Do Indirect Taxes Bite? How Hiding Taxes Erases Accountability Demands from Citizens*

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Abstract

Direct taxes appear to produce better governance than oil or aid revenues, and seminal accounts in political science attribute democratization in large part to the rise of effective taxation. Direct taxes apparently increase citizens' accountability demands. However, while existing evidence focuses on direct taxes, indirect taxes now comprise the majority of tax revenue worldwide. We argue that taxation's accountability effects hinge crucially on the form of taxation. Less-visible indirect taxes such as VAT may mobilize much less popular pressure than direct taxes. Cross-national data analysis demonstrates that taxation's effect on accountability applies mainly to direct taxes. Next, lab-in-the-field experiments in Uganda show that hidden indirect taxes provoke limited citizen ownership over budgets and less willingness to punish leaders for low transfers. Finally, a Uganda survey experiment indicates that even very common indirect taxes are hidden from citizens. The findings suggest that growing budget reliance on indirect taxes may limit taxation's accountability dividends and thus impair democratic representation.

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1 Introduction

> "Perhaps...the money which [the taxpayer] is required to pay directly out of his pocket is the only taxation which he is quite sure that he pays at all. ... If all taxes were direct...there would be a security...for economy in the public expenditure."
> – Mill, 1848

Taxation critically affects the evolution of democracy and government capacity (Tilly 1990; Bates and Lien 1985; Levi 1989; North and Weingast 1989). Greater government reliance on taxation—relative to non-tax sources like foreign aid or oil—correlates with lower corruption, higher levels of democracy, and higher public goods provision (Ross 2004; Timmons 2005; Baskaran and Bigsten 2013; Brollo et al. 2013; Gadenne 2015; Prichard 2015). Evidence indicates that taxation can improve government accountability and democracy because it increases citizens' accountability demands, making them more willing to monitor government performance and to sanction leaders when dissatisfied (Paler 2013; Martin 2014; Weigel 2017), though perhaps not universally in developing countries (de la Cuesta et al. 2019).

While most empirical work on revenue and accountability treats taxation as monolithic, taxation has changed dramatically since the Glorious Revolution. Panel A in Figure 1 shows that the majority of all tax revenues comes from indirect taxes. Moreover, since 1980, indirect taxes as a percent of GDP have increased the fastest: direct taxes increased by 0.6 percentage points globally, while indirect taxes increased by more than 3 percentage points—a one-third increase from the base rate. This growth has been driven by the rise of the Value Added Tax (VAT), as shown in Panel B of Figure 1. The increase in VAT stems in part from its promotion by the World Bank and other development organizations as a way for low-capacity states to expand their tax base and increase tax revenues without unduly distorting economic incentives.

As a result, in both high- and low-income countries, indirect taxes may be the only taxes many citizens pay. Recent numbers suggest that 44% of Americans and 43.4% of British citizens pay no income tax at all (Stallworth and Berger 2019; Joyce, Pope and Roantree 2019). In our survey in Uganda reported below, only 7.5% of respondents reported paying income tax. In contrast, almost all citizens in most countries pay indirect taxes, which include excise taxes, sales taxes, trade taxes, and VAT. How citizens experience and respond to indirect taxation thus ought to matter at least as much as, and arguably more than, how they respond to direct taxes.

A number of scholars have theorized that indirect taxes are less visible to citizens, potentially muting or eliminating taxation's effect on citizens' accountability demands (Brautigam, Fjeldstad and Moore 2008). This has serious implications. In developing countries, promoting indirect taxation may significantly limit the extent to which taxation can improve democratic accountability. In high-income countries, direct taxpayers may have the most influence, skewing policy in favor of wealthier individuals who pay more direct taxes. Yet we have virtually no evidence on whether this is, in fact, the case. Existing studies re-

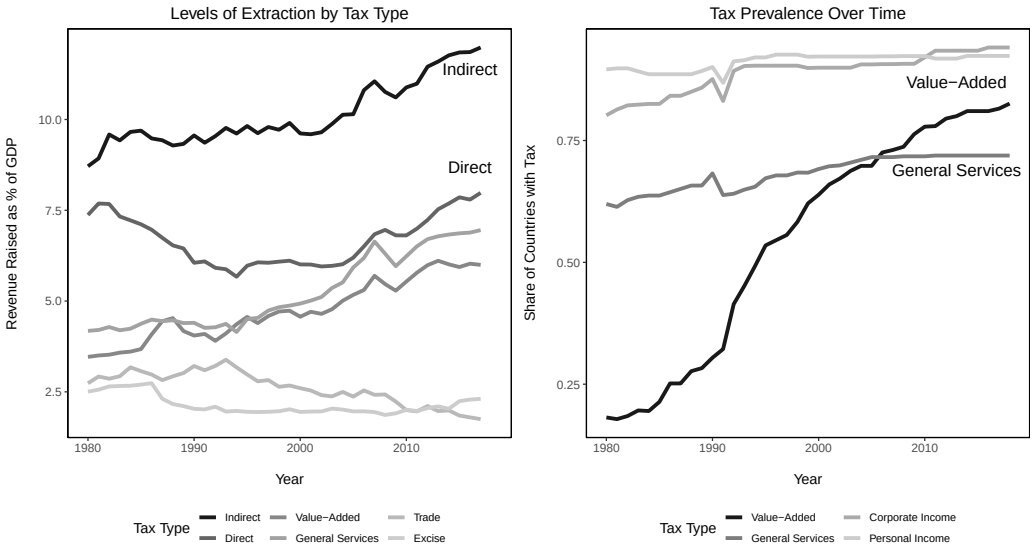

Figure 1: Taxation Over Time. Panel A plots revenue as a percent of GDP over time for different tax types (ICTD 2019). Value-Added, General Services, Trade and Excise taxes comprise the indirect tax line. Direct taxes includes personal income, corporate and other forms of direct taxes. Panel B plots the share of countries with a given type of tax over time (Seelkopf et al. 2019).

porting that taxation increases citizens' accountability demands are based on direct taxation (Paler 2013; Martin 2014; Weigel 2017), and most cross-national evidence combines all types of tax revenues (see e.g. Prichard 2015).[1]

This article develops and tests a theory of how a tax's visibility drives the extent to which it has positive effects on accountability. Existing research suggests taxation will only raise citizens' willingness to sanction poor government performance when it heightens the degree to which citizens feel *ownership* over the government budget, which increases expressive punishment of leaders if citizens do not benefit from government spending (de la Cuesta et al. 2018; Paler 2013). And citizens must feel a *loss* from the tax payment; this makes citizens eager to recover the loss through public spending and produces discontent when they do not (Paler 2013; Martin 2014). These conditions are more likely to be met when a tax is highly visible: citizens feel ownership over the tax money, feel the loss from payment, and see the transfer of funds to the government, generating increased accountability pressures.

While indirect taxes are often visible when first introduced, their visibility decreases over time. Citizens *acclimate* to higher prices, much as consumers adjust to normal rates of inflation; this reduces the sense of loss from indirect tax payment. Because the tax is collected by the seller, rather than the government, the link between the tax and the government budget weakens, reducing budget ownership. Combined, these changes dampen indirect taxation's long-run effect on citizens' accountability demands. In contrast, direct taxes are highly visible both when introduced and years after their introduction: individuals

[1]The exception is Timmons (2005), who finds that direct and indirect taxes are each associated with the policies preferred by taxpayers.

transfer their earned income directly to the government consciously and annually, creating a renewed sense of ownership and loss each year they pay.

We use cross-national data, laboratory experiments, and survey experiments to test the argument. We explore multiple links in the causal chain connecting taxation to improved governance. Cross-national analysis, using a modified version of extreme bounds analysis, tests the first and last links in the chain, demonstrating that while direct taxation is associated with meaningful increases in accountability, indirect taxation has little effect. To test the intermediate links, lab-in-the-field experiments in Uganda examine the effects of tax modality and visibility at the time a tax is introduced. We find that, when a simulated direct and indirect tax are equally visible, both taxes increase citizens' willingness to pay to punish a leader. However, making the indirect tax less visible reduces this effect significantly. Mechanism tests show that tax visibility affects budget ownership and the perceived loss from paying the tax.

We address several possible concerns with these results. First, to demonstrate that indirect taxes are less visible, we use a survey experiment in Uganda to show that priming citizens on indirect taxes affects citizens' perceived utility from purchasing—something that should not hold if indirect taxes are visible. We also show that, in Uganda, uncertainty about tax burdens is much higher for indirect, as compared to direct, taxes. Second, our experiments are designed to control for alternative mechanisms such as tax structure, type of taxed exchange, and taxation frequency. Finally, we consider other alternatives such as tax bargaining and state capacity and determine that they cannot explain our results. Together, the Uganda studies provide evidence that indirect taxation, by virtue of its relatively low visibility, produces weaker accountability pressures than direct taxation, and we demonstrate that this is driven by the ownership and loss mechanisms.

These results have significant implications for the study of accountability and state development. We show that any positive effect of indirect taxation on democratic accountability will be short-lived; in the long run, these benefits may not persist. Thus, governments may strategically rely more heavily on indirect taxation in order to reduce citizens' accountability demands. If countries continue to increase indirect taxation, the positive relationship between taxation and political accountability may weaken. Further, low-income citizens paying only indirect taxes may be less well represented than more wealthy direct taxpayers. Indirect taxes may disrupt the causal chain connecting taxation to accountability pressures by reducing citizen demands for better governance.

2 Theory

Direct taxes are collected from the taxpayer by the government and are typically applied to a certain form of income or assets (i.e., wages or capital gains). Indirect taxes are levied on particular goods or services at the time of purchase, manufacture, or trade, and remitted to the government by the seller or producer (i.e., VAT and excise taxes). We argue that while direct and indirect taxes can both increase accountability demands when

first introduced, only visible direct taxes will influence government accountability in the long run. We use these insights to develop a set of testable hypotheses.

2.1 How Taxation Affects Accountability Pressures

Historically, taxation played a key role in developing modern democratic states (Bates and Lien 1985; North and Weingast 1989; Levi 1989). More recent work has shown that tax-reliant governments are more democratic (Ross 2004; Prichard 2015), less corrupt (Baskaran and Bigsten 2013), and more likely to provide taxpayers' preferred policies (Timmons 2005). The alternative to taxation is typically either foreign aid or revenues from natural resources like oil; reliance on such "windfall" revenues can lead to worse governance outcomes and may also lead to lower taxation (Ross 1999; Morrison 2009).

Taxation improves accountability in part by increasing citizens' willingness to monitor government performance and to take political action when dissatisfied (Paler 2013; Weigel 2017). Taxation purportedly increases the psychological benefits citizens receive from punishing poor government performance. Higher psychological benefits arise from two related mechanisms: ownership and loss aversion. The loss aversion theory posits that citizens expect to receive their earned income, and taxation forces a painful loss of income that citizens are eager to regain through government spending Martin (2014); Sandbu (2006). Due to the shape of loss-averse utility functions, this makes citizens more sensitive to the economic utility lost due to any corruption or other non-optimal government policy. If a citizen's willingness to engage in political action is linked to the degree poor government performance hurts them personally, taxation will then increase citizens' willingness to demand accountability.

The ownership mechanism complements the loss-aversion mechanism. Work in psychology shows that individuals demand more from a resource that they view as "theirs" (Wu et al. 2012). Recent work in political science demonstrates that citizens' sense of ownership over government budgets predicts willingness to punish and that direct taxation increases punishment in part by activating budget ownership (de la Cuesta et al. 2018). The ownership and loss-aversion mechanisms require two conditions. First, citizens must feel a loss from paying the tax: their expected utility (reference point) is pre-tax, not post-tax, income. Second, for taxation to increase ownership, taxpayers must see that their tax payments are transferred to the government budget. These conditions suggest that taxation's accountability dividends may depend on a tax's *visibility*. When a tax is highly visible, citizens feel a loss from paying it. They also clearly see their tax payment transmitted to the government, strengthening budget ownership. Taxation should then increases citizens' accountability demands. When tax payments are hidden, citizens may not feel a loss from payment, or may not link the tax to the government's budget; either of these will weaken the taxation-accountability link.

2.2 Tax Modality, Visibility, and Acclimation

A particular tax's visibility may therefore mediate the accountability dividends of taxation. A common intuition holds that indirect taxes prove less visible, and "bite" less, than direct taxes, lowering the impact on citizens' accountability demands (Moore 2004). For example, in describing interviews with American citizens about taxation, Williamson (2017) writes that those who do not pay income tax "are quick to downgrade their status to quasi-taxpayer, or deny being a taxpayer at all" (p. 51). Relatedly, the fiscal illusion literature argues that citizens fail to internalize the costs of indirect taxes, leading to higher than optimal government spending (Blumkin, Ruffle and Ganun 2012).

However, it is not clear that indirect taxes are invisible. Consumers are extremely sensitive to the prices of critical goods like food and fuel (Ballard-Rosa 2016). This suggests that consumption taxes, especially for poorer consumers, may "bite" much as direct taxes do. Likewise, work in economics indicates that indirect taxes can be highly visible, especially when incorporated into a good's shelf price (Chetty, Looney and Kroft 2009). More broadly, the introduction of VAT in several countries, including Ghana, has induced widespread protests and accountability demands from citizens (Prichard 2015). Prichard (2016) shows that competitive elections generate tax-depressing political budget cycles for both direct and indirect taxes, and Timmons (2005) finds that both direct and indirect taxes lead to policies favoring citizens hardest hit by the tax.

We reconcile these apparently conflicting findings by examining how tax visibility may change over time, particularly for indirect taxes. First, consider direct taxes. When a direct tax is introduced, or when rates increase, it is highly visible. Citizens' post-tax income goes down, activating the loss mechanism. Because direct taxes are paid straight to the government, this also activates the ownership mechanism. Thus, we expect direct taxes to increase accountability pressures at the time of introduction. This accords with existing evidence on direct taxes (Paler 2013; Martin 2014; Weigel 2017). Over time, we expect direct taxes to remain highly visible. Even when individuals pay an established income tax via withholding, annual income tax returns ensure that tax burdens are clear. Likewise, the budget link remains clear as taxes are remitted directly to the government. This should hold for income tax, and for other direct taxes more common in developing countries (such as property or business taxes).

Indirect taxes are also visible at the time of introduction. For example, introducing a VAT increases prices and noticeably decreases citizens' purchasing power, inducing a sense of loss. Media coverage may also make the link between higher prices and the budget clear, increasing ownership. In the short term, this can increase citizen demands on government similar to direct taxes. We argue that, in contrast to direct taxes, indirect taxes become less visible over time for three reasons. First, individuals adapt to the higher consumer prices under indirect taxes and adjust their expected post-consumption utility accordingly. This is similar to price shocks like inflation; they create temporary dissatisfaction, but consumers ultimately adjust. Governments may even assist this process by phasing in VAT rates (Prichard 2015), and by mandating tax-inclusive shelf prices. Second, indirect taxes are paid to a merchant instead of directly to the government; this obscures the connection

between tax payments and government spending. Third, unlike direct taxes, indirect taxes are paid as part of a contemporaneous exchange for a good or service, and this may diminish the salience of the tax.

If citizens do acclimate to indirect taxes, this will mute the effect on accountability demands. Such hidden indirect taxes will likely fail to activate the loss-aversion mechanism. Because citizens do not see the tax transmitted to the government, it is also less likely that indirect taxes will increase budget ownership. There is some evidence that visibility affects political outcomes. Finkelstein (2009) demonstrates that E-ZPASS electronic toll collection, which lowers toll visibility, made US state politicians more willing to raise toll rates in election years. Moreover, consumers appear to systematically underestimate indirect taxes (Sausgruber and Tyran 2005; Blumkin, Ruffle and Ganun 2012).

Examples of indirect taxes leading to citizen protests typically focus on the introductory period (Prichard 2015). In the long run, we argue that citizens begin to view tax-inclusive prices as the "real" price of a good. They may be aware on some level that these prices include taxes, but the tax loses its salience. Meanwhile, direct taxes remain highly visible. This leads to a divergence in which citizens who pay direct taxes demand more from government, but those who only pay indirect taxes do not.

2.3 Empirical Implications of Visibility and Acclimation

Our theory generates several testable implications. The broadest suggests that, if indirect taxes are ultimately less visible, we should see differences in how direct and indirect taxes affect country-level measures of accountability. In particular, we expect that:

> **Hypothesis 1:** The more a country relies on direct (indirect) taxes, the stronger (weaker) the positive effect of taxation on accountability outcomes.

Next, we claim that different taxes have different individual-level effects on accountability demands according to how visible they are:

> **Hypothesis 2:** Visibility drives the degree to which paying a tax makes citizens more likely to demand accountability from leaders.

We test two implications of H2. First, if we hold tax type constant and manipulate its visibility, then the same tax will have a smaller impact on citizens' willingness to punish poor leader performance when it is less visible. Second, when two different types of taxes are equally visible, they will impact citizens' accountability demands similarly. Finally, we argue that:

> **Hypothesis 3:** The visibility of a tax affects the degree to which taxation activates the budget ownership and loss-aversion mechanisms.

We expect that, while more-visible taxes will increase taxpayers' sense of ownership over the budget, less-visible taxes will have a smaller or null effect on ownership. Similarly, while paying more-visible taxes will generate larger utility losses in taxpayers, those paying a less-visible tax will incur smaller perceived losses.

3 Empirical Approach

To test our hypotheses, we combine laboratory experiments and survey experiments in Uganda with cross-national data. Uganda is well-suited to comparing the differential effects of indirect and direct taxation. Its per-capita GDP and other development indicators are at or near the mean for the continent (World Bank, 2016). Almost all citizens pay value-added and excise taxes, and direct taxation has played a key role in several recent elections (Persson and Rothstein 2015).

Country-level panel data enables estimation of the association between direct and indirect taxation and accountability. This tests Hypothesis 1, which was not pre-registered but follows closely from our theory. The laboratory experiments directly test how visibility affects citizens' accountability demands (H2) and whether visibility affects the activation of the loss aversion and ownership mechanisms (H3). The discussion section uses a survey experiment, combined with observational data on tax-burden perceptions, to show that indirect taxes become hidden over time and that citizens are significantly more uncertain about their indirect tax payments than direct tax payments. The experimental tests were pre-registered prior to data collection.

4 Direct and Indirect Taxation Have Different Effects on Accountability

Hypothesis 1 predicts that, if direct and indirect taxes have different effects on citizens' accountability demands, a government's reliance on direct taxes should be positively correlated with accountability, while indirect taxes will have a small or null effect. We test this using a panel dataset of 195 countries from 1980 to 2018. Our main independent variables are the tax-to-GDP ratios for direct or indirect taxes in each country-year (on a 0-to-100 scale), taken from the ICTD's Government Revenue Dataset (GRD).

To measure accountability, we considered variables that were plausibly responsive to changes in citizens' accountability demands, and that had good geographic coverage for at least 25 years. We discarded two common measures of accountability—democracy and democratization—based on concerns that they are unlikely to significantly change in the short run based on changes in tax levels. To the extent accountability pressures take the form of demands of better public goods provision, which does not require any changes in formal institutions, democracy-based measures will also ignore extra-institutional responsiveness by governments, particularly in autocracies. Other potential measures, such as spending on public goods; civic engagement; and voter turnout, are missing too many country-years to be useful.

Instead, we focus on the presence of corruption. Corruption directly inhibits governments' ability to implement citizens' preferred policies, thus undermining accountability. It is also a critical election issue in many countries, making control of corruption a direct measure of whether governments are accountable to citizens' preferences. Governments can

also rein in corruption far faster than they can make structural changes that would be reflected in democracy scores. The corruption measure is therefore desirable in that it reflects year-to-year movements in accountability than broader-level democracy measures, allowing it to capture responses to accountability demands that go beyond formal institutional change. To measure corruption, we use a corruption severity index from the Varieties of Democracy project. The index includes executive, judicial, and legislative corruption and ranges from 0 (least corrupt) to 100 (most corrupt).

As this analysis was not pre-registered, and as there are many plausible specifications, we avoid picking a single regression model. Instead, we run a modified version of the extreme bounds analysis used by Sala-i Martin (1997). We first specified a baseline model of the effect of taxation on corruption that included our independent variables—the tax/GDP ratios for direct and indirect taxes—as well as 11 "core" control covariates whose absence would clearly bias a model of taxation and accountability.[2] We then randomly draw 5 additional covariates from a set of 15 plausible auxiliary variables. This process yields 3,003 possible specifications. The use of a set of core controls removes many specifications that would omit obvious confounders, improving internal validity. Each model is of the following form:

$$\begin{aligned}\text{Corruption}_{i,t+1} = \alpha_i + \delta_t + \beta\text{RelianceIndirect}_{it} \\ +\gamma\text{RelianceDirect}_{it} + \boldsymbol{\eta}\mathbf{X}_{it} + \epsilon_t\end{aligned}$$

where RelianceIndirect and RelianceDirect are country i's indirect and direct taxes in time t as a proportion of GDP. The subscripts on α and δ denote country and year fixed-effects. Finally, $\mathbf{X}_{it}$ is comprised of a set of core covariates, the basket of theoretically plausible auxiliary covariates discussed above, and a region-specific quadratic time trend. The model's identifying variation comes from over-time, within-country variation in corruption that is unrelated to temporal shocks, region-wide trends or the included time-varying covariates. Standard errors are clustered by year to account for changes in model fit that could occur due to dynamic changes in the underlying data-generating process.

The quantity of interest is the distribution of beta coefficients for RelianceIndirect and RelianceDirect. H1 proposes that the effect of RelianceDirect on corruption should be negative and significant, while RelianceIndirect will have a small or null effect. Figure 2 plots the kernel-smoothed densities of these coefficient distributions. The distributions are visibly different; an increase in direct taxation is negatively associated with lower corruption in all 3,003 plausible models, while the effects of indirect taxation are mostly null and centered close to zero.

[2]Core controls are total revenue raised as a % of GDP, total non-tax revenues as a % of GDP, an indicator for civil war, GDP growth, inflation, an indicator for legislative or constituent assembly elections, log GNI per capita, log population, an indicator for presidential elections, and a three-category regime type measure (autocracy, anocracy or democracy) based on Polity IV. See Appendix A for additional details and aggregation of estimates.

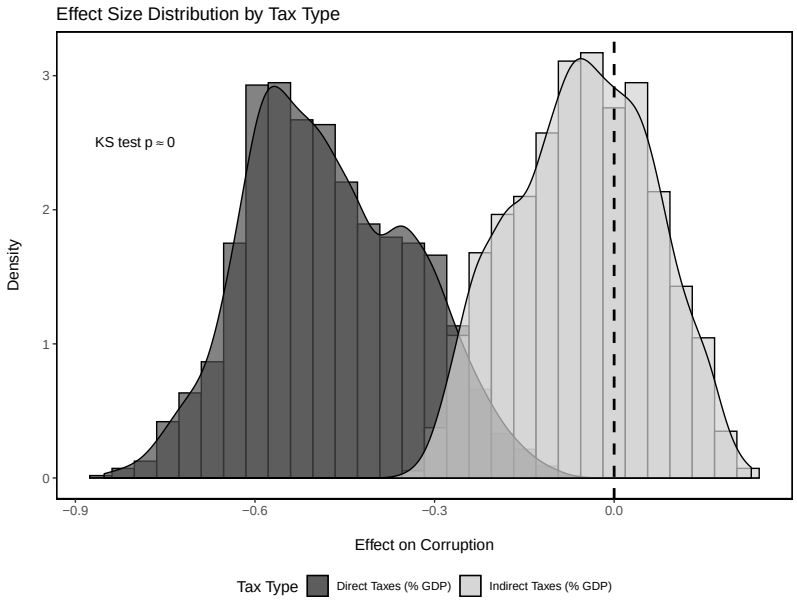

Figure 2: Coefficient Distribution for Direct and Indirect Taxes on Corruption. Histograms plot the coefficient estimates of direct and indirect taxation from 3,003 models. The effect of direct taxation is always negative and significant 93% of the time, while indirect taxation's effect is distributed around zero and is significant 11% of the time.

This difference is both substantively and statistically meaningful. The mean effect of increasing indirect taxation by one standard deviation (equivalent to 4.5% of GDP) is a 0.24% reduction in corruption, while the same effect for a one-standard deviation change in direct taxation (equivalent to 5% of GDP) is 2.4%, a ten-fold increase. Direct taxation has a negative, statistically significant effect 93.1% of the time. The coefficient on indirect taxation, by contrast, is positive in more than a third of the models, and is negative and statistically significant only 11% of the time. A Kolmogorov-Smirnov test rejects the null hypothesis that the two distributions are the same ($p \approx 0$). All models pass the modified Durbin-Watson test for AR(1) autocorrelation in unbalanced panels proposed by Baltagi and Wu (1999).

Appendix A reports three sets of robustness tests. First, our results hold for four different configurations of fixed effects and time trends. Second, the findings hold when considering an alternative V-DEM measure of accountability which characterizes the extent of patrimonial behavior by elected officials. Finally, our results are robust to a more sophisticated weighting scheme in which we weight coefficients by the product of their models' R^2 and the proportion of non-missing data after listwise deletion. These findings are consistent with our theory. We therefore now turn to our experimental tests of tax modality, visibility, and accountability pressures.

5 Tax Visibility Affects Sanctioning Behavior in the Lab

Our theory suggests that indirect taxes have a smaller accountability effect because they are less visible, and this reduces their effect on citizens' willingness to hold politicians accountable. This section uses lab experiments in Uganda to test how a tax's visibility affects the extent to which tax payments increase citizens' willingness to punish low transfers from leaders (H2), and the mechanisms underlying any effect of visibility (H3). The lab allows us to isolate tax visibility from other potential differences between direct and indirect taxes, and to precisely measure how visibility affects the loss and ownership mechanisms. Experimental protocols and tests were pre-registered with EGAP prior to data collection.

Our experiments model a strategic interaction between a single Citizen and a Leader.[3] In all treatments the Leader receives a "group fund" to allocate between herself and the Citizen. The Citizen simultaneously decides, for each feasible allocation decision, whether he would wish to pay a portion of his wages to punish the Leader with a fine (no one receives any money lost in punishment). We designed four treatments to vary both the source of the group fund and the visibility of any tax. Table 1 reports the stages of each experimental treatment. We first describe the baseline "Windfall" condition in which there is no taxation, then discuss the three tax conditions: Direct Tax, Visible VAT, and Hidden VAT.

In the "Windfall" condition, the Citizen earns an endowment of 1,000 Ugandan Shillings (UGX), then uses 500 UGX to buy a real consumer item of their choice. Respondents kept these goods at the end of the experiment.[4] The Leader then received the 1,000 UGX group fund, which was described as a windfall.[5] Decision-making then took place.

In the Direct Tax condition, the Citizen earned a 1,500 UGX endowment, then purchased a good for 500 UGX. They then paid a direct tax of 500 UGX: this was doubled and given to the Leader as the group fund. The tax was highly visible—respondents physically handed over coins representing the tax, and they saw it doubled and transferred to a tile representing the Leader. The rest of the game is identical to the Windfall condition.

In the "Visible VAT" condition, Citizens earned a 1,500 UGX endowment. They were told that the government has implemented a new tax, and the price of each good is now 1,000 UGX: 500 UGX for the good itself and a 500 UGX tax. The Citizen then paid 1,000 UGX for a good and saw the 500 UGX tax taken from the "shop," doubled to 1,000 UGX, and given to the Leader. Decision-making then took place. By making the indirect tax highly visible, we can test whether, controlling for visibility, direct and indirect taxes produce different accountability pressures from citizens; this is a key implication of Hypothesis 2.

The "Hidden VAT" condition differs only in the visibility of the tax. In the Visible VAT and Direct Tax conditions the tax and its amount are explicitly discussed in a group

[3] Both roles are played by ordinary citizens.

[4] Available goods were rice, soap, cooking oil, candles, and maize meal. Piloting confirmed that most respondents knew that each good's real-world shop price was 500 UGX.

[5] The Windfall condition combines three randomly-assigned treatments that describe the group fund as foreign aid, oil revenues, or unspecified. These are pooled for analysis.

Direct Tax	**VAT (Hidden and Visible)**	**Windfall**
Citizen gets wage of 1,500 UGX.	Citizen gets wage of 1,500 UGX.	Citizen gets wage of 1,000 UGX.
Citizen pays 500 UGX for a small item.	Citizen pays 1,000 UGX for a small item.	Citizen pays 500 UGX for a small item.
Citizen pays 500 UGX direct tax, which is doubled and given to Leader as group fund.	Citizen pays 500 UGX VAT to shop. Leader gets group fund of 1,000 UGX.	Leader gets group fund of 1,000 UGX.
Leader decides how to allocate the 1,000 UGX group fund.		
Citizen decides whether to pay 100 UGX to fine the Leader 400 UGX.		

Table 1: Timing of Lab Experiments

training prior to enumeration. During gameplay the group fund is explicitly labeled as taxes, and citizens see their tax transferred to the Leader. In Hidden VAT, the Citizen is told in the group training that "the Government has decided to introduce a tax on goods, similar to VAT, so now the goods cost 1,000." During gameplay Citizens pay the taxed price for goods, but are not reminded of the tax. Likewise, they are not explicitly reminded that the group fund comes from the tax; it is simply referred to as the "group fund." Thus, the Hidden VAT condition reduces tax visibility. By comparing citizen behavior in the Visible and Hidden VAT conditions we can test whether visibility affects punishment, controlling for the type of tax (H2).

The four treatments differ only in the framing effect induced by each treatment. At the time that the Citizen and Leader make their strategic decisions, the Citizen always has 500 UGX plus the purchased item, and the Leader has the 1,000 UGX group fund. The game was implemented as five single-shot rounds: absent expressive benefits for punishment, the unique subgame-perfect Nash equilibrium is for the Leader to offer 0 UGX to the Citizen, who never punishes. This allows us to test how visibility and tax type affect expressive benefits of punishment.

The lab setting allows us to control for potential alternative mechanisms that could differentiate direct and indirect taxation. First, we control for tax structure: in all tax conditions the tax is 33% of the Citizen's endowment, is paid exactly once, and is mandatory. Second, indirect taxes differ from direct taxes in that they involve an *exchange* in which a good or service is received as the tax is paid, potentially weakening the perceived losses from taxation. The Visible and Hidden VAT treatments control for this by holding exchange constant and only varying visibility. Finally, direct and indirect taxes may differ in *frequency*: while direct taxes are often paid per paycheck or yearly, indirect taxes are paid with every purchase. This could either make indirect taxes more visible, or make it more difficult for taxpayers to discern their true indirect tax burden. Our experiments control for this by collecting taxes once per round.

5.1 Implementation

We conducted 72 sessions of 16 respondents each in Kampala, Uganda using local volunteers.[6] Each session was randomly assigned to a treatment. After a group training, respondents met individually with enumerators to answer questions, were told whether they were a Citizen or Leader, then played five rounds of the treatment, changing pairings between rounds to maintain the single-shot nature of the experiment.[7] All pairings were anonymous,

[6] See Appendix B for additional sampling information.

[7] Each session had 12 Citizens and 4 Leaders. Respondents were not told this ratio, only that roles and pairings were randomly assigned, and that in each round they played with a different person than the previous round. To avoid deception, each Leader played with 3 citizens in each round. All thresholds and punishment decisions were communicated to the Leader. One pairing was randomly chosen for the Leader's payout, making all pairings payoff-relevant.

and the single-shot nature of each round was stressed.[8]

Source treatments were repeatedly stressed in the enumerator scripts and on game boards used during enumeration (with the exception of the Hidden VAT condition, as described above).[9] To increase realism, enumeration used real 100 UGX coins, and respondents earned each round's endowment through an effort task. The protocols directly linked each game component to the desired theoretical concept. The money the Leader keeps was described as "his own personal salary," while the Citizen transfer was described as "money that politicians send to a community for development or other services that benefit the people living there."[10] Punishment was described as similar to protesting or voting—it imposes costs on a politician but is also costly for citizens.

Pre-specified manipulation tests provide evidence that our treatments affected tax visibility in the desired manner. Post-treatment, 68.6% of respondents could correctly identify the source of the group fund in the Visible VAT condition, compared to 29.8% in the Hidden VAT condition. While it may seem strange to view such low pass rates as evidence that a treatment worked, we argue that "failing the manipulation check" is precisely what happens to real-world taxpayers when a tax is not visible.[11].

5.2 Measurement

To test Hypothesis 2, our dependent variable is a Citizen's punishment threshold in each round, defined as the smallest transfer made by the Leader at which the Citizen does not punish. For example, if a Citizen would punish the Leader for transfers of 0-300 UGX, but not 400 UGX, the punishment threshold is 400 UGX.[12] Hypothesis 2's predict higher punishment thresholds for more visible taxes.

Hypothesis 3 predicts that tax visibility should affect the degree of perceived losses from a tax payment and the degree of ownership citizens feel over the budget. To measure post-treatment ownership, we asked respondents how strongly, on a zero-to-ten scale, they agreed with the statement "I feel strong ownership over the group fund." We expect to find lower group-fund ownership for less visible taxes, and higher ownership for more visible taxes.

To measure loss, during each round, Citizens were shown a ladder with 21 rungs, where 0 represented someone "not at all happy/well off" and 20 represented someone "very happy/well off." At the start of each round, Citizen were anchored at rung 10. We then asked Citizens to update their position on the ladder following the purchasing decision but before the group fund has been created, any direct taxes paid, or any indirect taxes transferred

[8] In the post-treatment survey, 84.8% respondents reported believing they never played with the same leader twice.

[9] See Appendix B for sample materials. Full protocols available on request.

[10] This framing succeed in encouraging subjects to view money the Leader kept as rent: on a debrief question, 85% answered that it went "to cover leader's living expenses."

[11] In the Direct tax condition 99% of subjects correctly identified the source of the group fund.

[12] As Leaders do not punish, their behavior is not analyzed.

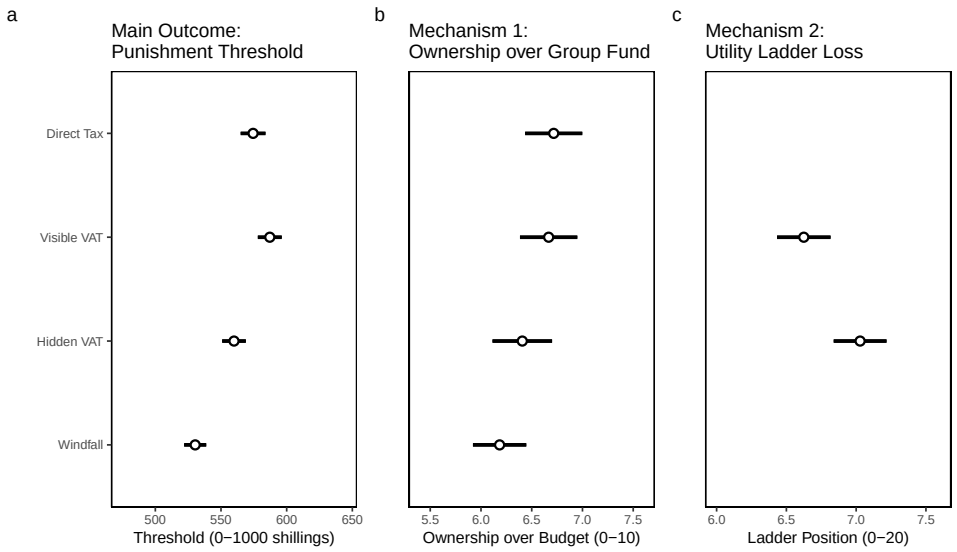

Figure 3: Mean Punishment Thresholds, Ownership, and Ladder Position by Treatment Condition. Panel A shows average punishment thresholds; panels B and C show by-treatment averages for the ownership and loss mechanisms.

to the leader.[13] This allows us to isolate how each treatment affets subjective utility from purchasing. Ladder values above 10 indicate utility increased from purchasing, whereas values below 10 indicate a loss from purchasing. We expect to see a sense of loss in the two VAT conditions, where prices exceed the market price, and either no effect or a gain in the Windfall and Direct Tax conditions. Hypothesis 3 predicts smaller losses in the Hidden VAT condition relative to the Visible VAT condition.

5.3 Lab Results: Effect of Taxation on Punishment

This section tests two implications of Hypothesis 2. First, if visibility drives taxation's accountability dividends, we should see higher punishment thresholds in the Visible VAT, compared to Hidden VAT, condition. Second, if visibility is the primary driver of accountability pressures, then two taxes that are both highly visible will have similar impacts on citizens' punishment behavior. Thus, we expect the Direct Tax and Visible VAT treatments to have similar and positive effects on citizens' punishment thresholds, relative to the Windfall conditions. If this is not the case, then factors other than visibility may be driving any differences between direct and indirect taxes.

Panel A of Figure 3 plots the treatment means and 95% confidence intervals for Citizens' punishment thresholds. As predicted, thresholds are lower in the Hidden VAT condition than the Visible VAT condition. In contrast, the two visible tax conditions—Direct Tax and Visible VAT—have similar average punishment thresholds. As expected, the

[13]See Appendix B for more details.

	Dependent Variable		
	Threshold	Ownership	Ladder Position
Visible VAT - Hidden VAT	27.46**	0.34*	−0.44*
	(10.70)	(0.19)	(0.23)
Visible VAT - Direct Tax	12.44	0.03	
	(11.11)	(0.19)	
Round FE	✓	N/A	✓
Item FE	✓	N/A	✓
Covariates	✓	✓	✓
N	4150	829	4150

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Table 2: Treatment Effects on Punishment, Ownership, and Ladder Position. Increasing indirect tax visibility increases subjects' punishment thresholds, budget ownership, and feelings of loss from purchasing (Row 1). Equally visible indirect and direct taxes generate equivalent accountability pressures (Row 2). Columns 1 and 3 use subject-round data with subject-clustered (CR2) standard errors; Column 2 uses subject-level data with robust (HC3) standard errors. Total sample size includes all treatment conditions. See Appendix B for additional comparisons.

Windfall conditions produce the lowest average thresholds; even low-visibility taxes produce higher willingness to punish than windfall revenues do.

Confirming these results, Column 1 of Table 2 shows the results of OLS models that include subject covariates, the Leader transfer from the previous round, and fixed effects for each enumerator, each round and the item purchased that round; standard errors are clustered by subject.[14] The first row of Column 1 shows that making the VAT more visible led to a 27.5 UGX average increase in the amount citizens demanded from the leader ($p = 0.011$). This supports H2's contention that, holding a tax constant, increasing visibility increases citizens' willingness to punish low transfers. In contrast, Row 2 of Column 1 shows no significant differences between the Direct Tax and Visible VAT conditions. This supports H2's second implication — that equally visible taxes should produce similar accountability pressures. Together, these results support our prediction that a tax's visibility will drive the extent to which it increases citizens' willingness to punish.[15] We now turn to Hypothesis 3.

5.4 Tax Visibility Affects Ownership and Loss

Hypothesis 3 predicted that visibility would affect punishment by affecting the ownership and loss mechanisms. If citizens do not see the tax or its transfer to the government,

[14] Specification was pre-registered. Results robust to alternative specifications (see Appendix B). Covariates are gender, age, education, poverty, and an index of local public goods.

[15] All three tax conditions have significantly higher punishment thresholds than the Windfall group. See Appendix B.

it may limit the extent to which taxation increases budget ownership. Citizens may also not fully feel a loss from paying a less-visible tax. We test these implications using two additional lab measures described above. For ownership, we expect higher group-fund ownership for more visible taxes. For the loss measure, we expect purchasing to induce utility losses in both VAT conditions, but Hypothesis 3 predicts larger losses when the tax is more visible.

Panel B of Figure 3 plots the by-treatment means and 95% confidence intervals for our subject-level ownership measure. Column 2 of Table 2, using a similar OLS model to Column 1, finds that group-fund ownership is 0.343 points higher in the Visible VAT condition compared to the Hidden VAT condition($p = 0.07$).[16] However, when we compare the equally visible Direct Tax and Visible VAT conditions, the coefficient is close to zero: equally visibile taxes produce similar ownership levels.[17] Together, these results suggest that reducing a tax's visibility mutes its impact on citizens' budget ownership, reducing willingness to punish low transfers.

To examine Hypothesis 3's second implication —that tax visibility affects the subjective loss individuals feel from paying a tax—Panel C of Figure 3 shows Citizens' average utility ladder values after purchasing. Panel C shows that, in both VAT treatments, utility decreased after purchasing the taxed good, relative to the pre-purchase anchor of 10.[18] Column 3 of Table 2 shows that, as predicted, these losses are 0.44 points smaller in the Hidden VAT condition ($p = 0.064$), a striking 14% increase in loss from making the tax more visible. The ladder results imply citizens interpret the exact same monetary loss differently depending on whether the higher price is visibly caused by a tax.

6 Discussion

The laboratory results show that when Citizens pay a new, highly visible indirect tax, its effect is very similar to that of a new direct tax. However, when the link between higher prices and the group fund was obscured in the Hidden VAT condition, taxation had a smaller effect on Citizens' punishment thresholds. Making the indirect taxes less visible also muted ownership over the group fund and generated smaller utility losses from paying the higher price. Together, these results suggest that tax visibility may account for the different effects of direct and indirect taxation on country-level corruption. This section examines possible concerns with our results.

[16] The difference is significant at the 5% level if we use the pooled Visible VAT and Direct Tax conditions as a reference category.

[17] Appendix B shows that ownership in the Visible VAT and Direct Tax conditions is significantly higher than in the Windfall condition, while ownership in Hidden VAT is not.

[18] The Direct Tax and Windfall conditions are omitted because respondents bought an untaxed good and thus ladder values are not comparable. See Appendix B.

6.1 Are Indirect Taxes Really Less Visible?

While the cross-national data show that direct and indirect taxes are associated with different corruption levels, and the lab experiments show that tax visibility can drive citizens' willingness to punish, we have not yet shown that indirect taxes are indeed less visible. We now turn a national survey, collected in 2018 in Uganda, to test citizens' knowledge of direct and indirect tax burdens, and whether citizens feel a loss from paying an established tax.[19]

In our lab data, respondents felt a loss from paying a "new" indirect tax. Our theory predicts that, over time, citizens should adapt to tax-inclusive prices, making the tax less visible. This has a clear implication: citizens should not feel a loss from paying an indirect tax that they are used to paying. However, reminding them that their utility could have been higher in the absence of the tax should induce a sense of loss; priming citizens on indirect taxes will lower utility gains from a purchase. In contrast, if indirect taxes are visible, reminding citizens of such taxes should not affect utility from purchasing.

To test this, survey respondents completed a brief effort task to earn 2,600 UGX, then chose to purchase either a bar of soap or an airtime voucher, each of which cost the actual market price for the good in that locale, typically 500-700 UGX.[20] Respondents were randomly assigned to one of three possible treatment conditions: Control, Hidden Tax, or Visible Tax. All groups were told "This is [ITEM] that costs [AMOUNT]." The Hidden Tax group was reminded that the price included taxes, but not told the amount of the tax. The Visible Tax group was told that "If there were no taxes on ITEM, it would cost BLANK– you could buy it and have BLANK Sh left over. But, because there is BLANK the total cost of the ITEM is BLANK Sh." Thus, the tax is made highly visible. For each item, we used the actual taxes levied on that good in Uganda: 18% VAT for both goods, plus a 12% excise tax for airtime.

Our outcome measure is a 21-rung utility ladder like that used in the lab experiments. Respondents were achored at rung 10 prior to purchasing, then asked to update the ladder post-purchasing. As soap and airtime are valued goods, we expect the control group to be in the realm of gains from purchasing, reflected by average ladder values greater than 10. If indirect taxes are visible, neither treatment should affect post-consumption utility. If indirect taxes are not visible, we expect the reminder in the Hidden VAT and Visible VAT conditions to lower average post-purchase utility; this effect should be significantly larger in the Visible VAT condition.

Figure 4 plots the average ladder values and confidence intervals in each condition, pooled and broken down by item purchased. The vertical line indicates the pre-purchase anchor. Respondents in the Control condition have average ladder values of 10.8, putting them in the realm of gains. In the Hidden Tax condition this drops to 9.76; simply reminding respondents of taxes is enough to wipe out *all* gains from purchasing. In the Visible Tax condition the average ladder value drops to 7.59: respondents who were reminded of the specific taxes they pay are now in the realm of losses, similar to the loss induced by direct

[19] See Appendices C and D for survey details.
[20] 51.7% paid 500 UGX and 48.2% paid 600 UGX.

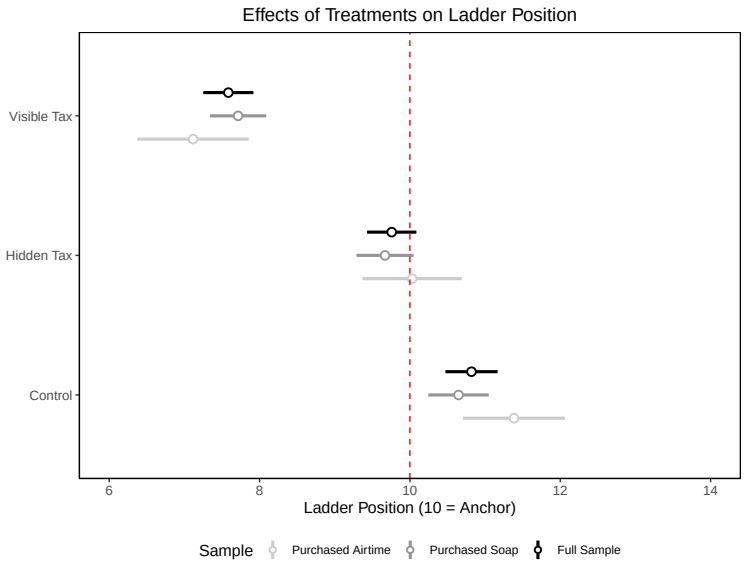

Figure 4: Effect of Visibility on Subject Utility. Dots show post-purchase utility ladder values by treatment group. As expected, reminding subjects that prices include tax moderately decreases utility (Hidden Tax), while giving subjects the exact tax amount has a larger effect (Visible Tax). Within each sub-sample, all point estimates are significantly different from each other.

taxes. This loss is more pronounced in the airtime condition, where taxes are higher than in the soap condition.

The survey experiment shows that VAT and excise taxes are not visible to Ugandan citizens, supporting the main contention of this paper. However, it remains to show that direct taxes are more visible. To address this, Figure 5 reports the results of a module, included in the same survey, that measures respondents' perceived tax burdens. Enumerators asked respondents their monthly household income, then how much of that income they thought they would pay in taxes. Respondents were then asked to list all the taxes that encompassed. Finally, respondents were asked how much they thought they paid for each tax listed, and (on a 10-point scale) how certain they were about that amount.[21]

Panel A of Figure 5 shows that few citizens report paying direct taxes, while a majority report paying at least one indirect tax. However, as almost all citizens pay both VAT and excise taxes, this means that indirect taxes are heavily under-reported. Panel B reports the results of the certainty module. If direct taxes are more visible than indirect taxes, we should expect that respondents will be more certain about the amount of direct taxes they pay. This is indeed what we find: average certainty is far lower for VAT and excise taxes than the three direct taxes. Appendix C shows that the results are similar if we limit the sample to only those who reported paying at least one direct tax; lower certainty is not being driven by different samples paying direct and indirect taxes. Thus, both observational and experimental data demonstrate that direct taxes are more visible to Ugandans than indirect taxes.

[21] See Appendix C for additional details.

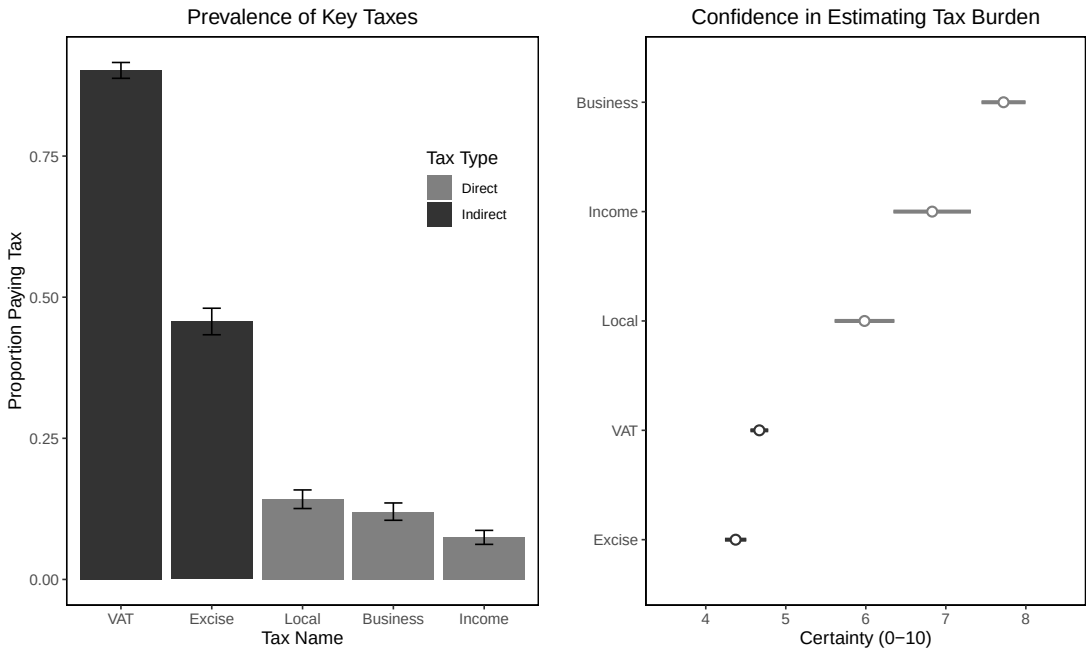

Figure 5: Tax Prevalence and Certainty for Most Common Taxes. Panel A shows the proportion of the sample that reports paying common direct (gray) and indirect (black) taxes. Panel B shows how confident respondents were in reporting the amount paid for each tax. As expected, the two indirect taxes are least visible.

6.2 Alternative Mechanisms

Another potential concern is that direct and indirect taxes differ in other ways other than visibility, and these differences are driving our cross-national results. One possibility is the ability to bargain over direct and indirect taxes. Theories of tax bargaining argue that taxation improves accountability when citizens can withhold tax payments, forcing tax-reliant leaders to grant policy or institutional concessions in return for quasi-voluntary tax compliance (Bates and Lien 1985; Levi 1989; North and Weingast 1989). Tax bargaining has been documented in many settings, including for indirect taxes.[22] We assume that tax bargaining will take place for some taxes, and may be affected by a tax's visibility and other characteristics, but testing this mechanism is outside the scope of this paper. For tax bargaining to undermine our results, it would have to be *more* likely for indirect taxes than direct; as indirect taxes have been promoted as easy to collect, this reduces this concern.

Another potential mechanism is that taxation increases accountability pressures because it signals to citizens that the state is higher-capacity than previously believed, as shown in (Weigel 2017). While we do not test whether tax modality affects the signal taxation sends about state capacity, it is generally accepted that indirect taxes require lower state capacity than direct taxes: this is a key reason why they are often favored by many governments. This suggests that indirect taxation might send a weaker signal about state capacity, and thus if anything should strengthen our results.

[22] See e.g. Prichard (2015).

Third, direct and indirect taxes differ in many ways other than visibility, and some of these differences could account for differential accountability pressures by tax modality. In Section 5 we discussed how our research design isolates the effect of visibility from these alternative mechanisms. Here, we discuss three additional potential differences between direct and indirect taxation—voluntariness, exchange, and frequency.

Direct taxes are involuntary in that they target entire classes of individuals or types of incomes: income taxes apply to everyone who earns wages of any kind. Indirect taxes are technically voluntary in that an individual can choose to not pay a tax by avoiding taxed purchases. While avoiding all taxed consumer goods would be difficult, individuals may still feel that they have more choice about the amount of indirect tax they pay. This could decrease accountability pressures if it decreases the losses citizens feel from paying taxes. Yet there is little evidence that citizens feel that indirect taxes are voluntary in any meaningful sense. This is largely because indirect taxes are often levied on staple goods, such as household items and food, that all but the wealthiest consumers simply cannot avoid. Anecdotally, voluntariness does not seem sufficient to reduce demands: Uganda's recent taxes on mobile money transfers and social media use are both "voluntary" but their introduction (consistent with our acclimation theory) generated significant citizen discontent.

Another potential mechanism is *exchange*. In contrast to direct taxes, a citizen who pays an indirect tax by definition receives something of value in return, namely the purchased good or service. This could substantially reduce the degree to which paying the tax generates a sense of loss in citizens, dampening accountability pressures. We are able to rule out this mechanism in our laboratory experiments by comparing two equally visible taxes, one in which there is exchange (Visible VAT) and one in which there is not (Direct Tax). We find no difference in subjects' thresholds, suggesting that the exchange mechanism does not weaken accountability pressures.

Finally, direct and indirect taxes may differ in payment *frequency*. Direct taxes are typically due once a year, or withheld from regular paychecks. In contrast, indirect taxes are paid with every purchase, likely almost every day. If increased frequency decreases salience, this implies that indirect taxation will be less salient and potentially have a smaller impact on accountabiltiy demands. We argue that, if true, this is simply part of the visibility mechanism: frequent payment makes a tax less visible. Additionally, our lab experiments show that visibility can be manipulated separately than frequency, reducing concerns that we are simply identifying the effect of tax frequency on punishment.

7 Conclusion

A growing body of work suggests that taxation affects accountability in part by increasing citizen engagement and citizens' accountability demands. However, this work has focused on direct taxes, which, despite their centrality in the taxation-accountability literature, form a minority of global tax revenues. Far less is known about the accountability effects of indirect taxes, despite their prevalence. This paper presents a theory linking tax visibility to the extent to which taxation will increase citizens' demands for accountability.

We show that, while higher country-level reliance on direct taxes is linked to lower corruption, reliance on indirect taxes has a small or null effect. Lab experiments in Uganda show that lowering a tax's visibility limits the extent to which it can activate loss aversion and budget ownership, as well as reducing the effect of taxation on citizens' willingness to punish low transfers from leaders. Survey data from Uganda shows that citizens have a high degree of uncertainty about the indirect taxes they pay, relative to direct taxes, and that priming citizens on indirect taxation decreases utility from purchasing.

Together, our evidence suggests that the accountability dividends of taxation may be limited for indirect taxes. When a VAT or other indirect tax is first introduced, it is highly visible and may lead to protests or citizen demands. This is consistent with the case studies in Prichard (2015), and with recent events in Uganda: the introduction of taxes on mobile money and social media initially induced citizen uproar. However, in the long run citizens acclimate to the new tax. Indirect taxes become less visible, and while citizens may be aware those taxes exist, they are not salient in day-to-day life.

These findings are especially important given recent trends in taxation. Direct tax rates have remained relatively stagnant, while indirect taxes have increased significantly. In part this may be because, especially in low-capacity states, indirect taxes are often easier to collect. However, our paper suggests that governments who wish to avoid accountability pressures may also have strategic reasons for focusing on indirect taxes. This threatens to weaken the long-standing link between taxation and good governance, raising questions about whether international actors should continue to promote the use of indirect taxes; their negative political effects on democracy may outweigh their economic benefits.

These results suggest several avenues for future research. While we focus on the general differences in visibility between direct and indirect taxes, some direct taxes may be relatively less visible, especially those paid via paycheck withholding, while some indirect taxes may be much more visible. Second, while we show that visibility is an important aspect of taxation, taxes differ in other ways discussed above, including frequency of payment and the type of exchange. More work is needed to examine how these other potential mechanisms affect the taxation-accountability relationship.

Few matters in public life prove more central to governance and accountability than the way that governments extract money from their citizens to pay for public goods and services. Historically, the particulars of tax policy have driven the evolution of democracy and the accountability mechanisms enabling citizens to demand responsiveness from leaders. The changing forms of taxation in the modern world—and the especially the increasing dominance of indirect taxes over direct taxation—may necessarily alter this fundamental citizen-government connection. The research reported here suggests the need for much more attention to how the mode of taxation drives accountability demands.

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