



## Incentivising small firms to boost VAT revenue: Evidence from Zambia

Brian Dillon, Jihye Jang, John Mulenga, and Twivwe Siwale

- Value Added Tax (VAT) is one of the most effective tools for increasing revenue in fiscally constrained environments.
- VAT is subject to revenue leakage when VAT-registered firms sell to non-VAT buyers, resulting in revenue loss.
- This study examines two policy tools to encourage small firms to request formal VAT invoices from their VAT-registered suppliers, generating a record of the transaction and increasing the probability that tax is remitted.
- The first incentive is a probabilistic financial reward (a lottery). The second incentive is a tax morale message intended to prime non-financial reasons to comply with tax laws.
- We evaluate the effectiveness of these tools using two randomised controlled trials (RCTs) in Lusaka, Zambia.
- We find that small non-VAT firms react strongly to even modest financial incentives, suggesting this is an important precursor to possible scale-up.
- Tax morale messaging seems to have only a small, short-term effect on VAT invoice requests by study firms. The messaging RCT is ongoing.

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## Overview of the research

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Raising additional revenue is a priority for tax authorities in many developing economies. Governments in these settings typically have limited enforcement capacity, and the informal sector, which is difficult to tax, tends to be large. Even formal firms routinely underpay taxes. The result is that many countries are stuck in a negative feedback loop: low levels of tax revenue undercut the government's capacity to provide services and enforce tax laws, which in turn reduces the willingness of agents to pay taxes, thereby starving the government of the revenue required to improve enforcement and public service delivery.

A key way to break out of this loop is to build tax systems that involve third-party reporting.<sup>1</sup> Information from a third party about another agent's tax obligations can raise the probability that noncompliance will be detected and create pressure to comply with tax obligations. In recent decades, the Value Added Tax (VAT) has been one of the key tools for creating third-party information and increasing revenue in fiscally constrained environments. In Zambia, VAT is responsible for 23% of revenue raised in 2022<sup>2</sup>.

VAT is successful because it is self-enforcing for transactions between VAT-registered firms. Buyers have a financial incentive to report the value of the sale so that they can claim a rebate. This incentive structure is effective along the supply chain but breaks down at the "last mile," i.e. when a VAT-registered firm makes a sale to a non-VAT buyer. To address this problem, some tax authorities have used financial incentives or lotteries to encourage final consumers to request an invoice (a VAT receipt) when making purchases. The invoice acts as third-party information, and its issuance is often recorded in an electronic database, raising the cost of tax evasion.

We conducted a pair of randomised controlled trials (RCTs) in Lusaka, Zambia, to measure the effectiveness of programs for increasing VAT revenues. Both RCTs focus on inducing small retail firms—those that are too small to register for VAT, but are important customers for VAT-registered wholesalers—to request formal VAT invoices from their suppliers. The first intervention offered firms a financial incentive, similar to a lottery ticket, based on the total value of VAT invoices they collect. The second intervention used tax morale messaging to make some of the non-financial reasons to comply with tax laws salient. In this policy brief, we report the initial findings of the ongoing study.

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<sup>1</sup> Jensen, Anders (2022). "Employment Structure and the Rise of the Modern Tax System," *American Economic Review* 112(1): 213-234.

<sup>2</sup> Zambia Revenue Authority (ZRA) (2022). "Annual Report 2022," *Zambia Revenue Authority*, Lusaka.

## Policy motivation and background

The research team has been working with the Zambia Revenue Authority (ZRA) to study policies to increase VAT revenues in Zambia. One of our goals is to understand whether tax rebate lotteries—government-run lotteries that reward agents with a chance to win cash when they take actions that contribute to tax remittance—can be successfully implemented in settings that lack certain institutional features that have helped them succeed elsewhere, such as universal taxpayer IDs<sup>3</sup>.

In late 2021, we piloted a tax rebate lottery with households in Lusaka. While we found that households were responsive to the incentives, the potential increase in VAT revenues from the incentive programme was not large enough to offset the projected cost of implementing the programme at scale. At the ZRA's request, we pivoted to focus on small retail firms. The ZRA believed *ex ante*, and our baseline data substantiates, that most wholesale purchases by these firms are untaxed. Because a targeted incentive programme for firms would be less complex than an economywide programme, our first experiment is based on a tax rebate lottery offered to small non-VAT firms.

Our second experiment involves tax morale messaging: communication intended to prime non-financial reasons to pay taxes. Such messages are popular with revenue authorities, in part because they are low-cost to implement. The ZRA uses messages regularly to encourage voluntary compliance. After completing the lottery RCT, we implemented an additional RCT to measure the impact of a tax morale message on the persistence of invoice-collecting behaviour by study firms.

## Study design

To enrol firms in the study, we visited 38 market areas in Lusaka in November–December 2022. We invited all retail firms to participate if (i) they had some fixed physical location (we excluded temporary market stalls and street vendors) and (ii) they were not VAT-registered. The initial sample consisted of 1,083 firms. We told all firms that we would visit them every 4–5 weeks beginning in early 2023. For the lottery RCT, we randomly assigned firms to one of three groups. Firms in the High Treatment group were told that at each survey visit, they could draw a card in the game with a 10% chance to win K300 (\$16.50). The number of draws they could make at each visit, which ranged from 0 to 3, depended on the total value of VAT invoices they had retained for business-related purchases since our previous visit. Firms in the Low Treatment group faced the same offer but could receive a cash prize of K35 (\$1.92) for winning the game. High and Low treatment

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<sup>3</sup> Naritomi, Joanna (2019). “Consumers as Tax Auditors.” *American Economic Review*, 109 (9): 3031–72. DOI: 10.1257/aer.20160658

firms could win the lottery a maximum of one time per visit. The third group was a control group with no opportunity to win a prize.

We visited firms five times in the lottery RCT from March to July 2023. At each visit, we recorded the details for all VAT invoices and non-VAT receipts retained since our prior visit. We also asked about changes to shopping patterns and supplier relationships, which could affect (and be affected by) how study firms respond to the incentives.

The second part of the study, the messaging RCT, began immediately after the lottery RCT. We randomly assigned all firms to Treatment or Control, stratifying on treatment status in the lottery RCT. Treated firms received a 4-part message intended to prime non-financial reasons to comply with tax laws, including peer pressure, reciprocity with the state to provide public services, and fairness (see the box below). The message was read aloud by enumerators and provided as a paper copy. The control group received a placebo message, consisting of the first paragraph of the treatment message.

### Tax Morale Message

We have appreciated your ongoing participation in this study, and we look forward to visiting 3-4 more times. Please continue to retain invoices and receipts. In future visits we will conduct our normal short surveys (not as long as today) and will review the receipts and invoices that you retain. Remember that VAT-registered firms must provide you with an invoice if you request one, for any purchase.

Over the last 4-5 months, \_\_\_\_% of firms like yours involved in our study have collected more VAT invoices than your firm, and \_\_\_\_% have collected the same amount or fewer VAT invoices.

VAT firms almost always request invoices when buying and selling from each other, because they can use those invoices to claim tax refunds from ZRA. So ensuring that you get an invoice is a way to make sure that the tax you paid is sent to the government on your behalf.

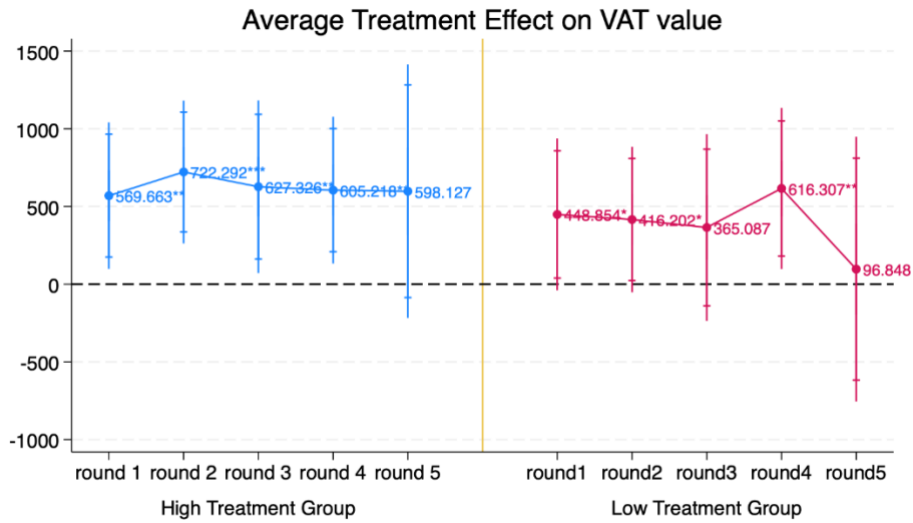
Essential public services, including market infrastructure, roads, electricity, schools, and hospitals are funded by taxes. When VAT-registered firms underpay taxes, everyone loses out. Asking for a VAT invoice is a simple yet effective way to help increase tax revenue and provide better services in Zambia.

### Preliminary findings

In the Lottery RCT, the average treatment effect for the High Treatment group was to retain VAT invoices totalling ZWK 624 more per round than Control firms (p-value < 0.01), representing a 46% increase. The effect for the Low Treatment group was ZWK 392 (p<0.10), a 29% increase. Figure 1 shows the estimated effects by round. Treatment effects are remarkably consistent for both groups, with the exception of the final round for the Low Treatment. The average effect

of the incentives is not statistically different between the High and Low treatments.

**FIGURE 1: Average treatment effect on VAT value**



The table below contains the key research questions and a summary of all key findings from five survey rounds conducted from November 2022 to September 2023 in Lusaka, Zambia.

**TABLE 1: Key research questions and key findings**

Key Research Questions	Summary of key findings
<p><b>Financial Incentive Scheme Intervention (Lottery RCT)</b></p> <ol style="list-style-type: none"> <li>Can small firms be incentivised with probabilistic rewards (lotteries) to request formal tax invoices from their VAT-registered suppliers?</li> <li>Do firm responses vary over time or with the value of the financial incentive?</li> </ol>	<ul style="list-style-type: none"> <li>Small firms respond to financial incentives by requesting and retaining more VAT invoices.</li> <li>The effects of High and Low treatment are statistically indistinguishable, suggesting that the existence of any incentive may be more important than its value.</li> <li>The total value of VAT invoices retained by high treatment firms is ZWK 642 higher than the Control group, representing a 46% increase over the Control mean of ZWK 1348 (p-value &lt; 0.01).</li> <li>The treatment effect for the Low treatment firms is ZWK 392 (p&lt;0.10).</li> <li>The effect of the intervention is consistent across time, particularly for high treatment firms.</li> </ul>

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**Non-Financial Intervention (Tax Morale****Messaging RCT)**

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| 1. Does tax morale messaging influence the persistence of invoice requests?  | • From the first round of conducting the messaging study, the message had a weak positive effect on the VAT value retained (ZWK 462, p-value < 0.1).         |
| 2. Do firm managers continue to collect VAT invoices from suppliers after the initial financial incentives to do so are removed? | • The previous high treatment group seems to retain more VAT in share, but the interaction terms are not significant. This aspect of the study is ongoing.0% |
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## Policy recommendations

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### 1. Tax rebate incentive programs for small firms are promising.

A lottery scheme targeted at small firms that purchase from VAT-registered suppliers is effective in incentivising these firms to collect VAT receipts, presenting an important opportunity for increasing VAT revenues at low cost. These firms make larger and more frequent purchases than households, have taxpayer IDs, and have fixed locations, making a tax rebate incentive program for small firms easier to implement and potentially better value than one implemented with households.

### 2. Even a low-value prize can be effective.

The value of the lottery prize did not seem to be a key factor in the study, as the effects of the High and Low Treatment are statistically indistinguishable. One interpretation is that the cost of requesting VAT invoices from some suppliers is very low, so the presence of any financial incentive to do so is sufficient to change behaviour. This bodes well for the cost-effectiveness of this type of programme, as the Low Treatment is substantially less expensive to implement.

### 3. Open questions remain.

Research to better understand other aspects of the Lottery RCT is ongoing, including (i) whether and to what extent study firms submitted fake VAT invoices, (ii) how study firms adjusted their shopping patterns in response to the incentives, and (iii) whether we can detect any impact of the incentives in the total VAT remittances paid by suppliers in Lusaka. Data is also still being gathered to assess the impact of the Messaging treatment over multiple rounds.

## References

Jensen, Anders (2022). "Employment Structure and the Rise of the Modern Tax System," *American Economic Review* 112(1): 213-234.

Naritomi, J. (2019). "Consumers as Tax Auditors." *American Economic Review*, 109 (9): 3031-72. DOI: 10.1257/aer.20160658

Zambia Revenue Authority (ZRA). (2022). "Annual Report 2022." Zambia revenue Authority, Lusaka.