Exploring Social and Group Dynamics of Tax Compliance:
A Conjoint Experiment Among Zambian Taxpayers

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Introduction

An efficient and well-functioning tax system is a necessary foundation for any country to achieve economic development (Kleven et al. 2016). One of the key features of a good tax system is the level of tax compliance amongst economic players. In Zambia, tax compliance rates are very low, especially among the Micro, Small and Medium Enterprises (MSMEs). Filing compliance among these taxpayers has been declining since 2010. In 2016, taxes paid by MSMEs only contributed about 15% of the Zambia Revenue Authority's (ZRA) collections (ZRA 2017). As part of a multi-phase research project, we conduct a survey that unpacks the barriers to tax compliance among this group of taxpayers. Along with exploring many of the oft-cited barriers to tax compliance, such as low rates of monitoring and enforcement of the tax law, a conjoint experiment sheds light on the social and group-level dynamics of tax compliance and a list experiment refines our measures of tax compliance. Here, we present the pre-analysis plan for the conjoint and list experiments.

Motivation

The broader study is meant to describe and test hypotheses about the key barriers to tax compliance that MSMEs face. The study team hopes to use the findings of this study to propose innovations that can specifically address these soon to be uncovered challenges, allowing ZRA to develop policy interventions that will improve compliance and tax morale in the MSME sector. In particular, because the costs of tax collection in this sector are high, substantial potential revenue remains uncollected (Dube Casale 2016). Interventions that increase voluntary compliance by tax-makers therefore could dramatically improve ZRA's ability to collect revenue from this sector (Joshi and Ayee 2008).

The study will also contribute to the academic literature on the patterns of tax behaviour among a very important tax-paying group that is relevant to many countries in the developing world. Low compliance is not only a problem for Zambia, but also a significant policy issue plaguing many developing countries (Joshi et al. 2014). This is especially true in sub-Saharan Africa, where formal-legal structures are weak and governments lack the capacity to expansively enforce tax policy. A primary aim of this research is to discern efficient and effective avenues for improving voluntary tax compliance and, perhaps more importantly, tax morale among citizens. Effective taxation policy is a fundamental building block of development, and building voluntary compliance, in particular, helps to overcome fundamental collective action problems and increase trust in government (Booth 2012).

Research Questions

What are the social and group-level factors affecting tax compliance? Specifically, how do social norms, reputational cost, the involvement of community-based intermediaries in tax collection, and the risk of audits affect tax compliance?

Research Context and Sample

This research was part of a broader research project, funded by the International Growth Centre (IGC) and implemented in partnership with representatives from IGC and ZRA. The partnership developed after ZRA approached IGC, who in turn approached the researchers.

The research project entails a survey conducted among micro, small, and medium enterprises (MSMEs) in Zambia. This taxpayer group includes vendors at markets as well as small, permanent businesses in commerce hubs and taxi owners.

We employ a three-stage sampling strategy to sample MSMEs. First, after discussions with ZRA, we purposively selected two commercially active provinces within Zambia: Central and Lusaka. Then, with the assistance of local government in these provinces, we compiled a list of markets in the metropolitan areas of Lusaka, Kabwe, and Kapiri Mposhi, the primary cities in Central and Lusaka provinces. We draw a stratified random sample of markets off of this list, removing the markets selected for the pilot and stratifying on market size. A replacement list of markets provides additional sampling locations, in the event the sampled markets are inactive or smaller than anticipated. The sample includes 41 markets in Lusaka, 7 markets in Kabwe, and 4 markets in Kapiri Mposhi.

At each sampled market, the research manager completes a random walk protocol to randomly assign a team of three enumerators to survey throughout the market and surrounding businesses. The three enumerators also employ a random walk protocol to sample individual respondents dispersed throughout their enumeration area. The sampling protocol results in an average of 23 respondents per market and 1237 respondents in the sample in total.

Each respondent completes a survey containing approximately 50 questions (with more or fewer depending on several skip patterns). The survey includes questions about relevant covariates as well as many dimensions and aspects of tax awareness and tax behavior. This pre-analysis plan lays out the hypotheses and tests for two areas of the survey only: a list experiment intended to provide a group-level measure of tax compliance, and a conjoint experiment on the social and group-level dynamics of tax compliance.

Research Design and Hypotheses

Measuring Tax Compliance

In the survey, we use a list experiment to measure tax compliance among MSME operators. Specifically, we present the following list experiment to each survey respondent:

> Now I would like to read you a list of items that people sometimes spend money on. After I am done, I would like you to tell me **how many** of these things you have spent money on in the past **year**. As I read the list, please do not tell me which things you spend money on or nod for different items, or otherwise give me any response to individual items. Just count in your head the number of things you have spent money on and tell me that number. Before we start, I'm going to give you an example. I will mention a list of items you might own and you tell me the number of items that you own. Remember, just tell me the number, not which ones. The items are a cooking pot, a radio, and a car. How many of these items do you own? Just tell me the number and not the particular items. *Correct the participant if they indicate (verbally or by nodding, etc.) which items they own. Do not move on until they understand this.*
>
> *Did the respondent complete the task correctly, or did they indicate which items they own?*
> a. *Completed correctly*

b. Completed incorrectly - indicated which items they own

Now I will read a list of items people sometimes spend money on. Remember, just tell me the number of these things you have spent money on in the last year - do not let me know which ones. The items are:

LIST 1 (randomly assigned to half of the participants via the survey app)
Tyre repairs for a bicycle
New clothes for your spouse
School fees for a female child
Medical bills for a relative
ZRA taxes on your business

LIST 2 (randomly assigned to half of the participants via the survey app)
Tyre repairs for a bicycle
New clothes for your spouse
School fees for a female child
Medical bills for a relative

How many of these items did you spend money on in the last year? [INTEGER]

Did the respondent complete the task correctly, or did they indicate which items they have spent money on in the last year?
a. Completed correctly
b. Completed incorrectly - indicated which items they have spent money on in the last year

To analyze these data, we will complete a standard list experiment analysis, using a t-test to compute the average difference in item counts reported by respondents exposed to lists 1 and 2, to assess the proportion of MSME operators who pay taxes.

We also plan tests for heterogeneous effects. Specifically, we will run sub-sample analyses, splitting the sample by operator gender, total household income,[1] whether the business provides goods or services, business type (market vendor, enterprise owner, taxi driver, other), and business reliance on

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[1] We will analyze income in two ways. First, we will use a simple self-reported household income question. Second, we will use Bayesian factor analysis to create a latent measure from a set of income indicators: "Where do your family members usually go for a health check-up/treatment when someone in your family is sick?", "Have you or are you paying for the education of any children and/or dependents?", "What type of school did or do your children and/or dependents attend for education?", "What is the highest level of education you have completed?", "In what age bracket are you?", "Is your residence urban or rural or somewhere in between?", "Do you rent or own your residence?", "Is your home wired for electricity?", "Is your home connected to the electricity grid?", and "How many of the following belongings are owned by your household?". See the attached survey for details.

services.[2] This section is largely descriptive, in that we want to measure compliance levels broadly, and within subgroups, but are not testing hypotheses. The one exception is with respect to business operators' reliance on public services, for which we hold the following hypothesis:

Hypothesis 1: MSME operators who rely more on public services will be more likely to pay taxes than those that who rely less on public services.

Conjoint Experiment

Also embedded in the survey is a conjoint experiment. In this conjoint experiment, we test a series of hypotheses about the circumstances under which MSME operators are willing to pay their business taxes. Selecting these dimensions for testing was informed by the literature on taxation and norms (Blumenthal et al. 2001), reputational cost (Mascagni 2018), and formal punishment institutions (Fellner et al. 2013), as well as the priorities of ZRA in considering the Zambia context and the group of MSME taxpayers.

Specifically, we hypothesize:

Hypothesis 2: MSME operators are more willing to pay their taxes when norms supporting tax-paying are high.

Hypothesis 3: MSME operators are more willing to pay their taxes when business associations act as tax collectors.

Hypothesis 4: MSME operators are more willing to pay their taxes when other business owners will learn about their tax compliance.

Hypothesis 5: MSME operators are more willing to pay their taxes when audits are more likely.

We run the following conjoint experiment to test these hypotheses:

> Now we are going to ask your opinion about business taxes. We will show you two pairs of hypothetical business tax situations. Please remember that these are situations that we have made up, not proposals that your representatives have made or real scenarios. For each pair of tax situations, we will ask you to pick the situation you would most support, and the situation in which you would be most likely to pay your business taxes. There are no right or wrong answers.

Dimension	Value A	Value B	Value C
Tax Paying Norms	Members of the business community look down on those who do not pay as they should	Members of the business community respect each businesses' decision regarding whether or not to	

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[2] The survey contains five questions tapping reliance on services. To measure general reliance on services we will use Bayesian factor analysis to generate a latent measure from these five questions. We will then spit the sample into above- and below-average groups on this measure.

		pay	
Tax Paying Collective	Businesses will pay taxes directly to ZRA	Businesses will pay fees and taxes to a business association in their area, who will pass on the taxes to ZRA.	
Tax Paying Reputation	Other small businesses will find out whether or not a business pays its taxes and fees	Tax and fee paying is confidential	
Probability of Audit	Approximately half of businesses will be audited every year.	Approximately one quarter of businesses will be audited every year.	Very few businesses will be audited every year.

For which of these two plans would you be most likely to pay your business taxes?
a.   Plan A
b.   Plan B

We will analyze the conjoint experiment following Hainmueller, Hangartner, and Yamamoto's (2015) approach to non-parametrically estimate the effects of each conjoint dimension, simultaneously testing hypotheses 2-5.

We also hypothesize that MSME operators who are especially reliant on public services—as defined in the previous section—will demonstrate greater treatment effects:

Hypothesis 6: Public service reliance will interact positively with each of the main effects posited in hypotheses 2-5.

We will test hypothesis 6 by including interactions between each main effect and an indicator for above-average public service reliance. We expect all of these interaction terms to be positive.

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