Tax Salience

Experimental Evidence from Tanzania

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Abstract

In sub-Saharan Africa, the adoption of mobile money has increased substantially during the last decade and is an important driver of financial inclusion in the region. At the same time, governments have implemented tax on mobile money transfers that may constrain financial inclusion and provide an incentive for cash transfers. The introduction of the taxes has led to heated public debate and reductions in the mobile money tax rates in several countries, making the tax highly salient to many taxpayers. This paper examines the effect of tax salience on the use of mobile money. Using a lab experiment among market traders in Dar es Salaam, we find that increasing the salience of the tax significantly reduces the use of mobile money.

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1 Introduction

The adoption of mobile money transfers has increased substantially in Sub-Saharan Africa during the last decade (Suri et al., 2023). Such transfers allow users to make financial transactions without owning owning a bank account (Apeti, 2023; Suri et al., 2023). Governments in the region increasingly also collect revenue by taxing mobile money transactions (Anyidoho et al., 2023; Apeti and Edoh, 2023; Mader et al., 2022; Okunogbe and Tourek, 2024). The mobile money tax is relatively easy to enforce - it is typically collected by telecommunication companies and services providers, and the transactions are relatively easy to monitor. Proponents further argue that the mobile money tax has the advantage of capturing transactions in the informal sector. Critics have argued that the tax disproportionately affects lower-income groups, and, thus, provides an incentive for cash transactions and thereby undermines financial inclusion (Anyidoho et al., 2023; Okunogbe and Tourek, 2024). However, there is limited evidence of the effects of the mobile money tax on the use of mobile money transfers (Anyidoho et al., 2023).

At the same time, the introduction of the tax has led to heated public debate in several African countries, making the tax highly salient to many taxpayers (Anyidoho et al., 2023; Okunogbe and Tourek, 2024). The high salience of the tax is likely to increase the effect of the mobile money tax on the use of mobile money transactions. Contrary to the central public economics assumption that agents optimize fully with respect to tax policies, the recent literature in behavioral public economics suggests that tax salience affects individual behavior (Chetty et al., 2009; Slemrod, 2019).

This paper studies the causal effect of *salience* of the tax on mobile money usage. To do this, we conduct a lab experiment with market traders in Dar es Salaam, Tanzania, where a tax on mobile money transactions was introduced in 2021. In the experiment, participants are randomized into either receiving a reminder about taxes and fees on mobile money transfers intended to increase the salience of the tax (Salience Treatment) or receiving no information at all (Control Group). Thereafter, we elicit participants' willingness to pay to receive their participation fee as mobile money (as opposed to cash).

We find that increasing the salience of the mobile money tax significantly reduces willingness to pay to receive their participation fee as mobile money. The magnitude of the effect is large -

about three times larger than the actual amount of taxes and fees.

The paper relates to several strands of the literature. First, it relates to the emerging literature on the taxation of digital financial services, including mobile money transactions. A handful of studies have documented negative effects of mobile money tax in the form of reduced support for the state's right to collect taxes and self-reported willingness to pay tax (Yeandle and Doyle, 2024), regressiveness (Anyidoho et al., 2023) and the frequency of mobile money transactions (Diouf et al., 2023). However, focusing on aggregated country level indicators, Diouf et al. (2023) finds no significant effect of the tax on mobile money use. Clifford (2020) find that the mobile money tax in Uganda initially reduced use substantially, but that it was back to pre-tax levels after 18 months. Using the entropy balancing method Apeti and Edoh (2023) find that the adoption of mobile money increases tax revenues in developing countries through improvement of institutional quality, a broader tax base and simplification of the tax payment process, but the paper does not consider taxation of mobile money transactions explicitly. Our paper contributes to the literature by providing evidence showing that the salience of the mobile money tax causally reduces mobile money use.

The paper also relates to the literature on the effect of tax salience on taxpayer behavior. Studies have documented that tax salience increases individuals' willingness to punish unaccountable decision-makers in the lab (de la Cuesta et al., 2022; Martin, 2023; Sjursen, 2023). We contribute to the lab experimental literature by studying the effect of tax salience on another outcome, namely use of mobile money transactions. Furthermore, by studying the effect of tax salience on the use of mobile money, we also add to the studies by Chetty et al. (2009) and Finkelstein (2009) showing that consumers under-react to taxes that are not salient, and to the broader literature on salience and economic behavior (see Bordalo et al. (2022) for a review).

The paper is organized as follows. The experimental design is presented in Section 2, and the sample and setting is discussed in Section 3. Section 4 describes our empirical strategy. The results are in Section 5. Section 6 concludes.

2 Experimental Design

This section outlines the experimental design. We first describe the sequence of events in the experiment and explain our treatment in more detail. Furthermore, we describe the elicitation of the main outcome, which is willingness to pay (WTP) for Mobile Money (MM). The complete questionnaire can be found in the Appendix.

Sequence of events In the beginning, participants consent to the study and complete a short pre-questionnaire capturing basic demographic characteristics. If they consented to participate in the experiment, participants were asked to write down their phone numbers on a paper slip with an ID number from 1 to 25.[1] In the next step, half of participants receive a reminder about a levy on mobile money (salience treatment). They subsequently make a series of choices to elicit their willingness to pay for mobile money.

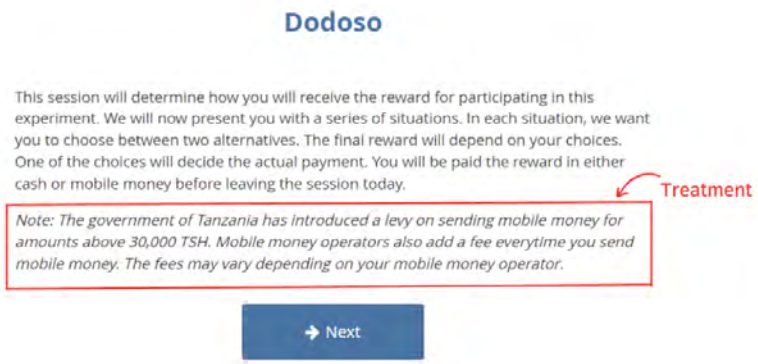
2.1 Salience Treatment

Participants were randomized into receiving a reminder about a recently introduced levy on mobile money or into not receiving this reminder. Participants in the Salience Treatment group were reminded twice: once at the beginning of the study and again during their decisions in the willingness to pay elicitation. Figure 1 shows the treatment as presented in the English version of the survey (excluding the red parts).

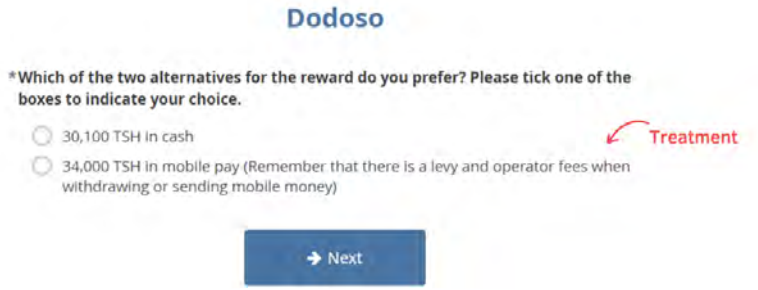
This levy on mobile transactions was first introduced in July 2021 through the National Payment Systems Act, section 46A (GSMA, 2021). It was introduced in an effort to increase the tax base, and in the fiscal year 2021/2022, the MM levy collected TZS 358 billion in total domestic tax revenue, which accounts for 1.7% of the total domestic revenues. In comparison, the personal income taxes, only accounted for 1.1% of the total domestic revenues (Tanzania Revenue Authority, 2023). Therefore, it is evident that the MM tax is an important tax for the Tanzanian government Participants in our sample frequently use mobile money as a payment method, and hence are frequently obliged to pay this levy. When transferring money via mobile money, the levy gets charged automatically. Hence, when using mobile money, participants have to expect further costs and these further costs become salient with our treatment.

[1] They had the option not to write their phone number as well. The phone numbers were used only to transfer the participation fee if they chose to receive it as MM. Due to GDPR concerns, the paper slips with phone numbers were shredded at the end of each day.

Figure 1: Salience treatment as displayed in our experiment



((a)) Introduction



((b)) Question 1 out of 7

2.2 Main Outcome: Willingness to Pay (WTP)

After the Salience Treatment, participants answered seven questions regarding their preference for receiving the participation fee in either cash or mobile money (MM). These responses allow us to estimate their willingness to pay (WTP) for mobile money. Participants were informed that, at the end of the survey, one of these questions would be randomly selected, and their participation fee would be paid out accordingly. Hence, our WTP measure is fully incentivized.

The participants' WTP is elicited by using a Multiple Price List (MPL) elicitation method with seven questions, similar to Allcott and Kessler (2019). This method works as follows: In each of the questions participants can decide to receive their payment in cash or in mobile money (see Panel (a) of Figure 1). Hereby, the amounts paid out differ between payment methods. As illustrated in the first row of Table 1, participants first choose between TZS 34,000 in MM or TZS 30,100 in cash. Then, the cash option continues to increase in the consecutive rounds until the cash and MM amounts are the same (TZS 34,000). In the last three questions, the MM amount is reduced step by step while holding the cash amount constant at TZS 34,000. This procedure offers an easy and understandable elicitation method. To avoid anchoring effects, the order of the seven questions was randomized for each participant. Anchoring effects can occur when similar options are displayed consecutively, leading participants to consistently choose the same option—a pattern found to be prevalent in similar studies Jack et al. (2022).

Table 1: Overview of the MPL

Binary choices	**Mobile money**	**Cash**
Question 1	34,000	30,100
Question 2	34,000	31,600
Question 3	34,000	33,100
Question 4	34,000	34,000
Question 5	33,100	34,000
Question 6	31,600	34,000
Question 7	30,100	34,000

3 Sample and Setting

The study was conducted in 2023 in Dar es Salaam - the largest city and financial hub of Tanzania. Participants in this study were business men, more specifically market traders recruited from 16 different markets in Dar es Salaam. These markets typically comprise many small

shops, each managed by one single market trader, and are where people typically buy food and all other goods, such as clothes and household items. Every market trader is required to register with the market committee and has to pay a market tax (Siebert and Mbise, 2018).

In each market, we randomly selected 50 participants on the basis of the official trader's list with the help of market leaders.[2] Participants were invited the day before the study. If they were willing to participate (98% of invited individuals), they were assigned a specific time at which they had to be present at the market on the following day. On the day of the experimental session, a bus service was arranged to transport participants from their respective markets to the study location, and they were returned to their markets after the study. This streamlined the participation process, making it convenient for market traders to take part in the study. Within each market, we divided participants into two separate sessions, resulting in a total of 32 sessions with 25 participants each. Sessions with participants from the same market were scheduled consecutively on the same day and the second group was picked up before the first group returned. This ensured that participants did not interact with one another until everyone from the same market had completed the study.

The lab-in-the-field experiment was conducted at REPOA, which is a leading independent Tanzanian research institution. Upon arrival, participants were greeted outside the conference hall where the experiment was conducted. They were asked to enter the room one by one, draw a number from the box by the entrance, sit down at the desk with the corresponding number and wait for further instructions without using their phones or communicating with other participants. On each desk there was a pen, a slip to note down their desk number and phone number and a water bottle. When all the participants were seated, the enumerators explained that the participants should complete an electronic survey on the tablet handed out to them. The enumerators also explained that the answers and decisions made in the study would be treated confidentially. Each participant received a show-up fee of minimum TZS 30,100 (approx. USD 11.58), see section 2.2 for details. This also included participants that showed up but did not consent to participate in the experiment. To ensure the anonymity of the participants, they received their payment in a sealed envelope or as mobile pay at the end of the experimental

[2]The traders list, managed by the market committee, contains the names of all traders in a market. To select participants, the total number of names N on the traders list was divided by 50, and then every $\frac{N}{50}$th trader was invited to take part in the study. The market leaders received a 30,000 TZS compensation for their time

session.

We next present descriptive statistics for our sample.[3] As illustrated in Table 2, 38% of the participants in the dataset are female. Although the share of females is slightly higher in the control group compared to the treatment group (41% vs. 36%, respectively), this difference is not statistically significant (as reported in the last column of Table 2). Compared to the overall Tanzanian population, where the female proportion is estimated to be around 48.7% (Afrobarometer, 2021), the share in our sample is slightly lower.[4]

Table 2: Descriptive statistics of the sample

	Mean			**P-value of t-test**
	Control	Treatment	Total	Control vs. Treatment
Female	0.41	0.36	0.38	0.159
	(0.03)	(0.03)	(0.02)	
Above Median Age	0.45	0.54	0.49	0.036**
	(0.03)	(0.03)	(0.02)	
High School	0.26	0.29	0.28	0.430
	(0.02)	(0.03)	(0.02)	
Observations	322	315	637	

Mean (standard error) and p-value of t-test. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Notes: The table reports descriptive statistics of the sample using the indicator variables used for the analysis. Column (1) reports means for control group, Column (2) reports means for the treatment group, Column (3) reports the means for the entire sample, and Column (4) reports p-values for a two-sided t-test for difference in means between control and treatment groups.

The median age in the dataset is 42 years old. This is considerably higher than the country-wide median age of 17.8 years old, according to the last national census (UNDP, 2017). However, this is expected since the age requirement to participate was 18 years old. Another reason could be that becoming a part of an organized market requires a very specific network and an understanding of the context, which is acquired over time (Kirumirah and Munishi, 2021). Furthermore, median age is expected to differ considerably between rural and urban areas, with the country average not allowing us to differentiate between the two types of regions. Table 2 shows that the share of participants above median age is significantly different (p=0.036)

[3]Following our pre-analysis plan, 159 observations were removed due to multiple switching behavior (MSB). A multiple-switcher is a participant that switches between MM and cash more than once during the experiment. This also includes the ones who switched from cash to MM since this is not logical given the nature of the MPL and thus indicates internally inconsistent choices.

[4]This could be due to two reasons: One plausible explanation could be that female vendors may have small children and therefore remain at the marketplace to manage the shop and attend childcare responsibilities, while the male counterpart participate in the experiment. There might also be a cultural explanation, e.g., that it is more common for men to own a shop (Idris, 2018).

between treatment and control group. We account for this by controlling for *Above Median Age* in our empirical analysis.

We measure education with an indicator for participants having completed high school or more. As seen in table 2, 28% of the entire sample has a degree from high school or higher. According to the Afrobarometer (2021), there are 24.3% who have high school education or higher in Tanzania. Furthermore, there is a 3 precentage point difference between the control and the treatment group, which is not significant.

4 Empirical Strategy

4.1 Main Outcome

Based on the seven questions described in Section 2.2, we calculate each individuals willingness to pay, which is the main outcome in our analysis. Based on the seven questions described in Section 2.2, we calculate each individual's willingness to pay (WTP), which serves as the main outcome in our analysis. To do so, we first identify the interval in which an individual's WTP falls and then assign them the average value of that interval.

For example, if a participant chose TZS 33,100 in MM instead of TZS 34,000 in cash, the participant valued receiving it in MM with TZS 900 or more. If a participant chose TZS 34,000 in cash instead of TZS 31,600 in MM, the participant values receiving it in MM with TZS 2,400 or less. A participant who answers like this, has a WTP in the interval between TZS 900 and TZS 2,400. The experiment also allowed participants to reveal negative WTP since participants might prefer cash to such an extent that they would be willing to give up a monetary amount to receive the participation fee in cash instead. Therefore, a negative WTP suggests a preference leaning towards cash, i.e., participants with a high willingness to give up money to receive it in cash. On the contrary, a positive WTP suggests a willingness towards paying to receive it in MM. Evaluating all seven of participants' choices allows placing respondent's WTP into eight intervals, symmetric around zero ('= in TZS 1,000):

$$(-\infty, -3.9'], [-3.9', -2.4'], [-2.4', -0.9'], [-0.9', 0], [0, 0.9'], [0.9', 2.4'], [2.4', 3.9'], [3.9', \infty) \quad (1)$$

To simplify the analysis, we assign one unique WTP value for each interval, namely the mean of the endpoints of the WTP intervals. For the highest and lowest intervals (WTP less than -3.9 or greater than 3.9), we follow (Allcott and Kessler, 2019) to compute the mean. We assume that the conditional distribution of WTP within these intervals follows a triangular shape, with an initial density equal to the average density of the adjacent range. This approach yields mean WTP values of -13.1 for the interval $(-\infty, -3.9]$ and 12.4 for $[3.9, \infty)$.[5]

4.2 Regression Equation

To estimate the effect of the salience treatment on WTP, we estimate the following equation:

$$Y_i = \alpha + \delta Salience_i + \beta X_i + \beta M_i + \varepsilon_i \tag{2}$$

with y_i being the individual's willingness to pay (calculated as explained in Section 4.1). $Salience_i$ is an indicator variable that takes on the value of one if receiving salience treatment, and zero otherwise. X_i is the background vector consisting of demographic characteristics. It includes an indicator variable for above median age taking on the value of one if over 42 years old and zero otherwise, an indicator variable for gender which takes on the value of one if female and zero otherwise, and an indicator variable for high school education which takes on the value of one if finished high school and zero otherwise. M_i is an indicator variable taking on the value of one if the participant is a high frequency user of MM (i.e., those choosing "Twice a week or more" and "Daily" in the post-questionnaire), and zero otherwise.

Heterogeneity Additional to this baseline specification, a heterogeneity analysis will be conducted using interaction terms between treatment and the background indicator variables for *Female*, *Above Median Age*, and *High School*. Based on these regressions, the aim is to understand whether significant differences exist between sub-groups in the sample. Separate regressions for background indicator variables are created by using the following specification:

[5] Detailed calculations can be found in the Appendix.

$$Y_i = \alpha + \delta Salience_i + \beta X_i + \theta Salience_i \times Var_i + \beta M_i + \varepsilon_i \quad (3)$$

with Var_i is an indicator variable for *Female*, *Above Median Age*, or *High School*. $Salience_i \times Var_i$ is an interaction term between the salience treatment and background indicator variables. On top of heterogeneity with respect to background characteristics, we will also analyses heterogeneity with respect to being a switcher. Therefore we create an indicator variable (*Switcher*) for those individuals who switch to examine the part of the sample that falls in the WTP intervals between the outer bounds of the distribution. The rationale is to gain insights into how the salience treatment affects this particular sub-sample, as opposed to the part of the sample that exhibits a strong preference for MM or cash.

5 Results

We start by presenting the main results before moving on to the analysis of heterogeneous treatment effects.

5.1 Main Analysis

Figure 2 summarizes the participants' WTP for the entire sample. Most participants end up on the outer bounds, but many also end up in the interior WTP intervals. This suggests that many participants consistently chose either cash or mobile money throughout the MPL.

Figure 3 displays our main treatment effect. Participants for whom the mobile money levy was more salient exhibit a significantly *more negative* willingness to pay for mobile money, meaning they have a higher preference for receiving their participation fee in cash.

Table 3 reports the results from estimating equation 2 using standard OLS regression. Across all specifications, we observe a negative and statistically significant effect of the Salience Treatment on the willingness to pay for mobile money. In the final column, we present results for the specification that includes the full vector of controls. In this specification, the Salience Treatment reduces the mean willingness to pay by TZS 2,763. This effect is around three times

Figure 2: WTP interval distribution for the sample ('=TZS 1,000)

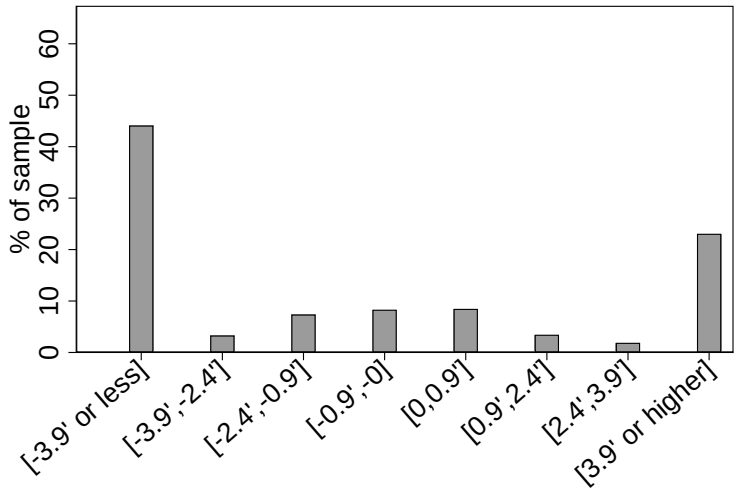
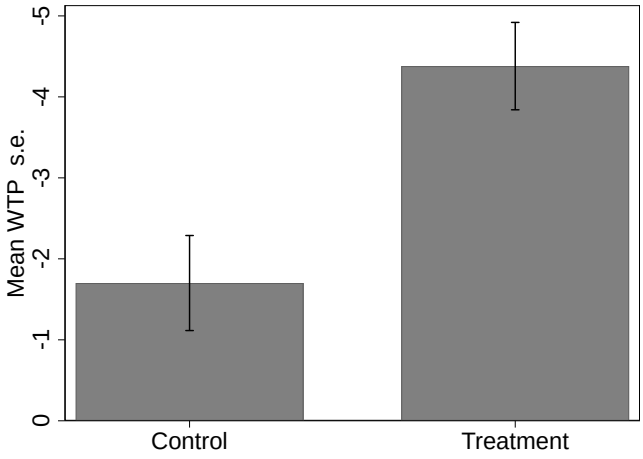


Figure 3: Mean WTP with standard errors by treatment



Notes: The figure shows the mean WTP values for the control and treatment groups. The mean WTP is in TZS 1,000. Y-axis is reversed for readability. The figure also indicates the estimated standard errors.

as high as the actual amount of taxes and fees. These results can be interpreted as evidence that making taxes more salient decreases the preference for the taxed good.[6]

Furthermore, in column (5), the variable *High Usage of MM* is significant at the 1 percent level, indicating that participants who use MM twice a week or more, generally have a TZS 2,815 higher WTP. Lastly, the high school indicator variable is significant at the 5 percent level, indicating a higher WTP for MM of TZS 2,815.

[6]Using the Wald test, we check if the δ estimate in the main specification, is statistically different from the total amount of taxes and fees. The test returns a p-value of 0.0233, which means that the effect size is statistically different from total taxes and fees at the 5 percent level, and this implies that the magnitude of the treatment effect is large.

Table 3: Main regression analysis

	(1)	(2)	(3)	(4)	(5)
Salience Treatment	-2.679***	-2.670***	-2.688***	-2.814***	-2.763***
	(0.797)	(0.796)	(0.800)	(0.799)	(0.792)
Female		0.156	0.185	0.212	0.481
		(0.829)	(0.839)	(0.837)	(0.834)
Above Median Age			0.234	0.909	0.701
			(0.812)	(0.854)	(0.848)
High School				2.535***	2.262**
				(0.924)	(0.918)
High Usage of MM					2.815***
					(0.801)
Constant	-1.701***	-1.765***	-1.883**	-2.869***	-4.300***
	(0.587)	(0.657)	(0.768)	(0.850)	(0.911)
Observations	637	637	637	637	637
R^2	0.017	0.017	0.018	0.029	0.048

Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Notes: The outcome variable is WTP taking on the mean value of the WTP intervals. Column (1) shows the simple specification with only WTP on *Salience Treatment*, where *Salience Treatment* is an indicator variable taking on the value of one if receiving treatment and zero otherwise. Column (2) shows the estimates including a gender indicator variable *Female*, which takes on the value of one if female, and zero if male. Column (3) shows the estimates including an indicator variable *Above Median Age*, which takes on the value of one if above 42 years old, and the value of zero if below. Column (4) shows the estimates containing the indicator variable *High School*, which takes on the value of one if obtained high school diploma, and zero otherwise. Lastly, Column (5) shows the main model specification where also the indicator variable *High Usage of MM* is included, which takes on the value of one if using MM twice a week or more, and zero otherwise.

Alternative WTP specification Before moving to heterogeneity checks, we test if our results are robust to alternative specifications of our main outcome variable, the willingness to pay for mobile money. Table 4 shows an overview of the regression results using alternative assumptions for mean WTP on the outer bounds. From the table, we see that *Salience Treatment* coefficients change in value when changing the mean WTP on the outer bounds. Since the triangular distribution assumption likely does not hold in reality, alternative heuristic calculations of half and one-third of the triangular distribution were used.[7][8] From table 4, all *Salience Treatment* coefficients are significant but they decrease in value when using alternative assumptions. Column (2) is the heuristic benchmark assuming half the mean value calculated using a triangular distribution. From this column, we can see that WTP decreases with TZS 1,681

[7]Mean WTP (1/2): $(-\infty, -3.9'] = -7.8,\ [\,3.9', \infty) = 7.5$
[8]Mean WTP (1/3): $(-\infty, -3.9'] = -6.1,\ [\,3.9', \infty) = 5.9$

when receiving treatment. Column (3) is the heuristic benchmark assuming one-third of the initial mean values, and when receiving salience treatment, WTP decreases with TZS 1,331. Since most participants fall into these intervals, the estimated mean WTP is highly sensitive to the mean on the outer bounds.

Table 4: Regression analysis with alternative WTP specifications

	(1)	(2)	(3)
Salience Treatment	-2.763***	-1.681***	-1.331***
	(0.792)	(0.477)	(0.376)
Female	0.481	0.308	0.252
	(0.834)	(0.502)	(0.395)
Above Median Age	0.701	0.379	0.274
	(0.848)	(0.511)	(0.403)
High Usage of MM	2.815***	1.734***	1.385***
	(0.801)	(0.482)	(0.380)
High School	2.262**	1.338**	1.040**
	(0.918)	(0.554)	(0.437)
Constant	-4.300***	-2.577***	-2.029***
	(0.911)	(0.550)	(0.434)
Observations	637	637	637
R^2	0.048	0.049	0.049

Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The table shows OLS regressions where the outcome variable is WTP taking on the mean value of the WTP intervals. Column (1) shows the regression using a triangular distribution with mean WTP values at the negative and positive outer bounds, which are -13.1 and 12.4, respectively. Column (2) shows the regression using a heuristic benchmark where we take half the values of the mean WTP values using a triangular distribution, which provides mean WTP on the negative and positive outer bounds to be -7.8 and 7.5, respectively. Column (3) shows the regression where we use one-third of the mean WTP values when using a triangular distribution, which gives mean WTP on the negative and positive outer bounds to be -6.1 and 5.9, respectively.

5.2 Heterogeneity

Table 5 reports the results for the heterogeneity analysis described in Section 4. We find no indication that treatment effects differ with respect to gender or age. We find that participants with High School education or more exhibit a significantly stronger reaction to the Salience Treatment: They decrease their willingness to pay even more in reaction to the treatment. In contrast, participants who switch their choice decrease their willingness to pay to a significantly lesser extent in response to the treatment compared to non-switchers.

Table 5: Heterogeneity analysis

	(1)	(2)	(3)	(4)	(5)
Salience Treatment	-2.763***	-2.658***	-3.393***	-1.920**	-4.057***
	(0.792)	(0.997)	(1.093)	(0.939)	(1.139)
Female	0.481	0.611	0.504	0.437	0.544
	(0.834)	(1.202)	(0.834)	(0.831)	(0.824)
Above Median Age	0.701	0.694	0.075	0.690	0.722
	(0.848)	(0.850)	(1.191)	(0.848)	(0.835)
High School	2.262**	2.254**	2.269**	3.803***	1.932**
	(0.918)	(0.919)	(0.918)	(1.316)	(0.913)
High Usage of MM	2.815***	2.824***	2.818***	2.893***	2.827***
	(0.801)	(0.802)	(0.800)	(0.800)	(0.783)
Salience Treatment × Female		-0.271			
		(1.634)			
Salience Treatment × Above Median Age			1.273		
			(1.584)		
Salience Treatment × High School				-3.037*	
				(1.730)	
Switcher					2.210**
					(0.869)
Salience Treatment × Switcher					3.618***
					(1.192)
Constant	-4.300***	-4.352***	-4.029***	-4.725***	-4.947***
	(0.911)	(0.961)	(0.981)	(0.943)	(1.107)
Observations	637	637	637	637	637
R^2	0.048	0.048	0.049	0.052	0.090

Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Notes: The table shows all the regressions in the heterogeneity analysis. The outcome variable is WTP. Column (1) shows the main regression model. Column (2) shows the regression where *Salience Treatment* × *Female* is the interaction term. Column (3) shows the regression where *Salience Treatment* × *Above Median Age* is the interaction term. Column (4) shows the regression where *Salience Treatment* × *High School* is the interaction term. Lastly, column (5) shows the regression where the indicator variable takes on the value of one if switching in the MPL once and zero if no switches occur. *Salience Treatment* × *Switcher* is the interaction term.

6 Conclusion

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Appendix

A Additional Results

Table A.1: Probit regression with binary outcome variable for WTP

	(1)
Salience Treatment	0.355***
	(0.104)
Female	-0.085
	(0.107)
Above Median Age	0.059
	(0.109)
High Usage of MM	-0.296***
	(0.105)
High School	-0.214*
	(0.118)
Constant	0.388***
	(0.122)
Observations	637

Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The table shows a Probit regression where the outcome variable is WTP taking on the value of one if negative WTP and zero if positive WTP interval. Column (1) shows the regression using the main model specification with a binary outcome variable of WTP.

B Additional Calculations WTP

For the outer interval ranges, mean WTP is calculated using a formula assuming the mass above TZS 3,900 to be distributed triangularly on the WTP range $[3.9', \infty)$, and similarly for the range $(-\infty, -3.9']$. To calculate mean WTPs, the assumption of triangular mass gives us the density for $[2.4, 3.9]$ to be 1.8%, and the mass in the range $[3.9', \infty)$ to be 23%. Similarly, we find the density on $[-3.9', -2.4']$ to be 3.2% and the mass in the range $(-\infty, -3.9']$ to be 44%.

Following Allcott and Kessler (2019) mode of calculating, we assume that this density is the maximum at TZS 3,900, and decreases to zero density above some upper bound. The upper bound is found using simple geometric calculations. First, we use the formula of the area of the triangle:

$$triangular\ area = \frac{base \times height}{2} \tag{A.1}$$

This area represents the mass in the range $[3.9', \infty)$ which we know is 23%, and then we find the upper bound:

$$23\% = \frac{(x - 3.9) \times 1.8\%}{2} \tag{A.2}$$

$$46\% = (x - 3.9) \times 1.8\%$$

$$25.55 = x - 3.9$$

$$x = 29.45$$

We find the mean by using the formula for the mean of a triangular distribution:

$$mean_{WTP} = \frac{a + b + c}{3} \tag{A.3}$$

where a is the lower bound, b is the upper bound, and c is the value of the mode, i.e., the value where the density is highest. Since we assume the highest density is at TZS 3,900, we will use this value. Therefore, we get the following:

$$mean_{WTP} = \frac{3.9 + 29.45 + 3.9}{3} \rightarrow mean_{[3.9', \infty)} = 12.4 \tag{A.4}$$

Similarly, for the lower bound, the formula of the area of the triangle is used since the area represents the mass in the range $(-\infty, -3.9']$ which we assume is 44%. We then find the upper bound:

$$44\% = \frac{(x - 3.9) \times 3.2\%}{2} \tag{A.5}$$

$$88\% = (x - 3.9) \times 3.2\%$$

$$27.5 = x - 3.9$$

$$x = 31.4$$

We find the mean by using the previously mentioned formula for the mean of a triangular

distribution:

$$mean_{WTP} = \frac{3.9 + 31.4 + 3.9}{3} \rightarrow mean_{(-\infty,-3.9']} = -13.1 \tag{A.6}$$

This results in the mean on the lower bound being negative TZS 13,100, and the mean on the upper bound being TZS 12,400.

C Instructions

Dodoso

Please put the number at the table into the field below and then hand the tablet to the participant.

Welcome to this research study!

This is the consent form for participating in a study conducted by REPOA – an independent Tanzanian research institution and CMI – an independent Norwegian research institution. The purpose of the study is to learn about your views on social issues and economic decisions.

If you choose to take part in the project, this will involve that you fill in an electronic survey. In the survey, we will ask you about your views, and we will ask you to make some economic decisions. All the information you submit in the survey will be treated with strict confidentiality, and in compliance with privacy regulations. Your participation in the study will take about 1 hour and your answers will provide important inputs for policies to improve the Tanzanian society.

As a compensation for your time, you will receive a payment of TZS 30 000 at the end of this session. Depending on the choices you make, you may make additional earnings during the experiment. Depending on your choices, we may need your phone number to pay you. We will therefore ask you to provide your phone number as part of this study. Your phone number will only be used to pay you. It will not be used for any other purposes. Your phone number will be recorded separately on the sheet of paper on your desk. The sheet of paper will be shredded at the end of today. During today, your phone number will be stored safely in a safe place that only the researchers involved in this project have access to. After today all your responses are completely anonymous, and it will not be possible to pick you out from what you say or do in the survey.

Participation is voluntary

Participation in this study is voluntary. If you choose to participate, you can stop the survey at any time without giving a reason and without penalty. We will process your phone number during today based on your consent. During today, you have the right to request that the phone number is deleted. This afternoon, your phone number will be deleted from our file in any case.

By chance, you have been selected for participation in this study as one of 50 traders from the market you trade in.

If you have questions about the project, or wish to exercise your rights, please contact: Dr. Lucas Katera at katera@repoa.or.tz.

Please confirm that you have received and understand the information about the research study and whom to contact in case of questions and that you consent to take part in the study below. Do you agree to participate in the study?

- (●) Yes
- ( ) No

Thank you for participating in this study. From now on until the end of the session, please refrain from communicating with other participants. If you do not abide by this rule, we will have to exclude you from the study.

We kindly ask you to read the instructions thoroughly. If you have any questions after reading the instructions or during the study, please raise your hand and one of the instructors will come to you and answer your question in person. Your payment and your decisions throughout the study will be treated confidentially. None of the other participants is informed, neither during nor after the study, about your decisions in the study or your payment.

Phone number

First, we ask you to write your phone number that you use for mobile money on the sheet of paper on your desk. Your phone number may only be used to make the payment to you. It will not be used for any other purposes. The paper slip with your phone number will be shredded at the end of today.

_____

When you have provided your phone number, please confirm that you have done so by ticking the box below.

- ◯ I confirm that I have provided my phone number
- ◯ I do not want to provide my phone number

To start with, please answer the following questions about yourself.

_____

How old are you?

_____

What is your gender?

- ◯ Female
- ◯ Male
- ◯ Prefer not to answer

What is your highest level of education?

- ◯ No schooling
- ◯ Informal schooling (including Koranic schooling)
- ◯ Some primary schooling
- ◯ Primary school completed
- ◯ Intermediate school or some secondary school/high school
- ◯ Secondary school/high school completed
- ◯ Post-secondary qualifications other than university, e.g. diploma or degree from polytechnic or college
- ◯ Some university
- ◯ University completed (Bachelor)
- ◯ Post-graduate (Master)
- ◯ Don't know
- ◯ Prefer not to answer

What kind of product are you selling?

- ◯ Vegtables
- ◯ Spices
- ◯ Grains
- ◯ Clothes
- ◯ Electronics
- ◯ Other (please specify)
- ◯ Don't know
- ◯ Prefer not to answer

Please specify

_____

What is your religion, if any?

- ◯ Christian
- ◯ Muslim
- ◯ None
- ◯ Other (please specify)
- ◯ Prefer not to answer

Please specify if you would like to

_____

This session will determine how you will receive the reward for participating in this experiment. We will now present you with a series of situations. In each situation, we want you to choose between two alternatives. The final reward will depend on your choices. One of the choices will decide the actual payment. You will be paid the reward in either cash or mobile money before leaving the session today.

Note: The government of Tanzania has introduced a levy on sending mobile money for amounts above 30,000 TSH. Mobile money operators also add a fee everytime you send mobile money. The fees may vary depending on your mobile money operator.

_____

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- ◯ 30,100 TSH in cash
- ◯ 34,000 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- ◯ 31,600 TSH in cash
- ◯ 34,000 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)
- 33,100 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in cash
- 34,000 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in cash
- 33,100 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 31,600 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)
- 34,000 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in cash
- 30,100 TSH in mobile pay (Remember that there is a levy and operator fees when withdrawing or sending mobile money)

This session will determine how you will receive the reward for participating in this experiment. We will now present you with a series of situations. In each situation, we want you to choose between two alternatives. The final reward will depend on your choices. One of the situations will decide the actual outcomes. You will be paid the reward in either cash or mobile money before leaving the session today.

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in mobile pay
- 30,100 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in mobile pay
- 31,600 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 33,100 TSH in cash
- 34,000 TSH in mobile pay

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 34,000 TSH in mobile pay
- 34,000 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 33,100 TSH in mobile pay
- 34,000 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

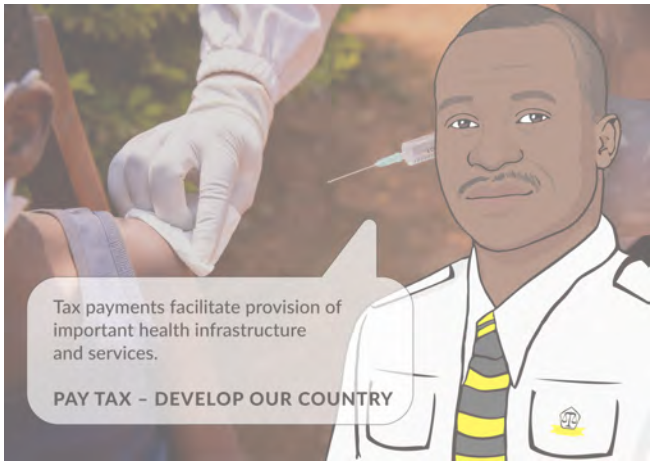
- 31,600 TSH in mobile pay
- 34,000 TSH in cash

Which of the two alternatives for the reward do you prefer? Please tick one of the boxes to indicate your choice.

- 30,100 TSH in mobile pay
- 34,000 TSH in cash

Thank you. We will now continue with the next part of the survey.

Please take a careful look at the picture below.



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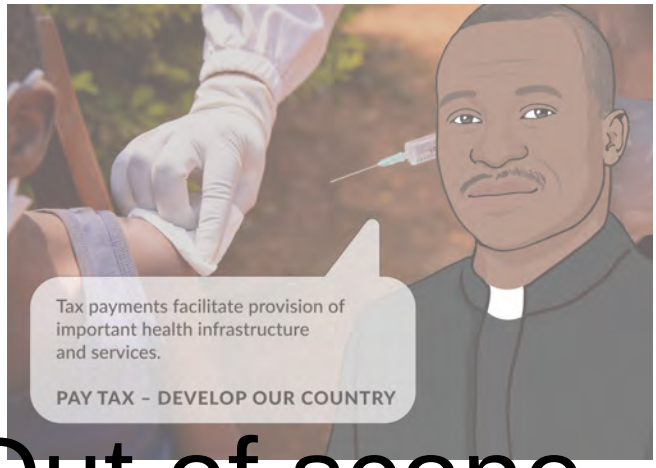

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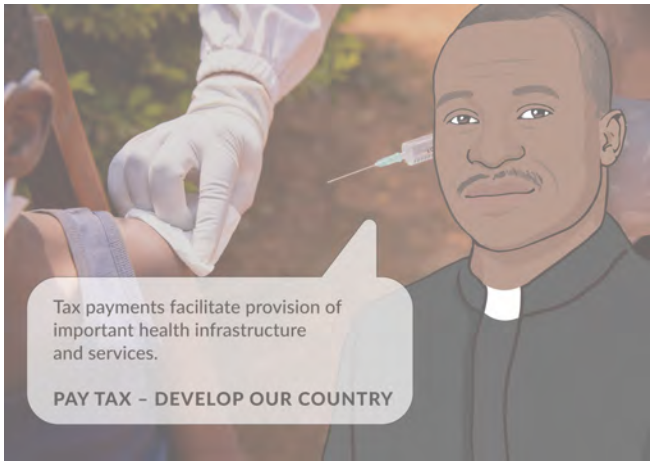

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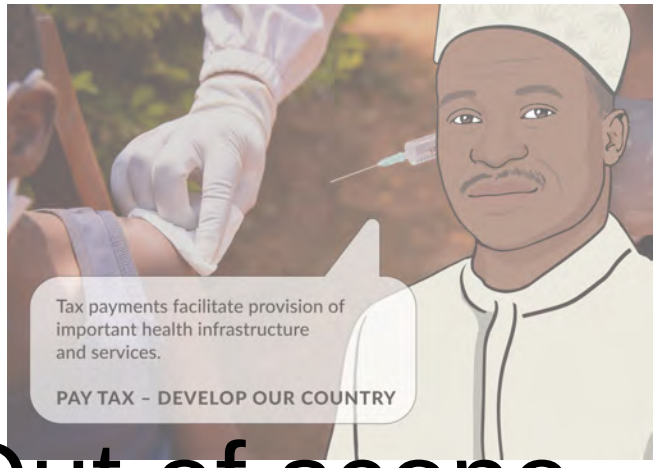

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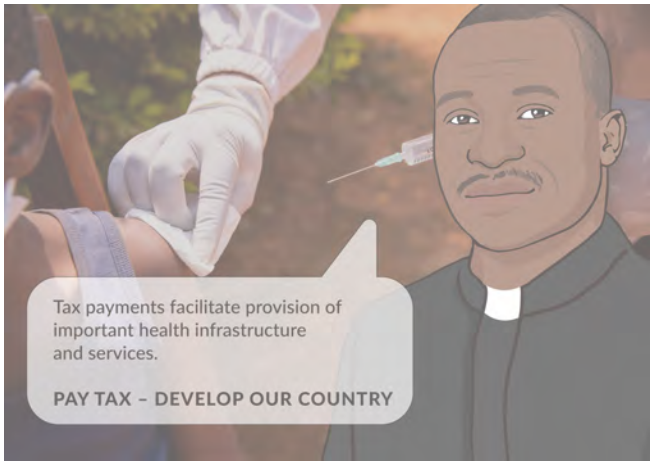

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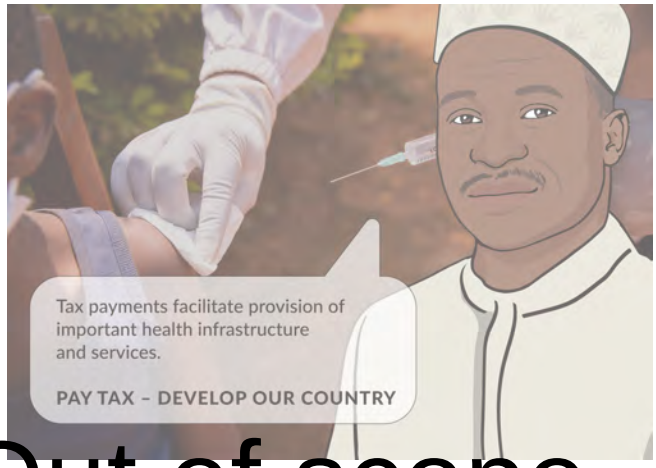

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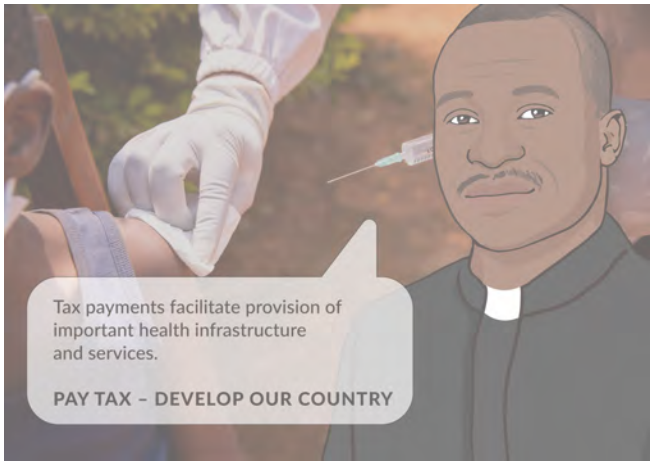

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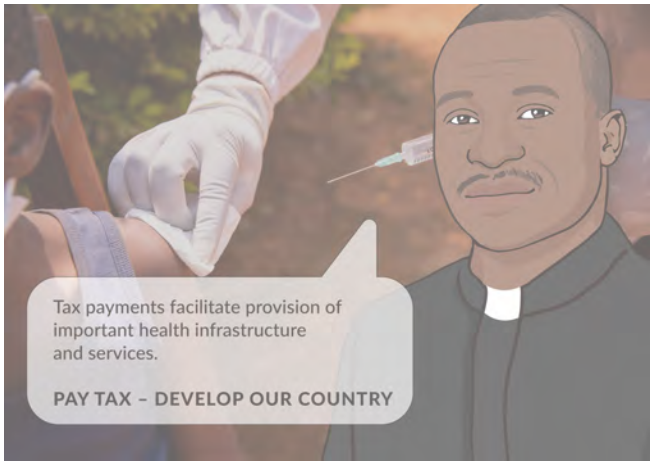

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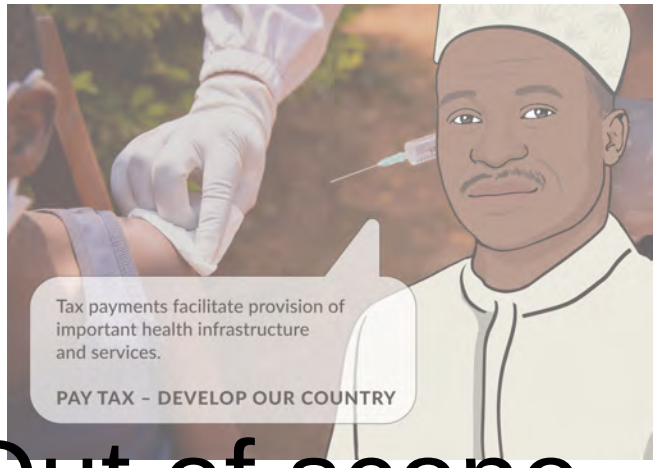

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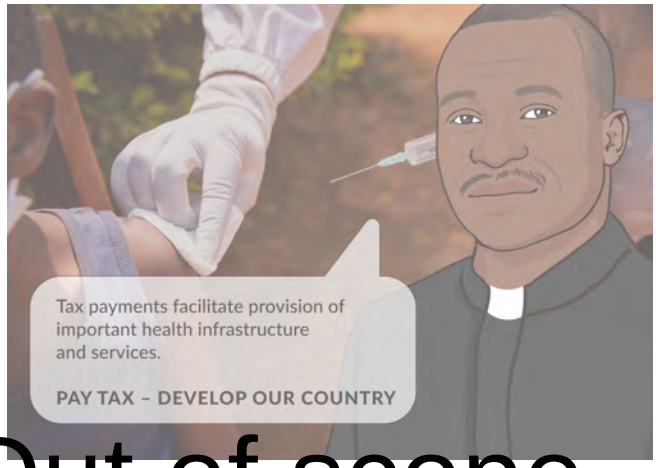

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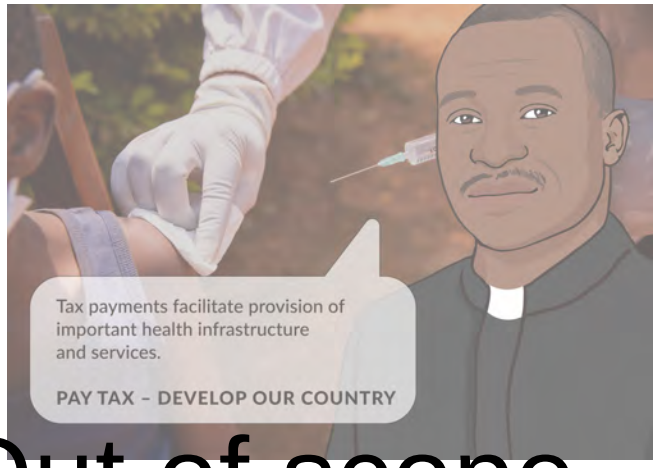

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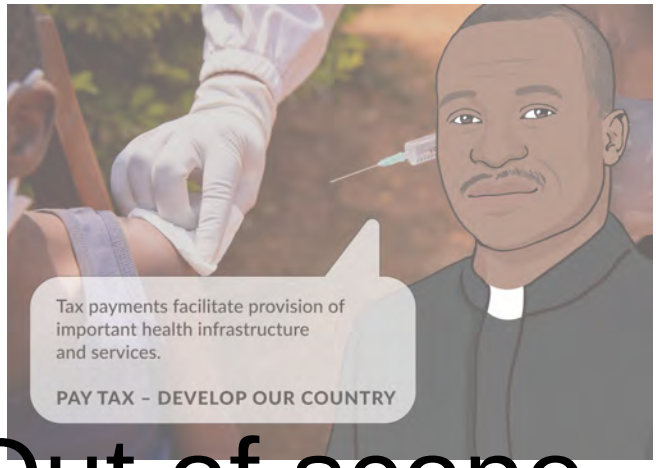

Out of scope

How credible do you find the information in the picture?

- ◯ Very
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all

How much do you trust the information in the picture?

- ◯ Very
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all

How much of the information in the picture was new to you?

- ◯ All of it
- ◯ Most of it
- ◯ Some of it
- ◯ None of ot

In this part of the study, you will receive an extra payment. The size of this payment depends on a decision you make.

You will make two decisions. One of them will be picked by chance and determine your payment.

You will receive the payment in cash at the end of the session. To keep your decisions anonymous, you will receive the money in a sealed envelope.

In each decision, you receive an income of 10,000 TSH. This income is subject to a tax of 20%. Your tax payment depends on how much income you report:

Tax Payment = 20% of Reported Income

You can decide how much income you report. Your final payment is your income minus the tax payment:

Final Income = 10 000 – (Tax Payment)

Your tax payment will be transferred to the recipient stated in the instructions for each decision.

The tax collected in this decision will be added to the tax revenue of Tanzania. How much of the 10 000 TSH would you like to report?

- ◯ 10,000 TSH
- ◯ 9,000 TSH
- ◯ 8,000 TSH
- ◯ 7,000 TSH
- ◯ 6,000 TSH
- ◯ 5,000 TSH
- ◯ 4,000 TSH
- ◯ 3,000 TSH
- ◯ 2,000 TSH
- ◯ 1,000 TSH
- ◯ 0 TSH

Out of scope

Your final income is **TSH**.
You reported an income of TSH.
Your tax payment is TSH.

The tax collected in this decision will be added to the budget of a community health initiative in Tanzania. How much of the 10 000 TSH would you like to report?

- ◯ 10,000 TSH
- ◯ 9,000 TSH
- ◯ 8,000 TSH
- ◯ 7,000 TSH
- ◯ 6,000 TSH
- ◯ 5,000 TSH
- ◯ 4,000 TSH
- ◯ 3,000 TSH
- ◯ 2,000 TSH
- ◯ 1,000 TSH
- ◯ 0 TSH

Your final income is **NaN TSH**.
You reported an income of TSH.
Your tax payment is NaN TSH.

Out of scope

The tax collected in this decision will be added to the tax revenue of Tanzania. How much of the 10 000 TSH would you like to report?

- ◯ 10,000 TSH
- ◯ 9,000 TSH
- ◯ 8,000 TSH
- ◯ 7,000 TSH
- ◯ 6,000 TSH
- ◯ 5,000 TSH
- ◯ 4,000 TSH
- ◯ 3,000 TSH
- ◯ 2,000 TSH
- ◯ 1,000 TSH
- ◯ 0 TSH

Your final income is **NaN TSH**.
You reported an income of TSH.
Your tax payment is NaN TSH.

We now ask you to complete a short questionnaire while we prepare your payments.

Who finances provision of health infrastructure and services in Tanzania?

How satisfied or dissatisfied are you with the following public services provided by the government?

Provision of roads and bridges

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neither satisfied nor dissatisfied
- ◯ Dissatisfied
- ◯ Very dissatisfied

Provision of public transport

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neither satisfied nor dissatisfied
- ◯ Dissatisfied
- ◯ Very dissatisfied

Out of scope

Provision of health infrastructure and services

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neither satisfied nor dissatisfied
- ◯ Dissatisfied
- ◯ Very dissatisfied

Provision of education services

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neither satisfied nor dissatisfied
- ◯ Dissatisfied
- ◯ Very dissatisfied

Please consider the following statement:
Taxpayers must always pay the taxes that they owe to the tax authority.

How much do you agree with the statement?

- ◯ Stongly Agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly Disagree

Out of the 24 other participants in the room, how many do you think Agree or Strongly Agree with the statement?

_____

Please consider the following statement:
Taxpayers could refuse to pay taxes if they are not receiving public services of adequate quality.

_____

How much do you agree with the statement?

- ◯ Stongly Agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly Disagree

Out of scope

Out of the 24 other participants in the room, how many do you think Agree or Strongly Agree with the statement?

_____

Out of ten taxpayers, how many do you think cheat on their taxes

_____

Out of ten taxpayers who cheat on their taxes, how many do you think are detected by the Tanzanian Revenue Authority?

_____

How much do you trust the national government?

- ◯ A lot
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all
- ◯ Don't know / Haven't heard enough

How much do you trust your local government authority?

- ◯ A lot
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all
- ◯ Don't know / Haven't heard enough

How much do you trust the Tanzania Revenue Authority?

- ◯ A lot
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all
- ◯ Don't know / Haven't heard enough

How much do you trust Religous Christian leaders?

- ◯ A lot
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all
- ◯ Don't know / Haven't heard enough

Out of scope

How much do you trust Religous Muslim leaders?

- ◯ A lot
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all
- ◯ Don't know / Haven't heard enough

How willing are you to give to good causes without expecting anything in return?

- ◯ Very
- ◯ Somewhat
- ◯ Just a little
- ◯ Not at all

How important would you say religion is in your life?

- ◯ Very important
- ◯ Rather important
- ◯ Not very important
- ◯ Not at all important
- ◯ Prefer not to answer

Finally, we want to know more about how you send and receive money. How do you generally prefer to send and receive money?

- ◯ Cash
- ◯ Mobile pay
- ◯ Bank account
- ◯ Other

What mobile pay operator(s) do you use?

- ☐ Vodacom with M-Pesa
- ☐ Tigo with Tigo Pesa
- ☐ Airtel with Airtel Money
- ☐ Halotel with Halopesa
- ☐ TTCL
- ☐ Zantel with Ezy Pesa
- ☐ Other

How often do you use mobile pay?

- ◯ Once a month or less
- ◯ 2-4 times a month
- ◯ Twice a week or more
- ◯ Daily
- ◯ Never
- ◯ Prefer not to answer

What do you use mobile pay for? Please select several options if that is correct for you.

- ☐ Transferring to family members
- ☐ Transferring to friends
- ☐ Goverment payments
- ☐ Buying goods and services
- ☐ Selling goods and services
- ☐ Other
- ☐ Prefer not to answer

Please specify if you would like to

If you send (not withdraw) 40,000 TSH mobile money, approximatly how much extra would you need to pay for levy and fees when sending money (in TSH)? If you do not know, please make a guess.

- ◯ 0 TSH
- ◯ 200 TSH
- ◯ 400 TSH
- ◯ 600 TSH
- ◯ 800 TSH
- ◯ 1,000 TSH
- ◯ 1,200 TSH
- ◯ 1,400 TSH

Of the TSH, how much is the government levy?

You have not consented to the survey. Please contact the enumerators.