

Threats of Audits and Tax Morale in Africa: Evidence from a Randomized Field Experiment in Ethiopia

Abebe Shimeles

(co-authors: Daniel Z.Gurara and Firew Woldeyes)

July 07, 2021

Outline

- ▶ Motivations for the Study
- ▶ Theoretical Framework
- ▶ Field Experiment
- ▶ Policy Implications and Conclusions

Motivation

- ▶ Tax revenue in Ethiopia, at 10 percent of GDP in 2019, is much lower than the SSA average of 14 percent
- ▶ The trend is not encouraging either.
 - ▶ Tax revenue as a share of GDP declined from the 2010-15 average of about 12 percent to 11 percent of GDP during 2016-2019.
- ▶ Strict enforcement of the provisions in the tax code since the mid-2000s has reached its limit as the court system is overwhelmed.
- ▶ Tax authorities are exploring alternative ways of tax collection without resorting to coercive measures

Motivation

- ▶ Measures to improve compliance include both coercive and persuasive actions
 - ▶ Coercive: Enhanced monitoring and harsh penalties



- ▶ Persuasive: Acknowledge "best" tax payers, preferential treatment for "reliable" tax payers

Motivation

- ▶ A number of field experiment studies looked at the impact of coercive measures, such as audit threat, and others to deter tax evasion
- ▶ However, the relative importance of coercion/deterrence vs persuasion measures is not very well known
- ▶ We address this gap using a unique experiment design implemented in Ethiopia.

Policy Questions

- ▶ How serious is tax evasion?
- ▶ Can we reasonably estimate it?
- ▶ What is the best instrument to promote compliance: Coercion or Persuasion?

Conceptual Framework

- ▶ The tax climate in a society can vary on a continuum between an antagonistic and a synergistic climate.
- ▶ In an antagonistic climate, taxpayers and tax authorities work against each other: like "cops and robbers"
 - ▶ Tax authorities perceive the taxpayers as "robbers" who try to evade whenever they can and need to be held in check;
 - ▶ Taxpayers feel persecuted by the authorities ("cops") and feel it is right to hide.
 - ▶ Voluntary compliance is likely to be negligible, and individuals are likely to resort to "rational" weighing of the costs and benefits of evading.

Conceptual Framework

- ▶ In a synergistic climate: tax authorities perform a service for the community: "service and client" attitude.
- ▶ Voluntary compliance is likely to prevail
- ▶ Individuals are less likely to consider the chances of evading, and more likely to contribute their share out of a sense of obligation.

Conceptual Framework

- ▶ Consider a risk averse entrepreneur maximizing expected utility from net income and faces a flat profit tax θ .
- ▶ The entrepreneur faces two possibilities:
 - ▶ Report a fraction of profit ($\beta < 1$) and pay tax on the reported profit in the event that she escapes detection
 - ▶ In the event of detection, she ends up paying the full amount of the tax plus penalties.
- ▶ The probability of detection is constant and is given by π .

Conceptual Framework

- ▶ The full amount of the entrepreneur's net income/profit when she/he under-reports and is not audited is given by

$$Y_d = [R(q) - C(q)](1 - \beta\theta)$$

- ▶ while when she under-reports and is audited net income is

$$Z_d = [R(q) - C(q)](1 - \beta\theta - \tau\theta(1 - \beta)) \text{ where } \tau \text{ is the fine rate on unreported profit tax}$$

- ▶ The maximization problem is

$$\max_{\beta} E(U) = (1 - \pi)U(Y_d, M_y) + \pi U(Z_d, M_z)$$

- ▶ The f.o.c and s.o.c imply higher probability of detection, higher penalty rate and higher tax morale (M_y and M_z) increase reported profit and hence profit tax.

Randomized Experiment

- ▶ Why randomization
 - ▶ A generic problem with both the time-series and cross-sectional studies is that the subjective probability of detection and the subjective costs of evasion are difficult to measure.
 - ▶ Even if possible to measure, their variation may be subject to various confounding factors. Most importantly observational data does not provide the counterfactual accurately.
 - ▶ In the case of randomization, the source of variation is unambiguous and is the gold standard to get the counterfactual.

Experiment Design

- ▶ The experiment is on taxpayers that are required by law to keep book of accounts and submit profit and loss statements in Addis Ababa.
- ▶ We excluded large taxpayers (about 1 percent of taxpayers) based on discussions with the tax authority as well as state-owned businesses.
- ▶ The experiment was authorized by the director general of the Ethiopian Revenue and Customs Authority.
- ▶ Two treatment groups: Coercion and persuasion

Experiment Design

- ▶ The coercion group received abridged version of the tax code along with a strongly worded letter with the following message:
 - ▶ Paying tax is national obligation as tax is a key source of financing development
 - ▶ The tax authority is aware that some businesses evade tax and it has been taking different measures to reign in tax offenders
 - ▶ Your business could be one of the taxpayers that could be audited in the 2014/15 budget year
 - ▶ Understatement of tax would entail a penalty in the amount of 10
 - ▶ Submitting false or misleading statements is a criminal offence with a penalty of up to 15 years of imprisonment and a fine of up to 200,000 Birr (about 10,000 USD).

Experiment Design

- ▶ Persuasion group received a letter with the following content:
 - ▶ List of flagship projects completed over the past five years
 - ▶ Your tax contribution is critical to finalize the developmental projects
 - ▶ Please pay your tax on time and support the development of your country
 - ▶ The tax office provides preferential treatment for "reliable" tax payers
 - ▶ A flier with a graphic illustration of where the tax money is going.

Experiment Design

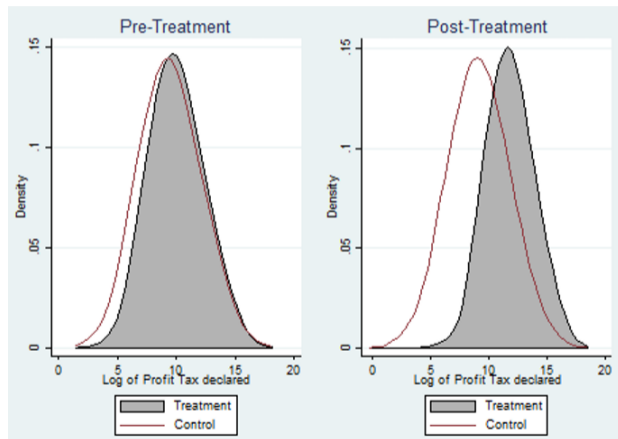
- ▶ The letters for both treatment groups were signed by the respective branch managers
- ▶ Except few branch and senior managers at the headquarter, no one knows about the real intention of the letters
- ▶ All the treatment group taxpayers were contacted personally and the letters were hand-delivered, with a proof of delivery signature.
- ▶ The letters were delivered six weeks before the beginning of the tax filing period for the messages to be in the active mind of taxpayers.

Empirical Model

$$\ln(y_i) = \alpha + \beta_1 * T_{1i} + \beta_2 * T_{2i} + \beta_3 * X_i + e_i$$

- ▶ $\ln(y_i)$ is declared profit tax payable
- ▶ α is a constant, T_{1i} and T_{2i} are the treatment indicators for coercion and persuasion
- ▶ X_i controls for sectors, districts and legal status of the firm, e_i is an error term, and i is an indicator for a business.

Pre-treatment and Post-treatment Distribution



Regression Result

Table: The Impact of Treatment on Profit Tax: 2013 vs 2012

	OLS		DID			
	1	2	3	4	5	6
Persuasion	0.38***	0.31***	-0.03	-0.03	-0.01	-0.03
Coercion	0.61***	0.48***	0.13	0.09	0.05	0.38**
Persuasion-DID			0.41**	0.32**	0.40**	0.54**
Coercion-DID			0.48***	0.38***	0.41***	0.57***
Constant	9.10***	8.40***	9.40***	8.49***	8.32***	8.58***
Observations	2,255	2,255	6,665	6,665	5,379	2,310
R-squared	0.014	0.237	0.01	0.232	0.143	0.25
Control	No	Yes	No	Yes	Yes	Yes
Time Dummy	-	-	Yes	Yes	Yes	Yes

One year after the experiment: 2014 vs 2012

Table: The Impact of Treatment on Profit Tax: 2014 vs 2012

	OLS		DID			
	1	2	3	4	5	6
Persuasion	0.06	-0.02	-0.03	-0.03	-0.01	-0.03
Coercion	0.17	0.03	0.13	0.08	0.05	0.37**
Persuasion-DID			0.1		0.08	0.17
Coercion-DID			0.04	-0.04	0.07	0.04
Constant	9.66***	8.77***	9.40***	8.44***	8.32***	8.42***
Observations	2,297	2,297	4,410	4,410	3,533	1,517
R-squared	0.001	0.21	0.005	0.228	0.143	0.249
Control	No	Yes	No	Yes	Yes	Yes
Time Dummy	-	-	Yes	Yes	Yes	Yes

Robustness Check: Quantile Regression

	2013			2014		
	25th Per	Median	75th Per	25th Per	Median	75th Per
Persuasion	0.01	-0.03	0.1	0.02	-0.08	0.04
Coercion	0.18*	0.13	-0.04	0.16*	0.08	-0.1
Persuasion-DID	0.41***	0.37**	0.24	-0.05	-0.06	-0.03
Coercion-DID	0.48***	0.34**	0.23	-0.02	-0.11	0
Constant	7.76***	8.38***	9.01***	7.75***	8.67***	9.35***
Observations	4,856	4,856	4,856	4,885	4,885	4,885
Control	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Robustness Check: Matching Estimator

	2013 vs 2012		2014 vs 2012	
	(1)	(2)	(3)	(4)
Persuasion	0.42*** (0.107)		0.10 (0.107)	
Coercion		0.61*** (0.100)		0.17* (0.103)
Observations	1,588		1,642	

Results

- ▶ Due to the randomization design, differences between the treatment and control groups could be attributed to the impact of the experiment, as the groups do not differ from each other in any other respect.
- ▶ Both punishment and persuasion are effective in the context of our experiment.
- ▶ Persuasion is as effective as punishment.
- ▶ Caveats:
 - ▶ The fact that taxpayers are contacted personally and served with a letter could make taxpayers feel that they are watched.
 - ▶ If taxpayers felt that the tax office targeted them specifically, they might become more careful in their tax returns.
 - ▶ In this case, the effect of the persuasion letter may not be different from the punishment letter.

Discussions

- ▶ It could be argued that for the authorities, the only important outcome is the level of compliance, irrespective of whether such compliance is voluntary or enforced.
- ▶ However, because audits are costly and strict enforcement overwhelms the court systems especially in developing countries, it seems useful to consider alternative ways.
- ▶ In addition, the 'cops and robbers' approach is costly and it also raises the question of how to 'guard the guards'.
- ▶ Audits and fines may encourage taxpayers to resist when they believe that monitoring is imperfect and that they can get away with evasion.

Discussions

- ▶ Based on our results, nudging/persuasion may be the best instrument.
- ▶ The disappearance of the positive results a year after the experiment indicates the importance of designing a continuous and sustained tax compliance strategy rather than a onetime intervention.
- ▶ On average, the treatment group increased its tax payment by 5046 Birr / USD 250.
- ▶ That is, our experiment increased tax payment by the treatment group by USD 750,000.
- ▶ If we generalize our results for the Addis Ababa taxpayer population, the evaded profit tax could be close to USD 25 million.

Policy Implications

- ▶ Identifying chronic tax evaders can be facilitated through effective use of third-party information to enforce compliance through well structured, cost effective and credible audit strategy.
- ▶ Adoption of e-payment systems for key firm productivity indicators, such as utilities.
- ▶ Tax-payers respond positively to accountability and transparency and efficient utilization of tax revenue. Harnessing this 'citizen good will' is essential.
- ▶ Often reforms are impeded by chronic corruption. Changing perceptions becomes critical.

Thank you