

The Opportunities and Challenges of Technology for Tax Administration

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COVID-19 is a stark reminder of how technology has transformed our lives

Thought experiment: Imagine COVID-19 happened 20 years ago.

- Technology has transformed different aspects of life:
e-learning, e-commerce, e-governance

Technology is reshaping different government functions

- Procurement (Lewis-Faupel et al 2016)
- Education (Aker and Ksoll 2019; Escueta et al 2017)
- Voting (Callen and Long, 2015; Fujiwara 2015; Callen et al, 2016; Aker et al, 2017)
- Social protection (Aker et al 2016; Muralidharan et al 2016; Banerjee et al 2016)

Can technology improve tax collection?

- **Rapid adoption** over last decade
 - ▶ Set to increase further post-COVID with more **socially-distant taxation**



- Lots of **enthusiasm** around the potential of digitization
 - ▶ To what extent is this potential realized?
 - ▶ How can we maximize its impact?

This Talk: Can technology improve tax collection?

1. Overview of Literature

- ▶ Okunogbe, Oyebola and Fabrizio Santoro (2021). **“The Promise and Limitations of Information Technology for Tax Mobilization”** Policy Research Working Paper

2. Liberia Real Estate Tax

- ▶ Okunogbe, Oyebola (2021). **“Becoming Legible to the State: The Role of Detection and Enforcement Capacity on Tax Compliance”** Policy Research Working Paper

3. Tajikistan E-filing

- ▶ Okunogbe, Oyebola and Victor Pouliquen (2022). **“Technology, Taxation and Corruption: Evidence from the Introduction of Electronic Tax Filing”** American Economic Journal: Economic Policy

Key Messages: Can technology improve tax collection?

- Yes! Technology can help tax authority:
 - ▶ Define compliance: identify what needs to be taxed
 - ▶ Facilitate compliance: make it easier for people to pay
 - ▶ Monitor compliance: detect evasion when it occurs
- However, technology is not a silver bullet
 - ▶ Its impact depends on other dimensions of tax capacity such as enforcement
 - ▶ It creates winners and losers. Losers may act strategically to undermine its impact.

Potential and Limitations of Technology in Taxation

Okunogbe, Oyebola and Fabrizio Santoro (2021).

“The Promise and Limitations of Information Technology for
Tax Mobilization”

World Bank Policy Research Working Paper WPS 9848

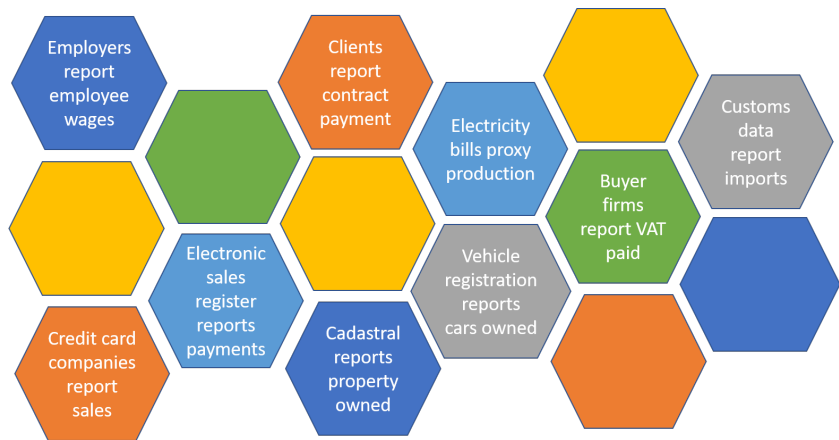
Technology has the potential to transform key functions of tax administration



1. Technology can help to **define compliance** **(understand the tax base)**

- IT-enabled systems can provide information about the tax base to the state:
 - ▶ Creating new databases e.g., taxpayer (or property) registration (Fish 2018, Kamara, Meriggi, Prichard, 2020, Mascagni et al 2019b, Okunogbe 2021)
 - ▶ Capturing transactions as they occur e.g., electronic billing machines (Ali et al. 2017, Mascagni et al. 2021)
 - ▶ Accessing third party information e.g., linking existing databases

Information from different sources help build the profile of a taxpayer



2. Technology can help to **facilitate compliance**

Ways in which tax authority can use IT to make compliance easier for taxpayers

- Website: clear information with tax rules, rates, procedures, deadlines, how-to guides
- Communication: Email, SMS, automated voice calls with reminders (Mascagni and Nell forthcoming)
- E-filing, E-payment, E-refunds (Jouste et al 2021, Kochanova et al. 2020, Okunogbe and Pouliquen 2022, Yilmaz and Coolidge 2013)
- Pre-filled returns

Goal: Easy, transparent process that does not require any personalized interaction

- Often dual effect: reduce compliance costs and limit corruption/ harassment

3. Technology is important for **monitoring compliance**

- Tax authorities can use IT applications to *automate* regular crosschecks of self-reported tax liability with other data sources (Almunia et al 2021, Mascagni et al 2019a, Shah 2020, Mittal and Mahajan 2017, Fan et al 2018)
- Tax authorities can better target audits by building a *risk profile* for taxpayers using data on their past behavior and information gathered from other firms (Khwaja et al 2011).
 - ▶ Can range from simple processes (e.g., using sector level averages) to machine learning methods

Infrastructure and Connectivity

Crucial to have right hardware and connectivity:

- Within the tax authority
- Among taxpayers (Obert et al. 2018, Eilu 2018)
 - ▶ Equity concerns (M-declaration in Rwanda)



The Human Factor

Technology is a tool.

It is only as good as its users:



- **Taxpayers:** May need training or subsidies to adopt technology
- **Tax officials:** Need right skills and training as well as aligned incentives. IT cannot enforce tax laws!

Other Limitations

- **Institutional Strategy:** Essential for fully integrating technology
 - ▶ Proper sequencing of technology
 - ▶ Redefined roles for all staff
- **Regulatory environment**
 - ▶ Timely prosecution of evaders
 - ▶ Modern laws to support data sharing across institutions



Liberia: Real Estate Tax

Okunogbe, Oyebola (2021).

“Becoming Legible to the State: The Role of Detection and Enforcement Capacity on Tax Compliance”

World Bank Policy Research Working Paper

Liberia Real Estate Tax

Potential of Technology:

- Define compliance (identify the tax base)
- Facilitate compliance
- Monitor compliance

Limitations of Technology:

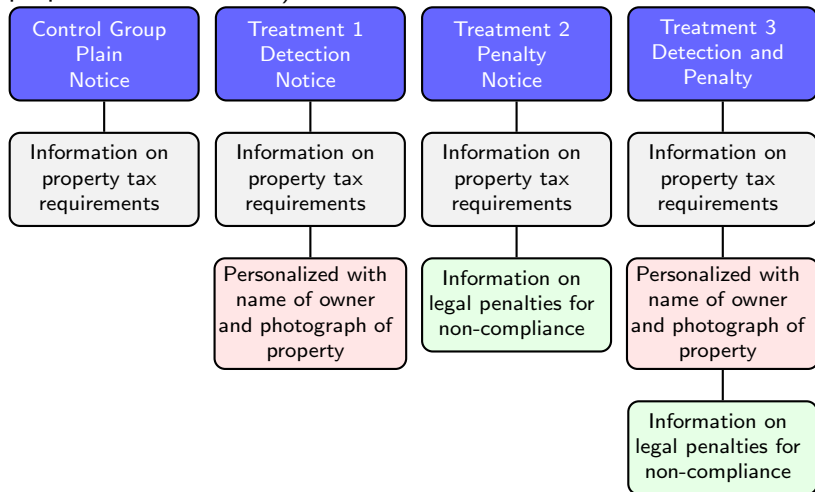
- Infrastructure and connectivity
- The human factor
- Institutional strategy
- Regulatory environment

Deep Dive 1: Real Estate Tax in Liberia

- **Problem:** Limited capacity to enforce tax given lack of cadastral
- **Low-cost technology investment:** Recruit and train youth to use open-source software on tablets to capture the location, ownership, photo and GPS of properties. Create new property database
- **Research design:** Use information obtained from data collection exercise to send payment notices to property owners. Property owners were randomly assigned to receive different versions of the notice.

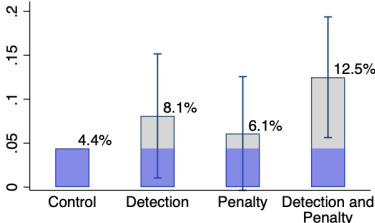
Experiment 1 Design

Sample: Properties in pilot community not on tax register (N=571 properties, 461 owners)

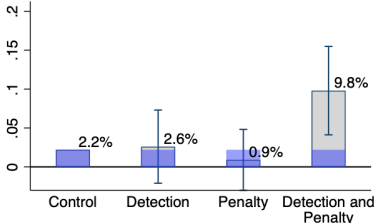


Deep Dive 1: Real Estate Tax in Liberia

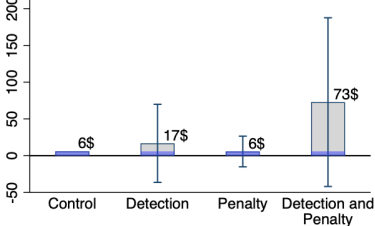
Respond/Register



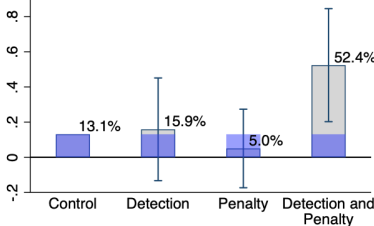
Pay



Amount Paid (\$)



Amount Paid (IHS)



Deep Dive 1: Real Estate Tax in Liberia

- **Impact:** Notice that included name of owner and photo of property tripled registration and payment rate compared to plain notice
- **Challenge:** More than 85 percent do not respond likely due to lack of credible enforcement capacity
- **Policy Lesson:** Digitization is necessary but not sufficient for tax administration
 - ▶ Must be coupled with enforcement capacity
- **Other applications:**
 - ▶ Information on firm transactions with electronic fiscal devices
 - ▶ Other third-party information e.g. VAT, wages
 - ▶ Taxpayer registrations

Electronic tax filing in Tajikistan

Oyebola Okunogbe and Victor Pouliquen (2022). “Taxation, Technology and Corruption: Evidence from the Introduction of Electronic Tax Filing” *American Economic Journal: Economic Policy*.

Electronic tax filing in Tajikistan

Potential of Technology:

- Define compliance (identify the tax base)
- Facilitate compliance
- Monitor compliance

Limitations of Technology:

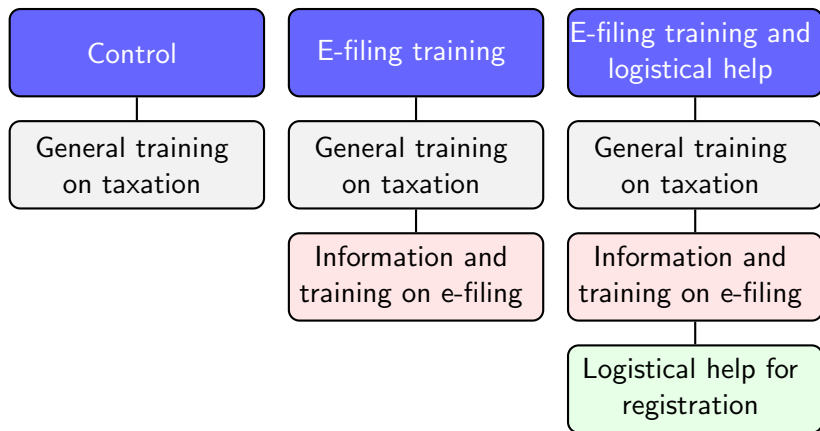
- Infrastructure and connectivity
- The human factor
- Institutional strategy
- Regulatory environment

Deep Dive 2: Electronic Tax Filing in Tajikistan

- **Problem:** Monthly visits to submit tax declarations result in high compliance costs and opportunities for corruption.
- **Technology intervention:** E-filing allows firms to file online. Reduces in person interactions with tax officials
- **Research design:** Provide randomly selected firms e-filing training and logistical help to complete complex e-filing registration process, creating higher e-filing use by these firms
- **Baseline firm characteristics:** Firm costs/ benefits depend on whether firms colluded with tax collectors. Proxy by risk profile score of the firm

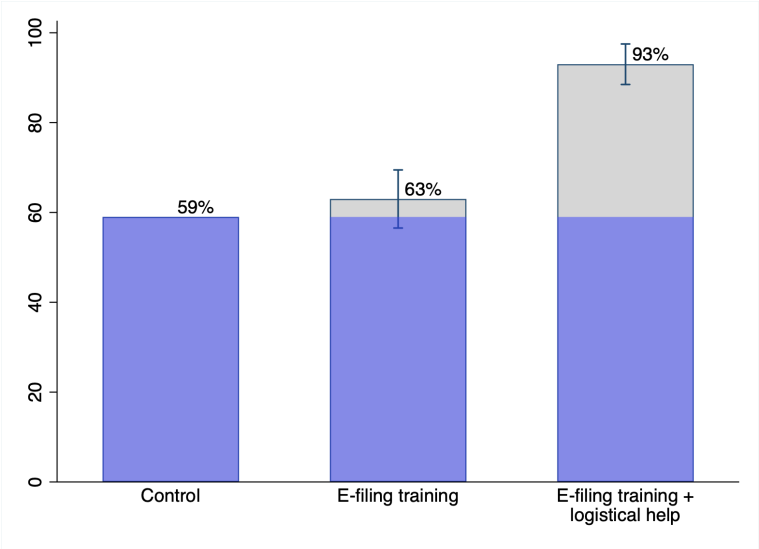
Experiment Design

Sample: Simplified regime taxpayers already on the tax roll
(N=1496)



Results on e-filing adoption

Treatment impact



Deep Dive 2: Electronic Tax Filing in Tajikistan

Impact

- Compliance costs: ↓ 5 hours each month (40% of time spent on taxes)
- Bribes: ↓ 18% but only among low-risk-score firms
- Tax Revenue: ↑ Doubled among high-risk-score firms

Challenge:

- High-risk-score firms less likely to adopt e-filing, more likely to drop out

Deep Dive 2: Electronic Tax Filing in Tajikistan

Policy Lessons:

- Technology can not only reduce compliance costs, but also increase tax payments and reduce corruption
- Relevant to other technologies that reduce in-person interactions with tax officials
- When adoption is voluntary, users may respond strategically: those for whom technology may impose greatest constraint may be less likely to adopt

Conclusion

- Governments can mobilize tax revenues by using technology to **define**, **facilitate** and **monitor** compliance
- Technology is not a silver bullet.
 - ▶ Complementary investments in people and institutions (such as enforcement capacity) are crucial to reap its benefits
- Must anticipate how different subgroups of users may be affected and their likely response
- Large amounts of data generated from new technologies tools provide new opportunities to gain research insights for policy making

Thank You!

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Image Courtesy: Nick Harris
(www.flickr.com/photos/nickharris1/8026290210)

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