Making the City
Building State Capacity in Low-Income Countries

Augustin Bergeron

Harvard University

October 30, 2024

Highway in the US

Highway in the DR Congo

Rain
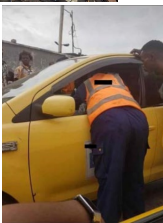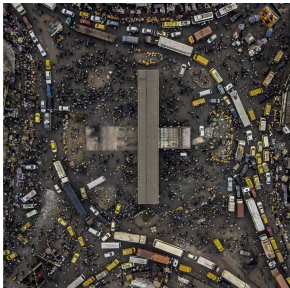
Operating Room in the US

Operating Room in the DR Congo

Police and Traffic Enforcement in the US

Police and Traffic Enforcement in the DR Congo

Conflict Resolution in the US

Conflict Resolution in the DR Congo

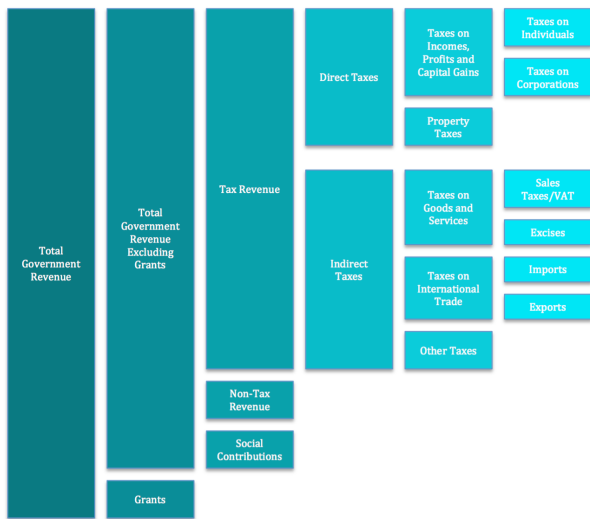## Social Assistance in the US

Social Assistance in the DR Congo

Financing Public Goods and Social Assistance Programs

1. Tax Revenue

2. Social Contributions

3. Non-Tax Revenue
    i. Natural resources
   ii. Investment income
  iii. Borrowing

4. Grants

# Financing Public Goods and Social Assistance Programs

Source: Prichard et al. (2014) "The ICTD Government Revenue Dataset", ICTD Working Paper 19
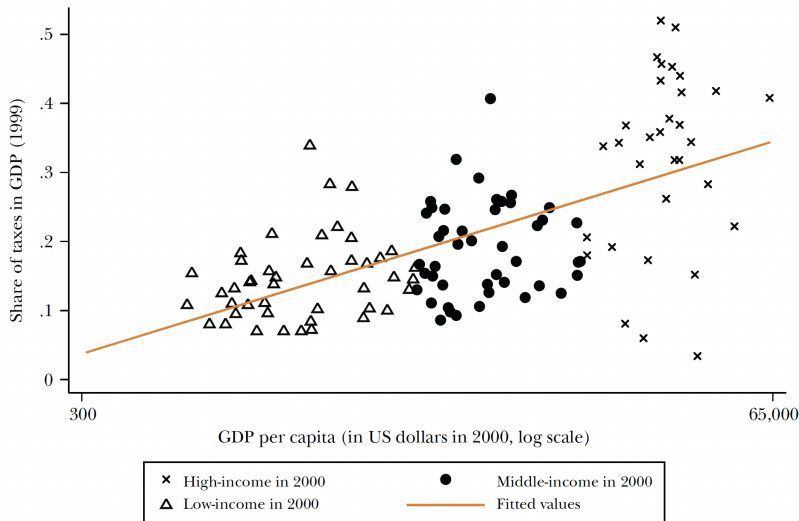
Taxes Fund Most Public Goods and Social Programs

1. Tax Revenue = **82%** of revenue in LICs (Prichard et al. 2014)

2. Social Contributions

3. Non-Tax Revenue

   i. Natural resources

   ii. Investment income

   iii. Borrowing

4. Grants

# Tax Revenue in % of GDP Across Countries
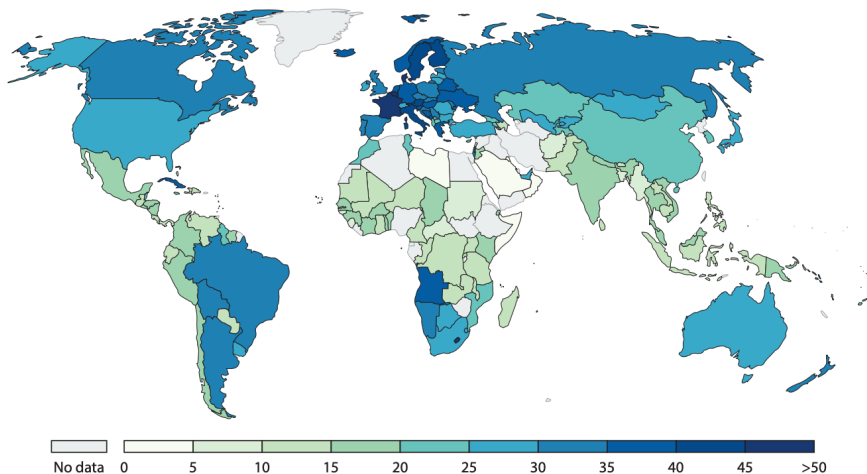
Source: Pomeranz and Vila-Belda (2019) "Taking State-Capacity Research to the Field: Insights from Collaborations with Tax Authorities", Annual Review of Economics, 11(1)

Challenge: Low Tax Revenue in Low-Income Countries

GDP per capita (in US dollars in 2000, log scale)

× High-income in 2000   ● Middle-income in 2000
△ Low-income in 2000   —— Fitted values

Source: Besley and Persson (2014) "Why Do Developing Countries Tax so Little?", Journal of Economic Perspective, 28(4)

Even More of an Issue for Local Taxes
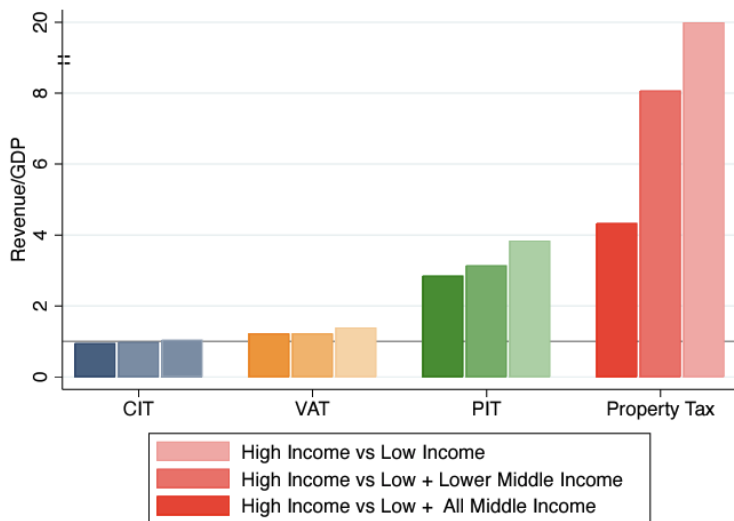
Outline

Why do Low-Income Countries Tax so Little?

1. Information:

   ▶ Lack of information about individuals/firms?

2. Tax Rates and Enforcement:

   ▶ Tax rates are too low? Or too high?
   ▶ States do not enforce taxes?

3. Tax Personnel:

   ▶ Poorly recruited, allocated, or incentivized tax personnel?

* Non-exhaustive list! Other determinants include individuals' tax morale which
can be affected by many factors, including governance (e.g., political alignment,
public goods provision) or the transparency and fairness of the tax system.

Evaluating Tax Policies

How can we study the causal effect of these tax policies?

1. Natural experiments resulting from tax changes combined with administrative tax data (e.g., Best et al. 2015, Carillo et al. 2017, Naritomi 2019, Bachas and Soto 2021, Basri et al. 2021, Gadenne et al. 2022, Jensen 2022, Okunogbe and Pouliquen 2022, Bachas et al. 2023, Brockmeyer and Somarriba 2023)

2. Randomized Controlled Trials (RCTs) conducted in partnership with tax authorities (e.g., Pomeranz 2015, Khan et al. 2016, 2019, Brockmeyer et al. 2019, Balan et al. 2022, Bergeron et al. 2024, Kapon et al. 2024)

   ⇒ The economist as a 'plumber' collaborates with governments to identify and fix 'leakages' in tax systems (Duflo 2017)

   ▶ Today: highlight findings from this approach

Outline

Information is King: Historical Perspective

▶ To impose any tax, the state needs information about the taxable transactions taking place in the economy

▶ Historical perspective:

  ▶ Historically, governments focused on activities that were easier to observe, such as tariffs or tolls

▶ Example :

  ▶ Danish Sound Dues tolls collected from ships passing through the strait connecting the Baltic Sea to the North Sea

  ▶ Represented 50% of Danish state income in 16th and 17th century.

The Sound Straight in 1617

Third-Party Reporting: Wages

- ▶ Key source of information: third-party reporting

  - ▶ Agents have an incentive to report information to the government that includes evidence of tax obligations of other agents

  - ▶ Third-party reporting creates a paper trail

- ▶ Well-known example: wages

  - ▶ Employers file wage forms with the government and deduct wages from profit tax, creating a paper trail of employee incomes

Wage Labor and the Rise of the Modern Tax System

▶ Rise in employee share drives emergence of modern tax system
(Jensen 2022)
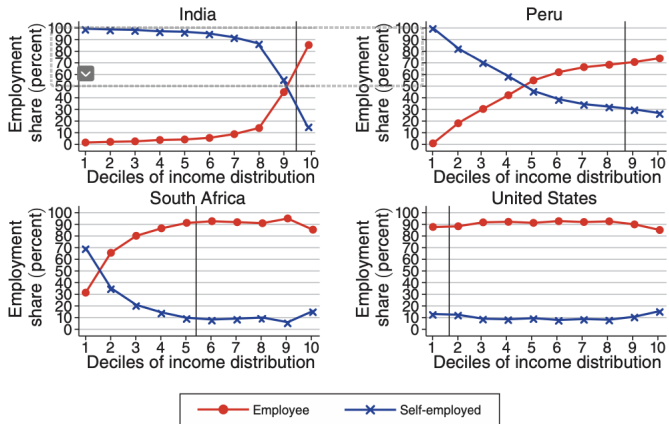
Third-Party Reporting: VAT

▶ Another source of third-party information: the VAT

▶ Client firms have an incentive to ask suppliers for a receipt
  ▶ Why? To deduct input costs from the VAT

▶ Self-enforcement breaks down at the end of the production chain
  ▶ Why? Consumers don't have incentives to ask for a receipt
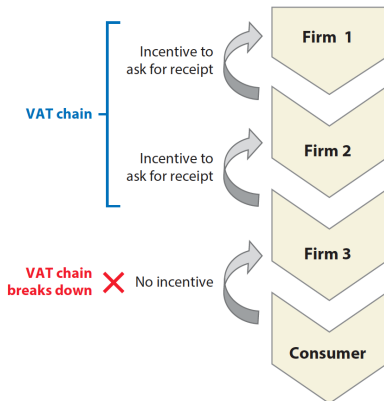
Self-Enforcement in the VAT

▶ Pomeranz (2015) studies the self-enforcement of the VAT in Chile

▶ RCT: Randomized letters informing 100,000 firms that they have been selected for special scrutiny and might be audited

▶ Confirms self-enforcement: increase in reported sales to consumers (no paper trail), no impact for intermediary sales (paper trail)
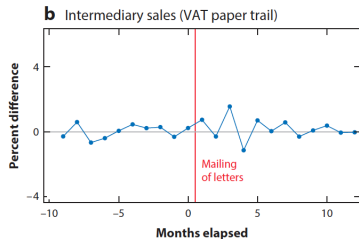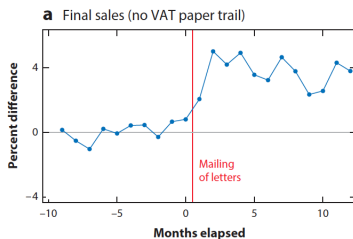
Delegating Tax Collection when Information is Limited

▶ Governments with limited formal information therefore struggle to collect taxes effectively

▶ Potential solution: delegating tax collection to informal leaders who have local knowledge

▶ Evidence from Balan et al. (2022): Local chiefs, assigned to collect taxes, leveraged local knowledge to target high payment propensity households, increasing tax revenue by 44%

Other Tax Policy Tools

▶ Next: Explore other tax policy tools available to LICs governments

  ▶ Tax Rates and Enforcement

  ▶ Tax Personnel

▶ Method: Analyze results from a series of RCTs conducted with the provincial government of Kasai-Central, DRC, to understand the impact of these policy tools (Bergeron et al. 2024a, 2024b)

Outline

How to Set Tax Rates?

- ▶ Context: Door-to-door property tax campaign in Kananga, DRC

- ▶ RCT: Random assignment of tax liability written on tax letter
  - ▶ Status quo vs. 17%, 33%, or 50% reduction

Status quo rate   50% reduction in rate

What are the Effects of Higher Taxes?

What happened as the amount of tax due increased?

1. To tax compliance?
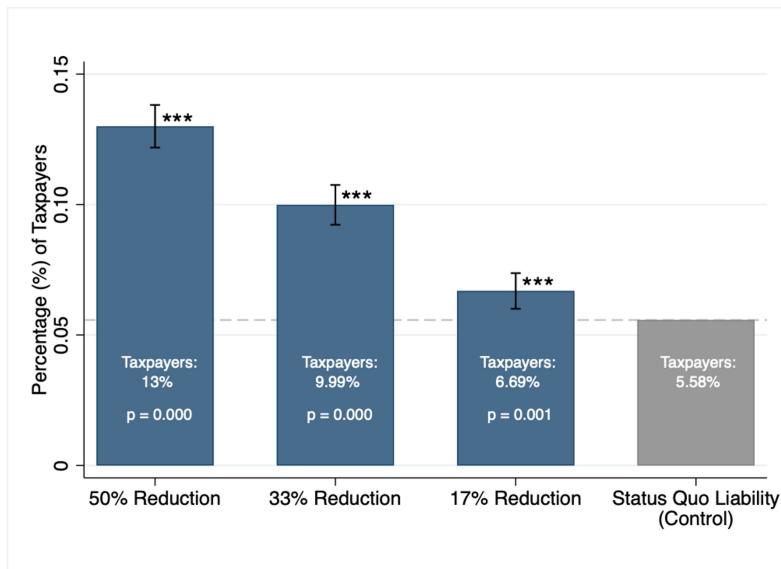
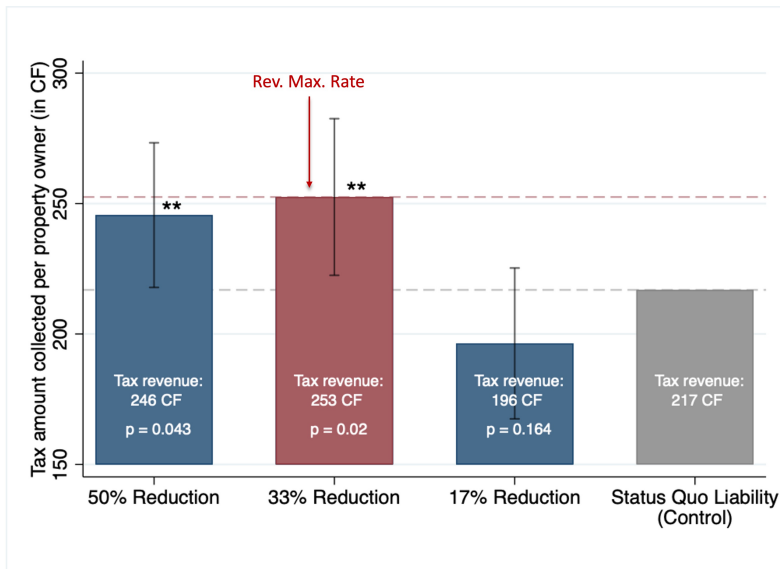   ▶ Tax compliance = % of owners who paid the tax

2. To tax revenue?

   ▶ Tax revenue = tax amount × number of taxpayers

   = tax amount × % of owners who paid × nb of owners

Tax Compliance Decreased as Taxes Increased

Tax Revenue Decreased as Taxes Increased!

What's Going On?

- ▶ Tax increases lead to two effects:
  - ▶ Revenue effect (+): Taxpayers pay more
  - ▶ Compliance effect (-): Fewer taxpayers (more tax delinquents)
- ⇒ Tax revenue decreases because the compliance effect dominates!

- ▶ Low tax enforcement might play a role
  - ▶ I.e., people just refuse to pay when tax amounts increase
- ⇒ What if the government threatens sanctions for tax delinquents?

How to Enforce Taxes?

- ▶ RCT: Randomly assigned messages on tax letters
  - ▶ Control Message: "Paying the property tax is important"
  - ▶ Enforcement Message: "If you refuse to pay the property tax, you could be summoned to the tax ministry for investigation and audit"

Control Message   Enforcement Message

Higher Revenue at Higher Rates with Threats of Sanctions
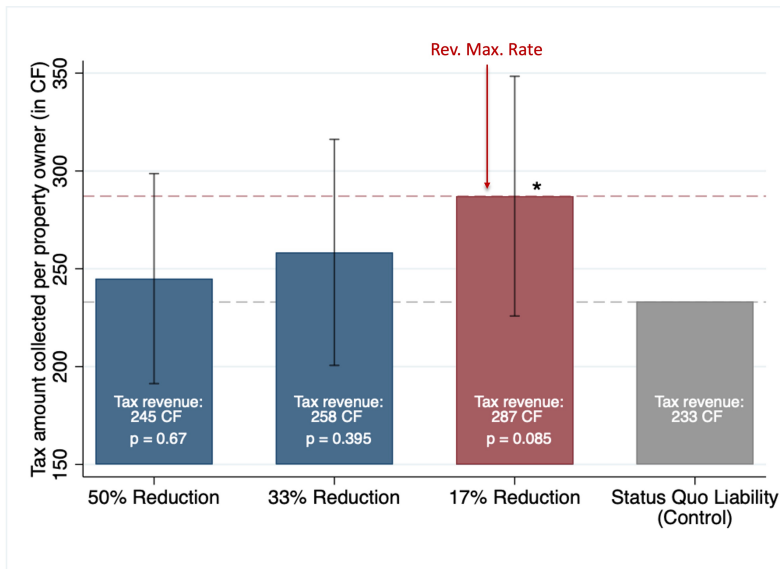
Policy Lessons and Implications

1. Low tax enforcement imposes a ceiling on tax rates
   - ▶ When enforcement is low, increasing tax rates can lower tax revenue

2. Enforcement threats allow higher revenue at higher rates

⇒ Tax rates should be increased jointly with tax enforcement

Improving Tax Enforcement

What can governments in LICs do to improve tax enforcement?

▶ Increase the number of audits (Kleven et al, 2011)

▶ Increase the number of collectors and auditors (Basri et al, 2021)

▶ Next: Improve tax personnel

    ▶ Better allocation of current tax collectors

    ▶ Hiring better collectors

    ▶ Increasing collector wages

Outline

## Improving the Assignment of Tax Collectors

▶ Context: Same door-to-door property tax campaign in Kananga DRC

▶ RCT: random assignment of state tax collector to teammates and neighborhoods to identify their optimal assignment

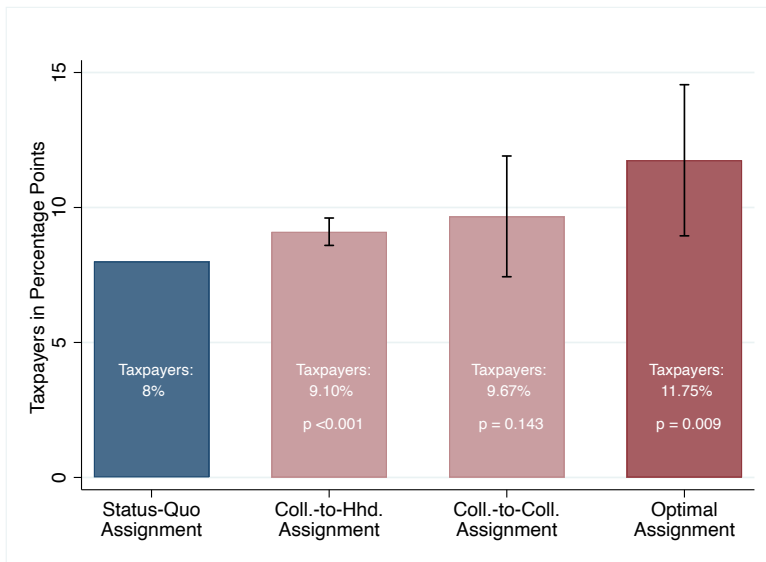## Optimal: Positive Assortative Matching

▶ Optimal: Maximizes tax compliance while (i) sending two collectors to each neighborhood (ii) keeping the collectors' workload the same

▶ Results: Collectors with high (low) ability are matched and assigned to nbhd with high (low) ability to pay (positive assortative matching)
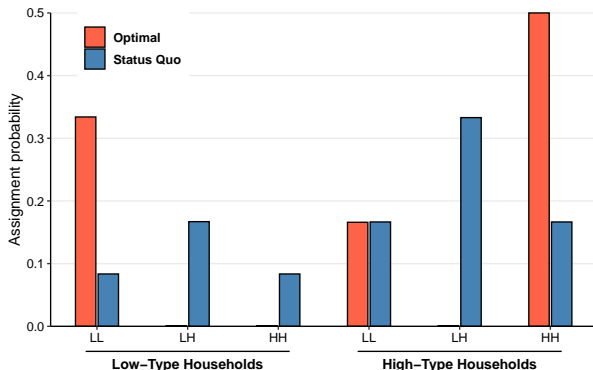
Tax Compliance Increases by 47% and Revenue by 38%

Hiring Better Collectors
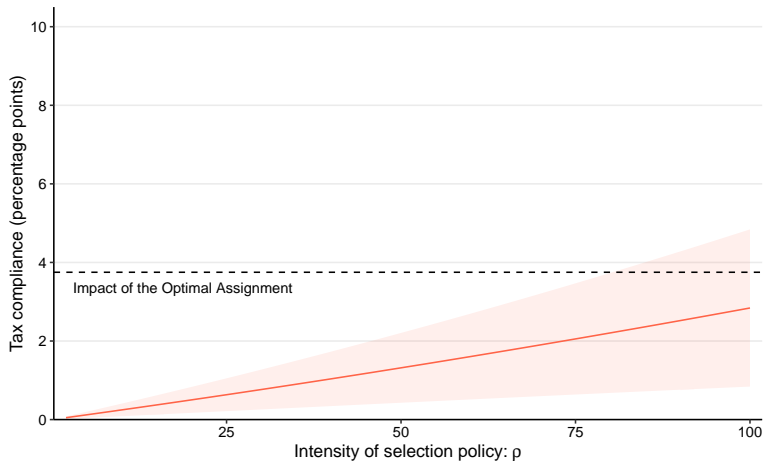
▶ Replacing low-type collectors with new ones results in a lower compliance increase than f^*

Increasing Collector Wages

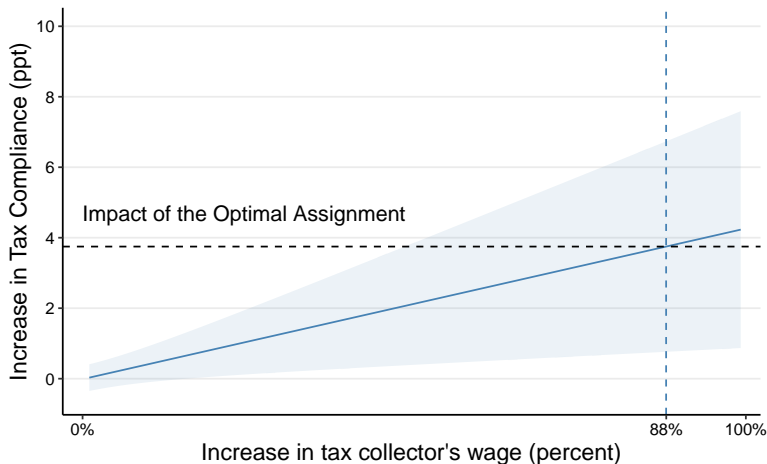▶ Increasing collectors' wages by 88% would yield the same compliance increase as f^* but would reduce tax revenue net of wage by 13%

Other Collector-Level Interventions

▶ Khan et al. (2016)

  ▶ Performance pay increases tax revenue growth by 64%
  ▶ Additionally, higher reported bribes in incentivized areas:
    ▶ Suggests higher bargaining power of collectors over taxpayers

▶ Khan et al. (2019)

  ▶ Examine incentive effects of assigning collectors to preferred locations based on performance (*performance-ranked serial dictatorship mechanism*)
  ▶ Results show 30-41% increase in annual tax revenue growth

Outline

Taking Stock: Building Fiscal Capacity in Fragile States

1. Information: (third-party) information is crucial for tax collection

2. Tax Rates and Enforcement: Strengthening enforcement capacity enables a higher revenue-maximizing tax rate

3. Tax personnel: Assignment, selection, and wage have large impacts

Large scope for collaborations between researchers and tax authorities

What Happens When it Rains? Back