

Tax Capacity, Fiscal Federalism and Development

Nada O Eissa

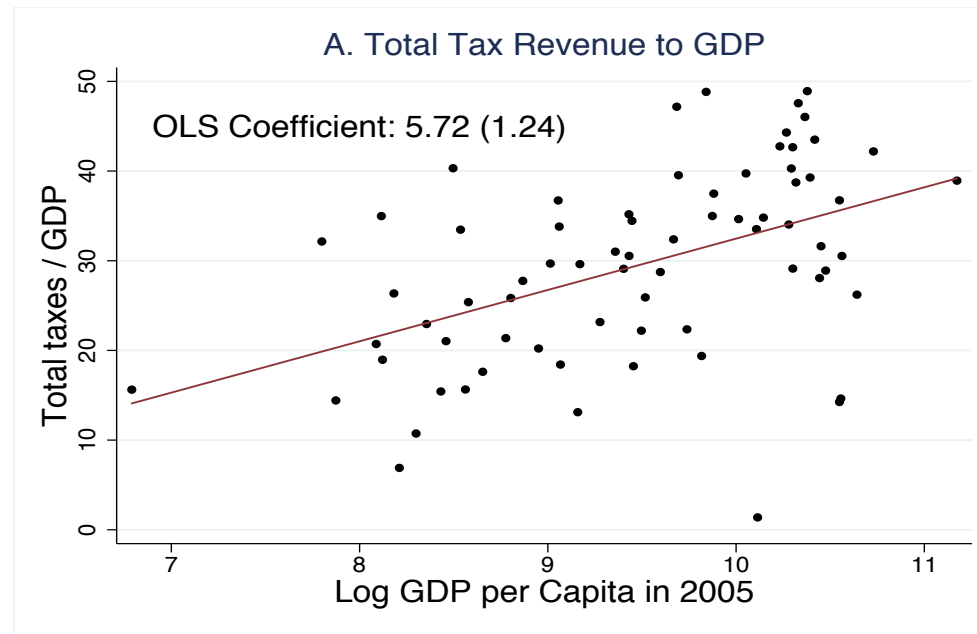
Georgetown University, NBER and IGC

Ministry of Finance, Ghana

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Taxation and Development

- Taxation is central to both state and economic development



Source: Kleven, Kreiner, Saez (2015)

Taxation and Development

- ❑ Critical questions in the field of development for policymakers and academics
 - ① how does a government go from raising around 10% of GDP in taxes to raising around 40%”? (Besley and Persson 2013)
 - ② what is the optimal investment in tax collection and administration?
 - ❑ efficient taxation requires investments in capacity (Slemrod and 2014)
 - ③ How can evidence be brought to bear on policy design
 - ❑ policy not based on evidence can often do more harm than good

Limits of Taxing Powers

U.K. Poll Tax, 1990



Taxation and Development

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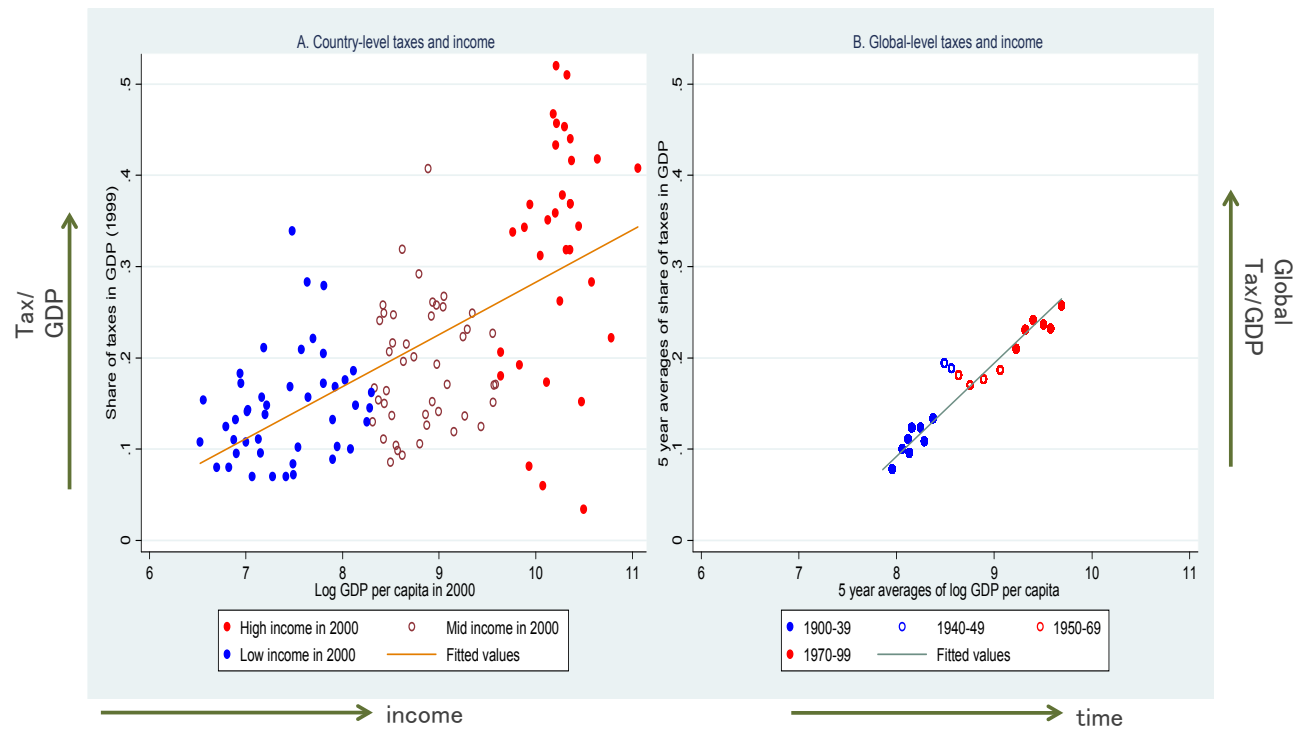
Outline

1. Basic Patterns and Trends
2. Conceptual Framework
 - a) Basic economic model
 - b) Tax *systems* approach
3. Empirical Literature: What Have We Learned
 - a) Methods: modalities and technicalities
 - b) Evidence
4. Fiscal Federalism and Equity
5. Directions for Practitioners and Policymakers

Taxation and fiscal capacity in developing countries

1. [Low fiscal capacity](#)
2. Heavy reliance on narrow (distortionary) taxes as opposed broad-based (income) taxes
 - ❑ Trade, selective consumption and turnover taxes
 - ❑ tax administration

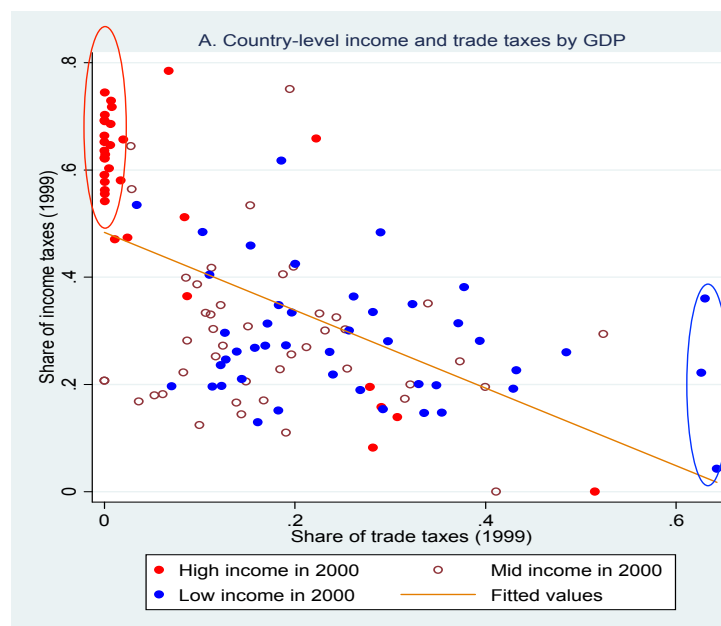
Richer countries collect a much larger share of their income in taxes than do poorer countries.



Taxation and fiscal capacity in developing countries

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2. Heavy reliance on narrow (distortionary) taxes as opposed broad-based (income) taxes
 - [trade](#), selective consumption and turnover taxes

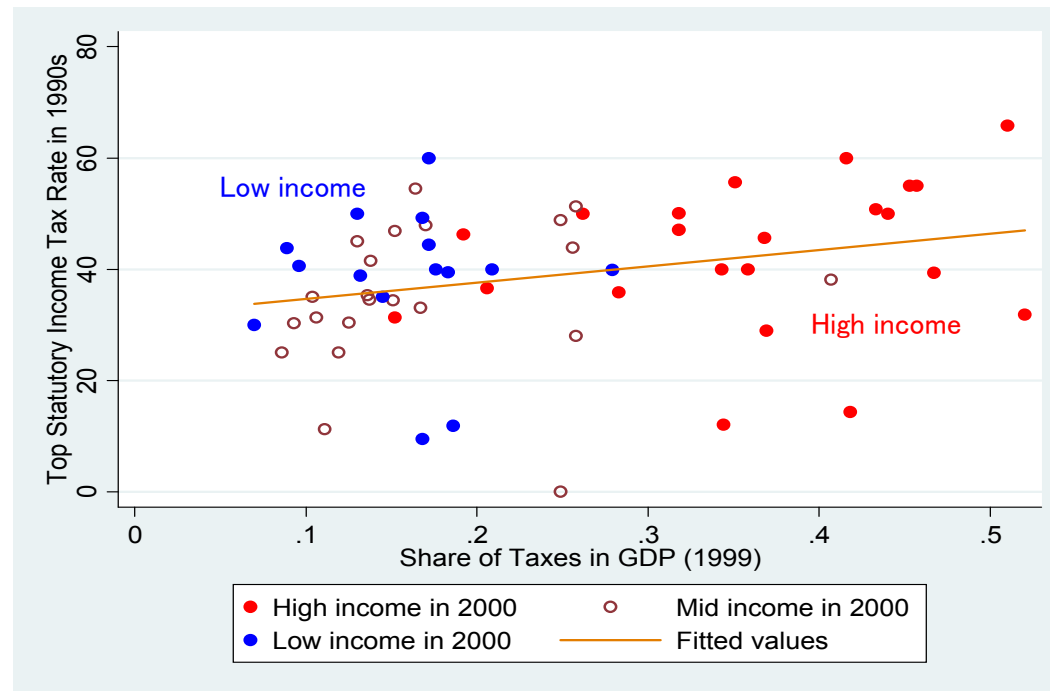
Higher-income countries rely much more on income taxes as opposed to trade taxes than do poorer countries.



Taxation and fiscal capacity in developing countries

1. Low fiscal capacity
2. Heavy reliance on narrow (distortionary) taxes as opposed broad-based (income) taxes
 - ❑ trade, selective consumption and turnover taxes
 - ❑ explanation lies partially in tax administration
3. A compelling reason that the difference in tax shares lies in tax administration (as opposed to policy) comes from the relationship between tax rates and tax ratios
 - ❑ Even with comparable statutory rates, developed countries raise much more revenue (as a share of GDP) than developing countries.

Tax Revenue Share and the Maximum Statutory Tax Rate

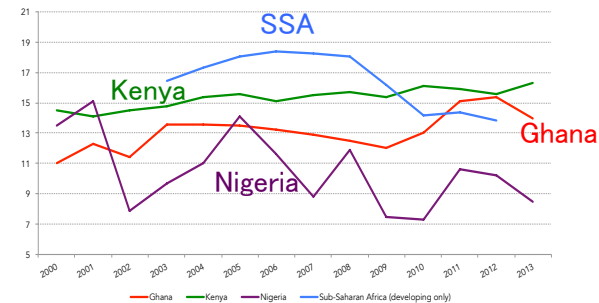


Taxation and fiscal capacity in Africa

1. Government revenue share in GDP was rising on average through the 1990s and early 2000s

- Caveats

- tax vs. other sources (natural resources)
- a lot of variability in revenue changes across countries
- shifting fortunes after the 2008 Global recession



2. The composition of taxes has tilted away from trade towards indirect taxes

Conceptual Framework

- ❑ Traditional literature on taxation
 - ❑ Design of optimal tax
 - ❑ Ramsey (1927): optimal consumption tax not uniform
 - ❑ Tax goods such that the marginal revenue per dollar is equal across goods
 - ❑ tax goods that have low elasticity of demand/ supply at *higher* rates
 - ❑ Note the distributional implications

Optimal Income Tax

3 cornerstones of optimal tax framework

- ① Individual preferences, firm technology and market structure
- ② Revenue requirement
 - Exogenous: simplifies objective function
- ③ Social welfare function

Modern Optimal Tax

- Yielded important insights into design of taxes
- But most were/are of limited practical relevance
 - Mirrlees (1971): marginal tax rate on richest person is zero

Tax Compliance/Evasion

- ❑ Optimal evasion depends on terms of gamble (likelihood of detection and penalty) and attitude toward risk (Alingham & Sandmo 1972)
- ❑ based on economic model of crime
 - ❑ a person commits a criminal act if the expected utility to him exceeds the utility he could get by using his time and other resources at other activities
 - ❑ criminals therefore don't have a different basic motivations from others, but rather have different benefits and costs.

Tax Compliance/Evasion

- How much should be allocated to detecting evasion? (Sandmo 1981)
 - equate resource cost of detection and the social benefit on the margin
 - » Additional revenue is not net gain to society
 - » benefits: faith in government

Optimal Tax Systems and the Technology of Tax Collection

- Slemrod (2013) incorporates tax administration into optimal tax framework
 - cornerstone now technology of tax collection
 - Ease of administering various taxes has critical implications for the optimal structure of tax systems.
 - marginal resource cost now depends on ease of collection
 - Optimal tax system equates the marginal excess burden to marginal administrative cost
 - Example: VAT
 - Differentiated rates and exemptions impose marginal administrative costs

Analytical Approaches

1. Big-Picture, macro approach: tax capacity and effort
[Stochastic frontier analysis - Langford and Ohlenburgh 2015]
2. Micro approach:
 - Design and evaluate (incremental) policy innovations in a world of weak tax enforcement
 - Collaborate (researchers/policy makers/practitioners)

Micro Tax Research

- Data: Administrative data provide a wealth of information in tax records
- Empirical Methods: could use tax schedules or tax reforms, previous changes in tax rates and enforcement to credibly estimate impacts
- Framework: Public Finance has a well-developed theory that can be brought to bear in designing policy
- Policy: Strong interest from policy makers in getting taxes right

Empirical Investigations in to Determinants of Tax capacity

1. Tax Policy
2. Tax Administration
3. Tax Compliance
 - a. Enforcement
 - b. Morale

New Evidence on Compliance

□ Enforcement

1. Third-party information

- Employer Reporting/Withholding (Denmark)
- Citizens as monitors (Brazil/Chile)
- Accounting firms (Uruguay)

2. Technology

- electronic billing machines- Rwanda/Tanzania

3. Psychology

- moral suasion (United Kingdom)
- Tax salience

Shaming tax dodgers to improve compliance



Shaming- Philippines

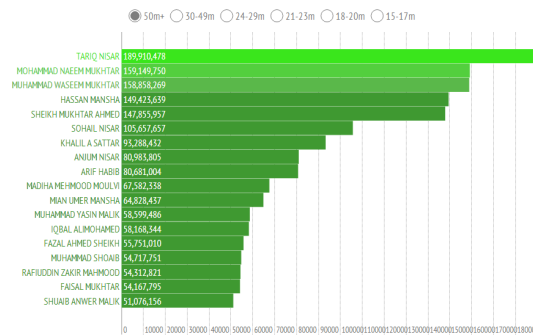


“singing eunuchs” - Bihar, India

Source: Singhal (2014)

Recognition as a tool to improve tax compliance and morale

Taxes paid by salaried individuals



Pakistan



Punjab, India

Source: Singhal (2014)

Tax Enforcement

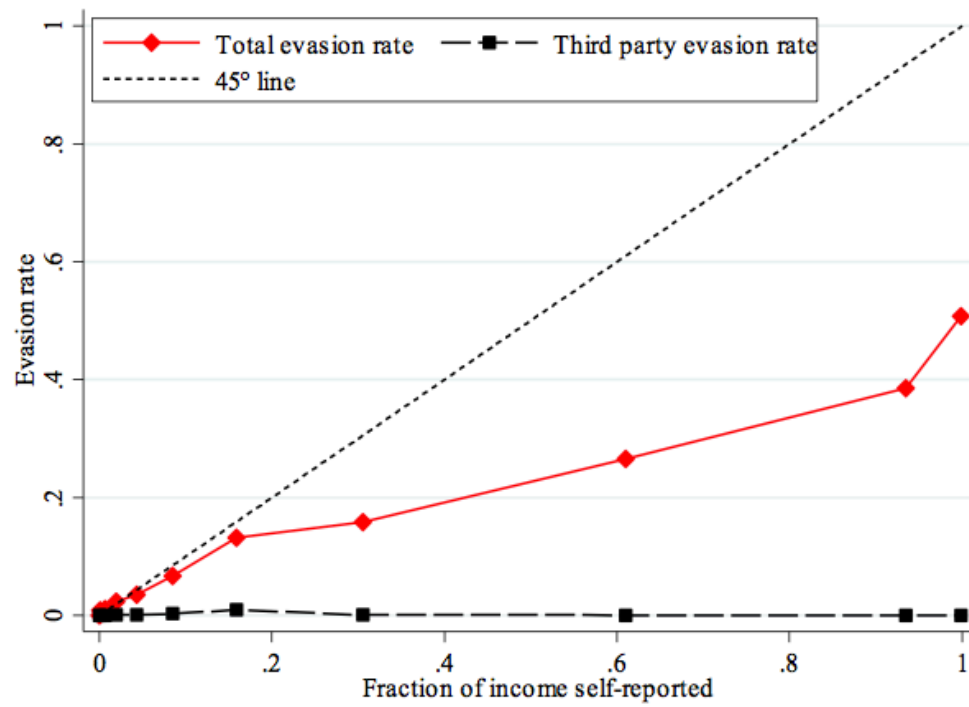
Kleven *et. al.* (2009, 2011)

- Denmark Experiment: Tax evasion rate is close to zero for income subject to third-party reporting, but substantial for self-reported income
- Tax enforcement is successful if and only if verifiable third-party information has wide coverage

Absent wide coverage of third-party or other information

- How can we expand third-party information?
- How should we design audits, set penalties?

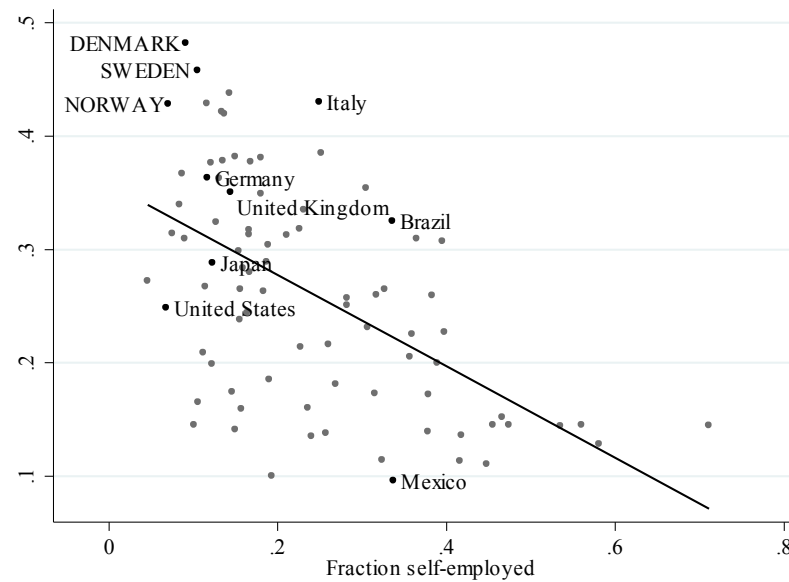
Third-Party Reporting: Evidence from Denmark (Tax take: 50%)



Source: Kleven, Knudsen, Kreiner, Pedersen, Saez (2011)

Third-Party Reporting: Cross-Country Evidence

Tax Share vs Fraction Self-Employed



Source: Kleven (2014)

Technology and Tax Compliance: Electronic Billing Machines and VAT Revenues

Collaboration with Rwanda Revenue Authority (RRA)

Immediate question: What is the impact of EBM's on
tax revenue?

Broader question: How can the government
encourage compliance?

Data

1. Quarterly VAT declarations, from 2012 through 2014
2. EBM registration data

EMB Receipt

SHOP NAME KIGALI TIN: 999999999		Tax Identification

Hainken 0,3l	1x 950,00 B	Item or service
Wine S.Africa 1l	1x 7000,00 B	

Total	7950,00	VAT
Total B-18%	6737,29	
TAX TAX B	1212,71	

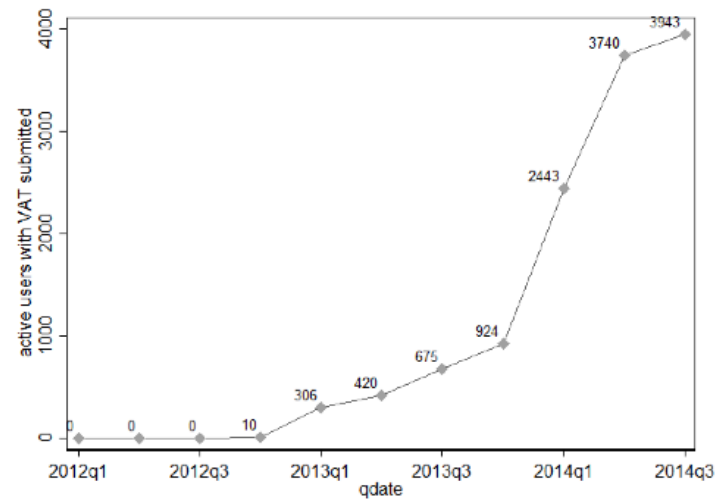
Cash	7950,00	Real Time Clock
Items number	2	

SDC Information:		Sales Data Controller s/n
Date: 25/5/2012	Time: 11:07:35	
SDC ID:	SDC001000001	
RECEIPT NUMBER:	168/258 NS	Consecutive receipt number
Internal Data:		
TE68-SLA2-34J5-EAV3-N569-88LJ-Q7		Internal Data (only PRA can verify)
Receipt Signature:		
V249-J39C-EJ48-HE2W		

RECEIPT NUMBER:	152	Receipt Signature (only PRA can verify)
DATE: 25/5/2012	TIME: 11:09:32	
MRC:	AAA0C123456	Machine Registration Code

Source: Rwanda Revenue Authority, "Electronic Billing Machines; Presentation for Foreign Visitors"

EBM Adoption



NOTES—Figure counts taxpayers as having activated EBMs in a given quarter if activation date occurs before the close of that quarter. Consequently, estimated activations by 2014q1 do not include firms that had begun—but not completed—activation process by April 1, 2014.

EBM Machines led to higher VAT Revenues

VAT revenues increased by 5.4%

But, to better understand what's underlying this impact, we set up a mystery-shopper study

- To what extent are machines being used?
- Can consumers encourage more usage?

Mystery Shopper Study: Design

- ❑ 129 visits to EBM-active retail shops in Kigali
 - ❑ Purchases from a menu of small goods: tea, coffee, soap, staples, etc., valued between RWF 500-RWF1000.
- ❑ An embedded experiment: in (only) half of these visits, selected at random, we specifically asked for a receipt.

Mystery shopper: Results

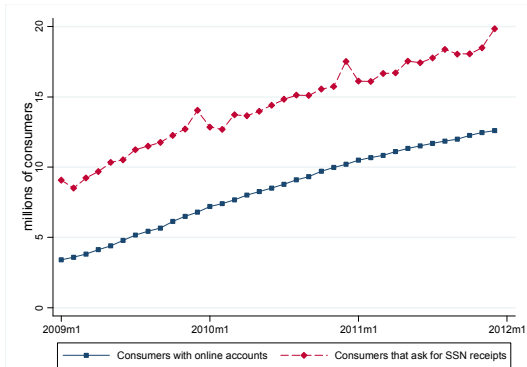
1. When unprompted, the fraction of purchases receiving EBM is low, at ~ 21 percent.
2. Merely asking for a receipt changes this substantially: increases the chances of receiving a receipt by 42 percentage points
 - substantial scope for consumers as auditors
3. Preliminary results are suggestive VAT is being partially passed through to consumers.
 - Estimated impact on price is RWF 111, as against a mean price of RWF 1300 without receipts.
 - Concern: competitive fringe

Cost of addressing evasion may be very low

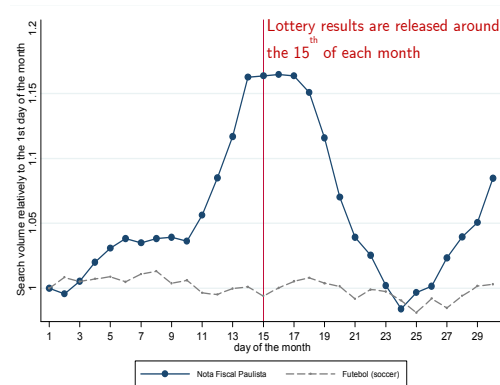
- Consumers as tax auditors (Naritomi 2013)
- anti-tax evasion program from Sao Paulo, Brazil - Nota Fiscal Paulista - that created monetary rewards for consumers to ask for receipts.
 - Massive data: 1 million firms, 40 million people, and 2.7 billion receipts!
- program increased revenue reported in retail sectors by more than 22% (over four year period).
 - no residual effect of firm exits and employment

Consumer attention and participation

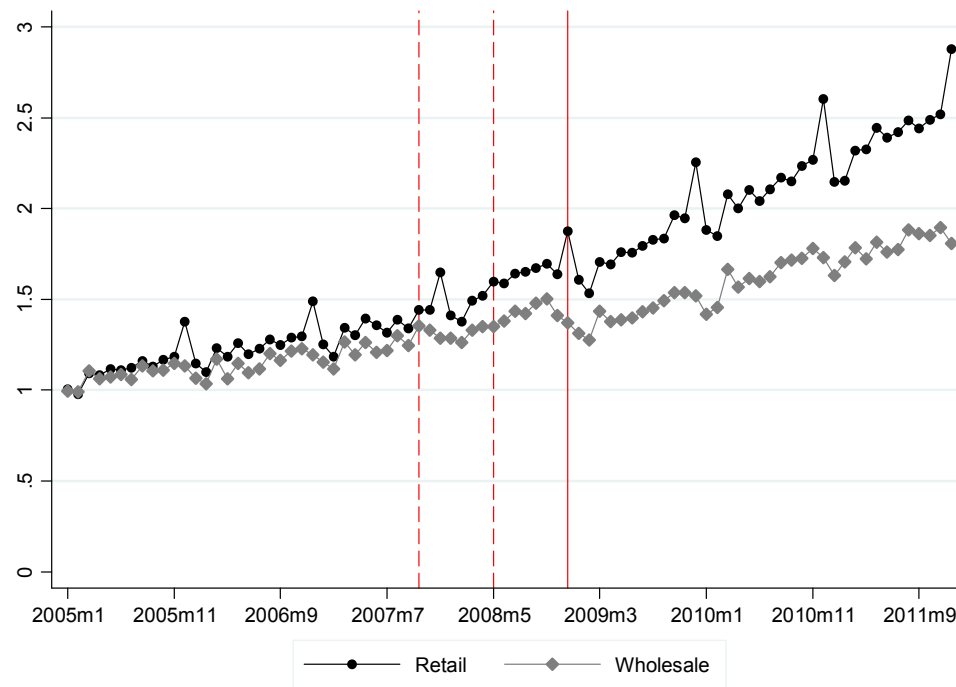
a. Number of consumers asking for SSN receipts and number of consumers with online accounts



a. Timing of lottery results - Google searches for *Nota Fiscal Paulista*.



Reported Revenue Changes Retail vs Wholesale



Cost of addressing evasion may be very low

– United Kingdom

- Letters from HMRC (Hallsworth et.al 2014)
- <https://www.gov.uk/government/news/hmrc-secures-record-tax-revenues-by-cracking-down-on-tax-dodgers>

Tax Policy

Traditional recommendations from the tax theory literature:

- Use progressive income taxes and VAT
- Do not use differentiated consumption taxes, capital taxes, and taxes on turnover, trade, and intermediate goods

These theoretical results generally assume:

- Perfect tax enforcement (administration costless)
- Full set of tax instruments available to policy makers

Optimal Tax Policies

Diamond-Mirrlees (1971): assuming perfect enforcement, only production efficient tax instruments should be used

Production inefficient tax policy in developing countries ubiquitous:

- **Minimum Tax Schemes (MTS)** whereby firms are taxed on either profits or turnover depending on which tax liability is larger

Turnover taxes are production inefficient, but maybe harder to evade?

Choice of Tax Instrument and Weak Capacity

In settings with weak tax capacity, the choice of instruments is key

- Which instruments represent the best trade-off between standard efficiency-equity concerns and compliance/administration concerns?
- Example: Best-Brockmeyer-Kleven-Spinnewijn-Waseem (2014) the MTS in Pakistan:
 - Turnover taxes reduce evasion by up to 60-70% of corporate income
 - Compliance gains outweigh the loss of production efficiency
 - So the MTS is a good policy in a weak tax capacity setting

Key Lessons

1. Third-party information

- withholding (income)
- technology (VAT)
 - consumers

2. Salience and Framing

- Morale: norms and business tax (Bangladesh)
- Messaging

Key Takeaways

- Rather than rely on transplanting developed country solutions, we examine country-specific policies
- Challenging but doable:
 - **Data:** High-quality data [e.g. administrative data]
 - **Design:** Credible research design [RCTs, quasi-experiments]
 - **Evaluation:** Rigorous evaluation techniques
 - **Collaboration:** Engagement between policy makers and researchers

Part II

Fiscal Federalism and Equitable
Development

What is fiscal federalism?

- ❖ Start with a common definition of a federal system
 - ❖ A public sector with both centralized and decentralized levels of decision-making in which choices made at each level are determined by the demands of residents of respective jurisdictions (Oates 1972)
 - ❖ Note: this will also be political (local elections) or administrative (public servant selection, pay, work conditions)
- ❖ Basic principle of fiscal decentralization: the provision of public services should be at the lowest level of government that internalizes the (spatial) benefits and costs

Implementation issues: fiscal federalism and decentralization

- ❖ Fiscal decentralization is the transfer of control over expenditures *and* revenues from the center to lower levels of government
 - Expenditure: service delivery - healthcare, education, some infrastructure
 - Revenues: increase transparency and stability of transfers, transfer power to collect and set taxes
- ❖ Analysis of the impact of fiscal federalism must account for political and administrative structures

Other Dimensions of Decentralization

Two measures of fiscal decentralization:

- revenue decentralization—the share of total tax revenues that subnational tiers receive
- expenditure decentralization—the share of total public expenditures funded from subnational budgets.

1. Number of tiers of government
2. Electoral decentralization
3. Personnel decentralization—the share of total government personnel employed at subnational tiers.



Table 6.1 Median Levels of Decentralization Measures by Geographic Region, 1995 (percentage)

Decentralization Measure	Number of Observations	Sub-Saharan Africa	East Asia	South Asia	Latin America	Middle East	Eastern Europe	Former Soviet Union	Western Europe
Number of tiers	164	4	4	4	3	3.5	3	4	3
Percent elected	155	33.3	35.4	33.3	62.5	0.0	83.3	33.3	69.0
Subnational share of public expenditure	67	4.7	10.8	37.6	9.6	8.4	16.9	27.6	24.1
Subnational share of total tax revenue	53	4.0	6.5	N/A	6.7	6.3	7.3	24.2	13.4
Subnational share of public employment	90	23.1	41.0	50.0	20.8	35.8	26.4	35.4	48.4
Stipulated autonomy	133	6.9	11.8	20.0	23.5	0.0	8.3	15.4	33.0
Residual authority	133	3.8	5.9	20.0	22.2	0.0	16.7	7.7	23.8
Federal	164	4.8	5.2	28.6	14.8	5.3	9.1	7.1	23.8

Sources: Daniel Treisman, *Defining and Measuring Decentralization: A Global Perspective* (Los Angeles: University of California, 2002); D. Elazar, *Federal Systems of the World: A Handbook of Federal, Confederal and Autonomy Arrangements*, 2nd ed. (London: Longman, 1994); S. Saideman, D. Lanoue, M. Campenni, and S. Stanton, "Democratization, Political Institutions, and Ethnic Conflict: A Pooled Time-Series Analysis, 1985–1998," *Comparative Political Studies* 35 (1) (2002): 103–129.

Dimensions of federalism

In practice, tremendous cross-national variation in how decentralization *unfolds*

1. **Uganda** - expansive decentralization across all dimensions in the 1990s, compromised by weak own-source revenues, service delivery, fiscal responsibility
2. **Cambodia** - communal elections, little independent revenue control, heavy reliance on intergovernmental transfers
3. **Chile** - political decentralization but centralized revenues
4. **Bolivia** - revenue sharing with municipalities (rule based) but centralized administration

Goals: to what end?

1. Public service delivery/economic growth (India)
2. Democratization
3. Stability (Columbia/Cambodia)

Colombia - decentralization seen as a way to reestablish stability and pacify rebel insurgency

- ❖ Political - mayoral and gubernatorial elections
- ❖ Fiscal - transferred important fiscal revenues

Cambodia - restore citizen trust in government after armed extended armed conflict

- ❖ Discretionary intergovernmental transfers allocated using *objective* formula
- ❖ Services prioritized through local participation

Basic theory

- ❖ Traditional theory of fiscal federalism provides a general *normative* framework for assigning functions to different levels of government and for the appropriate fiscal instruments required (Musgrave 1959; Oates 1972, 1999)
- ❖ Central government responsibility
 - ❖ certain "national" public goods like national defense
 - ❖ income redistribution
- ❖ Decentralized levels of government provide (local) goods and services that match residents' preferences
 - ❖ uneven decentralized provision desirable as it improves economic welfare (relative to uniform levels of such services)

Fiscal Instruments in a Federal System

- ❖ Primary sources of government finance are tax (and debt) instruments
 - Question in the context of federal system: which taxes are best suited for use at each level of government (tax-assignment problem)?
 - need to distinguish between administration (collection) and policy (setting tax rates, and tax base)
- ❖ Lower levels of governments have an additional source: intergovernmental grants

Taxation in Federal System

- In the context of taxation, the key issue in the design of taxes is the degree of mobility of taxed units (workers, firms etc.) at the central and lower levels
 - Mobile units can avoid the tax by relocating to lower tax jurisdiction
- General conclusion: lower levels of government should avoid taxing mobile units - be they people, firms or goods.
 - Taxing these units creates a welfare loss as they can avoid the tax by changing location

Jurisdictional Boundaries

- What should the geographic boundaries be?
- Key issue: Spillovers, by which we mean the accrual of benefits from any one jurisdiction's public goods to its neighbors.
 - increase the optimal size of a jurisdiction
 - Introduces heterogeneous preferences and reduces economic welfare.
- Existing boundaries largely historically and culturally determined
 - South Sudan, date back to the middle of the 20th century (Johnson 2015)
 - United States: rivers were used to demarcate boundaries.

Jurisdictional Boundaries

- Arguably a much more rational map would probably entail
 1. some fairly sizeable regional governments that extend over environmental resources
 2. smaller local governments that allow groups of residents to determine services of relevance mainly to themselves
(Oates 1999)

Fiscal federalism in South Sudan: Key Issues

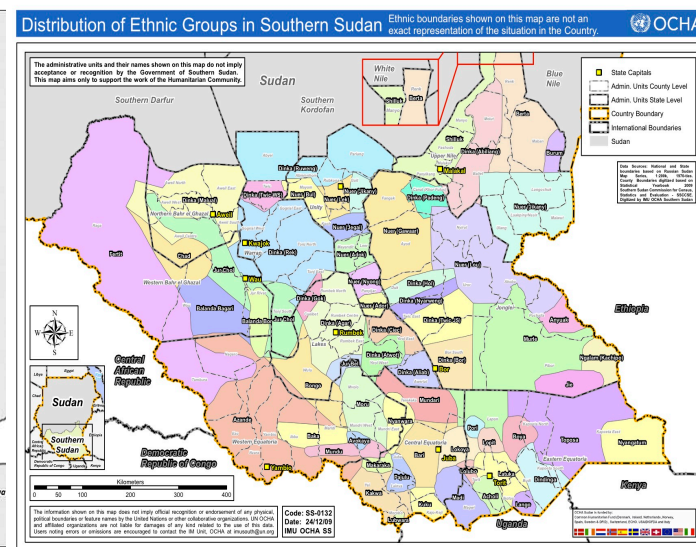
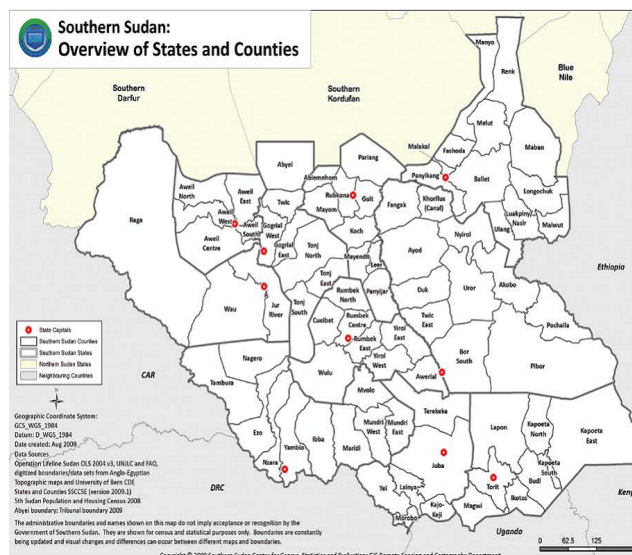
1. Ethnicity diversity
2. Internal/Armed conflict
3. Inequities across jurisdictions (states, counties,..)

❖ Ethnic diversity:

❖ Evidence is overwhelming that ethnic diversity lowers public goods

1. Microcredit loan default rates in Peru (Karlan, 2002)
2. funding for productive public goods–education, roads, sewers etc. in the United States (Alesina, Baqir and Easterly, 1999)
3. primary school funding –facilities, maintenance in rural Kenya (Miguel and Gugerty 2004)

Overlap: Local Governance Units and Ethnic Distribution



Empirical Test

- ❖ What is the relationship between public service provision and the ethnic composition at the county level?
- ❖ How does local public service provision differ across counties/payams/bomas with different ethnic composition?
 - ❖ Other factors matter: per-capita income, natural resource base, age distribution, etc,...
- Issue is the lack of data

Evidence that decentralization exacerbates inequity

1. Argentine secondary schools (Galiani, Gertler, and Schargrodsky 2008): Schools in poorer municipalities fell further behind their counterparts in better-off areas.
 - Different reasons for this outcome:
 - it may be that institutions of local democracy vary widely across areas, or richer areas may have more clout or lobbying power with higher authorities who allocate resources across areas.
2. Allocation of benefits across West-Bengali villages more regressive after decentralization.
 - Dominated progressive land reform

Educational resources vary across states and across counties within states

4.39 Percentage of Secondary Schools with access to basic facilities by state, 2010

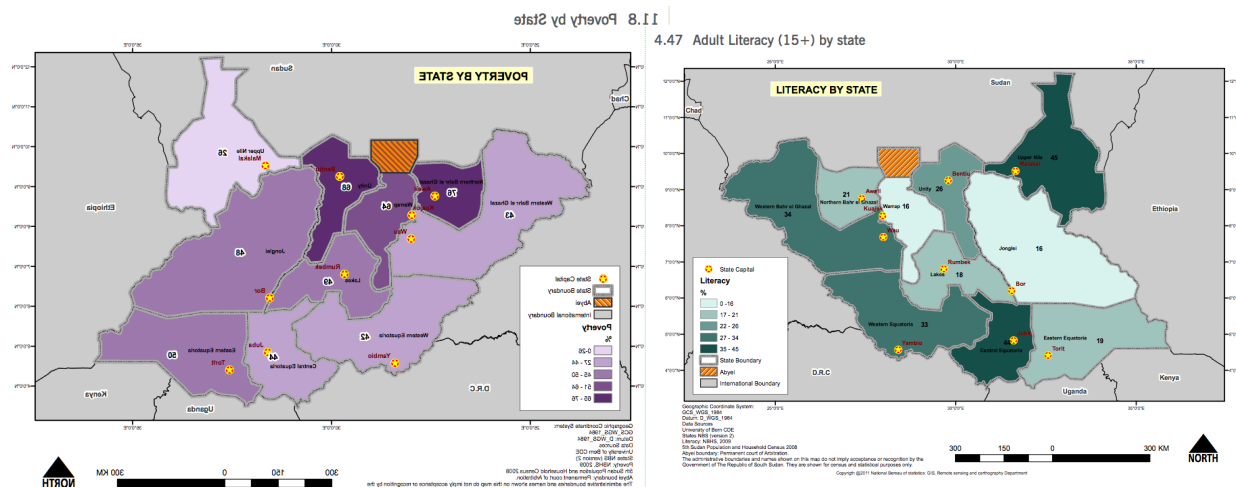
State	Drinking water	latrine	electricity	health centers
South Sudan	79.2%	75.6%	17.9%	17.9%
Upper Nile	88.9%	85.2%	18.5%	3.7%
Jonglei	85.7%	85.7%	28.6%	0.0%
Unity	60.0%	80.0%	0.0%	20.0%
Warrap	37.5%	62.5%	12.5%	12.5%
Northern Bahr El Ghazal	50.0%	66.7%	0.0%	16.7%
Western Bahr El Ghazal	84.6%	61.5%	7.7%	0.0%
Lakes	100.0%	100.0%	33.3%	0.0%
Western Equatoria	88.9%	83.3%	16.7%	11.1%
Central Equatoria	85.4%	70.8%	29.2%	8.3%
Eastern Equatoria	70.8%	75.0%	8.3%	12.5%
Source: EMIS Report 2010, MoEI				

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Source: EMIS Report 2010, MoEI				

Pre-existing inequities non-trivial in South Sudan: poverty and adult literacy rates across states



Issues in the Design of Intergovernmental Grants

1. Degree of redistribution
 1. Block grants vs matching grants
 2. Distance measures
2. Conditional vs unconditional
3. Fiscal Discipline
 - perverse incentives for fiscal behavior
 - own-source revenues vs. “free” money

Redistribution Tools

- Redistribution to offset inequities decentralized system
 1. Block grants
 - Pure income effect at the local level
 - Flypaper effect - does local spending rise by the same amount of the transfer? Do local authorities reduce tax burdens?
 2. Matching grants
 - Price and income effects at the local level
 - Incentivizes public service provision on the margin
 - Stronger fiscal discipline (?)

Redistribution Tools

- Considerations
 1. Conditionality
 - How much discretion should local authorities have?
 2. Criteria
 - Population: transfers based on jurisdictions share of population
 - Income per capita
 - Social welfare outcomes: education, health, poverty