



**Vedanth Nair**  
Research Economist, IFS & TaxDev

Festival of Social Sciences  
November 2022

@TheIFS

# How and why should developing countries raise more tax revenue?



Economic  
and Social  
Research Council

- Why should developing countries raise more tax revenue?
- What holds back tax revenue in developing countries?
  - Economies characterised by high levels of informality, evasion
- What can developing countries do to raise more tax revenue?
  - Improving tax administration through third-party reporting and withholding
  - Rethinking tax policy

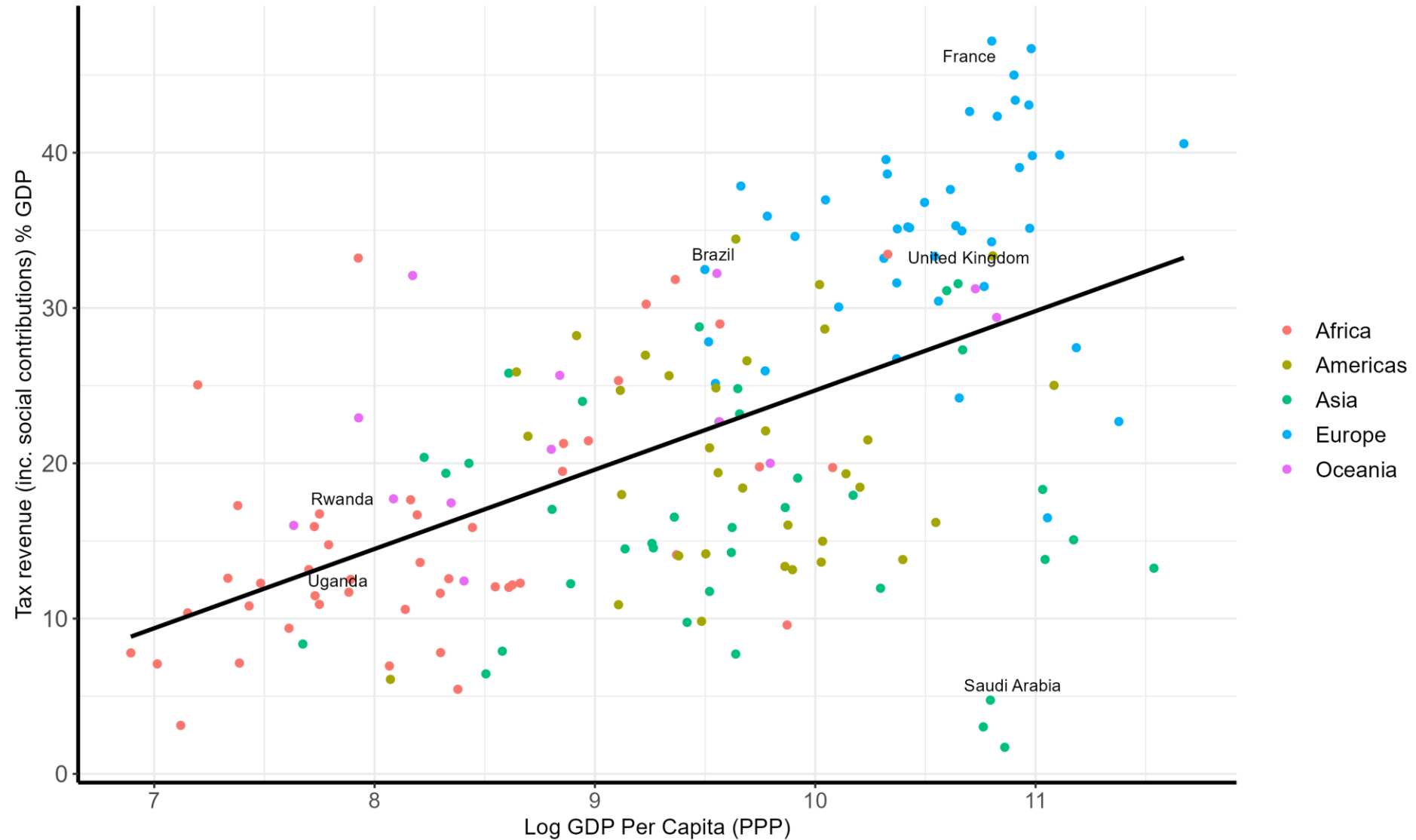


---

# Why should developing countries raise more tax revenue?

---

# Tax % GDP is much lower



Source: UNU-WIDER Government Revenue Dataset

# Urgent demands on tax revenue

- Developing countries have a strong need to raise tax revenue
- Demands to fund poverty reduction; investments in infrastructure and human capital
  - IMF (2019) estimates that low income countries will need to raise an additional 15.4% in GDP by 2030 to meet the sustainable development goals
- Reduced reliance on aid and resource revenues
- Taxation as a contributor to the development of the state

# Taxation and state development

‘The Participation Dividend of Taxation’, Weigel (2020)

- ‘No taxation without representation’ – historians have traced the growth of the state in Europe to the need to raise taxes (Tilly, 1992)
- Is there modern, robust empirical evidence for this?
  - Field experiment in Kananga, DRC
- Randomised property tax collection amongst the 356 neighbourhoods of the city
  - In control neighbourhoods, property tax compliance was 0.1%
  - In treatment neighbourhoods, property tax compliance rose to 11.6%
- Citizens from treatment neighbourhoods were 31% more likely to attend a town hall meeting
  - Attending a town hall meeting cost the equivalent of household daily income





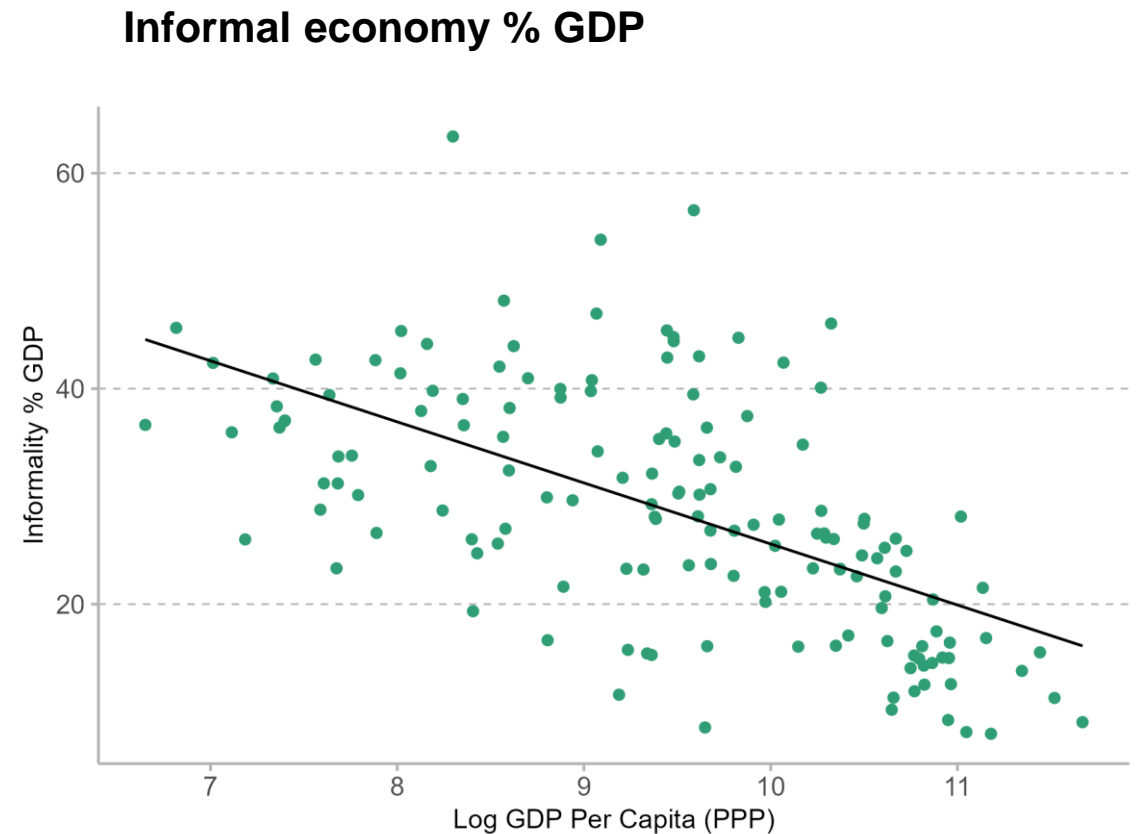
---

# How are developing countries different?

---

# High levels of informality

- Informality: production which is completely out of the reach of the government
- ~40% of the economy is in informal production (~90% of employment) in lowest income countries
- Note that informality  $\neq$  criminality
  - Some informality might also be evasion, but may also be exempted from taxation / under the registration threshold



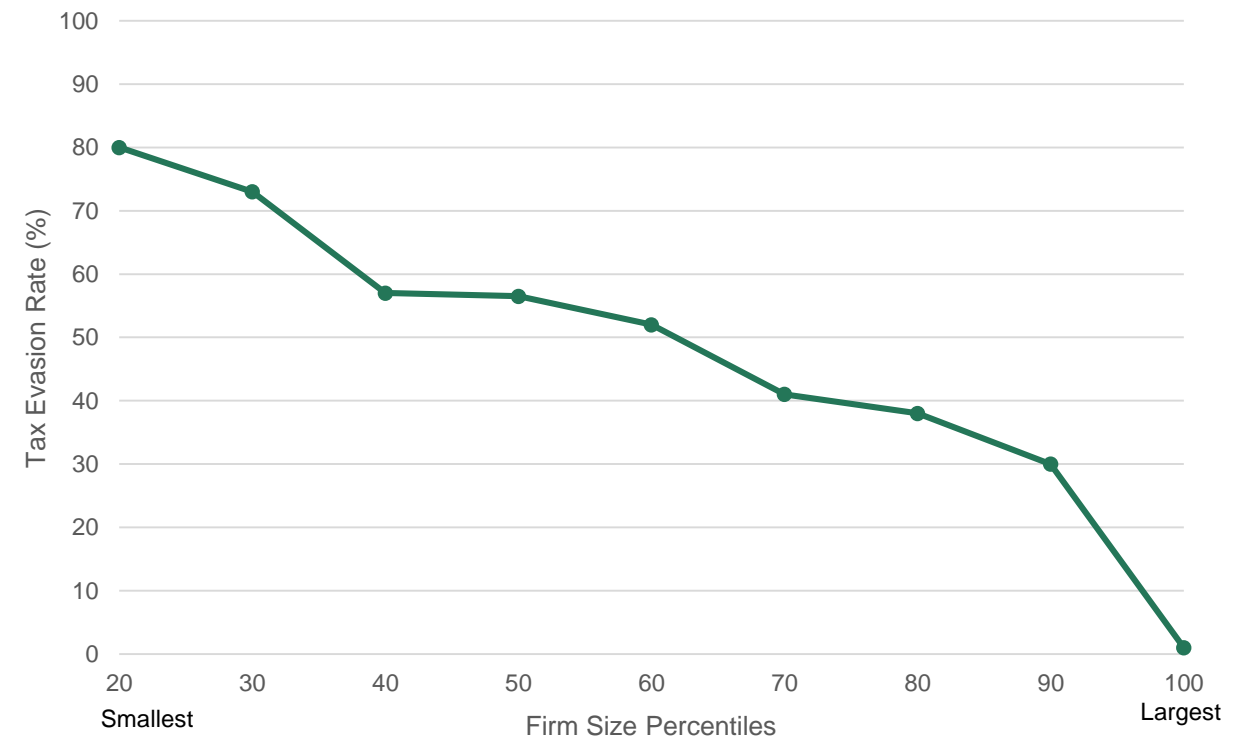
Source: World Bank



# High evasion within the formal economy

- Even within the formal economy, high rate of evasion
- Evidence from randomised audits in Pakistan show that almost 60% of firms at the median are evading

**VAT evasion rate by firm size in Pakistan, evidence from randomised audits**



Source: Best et al., 2021



---

# Improving tax administration

---

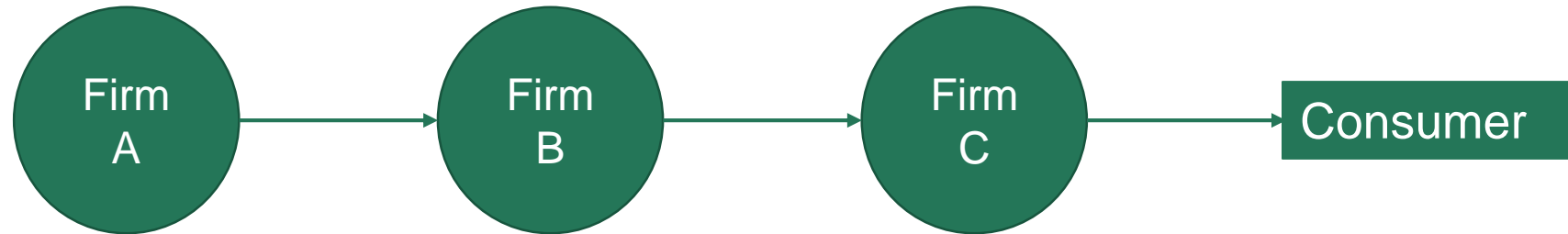
# Improving tax administration



- With such high levels of evasion, the process of collecting taxes (tax administration) is often as or more important than the structure of the tax system (tax policy)
- Tax evaders are not irrational – they balance the benefits of evasion against the costs of evasion
- Look at two studies with promising results
  - Third-party information: increase the probability of detection
  - Withholding: reduce the amount a firm can evade (and the benefits of evasion)

# Third party information in the context of a VAT

- A VAT is theoretically robust to evasion for B2B transactions
  - Firm A's outputs are Firm B's inputs; Firm B's outputs are Firm C's inputs
- Even with perfect B2B chains, tax authority cannot check whether Firm C's output VAT is correct



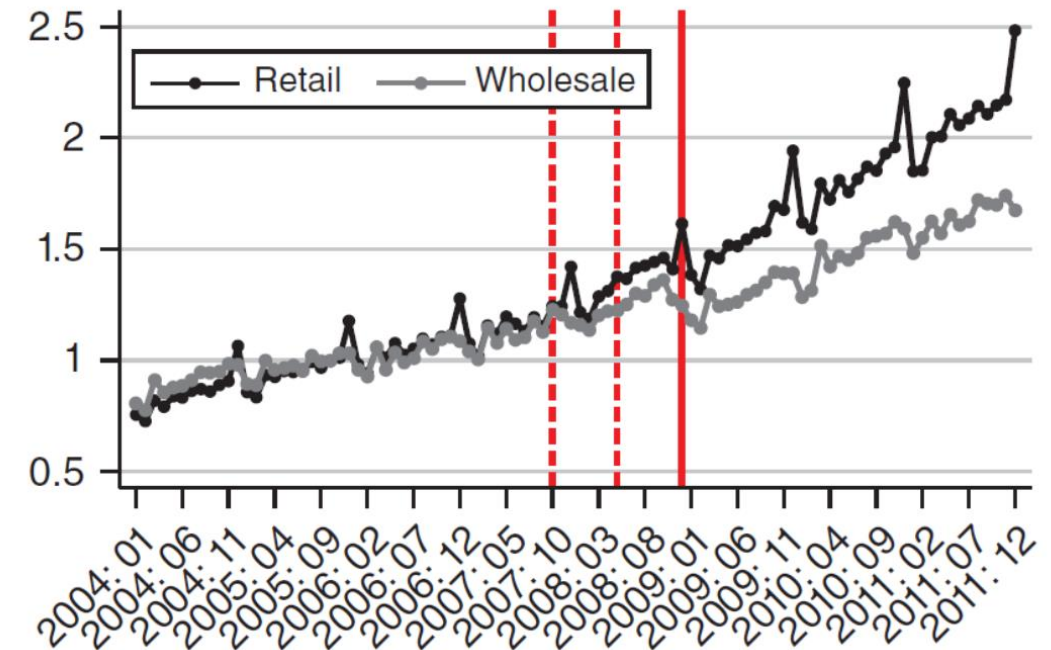
Firm	Sales	Purchases	Output VAT	Input VAT	Net VAT
A	100	0	20	0	20
B	300	100	60	20	40
C	900	300	180	60	120
Total					180

# Third-party information

‘Consumers as tax auditors’, Naritomi, 2019

- Solution → incentive consumers to ask for, and send in, receipts
- Consumers in Sao Paulo, Brazil, who get VAT receipts for purchases are entered into a lottery (of varying size – some prizes as small as \$5)
  - Very popular – 15 million people participated
- Difference in difference:
  - Retailers are the treatment group
  - Wholesalers are the control group – affected by similar macroeconomic factors, but not directly by the reform
- Increased reported tax liability by 26%, or 9.3% net of lottery rewards

Impact of consumer lotteries in Sao Paulo on log reported revenue



Source: Naritomi, 2019. Revenue is reported in logs and rebased to the average before October 2007.

# Third-party information

- Third-party information appears to have been successful in this context
- Third-party information can also be generated through electronic payments (Das et al., 2022) and electronic billing (Mascagni et al., 2021)
- Note that third-party information does not work in isolation
  - Almunia et al. (2019) find that tax authorities in Uganda do not use the existing third-party information to verify business-to-business transactions

# Withholding

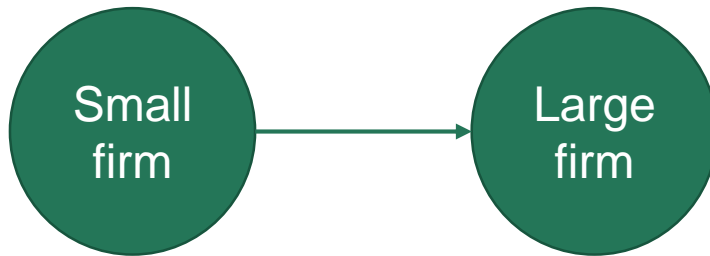


- Withholding: change who is legally responsible for paying the tax
- In almost all countries, personal income taxes are withheld by the employer
- Increasingly in developing countries, business taxes are subject to withholding (by designated large firms, government, credit card firms)
- Reduces the amount that small firms can evade

# Withholding

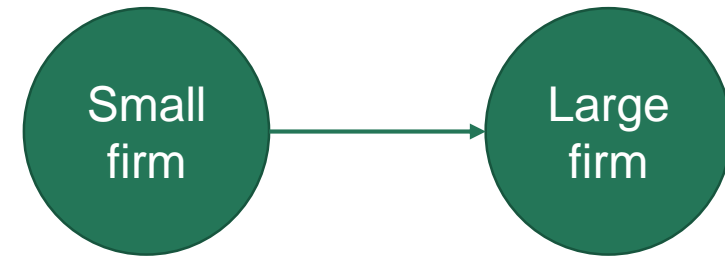
- Assume that all small firms evade 50% of their taxes
- Assume that there is a sales tax of 20%

## No withholding



Firm	Sales	Purchases	Sales tax owed	Sales tax paid
Small firm	100	0	20	10
Large firm	0	100	0	0

## Large firm appointed a withholding agent



Firm	Sales	Purchases	Sales tax owed	Sales tax paid
Small firm	100	0	0	0
Large firm	0	100	20	20

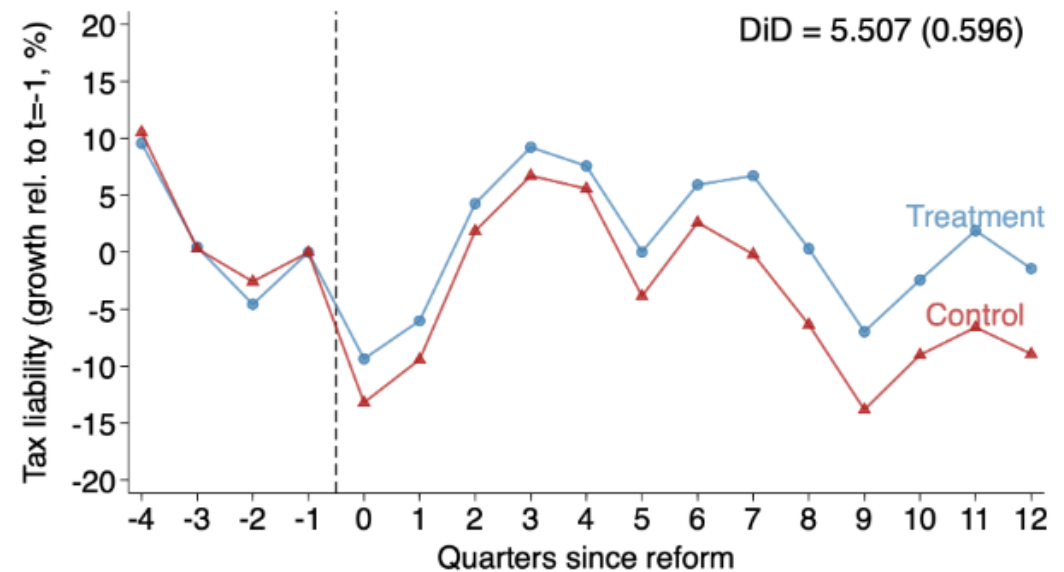


# Withholding

## 'Firms as tax collectors', Garriga and Tortarolo, 2022

- Studies the impact of withholding on sales tax in Buenos Aires
- Certain large firms are designated as withholding agents, and they have to collect the sales taxes made on sales by smaller firms to them
- Another diff-in-diff. Control: trading partners of firms that are required to withhold. Treatment: trading partners of firms that are not required to withhold
- Outcome: increase in tax paid by 5.5%
- Evidence withholding works from other contexts, in Pakistan (Waseem, 2022) and Costa Rica (Brockmeyer and Hernandez, 2019)

### Dynamic impact of sales tax withholding in Buenos Aires



Source: Garriga and Tortarolo, 2022



---

# Rethinking tax policy

---

# Rethinking tax policy

- Tax policy refers to the structure and design of the tax system
- Tax design in developing countries is often similar to those in high income countries, despite high evasion and informality
- Use VAT exemptions as an example of how tax policy in developing countries needs to be reconsidered given informality

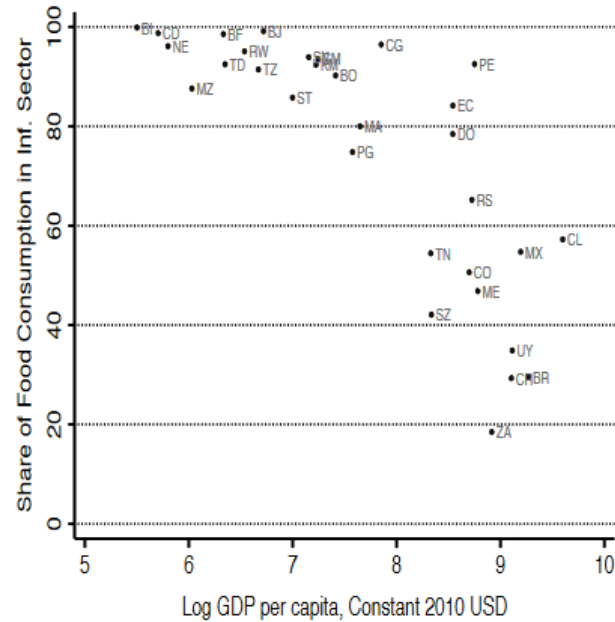
# VAT exemptions, equity and informality

- In both high and low-income countries, VAT exemptions / reduced rates on food are widespread, and justified on an equity argument
  - Poor tend to spend more as a % of income on food than the rich
  - Achieving equity is a typical goal of the tax system
- VAT exemptions are very costly in developing countries (often foregoing 25-40% of VAT revenue)
  - High informality in lower income countries means poor do not benefit from VAT exemptions
  - Better to remove VAT exemptions and spend on public goods / cash transfers

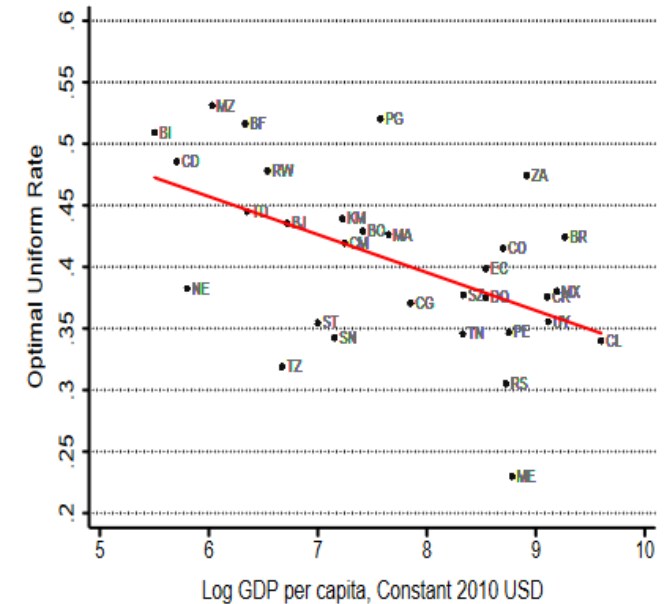
# VAT exemptions, equity and informality

- In poorer countries, food is overwhelmingly bought from the informal sector
  - Result holds true *within* countries as well
- Welfare-maximising VAT rates on food should be *higher* in lower income countries
- Redistribution via VAT constrained by informality

Share of food consumption in the informal sector, across countries



Optimal VAT rate across countries, accounting for informality



Source: Bachas et al. (2021). Figure on right assumes zero pass through of prices from formal to informal sector.



---

# Conclusions

---

# Conclusion



- Increasing tax-to-GDP is a key goal in developing countries
- High levels of informality, high levels of evasion make it difficult for developing countries to raise tax revenue
- Raising tax revenue requires:
  - Improvements in tax administration
  - Changing policy to account for high levels of evasion and informality
- Lots we haven't had time to talk about: multinational taxation, taxation of high net worth individuals
- Tax and development: fascinating from a research perspective, challenging from a policy perspective!

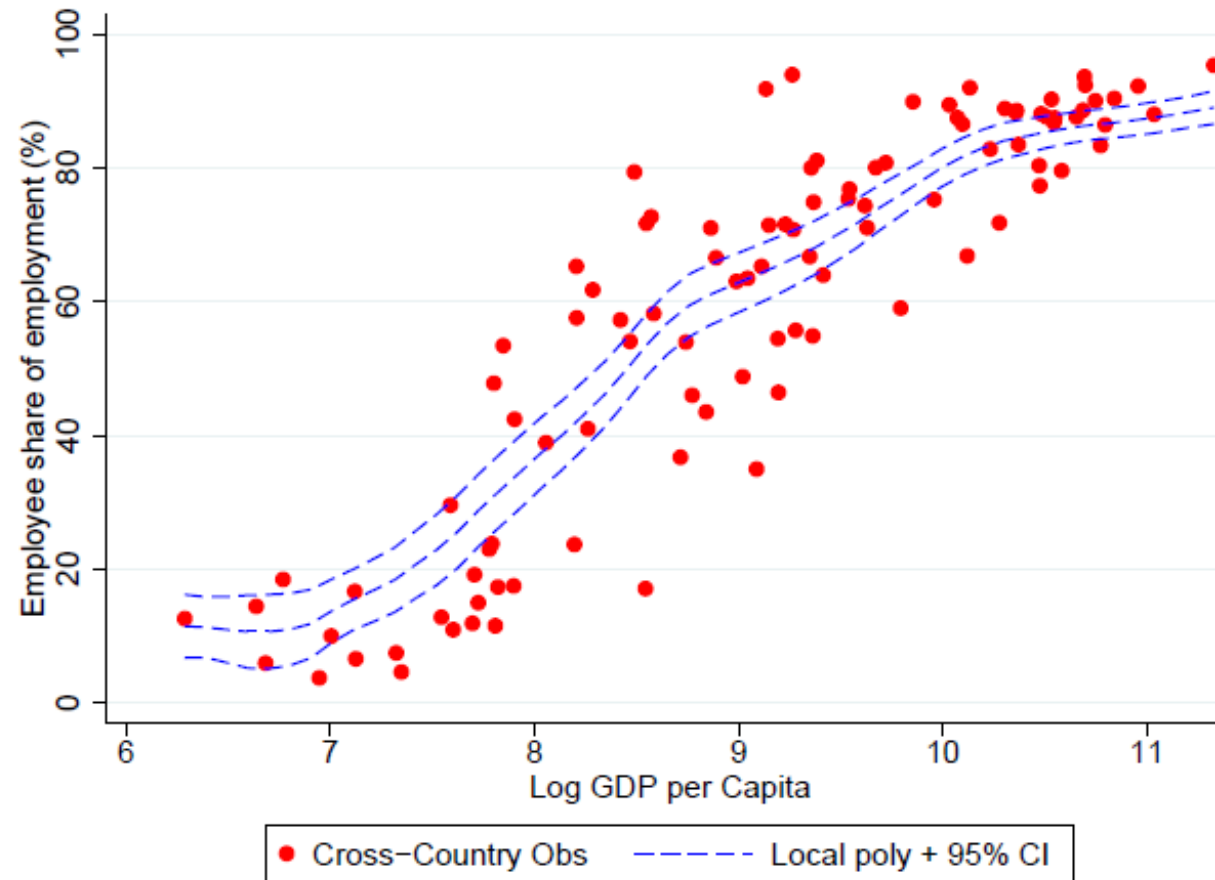
# References



- Best, M., Shah, J., & Waseem, M. (2021). *Detection Without Deterrence: Long-Run Effects of Tax Audit on Firm Behavior*.
- Brockmeyer, A., & Hernandez, M. (2019). *Taxation, Information, and Withholding: Evidence from Costa Rica*. World Bank, Washington, DC. <https://doi.org/10.1596/1813-9450-7600>
- Carrillo, P., Pomeranz, D., & Singhal, M. (2017). Dodging the Taxman: Firm Misreporting and Limits to Tax Enforcement. *American Economic Journal: Applied Economics*, 9(2), 144–164. <https://doi.org/10.1257/app.20140495>
- Das, S., Gadenne, L., Nandi, T., & Warwick, R. (2022). *Does going cashless make you tax-rich? Evidence from India's demonetization experiment*. The IFS. <https://doi.org/10.1920/wp.ifs.2022.0322>
- Garriga, P., & Tortarolo, D. (2022). *Firms as tax collectors*. [https://dtortarolo.github.io/WebPage/agip\\_networks.pdf](https://dtortarolo.github.io/WebPage/agip_networks.pdf)
- Mascagni, G., Mengistu, A. T., & Woldeyes, F. B. (2021). Can ICTs increase tax compliance? Evidence on taxpayer responses to technological innovation in Ethiopia. *Journal of Economic Behavior & Organization*, 189, 172–193. <https://doi.org/10.1016/j.jebo.2021.06.007>
- Naritomi, J. (2019). Consumers as Tax Auditors. *American Economic Review*, 109(9), 3031–3072. <https://doi.org/10.1257/aer.20160658>
- Pomeranz, D., & Vila-Belda, J. (2019). Taking State-Capacity Research to the Field: Insights from Collaborations with Tax Authorities. *Annual Review of Economics*, 11(1), 755–781. <https://doi.org/10.1146/annurev-economics-080218-030312>
- Tilly, C. (1992). *Coercion, capital, and European states, AD 990-1992* (Rev. pbk. ed). Blackwell.
- Waseem, M. (2022). The Role of Withholding in the Self-Enforcement of a Value-Added Tax: Evidence from Pakistan. *The Review of Economics and Statistics*, 104(2), 336–354. [https://doi.org/10.1162/rest\\_a\\_00959](https://doi.org/10.1162/rest_a_00959)
- Weigel, J. L. (2020). The Participation Dividend of Taxation: How Citizens in Congo Engage More with the State When it Tries to Tax Them. *The Quarterly Journal of Economics*, 135(4), 1849–1903. <https://doi.org/10.1093/qje/qjaa019>

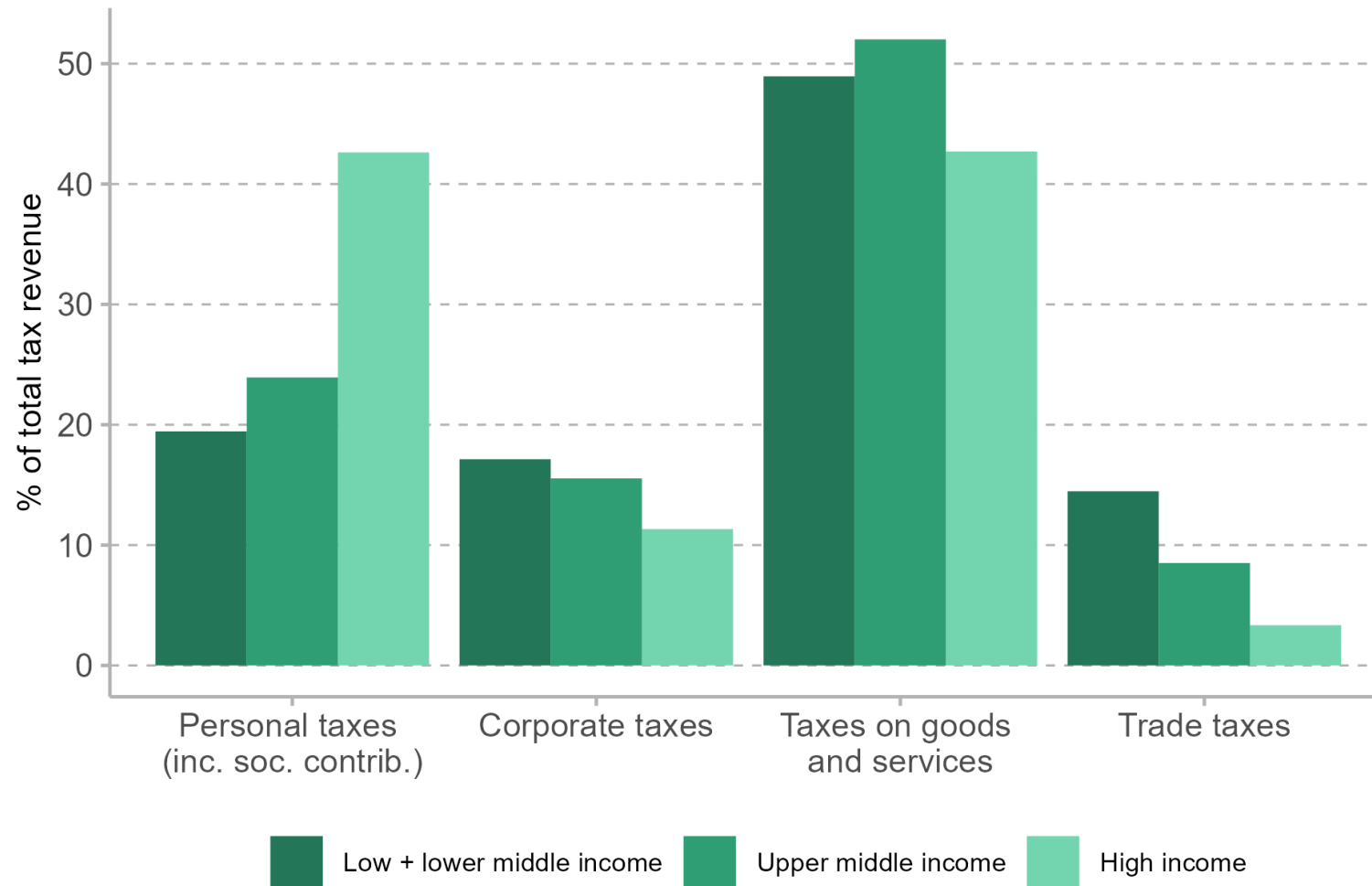


# Appendix: employee share



Source: Jensen (2019)

# Appendix: more taxes on goods and services, fewer taxes on personal income



Source: UNU-WIDER Government Revenue Dataset 2021.