Firm's (in)formality decision: The role of tax scheme

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Motivation: Taxes, firms and growth

- Tax policy in developing countries
  - Two aims of tax policy: production and revenue efficiency, often clash (Best et al. 2014).
  - VAT seems superior on both fronts, but high compliance costs? Very little evidence on how VAT works in high evasion environments (Pomeranz 2015; Keen and Lockwood 2010).
- Informality, firms and growth.
  - Regulation/tax policy provides firms with incentives to stay small/labour intensive $\rightarrow$ lower TFP? (Hsieh and Klenow 2009).
  - Understanding how tax policy changes can make firms enter the formal sector is first-order question for growth.

Objectives

- Understand how VAT affects firms' formality/evasion decision along the supply chain: a VAT (in)formality chain.
- Evaluation of a tax reform that limits the reach of the VAT.
- Study the effects of audit on firm behaviour.
- The influence of the firm position in supply chain on its tax compliance.

VAT and Compliance in a Nutshell

- Two types of firms: suppliers (upstream) sell to clients (downstream)
  - Value added = sales - inputs; → firms paying VAT must declare both to tax authorities.
- Benefits of VAT (relative to other taxes on firms):
  - Production efficiency: does not tax inputs (Diamond & Mirrlees 1971)
- Revenue efficiency:
  - Intensive margin: suppliers' sales are clients' inputs → threat of cross-check lowers evasion. Some evidence in Pomeranz (2015).
  - Extensive margin: clients deduct input tax for their purchases from formal firms → pay more for formal inputs → firms have incentive to adopt same formality status as their trading partners. VAT (in)formality chain, formalized in De Paula & Scheinkman (2010).
- Costs of VAT: compliance costs (account-keeping).
  - Most countries combine VAT with a turnover tax for small firms: suggests costs can exceed benefits.

Firm taxation in West Bengal

VAT main source of revenue.

- State government levies a VAT on sale of non-agricultural goods.
- Firms that pay VAT can deduct inputs purchased from other VAT firms from tax liability.

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Dual VAT system

- Small non-manufacturing firms can choose to pay a 0.25% turnover tax (small = turnover $<$ Rs. 5 million) instead of VAT .
- VAT firms that buy from turnover scheme firms cannot deduct the purchase from their tax liability $\rightarrow$ **turnover firms are 'VAT-informal'**: informal from the point of view of VAT firms.

VAT in West Bengal: Tax Reform

- Sep 2013: firms with turnover $<$ Rs. 5 million can now choose to pay a fixed amount once a year, no need to fill in forms. [Rs. 7,000 for turnover $<$ Rs 3.5 million and Rs. 12,000 for turnover between Rs 3.5 million and Rs 5 million]
    - Reform decreases the cost of choosing the turnover scheme.
    - With respect to VAT chain the reform decreases the cost of being "informal".
    - From the point of view of the government: trade-off between bringing in firms into VAT chain and collecting no tax from small firms.

Data: Firm data

Administrative data on 180,000 firms in VAT or turnover scheme for 2010-2011 to 2014-2015.

- Data on reported tax liabilities.
- Some data on goods produced: report sales and types of three main commodities sold.
- Some location information: tax charge (67 charges), postal code (not used so far).
- VAT firms must report transactions with other tax-registered firms (VAT or turnover).

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4 million annual transactions between firms.

- VAT-VAT transactions reported twice, good incentives to report truthfully.
- VAT-turnover transactions reported only by VAT firm. Possible under-reporting.
- Turnover-turnover transactions not reported.

Additional data

- Survey data -
  - Annual Survey of Industry. Establishments with more than 20/10 workers. Available 2010-2014, 2500 establishments in WB in 2010.
  - NSSO survey of unincorporated enterprises: covers all other firms, around 25000 establishments in WB in 2010 and 2015.

  Data on sales, inputs, commodities produced, and taxes paid in both surveys.

  Matching by industry type & location is feasible (extremely difficult)

Can we think of firms in turnover scheme as "informal"?

Differences VAT/turnover firms similar to formal/informal.

- Size: turnover firms must stay small → typically true for informal firms as well.
- Compliance: compliance cost a lot lower for turnover scheme → good option for firms that struggle to maintain accounts.
- Tax: tax liabilities (nearly) always smaller for turnover tax than VAT.

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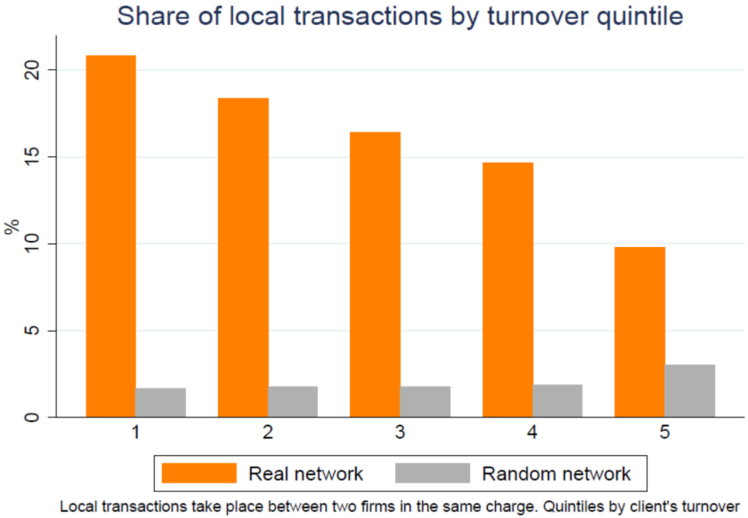
- Tax: tax liabilities (nearly) always smaller for turnover tax than VAT.
- Obviously not the same as informal. Will compare with real informal firms using survey data.
- But good setting to think about choice of tax scheme within trade network.

Firm characteristics

	Big firms	Small firms, VAT scheme	Small firms, Turnover scheme
Turnover (million Rs.)	80.2	1.6	1.8
No. of years	4.2	3.5	4.0
Kolkata (%)	32.5	30.0	15.7
Firm changes scheme (%)	1.4	3.7	16.0
Has a supplier (%)	80.7	65.5	63.9
Has a client (%)	67.2	39.2	3.3
Has a supplier and a client (%)	59.2	30.1	2.6
Observations	391048	247869	91298

Big firms: all manufacturers and firms with turnover $>$ Rs. 5 million.

Distance matters



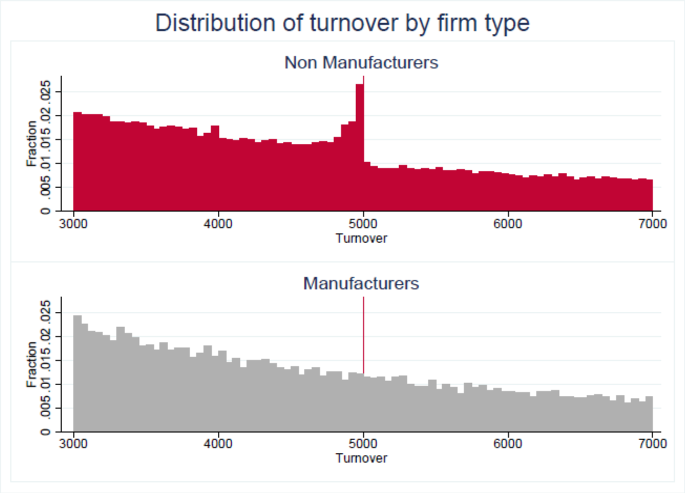
VAT & Compliance: Bunching

Key idea: use observed distribution of firms to infer 'VAT effect' on compliance ('bunching', Kleven 2015)

- If all firms could issue tax receipts - firms would choose turnover scheme as long as their value-added to turnover ratio is not too low.
- When turnover reaches Rs. 5 million, firm must pay VAT: discontinuous increase in tax liability $\rightarrow$ marginal tax rate $>$ 100% $\rightarrow$ firms should avoid having turnover $>$ Rs. 5 million, they should instead 'bunch' just below 5 million.
- Expect less bunching among manufacturing firms.

Comparing the extent of bunching for manufacturing and non-manufacturing firms enable us to measure the 'VAT effect' on formality choice.

VAT & Compliance: Bunching



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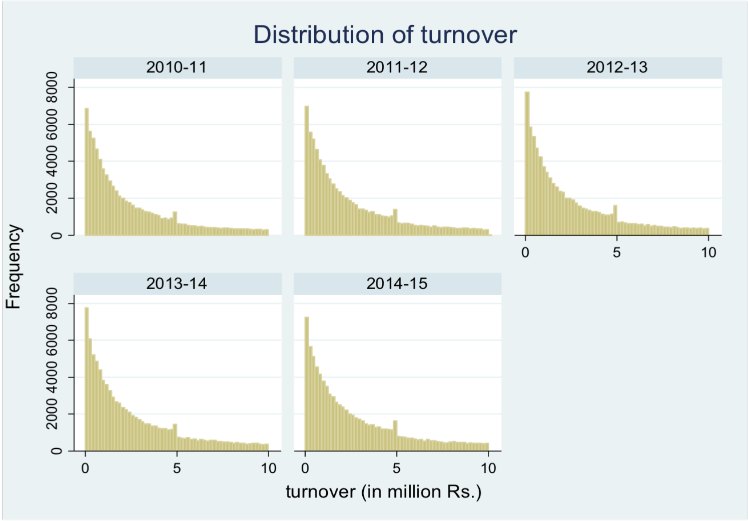
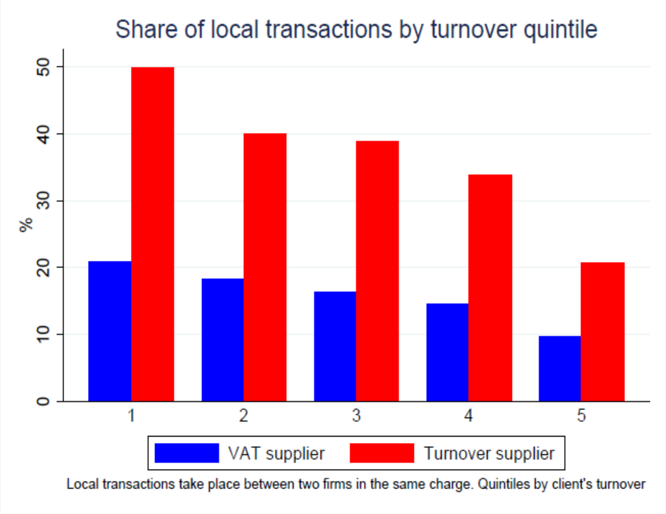


Distance & Supplier's tax status

Trade-off between distance and supplier's tax status

- Cost of input is price + transportation cost.
- VAT firms are more likely to trade with distant VAT firms than distant turnover firms (ITC incentive).
- Are transactions with turnover suppliers more likely to be local?

Trade-off: distance and tax status of supplier

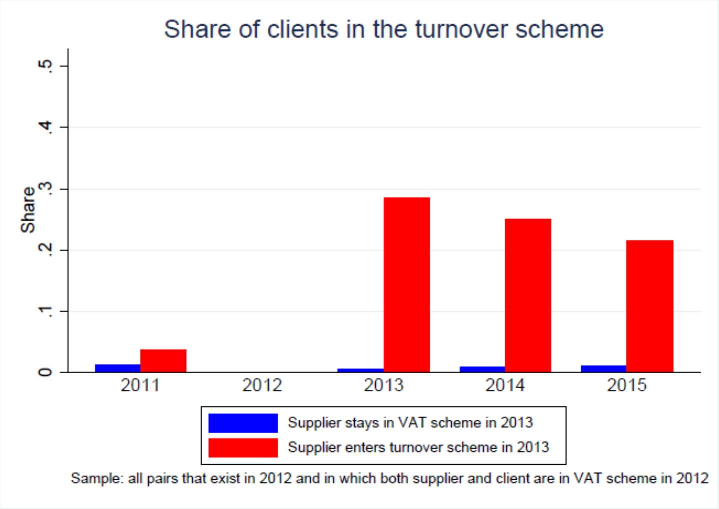


Tax status along the supply chain

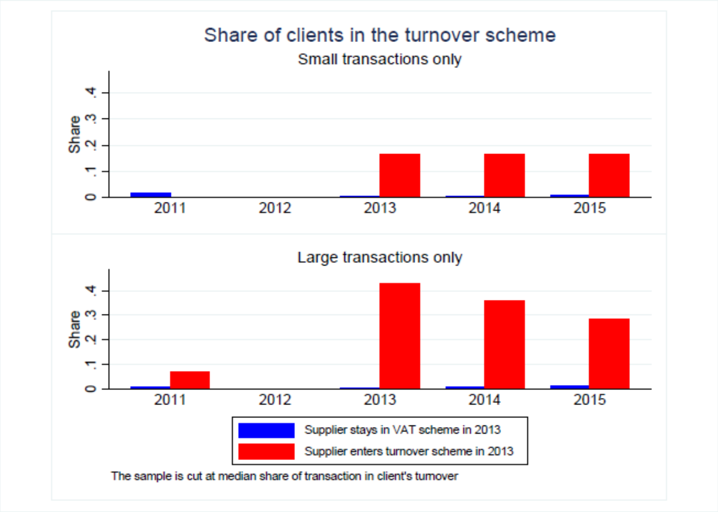
Firms with close potential formal suppliers more likely to be formal, all else equal.

- Holds in the cross section: VAT firms have more VAT suppliers.
- First pass: what happens to a firm when its supplier moves from the VAT to the turnover scheme?
- Client more likely to be turnover firm.

Firms 'follow' their suppliers when they change scheme...



Particularly when transaction is large



VAT scheme: Entry and Exit

	New entrant in VAT scheme	In VAT scheme in 2nd yr	In VAT scheme in 3rd yr
2011-12	13,861	-	-
2012-13	15,318	11,898 (86%)	-
2013-14	14,011	12,407 (81%)	10,206 (74%)
2014-15	11,434	11,007 (79%)	10.186 (66%)

- More than ten thousand firms enter the VAT scheme every year.
- The new entrants have at least 14% chance to move out of VAT scheme in next year.
- Life of a new entrant in VAT scheme is only 8 years?
- How is this high attrition related to VAT network structure?

Network: Transaction links

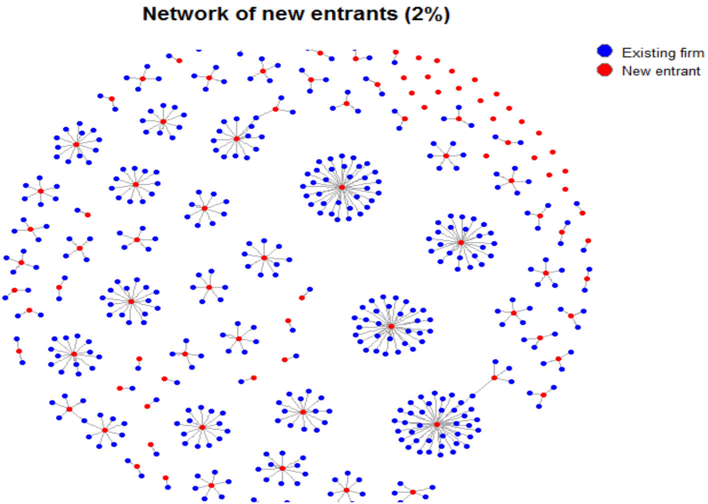


Figure 1: Kolkata 2011-12

Network: Transaction links

- 2011-12: On an average a new entrant has 6 links.
- A very few are highly connected with other VAT paying firms.
- There are also new entrants that do not have links with other VAT paying firms

Network: Transaction links and Survival

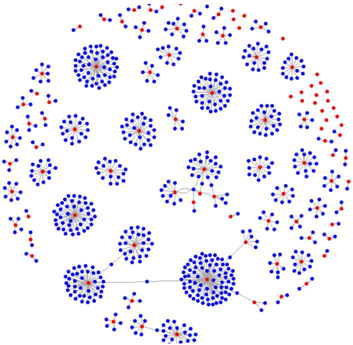


Figure 2: New entrants, in VAT scheme next yr

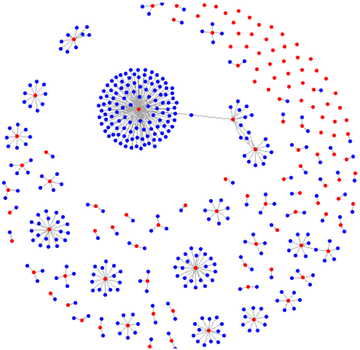


Figure 3: New entrants, not in VAT scheme next yr

Kolkata 2011-12

Conclusion

- Some evidence that dual VAT system provides firms with incentive to remain small - bunching below Rs. 5 million turnover.
- Distance matters: turnover suppliers are often local.
- Firms' tax status are linked - revenue multiplier effects and network inefficiency effects.
- New entrants with VAT paying suppliers are more likely to survive in the tax system - indication that input tax credit provides incentive for better tax compliance.

thanks