What You (Do Not) Get When Expanding the Net: Evidence from Forced Taxpayer Registrations

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- How effective are formalization programs in less developed countries?
- Evidence from existing formalization interventions is rather bleak
  - Visits by tax inspectors or large incentive payments effective, but costly (e.g. De Mel et al., 2013, de Andrade et al. 2016, Giorgi et al., 2018)
  - Providing information, reducing registration costs, or simplifying regulation hardly raises formalization rates (e.g. Bruhn and McKenzie, 2014).

Motivation

- **Tax authority digitization** allows for new enforcement strategies:
  'Most powerful tool for shifting light on the shadow economy' (OECD 2017)
- Allows comparing tax authority data with other government information
- **Testing ground South Africa: Snapshot synchronizations of business tax & commercial registry** in April 2008 and February 2014
- Determine effects on **tax registrations and revenue collection**
- Analysis relies on rich **tax administrative data**

  Business tax registrations (2007-2014)
  Business registrations at commercial registry
  Tax return and tax payment data 2009-2014

DIRECT EFFECTS

- Tax revenue collected from forcedly registered taxpayers depends
  - on the number of taxpayers drawn into the tax net
  - revenue collected per taxpayer; depends on behavior after registration
    - return submissions
    - income reporting
    - payment of tax due
- Firms that would have not voluntarily registered later: revenue collected is

$$\Delta\tau_i = \sum_t \underbrace{tr}_{\text{Tax Rate}} \cdot \underbrace{s_{it}}_{\text{Return}} \cdot \underbrace{\max(0, y_{it})}_{\text{Income}} \cdot \underbrace{p_{it}}_{\text{Payment}} \tag{1}$$

Firms must be

- profitable and
- tax-compliant

for authority to collect revenue

- In **weaker economic and enforcement environment**: post registration compliance may be weak and profitability low
- **Taxpayer selection** may drive a wedge between the behavior/characteristics of forcedly and voluntarily registered firms

- **Taxpayer selection and post-registration compliance: Effect ambiguous**
  - Positive correlation of compliance behavior across stages
    'Non-compliant types' show weak compliance on all stages
  - Negative correlation of compliance behavior across stages
    Firms with strong anticipated compliance behavior on post-registration stage select into non-registration

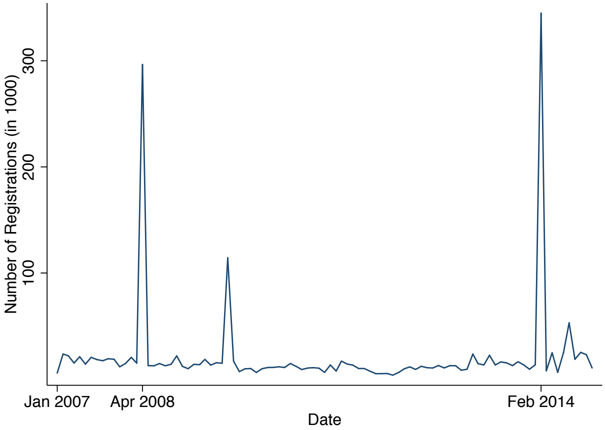
- **Taxpayer selection and firm size: Effect ambiguous**
  - Small firms with higher propensity to select into non-registration as risk to be targeted for non-compliance is lower
  - Large firms with higher propensity to select into non-registration as tax-savings/incentive to avoid post-registration stage are higher

- **Testing ground: South Africa**
  - Upper-middle-income economy; GDP per capita: 6001 US dollars in 2019
  - Tax-to-GDP ratio; 29.0% in 2015 (19.1% on African continent; 34% in OECD)
  - Corporate-tax-to-GDP ratio: 4.7% (2.7% in the OECD)
- **Business Taxation**
  - Proportional company tax rate of 28%.
  - Lower rates for 'Small Business Corporations'
- **Incorporation by CIPC Registration**
  - Business taxes are levied on incorporated firms only
  - Registration with Companies and Intellectual Property Commission (CIPC)
  - Benefits of incorporation include:
    - Limited liability of owners
    - Facilitated access to external capital
    - Opportunities for transactions with other formal businesses
  - Incorporated firms: above average productivity & size (OECD 2009, Alp 2009) likely fiscally valuable set of unregistered firms

- **Tax Obligations**
  - Firms must register with SARS within 21 days from CIPC registration, irrespective of their size or taxable income
  - Firms must submit tax returns for every tax year in which active
- **Enforcement**
  - Audits and fines on all compliance stages
  - Non-registration & late return submission
  - Income misreporting: understatement penalties

- **Registry Comparisons**
  - April 2008 and February 2014: Snapshot synchronizations of business tax and commercial registry
  - All non-compliers added to business tax registry
- **Data**
  - SARS's business tax registry
  - Population of business tax returns for tax years 2009 to 2014: reported taxable income, tax liability, sales, costs and assets, payment

Effect on Tax Registrations

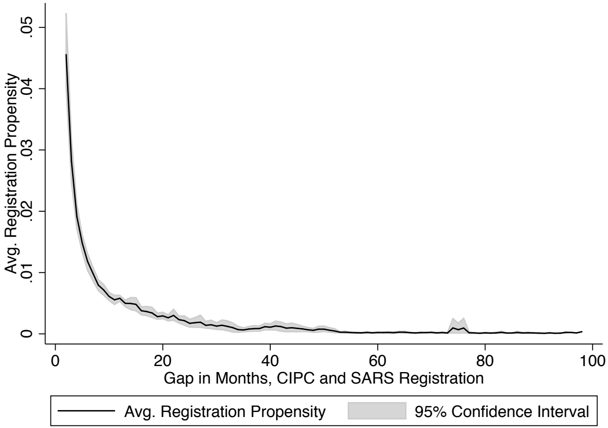


- Registry comparisons drew 274,822 (2008) and 311,378 (2014) firms into tax net
- Expansion of the tax net by 11% and 8% at the time of interventions
  $\Rightarrow$ **Interventions successful in bringing taxpayers into the tax net**

- **Low cost interventions**:
  - Outlays largely limited to contacting the forcedly registered taxpayers and informing them about registration and requesting submission of tax returns

- How many firms would have voluntarily registered with SARS at a later point in time in the absence of the intervention?
- Quantified for 2008 intervention based on observed voluntary registrations
  - Use information on registrations at CIPC and SARS prior to intervention
  - Propensity $\hat{\alpha}_\ell$ to register with SARS with an ℓ-month lag

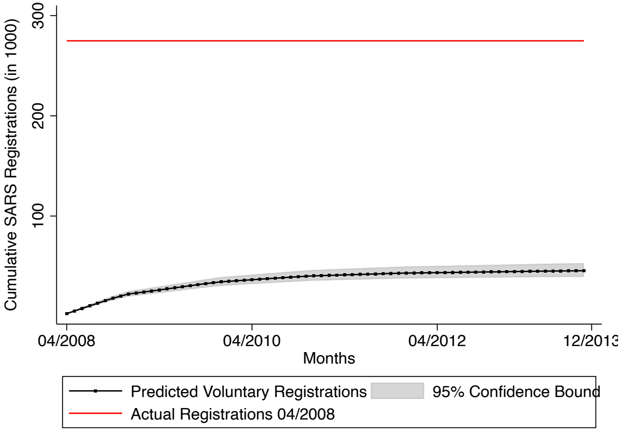
Effect on Tax Registrations



Effect on Tax Registrations

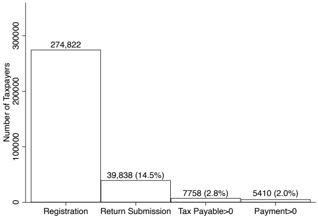
- **Number & timing of voluntary tax registrations in absence of interventions**
  - Voluntary registrations 2008 intervention: $\hat{R}_{ALL} = \sum_m \sum_\ell \hat{\alpha}_\ell C_{m-\ell}$, with $m \in \{04/2008, 05/2008, 06/2008....01/2014\}$
  - Results: $\approx 20\%$ of forcedly registered firms would have volunt. registered
- Potential caveat: registration propensities determined from pre-period
  - Determinants of tax compliance time-invariant (social norms, institutions,...)
  - Exception: Economic environment
    $\rightarrow$ Moderate economic downturn in ZA in our sample frame
  - Account for that by two strategies:
    - Estimate effect of unemployment on registration rates from province data: negative, significant but small effect $\rightarrow$ Adjust reg. propensities
    - Determine changes of voluntary registration propensities from observed post-intervention data for weakly treated areas

Voluntary Registration in Absence of 2008 Intervention (around 17%)

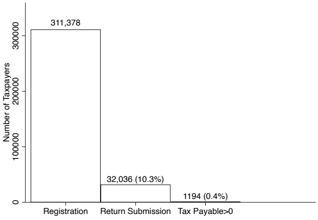


REVENUE EFFECTS

After Registration: Firms Hardly Pay Taxes



Registry Comparison in 2008



Registry Comparison in 2014

Figure 3: Post-Registration Behavior of Forcedly Registered Firms

Post-Registration Compliance: Forcedly vs. Voluntarily Registered Firms

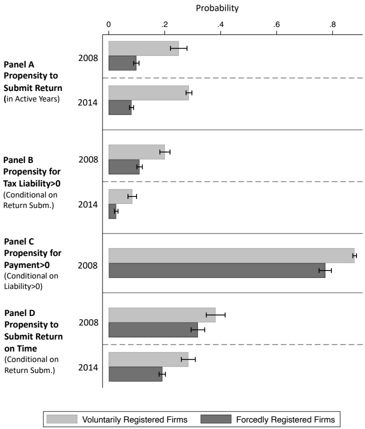
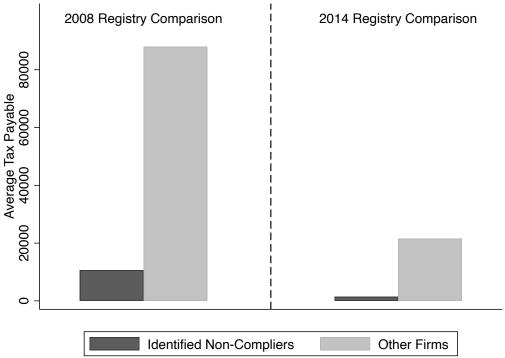


Figure 4: Post-Registration Behavior: Voluntarily vs. Forcedly Registered Firms

Level of Reported Tax Liabilities



- Return submission rates are...
  - ... small among forcedly registered firms
  - ... significantly below that of voluntarily registered firms
    Gap not explained by firm characteristics
    (year of CIPC registration, tax return year, host region)
    $\rightarrow$ Positive correlation of compliance behavior across stages
- Results not driven by inactivity:
  same registration gap emerges in years in which taxpayers are active

Level of Reported Tax Liabilities

- 80% gap in tax liability reported by forcedly and voluntarily registered firms
- Significant part of the gap explained by firm size
- Other observed characteristics without explanatory power

- In total: around 157,000 returns submitted between 2009-2014 by all forcedly registered firms from 2008 intervention
- Significant fraction (of positive tax liability/payment) returns would have also been received under the counterfactual
  (by taxpayers that would have voluntarily registered in absence of intervention)
- $<$ 2% of taxpayers that make positive revenue contribution
- 22 million US dollars in total
- Also *conditional on payments*, revenue contributions highly concentrated (Top 10/100/1000 firms contribute 30%/61%/94% of revenue)

Post-Registration Compliance: Forcedly vs. Voluntarily Registered Firms

Figure 5: Forcedly Registered Firms' Actual and Counterfactual Tax Return Submission

Other benefits and costs

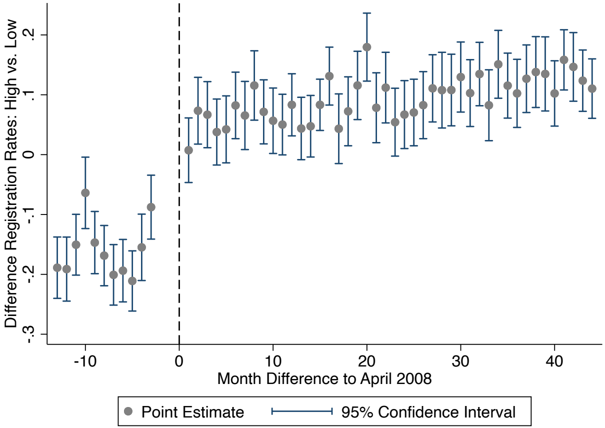
- Other benefits
  - Effects on other tax bases (VAT)
  - Effects on other tax years
  - Revenue from fines
  - Non-monetary benefits
- Other costs
  - Return submission costs (taxpayer)
  - Administration costs (tax authority)

INDIRECT EFFECTS

Deterrence Effects - Theoretical Considerations

- Enforcement interventions may collect revenue from targeted entities, but may also impact compliance in the population at large.
- Effect of registry comparisons theoretically unclear:
  - Signal of increased registration enforcement capacity
    $\Rightarrow$ Tax Registration Compliance $\uparrow$
  - New taxpayers may trigger congestion
    $\Rightarrow$ Tax Registration Compliance $\downarrow$
- Strategy: diff-in-diff design comparing strongly and weakly treated areas
  - Prior evidence: Enforcement spillovers in local networks
    (Lediga et al. 2020, Drago et al. 2020)
  - Focus on 2008 intervention
  - Treated grids: Firms learn about registration enforcement in networks;
    Control grids: Absorb common time trends in registration behavior

Deterrence Effects



Deterrence Effects

- Evidence for **timing responses** as well as genuine increase in the number of tax-registered firms
- No evidence for enforcement **spillovers to other compliance stages** (return submission and income reporting)
- Intervention **reduces number of firm registrations with CIPC**

Summary and Conclusion

- **Synchronizing business tax & commercial registry draws many firms in tax net**

  Implications for countries where tax and commercial registry are not synchronized

- **Although fiscally valuable segment of unregistered firms, revenue gains small**
  - Less than 2% of taxpayers that make positive payments
  - Implications: Target enforcement activities to large non-compliers; exempt small firms from business taxation (return submission requirements)

- **Some evidence for deterrence effects**

  Implications: Communication about successful administrative interventions or innovations may increase compliance