

Firms as Tax Collectors

Pablo Garriga
World Bank

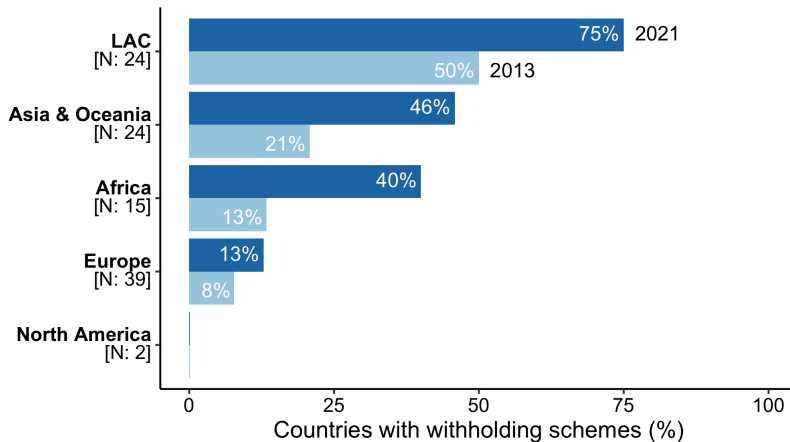
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9th Annual Mannheim Taxation Conference

September 8, 2022

- Govts in developing countries struggle to raise revenue and build tax capacity
 - ↑ taxes and/or ↓ non-compliance are standard tools
 - Yet achieving large-scale capacity requires fundamental transformations
 - Recent evidence of dramatic returns to improving tax administration (Basri et al., 2021)
- **Withholding systems** can help ease admin burden
 - Tax collection device where 3rd parties (large firms) collect/remit taxes on behalf of related parties (employees, firms)
 - Withholding of **personal income tax** is widespread (Besley and Persson, 2014)
 - Withholding of **indirect taxes** (VAT, sales, turnover) is increasingly used in developing countries, but remains largely understudied (Waseem, 2022; Brockmeyer and Hernandez, 2019)

Withholding of indirect taxes surged in many regions over the last years





Source: Own [Text analysis](#) on EY's 'Worldwide VAT, GST and Sales Tax Guide'

This paper

What are the implications of delegating tax collection duties to firms?



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1. Does tax withholding have an impact on aggregate revenue? **YES** 
2. Are withholding agents affected by this task? **NO** 
3. **How do firms respond when their commercial partners withhold taxes from them?**

This paper

What are the implications of delegating tax collection duties to firms?

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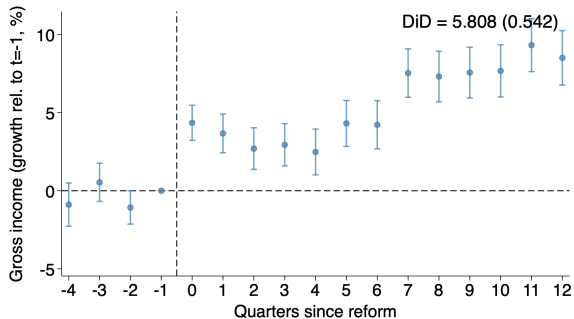
What we do:

- Exploit Δ in **turnover tax** collection system in the City of Buenos Aires
- Combine rich **admin tax data** + **two reforms** to the withholding system
→ Changed how the tax was collected, holding all else constant

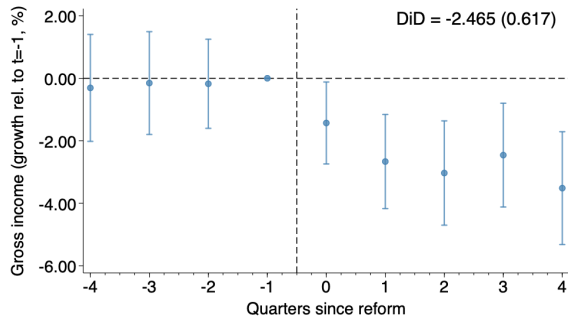
Preview of the findings

Changes in **tax collection** lead to sharp responses in taxpayer's self reported sales

↑ withholding \Rightarrow ↑ self reported sales



↓ withholding \Rightarrow ↓ self reported sales



Setting and Data

Subnational Turnover Tax

- Tax base: gross income (sales)
- Monthly electronic filing by taxpayer
$$\text{Outstanding balance} = \text{tax owed} - \text{amount withheld (if any)}$$
- Collection methods: key source of variation
 1. Direct payments (self-reported sales)
 2. Withholding by **collection agents (CAs)** ← Reform 1
 3. Withholding by banks ← Reform 2

Admin tax data

- Monthly tax filings
All line items required for filing TT
- Supplementary invoice summary from CAs
CAs report B2B transactions with trade partners

► Conceptual framework

► Tax filing example

► Reforms w/ raw data

► Summary statistics

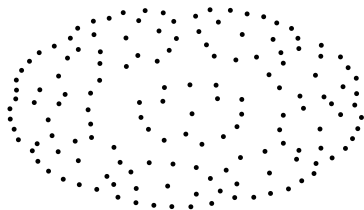
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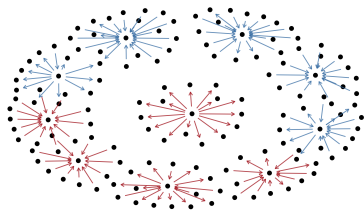
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Outline

Motivation

Setting and Data

Empirical Strategy and Results

Response to an \uparrow withholding

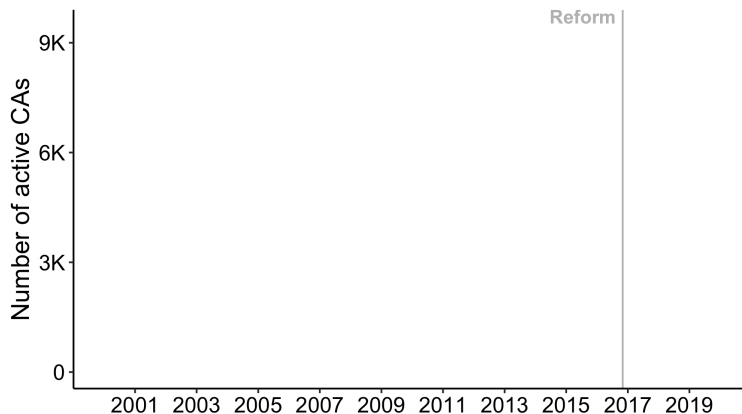
Response to a \downarrow withholding

Interpretation of Results

Closing remarks

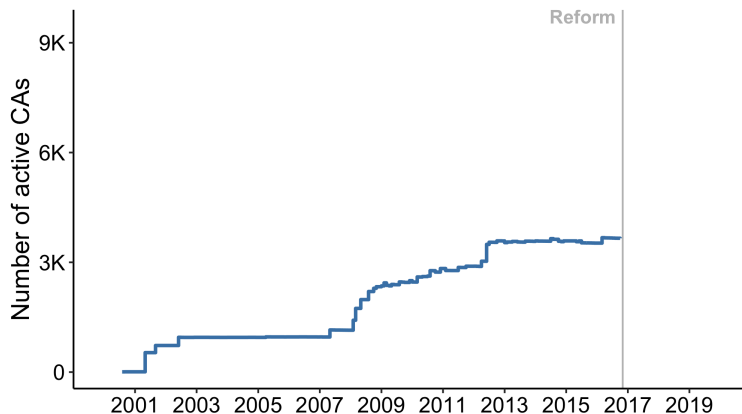
Reform 1: The net of tax collectors (CAs) doubled in size [▶ More details](#)

Nov 2016: firms appointed as CA if 2015 sales > AR\$60M (~97th ptile [▶](#))



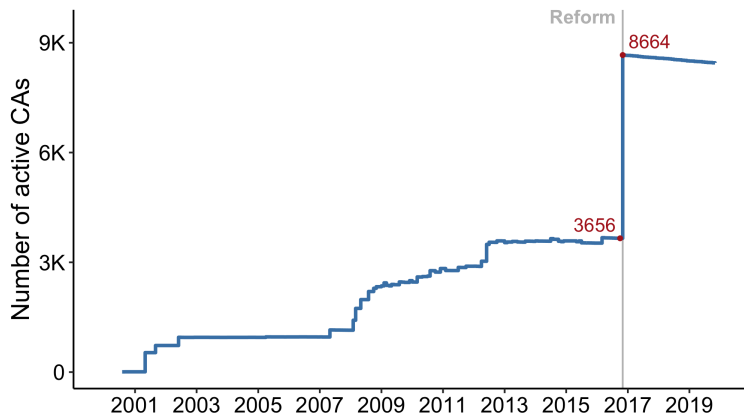
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Implication → more tax collected at source by CAs *in lieu* of direct payments [▶ Macro evidence](#)

Empirical Strategy and First Stage

- Goal: analyze taxpayers' responses to \uparrow in withholding
- **Diff-in-Diff** exploiting Δ in exposure to new CAs across taxpayers:

Control: linked to old CAs

\nearrow # CAs in Nov 16

Treatment: linked to new CAs

\uparrow # CAs in Nov 16

[▸ Reg. details](#)

[▸ Identification](#)

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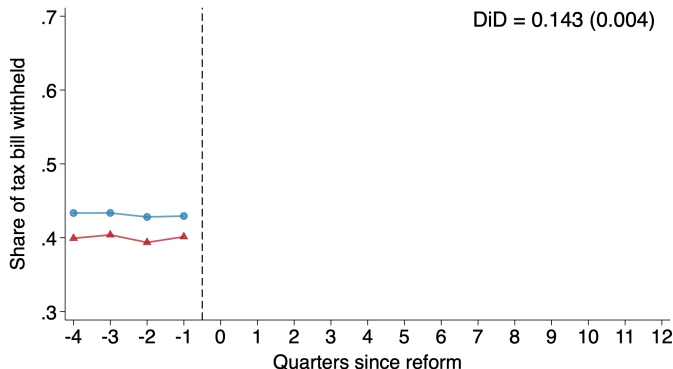
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Share of tax withheld by CAs



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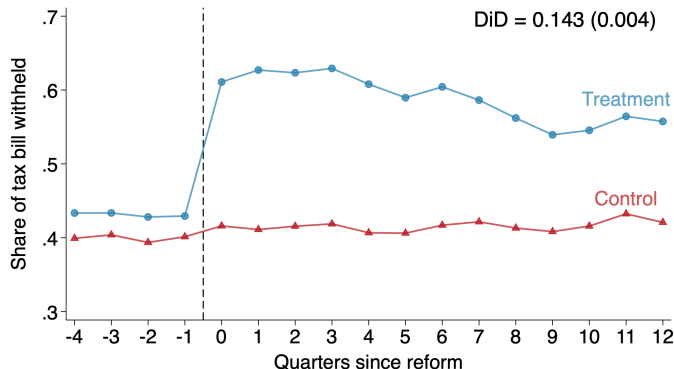
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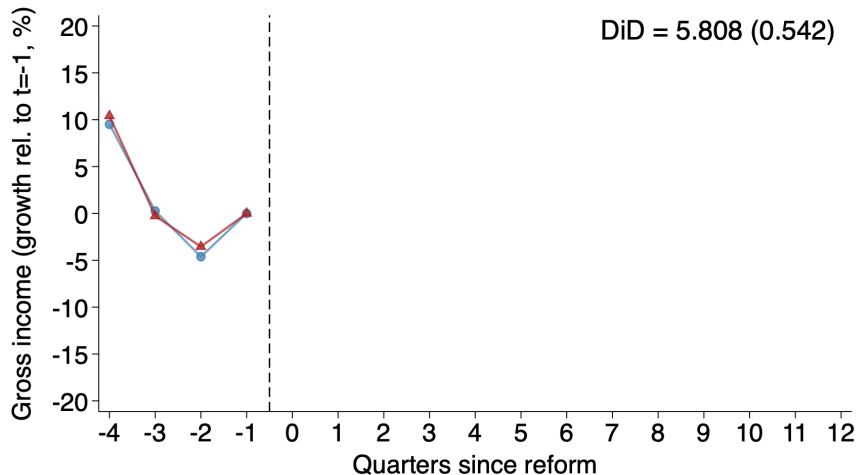
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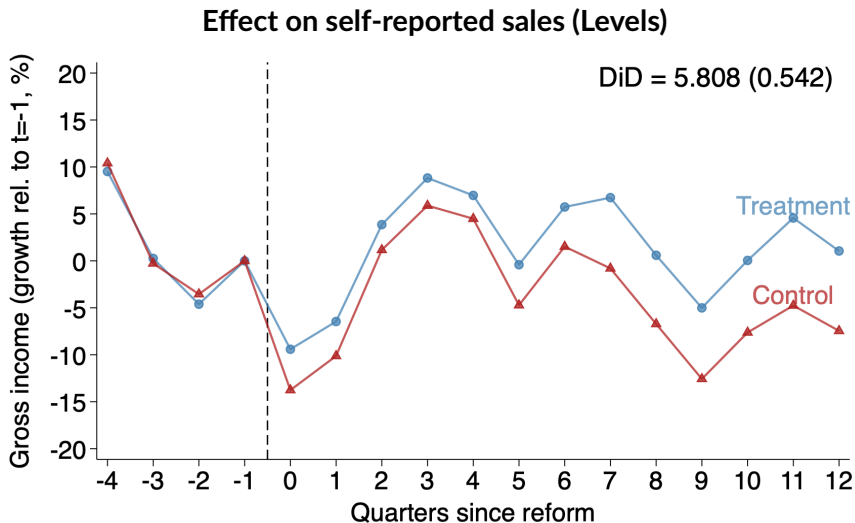


Self-reported sales \uparrow by 6 p.p. in response to 14.3 p.p. \uparrow in withholding

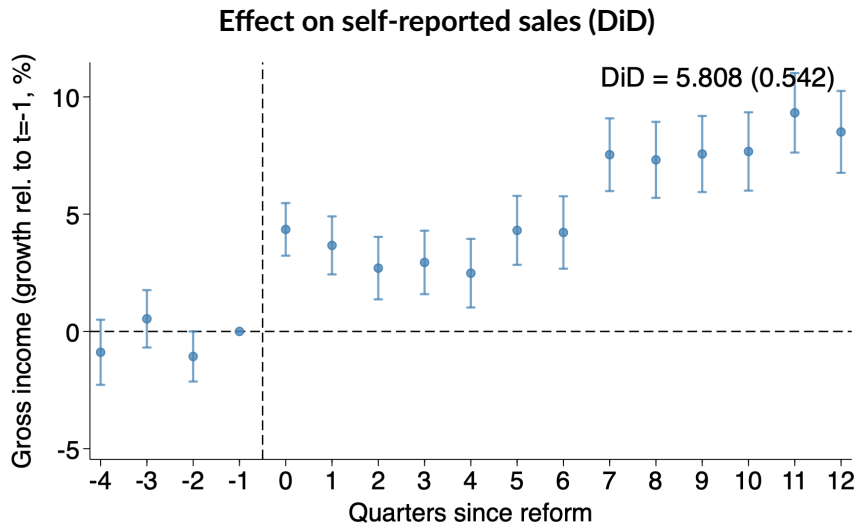
Sales growth evolves in parallel trends pre-reform



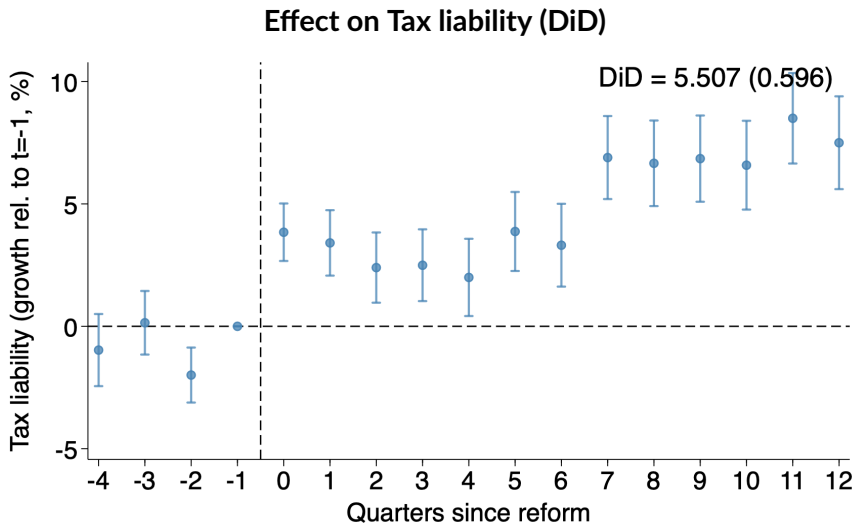
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In consequence, affected firms face higher taxes



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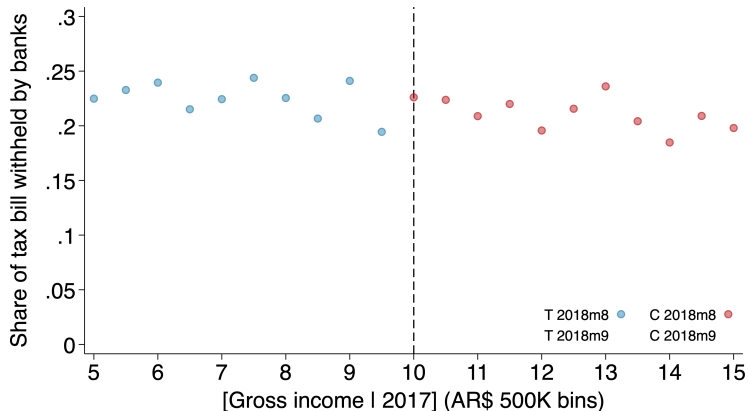
Closing remarks

Reform 2: Bank withholding fully waived for SMEs firms

Sep 2018: withholding by banks waived if 2017 sales < AR\$10M (~80th ptile)

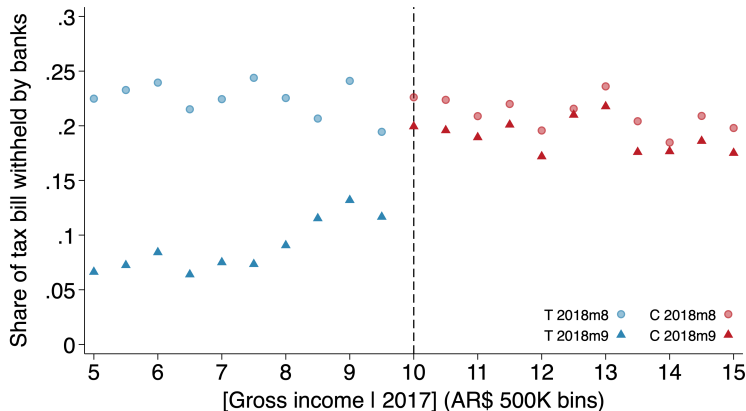
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Implication → decrease in tax withheld by banks for SMEs firms

Empirical Strategy and First Stage

- Goal: analyze taxpayers' responses to ↓ in withholding
- **Diff-in-Diff** grouping firms above/below 10m:

Control: AR\$10M and 20M
✗ bank withholding in Sep 18

Treatment: AR\$5M and 10M
↓ bank withholding in Sep 18

Empirical Strategy and First Stage

- Goal: analyze taxpayers' responses to ↓ in withholding

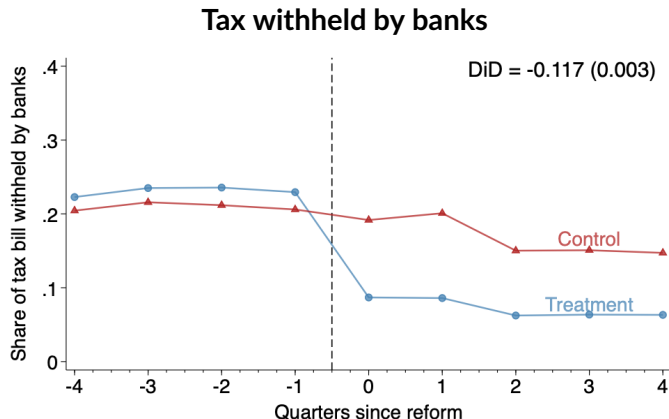
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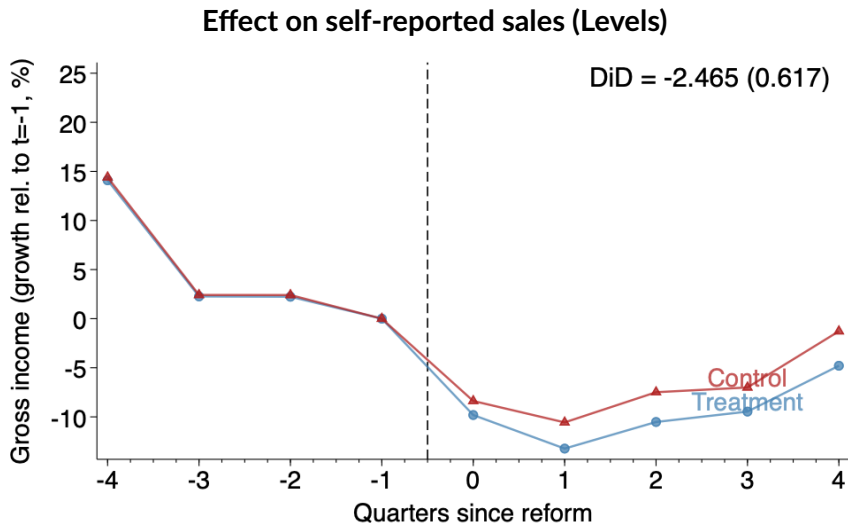
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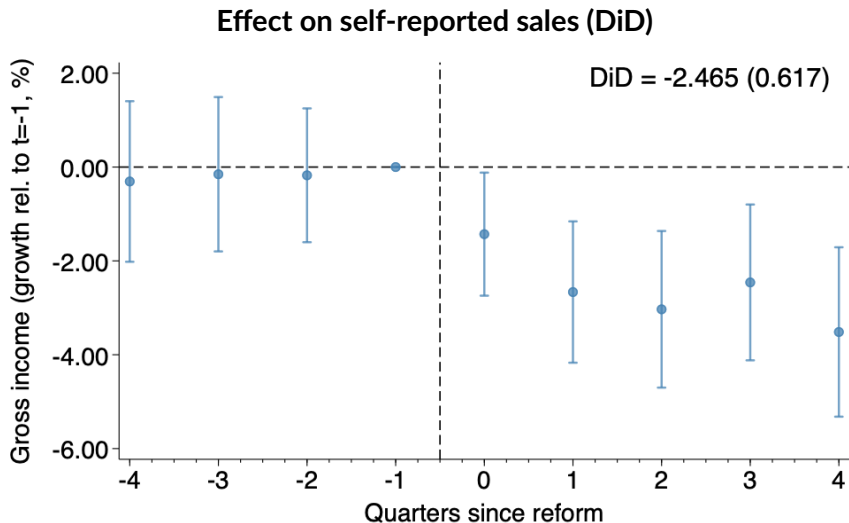
↓ bank withholding in Sep 18



Self-reported sales ↓ by 2.5 p.p. in response to 11.7 p.p. ↓ in withholding



Self-reported sales ↓ by 2.5 p.p. in response to 11.7 p.p. ↓ in withholding



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What's driving the response of self-reported sales?

- Aggregate impact should be interpreted as the **joint effect** of **3rd-party info** and **withholding** itself—as CAs do both simultaneously
- We can't separate the role of withholding vis-à-vis information reporting
- Yet, the **joint effect** is of first-order policy interest!
→ implementing/expanding withholding typically encompass both features

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Closing remarks and future work

Appointing firms as tax collectors is a promising tax administration tool

- \uparrow coverage of withholding \Rightarrow \uparrow reported income by taxpayers \Rightarrow \uparrow 10% revenue 
- Extra burden does not harm (large) CAs 
- Downside: Tax admin have incentives to over-withhold (interest-free loan)

Why not have every firm do this?

- Extra burden may hurt SMEs (e.g., need accountants, segmentation) [Gadenne et al, 2022]
- Over-withholding and unrefunded credits can affect firm activity [Pinto & Scot, 2022]

Thank you!

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Appendix

Related literature

Tax compliance and enforcement

Standard tax compliance model: which side of a taxed market remits is irrelevant, it affects the timing of tax remitted but not its amount

Remittance matters because avoidance/evasion opportunities differ across agents

[Slemrod \(2008\)](#), [Slemrod \(2019\)](#), and [Slemrod and Yitzhaki \(2002\)](#)

Modern tax systems

Firms play a crucial role: less costly to enforce taxes if there are fewer units to monitor, and if there is third-party reporting

[Kopczuk and Slemrod \(2006\)](#), [Pomeranz \(2015\)](#), and [Carrillo et al. \(2017\)](#)

Withholding of indirect taxes

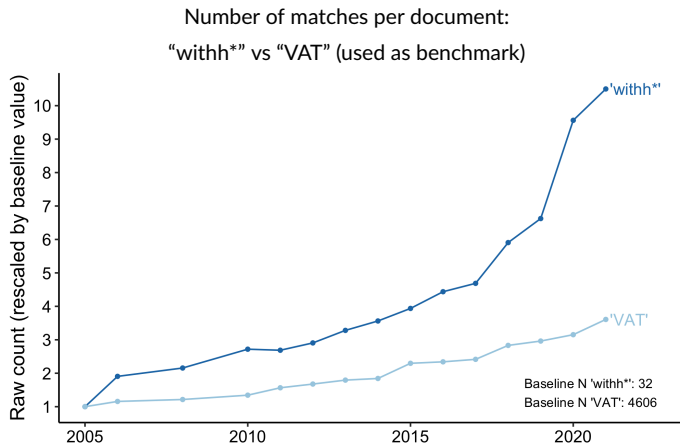
No remittance invariance: revenue increases when tax collection is moved upstream

Mechanisms: default payment, enforcement perc., withholding as a lower bound

[Kopczuk, Marion, et al. \(2016\)](#), [Brockmeyer and Hernandez \(2019\)](#), and [Waseem \(2022\)](#)

Text analysis

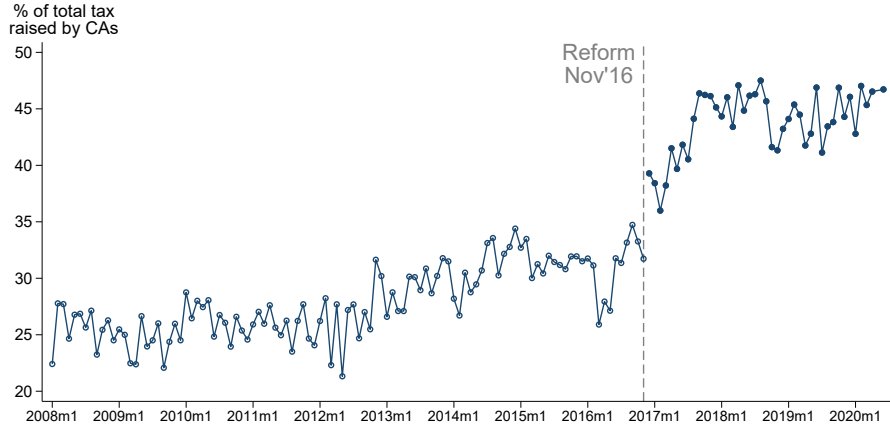
- Text analysis of EY's reports:
 - Match strings containing "withh*" (e.g., "withholding, withheld, withhold", etc.)
 - Split into country chapters where possible (2013 onwards)
 - Binary indicator if a country's chapter contains any matching strings
- There's a sharp increase in the number of matches over time



Macro evidence

Share of tax withheld

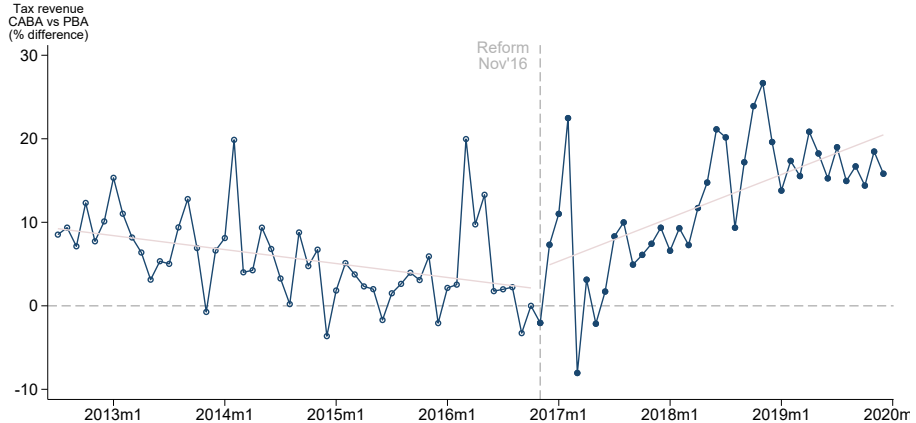
Increase in share of tax withheld by CAs



Macro evidence

Tax revenue

Increase in tax revenue (relative to a comparable district)

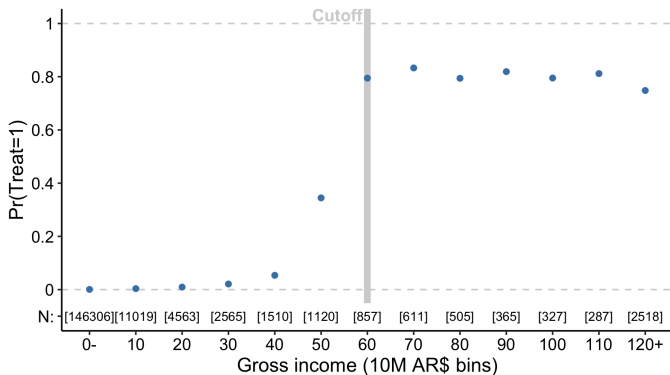


Response to appointment as CA

Empirical strategy and first-stage

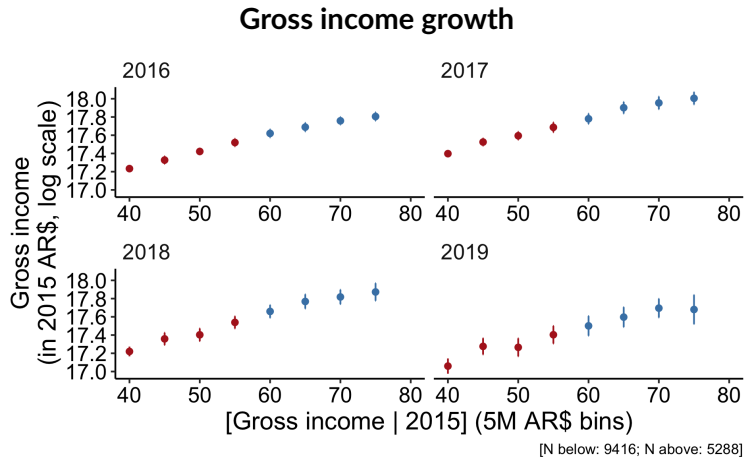
- **Nov 2016:** large firms appointed to collect taxes on behalf of clients/suppliers
- **Rule:**
2015 annual sales > AR\$60M
- **RDD:**
Compare sales of firms close to the AR\$60M cutoff
- Sales as proxy for commercial activity

Probability to be appointed as CA



Response to appointment as CA

Reduced-form



Response to appointment as CA

Interpretation of results

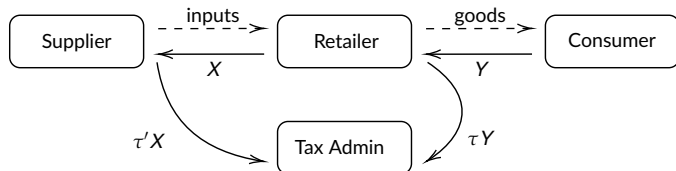
- CAs activity does not seem to be affected
- **Explanation:** These are **large/formal firms**
- Cash-flow benefit: small upside since it is short term and large firms are probably not financially constrained
- Administrative burden: may not be too high as these firms are likely to have streamlined accounting practices
- Scrutiny from govt: does not induce higher compliance as they are already formal



Conceptual framework

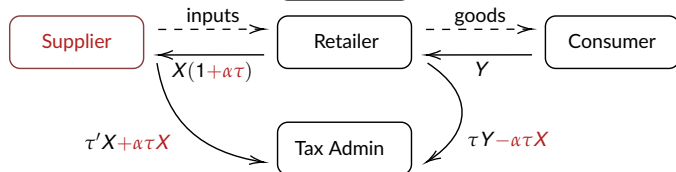
Direct payment

- $\tau'X, \tau Y$ self-reported



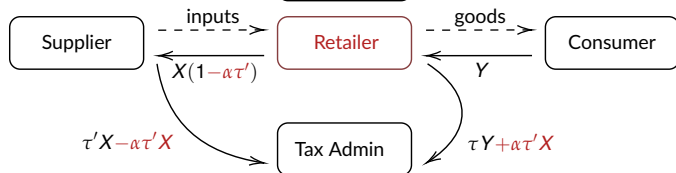
Withholding (Seller)

- **Supplier** now charges $X(1 + \alpha\tau)$ with $\alpha \in (0, 1)$
- Remits $\alpha\tau X$ to TA
- Retailer only owes $\tau Y - \alpha\tau X$



Withholding (Buyer)

- **Retailer** now pays $X(1 - \alpha\tau')$ with $\alpha \in (0, 1)$
- Remits $\alpha\tau'X$ to TA
- Supplier only owes $\tau'X - \alpha\tau'X$



Conceptual framework

Withholding through CAs implies **2 main changes on tax payments**

- **WHEN:** tax filing date (end of the month) vs in advance (at source)
- **WHO:** direct payment vs withheld amount remitted by 3rd party

Implications

- **For linked firms:**
 - Withheld amount is reclaimed automatically:
 - Lower-bound on self-reported sales and tax owed
 - Third-party information reporting (enforcement perceptions)
 - Might distort the choice of trade partners towards non CAs
- **For CAs:**
 - Administrative burden
 - “Cash-flow benefit”
 - Scrutiny from govt (enforcement perceptions)

Tax filing example

Mi Portal - Clave Fiscal x ARBA x +

No seguro | www10.arba.gov.ar/IBPresentaciones/detalleDJView.do#

Datos de la DJ		
Vencimiento	01/06/2020	
Inicio	02/03/2021	
Cierre		
Ingreso año anterior	\$ 114.926,00	
Resumen de totales		
Gravados	\$ 3.500,00	Carga de la DJ
No gravados	\$ 0,00	Modificar
Exentos/Gravados Tasa 0 %	\$ 0,00	
Deducciones declaradas por los agentes	\$ 104,00	
Deducciones declaradas por el contribuyente	\$ 104,00	Deducciones
Compensaciones	\$ 0,00	
Impuesto determinado de periodo	\$ 466,00	
Monto imponible declarado total	\$ 3.500,00	

[Volver](#) [Eliminar](#) [Enviar](#) [Imprimir resumen](#)

Withheld tax

Tax liability

Tax filing example

Mi Portal - Clave Fiscal

ARBA

← → ↻

No seguro | www10.arba.gov.ar/IBPresentaciones/preCerrarDJ.do

🔍

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⋮

CUIT:

Razón social:

Nro comprobante:

Año - Período:

Régimen:

Tipo de DJ:

Datos de la DJ

Impuesto determinado o monto mínimo	\$ 466,00
Deducción Art. 208 CF (T.O. 2011)	\$ 0,00
Saldo a favor anterior	<div>Ingrese saldo y recalculé \$ 0,00</div>
Pagos a cuenta registrados(Original)/RFOCB	\$ 0,00
Crédito fiscal COPRET	\$ 0,00
Honorarios profesionales (posterior Año 2003)	\$ 0,00
Crédito por pago CIC	\$ 0,00
Deducciones	\$ 104,00
Compensaciones	\$ 0,00
SALDO A FAVOR DE ARBA	\$ 362,00
Monto no gravado	\$ 0,00

Tax liability

Withheld tax

Outstanding balance

Continuar

Cancelar

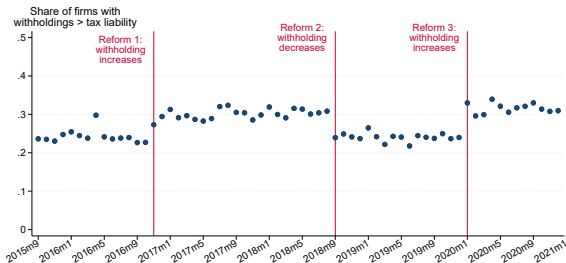
Documenting the reforms with raw data

Tax withholdings versus tax liability

Share of withholding to liability (median)



Share of firms overwithheld

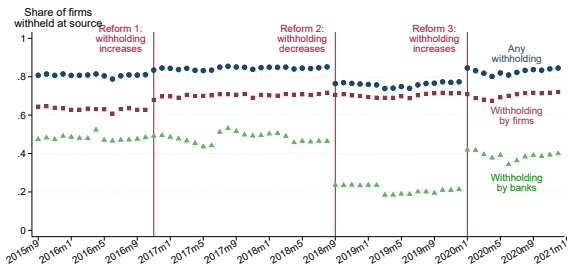


- R1: \uparrow withholding explained by a combined extensive- and intensive-margin increase of reverse withholding in the purchase of inputs
- R2: \downarrow withholding driven by an extensive-margin decrease in bank withholding.

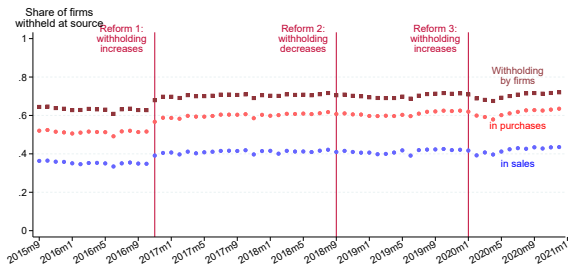
Documenting the reforms with raw data

Tax withholdings: extensive margin

Share of withheld firms per month



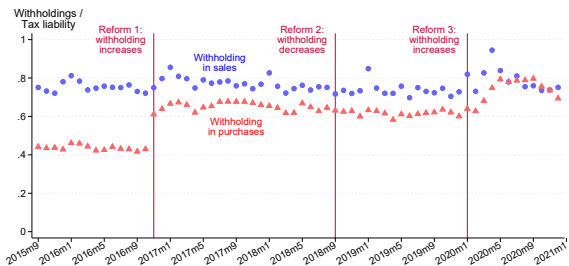
Withholding in sales and purchases



Documenting the reforms with raw data

Tax withholdings: intensive margin

Withholding by commercial partners



Withholding from banks



Summary Statistics

Firm statistics (Jan–Oct 2016)

	N firms	Gross revenue				Tax liability			
		p5	p50	mean	p95	p5	p50	mean	p95
<i>Panel A: Full sample</i>									
Firms	183,503	0	42	249	1,052	0	1	6	28
Collection agents	9,366	3	2,757	19,209	39,947	0	85	942	1,451
<i>Panel B: Estimating sample</i>									
Firms	80,208	7	123	415	1,664	0	3	11	45

Withholding statistics (Sep 2016)

	N Firms	Withheld firms	Withholdings / Tax liability				
		share	p5	p50	p75	p95	mean
Total withholding	132,897	0.806	0.029	0.434	0.969	2.643	0.770
<i>By type of withholding:</i>							
Sales to CAs	132,897	0.351	0	0	0.188	1.094	0.256
Purchases from CAs	132,897	0.514	0	0.002	0.116	0.923	0.214
Bank deposits	132,897	0.473	0	0	0.280	1.373	0.279

Main reform: more details

Nov 2016 reform

- **Appointment rule:** firms enrolled as CAs if 2015 annual sales > AR\$60M
- Appointment was binding, firms were not allowed to opt out
- Firms in some industries were included/excluded regardless of size
- One time policy, no further implementations of the rule beyond Nov 2016

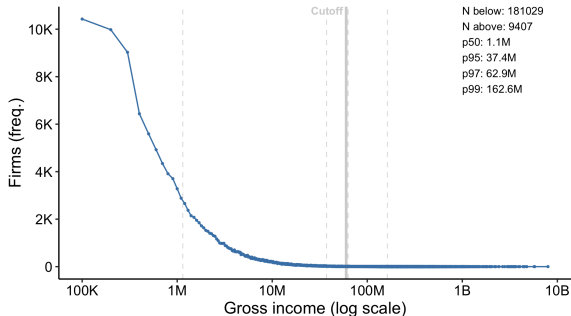
Implications for CAs

- **Pros:** Cash-flow benefit (short term, monthly remittance)
- **Cons:** Administrative burden (manage other's taxes), scrutiny from govt (comply with more rules)



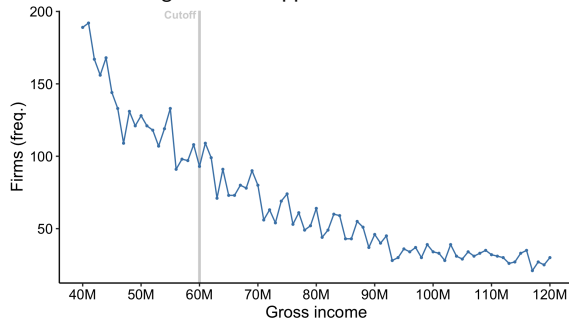
Firm size distribution

Pre-reform gross income distribution



Notes: Gross income bins of size 100K and 1M AR\$ (~ 8K and ~ 80K \$), respectively; "Cutoff" indicates the location of income threshold; Dashed lines indicate p50, p95, p97, p99, respectively; Showing relevant part of support in each plot.

Zooming in around appointment rule cutoff



Empirical strategy

$$y_{it} = \sum_{\tau=-q}^{-1} \delta_{\tau} \cdot D_{i\tau} + \sum_{\tau=0}^m \beta_{\tau} \cdot D_{i\tau} + \theta_i + \varepsilon_{it}$$

- i indexes firms and t calendar-quarters
- $D_{i\tau}$: event-study indicator for each quarter relative to the baseline period
 - Baseline period: Nov16-Jan17
- θ_i firm FE
- SE clustered by firm
- Balanced panel of firms

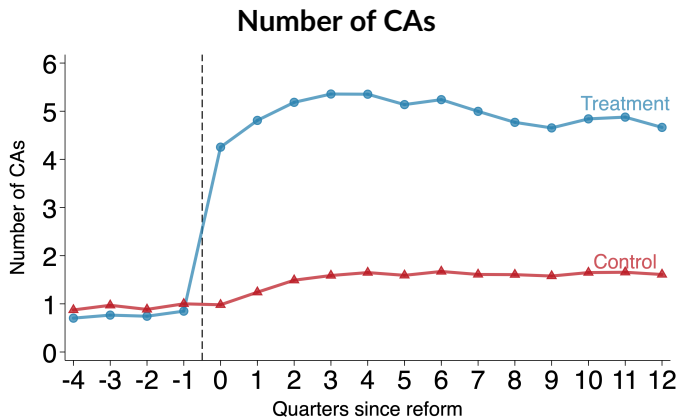
Identification

- At least one firm has to be CA to observe commercial links
- Firms connected to new CAs, November 2016 or later
- Assume links are stable within the first 6-months after reform
- **Construct T and C based on observed links between Nov 16–Apr 17**
- Short-run churning → measurement error in the assignment to T and C

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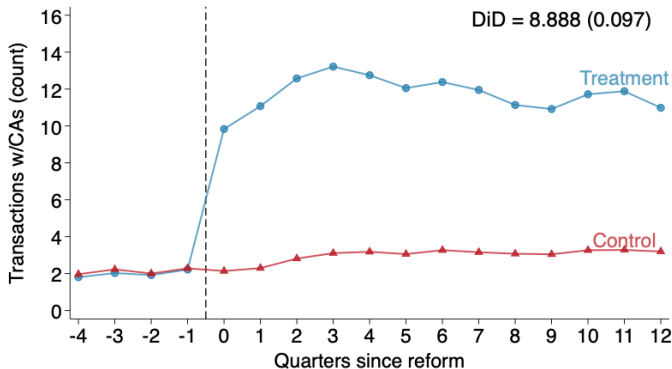


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No. of transactions with CAs

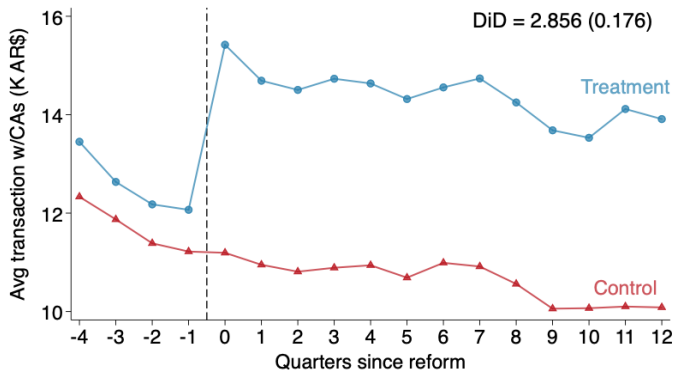


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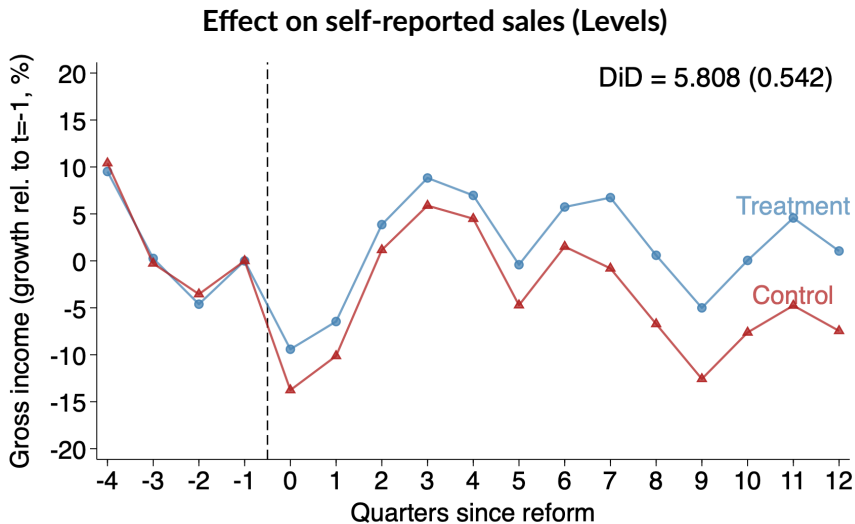
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- Short-run churning → measurement error in the assignment to T and C

Linkages persist beyond 6-months of the reform:

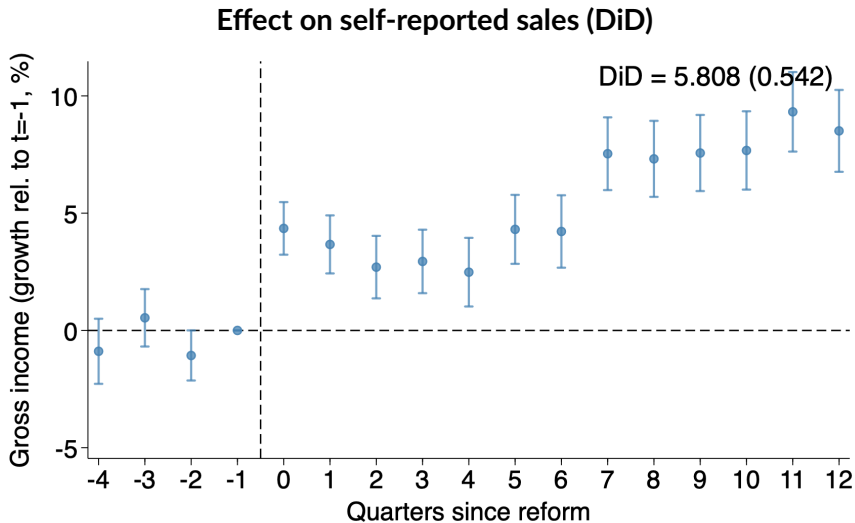
Avg. transaction amt. with CAs



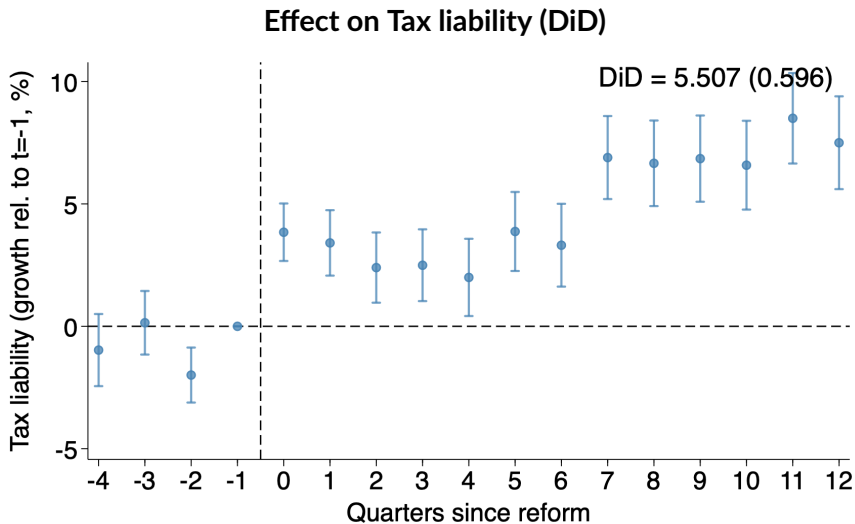
Response to an increase in withholding



Response to an increase in withholding



Response to an increase in withholding



Empirical strategy and First Stage

Empirical strategy:

- **Diff-in-Diff:**

Control: AR\$10M and 20M

✗ bank withholding in Sep 18

Treatment: AR\$5M and 10M

↓ bank withholding in Sep 18



Empirical strategy and First Stage

Empirical strategy:

- **Diff-in-Diff:**

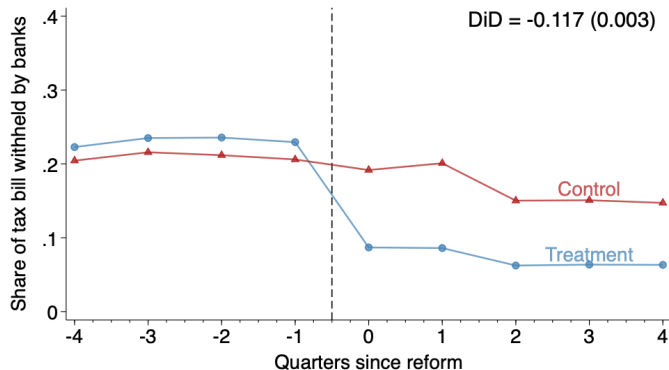
Control: AR\$10M and 20M

↘ bank withholding in Sep 18

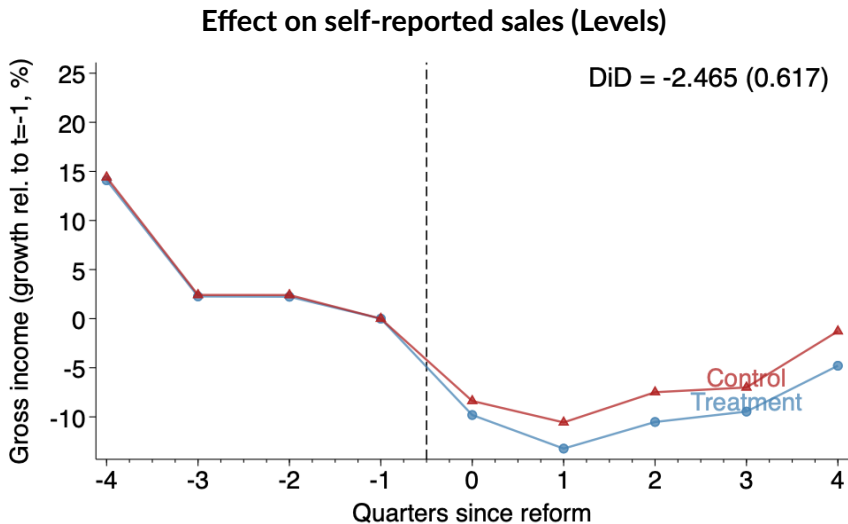
Treatment: AR\$5M and 10M

↓ bank withholding in Sep 18

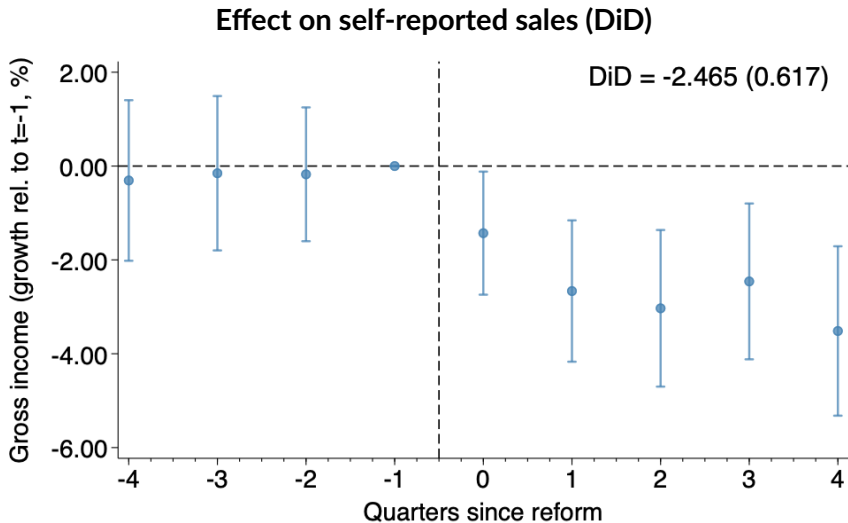
Tax withheld by banks



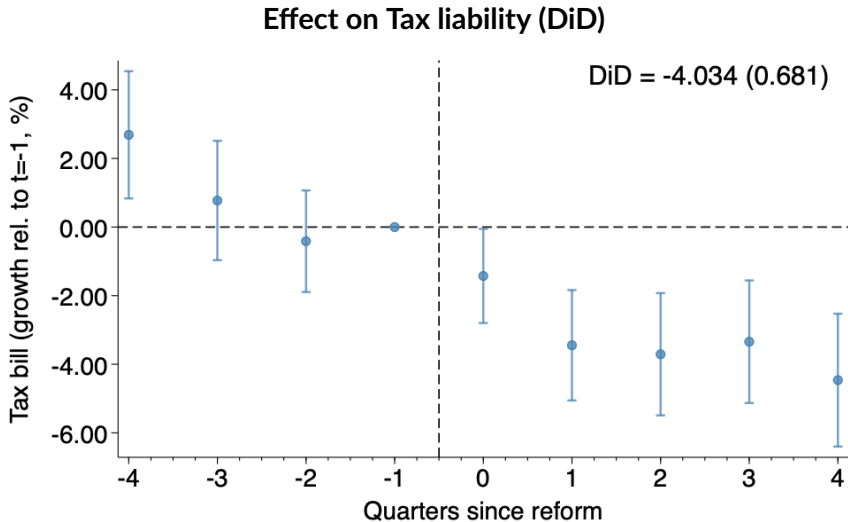
Response to a decrease in withholding



Response to a decrease in withholding



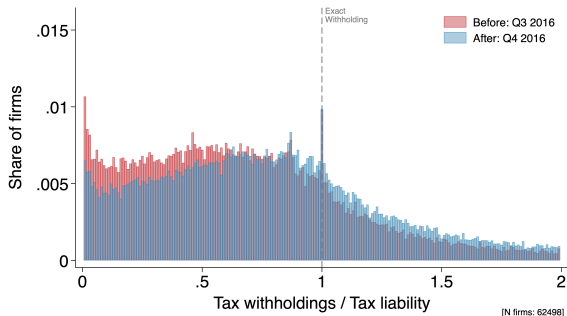
Response to a decrease in withholding



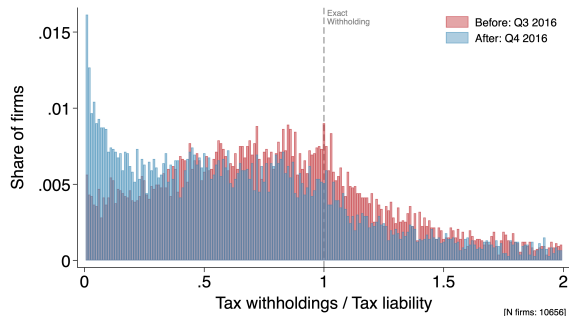
Interpretation of results

- Weak-enforcement setting: firms underreport Sales
- Most firms have Withholding/Tax liability ≤ 1
- Lower bound: taxpayers aim to report Sales such that Tax liability $>$ Withholding
- If withholding increases, reported sales must go up to keep the ratio low

R1: $\uparrow W \rightarrow \uparrow S \rightarrow \uparrow T$

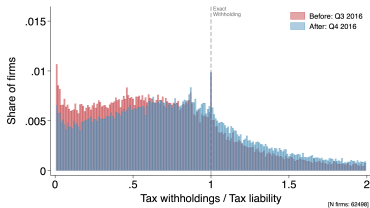


R2: $\downarrow W \rightarrow \downarrow S \rightarrow \downarrow T$

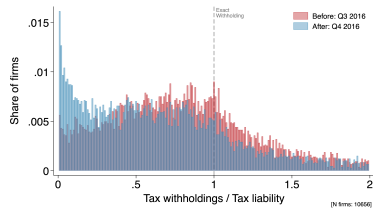


Interpretation of results: T and C

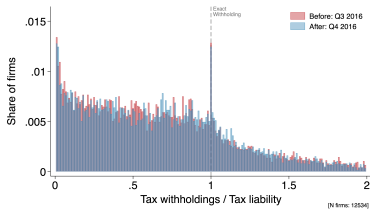
R1: Treated



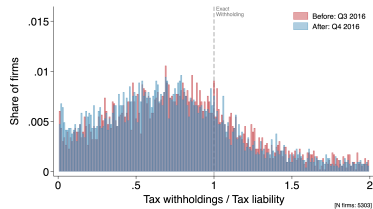
R2: Treated



R1: Control



R2: Control



Interpretation of results: Magnitudes

- How do the magnitudes compare relative to other papers?
- Waseem (2022): VAT base expansion to manufacturing sector
 - Reported sales \uparrow 40%
 - Previously untaxed sector responds by \uparrow sales to claim tax on inputs
- Brockmeyer and Hernandez (2019): sales tax withholding rate increase
 - Gross tax liability \uparrow 20%
 - Change in enforcement perceptions, example: first-time withholders
- Our paper: increase in the coverage of TT withholding
 - Reported sales \uparrow 5%
 - Setting with high intensive- and low extensive-margin informality (i.e., firms keep some transactions off the books)
 - Enforcement perception may be already high as VAT is in place