

# Bank Non-Secrecy: Taxation and Financial Service Use in Mexico

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Cash is a liquid *anonymous* transaction technology:  
facilitates illicit flows & informal sector activity

Should governments limit/monitor cash transactions?

- ▶ In many countries rules for cash above a threshold:
  - ▶ Spain ( $> \$ 2,500 \Rightarrow$  only via bank transfers),
  - ▶ US ( $> \$ 10,000 \Rightarrow$  currency transaction report)
- ▶ India demonetization policy in Dec 16
- ▶ In recent book Rogoff argues for end of cash in US -  
more cautious for Dev. countries

↑ **distortions in countries with low financial inclusion?**

Reform to monitor cash deposits on SMEs' financial behavior

- ▶ Sample of clients from large Mexican bank
- ▶ Today: only study **repeal** of cash monitoring

Preview of results from repeal of monitoring:

- ▶ Large increase in cash deposits (30% on average)
- ▶ Substitution to other deposits technologies
- ▶ Increase in total deposits for active cash depositors pre-reform

# Related Literature and Context

## Optimal cash holdings

- ▶ Depend on cost of converting to non-cash (Miller and Orr 66)

## Financial Information Trail and Taxation:

- ▶ Detect unregistered taxpayers & estimate presumptive tax (Gordon & Li 09, Slemrod & al 14)
- ▶ Multinational & wealthy indiv. avoidance (Zucman 14)
- ▶ Financial transaction taxes (Coehlo 16)

Recent tax scandals ↑ tax admin pressure to access financial info. Yet bank secrecy strong institution in dev. countries

# Financial Info Access in LA

**Table:** Tax administration access to bank information in L.A.

	Condition to access financial info.		
	Judge Authorization	Audit Procedure	Direct Access
Argentina (AFIP)		x	
Bolivia (SIN)		x	
Brasil (RFB)	x		
Chile (SII)		x	
Colombia (DIAN)			x
Costa Rica (DGT)	x		
Ecuador (SRI)		x	
El Salvador (DGII)		x	
Guatemala (SAT)	x		
Honduras (DEI)	x		
<b>Mexico (SAT)</b>		<b>x</b>	
Nicaragua (DGI)	x		
Panama (DGI)		x	
Paraguay (SET)	x		
Peru (SUNAT)	x		
Rep. Dominicana (DGI)	x		
Uruguay (DGI)	x		

Source: Inter American Center for Tax administration (CIAT) 2012

- The tax on cash deposits
- Simplified model
- Empirics
  - ▶ Event Study: Cash, substitution and Total deposits
    - ▶ Diff-in-diff with direct deposit beneficiaries as control for robustness
  - ▶ Distributional analysis:
    - ▶ Bunching
    - ▶ Large responses & Technological change
    - ▶ Event studies by pre-repeal cash deposit behavior

# Impuesto a los Depositos en Efectivo (IDE)

Tax created to circumvent bank secrecy & monitor cash



- Base = **monthly cash deposits** above threshold
- Other deposit methods are not tax liable
- **Control tax**: fully deductible against any tax liability allowing deductions
- Financial institutions remit & inform clients

# Tax Filing Regimes

## During IDE:

- ▶ Small and medium **incorporated** firms filled monthly cash-flow tax (IETU): allowed deductions of IDE
- ▶ Self-employed typically in REPECOS (requirements: non-incorporated firms + low revenue): bi-monthly turnover tax - does not allow any deductions

## Post IDE:

- ▶ IETU repealed  $\Rightarrow$  SME part of general CIT
- ▶ REPECOS replaced by Regimen de Incorporacion Fiscal. Diminishing tax rate discounts for 10 years.



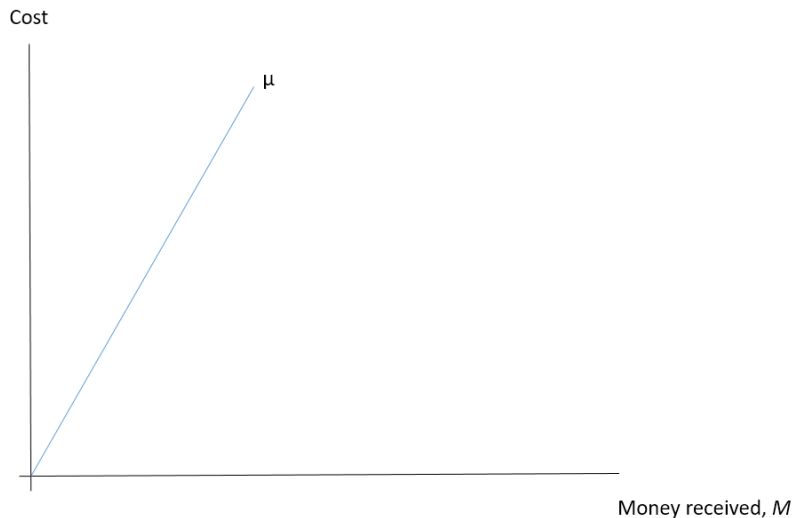
# IDE & Storage Technology

- ▶ Endowed with amount of money received,  $M$ 
  - ▶ Use  $M$  to finance consumption: abstract from savings
  - ▶ Ignore other benefits from formal banking (e.g. credit)
- ▶ Access to three storage technologies
  - ▶ Cash (under the mattress)
  - ▶ Bank cash deposits
  - ▶ Bank non-cash deposits (checks, electronic)
- ▶ Optimal choice of storage balances the relative costs of the different technologies
- ▶ Focus on extensive margin choices between storage technologies
  - ▶ In future allow for interior solutions (mix of technologies)

# Relative costs of technologies during IDE

- ▶ Cost curve of storing cash:  $\mu$ 
  - ▶ Risk of theft
  - ▶ Intercept at 0, linear increasing in M

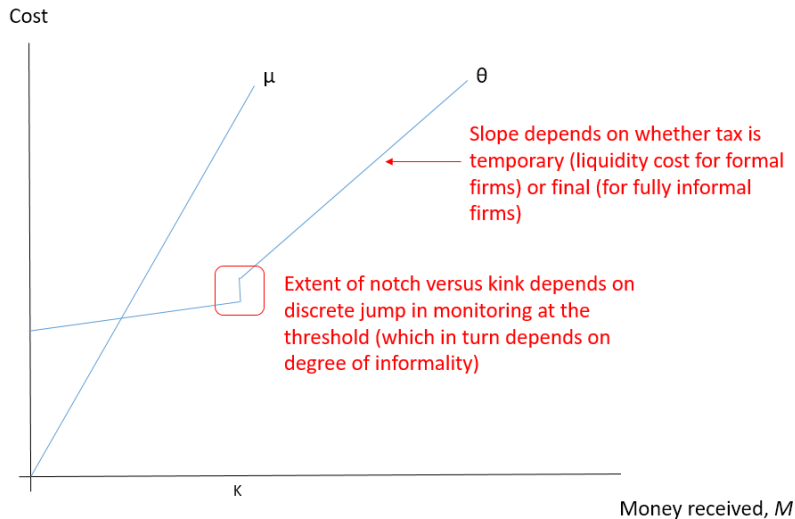
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- ▶ Cost curve of bank cash deposits:  $\theta$ 
  - ▶ Intercept  $> 0$ : fixed cost (opening account, travel)
  - ▶ Slope small and positive below K (IDE threshold)
    - ▶ due to e.g. risk of theft on way to bank
  - ▶ Steeper slope above K: cost of IDE

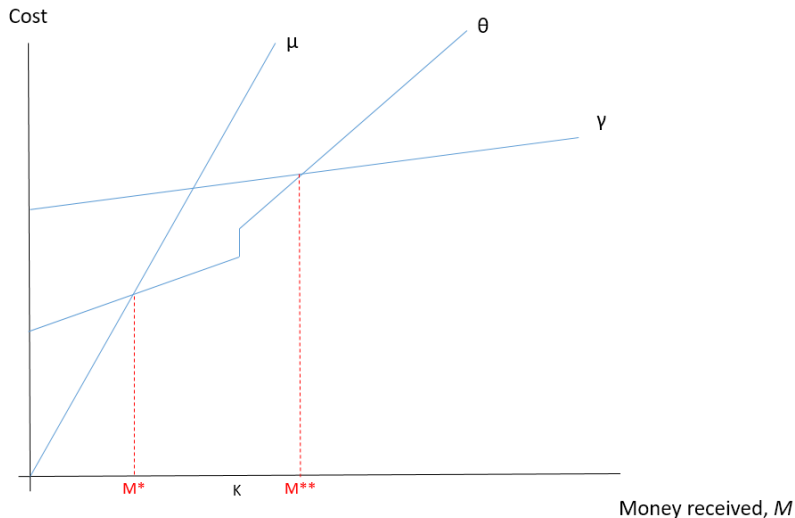
# Relative costs of technologies during IDE



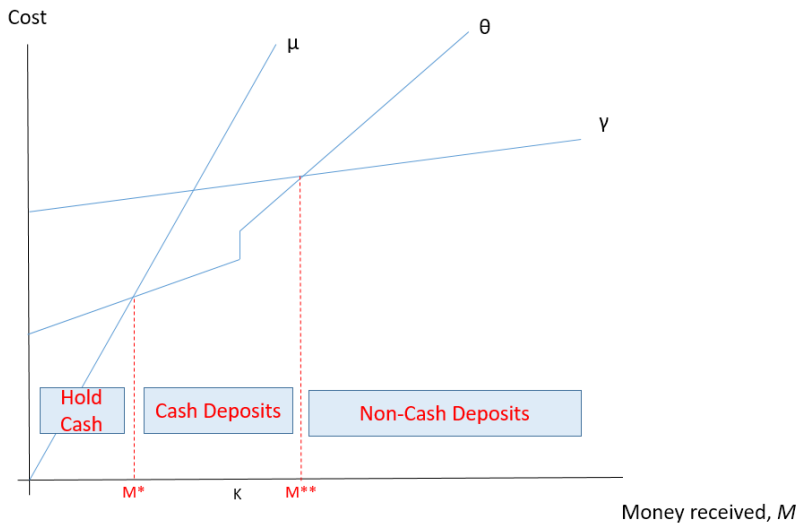
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  - ▶ Steeper slope above K: cost of IDE
- ▶ Cost of bank non cash deposits:  $\gamma$ 
  - ▶ Intercept  $>$  cash deposits: additional cost of converting into non-cash (e.g. technology adoption)
  - ▶ Slope:
    - ▶ Marginal cost of technology (e.g., transaction fee for point of sale terminal)
    - ▶ Traceable transactions (regardless of IDE: information trails increase likelihood of fines conditional on audit)

# Relative costs of technologies during IDE



# Relative costs of technologies during IDE

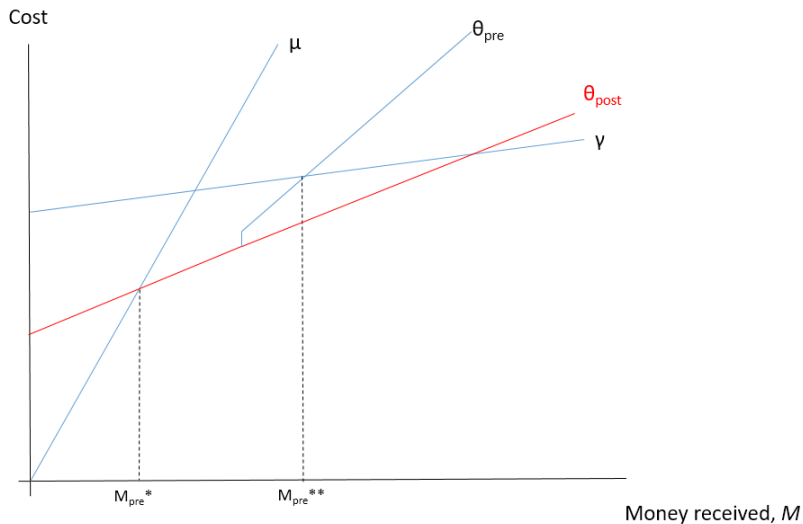




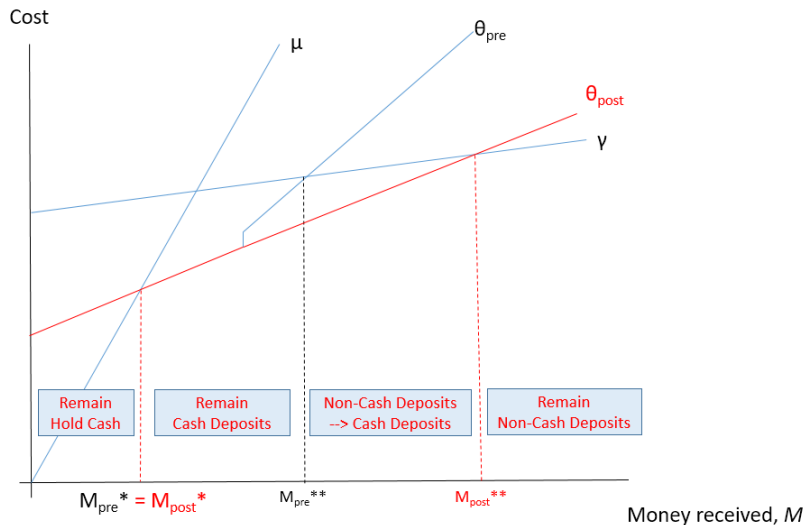
# Repeal of IDE

- ▶ No impact on cost of storing cash  $\mu$
- ▶ Impact on cost of bank cash deposits  $\theta$ 
  - ▶ Kink/notch at  $K$  disappears
  - ▶ Higher slope above  $K$  (cost of tax) disappears
- ▶ No impact on cost of non-cash deposits  $\gamma$

# Repeal of IDE



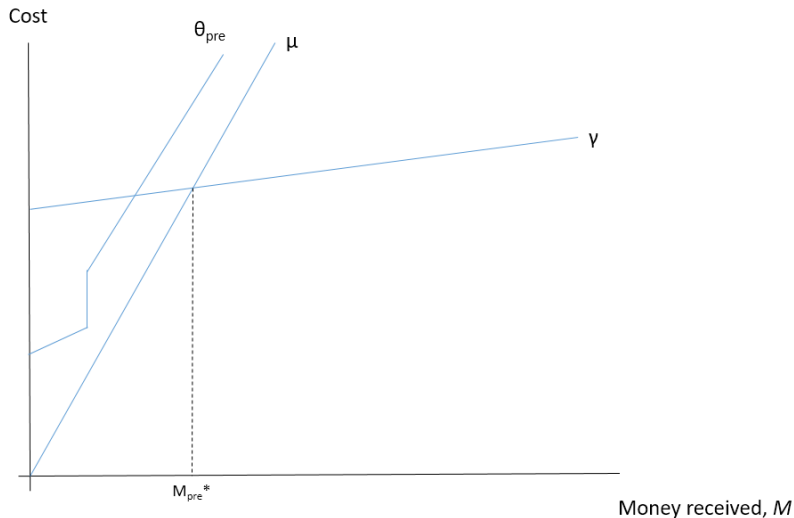
# Repeal of IDE



# Model Predictions

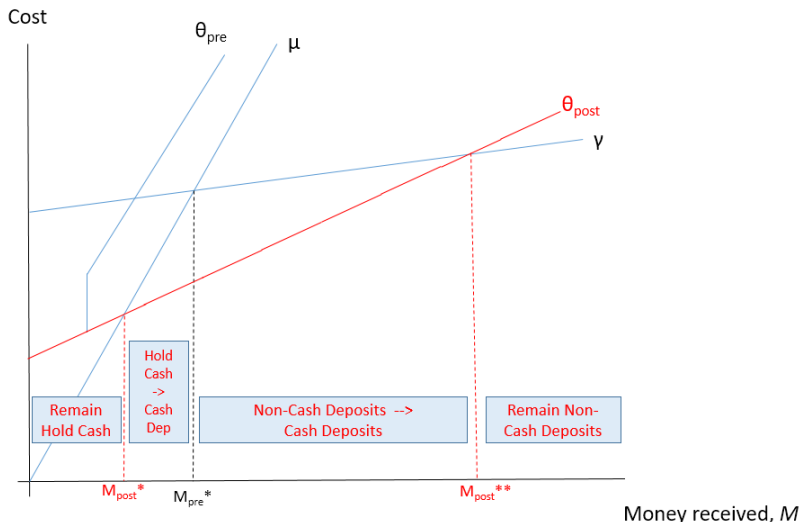
- ▶ Depends on total revenue:
  - ▶ Very low: continue holding cash
  - ▶ Low: continue depositing cash at bank
  - ▶ **Mid**: technology switch from non-cash to cash deposits
  - ▶ High: continue using non-cash deposits

# Alternative costs and cut-off: during IDE



# Alternative costs and cut-off: repeal

In this case, there is a group that switches from holding cash to making cash deposits at the bank.

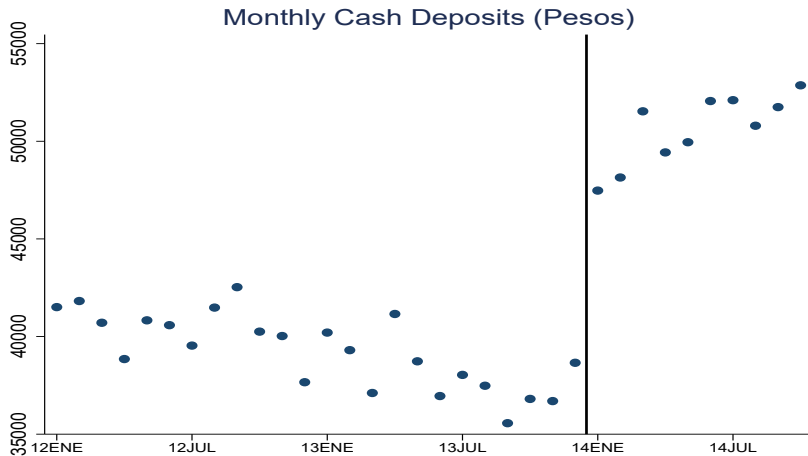


- ▶ 300,000 clients from large Mexican bank:
  - ▶ Monthly deposits & withdrawals by transaction method
  - ▶ Socio-demographics (firm revenues, locality, occupation)
  - ▶ Other financial products (e.g loans and credit cards)
- ▶ 4 types of account holders:
  - ▶ Individuals with direct deposit
  - ▶ Self-employed
  - ▶ Small firms
  - ▶ Large firms
- ▶ We focus on those affected by IDE: self-employed and small firms
  - ▶ Later bring in individuals with direct deposit as control for self-employed

- ▶ Continuous monthly panel April 2011 - October 2014
  - ▶ Current limitation: only month of December for 2006–2010  
⇒ Focus event study on **repeal** of IDE (in 2014)
- ▶ Self-employed and small firms: 180,000 accounts
  - ▶ Balanced sample ⇒ 150,000 accounts
- ▶ Later bring in 100,000 direct deposit individuals as control for self-employed
  - ▶ Balanced sample ⇒ 83,000 direct deposit individuals

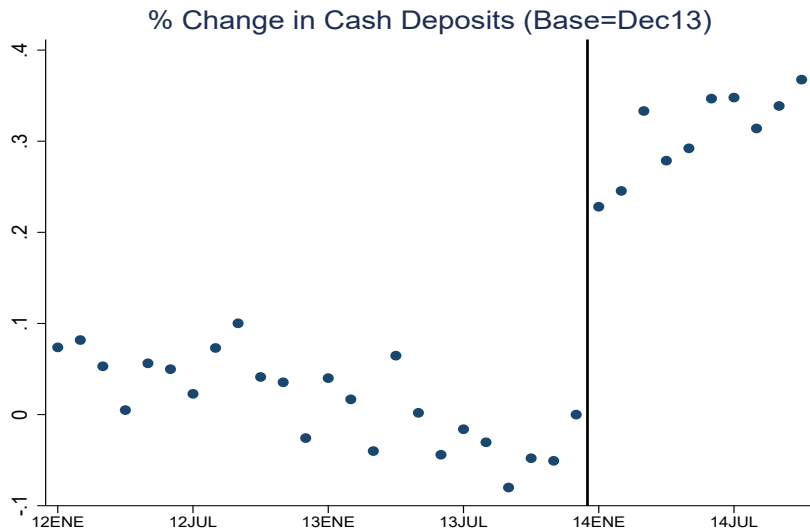


# Event Cash Deposits

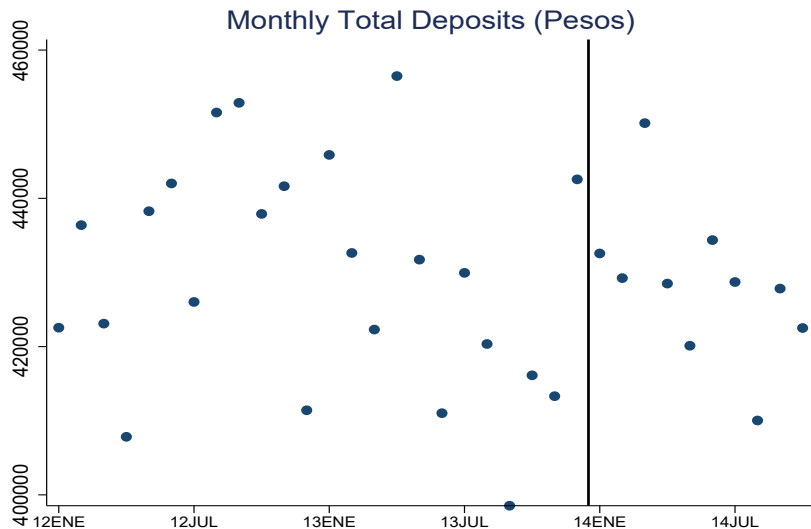


► Take away month fixed effects (December matters)

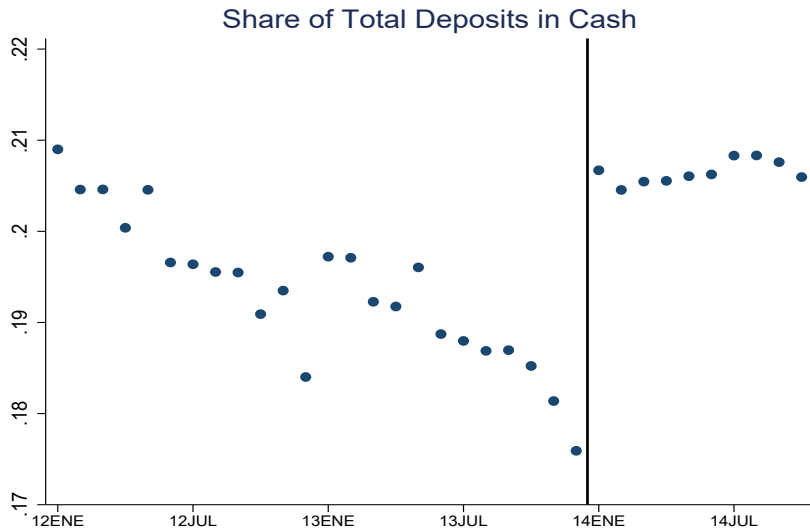
# Event Cash Deposits Change (Base = Dec13)



# Event Total Deposits



# Event Share Cash Used



# DD: Control group Individuals

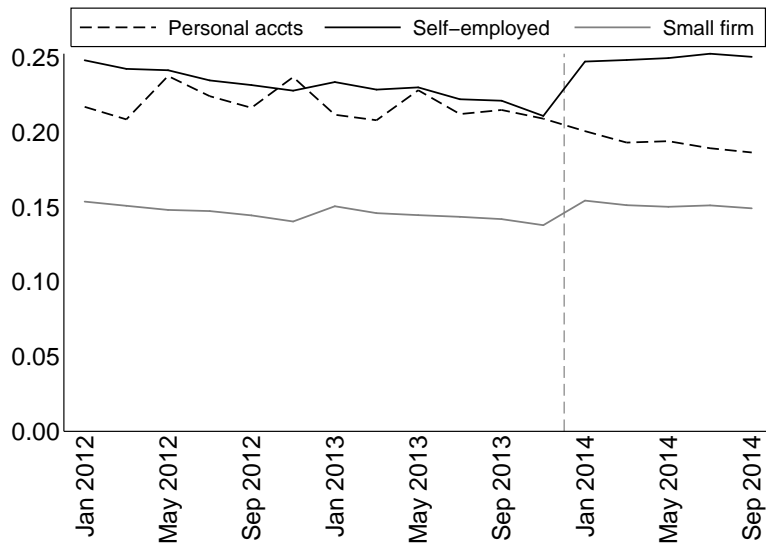
- ▶ To test robustness of event study results
- ▶ Identify control group not affected by IDE
  - ▶ Personal accounts
  - ▶ About half salaried direct deposit (formal)
  - ▶ Other half no direct deposit but always below threshold
- ▶ Treatment group is just self-employed
  - ▶ Since they are more similar to salaried individuals
- ▶ Estimate

$$y_{it} = \lambda_i + \delta_t + \sum_k \gamma_k T_i \times \mathbb{I}(k = t) + \varepsilon_{it}$$

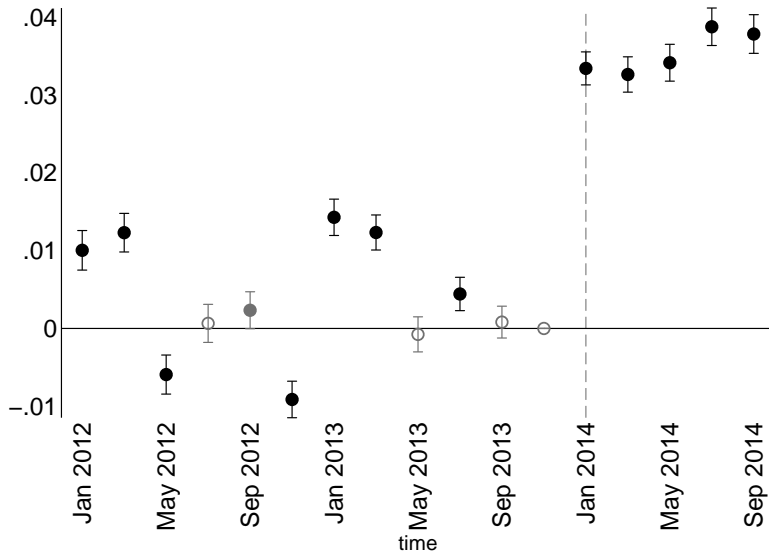
where

- ▶  $y_{it}$  is the share of deposits made in cash
- ▶  $T_i = 1$  if self-employed;  $= 0$  if salaried
- ▶  $\mathbb{I}(k = t)$  are time dummies

# Trends: Share deposits that are cash



# DD: Share deposits that are cash

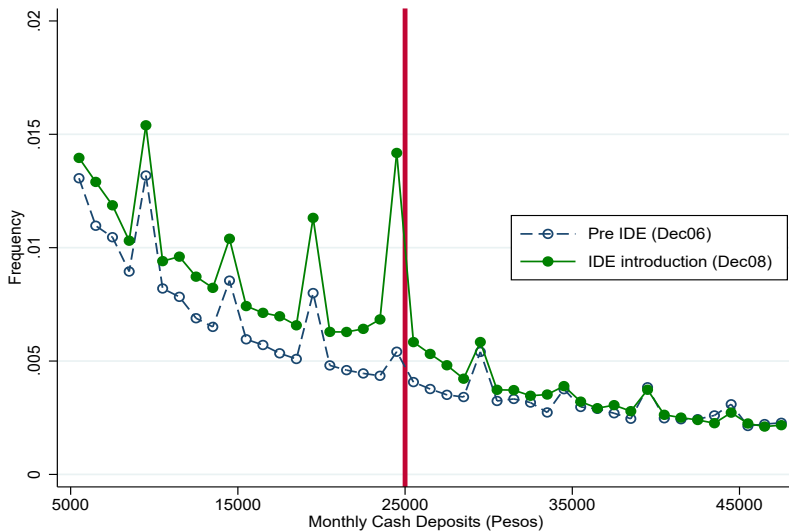


# Distributional Analysis

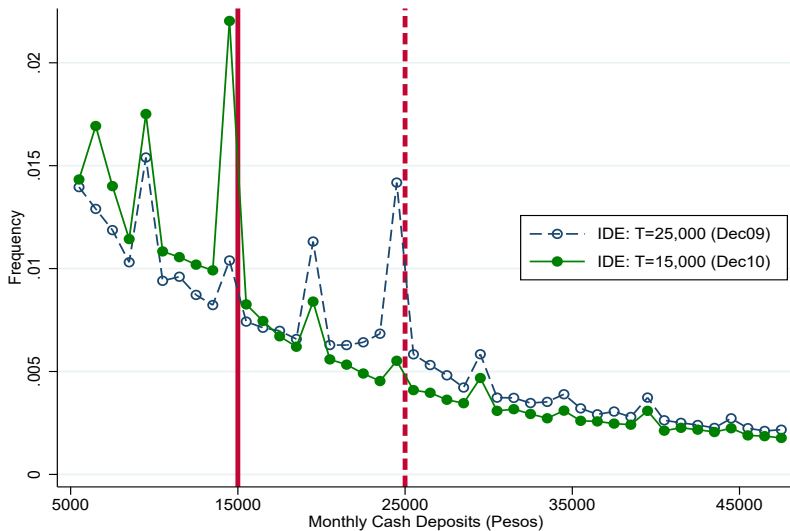
- ▶ Event study & DD evidence of average response
- ▶ Focus on other moments of distribution:
  - ▶ Bunching: Firms are reacting and aware of IDE
  - ▶ Data suggests no discontinuous *monitoring* jump
  - ▶ Diffuse excess mass below threshold and some very large responses: fixed cost of transaction technologies?
- ▶ Event studies based on past c.d. behavior:  $\uparrow$  in total deposits response for past active cash depositors



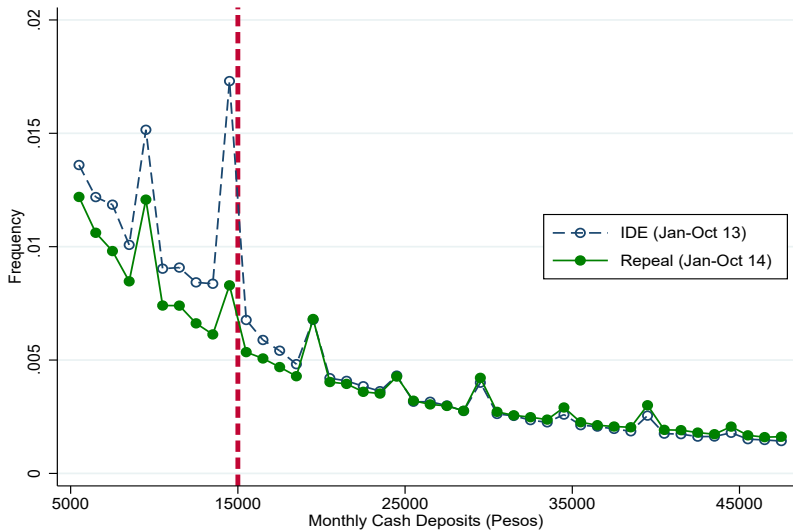
# IDE Introduction - June 2008



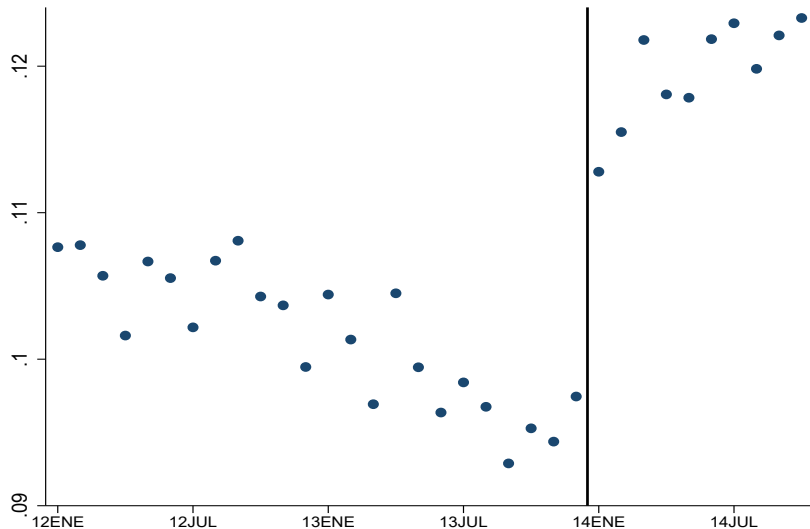
# IDE Change - Jan 2010



# IDE Repeal - Jan 2014

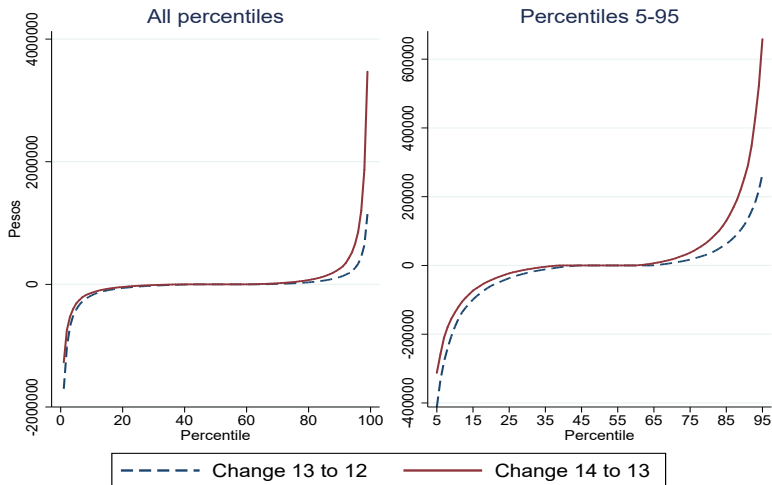


# Event: Mass Above 100,000k

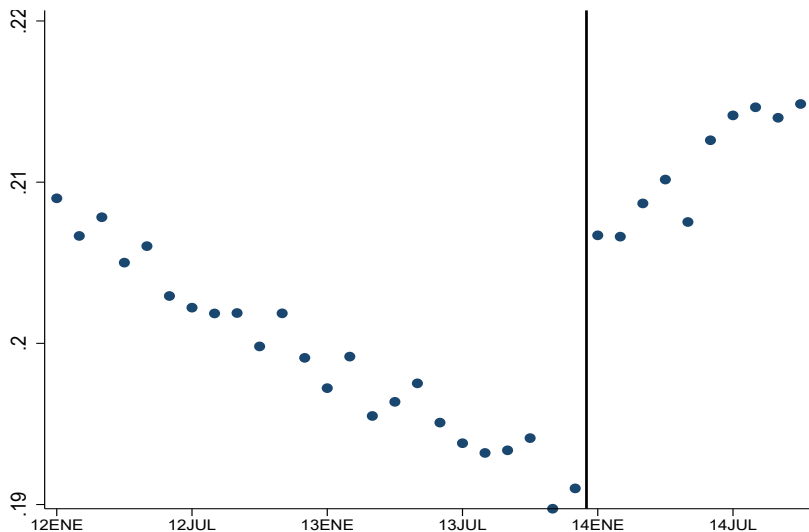


# Uneven Distributional Shift

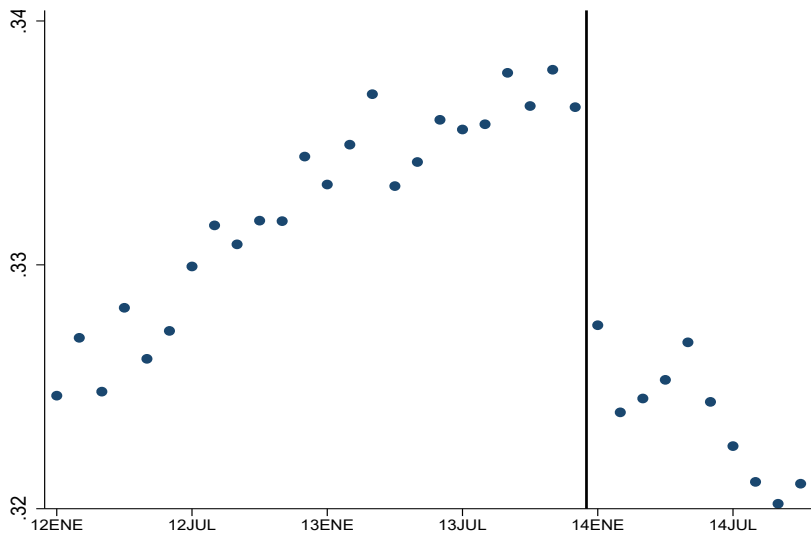
## Distribution of year to year CD change



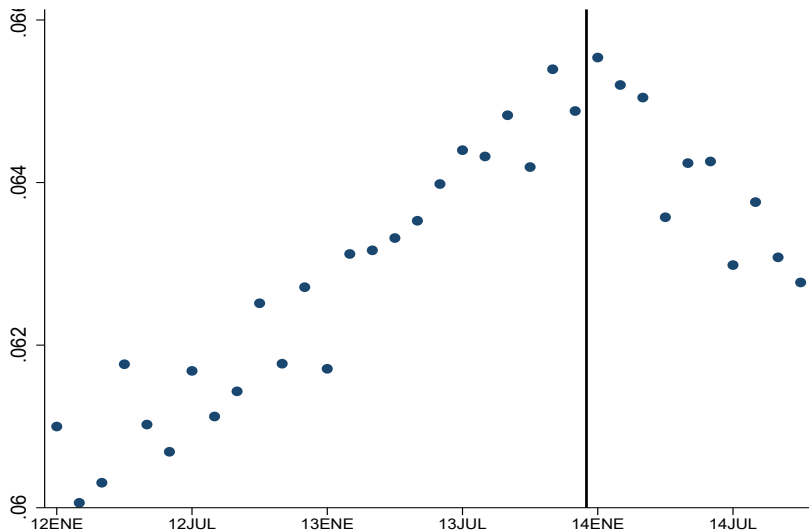
# Technology Switch: $\uparrow$ in Share of Cash



# Explained by ↓ in Share of Online Transactions



# + Slowdown in Point of Sales Terminal

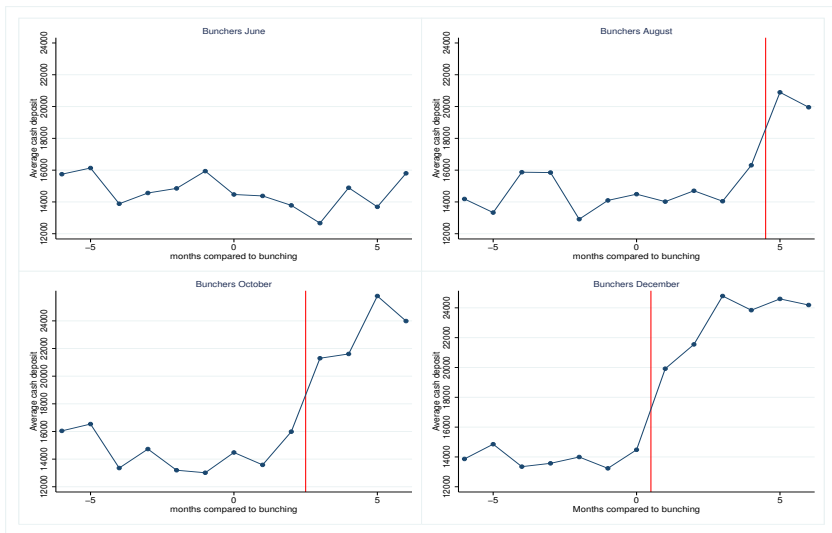




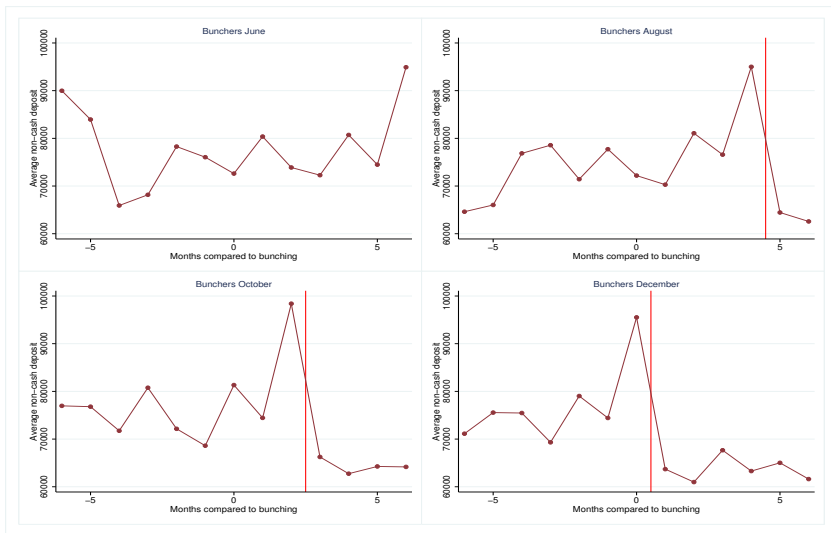
# Responses as a function of pre-repeal behavior

- ▶ Run event study for each c.d. bin pre-repeal: Example of bunchers (Only self employed in graphs below)

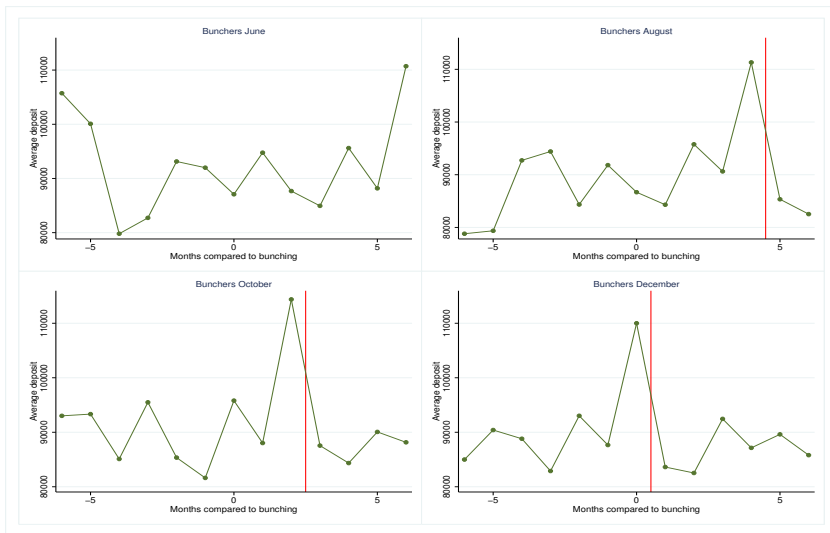
# Event bunchers cash deposit



# Event bunchers non-cash deposit



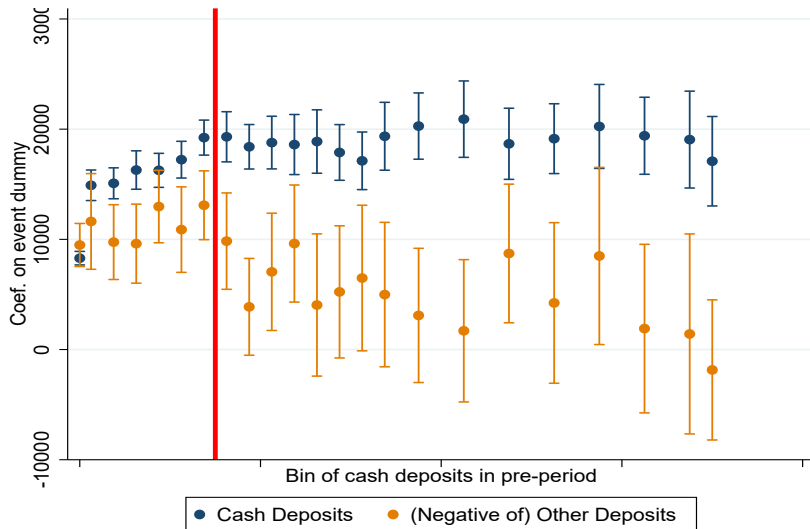
# Event bunchers total deposit



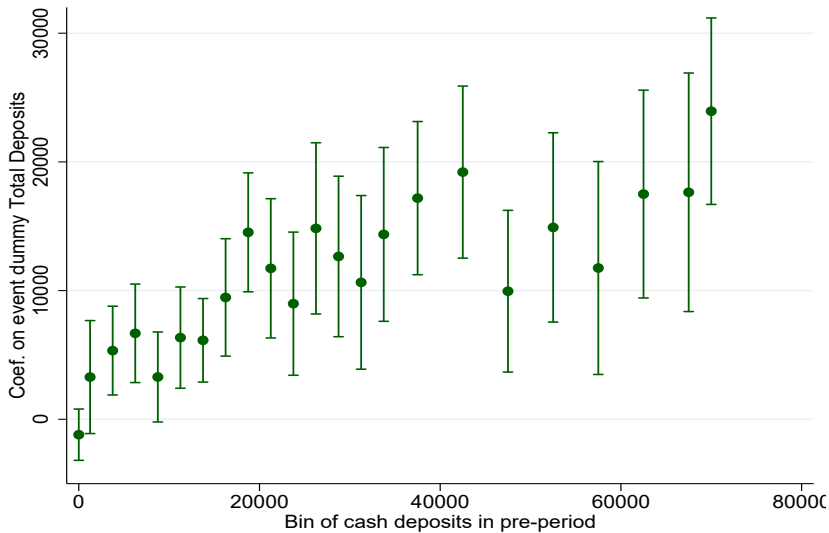
# Responses as a function of pre-repeal behavior

- ▶ Run event study for each c.d. bin pre-repeal:  $\Rightarrow$  mean reversion does not seem to be key based on placebos
  - ▶  $y_{imt} = \beta \cdot Post_{it} + \alpha_m + \gamma_i + \epsilon_{imt}$
  - ▶  $\alpha_m, \gamma_i$  are month and individual f.e.
  - ▶ Since multiple month each firm is assigned weight  $w$  by bin, where  $w$  is the number of month it was in that bin of cash deposits before the repeal of IDE
- ▶ Plot the resulting  $\hat{y}^{bin_x}$  for cash deposits, non-cash deposits and total deposits

# All bins: substitution of non-cash to cash



# All bins: total deposits



# Conclusion and Next Steps

Changing relative price of storage technologies impacts financial behavior:

- ▶ Cash deposits of SME  $\uparrow$  by 30% after repeal
- ▶ Substitution to other deposit technologies (online, POS)
- ▶ Total Deposit  $\uparrow$  for active c.d. users

## Next Steps

- ▶ Panel data 2006-2016
- ▶ Technology (dis)adoption: nationally representative data
- ▶ Proxy for c.d. demand with industry/geography (e.g. crime) & pre-IDE characteristics (e.g. cashflow timing)
- ▶ Role of monitoring versus taxation