Private Activity Bonds as Investment Subsidy: Evidence from the 1986 Cap on Bond Volumes

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1. PAPER IN A NUTSHELL

Private activity bonds are a subsidy to the cost of capital of firms

› To stimulate private sector investment, U.S. state and local governments can issue tax-exempt private activity bonds (PABs) on behalf of firms
› PAB yields are about 20% lower than conventional corporate bond yields

How does PAB supply affect firm investment and employment?

› I exploit two settings to provide causal evidence:
  (i) A legal reform and variation in PAB supply across states
  (ii) A PAB distribution lottery and random variation within one state

› I establish two key results:
  (1) PAB supply has a positive and economically large effect on investment
  (2) Although PABs subsidize capital over labor, I find no evidence for an input factor substitution, but a positive effect on employment

2. EMPIRICAL STRATEGY USING TWO SETTINGS

(i) 1986 Tax Reform and variation in per cap PAB supply across states

› The 1986 Tax Reform introduced new state-level volume caps for PABs
› Larger states (population ≥ 3m) are limited to 50 USD of PABs per cap, while smaller states (< 3m) can issue higher volumes of PABs per cap:
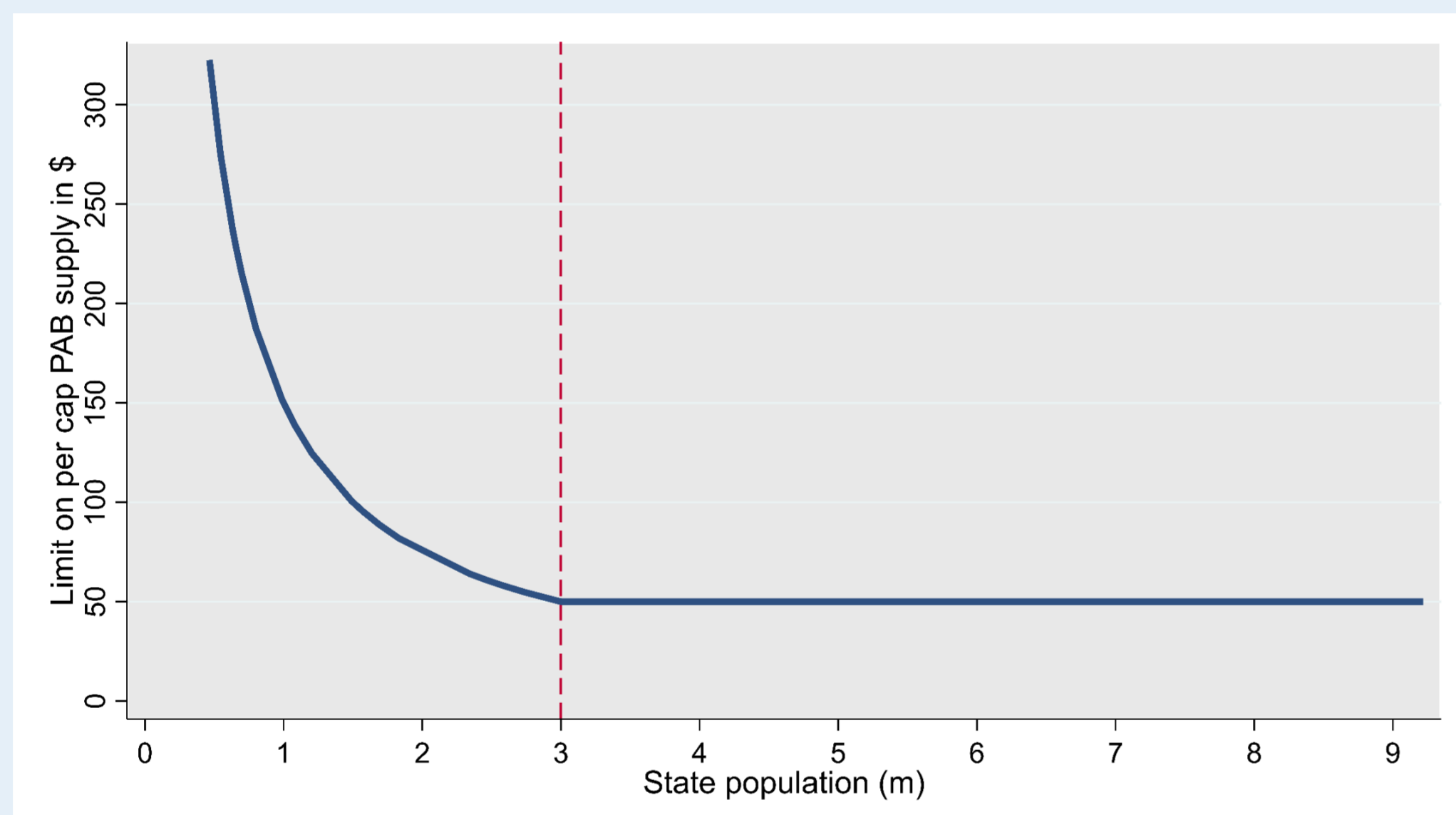
› Difference-in-differences framework at state borders:

$$Investment_{i,t} = \alpha + \beta Post\,1986_t \times Per\,cap\,PAB\,supply_s + \chi_{b,p} + \phi_i + \xi_t + \epsilon_{i,t} \quad \text{(Eq1)}$$

Alternatively: Employment | PAB eligible firm | State border region x post dummy fixed effects

**(ii) Texas PAB lottery and random variation in PAB supply within a state**

› Texas uses a lottery to allocate its PAB volume among funding applicants
› I compare firms that randomly win or lose PAB funding to isolate firm responses from potential distortions due to states' project selection:

$$\Delta Investment_{i,t} = \alpha + \beta\,log(Lottery\,allocated\,bond\,volume_i) + \xi_{lottery\,program\,year} + \epsilon_{i,t} \quad \text{(Eq2)}$$
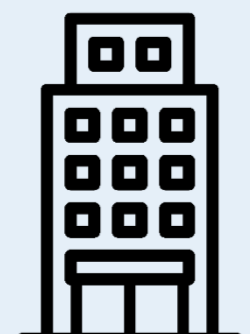
Change in investment between year t and pre-lottery year

3. DATA

› Firm headquarter and financial data from Compustat
› PAB beneficiary firms and PAB allocation volumes from SDC Platinum
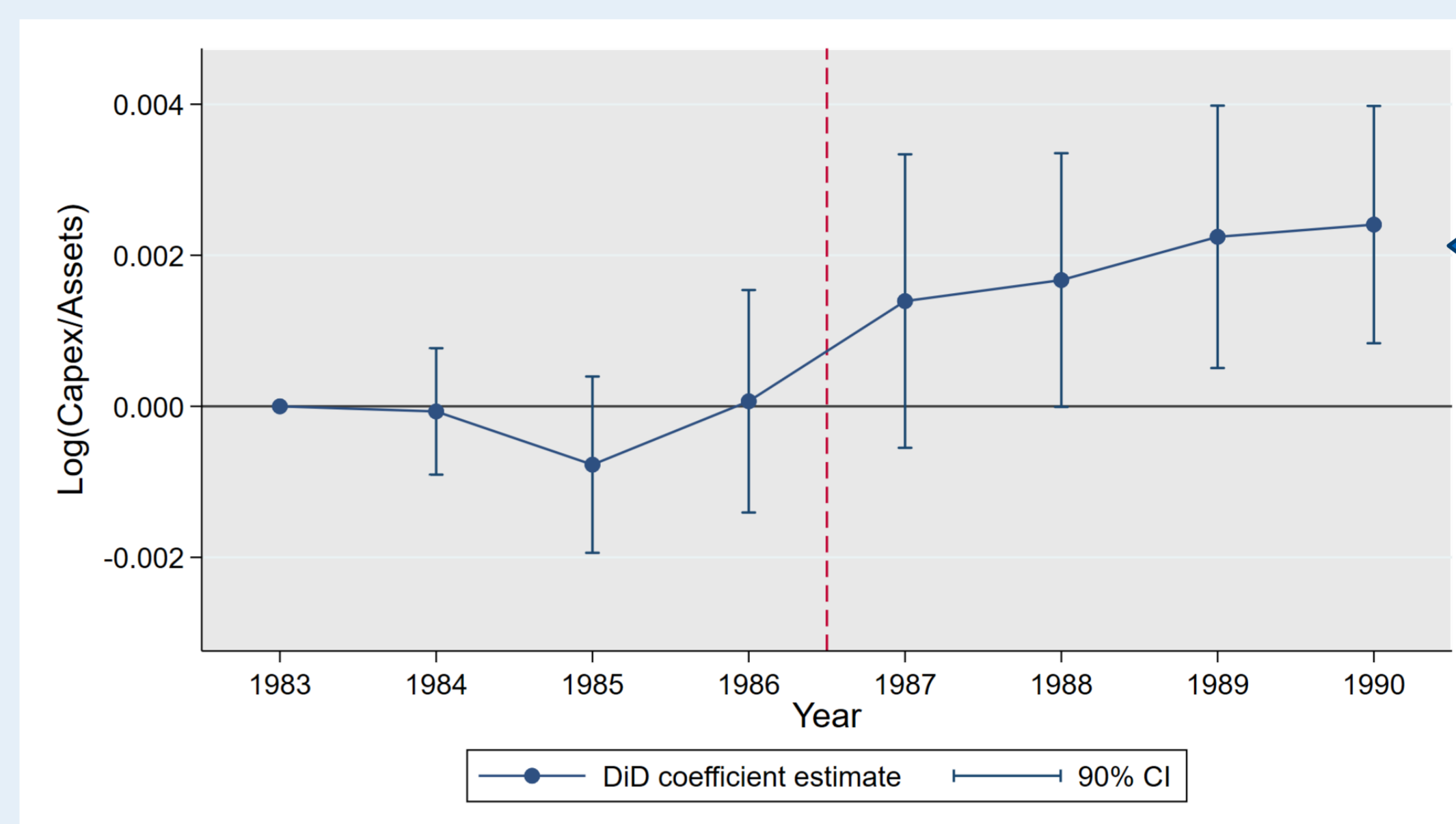› PAB lottery data from the Texas Bond Review Board
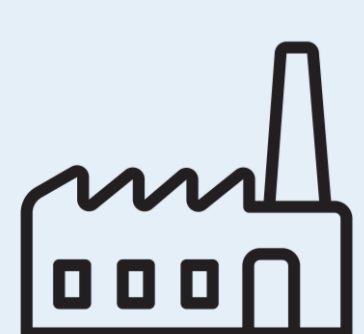
› 5 PAB eligible industries
› manufacturing, utilities, real estate, construction, higher education

› 682 PAB eligible firms in state border counties
› 140 PAB beneficiary firms
› 29 lottery attempts

4. RESULTS

(1) Per cap PAB supply and firm investment after the 1986 Tax Reform (Eq1)

PAB supply has a stimulating effect on firm investment

› An additional 50 USD in per cap PAB supply (~ one standard deviation) increases the capex-to-assets ratio of PAB eligible firms by 10.5%
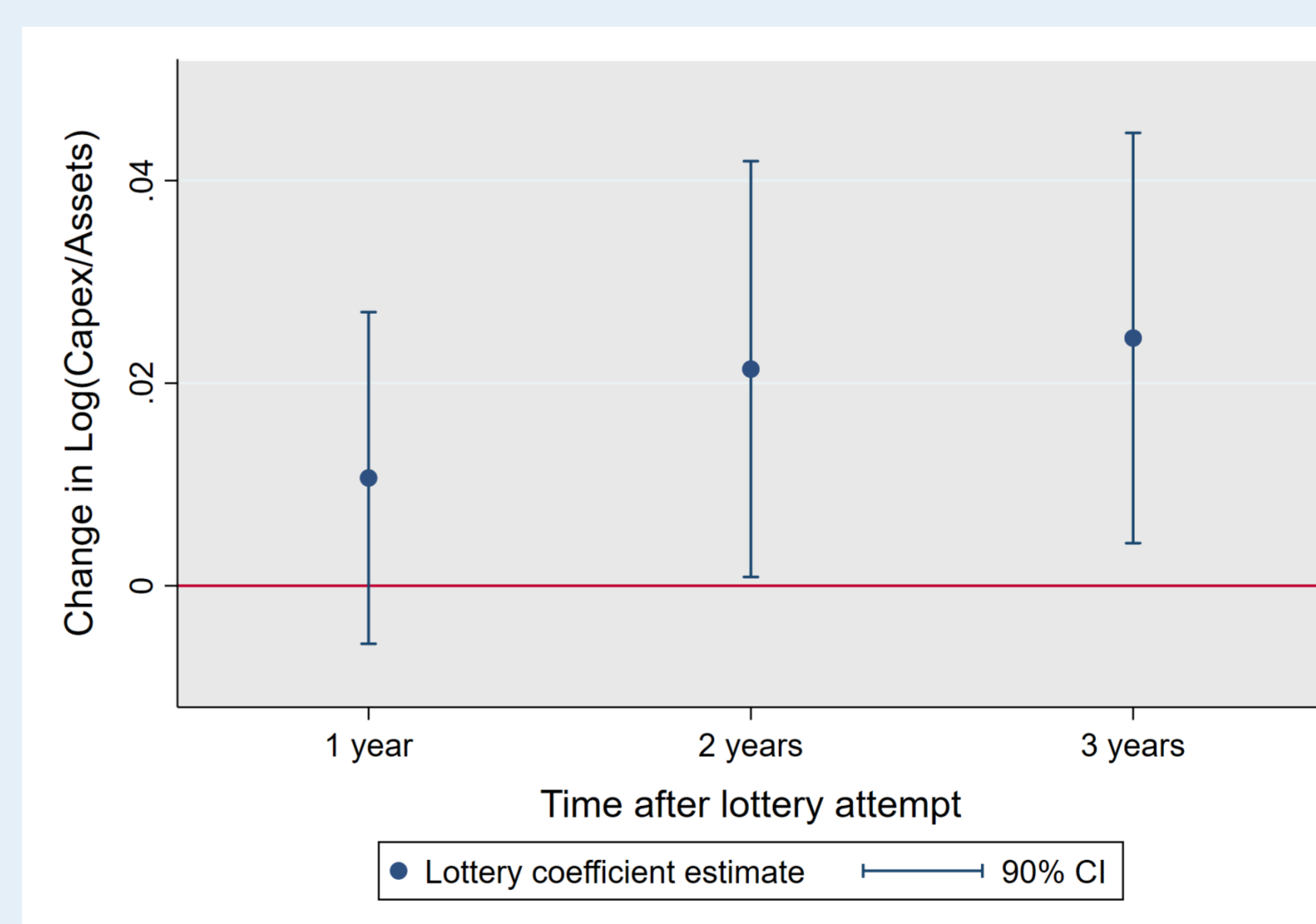
(2) Per cap PAB supply and firm employment after the 1986 Tax Reform
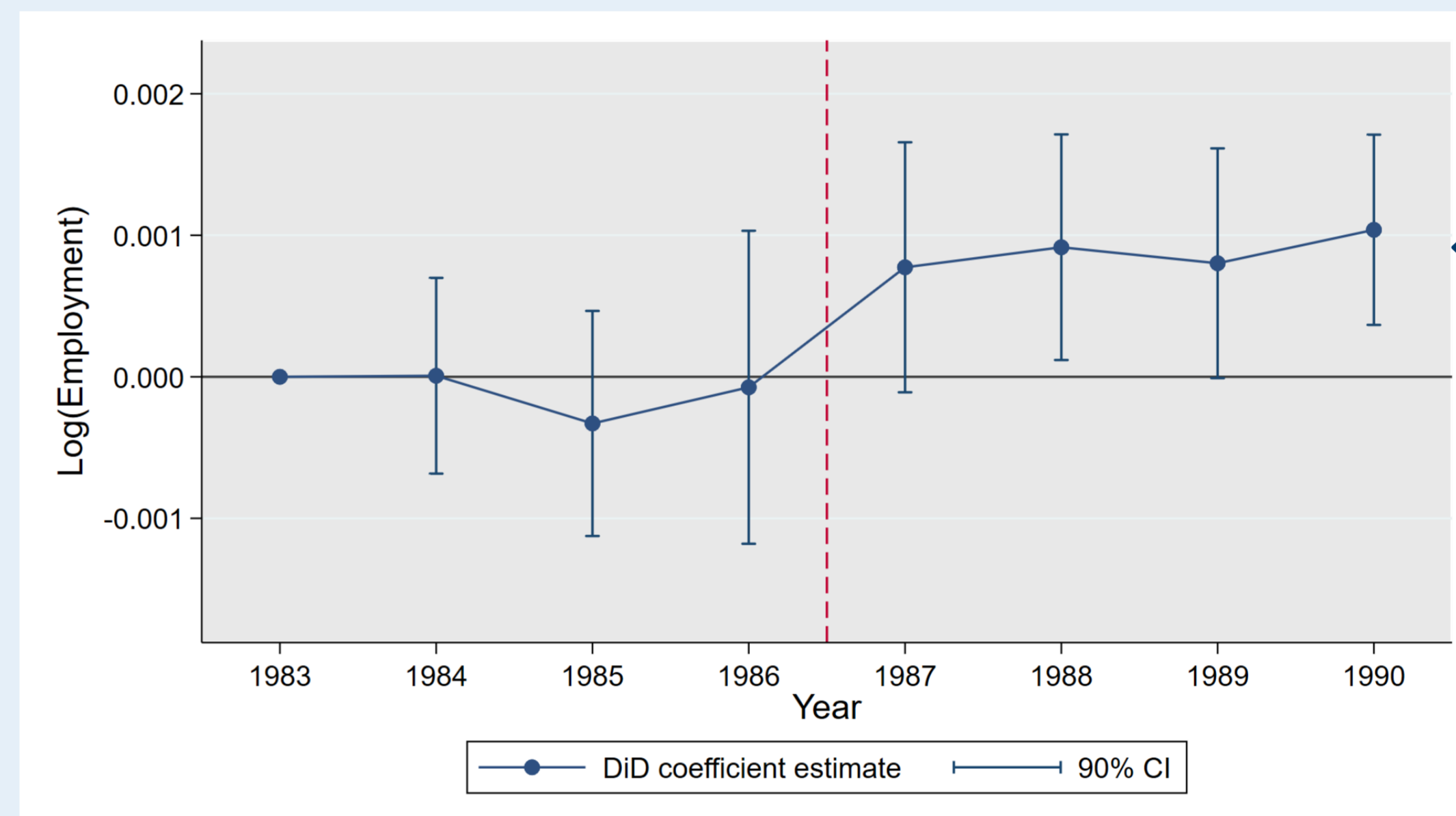
No evidence that firms substitute labor with tax-subsidized capital

› An additional 50 USD in per cap PAB supply (~ one standard deviation) increases employment of PAB eligible firms by 4.9%

(3) Ruling out a state selection effect: Texas PAB lottery (Eq2)

Positive investment effect of PAB funding allocated through the lottery rules out that states' project selection drives the results

5. CONTRIBUTION

I relate to several strands of the literature:

› **Municipal finance and its real effects**, by providing novel evidence on the direct stimulating effect of PABs for private sector beneficiaries, different to the well-known deficit-financed spending channel
› **Industrial policies**, by conducting a micro-econometric assessment of PABs as an investment subsidy that lowers the cost of capital for firms
› **Financing of corporate investment**, by studying investment responses to the supply of tax-subsidized external financing
› **Policy debate on PABs**, which focuses primarily on federal revenue losses and thus overlooks the beneficiary perspective

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