How SALT spices up municipal bond markets

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Motivation: Local investment is tied to local wealth?

- Wealthier counties have **higher leverage** and **more fund ownership**.
  - Valuable projects in low-income counties may remain unfundable.
- **Question**: Can intermediation loosen the link "local wealth $\iff$ local spending"?
- We use a tax-driven *demand* shock $\rightarrow$ Read off heterogeneous *supply* responses.

The shock: SALT deduction cap

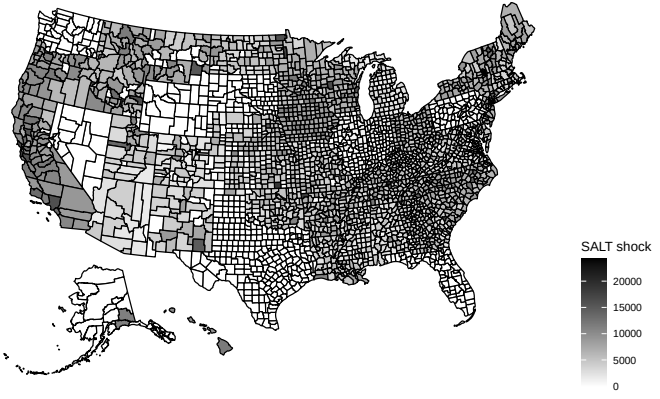
- Tax Cuts and Jobs Act (2017):
  - **Cap the deductibility of State&Local Taxes ("SALT") from Federal taxes**.
- With 2016 tax-and-income data, we compute:

$$\text{Treatment intensity} = \tau_f \cdot \Big(\underbrace{\tau_s \cdot I_c - \$10{,}000}_{\text{Deduction exceeding cap}} \Big) \quad \text{if } \underbrace{\tau_s \cdot I_c > \$10{,}000}_{\text{Cap binds}}, \quad \text{otherwise } 0$$

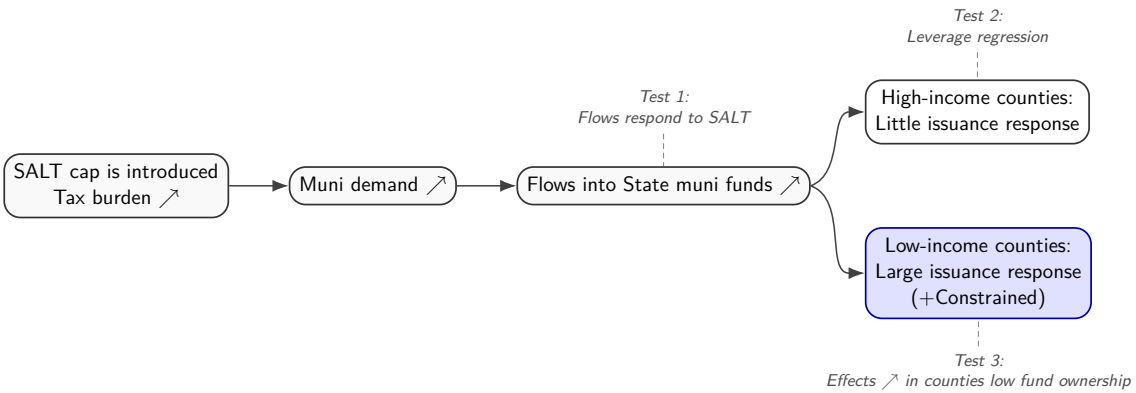
- $\nearrow$ Tax on high earners in high-tax states $\rightarrow$ $\nearrow$ Demand for tax-exempt munis.

Measuring county-level exposure

- Affects $\approx$ 80% of counties, but heterogeneously. ▸ Density ▸ Treated by state ▸ Alternative caps
- Average \$5.000/year; top-income-top-tax counties above \$20.000/year.



Fund pool demand at the State level, heterogenous supply effects



Design: continuous-treatment DiD, within state × year

- Data: 2015-2021, almost entire sample of all US counties. ▸ States ▸ Counties
- Main outcome: $\text{Leverage}_{c,t} = \frac{\text{Municipal debt}_{c,t}}{\text{County income}_{c,t}}$.
- We estimate the effect of SALT exposure (Chaisemartin et al. (2022)):

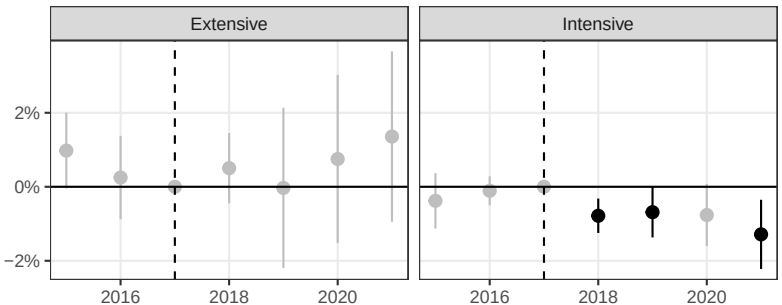
$$\text{Leverage}_{c,t} = \alpha_c + \alpha_{S\times t} + \underbrace{\sum_{t\neq 2017} \beta_t \cdot d_c}_{\text{Treatment intensity}} + \underbrace{\sum_{t\neq 2017} \phi_t \cdot 1_{\{d_c>0\}}}_{\text{Selection}} + \varepsilon_{c,t}$$

- **Estimand is relative**: Leverage change compared to same-State counties.
  - If $\beta_t < 0$, then low-SALT (low-income) counties issue *more* than the state average.

Result: Low-income counties borrow more

- Decrease in SALT exposure equal to its mean → **Leverage increase of 0.6%**. Table
  - Large vs. pre-TCJA median leverage of $\approx 8\%$.
  - Effect persistent throughout the whole time period.

Effect of SALT on Leverage.



Who responds: low-income, constrained counties

- We define "Strain" as below-median int. coverage
  - Cunha and Varley (2026).
  - Strained $\neq$ low income. ▸ Evidence
- "Strain" interaction **subsumes** the SALT effect.
- Effect concentrated:
  - ✓ Low-income counties, with low market access.
  - × High-income counties, with high existing debt.
- Thus, SALT effect: Relax financing constraints.
- Robust to definitions, vintages, cutoffs. ▸ Full table ▸ Robustness

	Leverage$_{c,t} \times 100$			
Interaction:	-		InterestCoverage	
	(1)	(2)	(3)	(4)
SALT$_c \times$ Post$_t$	-0.5*	-0.7**	-0.2	-0.4
	(-1.9)	(-2.4)	(-0.7)	(-1.2)
(SALT$_c > 0) \times$ Post$_t$		0.8		0.8
		(1.3)		(1.2)
SALT$_c \times$ Strained$_c \times$ Post$_t$			-0.5**	-0.5**
			(-2.2)	(-2.1)
Observations	5,080	5,080	5,080	5,080
R^2	0.98	0.98	0.98	0.98
Within R^2	0.0006	0.0009	0.002	0.002
c FE (2,540)	✓	✓	✓	✓
$S \times t$ FE (98)	✓	✓	✓	✓

What gets issued: new-money bonds, revenue bonds, discount structure

- Effects concentrated in:
  1. **New-money bonds** → Additional capital, not refinancing. ▸ Results
  2. **Use of proceeds**: Large effects in utilities, healthcare, housing. ▸ Results
  3. **Revenue bonds**: Project-backed, faster authorization. ▸ Results
  4. **Discount bonds**: Low coupon → Low debt servicing costs, fits cash-poor issuers.
- **Placebo**: No response for taxable munis. ▸ Results
  - Consistent with tax-driven fund flows.
  - Rules out credit-risk confounders.

First step: SALT leads to large fund inflows

$$\text{Flows}_{S,t} = \sum_{t \neq 2017} \delta_t \times \text{SALT}_S + \alpha_S + \alpha_t + \eta_{S,t}$$

- SALT-induced fund flows are large, $\approx$ 3% of TNA.
  - Immediate after the TCJA (Bloomberg (2019)).
  - No correlation before or after.
- Identification: Fund portfolios are **concentrated**, **persistent**.
  1. Holdings predict purchases.
  2. Flows amplify primary-market participation in *already-held* counties.

	$\text{Flow}_{S,t}$ (1)	(2)
$\text{SALT}_S \times 2015$	0.01	
	(0.69)	
$\text{SALT}_S \times 2016$	0.03	
	(1.2)	
$\text{SALT}_S \times 2017$	-	-
	-	-
$\text{SALT}_S \times 2018$	0.03*	0.03**
	(2.0)	(2.0)
$\text{SALT}_S \times 2019$	0.004	
	(0.17)	
$\text{SALT}_S \times 2020$	0.007	
	(0.20)	
$\text{SALT}_S \times 2021$	0.01	
	(0.63)	
Observations	238	68
R^2	0.63	0.85
Within R^2	0.01	0.09
S FE	34	34
t FE	7	2

The fund channel

$$\text{Leverage}_{c,t} = \beta \times \underbrace{\widehat{\text{Flow}}_{S,t} \times \text{CountyShare}_{c,t-1}}_{\text{Predicted fund allocation to county } c} + \alpha_c + \alpha_{S \times t} + \varepsilon_{c,t}$$

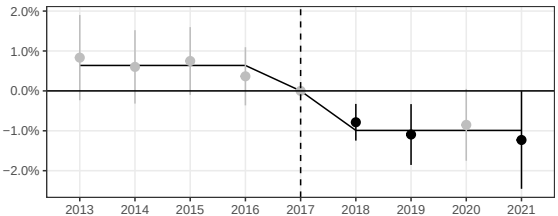
- **Usually**: Positive coefficient → Funds buy more of what they already have (Van Nieuwerburgh and Veldkamp (2010)).
- **In 2018**: Negative → Funds buy bonds from new counties, new issuers.
- Concentrated in states where **single-state funds matter more** (Babina et al. (2021)). ▸ Table

	Leverage$_{c,t}$		
	(1)	(2)	(3)
$\widehat{\text{Flow}}_{S,t} \times$ CountyShare$_{c,t-1}$	-6.1**	-6.1**	-6.1**
	(-2.2)	(-2.5)	(-2.5)
Covariance	State	County	White
Observations	2,102	2,102	2,102
R^2	0.99	0.99	0.99
Within R^2	0.002	0.002	0.002
c FE (1,051)	✓	✓	✓
$S \times t$ FE (58)	✓	✓	✓

Aggregate implication: Borrowing shifts toward low-income counties.

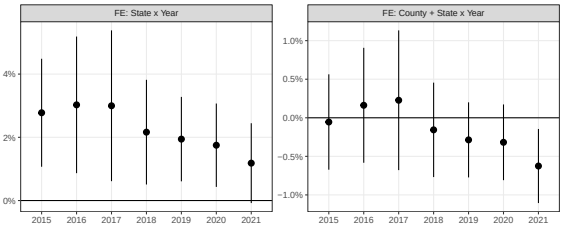
Debt concentration ↘

Effect of State SALT on State municipal debt HHI.



Income-leverage link ↘

Coefficient of county leverage regressed on per−capita log−income.



Avg. state: Debt HHI falls $\approx 2\%$ (prior median 24%).

Takeaways

1. SALT cap: large, sudden demand shock for munis. Large flows into State mutual funds.
2. **Low-income** counties responded by issuing more munis.
   - New-money bonds, revenue.
   - No taxable munis.
3. Funds matter, by **by pooling demand at the state level**.
   - Decouples issuance from local income.
   - Cross-county debt concentration falls.
4. **Policy**: Even if a tax policy is broad-based, it can carry distributional consequences at the local level.
   - In this case, positive spillover: Wealthy counties invest $\rightarrow$ Funding transmitted to low-income counties.

Bibliography I

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- Van Nieuwerburgh, Stijn and Laura Veldkamp (2010). "Information acquisition and under-diversification". In: *The Review of Economic Studies* 77.2, pp. 779–805.

Total issuance of municipal bonds

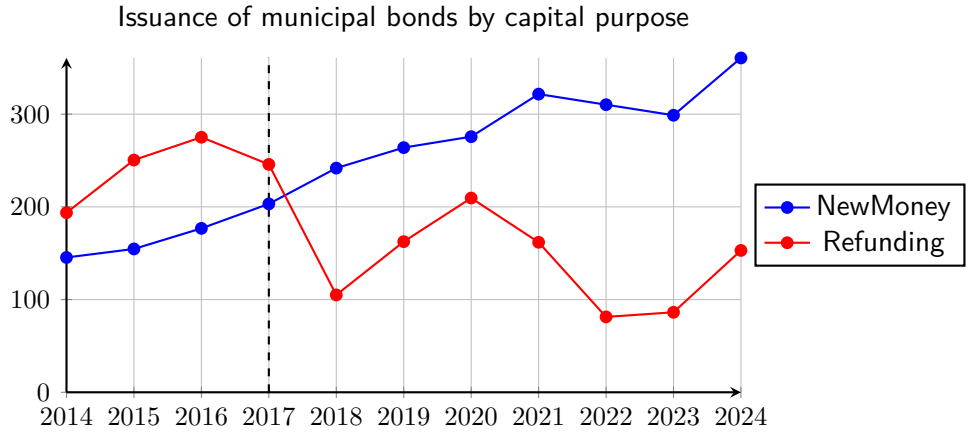

Figure: *Issuance of muni bonds by year, in billions of USD, split by capital purpose. SIFMA and MSRB.* Back

Holders of municipal bonds

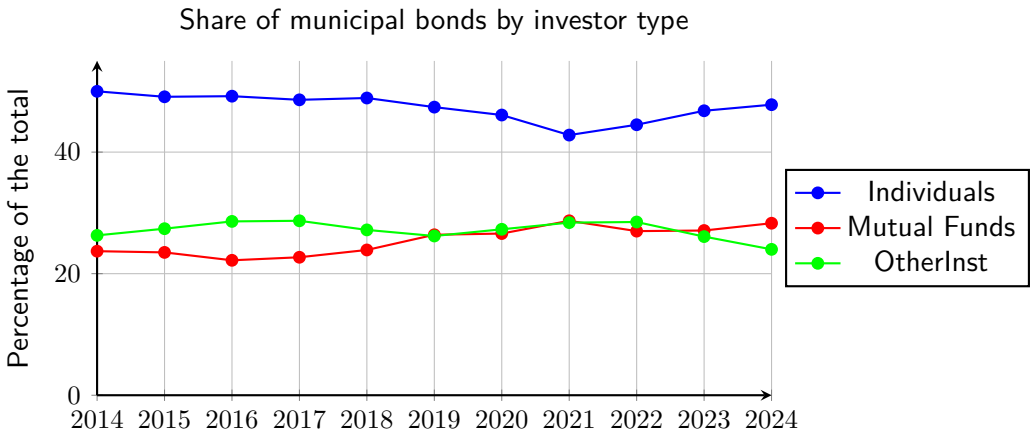

Figure: *Holders of municipal bonds by year, in percentage of the total (SIFMA). "OtherInst" is the sum of banks, insurers, and other holders.* Back

Density of treatment intensity

Figure: *Density of treatment intensity* d. *Scaled such that* $d = 0$ *is untreated,* $d = 1$ *is* $E[d \mid d > 0] \approx \$5{,}000$ *per person per year. Vertical dashed bars represent the interquantile range of* $d \mid d > 0$. Back

States in the data

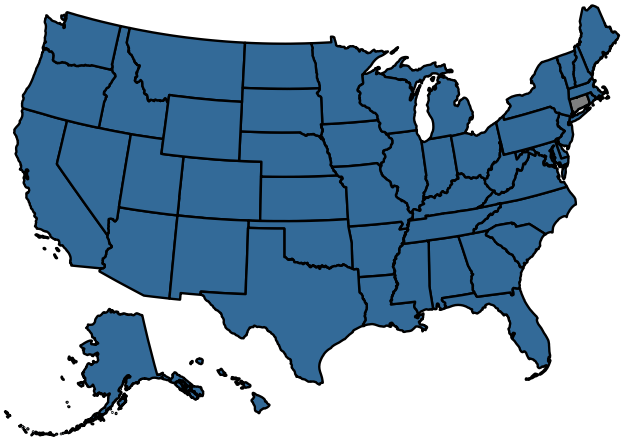

Figure: *States in the data.* Back

Counties in the data

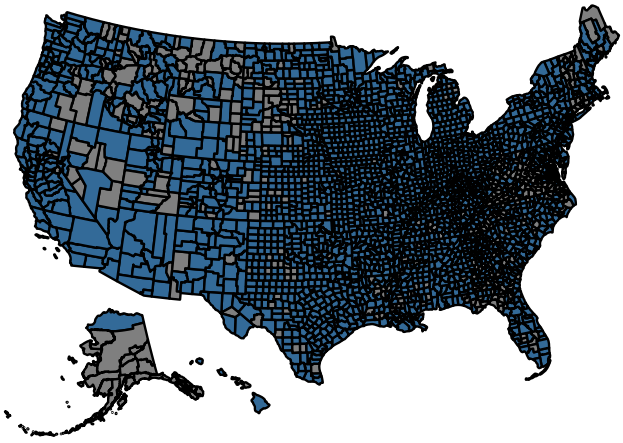

Figure: *Counties in the data.* Back

Share of counties that are treated

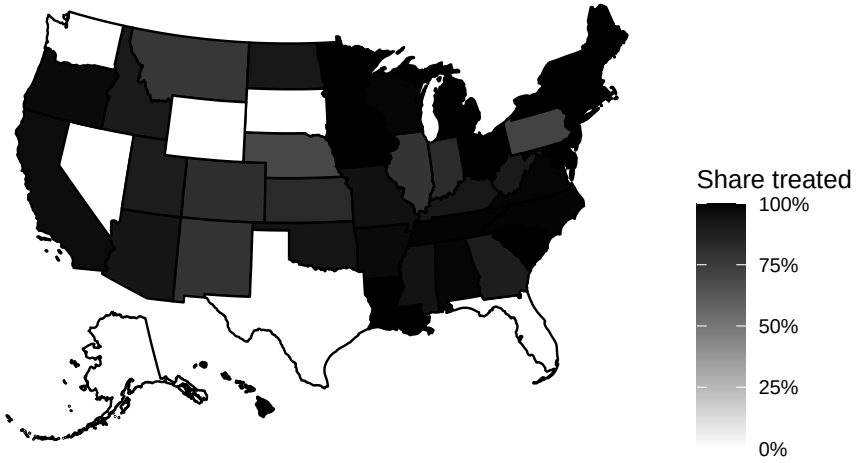

Figure: *For every State, share of counties who are treated.* Back

Share of affected counties by cap level

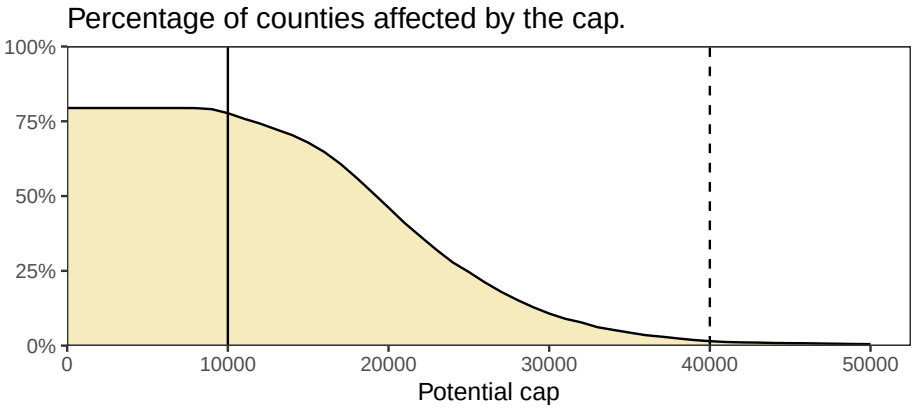

Figure: *Proportion of counties with positive SALT shock. Solid line: $10,000 cap in the 2017 "Tax Cuts and Jobs Act". Dashed line: $40,000 cap in the 2025 "Big Beautiful Bill" (Bloomberg (2025)).*

Back

Results of reduced form

	Leverage$_{c,t}$			
Base year:	2016		2017	
	(1)	(2)	(3)	(4)
SALT$_c$ × Post$_t$	-0.006**	-0.008***	-0.006*	-0.007**
	(-2.2)	(-2.8)	(-2.0)	(-2.1)
(SALT$_c > 0$) × Post$_t$		0.008		0.005
		(1.3)		(0.82)
Observations	5,158	5,158	5,158	5,158
R^2	0.98	0.98	0.98	0.98
Within R^2	0.0008	0.001	0.0007	0.0008
c FE (2,579)	✓	✓	✓	✓
$S \times t$ FE (98)	✓	✓	✓	✓

Period	Estimate	p-value
Pre	-0.24%	43.5%
Post	-0.88%	3.2%**
Difference	-0.64%	9.9%*

Treatment effects of SALT shock, intensive margin, full time series sample (2015-2016 is "Pre", 2018-2021 is "Post").

Back

Split by Use of Proceeds (UOP)

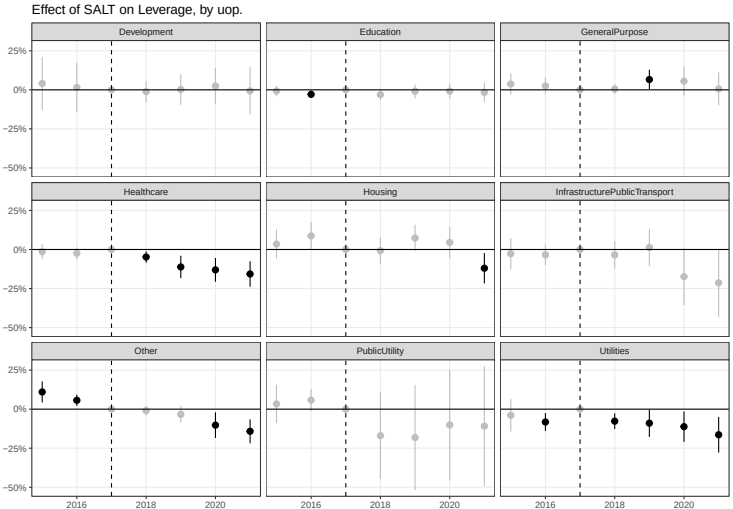

Figure: *Treatment effects of SALT shock on Leverage. Sample split by bond-level UOP.* Back

Split by Use of Proceeds (UOP)

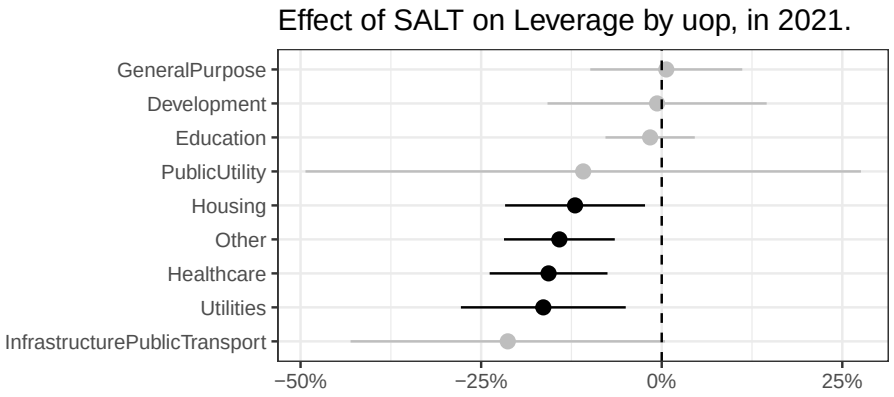

Figure: *Treatment effects of SALT shock on Leverage. Sample split by bond-level UOP.* Back

Split by source of repayment

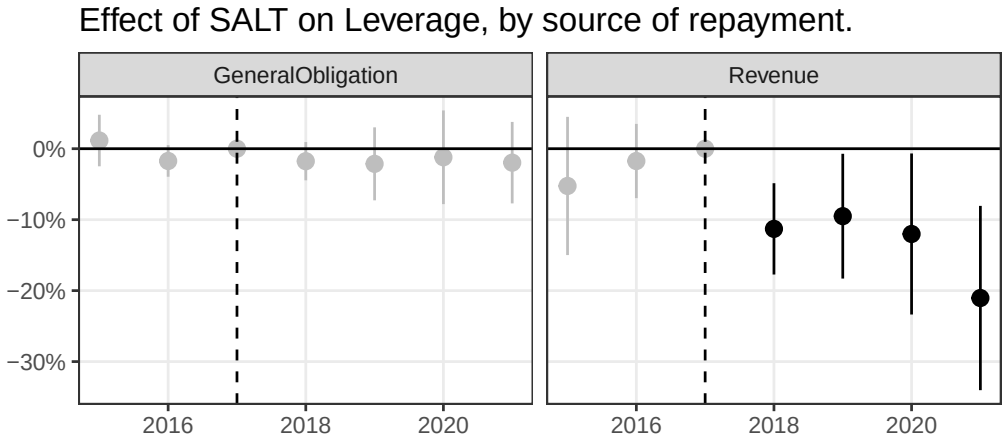

Figure: *Treatment effects of SALT shock on Leverage. Sample split by bond-level source of repayment.* Back

Split by capital purpose

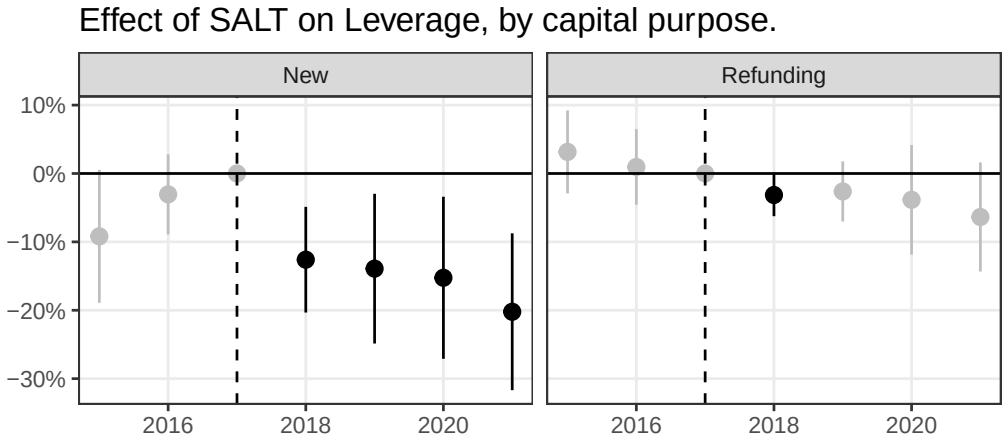

Figure: *Treatment effects of SALT shock on Leverage. Sample split by bond-level capital purpose.*

Back

Split by source of bond taxability

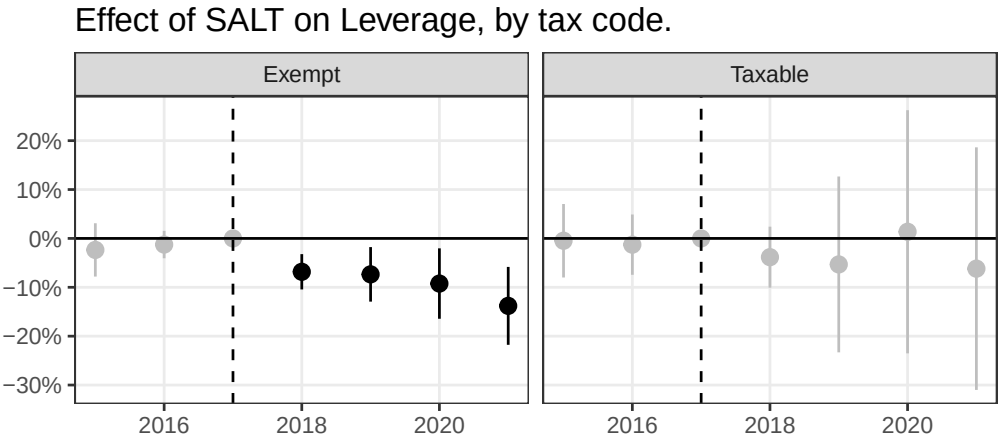

Figure: *Treatment effects of SALT shock on Leverage. Sample split by bond-level taxability.* Back

Full table of results on financial constraints

	Leverage$_{c,t}$							
Split: Definition of constraint	-		InterestCoverage		CashRatio		Both	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SALT$_c$ × Post$_t$	-0.005*	-0.007**	-0.002	-0.004	-0.003	-0.004	-0.001	-0.003
	(-1.9)	(-2.4)	(-0.7)	(-1.2)	(-0.95)	(-1.6)	(-0.45)	(-0.95)
$(\text{SALT}_c > 0) \times \text{Post}_t$		0.008		0.008		0.008		0.008
		(1.3)		(1.2)		(1.3)		(1.3)
SALT$_c$ × Constrained$_c$ × Post$_t$			-0.005**	-0.005**	-0.006**	-0.006**	-0.004**	-0.004**
			(-2.2)	(-2.1)	(-2.3)	(-2.3)	(-2.4)	(-2.4)
Observations	5,080	5,080	5,080	5,080	5,080	5,080	5,080	5,080
R^2	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Within R^2	0.0006	0.0009	0.002	0.002	0.002	0.002	0.001	0.001
c FE (2,540)	✓	✓	✓	✓	✓	✓	✓	✓
$S \times t$ FE (98)	✓	✓	✓	✓	✓	✓	✓	✓

Back

Robustness tests for the effects of financial constraints

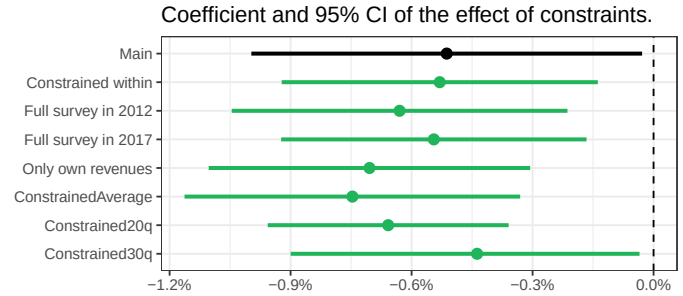

Figure: *Robustness checks for the effects of financial constraints. One at a time: (i) We define "constrained" a county with an above-median interest impact within the state, not compared to the entire cross-section of counties; (ii)-(iii) We use data from the 2012 or 2017 survey of local governments, covering the entire universe of municipal issuers instead of a representative sample; (iv) We scale interest payments by own revenue and not by total revenue, therefore excluding intergovernmental transfers such as those from state to county or across counties; (v) We define "constrained" a county with an above-average interest impact rather than above-median; (vi)-(vii) We define "constrained" a county below the 20th or 30th percentile of interest coverage ratio, rather than the median.* Back

Financially constrained $\neq$ Low-income

	Interest$_c$		Cash$_c$	
	2015	2016	2015	2016
	(1)	(2)	(3)	(4)
$\log$(IncomePerCapita$_c$)	0.39***	0.46***	-0.01	0.06
	(3.0)	(4.6)	(-0.2)	(1.0)
Observations	2,540	2,540	2,540	2,540
R^2	0.16	0.17	0.18	0.18
Within R^2	0.02	0.03	3×10^{-5}	0.0006
S FE (49)	✓	✓	✓	✓

Table: *Estimate of Constrained$_c = \alpha_S + \beta \times \log($IncomePerCapita$_c) + \varepsilon_c$, with a cross-section from 2015 or 2016. Interest and Cash are dummy variables which refer to having a interest coverage ratio or cash ratio below the cross-sectional median. Standard errors clustered by State.* Back

Sample split by State Fund Holdings (SFH)

	Leverage$_{c,t}$					
Split: SFH	Full sample		Low		High	
	(1)	(2)	(3)	(4)	(5)	(6)
SALT$_c$ × Post$_t$	-0.006*	-0.007**	-0.005	-0.007	-0.006**	-0.007*
	(-1.9)	(-2.5)	(-0.91)	(-1.5)	(-2.2)	(-2.1)
(SALT$_c > 0$) × Post$_t$		0.007		0.009		0.004
		(1.2)		(0.93)		(1.5)
Observations	4,994	4,994	2,598	2,598	2,396	2,396
R^2	0.98	0.98	0.97	0.97	0.99	0.99
Within R^2	0.0006	0.0009	0.0003	0.0005	0.004	0.005
c FE	2,497	2,497	1,299	1,299	1,198	1,198
$S \times t$ FE	94	94	48	48	46	46

Table: *Estimates of the effect of SALT on leverage, splitting States by the importance of State Fund Holdings (Babina et al. (2021)).* Back