Internet Appendix for:

Voter-induced Municipal Credit Risk

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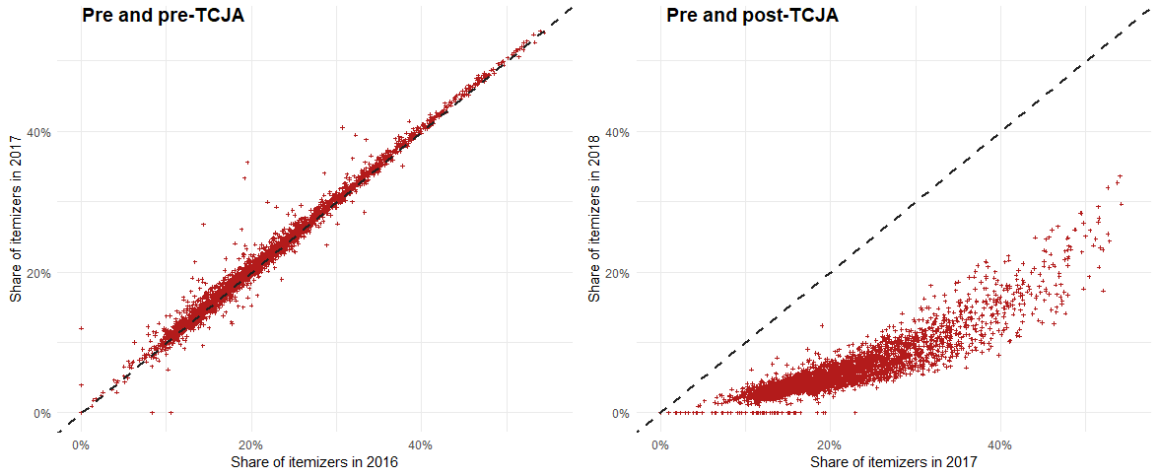
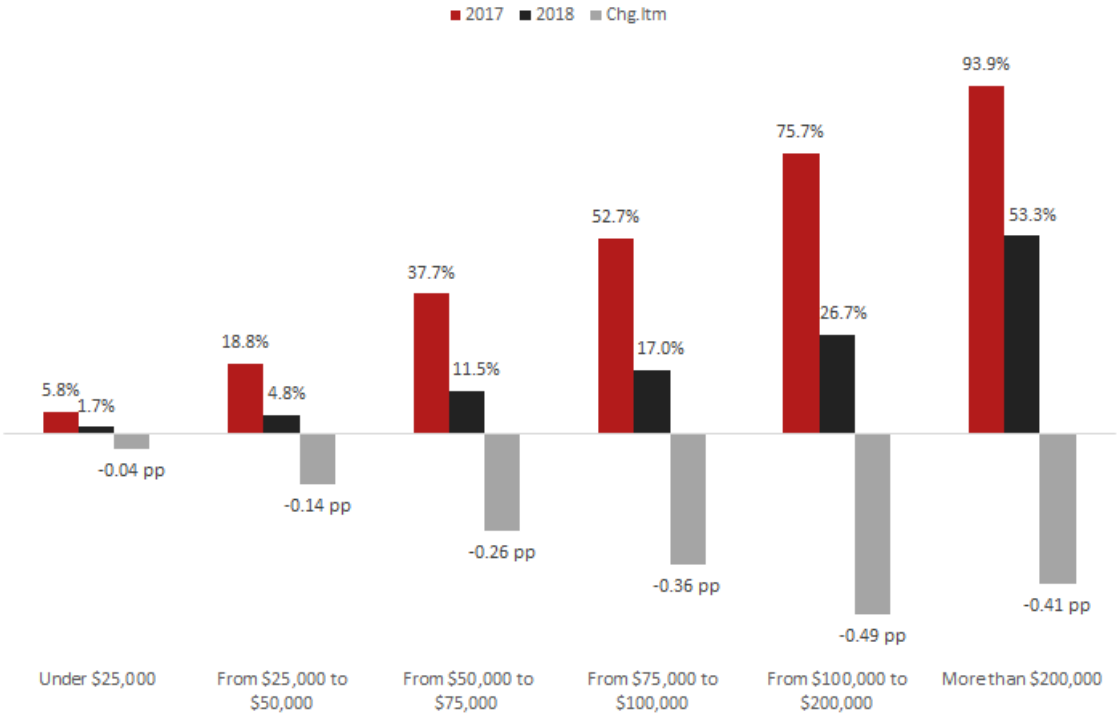
1 Additional Figures & Tables

Figure A1: Change in taxpayers' itemization rates



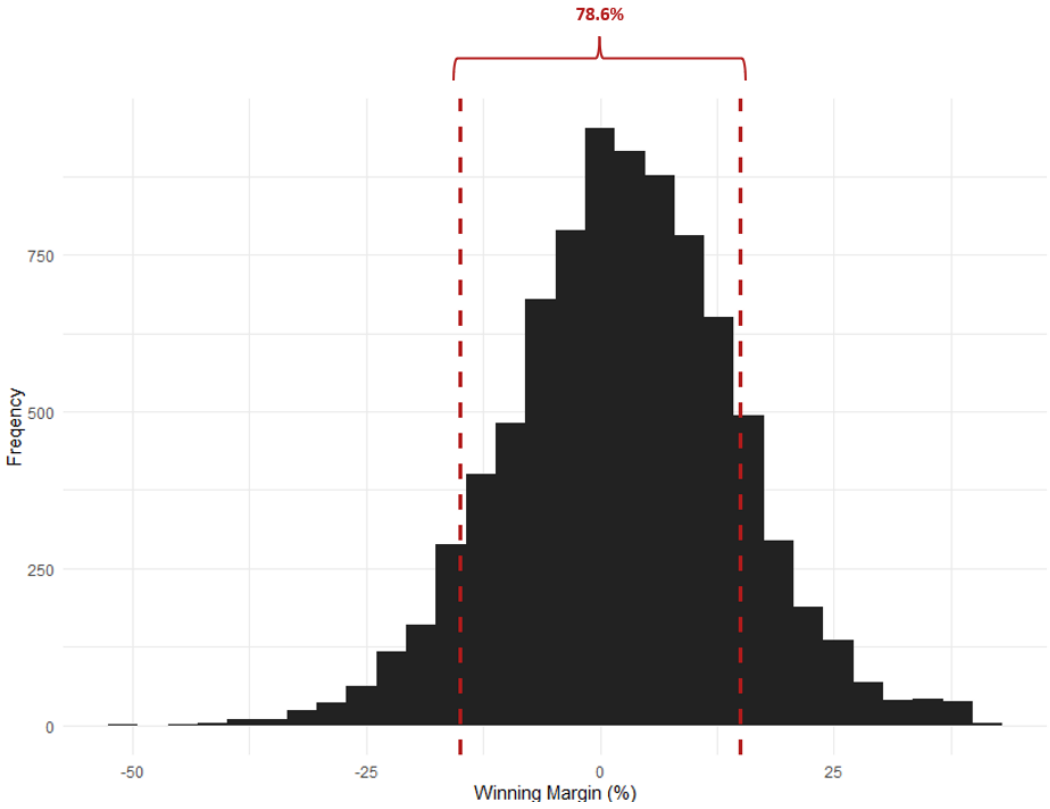
(a) Temporal variations



(b) Variation by income bins

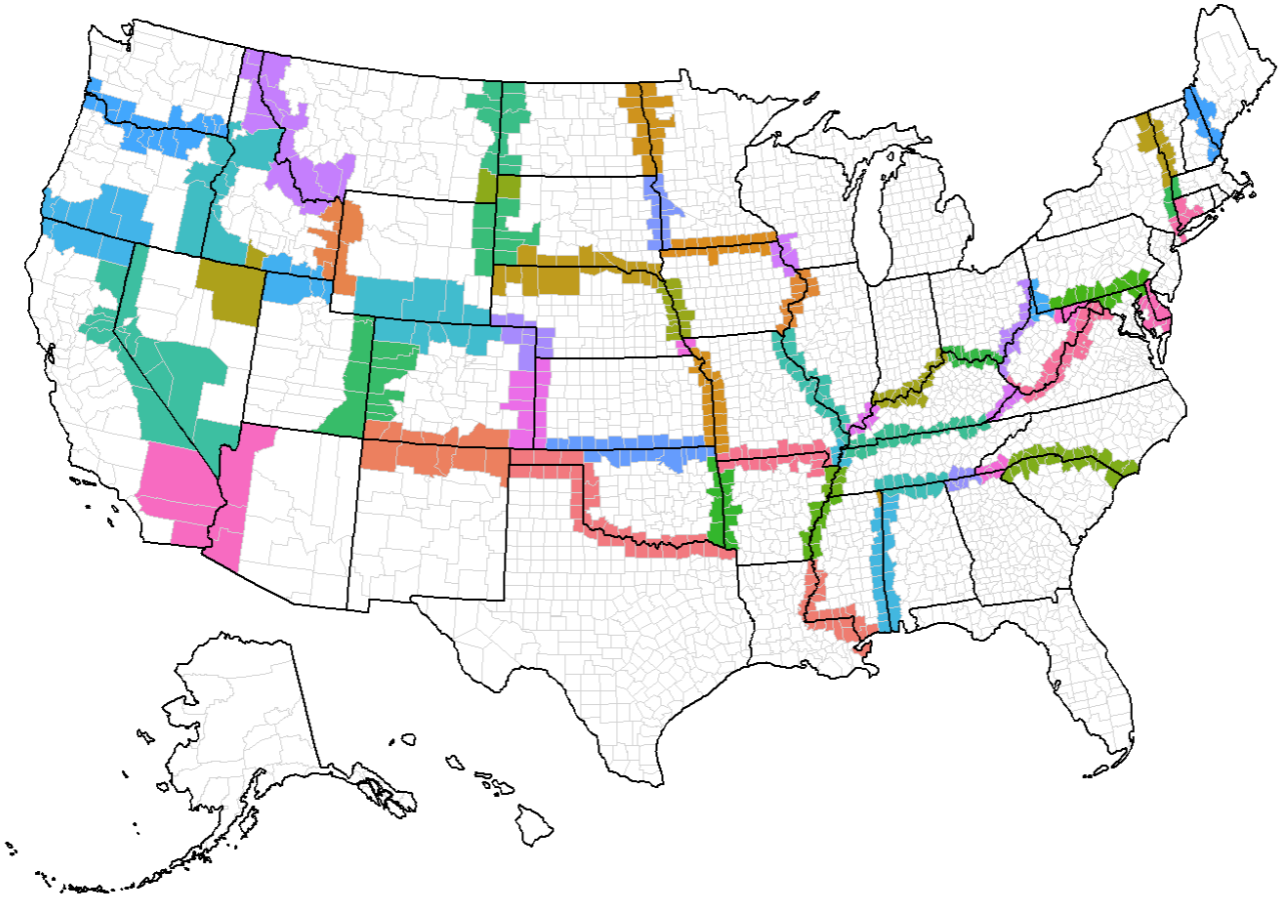
Note: The scatter plots in Panel (a) show the share of itemizers by county in 2016 versus 2017 (left) and between 2017 and 2018 (right). Each dot represents one county and both lines show the 45-degree line. In Panel (b), the bar graph shows the share of itemizers in 2017 and 2018 by income groups. The negative grey bars show the treatment variable Chg.Itm. The data comes from the Statistics of Incomes of the IRS

Figure A2: Winning margin at bond and tax referenda in four states



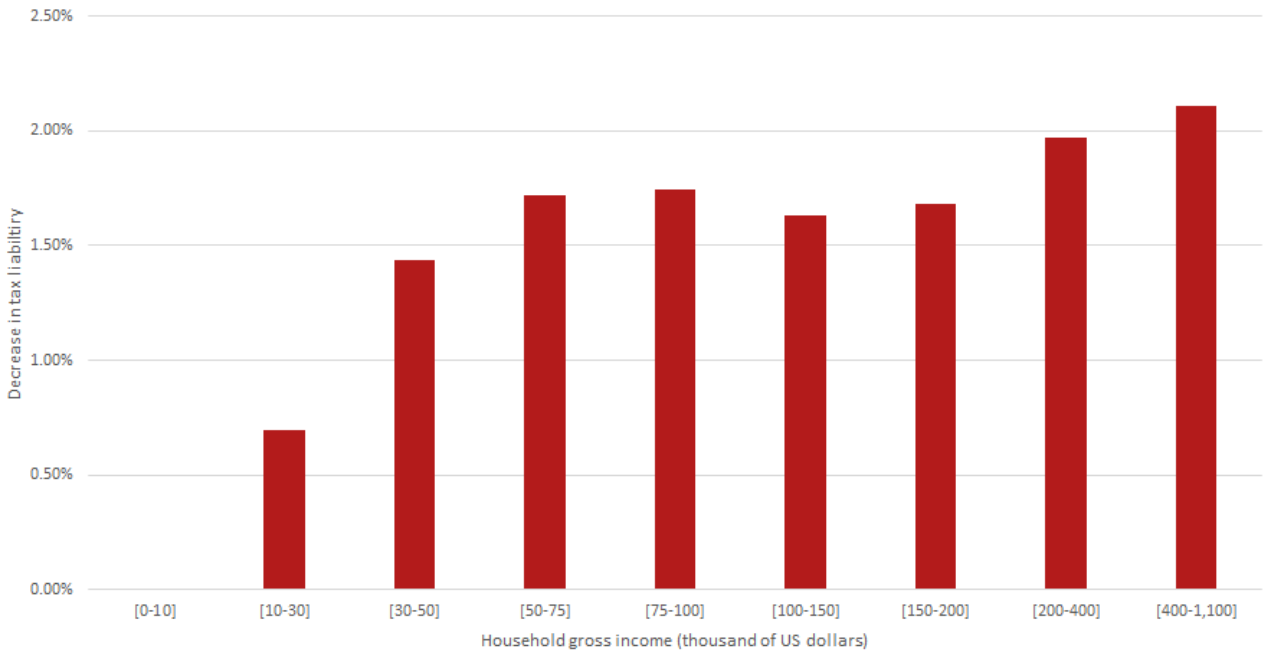
Note: This histogram shows the winning margin at school bond and tax referendums from 2000 to 2016 in California, Ohio, Texas, and Wisconsin. The data was downloaded from the replication files of Kogan et al. (2018). The vertical dashed bars show the +/- 15 percentage points away from the passing thresholds.

Figure A3: State-border pairs with distinct residents' voting status



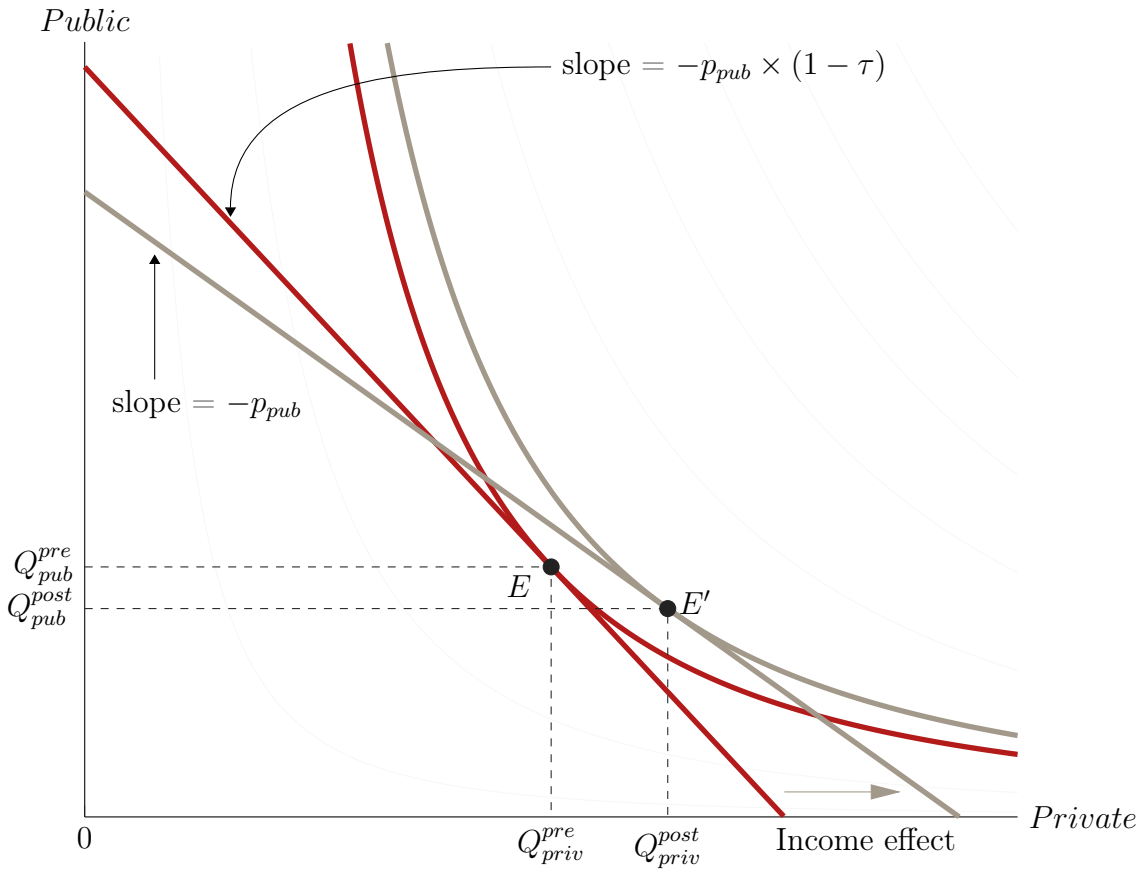
Note: This map shows the state-border pairs used in the border study. Counties are grouped together (one color) when the political involvement of residents differs from one to the other side of the state borders.

Figure A4: TCJA implied income effects from change in tax liability



Note: These bars show the decrease in tax liability from the TCJA in the percentage of income. The data is compiled from Table (4) of Ambrose et al. (2022).

Figure A5: TCJA fiscal change and demand for local public goods with income effects



Note: This chart theoretically shows the demand for local public goods for a resident who stopped deducting their State and Local Taxes (SALT) from their federal taxable income (treated resident), in combination with an increase in disposable income. The utility function is defined by Cobb-Douglas over public and private goods. p_{pub} represents the price of a unit of public goods, and τ is the average tax on federal incomes.

Table A1: Distribution of the fiscal shock measure by jurisdiction types

This table shows the distribution of the Chg.Itm variable for different jurisdiction level. The data comes from the Statistics of Income of the IRS. The school district measure is cross-walked using the The School District Geographic Reference Files provided by the EDGE program.

	Number	min	q01	q05	q25	Median	q75	q95	q99	max
State	51	0.130	0.131	0.139	0.168	0.196	0.212	0.241	0.259	0.266
County	3,141	0	0.059	0.085	0.119	0.151	0.191	0.251	0.293	0.347
School Districts	13,471	0	0.049	0.091	0.134	0.176	0.228	0.308	0.349	0.418
Zip code	27,521	0	0	0.045	0.129	0.176	0.231	0.313	0.364	0.583

Table A2: State level change in the share of itemizers pre- and post-TCJA

State	Chg.Itm (p.p.)	State	Chg.Itm (p.p.)
AL	18.17	MT	20.78
AK	15.38	NE	20.59
AZ	18.84	NV	16.73
AR	15.89	NH	21.93
CA	18.03	NJ	25.27
CO	20.11	NM	15.48
CT	26.62	NY	22.92
DE	21.18	NC	18.90
DC	18.62	ND	14.30
FL	17.13	OH	19.64
GA	20.08	OK	15.67
HI	16.65	OR	22.95
ID	20.41	PA	20.32
IL	21.24	RI	22.74
IN	17.02	SC	18.60
IA	23.27	SD	13.00
KS	18.15	TN	13.56
KY	20.08	TX	16.93
LA	16.64	UT	21.46
ME	20.02	VT	20.69
MD	22.65	VA	20.35
MA	23.07	WA	18.00
MI	19.75	WV	13.12
MN	24.23	WI	24.05
MS	16.76	WY	15.73
MO	18.97		

Table A3: Local fiscal shock and municipal bonds spreads - full set of coefficients

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. In Columns (4) and (5), regressions include the log of house value, the annual housing price growth, and the 3-year-horizon growth of housing permits. In Column (5), the post-TCJA trades are weighted by the number of trades for the same bond observed before the TCJA. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)				
	(1)	(2)	(3)	(4)	(5)
$Post_t \times Chg.Itm_j$	67.10**	55.06***	54.73***	56.40***	48.03**
	(27.53)	(19.19)	(19.16)	(19.76)	(21.81)
Population		−110.38**	−114.62**	−113.88**	−110.86**
		(45.11)	(44.55)	(45.33)	(51.91)
Income per capita		0.001***	0.001***	0.001***	0.001***
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Pop. growth		−140.57*	−125.31*	−177.48**	−233.04**
		(75.80)	(73.73)	(84.35)	(99.52)
Employment growth		−56.24**	−55.78**	−59.52**	−57.93**
		(23.84)	(23.85)	(25.20)	(28.50)
Labor participation		60.54	55.51	89.85	116.03*
		(47.60)	(46.34)	(55.84)	(63.22)
Inv. maturity			91.52***	91.84***	86.36***
			(8.34)	(8.34)	(7.73)
Treasury Rate			−0.59***	−0.59***	−0.59***
			(0.04)	(0.04)	(0.04)
House value growth (%)				−0.09	−0.08
				(0.11)	(0.14)
House Value (log)				−5.90	−2.56
				(15.79)	(17.36)
Permit growth 3-year-horizon				0.06	0.03
				(0.27)	(0.43)
Bond FE	X	X	X	X	X
State x Month FE	X	X	X	X	X
Weighted trades					X
Observations	1,641,662	1,641,662	1,641,662	1,622,649	1,622,649
R^2	0.93	0.93	0.93	0.93	0.93
Adjusted R^2	0.92	0.92	0.92	0.92	0.92

Table A4: Robustness to main specifications

This table reports the regression estimates of various specifications following the baseline regression $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_j *are county or bond fixed effects as described in the table,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. In Column (1), the dependent variable is replaced by* $Spread\_MMA_{i,j,t}$, *the traded municipal bond spread over the MMA-curve. In Column (2), the treatment intensity variable is* $Itm2017_j$, *the share of itemizers in county* j *in 2017. In Column (3), the regressions do not include* $Z_{j,t-1}$, *in Column (4)* $X_{i,t}$ *includes bond rating fixed effects, and in Column (5) it also includes bond rating fixed effects interacted with month of trade fixed effects. Standard errors, presented in parentheses, are double-clustered at the county and trading month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable:				
	Spread MMA	Spread (bps)			
	(1)	(2)	(3)	(4)	(5)
$Post_t \times Chg.Itm_j$	29.58***		65.13**	56.14***	45.43***
	(10.36)		(27.53)	(17.91)	(15.82)
$Post_t \times Shr.Itm17_j$		35.23***			
		(8.72)			
State x Month FE	X	X	X	X	X
Bond FE	X	X	X	X	X
Bonds characteristics	X	X	X	X	X
County-level controls	X	X		X	X
Rating FE				X	X
Rating x Month FE					X
Observations	1,488,023	1,488,023	1,488,871	1,488,023	1,488,023
R^2	0.90	0.93	0.93	0.93	0.93
Adjusted R^2	0.88	0.92	0.92	0.92	0.92

Table A5: Unobservable-bias-adjusted treatment effects

This table reports the implied treatment effect (β^*) after correcting for the possible unobservable bias following Oster (2019) methodology using R_{max}, the maximum achievable R-square should we have access to all observable and non-observable variables, of 1 and various δ parameters, the degree of selection on unobservable relative to observables. Columns (1) and (2) use the regressions results of Table 2 Columns (1) and Columns (4) compared to a baseline regression that includes only the treatment variable $Post_t \times Chg.Itm_j$ and its lower interactions ($\beta = 126.61$ and $R^2 = 0.04$). In Columns (3) and (4), we compare the results of Columns (1) and (4) of Table **??** *with regressions that include Month by state fixed effects, county fixed effects, and bond characteristics ($\beta = 75.29$ and $R^2 = 0.64$). The last row shows the implied δ that would equal the treatment effects to zero ($beta^* = 0$).*

	No control		Some controls	
	to some	to most	to more	to most
	(1)	(2)	(3)	(4)
$\delta = 0.5$	64.853	53.837	66.150	54.298
$\delta = 1$	62.611	51.273	65.204	52.193
$\delta = 2$	58.125	46.144	63.311	47.985
$\delta = 3$	53.640	41.015	61.419	43.776
δ^*	14.958	10.997	35.456	13.402

Table A6: Difference-in-differences estimates of the house value increase

This table reports the estimates of $log(HousePrice_{j,t}) = \alpha_1\ Post_t + \alpha_2\ Chg.Itm_j + \alpha_3\ (Post_t \times Chg.Itm_j) + \epsilon_{j,t}$ *where* $HousePrice_{j,t}$ *is the Single Family Median house price for each zip code from Zillow ZHVI for all months from January 2015 to December 2020. Post equals one for periods after the enactment of the TCJA in January 2018, and* $Chg.Itm$ *is the differences between the share of itemizers in 2017 and 2018 in each zip code computing from the SOI of the IRS. Standard errors clustered at the level of the fixed effects are presented in parentheses. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable:				
	log(Median house value)				
	(1)	(2)	(3)	(4)	(5)
Post x Chg.Itm	-0.122^{**}	-0.125^{***}	-0.109^{***}	-0.112^{***}	-0.112^{***}
	(0.051)	(0.035)	(0.009)	(0.036)	(0.011)
Chg.Itm	4.822^{***}	4.824^{***}	4.022^{***}	3.856^{***}	
	(0.207)	(0.205)	(0.125)	(0.163)	
Post	0.163^{***}				
	(0.013)				
State FE	X	X			
Metro FE			X		
County FE				X	
Zipcode					X
Month fixed effects		X	X	X	X
Observations	1,887,988	1,887,988	1,887,988	1,887,988	1,887,988
R^2	0.616	0.619	0.750	0.738	0.996
Adjusted R^2	0.616	0.619	0.750	0.738	0.996

Table A7: Robustness analysis – Housing permit growth

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. In each column, the regression is supplemented by a variable proxying for the growth in housing permits in county j from the Census Building Permits Survey.For instance, in Column (1)* $Permitgrowth1year_t = Permit_t/Permit_{t-1} - 1$, *in Column (2),* $Permitgrowth2year_t = Permit_t/Permit_{t-2} - 1$, *and in Column (4)* $Permitcum.growth2year_t = (Permit_t + Permit_{t-1})/(Permit_{t-2} + Permit_{t-3}) - 1$. *All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)				
	(1)	(2)	(3)	(4)	(5)
$Post_t \times Chg.Itm_j$	55.38***	54.55***	55.75***	53.94***	54.71***
	(19.38)	(19.27)	(19.37)	(19.13)	(19.32)
Permit growth 1-year	0.05				
	(0.35)				
Permit growth 2-year		0.38			
		(0.37)			
Permit growth 5-year			−0.18		
			(0.20)		
Permit cum. growth 2-year				0.63*	
				(0.37)	
Permit cum. growth 3-year					0.05
					(0.27)
State x Month FE	X	X	X	X	X
Bond FE	X	X	X	X	X
Bond characteristics	X	X	X	X	X
County-level control	X	X	X	X	X
Observations	1,636,703	1,636,624	1,636,574	1,638,411	1,638,832
R^2	0.93	0.93	0.93	0.93	0.93
Adjusted R^2	0.92	0.92	0.92	0.92	0.92

Table A8: Robustness analysis – Housing permit growth exposure

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \phi\ Post_t \times Permits.Growth.Exposure_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics.* $Permits.Growth.Exposure_j$ *is the growth in housing permits in 2017 over the last one, two or three years in county* j *computed from the Census Building Permits Survey. In Columns (4-6), we replace* $Post_t$ *by trading month fixed effects. In Columns (7-9), we transform* $Permits.Growth.Exposure_j$ *into deciles categories that we interact with month fixed effects. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Post_t \times Chg.Itm_j$	55.67***	50.59**	52.85***	55.88***	50.25**	50.40***	52.78***	55.44***	50.61***
	(19.43)	(19.27)	(19.00)	(19.43)	(19.31)	(18.61)	(18.59)	(16.96)	(17.01)
$Post_t \times Permits.Growth.1y.Exposure_j$	1.36								
	(1.70)								
$Post_t \times Permits.Growth.2y.Exposure_j$		−2.70*							
		(1.57)							
$Post_t \times Permits.Growth.3y.Exposure_j$			−0.76**						
			(0.34)						
$Month.FE_t \times Permits.Growth.1y.Exposure_j$				X					
$Month.FE_t \times Permits.Growth.2y.Exposure_j$					X				
$Month.FE_t \times Permits.Growth.3y.Exposure_j$						X			
$Month.FE_t \times Permits.Growth.1y.Exposure.Decile_j$							X		
$Month.FE_t \times Permits.Growth.2y.Exposure.Decile_j$								X	
$Month.FE_t \times Permits.Growth.3y.Exposure.Decile_j$									X
State x Month FE	X	X	X	X	X	X	X	X	X
Bond FE	X	X	X	X	X	X	X	X	X
Bond characteristics	X	X	X	X	X	X	X	X	X
County-level control	X	X	X	X	X	X	X	X	X
Observations	1,634,007	1,634,007	1,634,007	1,634,007	1,634,007	1,634,007	1,634,007	1,634,007	1,634,007
R^2	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adjusted R^2	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92

Table A9: Main results dropping 2017

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. All trades from 2015, 2016, 2018, and 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. In Columns (4) and (5), regressions include the log of house value, the annual housing price growth, and the 3-year-horizon growth of housing permits. In Column (5), the post-TCJA trades are weighted by the number of trades for the same bond observed before the TCJA. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)				
	(1)	(2)	(3)	(4)	(5)
$Post_t \times Chg.Itm_j$	86.75**	69.82***	69.71***	71.12***	63.13**
	(34.29)	(24.69)	(24.54)	(25.36)	(26.70)
Bond FE	X	X	X	X	X
State x Month FE	X	X	X	X	X
County-level control		X	X	X	X
Time-varying bond control			X	X	X
Housing price controls				X	X
Weighted trades					X
Observations	1,300,572	1,299,873	1,299,873	1,284,574	1,284,574
R^2	0.93	0.93	0.93	0.93	0.93
Adjusted R^2	0.92	0.92	0.92	0.92	0.91

Table A10: Placebo tests

This table reports the estimates of $Spread_{i,j,t} = \delta\ (Post_t \times Chg.Itm_j) + \alpha_{st} + \alpha_i + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j *before and after the TCJA,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls, and* $Z_{j,t-1}$ *are lagged county-level characteristics. Each pair of Columns uses 4 years of tax-exempt GO bond trades as indicated in the Columns headers and* $Post_t$ *equals 1 for the second half of the sample. Standard errors, presented in parentheses, are double-clustered at the county and trading month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively*

	Dependent variable: Spread (bps)							
	2010-2013		*2011-2014*		*2012-2015*		*2013-2016*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Post_t \times Chg.Itm_j$	−5.42	2.15	−3.17	−6.60	−33.68	−31.00	2.77	3.70
	(19.95)	(19.97)	(20.64)	(21.63)	(38.43)	(36.51)	(25.50)	(27.19)
State x Month FE	X	X	X	X	X	X	X	X
Bond FE	X	X	X	X	X	X	X	X
Bonds characteristics	X	X	X	X	X	X	X	X
County-level controls	X	X	X	X	X	X	X	X
Weighted trades		X		X		X		X
Observations	1,222,216	1,222,216	973,481	973,481	1,129,310	1,129,310	1,085,313	1,085,313
R^2	0.87	0.87	0.92	0.92	0.90	0.90	0.92	0.92
Adjusted R^2	0.84	0.84	0.90	0.90	0.88	0.88	0.91	0.90

Table A11: Differences in bonds characteristics based on required approval indicator

*This table reports the summary statistics of tax-exempt GO bonds traded from 2015 until July 2017 (n = 831,288). All statistics are weighted by the inverse of the frequency of trades so that each of the 266,107 bonds carries the same weight. Spread is bond yield over the maturity-matched tax-exempt treasury yield in basis points, spread MMA is the maturity-matched yield on the Municipal Market Advisors AAA-rated curve, $Chg.Itm_j$ is the change in the share of itemizers at the county level. Month-level house values are collected from Zillow ZHVI, and the growth is year-to-year annual housing price growth. The housing permit growth is the cumulative 3-year-horizon growth of housing permits collected from the Census Bureau's Building Permit Survey. The data is split between jurisdictions that require residents' approval for fiscal and bonding policies or do not. The means for the two groups are presented in Columns (4) and (5). The difference in means along the t-statistics computed via OLS with double-clustered standard errors at the state and trade month levels are shown in the last two columns. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Mean	Std. dev.	Median	Approval	Non-approval	Difference	t-statistics
Main variables:							
Spread (bps)	273.90	168.10	242.00	279.23	247.27	31.96	2.61***
Spread MMA (bps)	92.83	80.80	68.02	94.78	83.10	11.68	4.44***
Chg.Itm (%)	0.21	0.05	0.21	0.20	0.22	−0.02	−1.44
Bond-level control variables:							
Rating (notch)	18.33	1.95	18.50	18.21	18.94	−0.73	−3.48***
Coupon (%)	3.60	1.31	3.98	3.55	3.86	−0.32	−2.94***
Maturity (years)	8.15	5.73	6.88	8.30	7.39	0.92	2.14**
Amount (000s)	2,396.37	8,588.05	1,004.63	2,308.13	2,837.30	−529.16	−0.62
Callable	0.57	0.50	0.50	0.57	0.54	0.03	1.35
Insured	0.31	0.46	0	0.33	0.20	0.13	3.20***
Reoffer	0.15	0.35	0	0.15	0.13	0.02	1.81*
Negotiated	0.38	0.48	0	0.40	0.27	0.13	1.24
County-level control variables:							
Income per capita (000s)	52.59	17.30	48.97	50.94	60.87	−9.93	−2.66***
Population growth (%)	0.01	0.01	0.01	0.01	0.01	0.003	0.80
Employment growth (%)	0.02	0.02	0.02	0.02	0.02	0.0002	0.06
Labor participation (%)	0.75	0.06	0.75	0.75	0.77	−0.02	−1.39
House Value (log)	12.36	0.59	12.29	12.32	12.55	−0.23	−1.29
House value growth (%)	4.57	3.51	4.34	4.77	3.59	1.18	1.22
Housing permit growth (%)	0.52	1.76	0.42	0.52	0.52	−0.004	−0.04

Table A12: Municipal bond yields and residents' involvement in municipal finance

This table reports the estimates of $Spread_{i,j,t} = \alpha_t + \psi Approval_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the tax-adjusted spread over the maturity-matched treasury yield at issuance,* $Approval_j$ *are indicators for jurisdiction in which residents' approval for local taxes and bonds are required,* α_t *are month fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. The sample consists of all GO bonds issuance data from 2015 to July 2017. In Columns (2) and (4), we further split the approval indicator into Majority and Supermajority status. In Columns (3) and (4) use, the sample is restricted to GO bonds that are uninsured. Standard errors in parentheses are double-clustered at the county and issuing months level. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)			
	All issues		Uninsured issues	
	(1)	(2)	(3)	(4)
Approval	7.22***		7.19**	
	(2.62)		(2.78)	
Majority states		4.49		4.93
		(2.76)		(2.97)
Supermajority states		18.20***		15.70***
		(3.89)		(4.41)
Month FE	X	X	X	X
Bond characteristics	X	X	X	X
County-level controls	X	X	X	X
Observations	69,830	69,830	53,194	53,194
R^2	0.81	0.81	0.79	0.79
Adjusted R^2	0.81	0.81	0.79	0.79

Table A13: Robustness to voter specifications linked to other TCJA provisions

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Other.TCJA.exposure_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Other.TCJA.exposure_j$ *are various county-level exposure to other TCJA provisions,* $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. Columns (1-2) use the percentage point change in average tax rates, Columns (3-4) use the 10-year (2005-2016) share of GO issuance that was advance refunding bonds, Columns (5-6) use the dollar amount of SALT that could not be deducted because of the cap normalized by the number of tax returns, and Columns (7-8) use the share of votes for Trump at the 2016 presidential election. Each column also includes a triple interaction (and all identified lower-level interactions) between* $Post_t$, $Chg.Itm_j$ *(the decrease in the ratio of itemizers in county* j*), and* $Approval_j$*) (the degree of residents' involvement in the local public finance process). Standard errors, presented in parentheses, are double-clustered at the county and trading month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)			
	(1)	(2)	(3)	(4)
$Post_t \times Chg.TaxRate_j$	−28.54			
	(239.04)			
$Post_t \times Reliance.AdvRefunding_j$		0.26		
		(13.70)		
$Post_t \times Wasted.SALT_j$			0.001*	
			(0.0004)	
$Post_t \times Share.Trump_j$				−12.23**
				(5.77)
$Post_t \times Chg.Itm_j$	−32.50	−31.17	−39.51	−25.46
	(25.81)	(26.65)	(30.43)	(25.88)
... x Approval	98.73***	98.05***	99.95**	95.53***
	(34.97)	(36.16)	(38.43)	(35.66)
State x Month FE	X	X	X	X
Bond FE	X	X	X	X
Bonds characteristics	X	X	X	X
County-level controls	X	X	X	X
Observations	1,640,288	1,640,288	1,637,667	1,635,124
R^2	0.93	0.93	0.93	0.93
Adjusted R^2	0.92	0.92	0.92	0.92

Table A14: Summary statistics weighted by Entropy Balancing Weights

*This table reports the summary statistics of the bond characteristics traded before the TCJA shock (n = 831,288). The sample consists of tax-exempt GO bonds issued by all local governments except state governments. All statistics are weighted by the entropy balancing weights that match bonds in high Chg.Itm jurisdictions to bonds in low Chg.Itm jurisdictions based on the pre-TCJA mean values for (1) spread, (2) median income per capita, and (3) homeownership rates. Spread is the tax-adjusted spread over the treasury bill, spread MMA is the maturity-matched yield on the Municipal Market Advisors AAA-rated curve, and Chg.Itm is the change in the share of itemizers at the county level. The data is split between municipal bonds that occurred in counties with high or low Chg.Itm (below or above the national shock of 19.6 percentage points). The means for the two groups are presented in Columns (4) and (5). The difference in means along the t-statistics computed via OLS with double-clustered standard errors at the county and trade month levels are shown in the last two columns. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Mean	Std. dev.	Median	High *Chg.Itm*	Low *Chg.Itm*	Difference	t-statistics
Main variables:							
Spread (bps)	271.66	174.73	227.93	267.66	275.44	-7.78	-1.50
Spread MMA (bps)	98.97	86.49	68.52	98.16	99.74	-1.58	-0.66
Chg.Itm (%)	0.20	0.05	0.19	0.24	0.16	0.08	25.77***
Bond-level control variables:							
Rating (notch)	18.42	1.94	18.50	18.52	18.33	0.20	1.05
Coupon (%)	3.57	1.26	3.98	3.61	3.54	0.07	1.67
Maturity (years)	7.34	5.53	5.96	6.89	7.78	-0.89	-5.34***
Amount (000s)	13.68	1.23	13.66	13.71	13.65	0.06	0.93
Callable	0.56	0.50	0.50	0.54	0.57	-0.03	-3.01***
Insured	0.32	0.47	0	0.30	0.34	-0.04	-1.27
Reoffer	0.12	0.32	0	0.11	0.12	-0.004	-0.52
Negotiated	0.37	0.48	0	0.32	0.42	-0.10	-2.71**
County-level control variables:							
Income per capita (000s)	55,892.47	22,231.34	49,616	57,321.28	54,538.16	2,783.12	0.58
Population growth (%)	0.01	0.01	0.01	0.01	0.01	-0.0001	-0.05
Employment growth (%)	0.02	0.02	0.02	0.02	0.02	0.003	1.07*
Labor participation (%)	0.77	0.07	0.76	0.77	0.76	0.02	1.78

Table A15: Bond pre-TCJA rating and maturity, change in itemizers, and municipal bond spread

This table reports the estimates of $Spread_{i,j,t} = \delta(Post_t \times Chg.Itm_j) + \delta^{rating}(Post_t \times Chg.Itm_j \times LowRating_j) + \alpha_{st} + \alpha_i + \beta X_{i,t} + \gamma Z_{j,t-1} + \eta(Post_t \times HighRating_j) + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county j and traded at month t,* $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. In Columns (1) and (2),* $LowRating_j$ *is an indicator that equals one if the pre-TCJA is lower than the median, and in Columns (3) and (4) is replaced by* $LongMaturity_j$*, an indicator that equals one if the pre-TCJA maturity is greater than the median. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. Columns (2) and (4) also include a triple interaction (and all identified lower-level interactions) between* $Post_t$*,* $Chg.Itm_j$*, and* $Approval_j$*) (the degree of residents' involvement in the local public finance process). Standard errors, presented in parentheses, are double-clustered at the county and trading month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)				
	(1)	(2)	(3)	(4)	(5)
$Post_t \times Chg.Itm_j$	2.54	−67.50**	1.04	−79.22**	−35.97
	(27.21)	(32.72)	(24.94)	(31.80)	(42.28)
... X *LowRating*	121.25*	118.82*			99.66
	(69.99)	(70.25)			(99.73)
... X *HighMaturity*			76.43***	75.07***	59.29*
			(26.98)	(27.03)	(32.08)
... x High Maturity x Low Rating					23.96
					(62.56)
$Post_t \times Chg.Itm_j \times Approval_j$		80.79**		92.61**	
		(36.11)		(35.55)	
State x Month FE	X	X	X	X	X
Bond FE	X	X	X	X	X
Bond characteristics	X	X	X	X	X
County-level control	X	X	X	X	X
Observations	1,488,023	1,488,023	1,488,023	1,488,023	1,488,023
R^2	0.93	0.93	0.93	0.93	0.93
Adjusted R^2	0.92	0.92	0.92	0.92	0.92

Table A16: Local fiscal shock to residents and revenue bonds spreads

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded revenue bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. All trades from 2015 to 2019 of Revenue bonds issued before the TCJA announcement are used. In Columns (4) and (5), regressions also include the log of house value and the annual housing price growth. In Column (5), the post-TCJA trades are weighted by the number of trades for the same bond observed before the TCJA. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)				
	(1)	(2)	(3)	(4)	(5)
$Post_t \times Chg.Itm_j$	−4.09	−33.21	−30.05	−15.01	−13.14
	(33.56)	(28.50)	(28.77)	(28.79)	(30.63)
Bond FE	X	X	X	X	X
State x Month FE	X	X	X	X	X
County-level control		X	X	X	X
Time-varying bond control			X	X	X
Housing price controls				X	X
Weighted trades					X
Observations	961,033	960,996	960,996	953,397	953,397
R^2	0.94	0.94	0.94	0.94	0.94
Adjusted R^2	0.93	0.93	0.93	0.93	0.93

Table A17: Residents' shock at state and school district level, and government bond yields

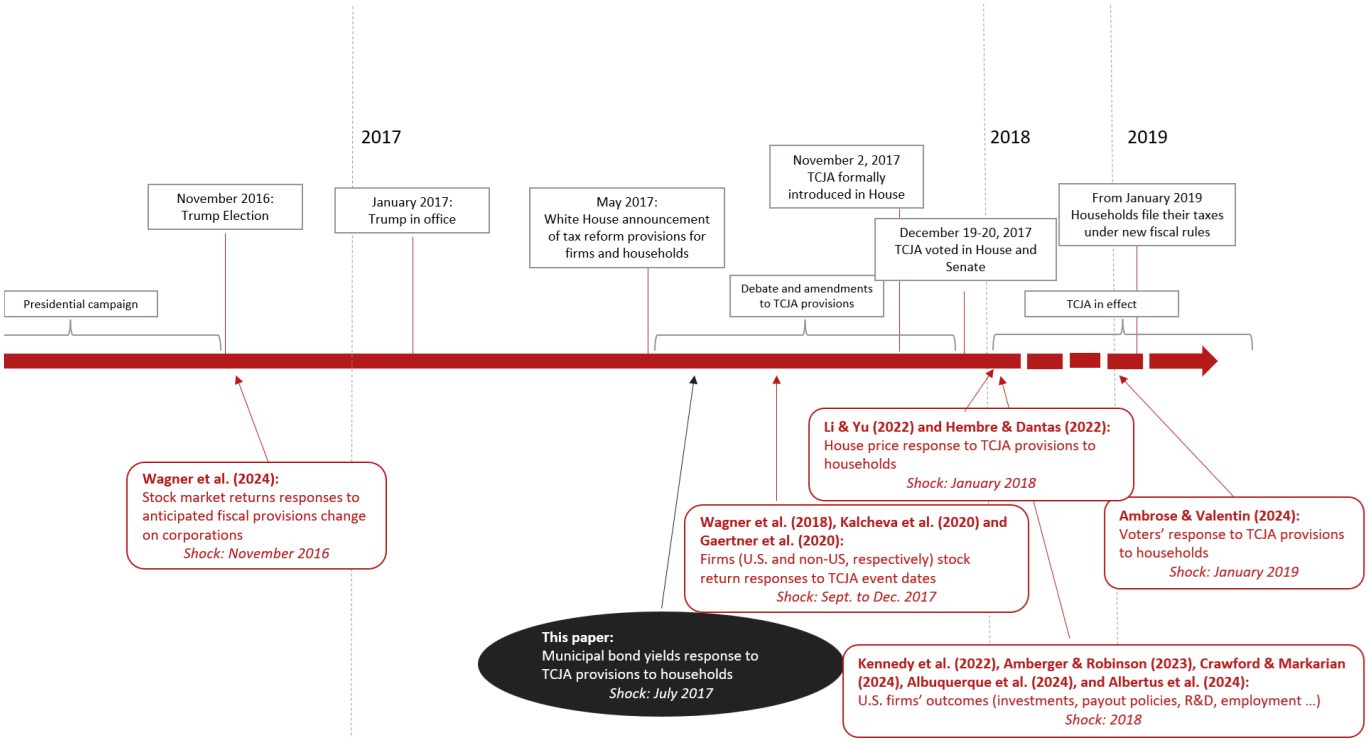
This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in jurisdiction* j *traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in jurisdiction* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_t *and* α_i *are time and bond fixed effects as described in the table,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. Standard errors, presented in parentheses, are double-clustered at the State (Columns [1-2]) or School district (Columns [3-4]) and trading month level. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Spread (bps)			
	State bonds		School district bonds	
	(1)	(2)	(3)	(4)
$Post_t \times Chg.Itm_j$	247.74***	191.88***	17.54***	16.59***
	(33.95)	(34.16)	(4.34)	(4.79)
Month FE	X	X		
State x Month FE			X	X
Bond FE	X	X	X	X
Bond characteristics	X	X	X	X
County/State-level controls	X	X	X	X
Weighted trades		X		X
Observations	171,069	171,069	745,007	745,007
R^2	0.93	0.93	0.93	0.93
Adjusted R^2	0.93	0.92	0.92	0.91

2 Discussion of Treatment Date Choice

Figure B1 shows the timeline of TCJA along with the various treatment dates from selected papers that use this shock in their empirical strategy. The existing literature supports a variety of post-TCJA treatment periods, ranging between November 2016 and January 2019, with the differences rationalized by the timing of information releases regarding changes in the corporate versus personal tax codes and the presumed speed with which different economic agents will incorporate this information. For example, Wagner et al. (2018a) uses the Trump election date (November 2016) to study the effects on stock returns since plans for corporate tax cuts were unambiguously on Trump's policy platform during the presidential campaign. Wagner et al. (2018b), Kalcheva et al. (2020) and Gaertner et al. (2020), in contrast, select various key-event dates, spanning from September to December 2017 to study non-US and US stock market reactions.[1] In contrast, Li and Yu (2022) and Hembre and Dantas (2022) use January 2018 to study the effects on home values, while Ambrose and Valentin (2024) uses even later dates to study voting outcomes. These later dates are consistent with the fact that the TCJA proposals for changes in personal taxes were not discussed until the announcement in mid-2017, and the marginal homebuyers and voters were slower to incorporate the TCJA into their decisions.

Figure B1: TCJA timeline and related papers



Note: This timeline presents the key events related to the passage of the TCJA and illustrates the different studies that have used the TCJA as a shock in their empirical analyses, along with the various dates they have chosen.

Two key institutional details support our use of a post-period beginning on or around July 2017. First, the TCJA provisions regarding households were announced in May of 2017 and were followed

[1] Other studies that focus on corporate investments among other firms' outcomes, such as Crawford and Markarian (2024), Amberger and Robinson (2024), Kennedy et al. (2022), and Albertus et al. (2024), use 2018 as the shock date. Albuquerque et al. (2024) uses January 2018 but specifically controls for the three months leading to January 2018 to avoid anticipation bias in the payout rates they study. Given our monthly data and to avoid anticipation bias (Borochin et al., 2022), we avoid using these later dates.

by several months of debate before being voted on in the House of Representatives in December of 2017. Thus, any date before May of 2017 is almost certainly too early for the purposes of our study, although in theory there could have been an earlier response that was then updated when the specific provisions of the TCJA were released.

Second, the July 2017 date is consistent with the dates chosen in the literature to the extent that the marginal investors in the municipal bond market are somewhat slower to incorporate information compared to equity market participants but faster than the typical homebuyer or voter. Although municipal bonds are traditionally viewed as being slower at incorporating information than more liquid markets (Cornaggia et al., 2022), several recent studies support the idea that municipal bond prices have recently begun responding more quickly to new information. On a high level, evidence suggests that the municipal bond market has transformed from being illiquid to a more transparent and liquid market characterized by increased trading by informed investors (Hund et al., 2024).

3 Endogeneity Concerns

We recognize that there is a potential correlation between our treatment intensity variable and trends in municipal bonds (and their premiums). Thus, we conduct several additional tests demonstrating that our analysis is robust to this concern. First, we study whether the composition of traded bonds changes around the TCJA in a way that could bias our main estimates. To do this, we construct complete panel data and estimate a linear probability model in which the dependent variable is an indicator that equals one when a bond is traded in a given month and the explanatory variables of interest are the same as those used in our main tests. Table C1 shows the results. The statistically insignificant coefficients on our main treatment variable indicate that more and less intensively treated bonds are not differential likely to be traded after the TCJA. Moreover, the non-significant interactions with other explanatory variables indicate little change in the relative characteristics of the treated and untreated bonds being traded after the TCJA shock.

Second, we acknowledge that our treatment embeds parts of any post-TCJA changes in the effect of factors such as household income, home value, and homeownership rate on municipal yield spreads. To document the effects of these three main determinants of the share of itemizers, we collect these data at the county level as of 2017 (pre-TCJA) and interact them with *Post* in regression specifications that parallel our main specification. We show the results in the first 4 columns of Table C2 noting that all these variables are standardized for ease of interpretation and comparison. As expected, these controls have a positive correlation with bond yields post-TCJA, although only the housing value exposure impacts yields significantly. For instance, the coefficients in Column (2) indicate that bond yield in a county with a housing value one standard deviation above the mean experiences a relative yield increase of 6.66 bps. Adding those three variables together depicts similar results with housing value being the only significant variable.

The last two columns of Table C2 show that our treatment operates through more than just these channels by controlling for deciles of these determinants interacted with month-fixed effects. The results of Columns (5) and (6) show that the residual variation in our treatment significantly predicts yield spreads, with possibly even a larger magnitude than the overall treatment effect we estimate. Examples of residual treatment are non-linearities in the income distribution (i.e., the change in itemizers is smallest in the bottom and top of the income distribution but concentrated in the middle and upper-middle class), the extent of family-based deductions, charitable giving, etc. The fact that these types of residual variation strongly predict post-TCJA yield is supportive of our argument because (1) it is unlikely that these features of the change in itemizers are coincidentally

related to post-TCJA yield spreads through channels other than our treatment, and (2) the similarity in the point estimate when compared to our main results suggests that our baseline treatment effect estimates are not substantially biased due to the inclusion of the three forces.

Table C1: Pre- and post-TCJA probability of municipal bond trading

This table reports the estimates of $Traded_{i,j,t} = \alpha_{st} + \alpha_j + \delta\ Post_t \times Chg.Itm_j + \beta X_i \times Post_t \times Chg.Itm_j + \varepsilon_{i,t}$. $Traded_{i,t}$ *is an indicator variable that equals one if bond* i *is traded in month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_j *are county fixed effects,* X_i *are bond level controls. A complete panel data of tax-exempt GO bonds issued before the TCJA announcement and traded at least once in the period 2015-2019 is used. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable: Traded indicator						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Post_t \times Chg.Itm_j$	0.007	0.064*	0.107	−0.003	−0.030	−0.004	−0.029
	(0.017)	(0.038)	(0.241)	(0.021)	(0.025)	(0.019)	(0.021)
Coupon		0.006					
		(0.004)					
... $\times Post_t$		0.003					
		(0.002)					
... $\times Chg.Itm_j$		0.031					
		(0.022)					
... $\times Post_t \times Chg.Itm_j$		−0.016					
		(0.012)					
Amount (log)			0.049***				
			(0.007)				
... $\times Post_t$			0.001				
			(0.004)				
... $\times Chg.Itm_j$			0.023				
			(0.036)				
... $\times Post_t \times Chg.Itm_j$			−0.007				
			(0.018)				
Callable				0.020***			
				(0.006)			
... $\times Post_t$				−0.002			
				(0.004)			
... $\times Chg.Itm_j$				−0.037			
				(0.026)			
... $\times Post_t \times Chg.Itm_j$				0.017			
				(0.021)			
Insured					−0.032*		
					(0.018)		
... $\times Post_t$					−0.040***		
					(0.011)		
... $\times Chg.Itm_j$					0.105		
					(0.069)		
... $\times Post_t \times Chg.Itm_j$					−0.014		
					(0.048)		
Reoffer						−0.064***	
						(0.010)	
... $\times Post_t$						0.076***	
						(0.011)	
... $\times Chg.Itm_j$						0.034	
						(0.048)	
... $\times Post_t \times Chg.Itm_j$						0.086*	
						(0.051)	
Negotiated							0.019**
							(0.009)
... $\times Post_t$							−0.037***
							(0.014)
... $\times Chg.Itm_j$							−0.010
							(0.034)
... $\times Post_t \times Chg.Itm_j$							0.087
							(0.067)
State x Month FE	X	X	X	X	X	X	X
County FE	X	X	X	X	X	X	X
Observations	15,966,420	15,966,420	15,966,420	15,966,420	15,966,420	15,966,420	15,966,420
R^2	0.021	0.024	0.059	0.022	0.024	0.025	0.022
Adjusted R^2	0.021	0.023	0.059	0.022	0.024	0.025	0.021

Table C2: The effects of the determinants of Itemizers on Bond Yield spread

This table reports the estimates of $Spread_{i,j,t} = \alpha_{st} + \alpha_i + \delta\ Post_t \times Chg.Itm_j + \phi\ Post_t \times Determinants.Itm.Exposure_j + \beta X_{i,t} + \gamma Z_{j,t-1} + \varepsilon_{i,j,t}$. $Spread_{i,j,t}$ *is the traded municipal bond tax-adjusted spread over the maturity-matched treasury yield located in county* j *and traded at month* t, $Chg.Itm_j$ *is the decrease in the ratio of itemizers in county* j, $Post_t$ *equals 1 for bonds traded after July 2017,* α_{st} *are state-by-month fixed effects,* α_i *are bond fixed effects,* $X_{i,t}$ *are bond level controls and* $Z_{j,t-1}$ *are lagged county-level characteristics.* $Determinants.Itm.Exposure_j$ *is the pre-TCJA measure of median income (Column [1]), housing value (Column [2]), and ownership rates (Column [3]) collected from the American Community Survey 5-years at the county level in 2017. All these variables are standardized for ease of interpretation and comparison. All trades from 2015 to 2019 of tax-exempt GO bonds issued before the TCJA announcement are used. Standard errors in parentheses are double-clustered at the county and month levels. Estimates followed by ***, **, and * are statistically significant at the 1%, 5%, and 10% levels, respectively.*

	Dependent variable:					
	(1)	(2)	(3)	(4)	(5)	(6)
$Post_t \times Income.Exposure_j$	5.61			3.32		
	(3.75)			(3.64)		
$Post_t \times HouseValue.Exposure_j$		6.66**		8.06*		
		(3.16)		(4.38)		
$Post_t \times Ownership.Exposure_j$			0.47	3.66		
			(2.60)	(3.88)		
$Post_t \times Chg.Itm_j$					84.65***	19.01
					(26.74)	(29.26)
... $\times Approval_j$						83.60**
						(34.57)
State x Month FE	X	X	X	X	X	X
Bond FE	X	X	X	X	X	X
Bond characteristics	X	X	X	X	X	X
County-level control	X	X	X	X	X	X
Income deciles x Month FE					X	X
House Value deciles x Month FE					X	X
Ownership deciles x Month FE					X	X
Observations	1,640,395	1,640,319	1,640,395	1,640,319	1,640,395	1,640,395
R^2	0.94	0.94	0.94	0.94	0.94	0.94
Adjusted R^2	0.92	0.92	0.92	0.92	0.92	0.92

4 Details on the Voter's approval variable

State	Status	Source	Details
Alabama	Majority	Ballotpedia	*"Alabama requires a ballot measure to issue new bonding or issue special school taxes "*
Alaska	No election	Ballotpedia	*"Alaska is one of nine states along with the District of Columbia that do not require elections for school bond and tax votes."*
Arizona	Majority	Ballotpedia	*"Arizona requires school districts to hold elections for issuing new bonds or to override a school district budget."*
Arkansas	Majority	Abott et al. (2020)	*"There are no limits on local property tax rates that school districts can levy, but there is a minimum of 25 mills for maintenance and operations. A majority of voters must approve increases to property tax rates beyond this minimum."*
California	Supermajority	Rueben and Cerdán (2003)	*"the passage of Proposition 218, which required that any new general tax or fee measure achieve a two-thirds majority vote, did little to aid local efforts to raise funds. For these governments, the only good news along these lines came in 2000, when the passage of Proposition 39 lowered the supermajority needed for school bond approval to 55 percent."*
		CA Secretary of State	Many elections occurring every year at every level of local governments.
Colorado	No election	Ballotpedia	*"Colorado has two different types of ballot measures that are required under two different laws. [...] This type of ballot measure has rarely been used; it is considered to be a last resort option."*
Connecticut	No election	Ballotpedia	*"In Connecticut, the voters of a school district must approve the district's budget on a annual basis. [...]. Also, Connecticut requires state approval for public school bonding and capital projects, but do not require voter approval."*

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State	Status	Source	Details
Delaware	Majority	Ballotpedia	*"Under Delaware law, all school districts must call for a special election in order to issue new bonds. Delaware requires a levy election if a school district wants to increase or decrease a tax levy."*
District of Columbia	No election	Ballotpedia	*"There are no school bond or tax elections in Washington, D.C.."*
Florida	Majority	Ballotpedia	*"referendums are required for school districts wanting to exceed the state's millage limit and to issue new bonds"*
Georgia	Majority	Ballotpedia	*"A simple majority is needed in order to pass a school levy or sales tax election"*
Hawaii	No election	Ballotpedia	*"Hawaii is one of nine states along with the District of Columbia to not have school bond and tax elections."*
Idaho	Supermajority	Idaho Constitution	*"No county, city, board of education, or school district, or other subdivision of the state, shall incur any indebtedness, [...] without the assent of two-thirds of the qualified electors thereof voting at an election to be held for that purpose, [...]"*
Illinois	Majority	Illinois General Assembly	*"however, nothing in this amendatory Act of the 98th General Assembly authorizes a taxing district to increase its limiting rate or its aggregate extension without first obtaining referendum approval as provided in this Section."*
Iowa	Supermajority	Iowa department of education	*"A bond election for school buildings and/or sites must be approved by at least 60 percent of those voting."*
Kansas	Majority	Ballotpedia	*" In Kansas, no capital outlay levy can exceed five years in length without voter approval. Also, ballot questions are mandatory in Kansas for issuing new bonds."*
Kentucky	Supermajority	Ballotpedia	*"A two-thirds super-majority vote is required to pass a bond issue in the State of Kentucky"*
Louisiana	Majority	Abott et al. (2020)	*"Parish school boards also have the authority to levy a "constitutional" property tax of up to 5 mills (13 mills in New Orleans). Districts can supplement this by obtaining voter approval to levy additional property taxes for a specific purpose relating to operations, maintenance, or capital expenses."*

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State	Status	Source	Details
Maine	Majority	Ballotpedia	*"In Maine, school districts are required to have elections to approve a budget or to issue new bonding and or bond taxes."*
Maryland	Only Baltimore	Ballotpedia	*"Under Maryland law, all new bonding for school districts and extensions to tax levies must be approved by the respective County Board of Commissioners where the district resides. The only part of the state that requires bond elections is Baltimore County. "*
Massachusetts	No election	Ballotpedia	*"Massachusetts is one of nine states along with the District of Columbia that do not require elections for school bond and tax votes."*
Michigan	Majority	Abott et al. (2020)	*"School districts must get approval from a majority of voters if they wish to exceed caps on local property taxes that the state set in 1994. In general, there is a cap of 18 mills on non-homestead property taxes. A majority of school district voters must approve millage increases for non-homestead properties and must renew these mills over time."*
Minnesota	Majority	Ballotpedia	*"Minnesota law requires a referendum for issuing new bonds that pertains to capital improvements or new construction of facilities."*
		MN secretary of states	Multiple tax and bond ballots for county, municipal, and school district.
Mississippi	No election	Ballotpedia	*"Mississippi is one of nine states along with the District of Columbia that do not require elections for school bond and tax votes."*
Missouri	Supermajority	Ballotpedia	*"There are tough super majority requirements as a bond issue requires a four-sevenths vote (57.15%) while any referendum involving exceeding the levy cap, debt ceiling levy, or a Proposition C levy referendum requires a two-thirds super majority vote (66.7%) for approval. "*
Nebraska	Majority	Ballotpedia	*"Elections are mandated for exceeding the Maximum Levy Cap, the growth rate, and issuing new bonding."*
New Jersey	Majority	Ballotpedia	*"A three-fifths (60%) super majority is required for levy limit elections while bond referendums require a simple majority."*

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State	Status	Source	Details
Nevada	Majority	Ballotpedia	*"In Nevada, a bond election is mandated if a school district needs to exceed the fifteen percent debt limit set by Nevada law. Also, if a school district wants to issue bonding to build new facilities or improve existing ones, voter approval is required"*
New Hampshire	No election	Ballotpedia	*"New Hampshire does not require school districts to seek voter approval to issue new bonding. New Hampshire is one of nine states along with the District of Columbia to not require school bond or tax elections."*
New Mexico	Majority	Article IX, New Mexico Constitution	*"No such law [] shall take effect until it shall have been submitted to the qualified electors of the state and have received a majority of all the votes cast thereon at a general election"*
New York	Majority with exception	Ballotpedia	*"Elections are not required for any city over 125,000, New York City, and Nassau County because the New York State Constitution forbids any school district from exceeding their debt limits and asking the voters to approve increases in debt limits."*
		Ballotpedia	*"A three-fifths (60%) super-majority vote is required to approve a election involving the constitutionally protected debt limit. A simple majority vote is required to pass a bond issue."*
North Carolina	No election	Ballotpedia	*"Under North Carolina law, a school district cannot take debt that exceeds two-thirds of their current debt without voter approval. The provision in the Constitution is for all local government units including school districts. However, North Carolina does not mandate elections for bond issues and exceeding levy caps. "*
North Dakota	Supermajority	Ballotpedia	*"North Dakota is one of a few states to have tough super majority requirements for voter approval. Any levy for capital improvements must have a three-fifths (60%) super-majority vote while any general fund levy election question must have a fifty-five percent super majority. A distance learning levy only requires a simple majority."*
Ohio	Majority	Coate and Milton (2019)	*"Since 1911, Ohio has limited the ability of local governments to set property tax rates, and allowed voters to approve higher taxes through referenda. [...] Approval requires a majority of votes."*

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State	Status	Source	Details
Oklahoma	Supermajority	Ballotpedia	*"Oklahoma requires a three-fifths (60%) super-majority vote to approve bond referendums while referendums involving the five mill limit only require a simple majority vote."*
Oregon	Majority	Ballotpedia	*"In Oregon, ballot questions are required when a school district if a school district wants to issue bonding, exceed the property tax cap protected by the Oregon Constitution, and exceed the Oregon Mill Rate. "*
Pennsylvania	Majority	Abott et al. (2020)	*"A 2006 law requires voter approval for any proposed tax increase that exceeds an index capturing increases in wages and employment costs for schools. "*
Rhode Island	No election	Ballotpedia	*"There are no school bond and tax elections in Rhode Island. Rhode Island is one of nine states along with the District of Columbia to not hold school bond or tax elections. "*
South Carolina	Majority	Ballotpedia	*"South Carolina requires ballot questions to issue new bonding and to exceed the fifteen mill levy limit. "*
South Dakota	Supermajority	Ballotpedia	*"South Dakota requires a three-fifths (60%) super-majority vote in order to approve a bond measure. However, South Dakota does not require elections for school districts seeking to exceed the levy cap."*
Tennessee	No election	Ballotpedia	*"Tennessee is one of eight states along with the District of Columbia that does not hold school bond or school tax referendums."*
Texas	Majority	Yu et al. (2022)	*"To issue general obligation bonds, local governments in Texas must obtain voter approval in referenda that use a simple majority rule."*
Utah	Majority	Ballotpedia	*"A simple majority is needed to pass an election involving the state mandated debt limit or a bond issue."*
Vermont	No election	Ballotpedia	*"All bond issues and requests to raise tax levies are the authority of the Vermont Educational and Health Buildings Agency. It is up to the agency to freely set the terms of all bond issues including interest, selling terms, maturity, and restrictions on successive bond issues."*

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State	Status	Source	Details
Virginia	No election	Ballotpedia	*"If a county wants to provide bonding to two or more school divisions a ballot question is required. If the request comes from a single school division or from a individual municipal government, no ballot question is required."*
		Virginia department of election	Only statewide and region bonds elections are reported since 1956.
Washington	Supermajority	MRSC	*"Many local ballot measures only require a simple majority (50% plus one) with no minimum voter turnout. However, bond measures and certain other voted revenue sources require a 60% Supermajority and may also require minimum validation (voter turnout) requirements."*
West Virginia	Supermajority	Ballotpedia	*"In order to pass a levy cap election, a simple majority is required. Any election that requires new bonding or bond taxes must pass through a super-majority of three-fifths (60%) to gain voter approval"*
Wisconsin	Majority	Abott et al. (2020)	*"Districts must obtain approval from a majority of district voters to exceed the state revenue limit."*
		Ballotpedia	*"Under Wisconsin law, a school district is required to issue a referendum for new bonds if the total costs of the bonding cause the district's debt to surpass $1,000,000 [...]. School districts are exempted from referendums if they are ordered by a state or federal court to remove hazardous substances or be in compliance with fire standards and the districts need to issue new bonds to pay for the state or federally mandated improvements. Also, no referendum is required if a new school district is created by detaching a former consolidated district or purchasing property "*
		WI Department of Public Instructions	Despite the institutional exceptions, we observe numerous yearly referendums on tax and bond elections in WI school district (e.g. 81 proposed ballot in 2022).
Wyoming	Majority	Ballotpedia	*"Wyoming has three different kinds of school finance elections which are for bond issues, creating or repaying a building fund, or to issue a special tax for adult education programs. [...] Bonding cannot be used to retire debt or pay other obligations."*

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