



CAPITAL INVESTMENT, SERVICE SOLVENCY, AND QUALITY OF LIFE AFTER MUNICIPAL BANKRUPTCY

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FISCAL STRESS & MUNICIPAL BANKRUPTCY

- Extreme fiscal stress has many sources, but few solutions
 - Hard budget constraints & limited federal/state aid limit choices for distressed local governments
- Chapter 9 bankruptcy is one avenue for relief
 - Must have state authorization
 - Must be insolvent
 - Must want to adjust its debts
 - Must be unable to negotiate with creditors

WHAT HAPPENS TO MUNICIPALITIES THAT FILE?

- Chapter 9 filings are historically rare
 - Municipal default rates are low (1.3 defaults/year pre-2007, 4.5 per year 2008-13), general purpose government (e.g. cities) default is extremely rare
 - General purpose bankruptcy even rarer: ~7 cases since 2008
 - Might be less rare post Great Recession & in COVID-19 era
- Chapter 9 allows municipalities space to reorganize
 - Cramdown generates leverage that can benefit municipalities via renegotiation of CBAs and reduction of obligations

SERVICE SOLVENCY & RESIDENT QUALITY OF LIFE

- Bankruptcy is focused on solvency of a local government
 - Mechanisms of bankruptcy clearly affect financial solvency, but unclear how they alter service delivery & residents
- Service solvency means providing adequate levels of service to residents
 - Similar to performance, extremely difficult to measure
 - Focus of courts has been on crime (Stockton & Detroit)

GENERATING A CONTROL GROUP VIA MATCHING

- Generate comparison group using propensity score matching on financial and demographic variables
- Financial data comes from United States Common Sense's GovRank
 - ~8,000 local governments from 2009-2014
 - Government-wide balance sheet data on financial health (i.e. Statement of Net Position & Activities)
- Demographic data from American Community Survey
- Match on bankruptcy predictors: net asset ratio, operating ratio, population, and population density

BANKRUPT & MATCHED MUNICIPALITIES

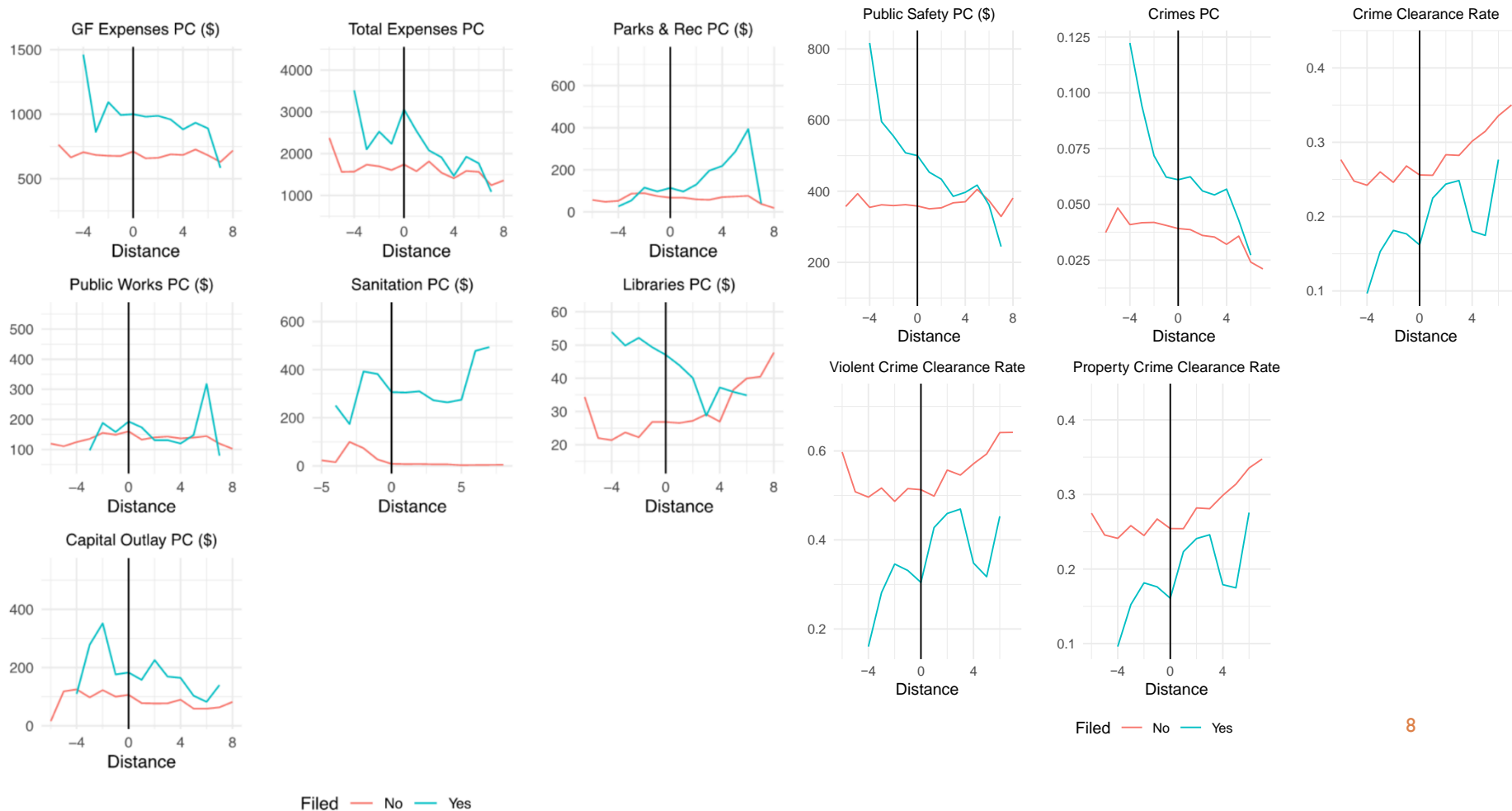
Central Falls, RI (2011)	Detroit, MI (2013)	Jefferson County, AL (2011)
Cranston	Flushing	Calhoun County
East Providence	Harper Woods	Houston County
Pawtucket	Highland Park	Madison County
Providence	Melvindale	Mobile County
Warwick	Pontiac	Montgomery County
Mammoth Lakes, CA* (2012)	San Bernardino, CA (2012)	Stockton, CA (2012)
Bell	Bakersfield	El Monte
Duarte	Baldwin Park	Norwalk
Placentia	Pomona	Sacramento
South El Monte	Long Beach	San Fernando
Seaside	Pico Rivera	Santa Ana

*Mammoth Lakes did not complete its plan of adjustment but used the threat of court repudiation of a legal judgement to renegotiate the terms of the settlement.

WHAT HAPPENS: INPUTS, OUTPUTS, OUTCOMES

- Inputs (via Statement of Revenues, Expenditures & Fund Balances)
 - Line-item expenditures (e.g. police, fire, library)
 - Revenues by source (e.g. sales tax, property tax, user charges)
- Outputs & Outcomes: focus on policing via UCR
 - Outputs: crime clearance rates
 - Outcomes: crime rates
- Control for socioeconomic characteristics in models via ACS, BLS, and Census data

UNADJUSTED TRENDS



EMPIRICAL MODEL

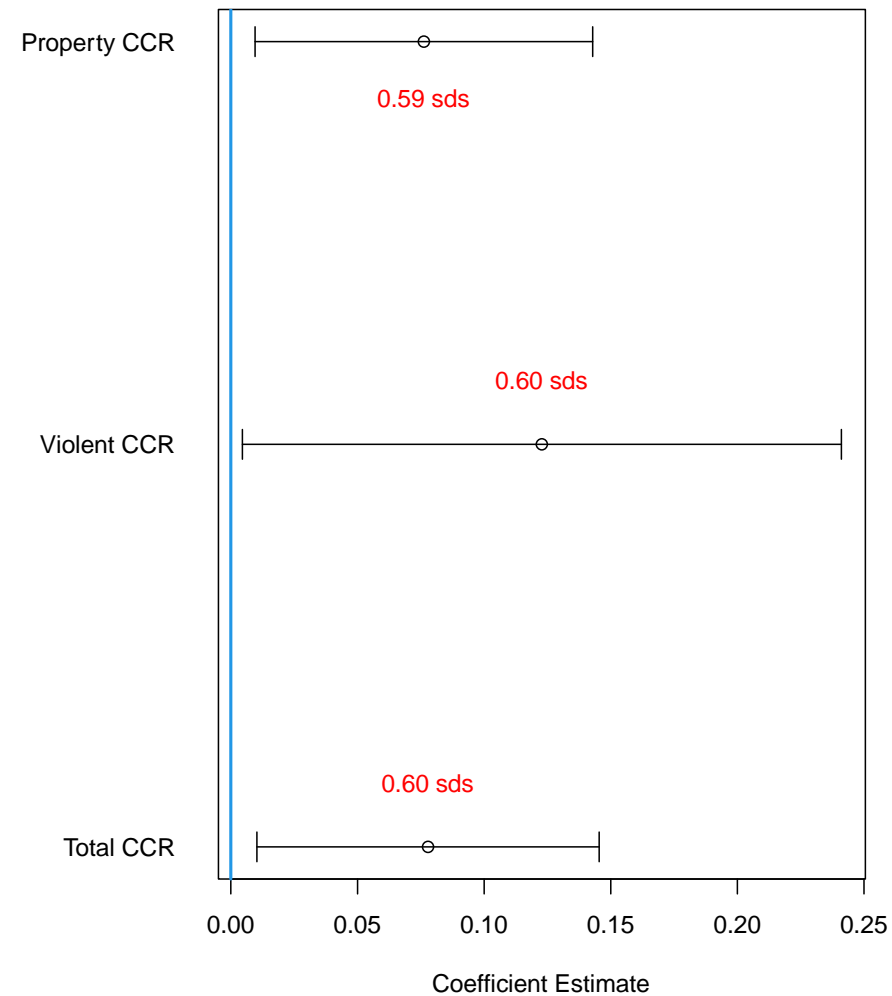
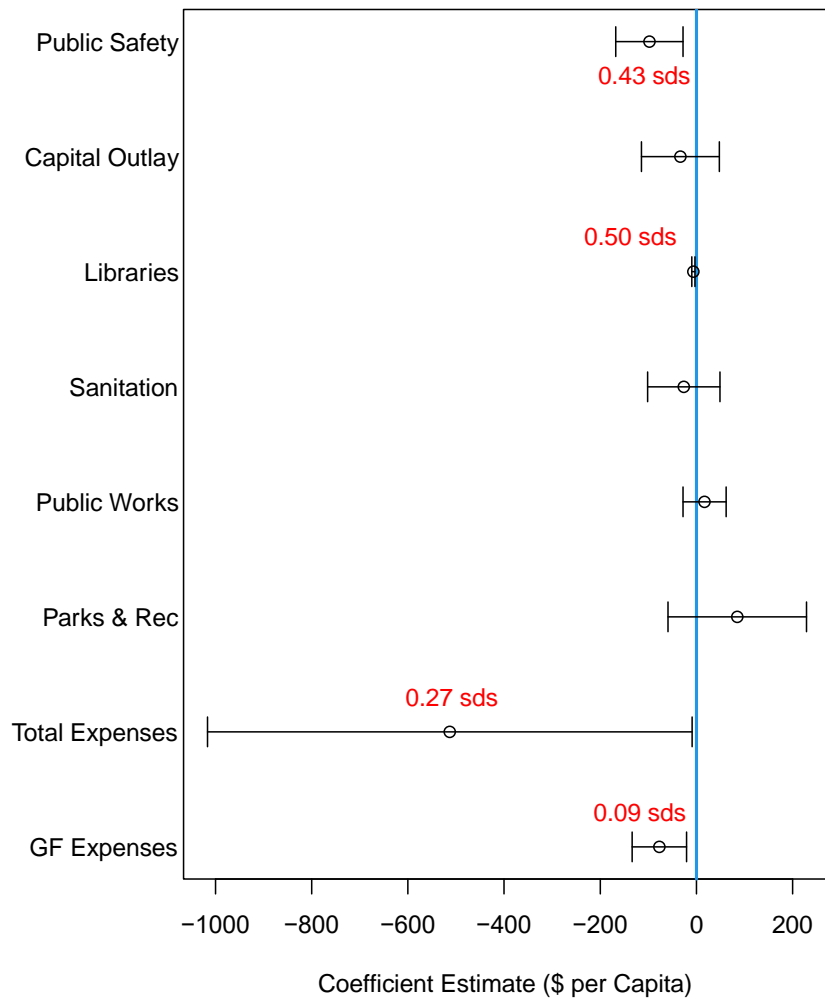
- Use staggered differences-in-differences model to identify effect of bankruptcy

$$\begin{aligned} Y_{m,t} = & \beta \text{BankruptcyFiling}_{m,t} \\ & + \omega \text{PostDistress}_{m,t} + \kappa \mathbf{X}_{m,t} \\ & + \alpha_m + \tau_y + \epsilon_{m,t} \end{aligned}$$

- Event study shows effects over time

$$\begin{aligned} Y_{m,t} = & \sum_{k=-4}^{-2} \delta_k \text{BankruptcyFiling}_{m,t}^k \\ & + \phi \text{BankruptcyFiling}_{m,t}^0 \\ & + \sum_{k=1}^{7+} \rho_k \text{BankruptcyFiling}_{m,t}^k + \kappa \mathbf{X}_{m,t} \\ & + \omega_t + \alpha_m + \tau_y + \epsilon_{m,t} \end{aligned}$$

DIFFERENCE-IN-DIFFERENCE RESULTS



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AUSTERITY OR PRACTICALITY?

- Ways to characterize responses to fiscal stress
 - Austerity urbanism: attempt to shrink size of government via deep cuts
 - Practical municipalism: balance cuts with search for new revenues, prioritize maintaining service provision
- Which one better describes what governments do in Chapter 9 via Plans of Adjustment? How do these choices affect service solvency?

MATCHING & CONTROL VARIABLES

Table 1: Matching and Control Variables

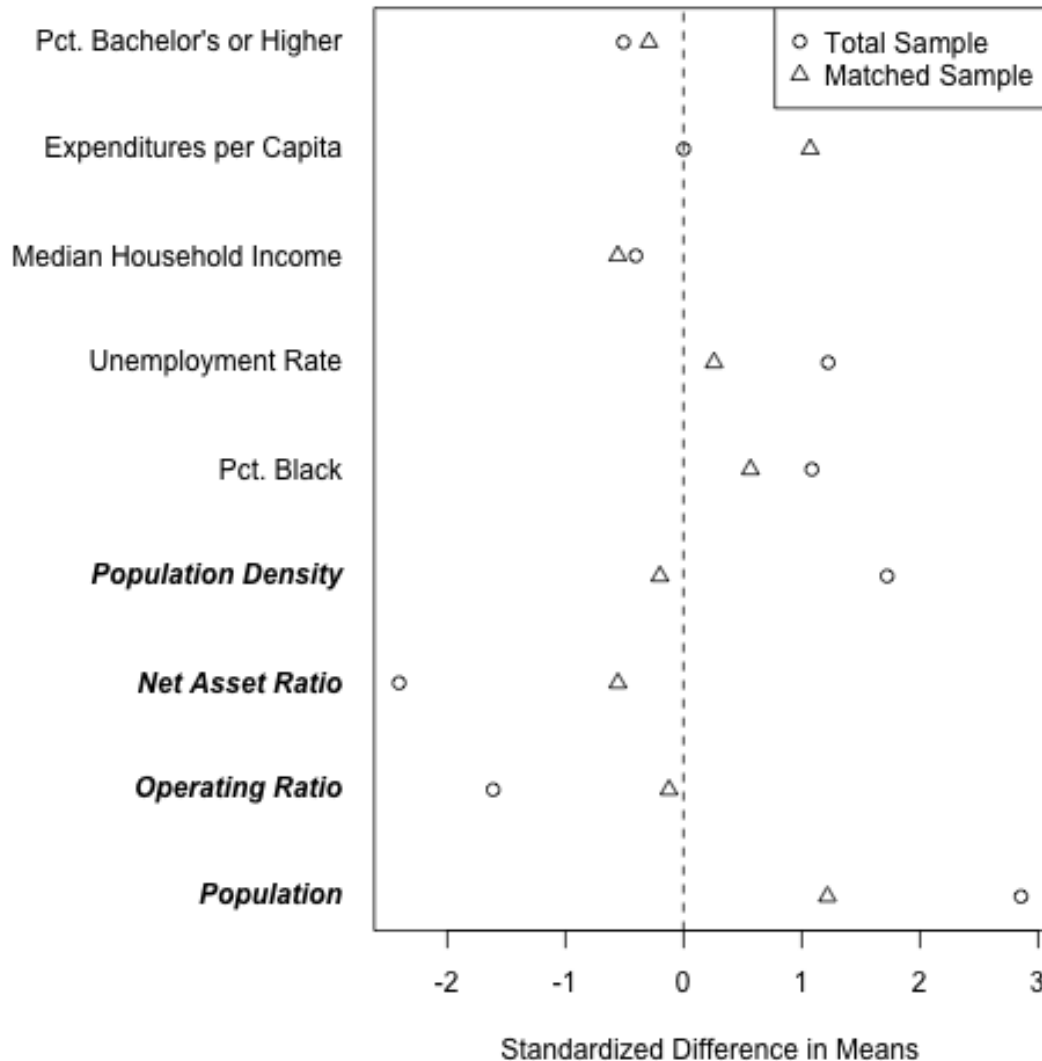
Variable	Description	Data Source
Operating Ratio	Calculated as Total Revenues / Total Expenditures	United States Common Sense
Net Asset Ratio	Calculated as Unrestricted Net Assets / Total Assets	United States Common Sense
Population Density	Population per square mile	ACS 5-year Estimates
Pct. Black	Percentage of the population that is black	ACS 5-year Estimates
Pct. Other Races	Percentage of the population that is neither black nor white	ACS 5-year Estimates
Population	Total population	ACS 5-year Estimates
Median Household Income	The median income at the household level	ACS 5-year Estimates
Pct. 65 Or Older	Percentage of the population 65 years old or older	ACS 5-year Estimates
Pct. 18 Or Under	Percentage of the population 18 year old or younger	ACS 5-year Estimates
Pct. w/ Bach. Or Higher	Percentage of the population that has obtained a Bachelor's degree	ACS 5-year Estimates
Unemployment Rate	Percentage of local population that is unemployed	ACS 5-year Estimates

LOGIT: PREDICTORS OF BANKRUPTCY

Table A.1: Logistic Regression on Filing for Bankruptcy

	Dependent Variable: <i>Bankruptcy Filing</i>
Net Asset Ratio	-4.046** (1.832)
Pop. Density (1000 people/sq mile)	0.244* (0.144)
Unemployment Rate	0.312 (0.321)
% Population Black	-0.02 (0.038)
Operating Ratio	-6.994* (4.045)
Population (000s)	0.009*** (0.003)
Expenditures per Capita (000s)	-0.44 (0.357)
Median Household Income (000s)	-0.24 (0.066)
% w/ Bachelors or Higher	-0.169 (0.200)
Wages per Capita	-3.59 (2.995)
Fire Services Exp. per Capita	9.474 (7.025)
Police Services Exp. per Capita	0.599 (6.213)
Parks and Rec. Exp. per Capita	-8.389 (10.620)
Constant	-0.643 (5.138)
Observations	11,211
Akaike Inf. Criteria	66.276

Note: Treated observations exit the sample in the year of bankruptcy filing *p<0.1; **p<0.05; ***p<0.01



- 5 matches per bankruptcy (n = 36)
- In-state only
- Matching yields group much more similar to bankrupt governments than population

DIF-IN-DIF RESULTS, EXPENDITURES

Table 3: Average Effect of Filing for Bankruptcy on Spending, per capita

<i>Outcome Variable</i>	
General Fund Expenses	−77.06*** (28.84)
Total Expenses	−512.88** (257.07)
Public Safety	−97.91*** (35.71)
Parks & Rec	−84.91 (73.61)
Public Works	16.92 (22.90)
Sanitation	−26.32 (38.30)
Libraries	−6.45*** (1.68)
Capital Outlay	−34.28 (41.36)
Year Fixed Effects	Yes
Municipal Fixed Effects	Yes
Clustered & Robust Std. Errors	Yes
Controls	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

DIF-IN-DIF RESULTS, REVENUES

Table 4: Average Effect of Filing for Bankruptcy on Revenue, per capita

<i>Outcome Variable</i>	
General Fund Revenue	-76.53 (66.82)
Total Revenue	-4.26 (142.53)
Total Taxes	26.10 (128.69)
Income Tax	-22.37 (14.77)
Property Tax	-32.20 (45.90)
Sales Tax	-11.27 (15.47)
User Charges	0.93 (4.43)
Forfeitures	-1.47 (4.84)
Year Fixed Effects	Yes
Municipal Fixed Effects	Yes
Clustered & Robust Std. Errors	Yes
Controls	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

DIF-IN-DIF RESULTS, CRIME RATES

Table 5: Number of Crimes Reported, per 1,000 Residents

	<i>All</i>	<i>Violent</i>	<i>Property</i>
Post-treatment period	-0.35 (1.86)	0.24 (0.69)	-0.41 (1.83)
Post-treatment * bankruptcy	-9.34 (6.18)	-2.78 (2.69)	-9.13 (6.04)
Log population	-69.43 (64.39)	-41.76 (28.04)	-66.45 (63.10)
65 and older (%)	-59.96 (146.67)	-26.29 (58.42)	-56.28 (143.93)
18 and younger (%)	-29.50 (93.05)	17.47 (46.04)	-25.44 (93.33)
Black (%)	-110.34 (117.45)	-61.35 (50.33)	-110.09 (115.49)
Bachelor's or greater (%)	13.37 (132.70)	-5.18 (58.76)	20.75 (130.71)
Unemployment (%)	172.81 (108.70)	64.62 (47.52)	168.49 (105.50)
Median HH income (1000s)	0.03 (0.67)	0.11 (0.30)	0.03 (0.66)
Public safety spending per capita, lagged	0.02 (0.02)	-0.01 (0.01)	-0.02 (0.02)
Year Fixed Effects	Yes	Yes	Yes
Municipal Fixed Effects	Yes	Yes	Yes
Clustered & Robust Std. Errors	Yes	Yes	Yes
N	251	251	251
Adjusted R^2	0.975	0.965	0.975

Note: *p<0.1; **p<0.05; ***p<0.01

DIF-IN-DIF RESULTS, CRIME CLEARANCE

Table 6: Crime Clearance Rate

	<i>All</i>	<i>Violent</i>	<i>Property</i>
Post-treatment period	-0.02 (0.02)	-0.04 (0.03)	-0.02 (0.02)
Post-treatment * bankruptcy	0.08** (0.03)	0.12** (0.06)	0.08** (0.03)
Log population	0.15 (0.23)	0.40 (0.33)	0.14 (0.22)
65 and older (%)	1.16 (1.04)	1.82 (2.32)	1.11 (1.03)
18 and younger (%)	1.89*** (0.68)	2.50** (1.12)	1.88*** (0.67)
Black (%)	0.00 (0.58)	-0.04 (0.67)	-0.01 (0.58)
Bachelor's or greater (%)	2.31* (1.33)	2.94* (1.53)	2.25* (1.34)
Unemployment (%)	-0.34 (0.62)	-0.01 (0.83)	-0.34 (0.62)
Median HH income (1000s)	0.01* (0.01)	0.01 (0.14)	0.01* (0.01)
Crime per capita, lagged	1.44 (1.18)	1.66 (1.66)	1.46 (1.17)
Public safety spending per capita, lagged (1000s)	0.06 (0.09)	-0.01 (0.14)	0.06 (0.09)
Year Fixed Effects	Yes	Yes	Yes
Municipal Fixed Effects	Yes	Yes	Yes
Clustered & Robust Std. Errors	Yes	Yes	Yes
N	223	223	223
Adjusted R^2	0.953	0.965	0.952

Note: *p<0.1; **p<0.05; ***p<0.01

EVENT STUDY RESULTS, PART 1

Table 7: Effect of Filing for Bankruptcy on per Capita Spending

	<i>Dependent variable:</i>					
	GF Expenses	Total Expenses	Parks & Rec	Public Works	Sanitation	Capital Outlay
	(1)	(2)	(3)	(4)	(5)	(6)
-4+ years	174.368*** (53.278)	432.511 (274.576)	13.822 (32.398)		-0.031 (6.902)	35.656 (69.381)
-3 years	26.233 (55.618)	145.531 (272.394)	35.326 (42.312)	39.382 (31.918)	13.852*** (2.397)	150.603* (86.207)
-2 years	72.289 (44.629)	160.835 (136.550)	-7.455 (14.410)	10.197 (21.239)	-0.842 (1.782)	114.948 (103.335)
Filing year	-15.527 (44.490)	628.990 (839.514)	3.757 (12.926)	12.216 (33.428)	0.614 (1.203)	12.982 (42.711)
+1 year	5.709 (109.039)	508.355 (529.084)	-4.576 (14.571)	28.383 (30.496)	-3.015 (2.982)	14.572 (36.416)
+2 years	27.067 (75.369)	-279.151 (342.762)	23.502 (21.500)	-17.795 (32.934)	-6.235 (4.039)	87.310 (70.797)
+3 years	-118.686** (48.263)	-520.489** (220.863)	124.425 (102.407)	-13.424 (27.829)	-6.736** (2.638)	29.980 (64.261)
+4 years	-68.176 (49.722)	-1,233.639* (693.797)	51.354 (61.266)	53.244 (47.742)	-10.100** (3.809)	10.653 (55.303)
+5 years	-85.485 (54.391)	80.729 (249.089)	196.634 (173.290)	-40.682 (62.308)	-12.445*** (3.777)	-105.720** (47.587)
+6 years	-81.280 (50.448)	-411.188* (239.861)	256.283 (224.477)	164.892 (148.082)	-6.592 (4.350)	2.219 (75.493)
+7+ years	-116.665* (64.751)	-594.666* (339.408)	88.961 (75.183)	48.628 (45.269)		155.849 (101.978)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Muni FE	Yes	Yes	Yes	Yes	Yes	Yes
CR SEs	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	321	323	260	308	59	270
R ²	0.993	0.946	0.894	0.923	0.999	0.863

Note:

*p<0.1; **p<0.05; ***p<0.01

EVENT STUDY RESULTS, PART 2

Table 8: Effect of Filing for Bankruptcy on Crime Data

	<i>Dependent variable:</i>				
	Public Safety PC (1)	Crimes per 1000 (2)	CCR, All (3)	CCR, Violent (4)	CCR, Property (5)
-4+ years	35.801 (61.150)	195.624 (167.797)			
-3 years	-0.517 (84.387)	-159.836 (280.080)	-0.113 (0.113)	-0.225 (0.139)	-0.110 (0.114)
-2 years	29.484 (48.689)	59.054 (58.525)	0.056** (0.026)	0.087 (0.062)	0.056** (0.025)
Filing year	-10.068 (19.056)	-37.466 (59.430)	0.018 (0.034)	-0.005 (0.054)	0.018 (0.033)
+1 years	-52.634 (67.662)	-78.732* (42.088)	0.099** (0.044)	0.149** (0.066)	0.098** (0.043)
+2 years	-68.267 (65.246)	-105.403 (64.773)	0.083* (0.046)	0.106 (0.073)	0.081* (0.045)
+3 years	-115.179** (57.599)	-134.037* (69.035)	0.110** (0.051)	0.148* (0.088)	0.108** (0.050)
+4 years	-104.419 (84.286)	-132.728 (97.668)	0.035 (0.057)	0.038 (0.091)	0.034 (0.057)
+5 years	-132.080** (54.898)	-136.380 (120.946)	0.003 (0.064)	-0.036 (0.096)	0.003 (0.065)
+6 years	-115.713* (61.549)	-126.266 (101.752)	0.061 (0.076)	-0.020 (0.110)	0.063 (0.076)
+7+ years	-97.980* (53.599)	-70.329 (125.855)			
Year FE	Yes	Yes	Yes	Yes	Yes
Muni FE	Yes	Yes	Yes	Yes	Yes
CR SEs	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	322	67	223	223	223
R ²	0.992	0.989	0.968	0.977	0.968

Note:

*p<0.1; **p<0.05; ***p<0.01