Capital Investment, Service Solvency, and Quality of Life After Municipal Bankruptcy*

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Abstract

As a legal intervention, Chapter 9 of the federal bankruptcy code provides an avenue by which a financially distressed local government can reorganize its operations. The outcomes of that reorganization, particularly for residents of those local governments, are unclear. In theory, a government could choose to use the leverage generated by Chapter 9 to make deep cuts to public expenditures, following the theoretical path described by austerity urbanism. Alternatively, a government could follow the tenets of practical municipalism and attempt to use the Chapter 9 process to steer any decline toward a better outcome. In this research, we explore how filing for Chapter 9 affects government service delivery. Beginning with general purpose governments that petitioned for Chapter 9 protection during The Great Recession, we generate a set of governments that were similarly-situated prior to the Chapter 9 filing via propensity score matching. We then evaluate the effects of filing for bankruptcy using a staggered difference-in-differences and event study analysis. This allows us to causally identify the treatment effect of a successful Chapter 9 filing on a battery of service-delivery outcomes: expenditures on a variety of core services; tax burdens; crime clearance rates; and investment in capital projects. We gather these metrics from myriad sources, including audited financial statements, the Census of Governments, and the DoJ's Unified Crime Reporting database. We find that filing for bankruptcy is associated with a shrinking public sector, but that these declines are also associated with improved service delivery. These findings suggest that Chapter 9 bankruptcy may provide governments with the space to improve operations while still cutting costs.

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1 Introduction

In 2012, The New York Times ran a story titled, "In Alabama, a County That Fell Off the Financial Cliff" (Walsh 2012). The article describes how Jefferson County lost its ability to provide basic services for its 650,000 residents after filing for Chapter 9 bankruptcy. The lede reads

> One county jail here is so crowded that some inmates sleep on the floor, while the other county jail, a few miles down the road, sits empty. There is no money for the second one anymore. The county roads here need paving, and the tax collector needs help. There is no money for them, either.... There is no money for holiday D.U.I. checkpoints, litter patrols or overtime pay at the courthouse. None for crews to pull weeds or pick up road kill.... Jefferson County has even canceled municipal elections scheduled for this August. It seems that there's no money for voting booths, either.

The story the article tells is not unique: municipalities that file for bankruptcy are in bad shape and that does not usually bode well for their ability to deliver services to residents (Kirshner 2020).

But the municipalities that file for bankruptcy are not distinctive in this regard. In 2016, the City of East Cleveland ran out of money for working snow plows in December (Raymond 2016). For reference, the Cleveland area averages 68 inches of snowfall per year (Johnston 2019). In Springfield, Ohio, firefighters began repairing their own fire engines because there was not enough funding to support a repair contract (Maciag and Wogan 2017). And in 2010, budgetary pressures caused the City of Colorado Springs to sell police helicopters on the internet, replace trash bins in parks with signs asking residents not to litter, and deactivate a third of its streetlights (Booth 2010). Though these are just anecdotes,Singla, Comeaux and Kirschner (2014) show that the municipalities that filed for bankruptcy were financially-similar to about a quarter of the other municipalities in the state. In other words,

though bankrupt municipalities are in bad shape financially, it is not clear that they are worse off than all others. Moreover, recent research suggests the possibility that bankruptcy may even improve the financial health of governments that file (Abott and Singla N.d.). Thus, it is not clear what effect municipal bankruptcy might have on a government's ability to deliver services or affect resident's quality of life. This is especially true when we consider the counterfactual to bankruptcy is much more likely to be similar to East Cleveland or Colorado Springs than it is to be a return to financial health.

In one respect, the effect of municipal bankruptcy on service delivery may seem straightforward: municipal bankruptcy is a legal process and it cannot improve the underlying socioeconomic conditions that cause extreme fiscal distress. In fact, there are pathways by which bankruptcy could harm residents. A government could choose to use the leverage generated by Chapter 9 to make deep cuts to public expenditures, following the theoretical path described by austerity urbanism. This combined with curtailed access to credit markets that may prevent infrastructure and other capital spending that can spur economic growth imply a grim future for governments going through Chapter 9. Alternatively, a government could follow the tenets of practical municipalism and attempt to use the Chapter 9 process to steer any decline toward a better outcome. In this light, the space provided by the court to reorganize a governments fiscal profile would improve resident quality of life via improved service delivery, potentially even overcoming budget cuts.

In this research, we investigate the effects of Chapter 9 bankruptcy on service delivery. To conduct this evaluation, we leverage the spat of municipal bankruptcies during and after The Great Recession. Based on the six municipalities that successfully petitioned the courts for protection under Chapter 9 of the federal bankruptcy code, we construct a set of financially-similar municipalities via propensity score matching. Then, using a staggered difference-in-differences and event study design, we explore whether filing for bankruptcy meaningfully altered service provision as measured by a range of different indicators. We find limited evidence that governments going through the bankruptcy process make substantial budgetary

cuts or increase revenue-generating activities. In addition, we show that bankruptcy may even service delivery outcomes even in the presence of budgetary cuts. These findings should provide financial managers and elected officials alike with some guidance about Chapter 9's viability as a strategy to manage decline in subnational governments.

2 What Happens During Municipal Bankruptcy & How It Affect Residents

American local governments face hard budget constraints. Whether due to state law, local charter, or credit markets, local governments generally cannot operate at a deficit with the expectation that those deficits will be supported by a higher level of government (Kornai 1986). As a result, when faced with declines in revenue, there are only a few potential options: cut expenditures, raise revenues, or rely on reserves. Austerity urbanism suggests that the dominant response following the Great Recession has been to focus on expenditure cuts, thereby hollowing out local governments (Peck 2012). Pragmatic municipalism, on the other hand, suggests that when faced with declines, local governments attempt to balance resource constraints against providing services to the community. This means sometimes cutting expenditures, sometimes raising revenues, and sometimes engaging in a combination of these strategies depending on the specific circumstances of the shortfall (Warner, Aldag and Kim 2020). Local governments facing extreme fiscal stress tend to be characterized in the literature more by austerity urbanism (Davidson 2019), though these claims have not necessarily been empirically validated in large N studies. Moreover, the small pool of literature studying municipal bankruptcy has not yet identified a clear answer about the choices governments in bankruptcy make and the effect those choices have on residents. Thus, it is unclear whether the process and its outcomes are better characterized as pragmatic municipalism or austerity urbanism.

What is clear is that municipal bankruptcy is a response to fiscal stress. In order to

use Chapter 9 of the federal bankruptcy code to remediate its liabilities, a local government must meet four criteria: it must 1) have specific state authorization to file for bankruptcy; 2) be insolvent; 3) be willing to file a plan of adjustment defining how it will make changes to its obligations; and 4) have made a good faith attempt to negotiate with its creditors and failed (Spiotto 2012). Historically, the first two criteria are the most significant obstacles to clear. State authorization is variable. 27 states authorize local governments under at least some contexts, 21 have no explicit policy, and 2 explicitly prohibit the process. Insolvency is similarly complicated. The statutes define the construct financially, meaning a government needs to be unable to meet its obligations currently or in the immediate future (11 U.S.C. § 101(32)(C)). However, recent court decisions have extended the definition beyond financial considerations to include a significant reduction or inability provide core services to residents (Abott and Singla N.d.; Gillette 2020).

The federal bankruptcy process allows governments to restructure their obligations in order to continue providing services to residents. This means the government stops payments to creditors while it negotiates a settlement that allows the government to continue operations for the foreseeable future. This Plan of Adjustment details the changes a government will make to its operations and to its obligations in order to continue functioning. It can include cut expenditures, raised revenues, renegotiated public sector union contracts, altered pension liabilities, and reduced principal or interest owed on long-term debt. The Plan of Adjustment is affected by external stakeholders but it is ultimately the local government's own making. No specific actions can be imposed on the local government by creditors or the court. Our research investigates how local governments use the freedom granted by Chapter 9 and how their choices affect residents via service delivery. Do governments engage in austerity urbanism and make deep expenditure cuts, or do they behave more like stewards of the public trust and try to maintain service delivery via something like practical municipalism?

2.1 Austerity Urbanism via Chapter 9

Perhaps the most common way to implement austerity urbanism is to reduce the size of local government by cutting expenditures (Peck 2012). Of course, all local governments have the ability to make cuts irrespective of fiscal stress. But Chapter 9 can make it easier for a government to make deeper changes should it desire to do so. This is because Chapter 9 bankruptcy grants the government the ability to reject existing contracts[1] like outstanding leases and collective bargaining agreements. The latter is of particular import because wages represent more than 40 percent of local government expenditures (McNichol 2012); absent the ability to reject a CBA in bankruptcy court, reductions to large service areas like policing or fire protection may require negotiations with politically-powerful public sector unions. This represents one of the main ways in which a local government could use Chapter 9 to implement austerity urbanism. We would expect such a response to be associated with dramatic cuts to expenditures that would reduce the size of government.

In addition to significant cuts to the size of government generally, austerity urbanism also predicts that cuts will be deeper to programs or areas that promote social welfare (Peck 2012; Davidson 2019). The mechanisms by which this can happen in Chapter 9 remain the same: removing barriers to expenditure cuts by altering CBAs and then making steep cuts to program areas that provide services to predominantly lower income residents.

It is important to note that the theory of austerity urbanism is not normative. Rather, it is presented as, "a coalition of business and financial interests, local government, and state and national government actors who use austerity measures – often bypassing democratic processes – to decrease the level of public services and public employment" (Kim and Warner 2016, p. 791). Most scholars discussing the theory note, either explicitly or implicitly, that residents are likely to suffer if it is implemented. As a result, we would expect resident quality of life to be negatively affected if governments use Chapter 9 to implement austerity

[1]Though breaching a contract entitles the counterparty to fees, such obligation is effectively treated as an unsecured liability in the court process (Jones Day 2010)

urbanism. Several scholars have provided evidence suggesting austerity urbanism defines municipal bankruptcy, most prominently using the case of Detroit (Phinney 2018). Some have even taken this as evidence that Chapter 9 is a bad policy option for governments because of the harm it imposes on residents (Kirshner 2020). However, a major drawback to these studies is that they do not consider the counterfactual; they do not compare what happened in governments that went through bankruptcy to fiscally-stressed municipalities that did not. As a result, it is not clear what, if any, effect Chapter 9 bankruptcy has on austerity urbanism or resident quality of life.

2.2 Pragmatic Municipalism via Chapter 9

As an alternative to austerity urbanism, pragmatic municipalism suggests that local governments facing fiscal stress will attempt to balance community needs against resource constraints (Warner, Aldag and Kim 2020). This means resisting cuts and instead focusing on a search for additional revenue streams to mitigate shortfalls as well as attempts to innovate in order to maintain service quality (Kim and Warner 2016). Broadly speaking, pragmatic municipalism suggests that public managers are stewards of the public trust and will therefore act to maintain or improve the quality of resident lives within the constraints of the social, demographic, legal, and economic landscape. There is considerable evidence to support this view of public manager responses to fiscal stress (Warner, Aldag and Kim 2020), though few studies apply the theory specifically to municipal bankruptcy.

Chapter 9 does provide a pathway by which governments can implement some of the pragmatic municipalism responses to fiscal stress. In resisting budgetary cuts, the legal process of Chapter 9 can be helpful. If fiscal stress in local governments is a function of declining revenues circumscribed by a hard budget constraint, one might think of Chapter 9 as a means to soften the budget constraint. This is because Chapter 9 provides immediate relief via the cessation of debt payments. Some of these reductions in expenditures can also continue post-bankruptcy depending on the specifics of the plan of adjustment. Thus, we

would expect a government implementing pragmatic municipalism via Chapter 9 to maintain current levels of service to the largest degree possible.

It is less clear that the legal process of Chapter 9 itself can aid governments in raising or diversifying revenue streams. Nevertheless, there is some evidence that governments going through Chapter 9 do attempt to raise revenues. For instance, residents in Vallejo voted to raise sales taxes after the city exited federal bankruptcy court. (Davidson 2019) ascribes this to a politically-motivated change in the city council as new councilors were open to new ideas after Chapter 9. Therefore, even though the legal process itself may not generate unique opportunities to raise revenues, it may still create them via political ones.

2.3 Municipal Bankruptcy, Resource Dependency Theory & Quality of Government Services

Thus far, we have largely considered the effects of Chapter 9 on residents via budgetary allocations. The underlying logic is that more resources are associated with better service quality and cuts are associated with reduced service quality. But the validity of this assumption is questionable, as the relationship between government performance and resources is commonly not found to be positive or linear (Singla, Stritch and Feeney 2018).

One common way to think about the effects of resources on organizational outcomes comes via resource dependency theory: organizations are affected by their environments and attempt to manage how dependent upon their environments they are Salancik and Pfeffer (1978) (Hillman, Withers and Collins 2009).

Pfeffer (1987, pp. 26-27) defines the key propositions of RDT:

> 1) the fundamental units for understanding intercorporate relations and society are organizations; 2) these organizations are not autonomous, but rather are constrained by a network of interdependencies with other organizations; 3) interdependence, when coupled with uncertainty about what the actions will be

> of those with which the organizations interdependent, leads to a situation in which survival and continued success are uncertain; therefore 4) organizations take actions to manage external interdependencies, although such actions are inevitably never completely successful and produce new patterns of dependence and interdependence; and 5) these patterns of dependence produce interorganizational as well as intraorganizational power, where such power has some effect on organizational behavior.

The majority of empirical work on RDT focuses on corporate organizations and specific behaviors designed to mitigate their dependence on the environment for resources (Hillman, Withers and Collins 2009). Broadly speaking, there is strong evidence showing that strategies such as mergers, joint ventures, and increasing corporate board size reduce organizational dependence and improve organizational outcomes (Dalton, Daily, Johnson and Ellstrand 1999; Gulati and Sytch 2007; Hillman, Withers and Collins 2009). There is also a body of evidence showing that RDT has value for public and nonprofit organizations as well (Malatesta and Smith 2014). Thus, from a RDT perspective, the question is whether Chapter 9 bankruptcy reduces dependence on the environment. If it does, we would expect organizational outcomes, including performance, to improve.

There are reasons to expect that Chapter 9 does this for local governments. This is due to the 10th Amendment, which severely restricts the abilities of the federal court to alter municipal behavior. As a result, municipalities in Chapter 9 bankruptcy retain a tremendous degree of control over their operations, something that cannot be said of Chapter 7 or 11 bankruptcy. Consider: municipalities cannot be forced into bankruptcy by creditors, meaning the process is voluntary; municipalities cannot be forced to sell assets to meet its obligations; and statutes explicitly prohibit the court from interfering with the political or governmental operations of the bankrupt municipality, meaning the court cannot require any specific expenditure cuts or increases to revenue (Moringiello 2014; Chung 2015). In addition to retaining control, municipalities gain leverage over their creditors. During the bankruptcy

process, municipalities craft a plan of adjustment on how it can return to solvency and continue operations. Creditors have no legal role in the construction of this plan, and the court's only role is to assess whether the plan is feasible (i.e., will the municipality be able to meet its obligations if the plan is enacted) and whether the plan passes the best interests test (i.e., are the creditors better off than they would be in the absence of bankruptcy). In the latter case, the court's assumption is that the alternative to bankruptcy is the repudiation of the debt, meaning the court assesses whether the plan is making a reasonable attempt to pay (Moringiello 2015). Critically, if the court determines these criteria are met, creditors can be forced to accept the municipality's plan via a process called cramdown (Chung 2015). As a result, municipalities gain leverage to renegotiate a broad range of obligations. In fact, because the process is so slanted toward municipalities, one might argue that municipalities that file for Chapter 9 protection are necessarily reducing their dependence on the environment because they give up little control and gain tremendous leverage during the process.

3 Data

In this research, we evaluate how Chapter 9 bankruptcy affects the residents of the communities that file. To conduct this evaluation, we begin by compiling a list of governments that filed for bankruptcy protection under Chapter 9 of the federal bankruptcy code in the years immediately following The Great Recession. Though there is no official list, these events are quite newsworthy and thus we are able to rely on media accounts as well as reports from credit rating agencies like Moody's, Standard and Poor's, think tanks like The PEW Charitable Trusts, and other municipal market observers.

We select this period because while municipal bankruptcies are quite rare among general purpose governments, this timeframe saw several large governments file within a short window. Limiting our analysis to this period also allows us to use data generated using the

same accounting standards, which would not be possible if we included high profile cases like Orange County, California in 1994. In addition, these more recent cases are all associated with the same economic shock and take place in the same national economic climate, helping control for other unobservables that may otherwise confound the analysis. We also omit cases when government filed for Chapter 9 but was ultimately prohibited from receiving federal bankruptcy protection by the court (e.g., Harrisburg, Pennsylvania). Finally, because the data required to execute our empirical strategy does not exist prior to 2008, we are forced to omit Vallejo, California from our analysis.

Based on these restrictions and our data collection, we have six governments that filed for Chapter 9 bankruptcy protection and were allowed to have their cases proceed to court: Jefferson County, Alabama (2010); Central Falls, Rhode Island (2010); Mammoth Lakes, California (2011); San Bernardino, California (2011); Stockton, California (2011); and Detroit, Michigan (2012). As we will further discuss below, we employ a matching strategy to generate a pool of similarly-situated governments that did not file for bankruptcy to serve as a control group. We then use a Difference-in-Differences design and event study analysis to estimate whether and how municipal bankruptcy affects resident quality of life.

3.1 Evaluating Capital Investment, Expenditures, and Revenue Decisions

Based on theory, there are two broad ideas about how local governments respond to fiscal stress: austerity urbanism and pragmatic municipalism. The former implies bankruptcy will be used to cut services to residents, while the latter suggests bankruptcy will be used to resist cuts and prioritize consistency in service provision. Critically, the legal process itself does not immediately signify that one response is more likely than the other. In order to evaluate these divergent responses, we explore how municipal bankruptcy affects the expenditure and revenue decisions of local governments.

To do this, we gathered data on expenditures and revenues from each government's

audited financial statement, or Comprehensive Annual Financial Report (CAFR). Unlike budgetary data or information from the Census of Governments, information from these documents present actual rather than projected figures, are subject to scrutiny via an independent auditor, and are compiled using consistent accounting standards (Ross, Yan and Johnson 2015). The lone downside to using CAFR data is that it requires gathering the documents from government websites and then manually extracting the requisite information.

Once we gathered the relevant CAFRs, we extracted information on spending and revenues from the Statement of Revenue, Expenditures, and Changes in Fund Balances for all Governmental Funds. On the expenditure side, we extracted total spending as well as spending on police, fire, parks and recreation, libraries, and capital outlay. On the revenue side, we extracted total revenue as well as information on property tax revenue, sales tax revenue, income tax revenue, user charge revenue, and revenue from fines and forfeitures. Austerity urbanism clearly implies that we should expect declines in all expenditures areas, perhaps particularly in parks and recreation and libraries. Pragmatic municipalism suggests we should see limited cuts but increases to user charges as well as potentially other revenue streams.

3.2 Operationalizing Service Solvency & Government Performance

Though examining budgetary allocations and revenue decisions gives us a window into how governments manage fiscal stress via the bankruptcy process, it does not tell us how residents are affected. Revenues and expenditures are inputs into a municipal system responsible for producing outcomes that residents actually experience and value: functioning roads and bridges, clean parks, safe neighborhoods, easy access to water, and adequate disposable income – just to name a few. Further, the relationship between those inputs and outcomes is not necessarily positive or linear. More financial resources do not necessarily mean better outcomes, and not all changes in resource allocation should be expected to affect outcomes in the same way (Singla, Stritch and Feeney 2018). The ability of a government to provide

these outcomes to residents at a reasonable level is known in financial management as service solvency.

Measuring or assessing the service solvency of a government, however, is particularly challenging. Previous literature (Wang and Liou 2009) has conceptualized service solvency using financial ratios like total taxes per capita, total revenue per capita, and total expenses per capita. The relationship between these metrics and service delivery or resident quality of life is unclear. It is possible that more revenue per capita could mean higher quality service delivery. But it is also likely that more revenue represents a political preference expressed as taxation-service bundles (Stone, Singla, Comeaux and Kirschner 2015; Tiebout 1956). This issue unfortunately makes broad financial ratios ill-suited for assessing the quality of service delivery.

How, then, should we assess service solvency? Broadly speaking, this is simply another way of asking how to assess the performance of government. And while there is a large and diverse body of literature on performance measurement in government, perhaps the single most important take away is that no single performance measure can capture all of the things one cares about when assessing performance (Behn 2003). Standardized metrics for evaluation require agreement about policy objectives and a clear understanding of the causal linkages in the program structure. And because different programs have different functions, evaluating an entire government may be impossible. Nevertheless, performance measurement can still be a valuable exercise when its limits are understood (Moynihan and Pandey 2010).

Unfortunately, there is no simple solution to this issue. The challenges of evaluating government performance are also enhanced in the local government context where the dearth of data limits the choice of metric. Many sources at the local level are not annual, are concentrated at the county-level (e.g. Bureau of Labor Statistics data), or are only available for a particular set of governments (e.g. a random sample, only governments with populations over 100,000, a specific state or region). Given these limitations, we focus our examination

of service solvency on one core area: policing. Policing and public safety are core to local government service provision and represent sizable portions of most local government budgets. In addition, the Federal Bureau of Investigations' Uniform Crime Reporting Program provides standardized, annual data on law enforcement outputs and outcomes.

In addition to playing an outsized role in local government service provision, policing and crime have been raised in numerous Chapter 9 cases as evidence of service insolvency (Gilette 2020). In Stockton, for instance, the court wrote

> Service delivery insolvency focuses on the municipality's ability to pay for all the costs of providing services at the level and quality that are required for the health, safety, and welfare of the community. The evidence demonstrates that the police department has been decimated. The crime rate has soared. Homicides are at record levels. The City has among the ten highest rates in the nation of aggravated assaults with a firearm. Police often respond only to crimes-in-progress. (In Re City of Stockton 2013)

To assess the performance of policing in local governments, we focus on two metrics: crime rates and crime clearance rates. In each instance, we look at the aggregated measure as well as the measures broken into violent and property crime. Critically, crime rates represent an outcome variable whereas crime clearance rates represent an output variable. Outcomes are perhaps more important to residents, but are frequently affected by numerous forces beyond any single actor's control. Crime rates are no different in this regard, with evidence that they can be affected by policing (MacDonald 2002; Zhao, Scheider and Thurman 2002) but also broad economic forces like unemployment (Raphael and Winter-Ebmer 2001). Outputs, on the other hand, are directly affected by the program in question but may be less directly related to the things residents care about. Crime clearance rates show the proportion of crimes cleared by arrest and have been used in several recent studies on the effectiveness of law enforcement (Park 2019; Goldstein, Sances and You 2020).

4 Empirical Framework

4.1 Matching the Data

Because filing for bankruptcy occurs so infrequently, and because the filing is far from an exogenous event, we constructed a weighted dataset using propensity score matching. We conducted k-nearest neighbor matching without replacement on the covariates most closely correlated with the decision to file for bankruptcy, measured in the final year prior to treatment, using the MatchIt package in R (Ho, Imai, King and Stuart 2011).

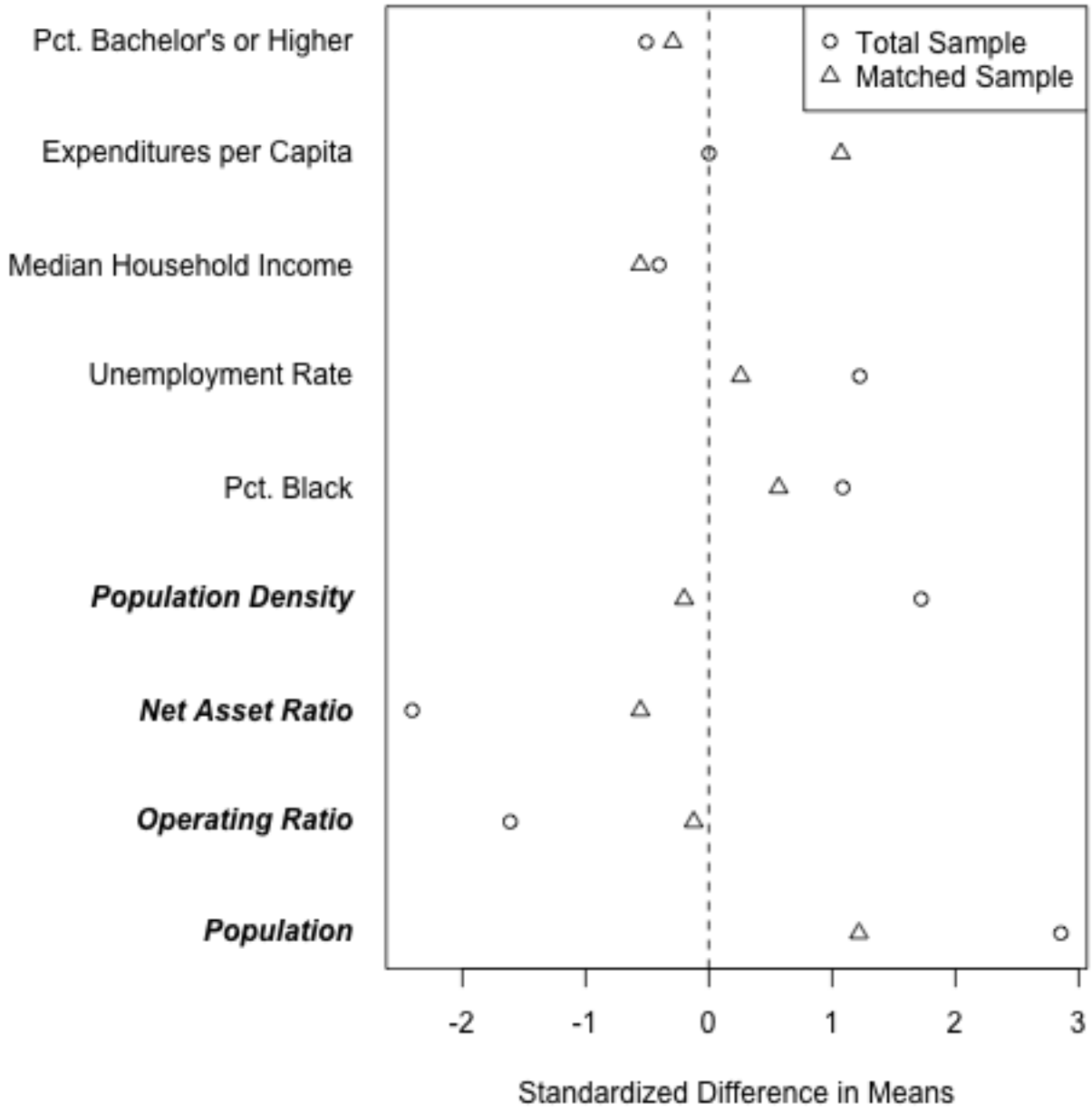
To execute the matching strategy, we first look to theory about prediction of fiscal stress and bankruptcy. Unfortunately, modeling and predicting fiscal stress or declines in government financial health is challenging due to the limited number of cases of default or bankruptcy (Gordon 2018). However, there is evidence that financial health indicators drawn from audited financial statements can be used to predict some of the behaviors associated with fiscal stress (Gorina, Maher and Joffe 2018). Similarly, a detailed study of Detroit showed that certain financial indicators were predictive of the city's bankruptcy filing (Stone et al. 2015). Moreover, scholars tend to agree that underlying demographic and socioeconomic characteristics of a government are the ultimate and critical drivers of financial health (Jacob and Hendrick 2012). Thus, we construct a dataset of financial, socioeconomic, and demographic variables for about 8,000 municipalities.[2] The data for these variables comes from three sources: the American Community Survey's 5-year estimates,[3] the United

[2]Though there are 39,000 local governments in the United States, panel data coming from audited financial statements is available for only roughly 8,000 governments. Because this data is necessary for our matching strategy, our sample is therefore limited. We should note that the GovRank dataset of audited financial statement data is at least an order of magnitude larger than any other panel dataset of municipal financial data. In addition, we believe the data captures approximately 90 percent of governments with more than 1,000 people and likely represents close to the population of governments that produce audited financial statements (for more detail see Kaldani, Carter, Kaye-Zwiebel, Aroskar, Ang, Ravi and Liu (2016)).

[3]Because the ACS' five-year estimates do not exist prior to 2009 and we need a balanced panel to execute the matching strategy, the data for 2008 are slightly different. For the demographic data, we calculate the annualized growth rate between 2000 (via the decennial census) and 2009 and use it to project 2008's values. For 2008 unemployment, we use the Bureau of Labor Statistics data at the county level.

States Common Sense's GovRank project, and the Census of Governments for 2007. Table 1 describes these variables and their associated datasets in more detail.

Figure 1: Balance Improvements



To determine which variables to match on, we first run a logistic regression to determine which of our covariates were associated with petitioning for bankruptcy protection. We find that two financial health variables – the net asset ratio and the operating ratio – and two

demographic variables – population and population density of the locality – were statistically related to the decision to file for bankruptcy. The results of this regression are presented in the Appendix in Table A.1. Table A.1 also contains variables that were not significantly associated with filing for bankruptcy: the local unemployment rate, the percent of the population that is black, expenditures per capita, median household income, the percent of the population with a bachelor's degree or higher, and various categories of social spending.

After filtering our data to municipalities with less than 1 million residents,[4] we selected k = 5 matches using cross-validation. Our matching strategy yields a significant improvement in balance on both our matched variables and our unmatched variables, including fiscal, financial, economic, and demographic characteristics. Figure 1 shows the matching balance.

[4]We made the decision to limit our analysis to cities and counties with populations under 1 million as we believe that there are structural differences in the bankruptcy process and large externalities associated with fiscal distress of municipalities of this size.

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

4.2 Empirical Model

In order to determine the causal impact of successfully filing for municipal bankruptcy, we estimate a staggered differences-in-differences (DD) model using our matched datasets. The staggered DD model, or DD model with variations in policy adoption timing, is slightly different from the canonical DD model where timing of the treatment does not vary (Stevenson and Wolfers 2007; Goodman-Bacon 2018). The variation in the years that municipalities filed for bankruptcy allows us to use a more generalized framework where we analyze changes in output and outcome variables before and after the year of filing (or in the case of control observations, before and after the year of acute fiscal distress), rather than before and after a fixed point in time. The model takes the form of equation (1):

$$Y_{m,t} = \beta BankruptcyFiling_{m,t} + \omega PostDistress_{m,t} + \kappa \mathbf{X}_{m,t} + \alpha_m + \tau_y + \epsilon_{m,t} \qquad (1)$$

The model relates output or outcome y in municipality m at time t directly to the act of successfully filing for federal bankruptcy protection. In equation (1), $Y_{m,t}$ is a measure of service provision, as discussed above. $BankruptcyFiling_{m,t}$ is an indicator of whether a municipality was in bankruptcy protection at time t and years thereafter (i.e., at least one calendar year after the municipality files), and $PostDistress_{m,t}$ indicates whether the observation in period t occurs after the municipality has experienced its acute fiscal event. For treated observations, $BankruptcyFiling$ and $PostDistress$ will only ever take on the same value $(0, 0)$ or $(1, 1)$ in a given period t for a given municipality m. For control observations, in which $BankruptcyFiling$ is always 0, $PostDistress$ takes on 0 or 1 depending upon whether we are observing the time period before or after the fiscal stress that qualified the observation to be similar enough to the treated observations to be included in our analysis. The model also includes a vector of controls $\mathbf{X}$ that includes logged population, population density, percent of the population over the age of 65, percent of the population under the age of 18, percent of the population that is black, percent of the population that has a bachelor's

Table 2: Matches

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

degree or above, the local unemployment rate, and median household income. Finally, the model includes municipal and year fixed effects, α_m and τ_y, respectively, and an error term, $\epsilon_{m,t}$. Standard errors are heteroskedasticity-robust and clustered by municipality.

Our parameter of interest in equation (1) is β, which estimates the average effect of filing for bankruptcy on our various measures of local government service provision. This estimate averages the effect across all time periods post-filing, including the time periods in which the municipality is still in bankruptcy protection. Because it is possible that the true costs and benefits to filing may not accrue to the municipality until after exiting bankruptcy protection, this specification may bias our estimate towards zero. Nevertheless, we find limited evidence that bankruptcy negatively affects service provision and some evidence that it improves service solvency. We alter the definition of what constitutes the period of treatment in the Appendix and find that our results are qualitatively unchanged.

While the classic formulation of the staggered DD model above captures the average effect of treatment on our financial indicators over all of the years of post-treatment data we observe, an event-study analysis allows us to trace the effects over time as well as probe the appropriateness of the parallel trends assumption which is a requirement for being able to interpret the DD estimate causally. In equation (2) we split our treatment into a set of lead and lag variables such that ρ_k estimates the effect of bankruptcy protection $k \in (1, 7^+)$ years after filing while δ_j estimates the difference in pre-treatment trends in the $j \in (-4^-, -2)$ years prior to filing (we leave the year prior to filing as our reference group). The ϕ parameter estimates the difference between those municipalities that filed for protection and those that did not in the year of filing. The reference period in our research design is the year before filing for bankruptcy protection. Our endpoints (3 years prior to filing and 6 years after filing) are binned as the vast majority of our observed data falls within this range.

$$Y_{m,t} = \sum_{-4^-}^{-2} \delta_k BankruptcyFiling_{m,t}^k + \phi BankruptcyFiling_{m,t}^0 + \sum_{1}^{7^+} \rho_k BankruptcyFiling_{m,t}^k + \kappa \mathbf{X}_{m,t} + \omega_t + \alpha_m + \tau_y + \epsilon_{m,t} \quad (2)$$

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

Outcome Variable	
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

5 Results

5.1 Difference-in-Differences

We begin by reporting the results for the classic DD specification from equation (1) in Tables 3 and 4. At first glance, the results appear to support the general conclusion that municipal bankruptcy shrinks the size of the public sector on several dimensions relative to the counterfactual, supporting the idea that bankruptcy is an avenue through which decisionmakers can pursue urban austerity.

To reach this conclusion, we consider the beta coefficient and p-value for each estimation. In total, we estimate 16 models for our set of matches. Among spending outcomes, we see beta coefficients that are statistically different than zero (i.e., statistically significant) in four

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

Outcome Variable	
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

of the eight models: general fund expenses per capita, total expenses per capita, public safety expenses per capita, and libraries expenses per capita. All of the coefficients on our parameter of interest are negative (with the exception of public works spending), suggesting that the municipal public sector shrinks along virtually all service dimensions after entering bankruptcy protection.

For both general fund and (especially) total expenditures, coefficient estimates are negative and substantively large. Governments that filed for bankruptcy saw average decreases in their general fund spending of 77 dollars per capita; with average populations in the filing localities of 330,000, this would amount in a net decrease of over $25M relative to non-filing governments. Similarly, filing governments could expect an average decrease in total expenditures of 513 dollars per capita for a total decrease of $169M. This implies that as much as a quarter of a filing government's annual budget could shrink upon entering bankruptcy protection, relative to those similar governments that chose not to file.

Public safety spending and libraries spending also shrinks upon filing for bankruptcy, and this decrease is statistically significant when comparing bankrupt municipalities to other governments within the state. Decreases in libraries spending is unsurprising in that libraries spending seems, intuitively, to be viewed as the least urgent of the categorical spending, and the most likely to be viewed as a luxury. However, the decline in public safety spending – a category of government expense that is more or less deemed universally essential – is more puzzling. If federal bankruptcy judges were insisting that places like Detroit and Stockton were insolvent because of the immense downturn in police performance and skyrocketing crime rates, why would bankruptcy actually result in a decline in public safety expenditures? The answer has to do with the political lightning surrounding public safety spending – particularly with regard to individual compensation and pension benefits (Davidson 2019).

While we would like to further investigate precisely where the declines in public safety originated – salary reductions? reductions in FTE? – our current data preclude us from doing so. Instead, we investigate the consequences of such extreme fiscal reorganization in

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

	All	*Violent*	*Property*
Post-treatment period	−0.35	0.24	-0.41
	(1.86)	(0.69)	(1.83)
Post-treatment * bankruptcy	−9.34	−2.78	−9.13
	(6.18)	(2.69)	(6.04)
Log population	−69.43	-41.76	-66.45
	(64.39)	(28.04)	(63.10)
65 and older (%)	-59.96	-26.29	-56.28
	(146.67)	(58.42)	(143.93)
18 and younger (%)	−29.50	17.47	−25.44
	(93.05)	(46.04)	(93.33)
Black (%)	-110.34	-61.35	-110.09
	(117.45)	(50.33)	(115.49)
Bachelor's or greater (%)	13.37	-5.18	20.75
	(132.70)	(58.76)	(130.71)
Unemployment (%)	172.81	64.62	168.49
	(108.70)	(47.52)	(105.50)
Median HH income (1000s)	0.03	0.11	0.03
	(0.67)	(0.30)	(0.66)
Public safety spending per capita, lagged	0.02	-0.01	−0.02
	(0.02)	(0.01)	(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

bankrupt municipalities. Tables 5 and 6 depicts what happens to the crime rate and crime clearance rate in bankrupt versus non-bankrupt municipalities after experiencing an acute fiscal event. We further break down these outputs and outcomes into violent crimes and crime rates and property crimes and crime rates, largely following Goldstein, Sances and You (2020).

As is probably unsurprising, our data are insufficiently powered to detect any statistically significant effect on per capita crime rates. While the point estimates of the coefficients on bankruptcy are negative for all three categories of crime rates, as depicted in Table 5, the estimates do not achieve statistical significance at conventional thresholds ($p = 0.13$ for all

Table 6: Crime Clearance Rate

	All	*Violent*	*Property*
Post-treatment period	−0.02	−0.04	−0.02
	(0.02)	(0.03)	(0.02)
Post-treatment * bankruptcy	0.08**	0.12**	0.08**
	(0.03)	(0.06)	(0.03)
Log population	0.15	0.40	0.14
	(0.23)	(0.33)	(0.22)
65 and older (%)	1.16	1.82	1.11
	(1.04)	(2.32)	(1.03)
18 and younger (%)	1.89***	2.50**	1.88***
	(0.68)	(1.12)	(0.67)
Black (%)	0.00	-0.04	-0.01
	(0.58)	(0.67)	(0.58)
Bachelor's or greater (%)	2.31*	2.94*	2.25*
	(1.33)	(1.53)	(1.34)
Unemployment (%)	−0.34	-0.01	-0.34
	(0.62)	(0.83)	(0.62)
Median HH income (1000s)	0.01*	0.01	0.01*
	(0.01)	(0.14)	(0.01)
Crime per capita, lagged	1.44	1.66	1.46
	(1.18)	(1.66)	(1.17)
Public safety spending per capita, lagged (1000s)	0.06	-0.01	0.06
	(0.09	(0.14)	(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

crimes, $p = 0.30$ for violent crimes, and $p = 0.13$ for property crimes). Increasing our sample size by removing the lagged value of public safety leaves our results unchanged. None of our other control variables achieve statistical significance, either, leaving us in the company of the many other social scientists across space and time who have struggled to explain changes in crime rates (Roeder, Eisen, Bowling, Stiglitz and Chettiar 2015; Greenberg 2014; Barker 2010; Ford 2016). It should be noted, however, that there is a marked secular decline in crime rates for both control and treated municipalities. This decline is evident in Figure 3 below.

Table 5 shows us that while we could not detect any effect of bankruptcy on crimes committed, we are able to detect a quite strong effect on the ability of the local police force to make arrests in response to those crimes. Bankruptcy increases the rate at which all crimes are resolved by 8 percentage points, violent crimes by 12 percentage points, and property crimes by 8 percentage points (about a third of the crimes in our sample are classified as violent crimes). These increases in clearance rates that the municipalities experience upon filing for bankruptcy protection are notable; an 8 percentage increase is about two-third of a standard deviation in the sample's crime clearance rate (which, on average, is 13% for the entire sample).

5.2 Parallel Trends Assumption and Event Study

Figure 2 displays the trends in our budgetary variables for both treated and comparison municipalities while Figure 3 displays the trends in our crime data. The data are centered around the year of filing for those municipalities that petitioned for bankruptcy while the data for comparison localities are centered around the year that fiscal indicators were most similar to those of their matched treated observations in the year prior to filing. While the trends across all three groups look similar for most of our outcome variables, we investigate the parallel trends assumption more thoroughly via an event study and a falsification test that can be found in the Appendix.

Table 7 reports the results of our event study and the appropriateness of the parallel trends assumption. The models contained in these tables allow us to trace the effects of the decision to file for bankruptcy across time while also allowing us to test the assumption that our matched municipalities' fiscal circumstances are statistically indistinguishable from those that received the treatment of bankruptcy protection. As Table 7 shows, the differences in the outcomes for our municipalities are not statistically different from zero for nearly all of the years prior to filing for nearly all of our outcomes, and this is especially true for the years that are nearest to the filing period. This suggests that our matching algorithm has done a good job of finding municipalities that are very similar to each other prior to and leading up to bankruptcy, *especially since we were unable to match directly on spending variables*, and that the assumptions necessary to causally interpret our DD estimates are satisfied.

Figure 2: Trends in Expenditures

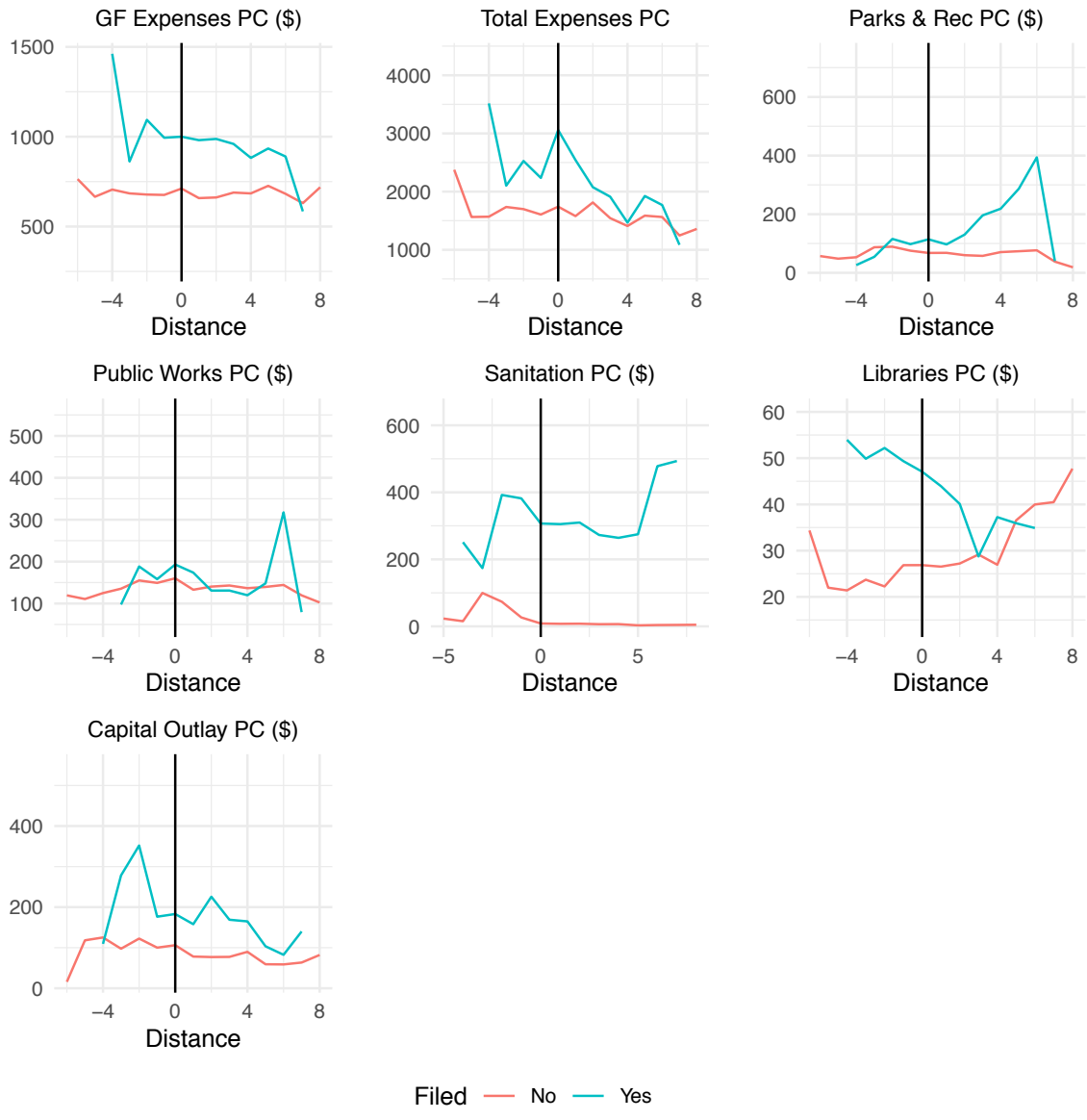


Figure 3: Trends in Crime Data

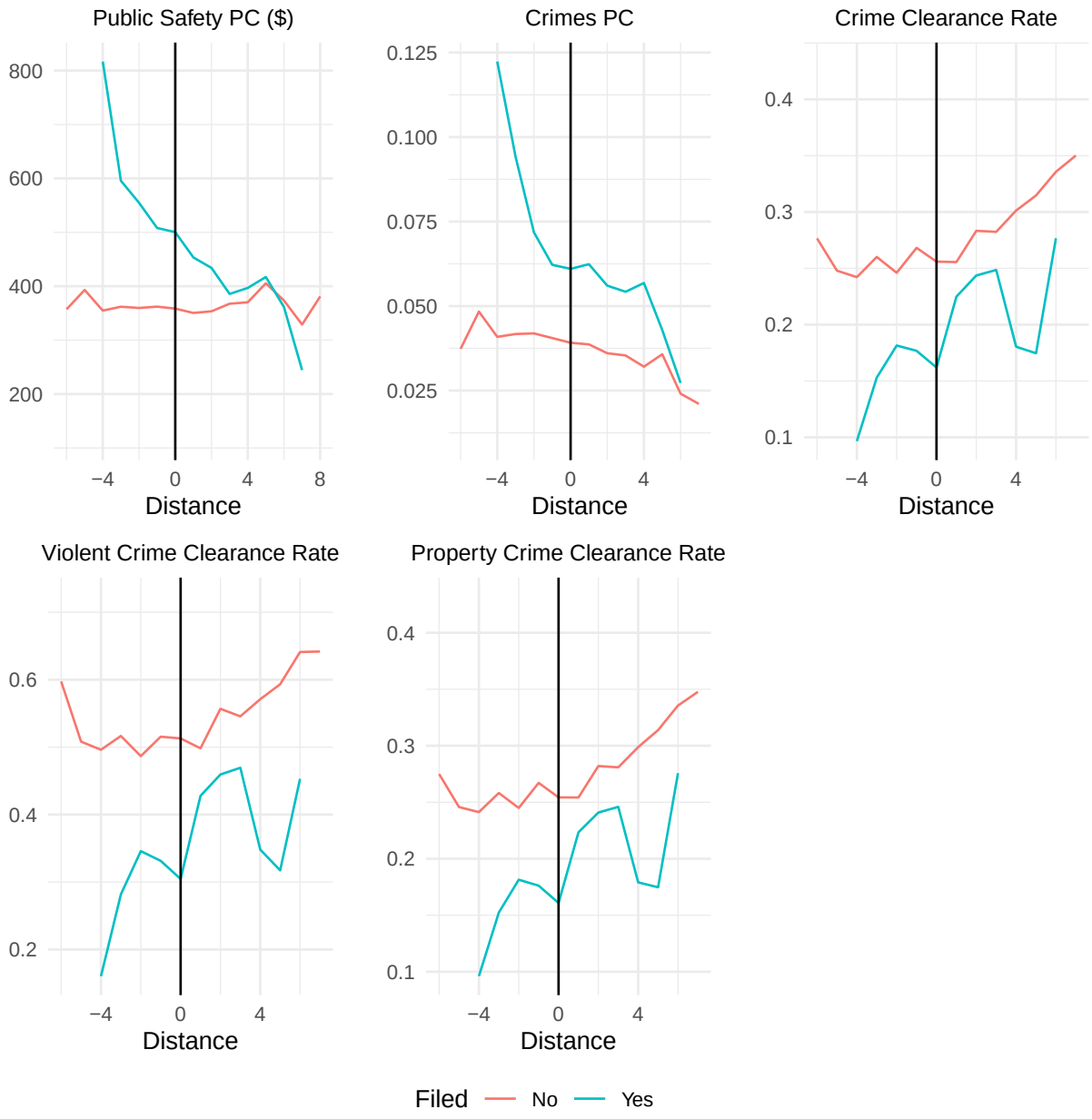


Table 7: Effect of Filing for Bankruptcy on per Capita Spending

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

The results generally confirm the findings from the DD estimates: municipal governments that filed for bankruptcy shrunk across a number of measures and across time, especially across libraries spending, sanitation, and aggregate measures of spending. The event study reveals dynamics that the difference-in-difference design is unable to show, however. Specifically, the contractions in spending and in revenue are not concentrated at a single point in time post-filing. Instead, the contractionary effects are persistent throughout the entire post-treatment period, even up until the last year in which we observe data.

Finally, we also conduct an event study of our crime data. Table 8 depicts the precipitous decline in per capita public safety spending (column 1). There were large, statistically significant contractions in public safety spending for every year more than 2 years out from filing, including more than 7 years from the date of filing. There were no statistical differences in spending patterns before the acute fiscal event occurred. There were also statistically significant declines in crime rates, but only for a handful of years in the post-filing period (one year post-filing and three years post-filing). The coefficients on the other years are all negative, but again, do not achieve significance due to our very small sample size (67 municipal-years). Changes in crime clearance rates, across all categories, are largely positive during the post-filing period, especially in the first three years after filing. This suggests that there are meaningful positive gains in government performance associated with filing for bankruptcy protection when experiencing acute fiscal distress, even if the financial inputs to those outputs and outcomes decline as a result.

Table 8: Effect of Filing for Bankruptcy on Crime Data

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

6 Discussion

Local government responses to fiscal stress have been the subject of study for decades. Recently, much of the theoretical debate has taken place around the opposing ideas of austerity urbanism and practical municipalism. One posits a hollow future for local governments due to a push to reduce the size and scope of how government that is only exacerbated when resources are constrained (Peck 2012). The other suggests that local governments behave as stewards of their community and will act strategically to balance resource constraints against the need for service provision. One of the goals of this research has been to leverage these diverging theoretical ideas to explore how one of the most acute expressions of fiscal stress – municipal bankruptcy – affects local government behavior. Do governments use the increased leverage provided by bankruptcy to make significant cuts, or do they engage in more practical strategies? The answer to this question is not simply just an academic exercise, but has important ramifications for resident quality of life. If local governments use municipal bankruptcy to further austerity urbanism, it raises important equity concerns for the efficacy of the policy. But if local governments engage in something closer to practical municipalism, it may be the case that Chapter 9 is a powerful tool to manage decline and fiscal stress in local governments.

Our findings paint a complicated picture about how municipal bankruptcy affects residents, one that does not fit squarely into austerity urbanism or practical municpalism. On the one hand, we find evidence that bankruptcy is associated with expenditure cuts, both to core services and to services more oriented toward social objectives. In addition, we see no evidence that governments going through bankruptcy attempt to raise additional revenues or diversify their revenue streams via additional user charges. Both of these findings are consistent with austerity urbanism. On the other hand, we see evidence of improved service solvency in the area of policing via a reduction in crime rates and an improvement in crime clearance rates. These findings are more consistent with practical municipalism or resource

dependency theory, which both imply that local governments undergoing restructuring will be able to improve their outcomes. The overall effect of municipal bankruptcy on residents is thus unclear; there is some evidence that bankruptcy reduces inputs to service delivery, but that those cuts do not necessarily impair outcomes for residents.

The starkest contrast between these findings comes in the area of policing, where we find statistically significant and negative effects of filing for bankruptcy on funding but statistically significant and positive effects of filing for bankruptcy on service quality via improved crime clearance rates. It is important to emphasize that these effects are relative to other fiscally-stressed municipalities, so we can attribute them to the Chapter 9 filing itself rather than just fiscal stress. What, then, explains these findings? One potential explanation is that the expenditure cuts are to police salaries and pension and retirement benefits, which could potentially reduce expenditures but not necessarily affect service quality. Another explanation is that the national saliency of the bankruptcy drove politicians and public managers to address problems through innovation. Pragmatic municipalism highlights innovation driven by fiscal stress, a finding supported in a variety of settings (Warner, Aldag and Kim 2020; Singla, Stritch and Feeney 2018). In Stockton, for instance, there has been an effort at more community-oriented policing since the bankruptcy (Friedrich 2019). And in Detroit, the city's ability to retain police officers was impaired prior to Chapter 9 (Dickson 2020); given the costs associated with high turnover, it could be possible to improve outcomes and reduce expenditures simultaneously.

What does all of this mean for Chapter 9 bankruptcy as a response to fiscal stress? Combining our findings with other work can help. Our work suggests that Chapter 9 bankruptcy has a limited and mixed effect on resident quality of life via service delivery. When combined with work demonstrating that Chapter 9 can improve the finances of local governments (Abott and Singla N.d.), however, the balance shifts toward a positive assessment of Chapter 9 as a response to extreme fiscal stress. It is, of course, critical for governments to not file for bankruptcy capriciously or to do so as a first response to stress. But, for some governments

struggling with decisions about making draconian cuts or Chapter 9, it may be the case that Chapter 9 is a viable option.

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Appendix

Contents

A Additional Tables and Figures

Table A.1: Logistic Regression on Filing for Bankruptcy

	Dependent Variable:
	Bankruptcy Filing
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