The Impact of State Intervention and Bankruptcy Authorization Laws on Local Government Financial Condition

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Abstract: US Bankruptcy Codes Chapter 9 specifies the procedure for local governments to file for bankruptcy and restructure their debt. A distinguishing feature of Chapter 9 is that localities can only file if allowed by state laws. While some states give unconditional authorization, other states only conditionally permit local bankruptcy filings or do not give authorization. The latter approaches represent more state control over fiscally distressed localities; and many of these states legislate intervention programs to induce corrective measures and prevent local governments from filing for bankruptcy. Relying on variations in state laws on bankruptcy authorization and intervention program across states and over time, this paper investigates the impact of policy adoption on the cash flow-related condition of local governments, including deficit and short-term debt. Fixed effects models provide mean estimates and fixed effects quantile regressions offer estimates for specific quantiles of financial condition outcomes. This paper finds that state authorization for bankruptcy is not associated with higher level of deficit and short-term debt at the mean. However, local governments with high existing deficit or borrowing are subject to moral hazard and incur more deficit and short-term debt upon the authorizations. While the moral hazard effect dominates for fiscally distressed localities, those with low levels of debt further reduce short-term borrowing, possibly due to the interest risk premium charged by the debt market upon bankruptcy authorizations. State intervention programs are associated with decreased average local short-term debt ratio; they are also effective at curbing deficit and short-term debt for localities with high deficit and borrowing.

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1. Introduction

Concerns for local government insolvency raise difficult questions for state policy makers. Local governments are considered “creatures of the state,” implying that states may assume responsibility for mitigating local fiscal distress; however, there is also a widespread interest in local autonomy that presumably includes the right to be locally responsible for poor decisions. This tension is well illustrated in the extreme case of bankruptcy among local governments, where federal bankruptcy codes Chapter 9 specifies local government bankruptcy as an option only if the state gives consent. Consequently, states cannot avoid taking a stance on whether or not local governments have the ability to declare bankruptcy. Specifically, if states permit local bankruptcy, they must detail whether to place conditions on the local access to federal bankruptcy courts. Regardless of bankruptcy authorization choices, the states may also consider allocating resources to aid insolvent localities and intervening in crisis, ideally to avoid bankruptcy filings. In defining these stances, states are confronted with the familiar trade-off in bankruptcy where access provides a moral hazard incentive to take more financial risk that presumably results in higher interest rates for all borrowers, against the desire for the distressed to find a way to start over. With high profile bankruptcy cases from the city of San Bernardino (California), Jefferson County (Alabama), and Detroit (Michigan), issues of moral hazard versus local autonomy are important public concerns in defining appropriate state policy.

Most previous literature has emphasized state-imposed fiscal institutions that seek to prevent fiscal distress; this paper examines two types of state laws regarding localities already in distress. The first institution, state authorization for local access to bankruptcy
court, has been controversial in its own right. For example, in the past few years, the Illinois legislature repeatedly considered bills to grant such an authorization for its debt-ridden local governments, so that they can restructure liabilities and possibly reduce the repayment amount. However, opponents voiced concerns over the bills: local public employee unions worry that bankruptcy will lead to a reduction in benefits, despite the constitutional guarantee of pension payments; some elected officials dislike the prospect of a wave of bankruptcy filings and the harmful effect it could have on the state’s reputation on the financial market. As of 2015, 15 states give unconditional authorization for municipal bankruptcy while 9 states grant authorization upon the fulfillment of certain conditions.

Concerned about the perverse incentives arising from unlimited bankruptcy access, some states consequently define a systematic intervention program. The programs often consist of detecting failing localities, adopting corrective budgetary plans, and appointing emergency managers to take over local decision making. They differ from ad-hoc state response to local fiscal crisis in two aspects. First, the process of intervention becomes known and predictable to the local governments, the public, and the financial market. Second, all local governments, unless legally excluded by law, are subject to the same program; small jurisdictions are unlikely to be overlooked and large localities are unlikely to receive preferential treatment. As of 2015, 12 states have enacted intervention programs.

The enactment of state intervention programs and bankruptcy authorizations may incentivize behavioral changes in local financial management decision-making. Specifically, if access to the bankruptcy courts is unconditional, local governments could
become risk seeking and comfortable with incurring deficit; essentially, moral hazard occurs as local officials take more risk because debtors bear the cost once liability restructuring is reached in court. Previous research has shown that the bankruptcy access is not costless to local governments, as the debt market capitalizes state bankruptcy authorizations into municipal bonds and increases local borrowing costs (Moldogaziev et al. 2014). Increasing interest rates can presumably discourage borrowing and deficits. In short, moral hazard incentives and deterrence effects are two offsetting driving forces, which make the combined effect of state bankruptcy authorization on local government fiscal condition unclear.

Intervention programs are often thought as an alternative to bankruptcy: if local governments are incapable of managing their own fiscal affairs, a state take-over may put things back on track and prevent bankruptcy filing. Unlike subnational bailouts in unitary countries, intervention programs in US states represent an uncertain amount of direct financial assistance but significant reduction in local autonomy, and in some cases, complete state takeover of local governance. Therefore, the intervention programs may provide strong motivation for local governments to refrain from deficit financing and to maintain solvency.

This paper investigates how the enactment of bankruptcy authorization and fiscal intervention programs impact local government cash flow-related conditions, which are operationalized with measures of total deficit and short-term debt on a representative sample of general purpose local governments in the US. By constructing a unique dataset of state policies on bankruptcy authorization and intervention programs, this is the first attempt in the literature to explore the cross-time variation in fiscal institutions on
distressed localities. This paper also contributes methodologically by complementing the traditional fixed effects model with a quantile fixed effects regression. This is important because the state policies are frequently determined out of concerns for local governments that are on one tail of the fiscal outcome distribution, while linear regression techniques estimate only mean conditional responses. As discussed above, bankruptcy authorizations induce countervailing incentives that may encourage risk taking through moral hazard while discourage it through higher interest rates. The set of competing effects may differ along the continuum of fiscal distress. The quantile approach reveals if one incentive is more pronounced on outlier localities carrying very high deficits while the other incentive dominates for localities on the other extreme. This is the first applied use of the two-step, fixed effect quantile regression developed by Canay (2011) in the fiscal federalism literature.

To preview the results, locality-level fixed effects regressions show that state authorization for bankruptcy is not associated with higher level of deficit and short-term debt on average. However, quantile fixed effects estimates show that local governments with high existing deficit and short-term borrowing may be subject to moral hazard and incur more deficit and short-term debt upon the authorizations. State intervention programs lead to decreased average local short-term debt ratio, and are effective at curbing deficit and short-term debt for localities with high deficit and borrowing. While the moral hazard incentive of bankruptcy authorizations is pronounced for distressed localities, the market deterrence effect may dominate for localities with little short-term debt: these jurisdictions reduce short-term borrowing even more upon state authorizations, possibly due to increased interest costs.
This paper proceeds as follows. Section 2 describes state authorizations for local government bankruptcy and intervention programs and formally states the research hypotheses. Section 3 provides a brief review of literature on this topic. Section 4 outlines the empirical models used to investigate the impact of these fiscal institutions on deficit and short-term debt ratio and describes the data. Section 5 presents empirical results and discussions. The last section concludes.

2. Fiscal Institutions on Distressed Localities

The idea that there exists a diversity of citizen preferences for the appropriate provision level of public services has long served as the prima facie case for local governments to have flexible means of financing. Nevertheless, states impose fiscal institutions on localities to prevent and correct for possible “local government failures.” Specifically with regard to fiscal sustainability, states rely on two sets of institutions that outline the power and responsibilities of local governments. The first class of institutions target at crisis prevention, including limitations on the amount of government debt and types of debt instruments, and balanced budget rules limiting the capacity of local government to budget for or carry an annual deficit. When these fiscal institutions fail, a local government runs a chronic deficit or incurs too much debt. As the locality does not have sufficient cash to pay liabilities on time, it is in default of the debt or is insolvent. Insolvency negatively affects the local government’s ability to provide public services and the financial market’s perception of the locality as a borrower.
Fiscal institutions regarding state and local choices given local government insolvency remain an empirically under-researched area. In the United States, such institutions include state authorization for local governments to file for bankruptcy and state intervention programs for fiscally distressed localities.

2.1 Chapter 9 Municipal Bankruptcy and State Authorization

Fiscal distress is a persistent shortfall in cash flows resulting from an imbalance between revenue and expenditure for given service levels. Fiscal distress manifests when a local government does not have the cash on hand to pay its liabilities, including interest on short- and long-term debt, accounts payable to suppliers, legal liabilities determined by a court, employee wages and salaries, and retiree benefits. The most extreme cases of fiscal distress are represented by defaults on bonds and by bankruptcies. A defaulting local government faces the constant legal pressure to dedicate possible resources to pay creditors, and may seek help from the bankruptcy court to systematically “work out” its liabilities.

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1 The two classes of fiscal institutions can interact with each other. For example, Epple and Spatt (1986) propose a model to explain why the imposition of debt limits may cause some states to be more willing in enforcing repayment instead of allowing default of local governments. As the debt limits decrease the fraction of communities who wish to default to a sufficiently low level, there could be political willingness among the state’s electorate to favor state intervention to enforce repayment.

2 Liu, Tian and Wallis (2013) decompose state regulations of local fiscal activity to three parts: monitoring, crisis definition, and intervention. Fiscal institutions examined in this paper focus on the latter two aspects.

3 Therefore, insolvency in this paper focuses on cash insolvency or short-term liquidity constraints, which can be a consequence of budgetary insolvency or fiscal-year imbalance, long-run insolvency or lack of sustainability, and service-level insolvency or inability to meet community’s service demands (Lewis 1994).
liability and negotiate with creditors to readjust its debt. Therefore, defaults are not synonymous with bankruptcies but often predate bankruptcies.⁴

US Bankruptcy Codes Chapter 9 provides the legal basis for municipal bankruptcy starting in 1937.⁵ Prior to the enactment of Chapter 9, creditors could only pursue an action of mandamus and compel the local government to raise taxes or seize accounts, inducing individual creditors to “race to the courthouse” to file separate mandamus suits. Negotiation with each creditor is impractical, costly, and potentially harmful for the majority of creditors. In comparison, Chapter 9 allows local governments to continue the provision of public services while working with all creditors to negotiate a debt adjustment plan (De Angelis and Tian 2013).

The Tenth Amendment to the US Constitution prohibits the federal government from interfering with states’ internal governance, and the federal law on municipal bankruptcy is no exception. Chapter 9 intends to balance a federal bankruptcy court’s power in restructuring debt with the sovereignty of a state and thus its local governments in various ways.⁶ For example, all municipal bankruptcy fillings have to be voluntary and cannot be forced by creditors; the bankruptcy courts cannot impose taxes or take over the government of the debtor, and generally play a less active role in municipal bankruptcy

⁴ Defaults are rare among rated municipal bonds but more common among unrated issuances. According to Appleson, Parsons, and Haughwout (2012), there were 2,521 defaults among all municipal issuances from 1970 to 2011, as compared to 71 defaults among Moody-rated bonds. ⁵ The federal Bankruptcy Codes define “municipality” to include cities, counties, villages, towns, school districts, special tax districts, and municipal utilities and enterprises as long as they are “instrumentalities or agencies of the state” (Spiotto 2011). Therefore, “municipal bankruptcy” is a conventional term used to refer to the bankruptcy of all local governmental entities, although this paper focuses on general purpose local governments only. ⁶ Subnational government insolvency is intrinsically different from that of private entities. Continuing provision of public good and services is the key. For example, liquidation, an option available for distressed private corporates, is not accessible for local governments, leaving debt readjustment the only choice.
than in corporate bankruptcy cases. Mostly importantly, states have to give authorization
to local governments for bankruptcy filing through state laws and legislations.\(^7\)

Whether to allow for municipal bankruptcy is ultimately a question of how much
control a state assumes over its local government. Through reviewing state laws and
tracking historical changes in the laws, the paper compiles a unique dataset of policy
adoption in Table 1. A total of 15 states currently provide unconditional authorization to
general purpose local governments. These states take a hands-off approach and local
governments may utilize bankruptcy as long as they meet the legal and procedural
requirements of Chapter 9. Meanwhile, 26 states do not address the issue of municipal
bankruptcy in state laws. A lack of specific state authorization indicates that localities
need to obtain permission from the legislature on an ad hoc basis and subject itself to the
uncertainty of state politics and possible state intervention in local governance. In
between the two extremes, 9 states provide conditional authorization for bankruptcy
through legislating a series of steps for local governments to obtain permission from a
specific entity, often the governor or a person/committee appointed by the state.

In granting a bankruptcy authorization, states need to weigh the pros and cons of
municipal bankruptcy, not only for local governments that are struggling financially but
all other localities in the state that will be subject to the law. On the pro-side, once a filing
is accepted, the debtor is put into automatic stay, insulated from continuing creditor
lawsuits and not required to make payments on unsecured bonds. The filing municipality

\(^7\) In 1994, the Congress amended the Bankruptcy Codes to change the previous requirement that a
municipality be “generally authorized” to “specifically authorized”, because the general
authorization clause had generated different interpretations in the court. What is consistent before
and after 1994 is that without an explicit state authorization, localities face greater uncertainty in
the court to even get the case accepted.
submits a plan for debt adjustment. As long as the plan is accepted by one-half in number and two-thirds in amount of each “class” of impaired creditors, the court would consider the plan accepted. Disagreeing creditors are essentially forced to settle for a debt adjustment plan. In sum, bankruptcies offer an opportunity for local governments to pay less on their liabilities and enable them to start anew.

On the con-side, the possibility of paying less on one’s debt through bankruptcy restructuring and the additional protection from creditors explained above beg the question whether the access to bankruptcy courts induces moral hazard.8 Local governments could become risk-seeking and engage in innovative borrowing mechanisms to reduce costs while feeling comfortable about taking risk due to the availability of bankruptcy. Fiscal insolvency of one locality may impair the access of other localities in the state to the credit market and lower state government credit ratings (De Angelis and Tian 2013), but the distressed jurisdiction is unlikely to consider the negative pecuniary externality when bringing the case to a bankruptcy court. Particularly for localities already facing chronic fiscal issues, instead of making structural changes, they may sink deeper into insolvency to qualify for bankruptcy and to transfer the loss to creditors and other governments in the state.

However, bankruptcy authorizations may increase local government borrowing costs which in turn reduces local debt. As discussed above, bankruptcies often lead to discounted debt repayment to the creditors; also, allowing local governments to file for bankruptcy signals a handoff approach of the state and its unwillingness to bail out

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8 Although not the focus of this paper, for the state as a whole, bankruptcy authorizations may be associated with drawbacks besides moral hazard, including loss of public confidence in governments, public employee union objections, and negative credit market responses.
financially distressed localities (White 2002). Therefore, the municipal bond market
negatively perceives state bankruptcy authorizations and charges a risk premium on local
government borrowing in those states (Moldogaziev et al. 2014). Simple supply and
demand analysis suggests that increased interest rates reduce local government
borrowing, including short-term borrowing for cash flow purposes, and suppress the
moral hazard effects of state bankruptcy authorizations. Arguably, the fact that municipal
bankruptcy is a rare event provides support for the deterrence effect of the market
process.⁹ ¹⁰

In sum, bankruptcy authorizations may trigger moral hazard which increases
local government deficits in the state; deficits, the fiscal outcome when annual
expenditure exceeds revenue, are made possible by selling assets or short-term
borrowing. Meanwhile, bankruptcy authorizations may increase local borrowing costs
that exercise an opposite effect in decreasing short-term borrowing. Therefore, the
overall effect of state bankruptcy authorizations on local deficit and short-term
borrowing are ambiguous. For fiscally distressed localities, the moral hazard effects
may dominate as these governments are in dire need for a way out of crisis, while for
fiscally healthy localities that occasionally borrow short-term to smooth out cash

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⁹ According to Spiotto (2008), from 1980 through 2006, there are 183 municipal bankruptcy
filings, among which only 32 are from general purpose governments (cities, villages or counties).
The most frequent filers are municipal utilities (75 filings) and special municipal district (38
filings).
¹⁰ Other factors, not related to the authorizations directly, decrease the attractiveness of
bankruptcy filings to local governments and thus reduce moral hazard incentives. First, Chapter 9
includes stringent eligibility requirements for local governments to prove insolvency and
negotiate in good faith, making it difficult to take advantage of creditors. The legal process for
bankruptcy filing is complicated, often prolonged and expensive. Second, politically bankruptcy
carries a negative connotation among voters (Allers 2015). Third, localities surviving a
bankruptcy may return to the capital market, and the stigma association with prior bankruptcies
increase their borrowing costs.
flow, the deterrence effect of increasing interest costs may be more pronounced.

Possible heterogeneous effects call for analysis along the distribution of local fiscal conditions, implemented through the fixed effect quantile regression discussed later in the paper.

2.2 State intervention

Only in the 1970s did the states begin to adopt intervention programs to cope with distressed local government in a systematic approach (Cahill and James 1992). As of 2015, seven states condition bankruptcy authorization on intervention programs, and five states that do not legislate about municipal bankruptcy have codified intervention programs to assist and/or take over distressed local governments. Generally, an intervention program involves initiating the intervention, declaring a locality to be in fiscal emergency which may include appointing someone to take over local administration, developing and implementing a recovery plan, and terminating the fiscal emergency.

State intervention programs can provide a mixture of “carrot” and “stick” to the distressed local governments. The carrot includes the state provision of technical assistance, and in some cases, direct financial assistance in the form of grants and interest-free loans. The stick includes the loss of local autonomy through takeover of state

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11 States could also intervene in local government fiscal crisis through an ad hoc approach, passing legislations and providing assistance for specific localities on a case-by-case basis. Because such an approach is not standardized in law and might not be expected by local governments with certainty, it is not considered “institution” for analysis in this paper. Further, this paper defines intervention programs to be a system of procedures from declaring fiscal emergency to drafting and implementing corrective actions; for example, standalone grants and loans to local governments do not constitute an intervention program.
officials, and tough tax increases and service cuts that cannot be imposed by the bankruptcy court in a Chapter 9 proceeding. While there are variations in specific program designs, intervention programs share the common feature of reduction in local autonomy and increased participation of the state government in local affairs, culminating in the state appointment of an emergency manager that completely takes over local governance, as seen in Michigan, New Jersey, Pennsylvania, and Rhode Island. In fact, Anderson (2011) calls state intervention programs a “democratic dissolution” that suspend local democracy even though the city remains a legal entity.

The appreciation of local autonomy, coupled with the state rights in providing bankruptcy authorizations, clears the US states from the problems that trouble many unitary countries in deciding whether to bail out distressed subnational governments. In countries where higher level government cannot make credible promise of no bailout because of the fear of government failure, political structure and other reasons, lower level governments engage in unsustainable fiscal behavior in expectation of bailouts. US federal government and states, however, have demonstrated the willingness to let sublevel governments be in default ever since the Great Depression (Rodden 2006). Most of the state intervention programs represent significant loss in local autonomy as opposed to an opportunity to “raid the fiscal commons” (Oates 2005). A further supporting observation is that none of the unconditional bankruptcy authorization states have an intervention program. The very existence of unconditional authorization signifies that a

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12 Similarly, through logit regressions of whether a locality pursues bailout on the percentage of coalition party remaining in power over the time period, Allers (2015) finds that in Netherland, as long as local officials have a relatively long-term interest in re-election, the sufficiently unattractive terms in the bailout/intervention programs prevent municipalities from abusing the system.
state has taken a hands-off approach in dealing with local affairs, and thus is unlikely to intervene. Also, localities can use unconditional authorization to bargain for more preferential state bailout offers (Gillette 2012), rendering the coexistence of unconditional bankruptcy authorization and state intervention politically suboptimal. Without an unconditional authorization, states ultimately control local governments’ ability to use bankruptcy to readjust debt. The authorization process greatly improves the state’s bargaining power with localities in imposing sustainable financial management practices with or without providing aid.

In sum, local decision makers fear the loss of autonomy triggered by state intervention programs. The deterrence effect may even encourage localities to take extra caution in managing their fiscal affairs and avoid being placed under state control. This paper hypothesizes that state intervention programs for distressed localities are associated with improved local financial conditions.

3. Literature Review

Since the inception of the Federal Bankruptcy Codes, the law community has paid attention to the issue of municipal bankruptcy authorization and the legal interpretation of states’ reach in controlling local access to bankruptcy. Most of the legal research has focused on the consequence and efficacy of specific bankruptcy cases rather than the general impact of state laws (Ellman and Merrett 2010, Skeel 2013, Moringiello 2014). Similarly, many academic case studies shed light on the reason and consequences of noteworthy bankruptcy cases (Johnson 2003, De Angelis and Tian 2013). Empirical papers regarding bankruptcy authorizations looks exclusively at whether authorizations
are associated with increases in state and local borrowing costs (Moldogaziev et al. 2014; Gao et al. 2016).

Similarly, previous research on state intervention programs focuses solely on describing the policies and conducting case studies of local governments being intervened. Based on a survey of state officials, Honadle (2003) categorizes the role played by a state in dealing with local government fiscal crisis into four aspects: predict, avert, mitigate, and prevent; responses of state officials show a wide variation in state approaches but the paper conducts no evaluation of the effectiveness of these approaches. Cahill and James (1992) summarize the common design of state intervention programs and their inability to abrogate contracts and provide warnings to communities in danger. Beckett-Camarata (2004) surveyed 15 Ohio local governments identified by the state to be in fiscal emergency; respondents say that the Ohio Fiscal Emergency Law had a positive effect on the overall financial performance in 69 percent of these local governments and 58 percent on general fund balances.

This paper provides a first look at the impact of state bankruptcy authorization and intervention laws on local government financial condition. Although no such empirical literature is available in the US context, lessons can be learned from literature on subnational bailouts in other countries. Using country as the unit of observation, Wibbels (2005) finds through case studies that when the national government is politically strong as compared to provincial authorities, fiscal reforms tend to decentralize expenditure responsibilities as national governments displace deficit onto subnational governments; and with sufficiently competitive electoral environments, subnational governments refrain from the collective action problem because they will not subsidize
others’ debt. The parallel implication for the US is that the system of strong state and competitive local governments will minimize problems of intervention and bailout. Rodden (2006) demonstrates that bailout expectations are strongest when subnational governments rely on revenue transfers rather than independent local taxation, which implies that the common pool problem induced by state assistance is weak for US local governments with highly autonomous property tax revenue.

4. Empirical Testing

4.1 Data
To reiterate, this paper intends to examine the impact of state legislations regarding intervention in fiscally distressed localities and municipal bankruptcy authorization on local government cash flow-related financial conditions. This paper takes advantage of the changes in state legislations since 1970. Table 1 lists the types of municipal bankruptcy authorization and state intervention in each state and effective years, compiled through a comprehensive review of state laws. The policy variations across states and time enable a standard two-way fixed effects model that controls for time-invariant, locality-specific characteristics. Such a control is important because local governments manage their fiscal affairs in different political and historical contexts. These time-invariant, unobserved factors may be correlated with the state decisions to legislate about distressed local governments and at the same time associated with local financial condition. The fixed effects tell us how the enactment of state policies affects
the financial condition of a locality compared to its old self, controlling for all factors that do not change over time.

[Table 1 about here]

This paper relies on an unbalanced panel data of local general purpose governments (counties, cities, and towns) from the Census Bureau Annual Survey of Government Finance from 1970 through 2012. The Census Bureau conducts a census of local government finance every five years, covering all local governments in the United States. During the in-between years, a representative sample of local governments are surveyed. This paper uses data over the same time period on county-level employment and per capita income from the Bureau of Economic Analysis. Finally, information on how many Chapter 9 bankruptcies have been filed in a state between 1970 to a given year are collected from the Public Access to Court Electronic Records web site. Cumulative filings are correlated with the policy variables as well as the outcome of interest: as the credit market tends to punish all borrowers within a state with a large number of bankruptcy cases, resulting changes in the borrowing cost alter deficit and borrowing behavior; meanwhile, one locality can learn from others’ filing and become more comfortable with deficit and debt. Therefore, controlling for the filing variable ensures consistent coefficient estimates.

4.2 Fix Effects Regression

A natural candidate for measuring insolvency is total deficit, calculated as the difference between annual expenditure and revenue. Local government expenditure is assumed to be a function of indicators of demands for public services, including employment, per capita
income and population. Revenue is a function of revenue generating capacity factors, including local economic conditions, intergovernmental transfers and existing revenue structure. Finally, both the revenue and expenditure functions are assumed to take a linear form. Thus, a reduced form regression for deficit can be shown as:

\[
\begin{align*}
\text{Exp}_{it} - \text{Rev}_{it} = \text{Def}_{it} &= a_0 + a_1 \text{Econ}_{ct} + a_2 \text{Pop}_{it} + a_3 \text{Grant}_{it} + \\
a_4 R\text{Index}_{it} + a_5 F\text{iling}_{st} + b_1 P\text{ermit}_{st} + b_2 C\text{Permit}_{st} + b_3 I\text{nterv}_{st} + \pi_t + \\
\rho_t + \epsilon_{it}
\end{align*}
\]

where deficit is scaled by population with a positive value indicating the per capita deficit in a local government in a given year and negative value indicating per capita surplus. Clearly, the deficit measure normalizes across localities of different sizes. \text{Econ} is a vector of economic variables including the ratio between local jobs and number of residents and logged per capita income; measures of these variables are only available on the county level and thus are used as proxies for economic conditions of local governments in the county. \text{Pop} is the log form of population served by a locality. \text{Grant} is a vector of logged federal grant and state grant. \text{RIndex} is a revenue diversification index constructed on the basis of the Hirschman-Herfindahl Index (HHI): 

\[
1 - \frac{\sum_{i=1}^{n} R_i^2}{1 - \frac{1}{n}},
\]

where \(R_i\) is the proportion of revenue generated from each source and \(n\) is the total number of revenue sources (Suyderhoud 1994, Carroll 2009). A higher index value represents a more diversified revenue structure and improved capacity to weather economic downturns. Following Carroll (2009), this paper constructs a revenue diversification HHI measuring the diversity of all revenue sources.\(^{13}\) \text{Filing} measures

\(^{13}\) The revenue diversification HHI is based on categories of total taxes, general charges excluding liquor store and utility, and miscellaneous general revenue including investment gains and intergovernmental revenue (thus \(n=3\) for the index). The revenue diversification HHI captures
how many chapter 9 bankruptcy cases have been filed in the state between 1970 and any given year of observation.\textsuperscript{14} Further, $\pi_t$ is the locality fixed effects and $\rho_t$ represents year fixed effects. Finally, key policy variables of interest include $\text{Permit}$ (whether an unconditional bankruptcy authorization exists), $\text{CPermit}$ (whether a conditional authorization exists), and $\text{Interv}$ (whether a state intervention program is in place).

To avoid running a deficit, localities can borrow at the end of the fiscal year to “smooth out” cash flow and temporarily erase deficit from their book (Kirkland 1983). This type of borrowing needs to be repaid after about or less than a year and is known as short-term debt for cash flow purposes.\textsuperscript{15} Recognizing that a local government may appear to have no deficit during a year but has incurred short-term debt to fill the budgetary gap, this paper includes short-term debt as the second dependent variable. Following Bahl and Duncombe (1993), this paper measures short-term debt as a ratio between end-of-year outstanding amount and local personal income.\textsuperscript{16} The income-weighted short-term ratio reflects borrowing affordability.

Because local governments utilize short-term debt to smooth cash flow and replace deficit, the determinants of deficit also impact the short-term debt ratio. Further, diversification when local options for sales and income taxes are not allowed or strictly limited by the states, which is common in many states.

\textsuperscript{14} This measure includes bankruptcy filings that are ultimately dismissed by the court as well as those leading to a debt restructure plan. However, we exclude obvious erroneous filings such as individuals filing under Chapter 9. Filing counts also include filings made by both general purpose governments and special purpose governments.

\textsuperscript{15} Governments may also incur short-term debt in anticipation of longer maturity bonds for capital projects. Although the Census Bureau data do not separate out short-term debt for cash flow purpose versus for capital purpose, at least one rating agency acknowledges that the capital financing debt can also be used to tackle deficits (Askew 2010).

\textsuperscript{16} Ideally, one would use new short-term debt issued during the year to measure the intensity of borrowing for cash flow purposes; unfortunately, the Census Bureau data provide only the end-of-year outstanding amount. Nevertheless, if local governments do incur more short-term debt at the end of the year to close deficit, the measure used in this paper is appropriate.
access to the debt market and the cost of debt influence localities’ decision to take on short-term debt; research using cross-sectional data often include a national market rate of return index to control for borrowing costs (Trogen 2000). In this paper, year fixed effects absorb such an index. Policy variables of interest and control variables are included in the same way as in equation (1), as well as locality and year fixed effects. Table 2 provides summary statistics of all variables.

[Table 2 about here]

4.3 Fix Effects Quantile Regression

Classical regression analysis, including the fixed effects regression explained above, focuses on the mean. That is, the regression summarizes the relationship between the outcome variable and explanatory variables by estimating the conditional mean of the outcome at each fixed value of explanatory variables. However, a quantile regression allows researchers to explore such a relationship at a noncentral location for the outcome without introducing selection bias that accompanies sample splitting based on the dependent variable. Because state legislations on bankruptcy authorization and intervention are targeted at distressed local governments with high deficits or short-term borrowing, the effect of these legislations on local fiscal condition may be very different for distressed localities than for fiscally healthy ones. Quantile regressions provide insight into such heterogeneous effects.

A simple quantile regression can be expressed as

\[ y_i = \beta_0^{(p)} + \beta_1^{(p)} x_i + e_i^{(p)} \]

where \( 0 < p < 1 \) indicates the proportion of the population with an outcome below the quantile at \( p \). Therefore, unlike the classical regression that estimates only one coefficient
for each covariate, quantile regressions estimate for quantile-specific parameter $\beta_1^{(p)}$.

Under the assumption that the $p$th quantile of the error term to be zero ($e_i^{(p)} = 0$), one can obtain coefficient estimates by minimizing the weighted sum of distances between the fitted value ($\hat{y}_i = \hat{\beta}_0^{(p)} + \hat{\beta}_1^{(p)} X_i$) and $y_i$.

Recent advancements in econometrics have extended the cross-sectional quantile regression analysis into panel data. Recall the benefits of a fixed effects model is that a researcher will be able to control for unit-specific, time-invariant unobservables. However, the demeaning mechanism of fixed effects for a classical linear model does not easily extend to quantile regression as there are different parameters across quantiles. Canay (2011) propose a two-step estimator to control for unit-specific characteristics for quantile regressions, under the assumption that the fixed effects represent a location shift only. That is, the unit-specific characteristics have the same impact on the outcome variable at different outcome quantiles, when controlling for other covariates. Canay (2011) proves that the two-step estimator is asymptotically consistent as the number of time periods approaches infinity. The two-step process applied in this paper includes 1) run the regular fixed effects regressions, estimate locality fixed effects, and net out the fixed effects from the dependent variable to obtain a new dependent variable $\tilde{y}_{it}$; 2) run a standard quantile regression of $\tilde{y}_{it}$ on all independent variables without fixed effects.$^{17 \, 18}$

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$^{17}$ Ideally, one would include all year dummies in the second step to control for common time trends. However, increased dimensions from the introduction of year dummies make the estimation of quantile regression difficult. Following Bonilla et al. (2015), I include a continuous year trend variable (with 1970 being year 0) and its square and cubic terms in the second step instead.

$^{18}$ Codes for implementing the two-step estimator are available in R upon request to the author. This paper extends the original code provided in Canay (2011), which works on only balanced panels, to more general cases of panel data.
4.4 Exogeneity of Policy Variables

Consistent estimate of the impact of state bankruptcy authorization and intervention on local government financial condition requires exogeneity of the policy variables. That is, state bankruptcy authorization and intervention programs are not associated with unobserved factors that could also be related to local deficit and short-term borrowing. One particular concern is that states adopt these policies when many local governments are struggling financially. Such a reverse causality problem could bias the estimates.

Understanding the reason for state policy adoption is essential in addressing concerns of reverse causality, although research on this topic is scarce. Lewis (1994) investigates the reasons behind state bankruptcy authorization and finds that on average affirmatively authorizing states exhibit relatively low income-scaled state and local spending and tax burden, and most of them have state-imposed tax and expenditure limits. Therefore, bankruptcy authorizations seem to be associated with ideological preferences of small government and public spending, not financial management performances or deficit condition. Yang and Nicholson-Crotty (2016) find that states adopt intervention programs through learning from others’ successful programs but not as a response to own local government performance. Further, the years of recent bankruptcy adoptions, which are driving variations in this paper’s identification strategy, follow major revisions of federal bankruptcy laws in 1976 and 1994. For example, Minnesota gave unconditional authorization to localities to file for bankruptcy in 1997 following the federal amendment in 1994 that requires “specific” authorization in state laws; and no local government has filed for bankruptcy in Minnesota ever since. Finally, bankruptcy
authorization and intervention programs are often responses to isolated and acute cases of crises as opposed to widespread failure of localities in the state. For example, New York enacted bankruptcy authorization in 1975 following the New York City financial crisis, while the deficit and short-term borrowing of an average locality in the state might not be severe at the time.

Researchers using a difference-in-differences strategy often look for violations of the “parallel trend assumption” to identify if the outcome in the treated group has already experienced shifts prior to the policy change, relative to the comparison group that never had a policy change. This paper implements a similar strategy. Figure 1 shows the average deficit (short-term debt ratio) represented by the solid line in the nine state that adopted bankruptcy authorizations from 1970 through 2012, with the vertical line representing the year of adoption. The dash line is the average deficit (short-term debt ratio) in the comparison states that did not experience a policy change during this time period. Contrary to the suspicion of reverse causality, localities in state adopting the policy do not appear to experience increasing deficit or short-term debt prior to the policy change.

5. Results and Discussion

Table 3 reports estimates from fixed effects regression controlling for locality-specific characteristics. All standard errors presented in the parentheses are clustered at locality level to adjust for autocorrelation. Per capita deficit is the outcome variable of interest in columns 1 and 2, while the short-term debt ratio is the dependent variable in 3 and 4.
Columns 1 and 3 include policy variables only while columns 2 and 4 add in other covariates.

[Table 3 about here]

State authorization for municipal bankruptcy is associated with increased per capita deficit, but the association is only marginally significant for conditional authorization once controlling for other covariates. The enactment of state intervention program seems to reduce deficit but the estimate is not statistically significant. Moving on to the short-term debt ratio, local governments borrow more upon the state authorization for bankruptcy, but this finding is only marginally significant without controlling for covariates and statistically insignificant with full set of controls. The intervention program does seem to curb short-term borrowing. On average, local governments decrease the ratio between short-term debt and personal income by 0.026, which represent a 27 percent reduction using the average value of 0.0948 as seen in the summary statistics. Insolvency or inability to pay debt is often the triggering factor for state intervention, and too much short-term debt presents imminent threat to a locality’s capacity to pay all debt on time. Therefore, if an average local government intends to maintain local autonomy and avoid state intervention, they are likely to reduce short-term debt to a reasonable affordability level. This is confirmed by the fixed effects model estimates.

The coefficients of other covariates are briefly discussed, as the research design does not lend to their causal interpretation. State grants and the revenue diversification index are the only statistically significant coefficients in the deficit regression. One percent increase in state grants is associated with $6 reduction in per capita deficit,
because the localities obtain external resources to pay for budgeted expenditures.

Interestingly, more diversified local revenue structure is associated with more deficit. Because the diversification index measures the balance between tax revenue, charges and fees, and intergovernmental transfers, fiscally struggling localities may have more diverse revenue structure as they seek a broader range of income. Moving on to column 4, factors including fiscal needs and access to the financial market impact short-term borrowing. More populated and richer local governments have on average less income-weighted short-term debt, probably because they are in less need for temporary cash flow smoothing. Localities relying more on federal and state grants take on more short-term debt. This finding may be explained by the fact that local governments have less control over the timing of non-own source revenue and hence, issue grant anticipation notes (GANs) to receive the cash flow earlier than the actual grant distribution date. Finally, more bankruptcy filings in the state are associated with increased short-term borrowing. There might be a learning effect among local governments in observing bankruptcies of their peers: local governments become more comfortable with short-term borrowing as they see bankruptcy as the plausible last resort.

Figure 2 represents graphically the coefficient estimates at different quantiles of the outcome distribution using the two-step estimator described above. The solid lines represent coefficient estimate and the dashed lines are the 90 percent confidence interval generated by bootstrap samples. The coefficient estimates for the three policy variables

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19 Bootstrapped standard error or confidence interval is often used for complex estimation method such as quantile regression where a direct expression of standard error is difficult to obtain mathematically. This paper generates block bootstrap samples at the locality cluster level; that is, observations across years of the same locality are treated as one block, and to form each bootstrap sample, we draw the same number of blocks with replacement from the data as the number of localities in the original sample. A total of 100 bootstrap samples are constructed. We apply the
at the distribution tails are clearly different from that near the mean. For both outcomes, bankruptcy authorization and intervention policies generally have no statistically significant impact on observations from 20 to 80 percentiles of the distribution.

[Figure 2 about here]

Let us first focus at the right tail of the distributions of deficit, that is, localities with high deficit controlling for covariates. Although the enactment of unconditional authorization has somewhat leveled effect across quantiles of the deficit distribution, the effect is statistically significant from zero for localities with a deficit above 65 percentile of the distribution. The coefficient estimate shows that for these localities, unconditional bankruptcy authorizations are associated with an average of $15 increase in per capita deficit. This finding lends support to the moral hazard hypothesis: localities incurring a high deficit are likely to push the deficit even higher upon knowing they have access to federal bankruptcy courts at their own discretion. The impact of conditional authorization, however, is not statistically distinguishable from zero for this group, suggesting that the conditions on authorization mitigate moral hazard. Intervention programs help curbing deficit for localities with deficit above 90 percentile of the distribution. The enactment of state intervention program is associated with about $14 reduction in deficit in this high deficit group. This finding may be due to the disciplinary and corrective effect of intervention programs, but can also be a result of direct state financial assistance provided by intervention programs to distressed localities. Note that

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same two-step estimator to obtain coefficient estimates on each bootstrap sample. For a given independent variable, the 5th and 95th percentile numbers from the 100 coefficient estimates constitute the lower and higher bound of the confidence intervals reported in Figure 2.
the paper controls for state intergovernmental transfers but the data do not separate out transfers that are specifically a part of the intervention programs.

The right tail of the short-term debt ratio distribution shows similar patterns. For localities above 90 percentile of the distribution, both conditional and unconditional bankruptcy authorizations are associated with statistically significant increase in the short-term debt ratio, indicating that localities heavily relying on short-term borrowing may have increased doing so. The moral hazard effect suggests the intention of “pushing oneself over the edge” so that the localities can meet the insolvency requirement and access the bankruptcy court. Intervention programs, on the other hand, reduce short-term borrowing of these localities.

The graphs also show statistically significant associations between state polices and outcome variables for localities with relatively low deficit or short-term debt ratio (left-tail observations), and that these local governments behave differently from those with high deficit or short-term debt. For example, local governments with deficit lower than 20 percentile of the distribution increase deficit upon the enactment of bankruptcy authorizations; but localities with short-term debt ratio lower than 20 percentile of the distribution decrease borrowing. While local governments with bigger revenue-expenditure gap are not necessarily those that incur more short-term debt, the contrasting findings suggest that bankruptcy authorizations alter local government preferences between short-term debt and book deficit. As the debt market negatively perceives bankruptcy authorizations and charges a risk premium on borrowers in states with such authorizations, short-term debt becomes unfavorable and low borrowing local governments borrow even less compared to before. Similarly, the credit market may
positively perceive intervention programs and reduce local government interest costs in states with intervention programs, which leads to an increase in short-term debt for localities at the left tail of the short-term debt ratio distribution. In sum, the quantile regression results show that while moral hazard effects of state bankruptcy authorizations dominate for fiscally distressed local governments, the market borrowing cost effect is more pronounced for local governments with low short-term debt.

6. Conclusion
At the core of what Oates (2005) refers to as the “second-generation theory of fiscal federalism” is the design of fiscal institutions in the context of information asymmetry. Fiscal decentralization, which is argued by the first-generation federalism researchers to best align constituency preference and local public provision, brings with it potential dangers. Local governments may raid the “fiscal commons” by shifting the burdens of local programs onto the nation as a whole through incurring deficits and seeking bailouts. The U.S. federalism has often been discussed as a successful example of reducing the commons problem through hard budget constraints and well-designed public bankruptcy laws (Qian and Weingast 1997, Oates 2005). This paper represents the first empirical investigation of the US model, specifically regarding state laws on bankruptcy authorizations and intervention programs.

Tracking the enactment time and contents of these fiscal institutions through comprehensive law review, this paper utilizes a two-way fixed effects regression to estimate the impact of state policies on local government deficit and short-term
borrowing. Using a two-step fixed effects quantile regression, the paper obtains estimate of the policy impact at different locations of the outcome distribution.

On average, bankruptcy authorizations are not associated with statistically significant changes in deficit or short-term debt at 5% level. However, there is significant heterogeneity in the impact of bankruptcy authorizations across localities with different levels of existing deficit and debt. For example, for localities with high existing deficit and debt, they are likely to further sink into financial problems. These findings lend support to moral hazard concerns. For fiscally distressed local governments, more deficit and borrowing are not only necessary to continue government operation and public service provision, but also help them in proving and demonstrating insolvency in the bankruptcy court, as long as the state allows for municipal bankruptcy. Further, note that estimates in the paper represent the combine effect of debt-encouraging moral hazard and debt-deterring market forces. If bankruptcy authorizations do increase borrowing costs, as seen from low-debt local governments that further reduce short-term borrowing upon bankruptcy authorizations, the “pure” moral hazard effect net of any response to changing interest may be even stronger.

State intervention programs seem to be a better alternative in handling distressed local governments, at least in terms of avoiding moral hazard. On average, intervention programs lead to a reduction in local short-term debt ratio; this is largely due to the decrease contributed by local governments with high existing level of short-term debt. Finally, intervention programs are associated with reduced deficits for localities at the right tail of the distribution, which are suggestive of the disciplinary and corrective effect and these programs.
In recent years, states such as Michigan and Rhode Island passed laws to condition bankruptcy authorization on intervention programs for fiscally distressed localities. Although this paper shows that bankruptcy authorizations induce moral hazard for localities already at risk, states need not shut the door of bankruptcy courts for their local governments. Chapter 9 debt restructure may be a viable and sole solution for some local fiscal problems. Intervention programs can serve as the gate keeper in this process: states step into local governance where deficit and short-term debt are high and the risk of moral hazard is acute. Methodologies used in this paper cannot directly estimate the combined effect of conditional authorization and intervention program due to multicollinearity problem of adding interaction terms, further research through case studies of particular states may be warranted.
Reference


Table 1. State Legislation on Municipal Bankruptcy and Intervention

<table>
<thead>
<tr>
<th>State</th>
<th>Municipal Bankruptcy Authorization</th>
<th>Year</th>
<th>Distressed Local Government Intervention</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>Unconditional</td>
<td>1935</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona</td>
<td>Unconditional</td>
<td>1955</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arkansas</td>
<td>Unconditional</td>
<td>1939</td>
<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>Unconditional</td>
<td>1949</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>Conditional</td>
<td>1993</td>
<td></td>
<td></td>
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<tr>
<td>Florida</td>
<td>Conditional</td>
<td>1979</td>
<td>Yes</td>
<td>1979</td>
</tr>
<tr>
<td>Idaho</td>
<td>Unconditional</td>
<td>1939</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illinois</td>
<td>Yes</td>
<td>1990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indiana</td>
<td>Yes</td>
<td>2007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentucky</td>
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<td>1942</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Louisiana</td>
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<td>1950</td>
<td></td>
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</tr>
<tr>
<td>Maine</td>
<td>Yes</td>
<td>1987</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michigan</td>
<td>Conditional</td>
<td>1990</td>
<td>Yes</td>
<td>1988</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Unconditional</td>
<td>1997</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>Unconditional</td>
<td>1995</td>
<td></td>
<td></td>
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<tr>
<td>Montana</td>
<td>Unconditional</td>
<td>1939</td>
<td></td>
<td></td>
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<tr>
<td>Nebraska</td>
<td>Unconditional</td>
<td>1943</td>
<td></td>
<td></td>
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<tr>
<td>Nevada</td>
<td>Yes</td>
<td>1995</td>
<td></td>
<td></td>
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<tr>
<td>New Jersey</td>
<td>Conditional</td>
<td>1938</td>
<td>Yes</td>
<td>1987</td>
</tr>
<tr>
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<td>Unconditional</td>
<td>1975</td>
<td></td>
<td></td>
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<tr>
<td>North Carolina</td>
<td>Conditional</td>
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<td>Yes</td>
<td>1971</td>
</tr>
<tr>
<td>Ohio</td>
<td>Conditional</td>
<td>1935</td>
<td>Yes</td>
<td>1996</td>
</tr>
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<td>Oklahoma</td>
<td>Unconditional</td>
<td>1935</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Conditional</td>
<td>1987</td>
<td>Yes</td>
<td>1987</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>Conditional</td>
<td>2010</td>
<td>Yes</td>
<td>1993</td>
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<td>South Carolina</td>
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<td>1939</td>
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</tr>
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<td>Tennessee</td>
<td>Yes</td>
<td>1993</td>
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<td></td>
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<td>Texas</td>
<td>Unconditional</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>Unconditional</td>
<td>1935</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author's compilation based on review of state statutes.
Note: Years denote the year that a municipal bankruptcy authorization or intervention program is effective in the state statutes. Unconditional authorization refers to an authorization to all general purpose governments in a state. Conditional authorization refers to the possibility of municipal bankruptcy but with the permission from a specified entity. The 21 states not listed in the table do not address municipal bankruptcy in their statutes; nor do they have an intervention program in state laws.
Table 2. Summary Statistics, 1970-2012

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Capita Deficit</td>
<td>-12.538</td>
<td>2139</td>
<td>-887000</td>
<td>518142</td>
</tr>
<tr>
<td>Short-term Debt Ratio (percentage points)</td>
<td>0.0948</td>
<td>1.0130</td>
<td>0</td>
<td>363</td>
</tr>
<tr>
<td>Unconditional Authorization</td>
<td>0.2234</td>
<td>0.4165</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Conditional Authorization</td>
<td>0.1684</td>
<td>0.3742</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Intervention Program</td>
<td>0.1531</td>
<td>0.3601</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cumulative Bankruptcy Filings</td>
<td>1.5804</td>
<td>5.6076</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Ln(Population)</td>
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<td>2.0570</td>
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<td>16.113</td>
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<tr>
<td>Ln(Federal Grants)</td>
<td>6.5474</td>
<td>5.5236</td>
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<td>22.272</td>
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<td>Ln(State Grants)</td>
<td>10.792</td>
<td>3.9451</td>
<td>0</td>
<td>24.051</td>
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<tr>
<td>Revenue Diversification Index</td>
<td>0.6982</td>
<td>0.2278</td>
<td>0</td>
<td>1</td>
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<tr>
<td>County Job to Resident Ratio</td>
<td>0.4881</td>
<td>0.1225</td>
<td>0.1141</td>
<td>6.6552</td>
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<tr>
<td>Ln(County Per Capita Income)</td>
<td>9.5592</td>
<td>0.6638</td>
<td>7.3473</td>
<td>12.152</td>
</tr>
</tbody>
</table>

Number of Observation 751,523

Note: Data on local government finance are from the Census Bureau Survey of Local Government Finance. Data on county economic conditions (job to resident ratio, per capita income) are from Bureau of Economic Analysis. Cumulative bankruptcy filing data are from Public Access to Court Electronic Records (PACER). Refer to the text for definitions and construction of variables.
### Table 3. Fixed Effects Regression Results on Deficit and Short-Term Debt Ratio

<table>
<thead>
<tr>
<th></th>
<th>Per Capita Deficit</th>
<th>Short-term Debt Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Permit</td>
<td>9.413</td>
<td>7.549</td>
</tr>
<tr>
<td></td>
<td>(8.890)</td>
<td>(17.84)</td>
</tr>
<tr>
<td>Conditional Permit</td>
<td>17.85***</td>
<td>11.81*</td>
</tr>
<tr>
<td></td>
<td>(6.230)</td>
<td>(7.104)</td>
</tr>
<tr>
<td>Intervention</td>
<td>-12.74</td>
<td>-7.316</td>
</tr>
<tr>
<td></td>
<td>(10.45)</td>
<td>(9.626)</td>
</tr>
<tr>
<td>Ln(Population)</td>
<td>92.30</td>
<td>-0.0479***</td>
</tr>
<tr>
<td></td>
<td>(111.0)</td>
<td></td>
</tr>
<tr>
<td>Ln(Federal Grants)</td>
<td>-0.361</td>
<td>0.0032***</td>
</tr>
<tr>
<td></td>
<td>(0.726)</td>
<td></td>
</tr>
<tr>
<td>Ln(State Grants)</td>
<td>-6.009**</td>
<td>0.0051***</td>
</tr>
<tr>
<td></td>
<td>(2.791)</td>
<td></td>
</tr>
<tr>
<td>Revenue Diversification</td>
<td>98.20**</td>
<td>-0.0322**</td>
</tr>
<tr>
<td></td>
<td>(41.88)</td>
<td></td>
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<tr>
<td>Job to Resident Ratio</td>
<td>15.40</td>
<td>0.385*</td>
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<tr>
<td></td>
<td>(132.0)</td>
<td></td>
</tr>
<tr>
<td>Ln(Per Capita Income)</td>
<td>-11.39</td>
<td>-0.0681***</td>
</tr>
<tr>
<td></td>
<td>(36.71)</td>
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<tr>
<td>State Cumulative Bankruptcy Filings</td>
<td>1.263</td>
<td>0.0014***</td>
</tr>
<tr>
<td></td>
<td>(2.872)</td>
<td></td>
</tr>
</tbody>
</table>

Locality and Year Fixed Effects | Yes | Yes | Yes | Yes
Number of Observations         | 751,523 | 751,523 | 751,523 | 751,523

Note: Locality cluster robust standard errors are reported in the parentheses. *** denotes p value < 0.01, ** denotes p value < 0.05, * denotes p value < 0.1.
Figure 1. Comparison between Bankruptcy Authorization States and No-Change States

Outcome variable: deficit

Note: Solid line represents average outcome for the state that adopted bankruptcy authorization between 1970 and 2012. Vertical line is the year of adoption. Dash line represents average outcome for states with no policy change.

Outcome variable: short-term debt ratio

Note: Solid line represents average outcome for the state that adopted bankruptcy authorization between 1970 and 2012. Vertical line is the year of adoption. Dash line represents average outcome for states with no policy change.
Figure 2. Fixed Effects Quantile Regression Estimates

1) Outcome variable: deficit
   Coefficient of unconditional authorization

   ![Graph](image)

   Coefficient of conditional authorization

   ![Graph](image)

   Coefficient of intervention

   ![Graph](image)

2) Outcome variable: short-term debt ratio
   Coefficient of unconditional authorization

   ![Graph](image)

   Coefficient of conditional authorization

   ![Graph](image)

   Coefficient of intervention

   ![Graph](image)

Note: X-axis represents quantiles of the outcome distribution. Y-axis shows the coefficient estimates. The solid line is the coefficient estimates while the dashed lines represent 90% confidence interval generated by bootstrapped sampling as explained in the text.