Summer 8-1-2022

Essays On Public Debt Management: An Exploration Of State Oversight Of Local Government Debt Issuance

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Recommended Citation
Jose, Justina, "Essays On Public Debt Management: An Exploration Of State Oversight Of Local Government Debt Issuance." Dissertation, Georgia State University, 2022.
doi: https://doi.org/10.57709/30555905

ABSTRACT

ESSAYS ON PUBLIC DEBT MANAGEMENT: AN EXPLORATION OF STATE OVERSIGHT OF LOCAL GOVERNMENT DEBT ISSUANCE

By

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August 2022

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A discussion of the public finances of local governments is incomplete without appropriate attention to the fiscal rules and institutions established to ensure sustainable public finance outcomes. Several scholars in public finance have studied these rules- exploring their adoption as well as evaluating their effectiveness under different political conditions. This dissertation has two main purposes: First, to introduce a new fiscal institution, termed as "state oversight rules" which allows state governments to proactively monitor local government borrowing, and second, to examine the impact of these rules on three different local government financial outcomes.

The dissertation begins with the development of a framework of state oversight rules based on an analysis of the statutory code of all 50 states. The first chapter carefully parses out the variations in the procedures and authorities responsible for oversight. The remaining chapters then utilize this framework to examine the impact of the rules on borrowing costs (chapter two), county government borrowing (chapter three) and water-sewer utility borrowing (chapter four). Chapter two examines the role of state oversight as a signal of credit risk. The results show that the variation in the design of the rules has a differential impact on borrowing costs. In general, as the rigor of the oversight process increases the borrowing cost of local governments decrease.

Chapters three and four examine the role of oversight on overall borrowing in the context of overlapping governments and water-sewer utilities, two circumstances that are discussed in the literature as leading to high overall borrowing. Chapter three studies whether the debt of county governments in states with oversight is responsive to the debt of its sub-county governments. Results show that the long-term debt of county governments does reduce as sub-county overlapping debt increases especially in states that have established a rigorous oversight process. Chapter four shifts attention to the water-sewer activities of city governments and examines whether the oversight process has an impact on overall borrowing. The results suggest that utilities subject to an oversight process have higher borrowing than non-oversight utilities indicating that the effectiveness of these rules is limited in the context of water-sewer utilities.

ESSAYS ON PUBLIC DEBT MANAGEMENT: AN EXPLORATION OF STATE OVERSIGHT OF LOCAL GOVERNMENT DEBT ISSUANCE

BY

JUSTINA JOSE

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree
of
Doctor of Philosophy
in the
Andrew Young School of Policy Studies
of
Georgia State University

GEORGIA STATE UNIVERSITY

2022

ACCEPTANCE

This dissertation was prepared under the direction of the candidate's Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Public Policy in the Andrew Young School of Policy Studies of Georgia State University.

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August, 2022

Acknowledgements

There are many people within and outside of the PhD program whose immense support has been critical to my successful completion of the program. First and foremost, my guide Dr. Bart Hildreth. I say "guide" and not professor or advisor, as his guidance has enabled me to navigate my way around not only the PhD program, but also the classroom, academic conferences and academia in general. His constant support helped me to put my best foot forward wherever I went, and I owe much of my success in this program to him. Dr. Ross Rubenstein for his guidance during my dissertation and job market hunt. I believe that his advice before my on-campus interviews played a crucial rule in my success in securing a position. Although my work with Dr. Benedict Jimenez only began towards the end of the PhD program, I have learned tremendously from my interactions with him. Dr. Lang (Kate) Yang for guiding me during my initial work on my dissertation and for providing me with numerous ideas each time I met with her. I would also like to thank Dr. Christine Roch, for making sure I was always on the right track and for patiently answering all my questions, Dr. Gordon Kingsley for giving me valuable advice each time I needed it and Dr. Andrew Feltenstein for supporting me in my endeavors. Special thanks to the Department of Public Management and Policy and the Public Finance Research Cluster for the financial support.

Apart from the formal mentoring that I received from my professors, I have also been informally guided by many people. My two go-to people through the PhD program for questions related to the program, research, job market, papers or just to brainstorm are Anmol Soni and Rahul Pathak. Both have been very generous with their time to patiently provide me with the best advice every step of the way. Ms. Abena Otudor played an important role in ensuring that all the PhD students were comfortable during their time in the program. The regular checking in,

phone calls and boosts of motivation were much needed as I moved through the program. Luisa Nazareno was my first friend or “PhD soul mate” as she correctly worded it. From figuring out visa issues to solving microeconomics problem sets together and finally co-authoring, our friendship has come a long way. Tingzhong Huang, Lauren Forbes, have been my constants throughout the PhD program.

There are several others who have played important roles throughout my time in the PhD program. Ankita, Anomitro, Richa and David for taking me around Atlanta. Ms. Elsa and Lakshmi Pandey for working with me in managing the datasets at the Municipal Securities Laboratory, Dean Sally Wallace for approving the purchase of the dataset I used in my dissertation, and all my professors especially Dr. Gregory Lewis whose knowledge has shaped me as a researcher in public policy. Furthermore, I would like to thank my uncle- Jose Sebastian, aunt- Brigita Jose and my cousins whose love and warmth here in the United States never let me miss home. My best friends- Swathi, Rini, Manasi, my cousins, my uncles and aunts who have all sent me well wishes and encouragement from far away.

I started this journey with two roommates, Sneha Pimpalkhute and Smriti Khare, both of whom became my second family. Our apartment was our second home where we had long conversations about any topic under the sun forever shaping my approach towards life. I will always cherish the memories that we created travelling, cooking, eating, dancing and watching bad movies together. I would especially like to thank Sneha Pimpalkhute for being so patient with me these five years and for always having my back. I end this journey with Kevin Michael, who stood by me like a rock in the past two years, lifting me up when I did not believe in myself and pushing me forward when all I wanted to do was take a nap and wallow in my sorrows.

I conclude this tribute by acknowledging those who have shaped my life before I entered this PhD program and created the foundation on which I stand today. I would like to thank Dr. Debolina Kundu, Dr. Ishita Ghosh and Dr. Ranjan Dash, without whose support I would not have joined the PhD program. Dr. Crystal David John (Stella Maris College) whose class in public finance was what got me interested in the topic. I hope to inspire many other students just like she inspired me. My parents, Jose Augustine and Mercy Jose, who believed in me from the beginning and never let me give up and my baby brother, Thejus Jose, who grew up even before I realized it. Sr. Christine Anthony, FMM, the warden of my undergraduate hostel, who took it upon herself to make sure I come out of my shell. Finally, to my grandparents, who showed me through their life, how to persevere against all odds. I hope I have made them proud.

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Chapter I

Decrypting the Law: A Review of the State Laws Overseeing Local Government Borrowing

Abstract: States have adopted a variety of rules and procedures to supervise, assist and oversee their local governments. Debt oversight rules are one such set of mechanisms that states have established to oversee local government debt issuances. Each state has developed unique rules creating substantial variation in the procedure and the type of authorities responsible for debt oversight. This dissertation begins with exploring the debt oversight rules across all 50 states. Using information from the state statutes it carefully parses out the procedures and the authorities responsible for debt oversight. The results from the review reveal that 28 states require their local governments to report debt and other financial information to their respective oversight agencies. The rules of each state differ in three main ways: First, the timing of submission of information; second, the procedure once the information is submitted; and third, the type of oversight agencies. These results are then used to create a framework to study the impact of the oversight processes on local government borrowing.

1.1 Introduction

The federal system of governments in the United States is such that the federal and state governments are co-sovereigns while municipal governments are sub-sovereigns of the state governments. The phrase "local governments are creatures of the state" refer to the fact that each local government is subject to the rules of their state leading to fifty different legal and political situations. There exists great diversity in state-local relations both within and between states. This diversity also extends to state- local financial relations as each state along with its municipalities can decide on a local basis (without federal intervention), the provision and financing of government services that best reflect their citizen's desires and are optimal for the jurisdiction's economic and social circumstances. By supervising local government fiscal health, states ensure that local governments are in a fiscally healthy situation thus maintaining their ability to provide services and to access the financial markets to finance the necessary improvements (Spiotto, 2013). For this purpose, states have developed a variety of tools to oversee local government finances which ranges from numerical limits such as tax and expenditure limits to intervention programs in case of fiscal distress.

State involvement in local government finances grew in the late 1860s and early 1870s with the growth of cities and overexpansion of debt during the 1860s, followed by the recession in 1873. Early attempts at controlling local borrowing were through constitutional and statutory limits and mandates (Rubin, 1998; Sbragia, 1996). Since then, there has been a gradual but steady expansion of state involvement in local affairs during the 20th century (Kloha, Weissert, and Kleine, 2005). States have implemented a variety of tools to regulate and monitor local governments. This includes limits and rule such as balanced budget requirements and tax and

expenditure limits. It also includes various rules regarding accounting, budgeting and debt management among many other financial areas.

Several scholars in public finance have studied these rules- exploring their adoption as well as evaluating their effectiveness under different political conditions. On one hand, the literature studies fiscal rules imposed by state legislative bodies or voters to constrain the financial decisions of local governments such as tax and expenditure limits (TELS), balanced budget requirements (BBR's) and debt limits. The empirical work in this area has investigated the impact of these rules on borrowing costs, the behavior of local government officials, expenditure levels, the interactions among the different institutions (Jimenez, 2018; Yusuf, Fowles, Grizzle, and Liu, 2012) and other fiscal outcomes (Costello, Petacchi, and Weber, 2017). On the other hand, there is extensive research on local government fiscal distress. A rich literature provides evidence about the socio-economic factors associated with fiscal distress, the effectiveness of intervention programs and Chapter 9 bankruptcy and the impact of these provisions on borrowing costs (Moldogaziev, Kioko, and Hildreth, 2017; Yang, 2019).

There is limited literature understanding the proactive role of the state in local government finance, specifically in debt financing. This dissertation fills that gap by focusing on the rule of state oversight of local government debt issuance. These rules have been set up by states to actively oversee debt issuance by their local governments and require local governments to submit debt issuance information/ receive approval to issue debt from their respective state governments. Early forms of these rules were developed by state governments to ensure more active supervision of the borrowing of local governments to compensate for the frequent failure of constitutional and statutory controls to limit the amount of borrowing. Stason (1931) argues

that the rigidity of the controls led to frequent evasion and circumvention through the creation of new governments or types of debt thus leading to the failure of the limits.

Massachusetts, in 1913, was the first state to establish these rules through the Municipal Finance Act. The act provided that "whenever a town or a fire, water, light or improvement district voted to raise money other than by issuance of bonds (for example, short term notes) the plan was to be forwarded to the State Director of Accounts in the Division of Corporations and Taxation. The director was made responsible for overseeing that the borrowing was in accordance with state laws and that the proceeds were used for the purpose for which authorized" (Goodall, 1964). By the 1960s the director's role was enlarged to oversee all borrowing by all units of local government including cities, towns, special districts and school districts (Goodall, 1964). Since then, multiple states have adopted various forms of these rules some of which were in the form of restrictions on power to incur indebtedness, marketing of securities, management of sinking funds and control over payments of interest and principal on outstanding obligations (Stason, 1931).

Studies on oversight mechanisms typically combine the variety of approaches that states have put in place to assist or supervise local governments. They merge the approaches of states that are more proactive where local governments are monitored constantly in advance of any fiscal emergencies with more reactive approaches where the local governments respond to fiscal emergencies (Spiotto, 2013). This prevents a clear and separate understanding of the state's role as a supervisor and a crisis manager. Parker (2015) discusses both elements in the context of debt issuance. The former includes debt approval methods where local governments must receive approval based on the debt issued. The latter includes mechanisms that are provided by states in times of emergencies. Similarly, Farnham (1988) looks at the impact of state government

regulations, oversight and assistance programs like prescribing the contents of official statements, review and/or approval of local bond issues, involvement with marketing or the provision of data to bond market participants on levels of local government borrowing. However, by combining the different roles of the state, it becomes difficult to see the effects of the different roles of the state separately.

One of the earliest references to these rules are in Lancaster (1923) where the author provides an overview of the constitutional authority provided to states to validate local government municipal bonds. The author discusses three mechanisms- the validation provided by state authorities (such as the Attorney General), court procedures and approval required by the people on all issues of debt. Some states also use the reporting of local debt statistics as a means to validate or oversee local debt. Petersen, Cole, and Petrillo (1977) delve deeper into the rules to identify the variety of activities undertaken by states to supervise and assist local government borrowing. However, it is based on a series of surveys conducted by the Municipal Finance Officers Association and the National Conference of State Legislatures in 1975-1976. Moreover, it does not separate the state's oversight procedures from its assistance rules which prevents a clear understanding of the state's different roles as a supervisor and an advisor. Many states also implemented their oversight rules after 1975 which makes these discussions incomplete.

This dissertation focuses on state rules that revolve around local government debt issuance. Each of the 28 states has established rules on three main aspects: first, when the local governments must submit debt information to their local governments; second, to whom do they submit this information and third, what do the state authorities utilize this information for. Since each state has their own legal structure, there exists considerable variation in all the three aspects of the oversight rules. The importance of these rules arises from the regular sharing of

information that occurs between state and local governments. This keeps the states informed about the debt of each local government therefore reducing the information asymmetry associated with local government debt. These rules also allow states to be more flexible in their supervisory role of local government finances as compared to constitutional or statutory limitations (Stason, 1931). Once these rules were enacted, there has been no changes across the years.[1] This partly mitigates the endogeneity problem that arises due the ability of a legislature or citizenry to enact or change fiscal rules (Knight and Levinson, 2000). Through a review of statutory codes of state governments, this chapter presents the variation that exists in the rules that states have established to oversee local government borrowing.

1.2 Theoretical Background

This dissertation on state oversight rules fits in the context of the theories of fiscal federalism, more specifically the "second generation theory of fiscal federalism (SGT)". The first (FGT) and second-generation theories of fiscal federalism discuss the distribution of roles between national and sub-national governments. The FGT explores the welfare efficient assignment of functions among different levels of government. A fundamental assumption of the FGT is that once a welfare efficient assignment of functions has been established along with the needed fiscal tools, public officials at all levels of government will pursue these responsibilities in a welfare maximizing manner. The SGT questions this assumption and instead characterizes public officials as utility maximizing individuals with their own objective functions (Oates, 2008). Public officials have the incentive to maximize the size of their budgets, eventually creating a monolithic public sector that Brennan and Buchanan (1980) term the "Leviathan". The

[1] Based on author research of statutory codes.

prominent thinkers of this field of inquiry stress upon fiscal decentralization as the solution for controlling rent-seeking public officials. Brennan and Buchanan (1980) put forward the idea that fiscal decentralization would constrain the public sector through greater inter-jurisdictional competition among the local governments. With mobile households and firms, inter-jurisdictional competition would constrain and therefore reduce the size of sub-national governments. However, although various countries have decentralized their fiscal, political and administrative responsibilities to lower levels of government, each of them differs in their economic performance. The success or failure of fiscal decentralization depends on the design of political and fiscal institutions in an economy (Litvack, Ahmad, and Bird, 1998).[2] These institutions influence the incentives that public officials at the sub-national level face leading to either fiscally prudent or perverse behaviors. The basis of this theoretical framework is the literature on fiscal institutions.

Fiscal Institutions are defined as rules that constrain the behavior of government officials. These institutions exist in the form of a rule or limit and are imposed by voters or the legislature to supplant the fiscal decision making of government officials (Johnson and Kriz, 2005). Theoretically, these rules are based on prudent fiscal principles and therefore may be expected to lead to exceptional financial performance. Well-functioning financial markets are a source of fiscal discipline for local governments. Poor fiscal performance by a local government would lead to reduced access to credit and high interest rates (Oates, 2005). However, the municipal bond market of the United States in particular, suffers from problems of information asymmetry. Due to the lack of required disclosure, investors use fiscal institutions as indicators of financial performance and low default risk. Poterba and Rueben (1999) found that the presence of tax

[2] Also see Bardhan and Mookherjee (2000), Rodden, Eskeland, and Litvack (2003).

limits raised the borrowing costs due to limits on revenue raising capacity while expenditure limits lowered the borrowing cost as lower expenditure is considered good for fiscal sustainability. Johnson and Kriz (2005) also found that tax limits led to lower credit ratings and therefore higher borrowing costs while expenditure limits, stricter balanced budget rules and restrictions on state debt issuance led to higher credit ratings and therefore lower interest costs. The relationship between debt limits and borrowing cost is mixed in the literature. Bayoumi, Goldstein, and Woglom (1995) found that states with strict debt limits faced lower borrowing costs. However, Poterba and Rueben (1999) concluded that there was no significant relationship between debt limits and borrowing costs. A rigorous process of state oversight could reduce the perceived default risk associated with local governments thus reducing their overall borrowing costs. For example, if the state requires approval of local debt plans based on the ability to pay, then it could lead to lower interest costs as state approval would signal a local government's good credit quality. However, the design of rules which defines the rigor of the debt oversight process, varies by state. Therefore, chapter two utilizes the variation in oversight rules (described in the next section) to analyze the impact on local government borrowing costs. It assesses the extent to which state oversight rules signal creditworthiness of local governments to investors.

The relationship between fiscal institutions and borrowing costs are based on signals of fiscal health from the sub-national government to the capital markets. The presence of a fiscal institution would signal to the capital markets that the decision-making power of sub-national governments are constrained leading to fiscally prudent decision-making. However, the question that arises is: what is the impact of these institutions on fiscal outcomes such as borrowing?

The effectiveness of these institutions depends on whether it acts as a soft or a hard budget constraint. The concept of a soft budget constraint was introduced by Kornai (1986) who

described it as a situation “when the strict relationship between expenditures and earnings has been relaxed, because excess expenditure over earnings will be paid by some other institution, typically by the state [federal government]”. Since then, the concept has expanded to define a situation where an entity finds it impossible to stick to a fixed budget because the budget constraint is negotiable. The most common examples of soft budget constraints are intergovernmental transfers from national to local governments or the freedom to borrow along with the ease of bailout by the central government. A hard budget constraint, on the other hand, is when there is a strict relationship between expenditures and earnings and a deficit is not tolerated (Kornai, 1986). Examples of hard budget constraints include the imposition of limits on fiscal policy such as borrowing, spending and budget deficits (Plekhanov and Singh, 2006).

Oates (2008) argues that the key to fiscal decentralization is to find the institutions that can accommodate the benefits of fiscal decentralization while avoiding the destabilizing effects from soft budget constraints. Fiscal institutions can be “soft” constraints if they do not effectively constrain the behavior of local officials. Sources of softness could be from the design of the fiscal institutions itself. Balanced budget requirements, for example, leads to spending cuts and tax increases to restrict deficits (Alt and Lowry, 1994; Poterba, 1994). However, the effects vary based on the design of the rule. Bohn and Inman (1996) find that soft limitations especially “those that require only a prospective or beginning of year balance” was not a constraint on state deficit behavior. Those states facing tighter rules had about $100 per capita in general fund surpluses as compared to those states that only faced soft constraints. Further, replacing the soft constraint with a tighter one reduced the probability of running a deficit from 0.26 to 0.11. Smith and Hou (2013) find that high spending can be reined in by technical rules that govern budgetary outcomes as opposed to political rules that determine how a budget is assembled and approved.

Other sources of soft budget constraints include the ability to circumvent fiscal limits placed on subnational governments. These rules were originally intended to be hard budget constraints and limit the amount of debt issued, however, the availability of mechanisms to circumvent the limits, reduced the enforceability of these rules. Von Hagen (1991) found that a combination of strict balanced budget rules with general obligation debt limits led to higher levels of debt (including revenue) that was not backed by the full faith and credit of the state. Mullins, Hayes, and Smith (2012) finds the same with tax and expenditure limits. This is also a feature of debt limits in the United States. In the late 1800s, state governments in the United States placed limits on local government debt as well as taxation. These were established as hard budget constraints to regulate and limit municipal borrowing and spending. However, when growing populations and increased demand for services pushed against these limits, cities petitioned the state for exceptions, which was frequently granted. Frequent exceptions, led to softening of the budget constraint, leading to approximately $73 million in excess of the debt limit by 1912 (Rubin, 1998). Furthermore, the enforceability of debt limits weakened or reduced through the issuance of debt or the creation of authorities that are not subject to the limit. Bunch (1991) and Bennett and DiLorenzo (1982) find that the presence of debt limits or tax and expenditure limits respectively lead to an increase in borrowing by off-budget entities such as public authorities or special districts.[3] Marlow (1995) finds that creation of special districts leads to expansion of both expenditure and debt, leading to concerns of "raiding the fiscal commons". The commons here

[3] The soft budget constraint commonly discussed in the literature is the ability to borrow with the ease of bailout by government. Rodden (2002) used data on forty-three OECD, developing and transition countries and concluded that the largest long-term deficits exist when sub-national governments are highly transfer dependent and are free to borrow. However, this is mostly related to borrowing for deficit financing, which is not common in the United States. Local governments utilize the municipal bond market to fund their long-term infrastructure project. The use of borrowing as a source of deficit financing is limited. However, during COVID-19, state and local governments that faced severe budget crises utilized the bond market to reduce or postpone annual expenses, raise operating capital, and restructure damaged financing. A local government's ability to shift current period budgetary costs onto future residents by borrowing is a factor that could soften the budget constrain of local governments (Inman, 2003).

refers to the common tax base shared by overlapping governments. A shared tax base could lead to fiscally perverse behaviors as the resources benefitting a particular jurisdiction is drawn from a common tax base. The disparity between costs and benefits could lead to overspending.

State oversight of debt issuance was established in response to the failure of debt limits to monitor the amount of debt issued by local governments (Stason, 1931). Requiring local governments to report to the state authorities provides states with a comprehensive view of all long-term local government borrowing (including those traditionally exempt from debt limits such as revenue bonds). Therefore, it could harden the soft budget constraints while providing the flexibility that constitutional and statutory debt limits do not provide. Chapters three and four shift attention to the functioning of debt oversight rules as a hard budget constraint on local governments. Focusing only on those local governments that must follow certain procedures before they issue debt, both chapters question if and how these rules affect local government borrowing in two different contexts. Chapter three focuses on borrowing in the context of overlapping governments. The vertical layering of governments leads to multiple governments sharing the same tax base. This is referred to as "fiscal commons" and research has predicted that overlapping governments could lead to sub-optimal fiscal outcomes. Through the process of oversight, states are in a unique position to control local government debt issuance. This chapter asks whether counties in states with an established oversight procedure are more responsive to the debt of their overlapping governments. Chapter four delves deeper into local government borrowing, looking specifically at borrowing for the provision of water-sewer services. The primary responsibility for infrastructure investments falls on local governments, who are heavily reliant upon borrowing to maintain service provision. However, their worsened financial

conditions could adversely affect the level of borrowing. This chapter investigates the role that oversight plays in the borrowing of water-sewer activities of local governments.

1.3 Framework of Oversight Rules

To investigate the rules that states established to oversee local governments, this chapter reviewed the statutory code of all 50 state governments. The review process began with defining state oversight rules "as a rule that requires local government to submit debt-related information to their state governments at different points in the debt issuance process." Once these rules were identified, they were coded on three main criteria: when the local governments were required to submit information, for what purposes and to whom (keywords are available in Appendix A). Based on the coding, this chapter develops a framework of the oversight rules. The rules covered in this chapter governs the variety of debt instruments used by local governments and are not specific to a kind of debt such as guaranteed debt. In their design of the rules, each state has established a procedure for local governments to follow and an oversight authority that oversees the local government's compliance with the required procedure. Therefore, some states may have commissions responsible for oversight created separately for the purpose of local finance oversight while others may add the oversight roles onto the existing functions of a state department. Some states are proactively involved with local governments where they approve debt before issuance while others are less so, limiting themselves to monitoring their local governments debt issuances on an annual basis. The variation in the rules subject local governments to different levels of state supervision.

An analysis of the state statutes (Table 1.1) revealed two broad fiscal institutions that states use to oversee local government debt issuance.[4] The first is the authority that is established to oversee the debt issuance process and the second is the procedure created by the state for the authorities and local governments to follow before or after debt is issued. Since each state has its own debt oversight rule it is important to highlight and categorize the variation that exists in the rules used by each state. Therefore, the next two sub-sections discern the types of authorities in each state and delineates the different responsibilities of authorities and local governments in each state.

1.3.a Authorities Responsible for Oversight

There exists substantial variation in the oversight authorities that states employ to oversee debt issuances of local governments.[5] States in Group A (Table 1.2) have created separate legal commissions/ divisions whose primary focus is the financial conditions of the state and local governments. These entities are either created independently like the California Debt and Investment Advisory Commission or are situated within larger state departments like the Florida Division of Bond Finance. Although some divisions are within larger state departments, they are legally recognized as a separate body and are assigned powers different from the state

[4] Rules included in this paper are general rules that are applicable to different types of local governments including Counties, Towns, Cities, Villages, Boroughs.

[5] The focus of this paper is on state level oversight authorities. Therefore, a commission/department is only considered an oversight authority if it has state level officials appointed by a state authority such as the governor. Those authorities whose members are at the local level are not considered to be a state oversight authority in this paper. For example, in the state of Nevada, in counties whose population is 700,000 or more, a debt management commission is created (N.R.S. 350.0115). The members of the commission consist of representatives from the board of county commissioners, governing bodies of the largest incorporated cities in the county, board of trustees of the county school district and the public. Among other responsibilities, municipalities need to receive the favorable vote of two-thirds of the members of the commission of each county, prior to the incurrence of any general obligation debt (N.R.S. 350.014).

departments. For example, the statutory code of Florida (Fla. Stat. § 215.62) creates a separate division of the State Board of Administration (SBA) known as the Division of Bond Finance.

Although the division is housed within the SBA their functions are different. The division is focused on the bonds issued by both state and local governments whereas the SBA is responsible for investment management.[6] The functions of the Division of Bond Finance include providing financial, legal and marketing services for the issuance and sale of bonds for state and local governments. This includes conducting financial analyses, structuring bond issues, conducting bond sales and collecting and maintaining information on tax-exempt bonds issued by local governments while the chief responsibility of the SBA is to manage assets and make investment decisions that will maximize the returns on investments.[7] The primary funds managed by the SBA are the Florida Retirement System Pension Plan, Florida Retirement System Investment Plan, Florida PRIME and Florida Hurricane Catastrophe Fund.[8]

States in Group B (Table 1.2) have assigned state departments to oversee the debt issuance process of local governments along with their other responsibilities. Here, no separate entity is created to oversee the debt issuance process of local governments. For example, in Pennsylvania, the department of community and economic development is responsible for the oversight process along with their other responsibilities such as zoning matters and housing and community assistance.[9]

Each of these oversight authorities is led by an elected official or an appointed official. This study separates them into two categories of authorities: Elected Officials and Appointed Officials. States that have elected officials as the administrator of the oversight process fall in the

[6] https://www.sbafla.com/fsb/Home.aspx
[7] https://www.sbafla.com/bond/
[8] https://www.sbafla.com/fsb/Portals/FSB/Content/Topics/2019_SBAOverview.pdf?ver=2019-02-12-154702-117
[9] https://dced.pa.gov/

former category. An example of such a state is Oklahoma where general purpose local governments are required to report to the Attorney General before issuing debt. Fifteen states have elected officials leading the oversight process. The second category includes those states who have appointed officials overseeing the issue of debt by local governments. Fourteen states require their local governments to report to officials appointed by the Governor. In Michigan, for example, the State Treasurer, who is appointed by the governor, must grant approval before any bonds are issued. Table 1.2 lists the authorities that state governments employ to conduct the oversight process for each state.

1.3.b Responsibilities of Authorities and Local Governments

1.3.b.1 Local Governments. To comply with the oversight process, local governments in 29 states must submit certain documents to the assigned state agency/authority at a certain point in the debt issuance process. The states differ in terms of when they require their local governments to report to the authorities. This study divides the debt issuance process into three distinct phases and places each state in one of the three phases.[10] Table 1.3 reports the three phases and the states that fall in each.

The first phase is the period before the sale of the debt. According to the Municipal Securities Rulemaking Board (MSRB), "sale date" refers to the date of the official acceptance of a bid or offer to purchase a new issue of municipal securities by an underwriter.[11] The first phase includes 19 states that require their local governments to submit debt information before the sale

[10] If a state requires their local governments to report to the oversight authorities at multiple points in the debt issuance process, then they are placed in the phase when the local governments first reports to the authorities.
[11] http://www.msrb.org/glossary/definition/award.aspx

of debt such as a report of proposed issuance or the description of the bonds that are being issued or certain forms that are required by their respective state agency before the issue of debt.

Table 1. 1. State Oversight Statutory Provisions

State	Statutory Code
Arizona	A.R.S. § 35-501, A.R.S. § 35-504
California	Cal Gov Code § 8855
Delaware	29 Del.C. § 8317
Florida	Fla. Stat. § 218.38
Georgia	Ga. Code Ann., § 36-81-8,§ 36-82-10
Indiana	Burns Ind. Code Ann. § 5-1-18-6
Iowa	I.C.A. § 12.1
Kansas	K.S.A. § 10-108
Kentucky	KRS § 65.117
Louisiana	LSA-R.S. 39:1410.60
Massachusetts	ALM GL ch. 44, § 10
Michigan	MCLS § 141.2303
Missouri	§ 108.240 R.S.Mo.
Nebraska	R.R.S. Neb. § 10-140
Nevada	N.R.S. 350.013
New Hampshire	RSA 33:14
New Jersey	N.J. Stat. § 40A:3-4
New Mexico	N.M. Stat. Ann. § 6-15-1
North Carolina	N.C. Gen. Stat. § 159-3, 159-51, 159-52
Oklahoma	62 Okl. St. § 13, 62 Okl. St. § 14
Pennsylvania	53 Pa.C.S. § 8111, 53 Pa.C.S. § 8204
Rhode Island	R.I. Gen. Laws § 42-10.1-4
South Carolina	S.C. Code Ann. § 11-15-100
South Dakota	S.D. Codified Laws § 6-8B-19
Tennessee	Tenn. Code Ann. § 9-21-130
Texas	V.T.C.A., Government Code § 1202.003
Washington	Rev. Code Wash. (ARCW) § 39.44.210
West Virginia	W. Va. Code § 13-1-25

Source: Author's Research. Legal Code found on Lexis Nexis and Westlaw

Table 1. 2. Oversight Authorities by State

Commissions/Divisions (Group A)			
State	**Commissions/Division**	**Division/Department Head**	**Appointed/Elected Head**
Arizona	Debt Oversight Commission	Director of the Department of Administration	Appointed
California	California Debt and Investment Advisory Commission	State Treasurer[12]	Elected
Florida	Division of Bond Finance	Governor of Florida	Elected
Louisiana	State Bond Commission	State Treasurer	Elected
Massachusetts	Municipal Finance Oversight Board	State Auditor[13]	Elected
New Jersey	Local Finance Board	Director of Division of Local Government Services	Appointed
North Carolina	Local Government Commission	State Treasurer	Elected
Rhode Island	Public Finance Management Board	State Treasurer	Elected

State Departments (Group B)			
State	**Department**	**Department Head**	**Appointed/Elected Head**
Delaware	Department of Finance	Secretary of Finance	Appointed
Georgia	Department of Community Affairs	Commissioner	Appointed
Indiana	Department of Local Government Finance	Commissioner	Appointed
Iowa	State Treasurer's Office	State Treasurer	Elected
Kentucky	Department for Local Government	State Local Debt Officer[14]	Appointed
Kansas	Treasurer's Office	State Treasurer	Elected
Michigan	Department of Treasury	State Treasurer	Appointed

[12] The Treasurer serves as the chairperson of the commission
[13] Although the State Treasurer and the Attorney General serve as board members, the State Auditor serves as the chairman of the MFOB (https://www.mass.gov/municipal-finance-oversight-board)
[14] State Local Debt Officer refers to the Commissioner, Department of Local Government or their designee

Table 1.2 (Continued)

State	Department	Department Head	Appointed/Elected Head
Missouri	Office of Missouri State Auditor	State Auditor	Elected
Nebraska	Nebraska Auditor of Public Accounts	Auditor of Public Accounts	Elected
Nevada	Department of Taxation	Executive Director	Appointed
New Hampshire	Department of Revenue Administration	Commissioner	Appointed
New Mexico	Department of Finance and Administration	Secretary	Appointed
Oklahoma	Office of the Attorney General	Attorney General	Elected
Pennsylvania	Department of Community and Economic Development	Secretary	Appointed
South Carolina	Office of the State Treasurer	State Treasurer	Elected
South Dakota	Secretary of State	Secretary of State	Elected
Texas	Office of the Attorney General	Attorney General	Elected
Tennessee	Comptroller of the Treasury	Comptroller of the Treasury	Appointed
Washington	Department of Commerce	Commerce Director	Appointed
West Virginia	Office of the WV Attorney General	Attorney General	Elected

The second phase is the period between the sale and delivery of bonds.[15] This category contains three states that require their local governments to submit debt information once the sale has been completed but before the delivery of bonds. The type of information submitted is the information on the bond issue or a report of issuance of bonds. The information here seems to be

[15] States in this category must report to their respective oversight authorities after the "issuance of bonds". This paper uses the MSRB definition of "When issued" which is "the time period in the life of a new issue of municipal securities from the original date of the sale by the issuer to the delivery of the securities to, and payment by, the underwriter (http://www.msrb.org/glossary/definition/when-as-and-if-issued-_waii_.aspx).

for recording purposes only. The third phase is the one after the delivery of bonds. At this point, the deal is complete. Reporting here is usually for recording debt information. Six states fall under this category and their local governments are required to report to the authorities only after the delivery of the issued bonds or annually at the end of the fiscal year.

1.3.b.2 State Authorities. State authorities differ in their use of information submitted by local governments. State authorities for states in Phases 2 and 3 seem to use the information for recording/monitoring purposes only while states in Phase 1 use it for monitoring and approval purposes.

The local governments in Phases 2 and 3 are required to complete the formality of submitting the required information.[16] There is no further requirement imposed upon them by the state. The purposes of the submitted information may be for the state governments to have complete and up to date data on the amount of debt issued in their state. Some of the states in Phase 1 require their local governments to first receive approval from authorities before they issue debt. Twelve states fall under this category. In these states, local governments can only issue debt once they have received the approval of the state authorities. If they do not receive state approval, then the local governments are not allowed to issue debt. The information submitted by the local governments range from proceedings related to the issuance of bonds to facts and documents about the financial condition of the issuing unit. Approval can be based on the ability to pay or compliance with law. States that provide approval based on ability to pay typically collect information regarding financial information such as revenues and total borrowing. Approval based on compliance with law is usually based on sufficiency of the transcript of proceedings.

[16] Some states such as Georgia that require local governments to report to an oversight authority after the delivery of bonds do not allow further issuance of bonds if the annual report for the previous year has not been submitted.

Table 1. 3. Framework of Debt Oversight Rules

Phase of the Debt Issuance Process		
Before Sale of Debt (Phase 1)	**Sale-Delivery of Issue (Phase 2)**	**After Delivery (Phase 3)**
Submission of Reports (Group A)	**Submission of Reports**	**Submission of Reports**
California	Washington	Georgia
Florida	Arizona	New Hampshire
Rhode Island	Indiana	Nebraska
New Mexico		Iowa
Kentucky		Nevada
South Carolina		South Dakota
Delaware		
New Jersey		
Approval Required (Group B)		
Compliance with Law (Group B.1)		
Kansas		
Missouri		
Oklahoma		
West Virginia		
Tennessee		
Texas		
Ability to Pay (Group B.2)		
Pennsylvania		
North Carolina		
Massachusetts		
Louisiana		
Michigan		

1.4 Discussion

This chapter contributes a new fiscal institution to the literature. It provides an overview of processes that state have put in place to oversee local government debt issuance. Through an analysis of the statutory code of 50 states, this chapter reveals that there exists substantial variation in the design of oversight rules especially in terms of the authorities responsible for oversight, the timing and the procedures established. These features could have varying effects on local government financial outcomes.

States established debt oversight rules to complement existing constitutional and statutory limitations on borrowing, ensuring that the state would be in constant contact with the local governments. Therefore, by establishing rules that require local governments to submit information at different points in the debt issuance process, states are more proactive with respect to monitoring local government borrowing and get a more comprehensive and current view of overall borrowing. This provides states with the opportunity to publish their databases of local government debt either through their websites or by publishing annual debt reports.

This makes consolidated information on local government borrowing available to the public allowing not only the financial markets to make decisions about issuers but also local governments to view their financial performance in comparison with other local governments in the same region. Some local governments also mention the oversight procedures that they have followed in their bond prospectus, termed as official statements, showing potential investors that states were involved in the debt issuance process of the local governments. Where there are problems of information asymmetry, this information transfer from the local to the state governments mitigates that asymmetry to some extent.

This chapter is a contribution to the larger literature on fiscal institutions. It shows that it is not only important to examine the presence of rules but also the design of these rules as it can vary by state. State oversight rules, at its core, are about information transfer from the local to state government, however, the design depends on the state. Some states may require local governments to just submit information to their states while others may require local governments to receive approval. These rules allow states to proactively monitor local government borrowing while also preserving a local government's freedom to borrow as per their requirements. The remaining chapters in this dissertation will use the framework in Table 1.3 to assess the impact of debt oversight on local governments.

Chapter II

Impact of State Debt Oversight on Borrowing Costs of Local Governments

Abstract: State supervision of local government debt issuance is a mechanism that could influence perceptions of local government creditworthiness in the municipal bond market. This chapter uses the framework created in chapter one to assess the impact of the various components of the oversight process on the borrowing costs of local governments. Twenty-eight states have an oversight procedure of which eleven states require their local governments to receive approval before they issue debt. Using general obligation data issued competitively from the years 2008-2016, the results show that borrowing costs are higher for local governments that have an oversight process. Among those that are subject to oversight rules, results vary with the procedure, type of oversight agency, as well as timing of the submission of information. Borrowing costs are lower for those local governments that go through an approval process, report to a state appointed commission, or are subject to an annual monitoring process.

2.1 Introduction

Information disclosure is a crucial element in the securities market because it provides investors with the information necessary to make informed decisions. Disclosure requirements regarding financial and operating information are established in the corporate securities market by the Securities and Exchange Commission (SEC). The Securities Act of 1933 and the Securities and Exchange Act of 1934 empower the SEC to promulgate disclosure but there is a broad exemption for municipal securities. As a result, investors have limited access to disclosure documents of state and local governments leading to an opaqueness in the municipal bond market relative to other financial markets. The lack of compulsory information disclosure by issuers contributes to the asymmetry that can lead to different judgements by both investors and issuers about the value of securities. Timely information is crucial for investors to make an informed judgement about the credit risk associated with an issuer.

Several market and institutional mechanisms have been developed to alleviate this asymmetry. This includes mechanisms such as self-certification, method of sale, underwriter certification and credit ratings (Peng and Brucato, 2004). States also design various fiscal institutions that could influence perceived state and local creditworthiness in the credit markets. Studies have found that institutions such as tax and expenditure limits, balanced budget requirements, and debt limits influence the yield on municipal bonds (Bayoumi, Goldstein, and Woglom, 1995; Johnson and Kriz, 2005; Poterba and Rueben, 1999). Moreover, the Municipal Securities Rulemaking Board launched the Electronic Municipal Market Access website (EMMA) which is an online repository that provides free access to issuer financial statements.[17]

[17] https://emma.msrb.org/

This chapter assesses the impact of state oversight on the borrowing costs of local governments. The state oversight rules essentially require their local governments to submit information to the respective oversight agencies. These rules differ for each state both in terms of timing of submission of the information as well as the way in which the information is processed by the states. The states also vary in the type of agency assigned with the oversight responsibilities. This paper hypothesizes the impact of the oversight rules on borrowing costs in three major ways: first, through the timing of disclosure of bond information; second, through the process followed once the information is submitted; and third, the characteristics of the oversight agency. States that require their local governments to submit information and gain approval from the oversight agency before they issue debt might be perceived as more proactive about the borrowing of their local governments. Moreover, states would have the most updated information about their local governments, thus allowing them to intervene if required. Any local government that gets the approval based on the ability to pay, would be considered by investors as less risky. Furthermore, similar perceptions could also exist about states that assign the debt oversight responsibilities to a separate entity. Investors investing in these states might associate low default risk associated with the municipal bonds issued in these states which could affect the borrowing costs.

2.2 Theoretical Background and Framework

Several studies have investigated the impact of fiscal institutions on local government borrowing cost. Johnson and Kriz (2005) argue that many fiscal limits and rules are based on prudent fiscal principles and therefore could lead to exceptional financial performance. Researchers have examined the impact of these institutions on financial performance indicators

such as spending, deficits and borrowing. Bohn and Inman (1996) found that strict balanced budget requirement significantly constrains state general fund deficits. This could reduce the perception of default risk leading to high credit ratings and low borrowing costs. Moreover, Poterba and Rueben (1999) show that borrowing costs are sensitive to a state's fiscal rules and budget forecasts. The direction of the impact depends upon the signaling effect that fiscal institutions provide about the fiscal health of a state or local government. If fiscal institutions increase the perceived default risk associated with the local government, then this could lead to high borrowing costs. For example, tax limitations could negatively affect credit ratings and lead to higher borrowing costs due to the constrain on the ability to raise revenue. This limit hampers a government's ability to repay its long- term debt. On the other hand, expenditure limits are viewed more positively as it imposes fiscal discipline therefore improving the ability to service debt (Johnson and Kriz, 2005; Stallmann, Deller, Amiel, and Maher, 2012).

Debt oversight by state governments on local governments could lead to lower perceived default risk. The presence of an oversight process does ensure that local governments are regularly submitting information to the state governments, therefore providing states with an updated view of overall local government borrowing. In fact, many states make the local government debt information public. For example, the California Debt and Investment Advisory Commission publishes more than thirty years of data on bonds, notes and other public debt issued by California state and local governmental entities.[18] This consolidated public information not only allows investors to gain information about a particular issuer but also allows local governments to compare their fiscal performance in comparison to other local governments. However, the impact of these rules on perceived default risk varies with the design. A more

[18] https://www.treasurer.ca.gov/cdiac/debt.asp

rigorous process could reduce the default risk associated with local governments. The rigor of the oversight process depends on its features: mainly when local governments are required to submit the information, to whom and how the states use this information. Therefore, local governments going through an approval process based on either compliance with law or ability to pay may be associated with low default risk as the approval could signify support by the state governments. Information provided by local governments in their official statements regarding the debt oversight process followed could lead potential investors to assume that the state supports the debt issuance of the local government.[19] Moreover, information submitted before issuing debt provides states with the opportunity to intervene if required ensuring a more rigorous oversight process. The sections below highlight how the different features of the oversight process define its rigor and therefore may impact local government borrowing costs.

Research has investigated the importance of information disclosure in the municipal bond market in different contexts. Financial reporting, its quality and the timing of the reporting are important factors that impact the costs of municipalities. Baber and Gore (2008) analyze state rules that mandate local governments to use Generally Accepted Accounting Principles (GAAP). They find that those states that mandate GAAP have about 14 to 25 basis points lower municipal debt financing costs than those states with no disclosure requirement.[20] This could be because the GAAP mandate assures lenders of transparent information disclosure more than what exists when GAAP disclosure is voluntary. Benson, Marks, and Raman (1984) suggest that stringent accounting regulations do lower municipal borrowing costs. The quality of financial reporting also plays an important role. Park et al (2021) concludes that high quality financial reporting

[19] Since there is no statutory or regulatory requirement regarding content of official bond statements, all local governments may not provide this information.
[20] One basis point is equal to 0.01%.

enhances market credibility and improves ratings. They also find that the impact is greater for those municipalities that have just begun to signal provision of transparent financial information in comparison to those that have already built market credibility. The timeliness of financial reporting is also a key factor that financial information is expected to possess to communicate effectively.[21] Mead (2011) reports that 89% of survey respondents that included users of governmental financial information, rate information received within 45 days as "very useful". For information received within 3 months, the proportion reduced to 44% and fewer than 9% of respondents found information received within 6 months to be very useful. Henke and Maher (2016) analyze whether the timeliness of information has an impact on the municipality's borrowing costs. They find that the delayed reporting has negative consequences for municipalities in terms of lower bond ratings and higher borrowing costs. They argue that slow reporting government entities are associated with a higher risk of default and therefore have low credit ratings.

This chapter hypothesizes that the submission of information to state oversight agencies could lead to reduced perceived default risk as states are aware of the debt associated with their local governments. This "backing" by the states could be viewed positively by the financial markets. The rigor associated with information disclosure could be higher based on the timing of the disclosure thus further impacting borrowing costs. An explanation of the framework below (Table 2.1) reveals the logic for these hypotheses. The top row of the framework shows three different categories of states where each category refers to the point in the issuance process where local governments are required to submit information. Local governments reporting in the

[21] Concept Statement No. 1 of the Governmental Accounting Standards Board: Objectives of Financial Reporting (https://www.gasb.org/cs/BlobServer?blobkey=id&blobwhere=1175824062706&blobheader=application%2Fpdf&blobcol=urldata&blobtable=MungoBlobs)

first phase are doing so before they issue any debt. This means that state oversight agencies have the most up to date and relevant information about their local governments. Information disclosure to states before the issuance of debt is a rigorous oversight process as states could use the information to intervene if they needed to. Moreover, approval on the basis of most recent information would be more rigorous. Local governments in Phases 2 and 3 report their information after the sale or delivery of the bond. As a result, there is a significant delay in when oversight agencies receive information regarding their local governments. This could lead to perceptions of high default risk and borrowing costs in comparison to Phase 1 as states in these categories play a passive role. Therefore,

Hypothesis 1: Local governments reporting to authorities in the first phase of state debt oversight would have lower borrowing costs than those that are required to report in the second and third phase.

Some local governments are also required to receive approval from their oversight agencies before they issue debt. This is either based on their ability to pay or the compliance with law. Since the requirement of approval is a more stringent oversight mechanism than mere submission of documents, the expectation is that local governments facing state approval will have lower borrowing costs than local governments that are just required to submit information. Once local governments receive approval, it could indicate that the state authorities believe that local governments would be able to repay the bonds. This would reduce the market perception of risk associated with that local government, thus increasing its credibility and reducing its borrowing costs. Furthermore, approval based on ability to pay would be a more stringent form of oversight leading to lower borrowing costs. Therefore,

Hypothesis 2: Local governments in states that require approval would have lower borrowing costs than local governments that are only required to submit information.

Hypothesis 3: Local governments receiving approval based on ability to pay would have lower borrowing costs than local governments that receive approval based on compliance with law.

High quality financial information would also signal good quality financial management of municipalities, an important role played by the administration. Moreover, management is an important factor that credit rating agencies assess while assigning a credit rating. Krueger and Walker (2010) show that financial management capacity is an important predictor of credit quality, even more than informational, personally and infrastructure management capacities. Denison, Yan, and Zhao (2007) find similar results while using management and educational performance data of Texas School Districts. Park et al (2021) conclude that municipal bonds benefit from lower borrowing costs when governments employ strict financial control mechanisms.

States have assigned their local government debt oversight responsibilities to various entities. Some of these agencies have been created separately such as the Florida Division of Bond Finance while other states have assigned the responsibilities to larger departments such as the Pennsylvania Department of Community and Economic Development. Since commissions or divisions are created separately for the purposes of financial management and assistance to the local governments, those local governments that report to them might go through a more rigorous oversight process than a local government reporting to a state department that is conducting the oversight process along with their other functions. Therefore,

Hypothesis 4: Local governments reporting to separately created legal commissions/ divisions would have lower borrowing costs than local governments reporting to an administrative department.

The comparison between elected and appointed officials has important implications for the borrowing costs of local governments based on the different incentive structures facing appointed and elected officials. Elected officials face the prospect of re-election and are therefore directly accountable to the voters while appointed officials are accountable to their peers and their employers for professional recognition and future job postings (Alesina and Tabellini, 2007). Maskin and Tirole (2004) determine that the most important decisions should be taken by elected rather than non-accountable officials because they cannot be removed after shocks to voter's preferences. In contrast, technical decisions should be given to appointed bureaucrats because the electorate is poorly informed about the optimal action, acquiring decision-relevant information is costly and feedback about the quality of decisions is slow. Whalley (2013) studies this question in the context of debt management policy. He investigates whether the method of selecting city treasurers affects costs of borrowing and finds that cities in California with appointed treasurers have lower borrowing costs than those with elected treasurers. A potential reason for this is the difference between them in their expertise on issues related to debt. Appointed officials who are usually appointed for their prowess would have greater technical expertise on matters related to debt than an elected official who may not have that technical knowledge. Borrowing directly from Whalley (2013), this paper hypothesizes that a state appointed official overseeing local borrowing would lower the borrowing costs of the local government, because the markets would have more trust in the oversight process of an expert

thus increasing the credibility and lowering the borrowing costs of the local government. Therefore,

Hypothesis 5: Local governments in states required to report to appointed officials may have lower borrowing costs than local governments reporting to elected officials.

Table 2. 1. Framework of State Oversight Procedures

Phase of the Debt Issuance Process		
Before Sale of Debt (Phase 1)	**Sale-Delivery of Issue (Phase 2)**	**After Delivery (Phase 3)**
Submission of reports (Group A)	**Submission of Reports**	**Submission of Reports**
California	Washington	Georgia
Florida	Arizona	New Hampshire
Rhode Island	Indiana	Nebraska
New Mexico		Iowa
Kentucky		Nevada
South Carolina		South Dakota
Delaware		
New Jersey		
Approval Required (Group B)		
Compliance with Law (Group B.1)		
Kansas		
Missouri		
Oklahoma		
West Virginia		
Tennessee		
Texas		
Ability to Pay (Group B.2)		
Pennsylvania		
North Carolina		
Massachusetts		
Louisiana		
Michigan		

2.3 Data and Methods

Two main data sources have been used to empirically test these hypotheses: First, the statutory code for all fifty states accessed through the Lexis Nexis and Westlaw databases have been used to conduct a detailed law review of oversight procedures established by states. This analysis helps to define the main independent variable which is based on the detailed features of the design of these rules. Each feature is a dummy variable identifying 1) the local governments who are subject to a debt oversight process; 2) The authorities that the local governments report to: Separately created Commissions or a state department; 3) The phase of the debt issuance process when the local governments must report the information (before or after sale/delivery); and 4) the purpose (submission or to receive approval). Although the oversight policy is at the state level, all the local governments in a state are subject to the oversight rules of the state.

The second data source is municipal bond data from Ipreo and Mergent which contain information on actual debt market transactions.[22] Most studies that examine the interstate variations on yields due to fiscal institutions use the Chubbs Relative Value Survey (CRVS) which is a measure of the trader's opinion on bond yields and not actual trades (Bayoumi et al 1995; Poterba and Reuben, 1999). Use of actual debt market transactions through the Ipreo and Mergent datasets allows a more accurate analysis of the impact of fiscal institutions on borrowing costs. Both Ipreo and Mergent datasets contain similar information on bond and issue characteristics as well as issuer information, but each has its own unique variables. For example, only the Ipreo dataset contains True Interest Cost, which is the main dependent variable for this analysis. True Interest Cost is a measure of the costs of issuing a bond. As defined by the MSRB, it is "the rate necessary to discount the amounts payable on the respective principal and interest

[22] Access to this data is from the Municipal Securities Laboratory, Georgia State University

payment dates to the purchase price received for the new issue of bonds.[23] The analysis includes limited and unlimited new general obligation bonds issued competitively from the years 2008-2016.[24] Limited tax general obligation bonds are paid from taxes subject to a limit and unlimited bonds are backed by unlimited tax authority of the local government.[25] The sample is further restricted to bonds issued by general purpose local governments such as counties, cities, towns and villages. The sample of bond issues has been limited by type of bond issue, issuer and type of sale to conservatively estimate the impact of state oversight rules on borrowing costs. Years prior to 2008 are not considered because Kentucky's oversight policy became effective in 2008. Therefore, limiting the analysis to years after 2007 minimizes reverse causality and helps to see a clearer impact of the rules. After removing observations with missing values, the final sample contains 4509 bond issuances where about half (2104) bonds are subject to oversight. The figures below summarize the distribution of bond issues across states.[26] This analysis relies on a linear regression to examine the impacts of oversight rules as well as the oversight authority on borrowing costs.

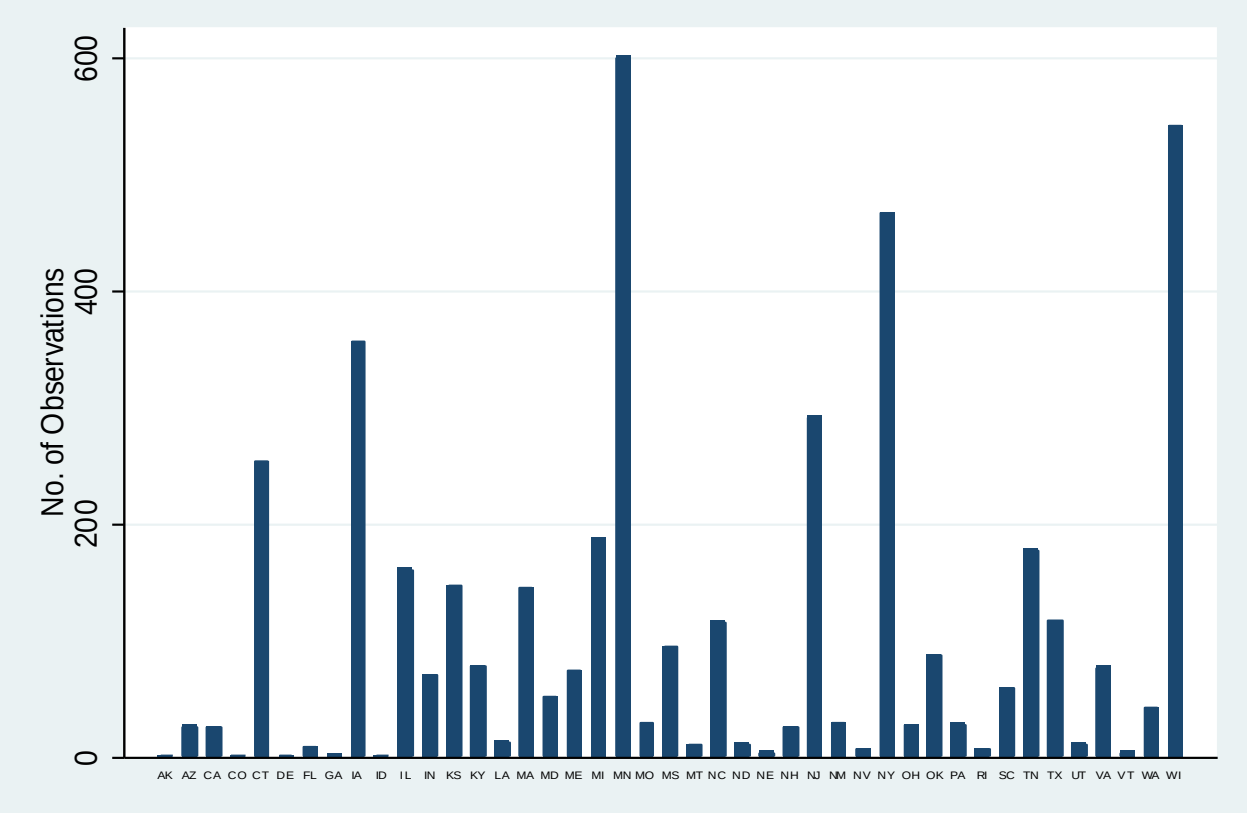
Control Variables

The analysis uses a linear regression controlling for issuer, bond and market characteristics. The bond characteristics included are those that are known to affect borrowing costs (Johnson

[23] https://www.msrb.org/glossary/definition/true-interest-cost-_tic_.aspx
[24] The analysis is limited to bonds. Other types of financial securities such as Certificates of Obligation and Tax Anticipation notes were excluded from the analysis.
[25] Definition taken from the MSRB's Glossary: For Unlimited Tax Bonds see- https://www.msrb.org/glossary/definition/unlimited-tax-bond, For limited tax bonds see: https://www.msrb.org/glossary/definition/limited-tax-general-obligation-bond
[26] It is important to note that this bar chart shows only limited and unlimited tax general obligation bonds competitively issued by general purpose governments across the states. Therefore states like Texas has a lower number of observations as the majority of their bond issuances are by other special districts as opposed to general purpose governments.

and Kriz, 2005; Moldogaziev, Kioko, and Hildreth, 2017). There are two dummy variables for tax exemption both at the state and at the federal level since this status is known to affect the demand of municipal bonds. The analysis also includes a dummy for whether the bond is insured and a dummy variable for whether a financial advisor was part of the debt transaction.

Figure 2. 1. Distribution of the Bond Issues Across States



Both characteristics reduce the borrowing costs associated with the bonds (Daniels, Dorminey, Smith, and Vijayakumar, 2018; Denison, 2003). Long term bonds typically have higher borrowing cost and therefore the analysis includes a control for the maturities of each bond. Furthermore, some bonds can be "called" back earlier than the maturity for refinancing purposes and therefore have higher borrowing costs. Therefore, a dummy for callable bonds is also included. The analysis also includes log values of the par value since the relationship between issue amount and TIC is expected to be non-linear (Yusuf and Liu, 2008).

The analysis also controls for issuer- specific variables. Population, debt per capita and region of the issuer have been included to control for the economic and fiscal positions of the local governments. To control for market fluctuations, the analysis includes the Bond Buyer's 20 General Obligation Bond Index. This index provides an estimation of municipal bond trends for general obligation bonds in the market on the date of issuance. Seven dummies, based on the Moody's Underlying Rating Scale, are used to control for credit rating. The underlying credit rating scale is Moody's assessment of the credit quality of a particular bond issuance absent any insurance or support from a financial guarantor/state credit enhancement program.[27] The highest credit rating present in this sample is a AAA (highest credit quality) and the lowest is Baa3.[28] Year dummies are added to control for any time related variation that took place during the years included in the sample.

The empirical specification for the borrowing cost model uses the following equation (1) where y_i is the dependent variable, True Interest Cost (TIC).

$$y_i = \boldsymbol{\beta}\,(D)_{\mathbf{it}} + \boldsymbol{\gamma}\, x_{it} + \mu_t + \varepsilon_{it} \qquad (1)$$

The main variable of interest is D, which highlights the various features of the oversight rules. The coefficient β measures the effect of the rules on the true interest cost. $\boldsymbol{\gamma}$ is the vector of coefficients associated with the covariates mentioned earlier (x_{it}). μ_t captures the year effects and ε_{it} is the error term. All standard errors are clustered at the Issuer level to allow for correlation between bond issuances of the same issuer.

[27] https://www.moodys.com/sites/products/productattachments/moodys%20rating%20symbols%20and%20definitions.pdf

[28] Analysis was run with credit ratings provided by rating agencies Fitch and S&P. There were no differences in the results and therefore the analysis uses Moody's underlying ratings.

Table 2. 2. Descriptive Statistics

Variables	Mean	Std. Dev	Min	Max
True Interest Cost (TIC)	2.94	0.94	0.39	7.32
Maturity, in years	16.21	5.41	0	34
Ln (Par Value)	15.61	1.11	12.21	20.01
Bond GO Index	4.19	0.545	2.83	5.50
Ln(Debt per capita)	7.09	0.97	-0.87	11.14
Aa1 (Yes=1; no=0)	0.10	0.30	0	1
Aa2 (Yes=1; no=0)	0.17	0.37	0	1
Aa3 (Yes=1; no=0)	0.09	0.295	0	1
A1 (Yes=1; no=0)	0.06	0.249	0	1
A2 (Yes=1; no=0)	0.033	0.179	0	1
A3 (Yes=1; no=0)	0.019	0.138	0	1
Baa1 (Yes=1; no=0)	0.005	0.074	0	1
Baa2 (Yes=1; no=0)	0.002	0.044	0	1
Baa3 (Yes=1; no=0)	0.000	0.029	0	1
Not Rated (Yes=1; no=0)	0.366	0.481	0	1
Financial Advisor (Yes=1; no=0)	0.924	0.264	0	1
Federal Tax Exemption (Yes=1; no=0)	0.931	0.253	0	1
State Tax Exemption (Yes=1; no=0)	0.213	0.409	0	1
Insured (Yes=1; no=0)	0.098	0.298	0	1
Callable (Yes=1; no=0)	0.304	0.460	0	1
Bank Qualified (Yes=1; no=0)	0.572	0.495	0	1
Region	1.76	0.84	1	4
Year 2008 (Yes=1; no=0)	0.146	0.353	0	1
Year 2009 (Yes=1; no=0)	0.104	0.305	0	1
Year 2010 (Yes=1; no=0)	0.098	0.298	0	1
Year 2011 (Yes=1; no=0)	0.102	0.301	0	1
Year 2012 (Yes=1; no=0)	0.107	0.309	0	1
Year 2013 (Yes=1; no=0)	0.126	0.332	0	1
Year 2014 (Yes=1; no=0)	0.116	0.321	0	1
Year 2015 (Yes=1; no=0)	0.127	0.333	0	1
Year 2016 (Yes=1; no=0)	0.077	0.267	0	1
Oversight (Yes=1; no=0)	0.542	0.498	0	1
Before Sale of Debt (Yes=1; no=0)	0.367	0.482	0	1
Between Sale- Delivery (Yes=1; no=0)	0.086	0.281	0	1
After Delivery (Yes=1; no=0)	0.087	0.282	0	1
Approval (Yes=1; No=0)	0.839	0.367	0	1

2.4 Results

The results presented in this section examines the effect of debt oversight rules on true interest cost of local governments. Table 2.3 presents the results from the linear regressions for five sets of specification (Hypothesis 1-3). The regressions control for issuer, bond and market characteristics. Models 1 and 2 examine the difference in costs between those local governments going through an oversight process versus those that do not.

Overall, the results suggest that oversight does affect the borrowing costs of local governments however the direction of the impact depends upon the type of oversight that a local government is subject to. State oversight on local government borrowing is expected to have a negative relationship with borrowing costs, that is, those local governments subject to oversight are expected to have lower borrowing costs than those that are not. However, model 1 shows the opposite. Although statistically significant only at 10%, those local governments that are subject to an oversight process pay higher borrowing costs than those that are not subject to an oversight process. To get a better understanding of the impact of oversight on borrowing costs, the analysis is further divided by the timing of reporting as well as the use of the information submitted.

Focusing on the timing of reporting, the hypothesis is that the earlier the local governments are required to submit information, the lower the borrowing costs. Model 2 contains the results for the regressions in which a set of dummies represent the phase in which a state requires its local governments to submit information. Here the reference group include those local governments that are not subject to an oversight process. The results suggest that holding everything constant, both Phase 1 and Phase 2 have higher borrowing costs than local governments in no oversight states. Local governments in Phase 1 pay a 6-basis point premium

and Phase 2 pays a 32-basis point premium.[29] Local governments in Phase 3, pay 6 basis points lower than those local governments with no oversight. This is the phase that requires local governments to submit information annually either after the delivery of bonds or at the end of the fiscal year. The results are contrary to the hypothesis that stated that Phase 1 would have the lowest borrowing cost. This is an indication that the capital markets prefer that states oversee their local governments annually rather than each time a local government issues debt. The results also show the importance of the design of the state oversight rules on borrowing costs.

Model 3 examines those states in Phase 1 where local governments are either required to go through an approval process (Group B) or just submit information to their respective state authority. The latter group is also the reference group in this analysis. The hypothesis states that those local governments that go through an approval process would have lower borrowing costs as it is a more rigorous process. The results suggest there is a statistically significant difference between the two categories at the 5% level. Model 3 shows that local governments in Group B have borrowing costs that are 9 basis points lower than any local government required to submit information to the oversight authority in Phase 1 holding everything else constant. Furthermore, local governments that go through an approval process can be divided into two categories: those that require approval based on compliance with law (Group B.1) and ability to pay (Group B.2). A comparison of the borrowing costs between these two categories (Model 4) reveals that local governments that are provided approval based on their ability to pay have higher borrowing costs (but not statistically significant) than those that are provided approval based on the compliance with the law. These results are contrary to the hypothesis that stated that a more rigorous

[29] 100 basis points=1%. This is the smallest measure used in quoting yields on bonds or notes. For example, if a yield increases from 3.00 percent to 3.01 percent, the difference is referred to as a one basis point increase. Definition taken from MSRB.

approval process would be associated with lower borrowing costs. To investigate the reason for this, the analysis was broken down by state. Model 5 presents the results. Here, the reference group were those local governments that required approval based on compliance with law (Group B.1). The results suggest that North Carolina and Massachusetts have lower borrowing costs and Pennsylvania and Michigan have higher borrowing costs than those local governments in B.1. In terms of magnitude, the borrowing costs are much higher for the local governments in the state of Michigan. This could be for two main reasons: 1) About 85% of the bonds issued by Michigan in the sample were "Not Rated". This prevents investors from gaining any information related to the credit quality of bonds which could be affecting the borrowing costs. The second reason could be related to the type of process that municipalities must go through. In Michigan, the state treasurer requires all local governments to receive approval once every year. Once the local governments are "qualified", local governments no longer need approval to issue any debt. The lack of approval before every issuance could be raising the borrowing cost. However, this reason is less likely as almost 90% of the local governments in Michigan, in the sample issued bonds only once a year. Borrowing costs for local governments in Louisiana is not significantly different from those local governments in group B1. This could be because the number of general obligation bond issuances by the local governments in Louisiana are very low (19 over 8 years in total by all local governments), as seen in Figure 2.1.

A possible explanation that lies within the framework of this study for why North Carolina and Massachusetts have lower borrowing costs than Pennsylvania and Michigan are the type of oversight authority.[30] The oversight process is North Carolina and Massachusetts is managed by

[30] Another potential explanation is that Michigan and Pennsylvania contain legacy cities that have faced industry decline.

the Local Government Commission and the Municipal Finance Oversight Board respectively. These are separate commissions created to support local government borrowing.

The results presented in Table 2.4 focuses on the oversight agencies themselves. Hypotheses revolve around their organizational structure including their role and leadership. Model 1 presents the differences in borrowing costs due to the type of oversight authority that local governments are reporting to. It shows that local governments overseen by commissions that are separately created for the purposes of financial management have lower borrowing costs than those overseen by existing state departments. This is consistent with expectation in Hypothesis 4. Furthermore, supervision by an authority led by an elected official result in lower borrowing costs for the local government compared to supervision by an appointed official led authority.

A separate commission such as the California Debt and Investment Advisory Commission provides information, education and technical assistance on debt issuance to local public agencies as well as public finance professionals.[31] Similarly, the Florida Division of Bond Finance, provides financial legal and marketing services necessary for the issuance and sale of bonds. The question that arises is, does the lower borrowing costs associated with elected officials still hold in a commission or state department? To investigate this question, the analysis uses an interaction term, the results of which are presented in Model 3. State department with an elected official have borrowing costs that are 25 basis points lower than state departments with an appointed official. However, the interaction term is not significant which means that there is no additional impact on borrowing cost if an elected official is in a commission.

[31] See https://www.treasurer.ca.gov/cdiac/

Table 2. 3. Results- Hypothesis 1-3

VARIABLES	(1) TIC	(2) TIC	(3) TIC	(4) TIC	(5) TIC
Oversight	0.0276*				
	(0.0167)				
Phase = 1		0.0597***			
		(0.0220)			
Phase = 2		0.330***			
		(0.0492)			
Phase = 3		-0.0547**			
		(0.0276)			
Approval = 1			-0.0902***		
			(0.0255)		
Basis				0.0297	
				(0.0341)	
North Carolina					-0.145***
					(0.0384)
Pennsylvania					0.192***
					(0.0585)
Louisiana					0.0721
					(0.0676)
Michigan					0.462***
					(0.0486)
Massachusetts					-0.224***
					(0.0383)
Aa1	0.0319	0.0265	0.0213	0.0273	-0.0134
	(0.0270)	(0.0278)	(0.0573)	(0.0652)	(0.0500)
Aa2	0.134***	0.133***	0.154***	0.161***	0.0870*
	(0.0271)	(0.0275)	(0.0455)	(0.0573)	(0.0471)
Aa3	0.189***	0.186***	0.186***	0.0998	0.0910
	(0.0315)	(0.0317)	(0.0603)	(0.0808)	(0.0682)
A1	0.311***	0.315***	0.308***	0.273***	0.231***
	(0.0379)	(0.0378)	(0.0637)	(0.0689)	(0.0655)
A2	0.415***	0.423***	0.420***	0.318***	0.310***
	(0.0573)	(0.0576)	(0.0974)	(0.0984)	(0.0895)
A3	0.364***	0.372***	0.303***	0.247**	0.187*
	(0.0549)	(0.0561)	(0.0832)	(0.111)	(0.110)
Baa1	0.797***	0.799***	0.941***		
	(0.0995)	(0.0972)	(0.185)		
Baa2	0.845***	0.856***	0.911***	0.645***	0.561***
	(0.169)	(0.170)	(0.322)	(0.0719)	(0.0629)
Baa3	1.404***	1.420***			
	(0.0732)	(0.0747)			
NR	0.273***	0.248***	0.312***	0.329***	0.218***

Table 2.3 (Continued)

VARIABLES	(1) TIC	(2) TIC	(3) TIC	(4) TIC	(5) TIC
	(0.0291)	(0.0295)	(0.0481)	(0.0614)	(0.0499)
Ln(Par Amount)	-0.0446***	-0.0445***	-0.0508***	-0.0619***	-0.0403**
	(0.00937)	(0.00949)	(0.0144)	(0.0181)	(0.0158)
Ln(Population)	-0.0177**	-0.0154*	0.0123	0.0253	-0.0111
	(0.00840)	(0.00859)	(0.0133)	(0.0159)	(0.0134)
Financial Advisor	0.0347	0.0526**	0.0358	0.0695	-0.00376
	(0.0220)	(0.0227)	(0.0321)	(0.0459)	(0.0323)
Maturity	0.0961***	0.0962***	0.0924***	0.0955***	0.0927***
	(0.00174)	(0.00175)	(0.00286)	(0.00380)	(0.00344)
Federal Tax Exemption	-0.747***	-0.732***	-0.774***	-0.653***	-0.680***
	(0.0419)	(0.0411)	(0.0610)	(0.0674)	(0.0616)
State Tax Exemption	0.0875***	0.114***	0.192	0.290	0.367
	(0.0187)	(0.0190)	(0.267)	(0.300)	(0.260)
Insured	0.129***	0.127***	0.180***	0.194***	0.0951**
	(0.0237)	(0.0243)	(0.0354)	(0.0437)	(0.0436)
Bank Qualified	-0.285***	-0.277***	-0.213***	-0.216***	-0.255***
	(0.0190)	(0.0187)	(0.0299)	(0.0368)	(0.0322)
Callable	0.100***	0.0992***	0.155***	0.144***	0.167***
	(0.0185)	(0.0184)	(0.0337)	(0.0442)	(0.0414)
20- Bond GO Index	0.719***	0.723***	0.737***	0.736***	0.752***
	(0.0187)	(0.0187)	(0.0352)	(0.0445)	(0.0414)
Ln(Debt Per Capita)	-0.0440***	-0.0276***	-0.0323**	-0.0419**	-0.0219
	(0.00920)	(0.00915)	(0.0142)	(0.0177)	(0.0148)
Region	-0.00707	-0.0270*	-0.0623***	-0.0451**	0.0625***
	(0.0116)	(0.0138)	(0.0185)	(0.0203)	(0.0189)
Constant	0.732***	0.561***	0.533	0.334	0.133
	(0.202)	(0.203)	(0.335)	(0.412)	(0.352)
Observations	4,506	4,410	1,561	1,056	1,056
R-squared	0.845	0.849	0.849	0.844	0.876

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2. 4. Results- Hypothesis 4-5

VARIABLES	(1) TIC	(2) TIC	(3) TIC
Commission	-0.0729***		-0.0771**
	(0.0264)		(0.0386)
Elected		-0.259***	-0.249***
		(0.0250)	(0.0327)
Commission*Elected			-0.0746
			(0.0482)
Aa1	0.0398	-0.00539	-0.0335
	(0.0434)	(0.0501)	(0.0476)
Aa2	0.173***	0.130***	0.106**
	(0.0411)	(0.0440)	(0.0430)
Aa3	0.207***	0.170***	0.153***
	(0.0496)	(0.0544)	(0.0536)
A1	0.282***	0.272***	0.250***
	(0.0571)	(0.0586)	(0.0597)
A2	0.386***	0.395***	0.377***
	(0.0847)	(0.0897)	(0.0910)
A3	0.344***	0.281***	0.247***
	(0.0751)	(0.0886)	(0.0912)
Baa1	1.023***	0.829***	0.830***
	(0.190)	(0.181)	(0.189)
Baa2	0.995***	0.828***	0.810**
	(0.286)	(0.316)	(0.330)
NR	0.339***	0.281***	0.263***
	(0.0423)	(0.0442)	(0.0421)
Ln(Par Amount)	-0.0448***	-0.0550***	-0.0486***
	(0.0128)	(0.0141)	(0.0135)
Ln(Population)	-2.11e-05	-0.00314	-0.00927
	(0.0123)	(0.0117)	(0.0117)
Financial Advisor	0.0216	0.0249	-0.00387
	(0.0354)	(0.0280)	(0.0289)
Maturity	0.0954***	0.0936***	0.0940***
	(0.00262)	(0.00264)	(0.00268)
Federal Tax Exemption	-0.715***	-0.763***	-0.752***
	(0.0563)	(0.0559)	(0.0556)
State Tax Exemption	-0.0247	0.193	0.254
	(0.0357)	(0.250)	(0.240)
Insured	0.147***	0.103***	0.0921***
	(0.0339)	(0.0342)	(0.0349)
Bank Qualified	-0.285***	-0.250***	-0.263***

Table 2.4 (Continued)

VARIABLES	(1) TIC	(2) TIC	(3) TIC
	(0.0288)	(0.0298)	(0.0296)
Callable	0.132***	0.169***	0.167***
	(0.0284)	(0.0311)	(0.0312)
20- Bond GO Index	0.718***	0.723***	0.726***
	(0.0315)	(0.0336)	(0.0338)
Ln(Debt Per Capita)	-0.0523***	-0.0398***	-0.0379***
	(0.0131)	(0.0130)	(0.0130)
Region	-0.0427***	-0.00894	-0.00441
	(0.0165)	(0.0149)	(0.0157)
Constant	0.722**	0.907***	0.916***
	(0.296)	(0.319)	(0.319)
Observations	2,102	1,728	1,728
R-squared	0.842	0.851	0.854

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

2.5 Discussion

The results show that an oversight process does increase the borrowing costs of local governments. However, the costs really depend on the features and the rigor of the oversight process. Rigor was first measured in two ways: the timing of the provision of information to the state oversight entities and the use of information by the state oversight agencies. Results show that states in Phase 1 and Phase 2 had higher borrowing costs than states that had no oversight process. In fact, Phase 3 had the lowest borrowing cost. This is contrary to Hypothesis 1 which expected Phase 1 to have the lowest borrowing cost. One potential reason for this might be that capital markets prefer that states have some oversight on their local governments but not in a way that would interfere too much with local government debt issuance. Some oversight may be preferred to no oversight because it could lead to the collection of information on local government debt. Some of the states provide annual local government debt reports on their websites. For example, the Iowa state treasurer's website provides an outstanding obligation report by political subdivision. Detailed reports also exist by county. Since Iowa has an oversight procedure it is also easier to know where to find this information. This allows potential stakeholders to make informed decisions. For states with no oversight procedure, there might not be one place where such consolidated information on local government debt is available. This could make it harder for anyone interested in the fiscal health of local governments of a state to make an informed decision. Moreover, an annual oversight process allows state to monitor local government borrowing while also preserving the freedom of local governments to borrow as per their requirements.

Local governments in Phases 1 and 2 are required to submit information either before they issue or deliver debt, because of which the oversight agencies have the latest information on

local debt. This could give them a possible window to intervene if required. Higher borrowing costs for local governments in these phases could be because financial markets prefer monitoring over active involvement in local government debt issuance. However, among the states that are more actively involved (Phase 1) results also show that borrowing costs are lower for those local governments that go through an approval process. This approval could be based on compliance with the law or the ability to repay indebtedness. Getting the approval from the state oversight agency could be an indicator of the confidence that states have in the local governments ability to repay the debt resulting in local governments enjoying lower borrowing costs. Borrowing costs are also lower for local governments reporting to commissions and to elected officials. Both characteristics might provide confidence to investors as commissions are separately created institutions for the purpose of debt oversight and elected officials are accountable to the public. This paper reveals that it is not only an oversight process that matters but also the type and the administration behind it.

Chapter III

An Examination of the Role of Debt Oversight in the Context of Overlapping Governments

Abstract: Theories of fiscal federalism assert that the actions of one government influences the fiscal decisions of other governments that surround it. Extending this concept to local government borrowing, the literature has determined that the debt of governments has a spillover effect on overlapping governments. Chapter three examines the role of oversight in the context of overlapping governments. More specifically, it assesses whether the debt of county governments in states with oversight is responsive to the debt of its underlying sub-county (or overlapping) governments. To investigate this question, this chapter uses financial data of county governments for the years 2010-2018. Results show that the long-term debt of county governments in the sample does reduce as sub-county overlapping debt increases. A comparison of counties subject to different types of debt oversight reveals that this effect is primarily driven by counties that go through an oversight process, especially a rigorous one.

3.1 Introduction

Fiscal decentralization is a concept that has been adopted by many countries around the world over the last several decades. According to the index of regional authority created by Hooghe, Marks, and Schakel (2010), 70% of countries have decentralized since 1950. While multiple definitions exist, the concept involves providing greater autonomy in terms of revenue and expenditure functions and providing greater decision-making powers to lower levels of government. Bardhan (2002, p. 202) said, "The logic behind decentralization is not just about weakening the central authority, nor is it about preferring local elites to central authority, but it is fundamentally about making governance at the local level more responsive to the felt needs of the large majority of the population."

In the United States, fiscal decentralization has translated into a unique system of governments where the same group of citizens may be served by multiple governments of counties, municipalities, townships, school districts and special districts. For example, the metro area of Pittsburgh has about 463 governments, the most per capita of any metro area with a population exceeding 1 million.[32] This vertical layering of governments is referred to as overlapping governments where each government shares the authority to tax and provide services to a common population (Berry, 2008).

This structure of overlapping governments complicates local government debt management. Local governments in the United States typically issue debt to provide various goods and services to their jurisdiction. Sources of repayment of debt include tax revenue or user fees drawn from the population within their jurisdiction. In an overlapping system of governments, each government that can issue debt, repays it by drawing from a shared tax base. Although there

[32] https://www.governing.com/news/headlines/gov-most-local-governments-census.html

is no consensus on how much debt is affordable, there is a theoretical limit to the amount of debt a certain tax base can support. Therefore, when one government leverages the tax base to issue bonds, this reduces the extent to which another government could utilize the same tax base. Greer (2015) finds that this structure could lead to higher interest costs. Furthermore, if there is a lack of coordination, then it could lead to high borrowing, leading to a high debt burden on the shared tax base. Credit rating agencies such as Fitch includes overlapping debt and growth in resource base to determine the "long term liability burden" of a governmental unit.[33]

In this context, a state oversight agency could act as a centralized coordinating agency as local governments subject to an oversight process, are required to submit information to their respective oversight authority. This provides states with a comprehensive view of total local government borrowing. In fact, according to Secrist (1972), one of the reasons state oversight rules came about is because overlapping governments led to an increase in the overall debt, leading to a circumvention of the debt limit posed on a local government. Secrist (1972) also suggests that in North Carolina, the local government commission approves debt issuance after considering overlapping debt, and borrowing that is burdensome is refused. With the presence of a state oversight process, states are in a unique position to monitor debt issuances by their local governments which in turn could affect the debt issued. Moreover, county governments subject to an oversight process may be more cognizant of their sub-county overlapping debt. This chapter assesses the role and impact of state oversight on county government debt issuance in the context of overlapping governments. More specifically, the research questions are:

[33] https://www.fitchratings.com/research/us-public-finance/fitch-rates-cameron-county-tx-tax-supported-obligations-aa-outlook-stable-14-03-2022

1. How does the overlapping debt of sub-county governments affect the long-term debt outstanding of county governments for counties subject to oversight versus those that are not?
2. How does the effect vary with the rigor of the oversight process?

To answer this question, this chapter relies on unbalanced panel data of county governments from Merritt research services for the years 2010-2018.[34] The Merritt dataset contains detailed financial information for 1213 counties from all 50 states.[35]

3.2 Review of Theoretical and Empirical Literature

The theoretical arguments put forth by the second-generation theorists of fiscal federalism surround the impact of fiscal decentralization on fiscal discipline. Public choice theorists argue that public officials are utility maximizing individuals with their own objective functions who have the incentive to maximize the size of their budgets. This eventually leads to the creation a monolithic public sector that Brennan and Buchanan (1980) term the "Leviathan". The prominent thinkers of this field of inquiry see fiscal decentralization as a solution for controlling rent-seeking public officials as fiscal decentralization would lead to greater inter-jurisdictional competition among local governments (Brennan and Buchanan, 1980). With mobile households and firms, citizens could hold local government officials accountable for their fiscal performance. The threat of exit by residents and firms from higher taxes and poor services could ensure that local government growth is controlled, therefore promoting fiscal discipline (Feld, Kirchgässner, and Schaltegger, 2010; Tiebout, 1956). Further, this system could also clarify the

[34] The data copyright is held by Investortools, Inc. More information on the Merritt dataset is available in Appendix D. State wise breakdown of the number of counties in the original dataset has also been included.
[35] This data was made available through the Municipal Securities Laboratory at Georgia State University.

link between taxes levied and benefits received (Jimenez, 2015). Brennan and Buchanan (1980) argue that the tendency of a government to grow is fueled by the taxpayers' lack of information about the revenues collected and the cost of services provided. Decentralizing would keep residents better informed about the true price of the services provided. An awareness of the costs would also moderate citizen demand for public services, therefore reducing the pressure on budgets to expand. Some scholars find that a high number of local governments leads to a smaller public sector (Feld et al., 2010).

The literature has identified several pathways through which the fiscal decisions of local governments affect similar type of local governments (horizontal competition) and between hierarchical levels of government (vertical competition). Some examples of horizontal competition include inter-jurisdictional tax competition and yardstick competition. The former examines how neighboring governments set attractive tax rates to attract mobile tax bases (Genschel and Schwarz, 2011) while the latter focuses on how electoral competition affects tax setting behavior (Besley and Case, 1992). Other research examines how competition between different types of governments impact fiscal decisions. For example, Jimenez and Hendrick (2010) suggest that fragmentation of general- purpose governments leads to lower spending however fragmentation of special purpose governments leads to an increase in spending. This is because when there are multipurpose governments, offering the same services, there is likelihood of greater competition as opposed to a special district that offers one type of service.

Vertical competition exists when the actions of one level of government affects a higher level of government. An important thread of research within this literature is of the system of overlapping governments where the same group of citizens are being served by numerous governments. This structure of governments in the United States presents a situation where fiscal

decentralization could lead to fiscal excesses. With overlapping governments, there is no longer the threat of exit as described by Tiebout (1956) as the governments are sharing the authority to tax and provide services to a common population. Researchers argue that the sharing of a tax base could lead to a fiscal commons problem leading to higher spending and taxation (Berry, 2008). This is because specific type of governments may be serving only a subset of the local taxpaying population but are nevertheless collecting revenues from taxpayers in a given geographic area. Berry (2008) finds that there is a positive association between the number of overlapping jurisdictions per municipality and local expenditures and own source revenues. In fact, Campbell (2004) argues that the failure to control for the vertical relationship between a municipality and a county leads to overestimations of the impact of fiscal decentralization and fragmentation on expenditure. Turnbull and Djoundourian (1994) find that overlapping governments have a complementary relationship where spending at the county level increases spending at the municipal level. This leads to higher spending rather than competition. The increase in special districts adds to the complexity of the structure of overlapping governments as district officials have fiscal independence. Moreover, the complex structure makes monitoring hard making it difficult for citizens to understand their overall tax or debt burden. Elected officials may adopt less visible sources of revenue as citizens are more likely to be sensitive to the variations in their tax bill (Krane, Ebdon, and Bartle, 2004). Moreover, the lack of a complete understanding of the cost of provision of services could lead to a non-transparent and growing fiscal purse.

Limited literature has examined the impact of overlapping governments in the context of local government borrowing. Some scholars find that overlapping jurisdictions lead to greater amount of borrowing. This could be due to lack of coordination as shown by Hildreth and Miller

(1994) in their case study on Riverside County which found that the lack of coordination between the overlapping governments led to debt issuances that placed enormous burdens on the tax-payer community. It could also be due to the presence of special districts as these districts are created to issue more debt than allowed under debt limits placed on general purpose governments. Faulk and Killian (2017) and Jimenez (2015) examine the relationship between special districts and borrowing and find that a higher number of special districts is associated with higher long term debt outstanding. Shi and Hendrick (2020) also find that an increase in fragmentation, measured as the count of overlapping jurisdictions and Hirschman- Herfindahl index of capital spending categories, leads to an increase in debt at the state and local level. Brien and Yan (2020) discuss the mimicking effect and argues that an increase in overlapping debt signals that local voters are willing to pay for additional public services leading to higher levels of debt. These studies indicate that there is limited competition among the overlapping governments leading to an increase in overall borrowing, supporting the idea that the shared tax base is a fiscal common pool resource (CPR).

Furthermore, the fragmented financial reporting of overlapping jurisdictions may reduce the public transparency of the overall debt burden. The Governmental Accounting Standards Board (GASB) issued Statement 44, which requires the statistical section of a government's comprehensive annual financial report to include information about direct and overlapping debt related to governmental activities. However, according to the Generally Accepted Accounting Principles (GAAP), it is not mandatory to disclose the statistical section of the financial report (Denison and Greer, 2014). Lack of transparency could lead to an overall higher debt burden.

Hildreth and Miller (1994) argue that to develop a better understanding of debt burden, it is important to focus on overlapping debt as it captures the total amount of debt (issued by multiple

governments) that the underlying tax base is responsible for repaying. Therefore, when one government leverages the tax base to issue bonds, this reduces the extent to which another government could utilize the same tax base thus increasing their risk of default. This leads to Greer (2015)'s reference of debt capacity as a common-pool resource which could be a source of debt competition in the context of overlapping governments. He argues that each jurisdictions issues debt to increase its own utility or to maximize a citizen's utility thus receiving a positive benefit. However, this may cause an overlapping government to pay higher interest rates as both governments pledge debt from the same tax base. This increase in interest rates is due to the limit to which the tax base can support debt issuance without risking default or creating budgetary constraints (Denison, Hackbart, and Moody, 2009). Therefore, debt issuance by one government entity could reduce the debt capacity available for other overlapping governments leading to higher default risk and therefore higher borrowing costs (Greer, 2015). This creates a debt competition scenario where governments compete on timing and issue size of their debt in the pursuit of favorable municipal interest costs. In fact, Martell (2007) finds that as the number of overlapping jurisdictions increases, the debt burden reduces. A potential explanation is that local governments are aware of the potential premium that they would pay and therefore this could affect the amount of debt that they issue. These studies are an indication of debt competition among overlapping governments.

Hildreth and Miller (1994) and Denison and Greer (2014) suggest formal methods of debt coordination that could allow the coordination of debt issuances among these overlapping governments. They cite North Carolina's Local Government Commission as an example of an authority that can coordinate its local governments debt issuances as it approves and conducts the sale of every local debt issue. By extension, this paper asks whether the presence of an oversight

process established by state governments leads to greater coordination of borrowing among the various local governments issuing debt. To test this, the paper focuses on the debt of county governments as well as that of its sub-county governments.

3.3 Hypotheses

There are two broad implications from the literature on overlapping governments and borrowing. First, overlapping governments could lead to high levels of borrowing due to reasons such as lack of coordination, the complexity of government structures, increase in the number of special districts, the limited awareness of citizens about their real debt burden or a mimicking effect. Second, the high cost of borrowing due to debt issuances by overlapping governments could restrict the amount of debt issued. This study draws from both literatures to build hypotheses regarding the impact of debt oversight.

In the context of overlapping governments, a debt oversight process by the state could affect county borrowing in two main ways. The first mechanism through which sub-county overlapping debt could have an impact on overall debt issued by county governments is through the oversight agencies themselves.[36] Each state that has established an oversight process, requires all their local governments to submit debt related information each time they want to issue debt. For those states in Group A (Phase 1), local governments are just required to submit information while those in Group B2 are required to receive approval (on the basis of ability to pay) from the oversight agency before issuing any debt. This provides the state with the latest information regarding the debt issued by all their local governments, which allows them to have a comprehensive view of total local government borrowing within the state. Therefore, they are in

[36] Underlying debt of the sub-county governments is referred to as "sub-county overlapping debt" throughout this chapter.

a unique position to coordinate debt issuances where if there is a high debt burden or high interest costs, they could intervene or provide a certificate of disapproval. In the context of county and sub-county governments, as the overlapping debt of sub-county governments increases, it is possible that county governments would not get the approval from the state since high sub-county debt could increase the overall debt burden of taxpayers in the county.

The second mechanism by which oversight could have an impact on county government borrowing, is through the transparent provision of debt related information of local governments. An oversight process provides citizens with a single location where they can access debt related information. The oversight agencies are repositories of debt related information about all local governments which is often published on their website. The data could be in the form of spreadsheets with data on debt outstanding of all local governments or it could be public records of the meetings when the approval process takes place. The provision of data in this manner, provides citizens with the opportunity to understand their debt burdens and also compare debt burdens with counties of similar socio-economic conditions. Furthermore, as part of the oversight process, states like Michigan and Pennsylvania require their local governments to publish notices of their ordinance each time a local government wants to borrow. This makes citizens more aware of the debt that is intended to be incurred. In Pennsylvania, citizens can object to the issuance.[37] The department only provides approval once the citizen and the local

[37] In a complaint against the Methacton School District, Montgomery County, Pennsylvania, John L. Andrews (the Complainant) filed a complaint stating that the estimated useful life of the "Project" (synthetic fields) was less than what the School District claimed and that the synthetic fields would have to be replaced before the bonds will be paid off. This complaint was based on Section 8142 of the Local Government Unit Debt Act which states that "No bonds or notes shall be issued with a maturity date exceeding the useful life of the project being financed…" The complaint was dismissed eventually by the Department of Community and Economic Development (DCED) because the school district, in their debt proceedings revealed that the maturity date for repayment of all principle of the Note would be on or before the expiration of the useful life of the project. However, this shows that citizens do have the opportunity to raise their objections to an issuance by a local government, leading to a review by the DCED (the oversight authority in Pennsylvania).
http://dced.state.pa.us/lguda/opinions/res/lguda-134.pdf

government concerned resolve matters. Any citizen could access these documents and determine the total indebtedness that they are subject to therefore improving the transparency of the process. The oversight process could make county governments more cognizant of their sub-county overlapping debt therefore leading to lower borrowing. This could result in lower issuance of debt in comparison to when there is no oversight. Therefore,

1. H1: For counties subject to oversight, as sub-county overlapping debt increases, the long- term debt outstanding of county governments decreases.
2. H2: For counties subject to an approval process, as sub-county overlapping debt increases, the long- term debt outstanding of county governments decreases.

3.4 Data and Methodology

To test these hypotheses, this paper relies on unbalanced panel data of county governments from Merritt Research Services for the years 2010-2018. The Merritt dataset contains detailed financial information for 1213 counties from all 50 states, collected from their respective audited comprehensive annual financial statements. This dataset is a repository of financial data tailored to be used by anyone concerned about the credit of municipal bond obligors. This dataset is predominantly used by institutional investors, investment bankers and credit analysts.[38]

Initial analysis includes county governments within all states in the sample to determine the relationship of overlapping debt to debt outstanding of county governments (Group A and B, Table 3.1).[39] To understand the impact of oversight, the analysis is limited to those states that require their county governments to report before they issue debt. This provides the states with

[38] The data copyright is held by Investortools, Inc. More information on the Merritt dataset is available in Appendix D.
[39] The analysis was also done with states in Phase 2 and Phase 3. The results remained consistent.

an opportunity to intervene in debt issuances if needed or provide data regarding local government borrowing. Limiting the analysis to these states would provide a clearer estimate of whether the debt of sub-county governments has an impact on county debt in states with an oversight process. This includes group A1 (States that are required to submit some information before issuing debt) and Group A2 (States that grant county governments approval based on the ability to pay) which includes the state of Louisiana, Pennsylvania, North Carolina and Michigan. Massachusetts dropped out of the analysis due to missing observations. Counties that are required to get approval based on compliance with the law have been excluded from the analysis because the approval would be based on legal aspects and therefore it would not have a direct impact on financial indicators.

Although the Merritt dataset contains data on 1213 counties across all 50 states, the analysis focuses on 214 counties from the year 2010 to 2018. There are 97 counties in Group A and 117 counties in Group B (Table 3.1). This is because of the missing data associated with the variables in the models.[40] The breakdown of the number of counties by oversight category is given in Table 3.1.

[40] The Merritt dataset contains data on 1213 counties. These are counties that the market believes is important to track. The number of counties in the sample reduce from 1213 to 750 counties because the analysis was limited to those states that were in Phase 1 of the oversight process and those that were not subject to an oversight process. Upon dropping the missing observations in overlapping debt and long-term debt (the main dependent and independent variable), the number of counties reduce to 350 counties. Missing data on overlapping debt does not indicate that the county has no sub-county overlapping debt. It might be because the county government does not report this information on their annual financial reports. 37 counties were dropped due to limiting the number of years to 2010-2018. The remaining counties dropped out due to missing observations on the other independent variables in the model. Based on a simple difference of means test, those counties that had missing data on long term debt and/or overlapping debt had a higher population, higher median income, higher median housing value and lower unemployment rates.

Dependent Variable

The variable of interest in this chapter is the long- term debt outstanding, standardized by population, income and $100 of total tax revenue (Governmental Activities[41]) of county governments. Long term debt outstanding refers to debt with maturities that exceed one year. Since there is a significant right skew and to minimize the effect of outliers, this chapter uses the log transformed values of long-term debt outstanding (Figure B.1).

Independent Variables

Research examining debt issuances has looked at the factors that influence the amount of debt. Socio-economic factors such as population, median income and fiscal health are indicators of the demand for goods and services. In this paper, the long-term debt is assumed to be a function of indicators of demand for public service such as population, median income and unemployment and government fiscal health such as unrestricted net assets and total tax revenue. As population increases, the capital improvement needs increase as a government has to accommodate the rising resident population. Moreover, high income residents may prefer tax-exempt debt financing as it could help reduce their current tax burdens. Unrestricted net assets and total tax revenue have been included in the analysis because they are important indicators of the size of government as well as the fiscal capacity and flexibility. To account for the differences in the responsibilities of county governments with respect to other local governments, the model also controls for the percentage of county government own source revenues (OSR) in total local government own source revenues (referred to as share of county

[41] According to Statement No.34 of the Governmental Accounting Standards Board 1999, governmental activities refer to activities financed by taxes and intergovernmental revenues and other non-exchange revenues. These activities are usually reported in governmental funds and internal service funds (Page 9).

OSR).[42] This data was obtained from the Census of Government data 2007, 2012.[43] The mean values for share of county OSR of counties that are subject to an oversight process is 0.33 and those that are not subject to an oversight process is 0.34. There is no statistically significant difference between the share of county revenue with total local government revenue in oversight versus no oversight states.

The key independent variable of interest is the overlapping debt per capita of county governments. This refers to the county's share of the debt of sub-county governments that underlie it. It is determined by the ratio of assessed valuation of taxable property lying within the limits of the county to the assessed valuation of each sub-county overlapping government. This data is published in the audited annual financial reports of county governments and is used by credit rating agencies to determine a government's long- term liabilities. Counties that have zero overlapping debt have been dropped out of this analysis. All the variables exist at the county government level (i) for each year (t). Table 3.2 contains the summary statistics.

For panel datasets, the most common methods of analysis are pooled OLS regression, a fixed effects or a random effects regression (Wooldridge, 2015). The pooled OLS regression was dropped as the null hypothesis of the Breusch and Pagan LM test, which helps to choose between a random effect and a pooled OLS was rejected (p=0.00).[44] This suggests that a random effects model is appropriate. To choose between the fixed and random effects model, the Hausman test, was conducted. The Hausman test provided a value of 0.02, rejecting the null hypothesis that a random effects model is appropriate. Therefore, this analysis uses the fixed effects model with

[42] Share of County OSR= County Own Source Revenues/ (County+ Municipality+ Special District) Own Source Revenues.
[43] Data for the remaining years were imputed using the straight-line method.
[44] The null hypothesis of the LM test is that variances across entities is zero, which means that there is no significant difference across units (no panel effects). Source: https://www.princeton.edu/~otorres/Panel101.pdf

county and year fixed effects.[45] The policy variation across counties and across time enables a two-way fixed effects model that controls for time invariant, county specific characteristics. Controlling for these characteristics is important as it accounts for any omitted variables that might be affecting the financial indicators used in this model. Year fixed effects accounts for any changes that are common to all counties in the dataset in a given year. The model is as follows:

$$\text{Lnlongtermdebt}_{it} = a_0 + a_1 \ln(\text{OverlappingDebt})_{it} + a_2 \ln(\text{Population})_{it} + a_3 \ln(\text{Median Income})_{it} + a_4(\text{Unemployment Rate})_{it} + a_5 \ln(\text{Unrestricted Net Assets})_{it} + a_5 \ln(\text{Total Tax Revenue})_{it} + a_6(\text{County Share})_{it} + \text{Year}_t$$

3.5 Results

This section summarizes the results presented in Table 3.3 (debt standardized by population), Table 3.4 (debt standardized by income) and Table 3.5 (debt standardized by tax revenue). The fixed effects models uses robust standard errors. Model 1 in Table 3.3 examines the impact of overlapping debt on long term debt outstanding among all states (Group A and B). Model 2 and 3 limits the analysis to those counties that are just required to submit information (Group A1) and those that are required to go through an approval process where the approval is based on ability to pay (Group A2).

[45] Dynamic Panel Modelling using the Arellano- Bond GMM estimator was attempted as it may be argued that the debt of a county for a given year is dependent on the debt of its previous year. However, the results were only significant for long term debt per dollar of tax revenue and not for long term debt standardized by population or income. This could be because the number of instruments were greater than the number of groups which could lead to biased results.

Table 3. 1. States by Number of Counties in the Sample

States with Oversight (Group A)	Number of Counties
Submission of Information (Group A1)	
California	17
Delaware	3
Florida	16
New Mexico	3
South Carolina	14
Approval (Group A2)	**Number of Counties**
Louisiana	4
Michigan	22
North Carolina	9
Pennsylvania	9
Total	**97**
States with no oversight (Group B)	**Number of Counties**
Colorado	8
Idaho	2
Illinois	9
Maryland	1
Minnesota	23
Montana	3
New York	7
Ohio	27
Utah	4
Oregon	9
Virginia	3
Wisconsin	21
Total	**117**

Table 3. 2. Variable Description and Descriptive Statistics

Variable	Variable Description	Mean	Std. Dev	Min	Max
Long Term Debt	Debt with maturities exceeding one year. Measure: Ln (Debt per capita, $100 of tax revenue and income)	101989.6	248563.8	16	2934807
Overlapping Debt	A county's share of the debt of its political subdivisions or the special districts sharing its geographical area. It is usually determined by the ratio of assessed valuation of taxable property lying within the corporate limits of the municipality to the assessed valuation of each overlapping district. Note: Here overlapping debt refers to the share of the **sub-county** debt. Measure: Ln (Overlapping Debt per capita)	719772	1846100	5	2.86e+07
Unrestricted Net Assets	Unrestricted assets that is not restricted or invested in capital assets, net of related debt Measure: Ln (Unrestricted Net Assets per capita)	50802.19	100032.3	12	1402813
Total Tax Revenue	Sum of all tax revenue including property tax revenue, sales tax and income tax) Measure: Ln (Total Tax Revenue per capita)	70445.87	119643.5	3065	1712448
Population	Population within a county Measure: Ln (Population)	275776.8	409715.4	23530	4657972
Income	Median Household Income Measure: Ln (Income)	54067.52	12191.02	28426	105667
Unemployment Rate	Percentage of persons over age 16 and unemployed	6.767	3.029	1.4	26.6

Share of County OSR	Share of county government own source revenues to total local government own source revenues[46]	0.341	.225	3.019E-12	0.99

All regressions controls for local characteristics such as population, median income, unemployment rate and characteristics of the government such as total tax revenue, unrestricted net assets and the share of county own source revenue in total local government own source revenue. Note that the r-square of the fixed effects model is low. A potential explanation for this could be that long term debt outstanding and overlapping debt are slowly changing variables. Bartels (2008) defined "slow changing variables" in panel data as the variables that do not change much over time. He argues that fixed effects models cannot give good estimates of slowly changing variables. Figures (B.2-B.5) contain graphs for the first differences of long-term debt per capita for counties for the states of NC, LA, MI and PA. The graph suggests that apart from a few counties, most show limited variation for the time period of 2010-2018.

Column 1 in Table 3.3 indicates that for all counties in the sample, overlapping debt has a negative relationship with the outstanding debt. The direction of the results are consistent with Martell (2007) who finds that as the number of overlapping jurisdictions increases, the debt issued reduces. However, the relationship is not statistically significant which suggest that there is no coordination of debt issuances between the county and sub-county governments. If county governments are facing high borrowing costs as the number of overlapping jurisdictions increases, as suggested by Greer (2015), then by not adjusting their borrowing, the burden of repayment on the population within the county could be high.

[46] Total local government own source revenue includes county, municipality and special district own source revenue.

The analysis is further divided into counties that just have to submit information and those that have to receive approval based on ability to pay. Columns 3 in Table 3.3 shows that for those counties that just have to submit information, an increase in overlapping debt has a statistically significant impact on long term outstanding debt. However, these results are significant only at the 10% level. Every 10% increase in sub-county overlapping debt leads to a 1.2% decrease in long term debt. Column 3 in Table 3.3 show that for those counties that go through an approval process, the overlapping debt has a negative impact on long term debt outstanding. The fixed effects estimates show similar effects where an increase in sub-county overlapping debt is associated with 1.5% decline in long term debt outstanding.[47] These findings are consistent for debt standardized by tax revenue and income which suggest that counties that are subject to the most rigorous form of oversight (approval based on ability to pay) are responsive to the overlapping debt of their sub-county governments. Oversight authorities may be proactively examining the overall debt of a particular county before providing approval or counties that know that they must go through this process might be more cognizant of their overall debt burden.

[47] Lagged values of overlapping debt per capita were used to determine if county borrowing was responding to sub-county borrowing of the previous year. However, these results were not significant. One possible explanation for this is that, at the state level, the oversight agencies have the most recent data. For example, the State Bond Commission of Louisiana requires its local governments to submit not only their latest annual financial report but an interim financial report that covers the period from the last financial report. https://www.treasury.la.gov/_files/ugd/882bef_898145d05bc24ffda7309bdade085f41.pdf

Table 3. 3. Long Term Debt Outstanding Standardized by Population

VARIABLES	(1) All states	(2) Submission of Documents	(3) Approval: Ability to Pay
Ln(OverlapingDebtPerCapita)	-0.0242	-0.129*	-0.151**
	(0.112)	(0.0645)	(0.0680)
Ln(MedIncPerCapita)	-0.992	1.444	-2.237
	(1.516)	(2.301)	(2.602)
Ln(TotalTaxRevPerCapita)	0.767***	0.706*	0.443
	(0.267)	(0.387)	(0.741)
Ln(UnrestrictedNetAssetsPerCapita)	-0.00415	0.0399	-0.0369
	(0.0257)	(0.0417)	(0.0505)
Ln(Population)	-3.867	-2.048	0.412
	(2.393)	(5.880)	(3.090)
Unemployment Rate	0.00175	-0.0380	-0.0189
	(0.0344)	(0.0682)	(0.0378)
Share of County OSR	-0.0101	0.0659	-1.092
	(0.615)	(0.500)	(1.507)
Year Dummies	Yes	Yes	Yes
Constant	45.20*	28.25	-8.206
	(27.17)	(70.76)	(34.81)
Observations	947	266	305
R-squared	0.039	0.101	0.056
Number of Counties	160	54	50
Number of States	21	5	4
Constant	45.20*	28.25	-8.206

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. 4. Long Term Debt Outstanding Standardized by Income[48]

VARIABLES	(1) All states	(2) Submission of Documents	(3) Approval: Ability to Pay
Ln(OverlapingDebtPerCapita)	-0.0242	-0.129*	-0.151**
	(0.112)	(0.0645)	(0.0680)
Ln(MedIncPerCapita)	-1.992	0.444	-3.237
	(1.516)	(2.301)	(2.602)
Ln(TotalTaxRevPerCapita)	0.767***	0.706*	0.443
	(0.267)	(0.387)	(0.741)
Ln(UnrestrictedNetAssetsPerCapita)	-0.00415	0.0399	-0.0369
	(0.0257)	(0.0417)	(0.0505)
Ln(Population)	-3.867	-2.048	0.412
	(2.393)	(5.880)	(3.090)
Unemployment Rate	0.00175	-0.0380	-0.0189
	(0.0344)	(0.0682)	(0.0378)
Share of County OSR	-0.0101	0.0659	-1.092
	(0.615)	(0.500)	(1.507)
Year Dummies	Yes	Yes	Yes
Constant	45.20*	28.25	-8.206
	(27.17)	(70.76)	(34.81)
Observations	947	266	305
R-squared	0.035	0.088	0.068
Number of counties	160	54	50
Number of States	21	5	4

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[48] According to Stata, the coefficient in the fixed effects regression depends upon yit minus the within-group means. As a result, the dependent variables in Table 3.3, 3.4 and 3.5 have almost same distributions leading to identical coefficients. See Figure B.6.

Table 3. 5. Long Term Debt Outstanding Standardized by Tax Revenue

VARIABLES	(1) All states	(2) Submission of Documents	(3) Approval: Ability to Pay
Ln(OverlapingDebtPerCapita)	-0.0242	-0.129*	-0.151**
	(0.112)	(0.0645)	(0.0680)
Ln(MedIncPerCapita)	-0.992	1.444	-2.237
	(1.516)	(2.301)	(2.602)
Ln(TotalTaxRevPerCapita)	1.767***	1.706***	1.443*
	(0.267)	(0.387)	(0.741)
Ln(UnrestrictedNetAssetsPerCapita)	-0.00415	0.0399	-0.0369
	(0.0257)	(0.0417)	(0.0505)
Ln(Population)	-1.867	-0.0483	2.412
	(2.393)	(5.880)	(3.090)
Unemployment Rate	0.00175	-0.0380	-0.0189
	(0.0344)	(0.0682)	(0.0378)
Share of County OSR	-0.0101	0.0659	-1.092
	(0.615)	(0.500)	(1.507)
Constant	40.60	23.64	-12.81
	(27.17)	(70.76)	(34.81)
Observations	947	266	305
R-squared	0.124	0.197	0.087
Number of counties	160	54	50
Number of States	21	5	4

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.6 Discussion

The system of overlapping governments in the United States is a product of the highly decentralized system of governance. Scholars argued that the large number of governments would lead to increased competition and as a result, fiscal discipline. However, the vertical layering of governments leads to multiple governments sharing the same tax base. As a result, governments are no longer competing for residents but are sharing the authority to tax and provide services to many of the same citizens within their jurisdiction. This could lead to government excesses, especially when the costs of a service are more spread out than the benefits which are concentrated on a few. Scholars have found that increase in the jurisdictional overlap leads to an increase in overall borrowing. However, Martell (2007) and Greer (2015) find that a high number of overlapping governments, could raise the interest cost of borrowing, leading to a tempering of county government borrowing.

This paper examines the relationship of county government borrowing with respect to sub-county borrowing across nine states and finds that there is a negative relationship between sub-county borrowing and overall borrowing. This is in line with research by Martell (2007) in Jefferson County, Colorado and Greer (2015) in Texas. However, this result is not statistically significant, which means that there is no coordination of borrowing taking place between sub-county and county governments. A lack of coordination could be detrimental as it could lead to high debt burdens on a shared tax base.

In this context, state oversight authorities play an important role as it could act as a centralized coordinating agency among the various local governments. This is especially true for those oversight authorities that grant approval based on ability to pay. The processes established allows states to have a more comprehensive view of local government borrowing as they have

data on total debt outstanding of all local governments. The oversight process also ensures that local governments have the most recent information about their total level of borrowing allowing them to make informed decisions based on the most recent data. The results from the analysis shows that for those counties subject to an oversight process, as sub-county overlapping debt increases, the long-term debt issued by the county governments reduces.

Borrowing is an important tool that helps local governments to finance important infrastructure projects. This chapter does not indicate that higher levels of borrowing has negative implications however, it builds on the premise that theoretically, there is a limit to which a shared tax base can support high borrowing, especially long-term debt. Although there is no consensus on what constitutes affordable debt, a high debt burden on the same tax base, especially more than the tax base can support could negatively affect the taxpayers, the municipality as well as the underlying economy. The results of the analysis provides an early indication of the supervisory role of the state in local government debt issuance. It shows that county governments that are subject to oversight are more responsive to their sub-county overlapping debt when they decide to borrow. These results suggest that an oversight process does play an important role in reducing the long-term debt burden of county governments

Chapter IV

Debt Oversight of Water-Sewer Funds: An Analysis of Utility Borrowing

Abstract: Local governments have traditionally been the dominant investor in water-sewer utilities. However, despite the high levels of investment, there is a significant gap in the amount of investment required to maintain the provision of services. Water-sewer systems face rising costs due to aging infrastructure, changes in economic conditions, population levels and rising labor costs. Borrowing provides these systems with a source of capital funding, however, with increased financial stress, it may become difficult for local governments to borrow to invest in their services. An oversight rule which requires them to get approval before they issue debt could impact their borrowing. This chapter first investigates the association between the debt issued and financial health ratios of the utility using data on water and sewer enterprise funds for the years 2010-2018. It then assesses the impact of oversight on debt per capita. Based on financial ratios, the results suggest that, on average, utilities are in a financially healthy situation. As a result, the impact of oversight does not restrict the amount a utility can borrow, allowing utilities to borrow as per their requirements.

4.1 Introduction

Water and Sewer systems are services essential to sustaining the economic and social viability of a community. In the United States, there exist approximately 153,000 public drinking water systems and more than 16,000 publicly owned wastewater treatment systems.[49] The drinking water systems serve more than 80% of the population and 75% of the population has its sanitary sewage treated by the wastewater systems.[50] Local governments are responsible for a major portion of the water-sewer infrastructure spending as they have received limited financial support from the federal and state governments. Based on 2017 census data on local government expenditures and revenues, combined water and sewer spending by local governments was estimated to be $125.5 billion. Water spending accounted for $70.2 billion (56%) and sewer spending for at $55.3 billion (44%).[51] However, despite the high investments, the cumulative investment gap is expected to widen to about $655 billion in water infrastructure.[52] In 2021, the American Society of Civil Engineers (ASCE) gave U.S drinking water infrastructure a C- grade, (mediocre conditions with significant deficiencies) with heavy investment needed to remedy the problems.[53] For the wastewater infrastructure, the grade is D+. In response to the investment gap in the water-sewer sector, the Biden Administration, on March 31, 2021, proposed a historic $111 billion investment in water infrastructure (Webster, 2021).[54] However, analysts suggested that such a historic amount would only fund about 25% of the level of projects that the

[49] The public drinking water systems can be public or privately owned.
[50] https://www.cisa.gov/water-and-wastewater-systems-sector
[51] Local Government Invests Record $125.5 Billion in Municipal Water and Sewer Infrastructure and Services in 2017, Access Date: June, 2022, URL: https://www.usmayors.org/2019/11/26/local-government-makes-record-high-investments-in-public-water-sewer-infrastructure/
[52] https://blog.epa.gov/2016/07/12/the-time-to-invest-in-americas-water-infrastructure-is-now/
[53] https://infrastructurereportcard.org/wp-content/uploads/2017/01/Drinking-Water-2021.pdf , https://www.statista.com/topics/4843/us-wastewater-and-sewage-industry/
[54] The Bipartisan Infrastructure Law finally passed $55 billion (half the amount proposed) to expand access to clean drinking water.

Environment Protection Agency (EPA) says is needed, leaving local governments to fund the remaining amounts (Webster, 2021).

To fund the investments gap, local governments rely on two main methods of financing infrastructure. The pay-as-you-go method, which refers to the use of revenues raised currently through user fees or taxes or the pay-as-you-use where local governments can borrow with the promise of repayment from future revenues (Chen and Bartle, 2017; Greer, 2020). The burden of both types of financing falls on the taxpayers or users of the system. The choice between both depends on factors such as economic conditions, revenues, lifespan of assets and budgetary institutions (Wang, Hou, and Duncome, 2007). Chen and Bartle (2017) suggest that pay-go financing is most used when the project sizes are small or if there is limited access to debt, local governments are closely approaching their debt limits, or there are prohibitions in the use of debt. A Standard and Poor (S&P) report suggests that utilities tend to fund a greater position of system capital needs on a pay-as-you-go basis.[55] Routine replacement of existing plants and normal improvements are generally financed by utility rate revenues (Mann, 1999). Debt financing is typically used for large investment where the costs are spread out through the life of the asset. In 2013, local governments held more than $1.7 trillion in long-term debt, diminishing their capacity to take on more debt (Anderson, 2013). Moody's analysts suggest that currently, water and sewer utilities would have to issue three to four times as much debt as they have been to fund the much-needed improvements (Webster, 2021). Other forms of financing include sinking funds, reserves, federal or state grants and public private partnerships.

[55] U.S. Municipal Water and Sewer Utility Sector is Stable as Median Ratios Show Improved Finances. Accessed: April, 2022. URL: https://www.spglobal.com/ratings/en/research/articles/190823-u-s-municipal-water-and-sewer-utility-sector-is-stable-as-median-ratios-show-improved-finances-11105713

Four states require their local water-sewer utilities to receive the approval of their respective state oversight authority before they issue debt. The debt oversight rules of the states of North Carolina, Michigan, Louisiana, and Pennsylvania require that any debt issued by the utility must receive the approval of the state oversight authorities based on its ability to pay.[56] The oversight process is especially important in the context of water-sewer utilities as they are facing rising capital needs but are also facing rising operating expenditures making it difficult for utilities to maintain self- sufficiency.[57] According to a recent 2017-2018 forecast by Bluefield Research, over the last ten years, utilities operating expenditure has risen 15%, projected to cross $93.8 billion in 2027.[58] Some reasons for the rising costs include old infrastructure, scaling populations and tightening environmental regulations. As assets tend to be underground or in other hard-to-service areas, the repair costs associated with system failures may be very high and may vary dramatically among assets (Gaur, Cruz, and Atwater, 2014). With increasing age of existing assets, utilities are facing significant capital expenditures to replace those that have exceeded their useful life. Furthermore, the EPA has increased regulatory requirements related to water quality which increases the overall operating costs of the utilities (Gaur et al., 2014). However, despite these issues, credit rating agencies provide utilities with high credit ratings. As of 2019, 46% of the utility ratings by Standard & Poor were in the 'A' category and 43% were in the

[56] **NC**: General Obligations Bonds, Revenue Bonds, Special Obligations Bonds, Project Development Financing Bonds (Among other type of securities). Information retrieved from https://files.nc.gov/nctreasurer/documents/files/SLGFD/LGC/LocalGovDebtMngmt/lgc_approval_flowchart1.pdf
MI: General Obligation Bonds, Revenue Bonds, IPA, Line of Credits, Notes: Information retrieved from: https://www.michigan.gov/documents/treasury/Instructions_for_Application_to_Issue_LTPA_507757_7.pdf
LA: LSA-R.S. 39:1410.60
PA: https://dced.pa.gov/download/lguda-full-text-pdf/?wpdmdl=57730
[57] Operating Expenditure is the cost that a utility incurs for running day-to-day operations such as rent, wages, administrative and general expenditure, depreciation.
[58] https://waterfm.com/report-opex-water-wastewater-utilities-nearing-100-billion-per-year/

'AA' category.[59] Only about 3% were rated BBB+ or lower. Utilities in major metropolitan areas with a large customer base or relatively younger utilities with fewer capital needs to manage aging infrastructure tend to be highly rated by credit rating agencies. This could be due to multiple reasons such as the belief that utilities are monopoly providers of services and therefore have the independence to make rate changes to cover costs, most utilities have a direct relationship with governmental entities which would be able to subsidize utilities in the event of financial stress and, utilities have debt service burdens that are higher than general governments as measured by the percentage of revenues reflecting a higher ability to repay debt.[60] However, despite the high credit ratings, there is still a possibility of risk. For example, Jefferson County Sewer Enterprise could not pay their debt service due to a liquidity problem that they faced during the Great Recession. In fact, Standard & Poor and Fitch Ratings reported a stable outlook for municipal water wastewater and drainage utilities at a time when utilities were scrambling to stay financially sound in the midst of revenue shocks after the great recession (Boyle, 2014).

In this context, the importance of an oversight process increases as states requires utilities to submit objective financial ratio information directly to oversight agencies to receive approval before they can issue debt, allowing the oversight authority to make an objective assessment of a utility's ability to repay debt. The oversight authorities in the respective states assess ability to pay using financial ratio information such as quick ratios, debt service coverage ratios, net revenues before the approval to borrow is provided. For example, on May 19, 2022, the State Bond Commission of Louisiana reviewed an application by DeSoto Parish to issue revenue

[59] U.S. Municipal Water and Sewer Utility Sector is Stable as Median Ratios Show Improved Finances. Accessed: April, 2022. URL: https://www.spglobal.com/ratings/en/research/articles/190823-u-s-municipal-water-and-sewer-utility-sector-is-stable-as-median-ratios-show-improved-finances-11105713. Ranking of Credit Ratings (from high to low): AAA, AA+, AA, AA-, A+, A, A-, BBB+ or lower. These ratings are based on 1200 utilities.
[60] U.S. Water and Sewer Rating Criteria, Fitch Ratings. Accessed in: April, 2022. URL: https://www.mwdh2o.com/media/17730/fitch-report-us-water-and-sewer-rating-criteria-november-2018.pdf

bonds of $3,500,000 to expand its water treatment plant capacity. The debt service coverage ratio at the time of application was 2.06 which means that the utility has enough revenue to pay operating and maintenance costs and debt service and still have a buffer for lean years. However, with the new debt issuance, the additional debt service was $223,915 which reduces the debt service coverage ratio from 2.06 to 1.1, just enough operating income to cover its annual debt and interest payments. [61] Additional debt service requirements, without a corresponding increase in annual income, could lead to lower ability to issue and repay debt. If an oversight agency does not give approval when there is limited ability to repay debt (as indicated by financial health ratios), then it acts as a hard budget constraint for the utilities. However, the ability of the oversight authority to approve borrowing, even if a utility may not have the ability to repay introduces a source of softness to the budget constraint.

This paper is an exploratory attempt to understand the role of oversight in the context of water-sewer utility borrowing. It first examines whether there is any association between financial health ratios and overall borrowing in utilities subject to oversight. It then examines, the impact of the oversight process on overall borrowing. In order to answer these questions, the paper uses data on water-sewer enterprise funds of city governments. Since water-sewer utilities typically rely on user fees and other fees such as development impact fees and connection fees as a major source of revenue, the utility is classified as a "business type activity". According to the Governmental Accounting Standards Board (Paragraph 67c of Statement 34), "an activity should use enterprise fund accounting and reporting principles if the pricing policies of the activity establish fees and charges designed to recover its costs, including capital costs (such as depreciation and debt service)" (Governmental Accounting Standard, 2001). The classification as

[61] Debt Service Coverage Ratio= Annual Net operating Revenue/Annual Debt Service

an enterprise fund requires that all aspects of operations, maintenance, and capital investments are addressed in a financially independent and self-sufficient manner.

4.2 Review of Theoretical and Empirical Literature

The importance of public enterprises in municipal financial management increased due to the widespread adoption of tax and expenditure limits across states. The adoption of tax and expenditure limits forced local governments to look towards alternative sources of revenues while maintaining the level of services provided. Government officials found it politically feasible to establish user charges instead of increasing property taxes or cut back on governmental services (Arapis, 2013). Residents may be more tolerant of a user charge increase than a tax increase as the user charge would be linked to a particular service and the increase could be justified by an increase in the costs of providing the service (Bunch, 1991). Moreover, movements such as the new public management movement sought to create consequences for performance which means that enterprises dependent on its customers for revenue could be used as an effective means for bringing about positive change. As a result, the usage of public enterprises increased as they were financed through user charges and fees and provided a potential revenue source since they often generated revenues beyond their costs. Moreover, enterprises were viewed as a practical way to finance projects and services off budget, without affecting balance budget requirements or voter outrage (Arapis, 2013).

Existing literature on fiscal institutions discusses enterprise funds as a source of a soft budget constraint, which local government officials could utilize to circumvent existing fiscal institutions. This is because the general fund, as opposed to the enterprise fund, receives the most scrutiny while analyzing the overall financial situation of a municipality as it may be the largest

fund on a municipality's ledger and it tracks the primary government functions. Enterprise funds, on the other hand could be beyond the control and scrutiny of citizen-taxpayers, which scholars argue could lead to problems of public accountability, especially when these funds are used to support the activities of the general government (Tyer, 1989). Scholars have examined how enterprise fund transfers to the general fund can influence the level of municipal services, expenditures and/or property tax revenues (Deno and Mehay, 1988; DiLorenzo, 1982; Rubin, 1988; Tyer, 1989). For example, Tyer (1989) describes how electric utility transfers in South Carolina cities were used to increase expenditures (expenditure effect) and to subsidize the property tax (substitution effect). Such transfers are not understood by the public and may disguise the true cost of providing services. Several scholars have also found that in states with strict balanced budget rules, the budget is balanced by transferring money out of funds that are legally not required to be balanced into funds that are required to be balanced (Costello, Petacchi, and Weber, 2015; Gore, 2015; Von Hagen, 1991).

Enterprise funds are also dependent upon borrowing, especially non-guaranteed debt (revenue bonds) to finance their major capital projects. Since these bonds are secured by user fees, the bonds are usually not subject to voter approval and debt limitations and are therefore subject to lesser scrutiny (Gitajn, 1984). Von Hagen (1991) found that in states with stringent balanced budget requirements, the ratio of nonguaranteed to guaranteed state debt is significantly larger. This is because non-guaranteed debt is not subject to the same limitations that are placed on guaranteed debt. The author finds similar results with debt limits where the only statistically significant difference between states with and without debt limits is the ratio of nonguaranteed to guaranteed debt. This is in line with Bennett and DiLorenzo (1982) who argue that issuance of revenue bonds served to evade debt limits.

The numerical nature of existing fiscal institutions allows for public officials to circumvent these limits using enterprise funds. The public finance literature, however, examining the financing of enterprise fund activities is limited. Municipal utilities in the United States have the choice to use of variety of financing options that are alternatives to user fees. This includes state revolving funds, municipal bonds, and public private partnerships (Greer, 2020). Municipal bonds are the most important form of alternative financing that utilities rely on (Boyle, 2014). Utilities issue general obligation bonds (backed by the full faith and security of the government) or revenue-backed debt (where the security is the utility's legal authority to generate user fees and rates). Typically, municipal utilities have a high credit rating even when they are facing financial issues (Boyle, 2014). This ensures that utilities are able to maintain their access to the capital markets. An emerging literature within this area is that of green bonds which has developed as an innovative financing mechanism.[62] Guha (2019) describes how the District of Columbia Water Sewer Authority issued a green bond to address the issue of Washington DC's ageing infrastructure. The proceeds were used to construct a 13-mile-long tunnel to reduce sewer overflow. Other innovations include private placement bonds and certificates of obligations are used to finance water infrastructure. These instruments are issued to avoid regulations that otherwise might restrict the issuance of general obligation or revenue bonds (Greer, 2020). State Revolving Funds are another financing mechanism that uses federal dollars to support investment in infrastructure through direct and low interest loans to local governments and other public and private entities. They are the dominant forms of federal investment for water and wastewater projects. Scholars have examined the role of these funds in supporting water and

[62] According to the World Bank, green bonds are financial instruments that finance green projects and provide investors with regular or fixed income payments.
https://www.worldbank.org/en/news/feature/2021/12/08/what-you-need-to-know-about-ifc-s-green-bonds

wastewater infrastructure (Johnson, 1995; Mullin and Daley, 2018). Another alternative is public-private partnerships. According to the Congressional Budget Office, the use of public private partnerships for water infrastructure became more common in the late 2000s.[63] In such a partnership, the public and private sectors work towards a specific goal or objective and in doing that share risks, responsibilities, liabilities, and authority.

There is limited empirical literature regarding the issuance of municipal bonds or debt by water-sewer utilities. In a recent paper, Erfanian, Chen, and Hodges (2021), find that water utilities in public service districts and municipalities in West Virginia are more likely to carry long term debt than private utilities. This chapter contributes to the public finance and water sewer utility literature by examining the role of debt oversight over the overall borrowing of water-sewer utilities. In this chapter, the analysis is limited to those states that require their local governments to receive approval based on their ability to pay. This allows state governments the opportunity to engage with the utility and provide approval based on their assessment of a utility's ability to repay their borrowing. In Louisiana, the State Bond Commission collects information on the debt service coverage ratio.[64] The announcements that declare the approval of the bond issuance have the details of the debt service coverage ratio, including the net revenue and total debt service with and without the proposed bond issuance. Pennsylvania requires its local governments to submit a "certificate from a qualified professional engineer or architect, estimating the revenues and operating expenses of the project and showing that the net revenues so estimated will be sufficient to pay the annual debt service as it falls due".[65] North Carolina's Local Government Commission collects information on ratios such as the quick ratio, debt

[63] Public- Private Partnerships for Transportation and Water Infrastructure, Congressional Budget Office, Access Date: April, 2022, https://www.cbo.gov/system/files/2020-01/56003-CBO-PPP.pdf
[64] https://louisianasbc.novusagenda.com/Agendapublic/
[65] https://dced.pa.gov/download/debt-management-handbook/

service coverage ratio.[66] Michigan must submit the highest, lowest, and average debt service coverage ratio for the next seven years when submitting information to the Michigan Department of Treasury.

As mentioned previously, these oversight rules are especially important in the context of water-sewer utilities that are facing declining financial health. Previous literature has found that water utilities face poor financial conditions (Khan and Stumm, 2003; Klase, 1995). One driver of financial challenges in water-sewer utilities is the decline in water use and the associated revenues. Deoreo and Mayer (2012) found that since 1995 until the great recession, indoor residential water use declined by 13.3% to as much as 42.7% for a family living in a high efficiency home. This is largely due to the entry of new technology to support conservation efforts. The great recession also caused declines in demand (Murphy, 2012). Furthermore, the declining investments in infrastructure has led to aging infrastructure and high operating cost. Credit rating agencies argue that one of the contributing factors for a high credit rating is the monopoly status of water-sewer funds and their ability to adjust water rates. However, due to political pressure and concerns related to affordability, it is not always possible to impose a rate increase. User charges, for an essential service, can be burdensome when it is a greater financial burden on the poor (Fankhauser and Tepic, 2007). Various factors can affect affordability including ownership of the utilities, region, utility size and local income inequality (Teodoro, 2018; Zhang, González Rivas, Grant, and Warner, 2022). In fact, Rivenbark, Roenigk, and Allison (2010) examine whether operational outcomes affect financial outcomes in water-sewer utilities. They conclude that operational outcomes do not have an impact on financial outcomes

[66] https://files.nc.gov/nctreasurer/documents/files/SLGFD/LGC/LocalGovFiscalMngmt/how-to-interpret-results.pdf

as these utilities operate in a political environment which may lead to situations which are in direct conflict to the notions of efficiency and effectiveness.[67]

This chapter draws from the public finance literature and the water-sewer literature. The public finance literature discusses enterprise funds as a way to circumvent existing limitations on borrowing. Since debt oversight rules were established to complement debt limits and since the rules govern non-guaranteed debt as well, this chapter seeks to assess whether the oversight process has an impact on the borrowing of water-sewer utilities. The water-sewer literature discusses that utilities, depending on a variety of factors, face financial constraints due to the lack of freedom to raise user fees while also facing higher operating costs. Therefore, in this context, if the state oversight rules act as a hard budget constraint, then it could deny approval to a water sewer utility that does not have the ability to repay the debt. If the water-sewer utility does have the ability to repay, then the oversight authority may provide approval. This indicates that there could be a positive association between financial health ratios and overall borrowing for those utilities that are subject to an oversight process.[68]

Therefore,

H1: There is a positive association between the financial health of water-sewer utilities and long-term borrowing for utilities subject to an oversight process.

[67] Researchers have developed performance indicators and also examined the factors that affect overall efficiency and effectiveness of utility systems (Balkema, Preisig, Otterpohl, & Lambert, 2002; Matos et al., 2003; Vieira, Alegre, Rosa, & Lucas, 2008).

[68] It is important to note here that this analysis does not argue that there is a causal relationship between financial health ratios and long- term debt. The only objective is to examine whether there is an association between financial health ratios and long- term debt. The idea behind this is that, utilities that have higher financial conditions are more likely to receive approval leading to higher borrowing. However, since there is no data available on the approval decision for each debt issuance, it is not possible to identify the causal mechanism. Therefore, this analysis is limited to understanding whether a higher financial ratio is associated with higher levels of borrowing and lower levels of financial ratio is associated with lower levels of borrowing in utilities subject to oversight.

If the state oversight rules provide approval, even if a utility may not have the ability to repay, then it introduces a source of softness to the budget constraint. In this situation, there would be no association between the financial health of water-sewer utilities and overall borrowing.

The direction of the impact of these rules on long term debt is ambiguous. On one hand if the activity (water/sewer services) is under financial stress, then it may not receive approval to issue debt thus reducing the among of debt that the entity can issue. On the other hand, if utilities have the ability to pay (as claimed by credit rating agencies) the utilities will receive the approval therefore not limiting the amount of debt issued. There is also a third argument that the debt issued could be higher, despite low financial conditions, because oversight authorities have more information about the fiscal situation and requirements of the activity, thus reducing the information asymmetry about the risk involved. This could potentially lead to more approvals as oversight authorities may be more confident about the debt management abilities of the city government.

4.3 Data and Methodology

This chapter uses data from Merritt Research Services, access for which is provided by the Municipal Securities Laboratory at Georgia State University.[69] The dataset contains financial indicators drawn from financial statements of water-sewer entities. This analysis is focused on water and sewer enterprise funds that received a significant portion of their revenue from their operations.[70] Water districts have not been included because the general government has no

[69] The data copyright is held by Investortools, Inc.
[70] Such as the Athens Water and Sewer Department (GA), Boston Water and Sewer Commission (MA), Bradford City Water Authority (PA), Calera Water Works Board, (AL), Brevard County Water Resources Department Fund (FL).

discretion over resources. Boards, commissions and authorities have also been dropped as they may also be independent and may have different roles and responsibilities across states. For example, the city of Atlanta defines boards, authorities and commissions as separate entities while the municipalities in Wisconsin use board and commission synonymously.[71] Enterprise funds are reported on the basis of Statement 34 of the Governmental Accounting Standard Board thus allowing more uniformity. Funds that received support from state or local tax dollars or transfers from other funds were excluded from the analysis to include those water-sewer utilities that were self- sufficient. Utilities that are receiving transfers from other funds or using tax dollars may be able to repay their debt because they have external support. This would bias the results examining the impact of oversight on overall borrowing and therefore they have been excluded from the analysis.

The analysis uses unbalanced panel data on 177 water-sewer funds of cities for the years 2010 to 2018. It uses the pooled OLS model with year fixed effects. As mentioned previously, funds in four states are categorized as subject to an oversight process (will be referred to as oversight utilities). Funds in fourteen states are categorized as not subject to an oversight process (will be referred to as non-oversight utilities). Further, the data is divided into types of enterprise funds based on characteristics such as the population served, and type of services provided:

1. Single/ Multipurpose Utilities: The dataset contains two types of funds: those that provide only one type of service and those that provide multiple services. The former, which will

[71] City of Atlanta defines Board as: "A group of persons having advisory, investigative, or managerial powers. Boards are created and established by ordinance of the City Council. Commission: "A group of persons brought together to provide investigative and decision-making functions to perform certain acts and duties; to report results to the City Council or to exercise quasi-judicial authority and making rulings on behalf of the City. Commissions are created and established by ordinance of the City Council." And authority as "An organization, having lawful delegation of power, that may exercise legal actions in a particular political or administration sphere. Powers are granted or authorized by federal or state laws or acts. Authorities are created and established by federal or state law, ordinance, or resolution of the City Council, pursuant to federal or state directives and/or requirements." https://citycouncil.atlantaga.gov/council-divisions/municipal-clerk/board-authority-commission-etc-bace

be referred to as "Single Funds", could be either a water or a sewer fund (where the revenues are from either water or sewer services). For example, the wastewater fund of the City of Fort Collins, Colorado, received $24,411,597 from fees and charges for services in 2018 which is 82% of its revenue. The latter, which will be referred to as Multi- Purpose Funds account for multiple services such as water, sewer and stormwater. These funds receive revenue from multiple services. For example, the Utility Fund of the City of Sanford, North Carolina, received $9,680,492 in sewer user charges and $11,229,428 in water user charges for the year 2018, accounting for 89% of its total revenue. Cities that had both multi-purpose funds and single funds were also removed from the analysis to increase the robustness of the results.[72]

2. Small Utilities: The Safe Drinking Water Act defines small water systems as those that serve a population of 10,000 or fewer people.[73] Drawing from this idea, the population in the dataset (which ranged from 824 to 400,000) was divided into four quartiles. Funds that fell in the first two quartiles were assigned a value of 1 and those that fell in the 3rd and 4th quartile were assigned a value of 0. Those with a value of 1 are in the population range of 824-40,742 while those with 0 serve populations in the range of 40,885-391,759.

Utilities that are small and/or provide a single service, face problems related to economies of scale. Since small utilities face the same compliance requirements and responsibilities as large systems do but with a smaller customer base, they are considered to have worse financial conditions than a larger system (Humphreys, van der Kerk, and Fonseca, 2018).[74] Similarly,

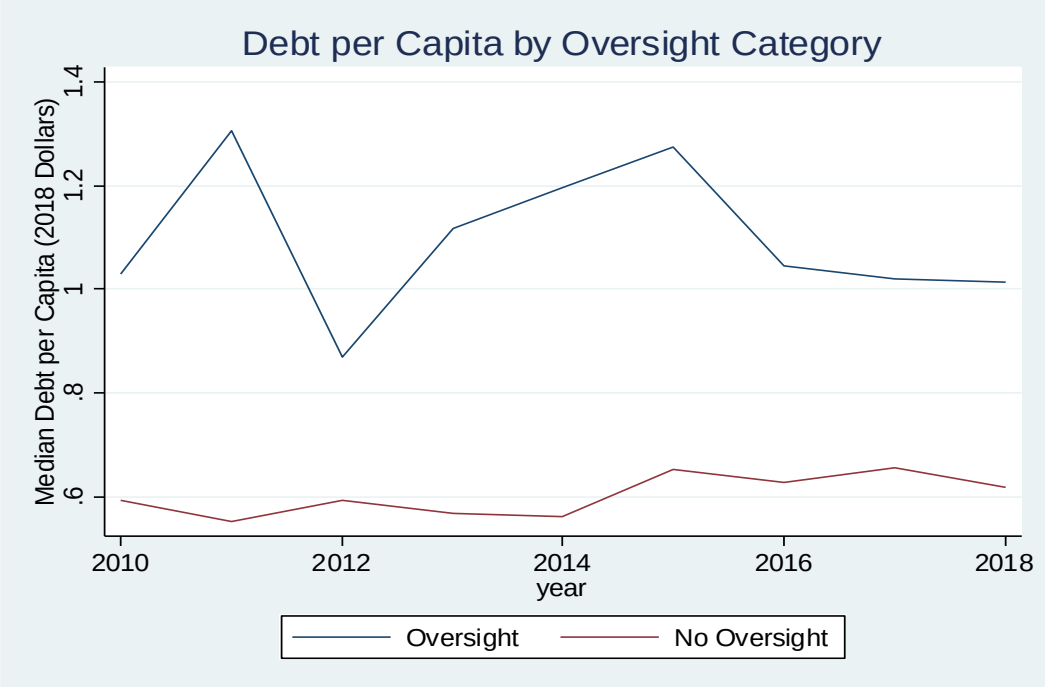
[72] For example, the city of Mansfield, Texas has Mansfield Drainage Utility Fund and Mansfield Water and Sewer Fund.
[73] https://www.epa.gov/water-research/small-drinking-water-systems-research
[74] https://www.waterworld.com/water-utility-management/asset-management/article/16192858/rural-revenue-a-look-at-small-water-and-wastewater-utility-cost-challenges-and-solutions

when multiple services are offered, the services can coordinate various activities leading to greater efficiencies than a single service.[75]

Dependent Variable

The dependent variable used in this study is the long-term debt.[76] This refers to debt with maturities exceeding one year, standardized by population and median income (latter for robustness checks). Figure 1 shows the overall trend of debt per capita by the oversight category. As per Figure 1, oversight utilities have higher debt per capita than non- oversight utilities. The breakdown by states is given in the appendix (Figure C.1 and C.2).

Figure 4. 1. Debt Per Capita by Oversight



[75] https://www.publicpower.org/periodical/article/multiservice-utilities-one-stop-shop-communities
[76] All monetary data in this dataset is in thousands of dollars.

Independent Variables

The analysis uses two sets of independent variables to answer both research questions. To determine if there is a difference in long term debt issued by the oversight utilities versus the non-oversight utilities, the main independent variable is whether a utility is subject to an oversight process. This is a dummy variable where a value of 1 is assigned to funds in LA, MI, NC and PA and 0 is assigned to those funds in states that have no oversight (See Table 4.1 for list of states).

Table 4. 1. Funds by State and Oversight Category

State (Oversight)	No of Funds[77]	State (No Oversight)	No of Funds
LA	3	AK	3
MI	24	AL	9
NC	16	AR	3
PA	8	CO	19
		CT	1
		MD	1
		MN	2
		MT	1
		NY	1
		OH	25
		OR	5
		UT	22
		VA	6
		WI	28

[77] Refers to the number of funds in each state and not the number of observations. Each fund has data for multiple years.

The second set of variables include financial health variables that are used to assess health of water-sewer utilities**.** Oversight agencies use a part or all these ratios to assess fiscal health. These include the operating ratio, quick ratio, life cycle ratio and debt service coverage ratio. Since the debt service coverage ratio is mathematically linked to long term debt issued, an alternative measure used is the revenue available for debt service as a percentage of total revenue (correlation coefficient: 0.66). The formulae and meanings for each are given in Table 4.2.

Each ratio measures some aspect of the financial health of a utility. The operating ratio measures whether the utility is self-supporting and has enough operating revenues to support its operating costs (>1). If not, the system would be operating at a loss. The quick ratio is a measure of liquidity. It measures the availability of unrestricted funds to fund operations and maintenance and capital expenditures. The higher the liquidity the greater the flexibility to meet future operational and capital needs such as unanticipated revenue declines or spending increases. Strong liquidity could also mitigate the reliance on issuing debt as cash could be used to fund capital projects.[78] The debt service coverage ratio measures the entity's ability to meet annual debt service obligations, after covering its operating costs. Additional revenues are used to build reserves or fund capital improvement. Bond covenants stipulate a minimum debt service coverage requirement for the utility to avoid technical default (Gaur et al., 2014).

Age of the infrastructure is an essential aspect of the financial health of utilities. Higher age of infrastructure not only affects water quality but could translate to significant costs for the utility. For example, an increase in breaks results in a loss of trillions of gallons of treated drinking water and the discharge of billions of gallons of raw sewage into local surface waters

[78] 2018 outlook stable as strong rate management and liquidity support sector. Access Date: April 2022, URL: https://www.austintexas.gov/sites/default/files/files/Water/Finance/Moodys%202018%20Outlook%20Water%20and%20Sewer%20Utilities.pdf

from aging sewer overflows leading to higher costs. Controlling for the age controls for the differences in capital requirements. A high life cycle ratio indicates a lower useful life leading to higher maintenance costs for the utility.

Control Variables

A city owned enterprise fund would be highly dependent on the characteristics of its service area. Since it relies on the revenue received through charges and fees from the population, the revenue stability of the activity depends on the demographic characteristics of the population that it serves. Therefore, the analysis includes population growth, median income, and unemployment rate to control for service area characteristics. The impact of population on debt could be either positive or negative. For example, an increase in population could lead to more demand for services and therefore more debt may be issued to accommodate the high demand. However, if population is declining, then borrowing may be pursued for the creation of projects necessary to arrest the decline.[79]

Income of the population is another indicator of the pricing as well as revenue stability. Populations with high median income are more likely to result in more inelastic demand for services and rate flexibility during periods of economic weakness. Therefore, credit rating agencies consider high median income to be a positive credit factor for utilities. Median Income of a region is also important for the pricing of services which could then affect the revenues earned by a utility. The median income per capita is used in this analysis. A lower unemployment rate is an indicator of demand. Areas experiencing a high unemployment rate could experience lower service demand. Moreover, high unemployment could also mean higher

[79] Debt Management Handbook., Pennsylvania: https://dced.pa.gov/download/debt-management-handbook/

delinquencies thus affecting the revenue of the enterprise funds. A report by the American Water Works Association states that the aggregate financial impact of COVID-19 on drinking water utilities is approximately $13.9 billion.[80] One of the reasons for this is the increased delinquencies because of high unemployment rates.

Table 4. 2. Formulae of Independent Variables

Financial Indicators	**Formula**	**Value > 1.0**
Total Operating Ratio (Measure of self-sufficiency)	Total Operating Revenue/ Total Operating Expenditure[81] Where Operating Revenue= Sum of water and sewer operating revenue + Total connection revenue and other operating revenue. And Operating Expense= Depreciation[82] (Amortization[83]) Expense + Total Operating and Maintenance Expense + Tax Paid + Other Operating Expense.	System has enough operating revenue to cover its annual operating expenses.

[80] The Financial Impact of the COVID-29 Crisis on U.S. Drinking Water Utilities, Access Date: April 2021, URL: https://www.awwa.org/Portals/0/AWWA/Communications/AWWA-AMWA-COVID-Report_2020-04.pdf
[81] Manual Calculations
[82] Depreciation is the expensing of a fixed asset over its useful life.
[83] Another word for depreciation but used for intangible assets.

Debt Service Coverage Ratio (A measure of a system's ability to pay its long term debts)	Measured as: Revenue available for debt service/ Total Revenue.	System has enough operating revenues to pay for its annual debt service once its operating expenses are paid.
Quick Ratio (Also known as current Ratio- Measure of short-term liquidity)	SUM(Cash + Net Accounts Receivable)/ Current Liabilities.[84]	System has enough money on hand to pay its current bills. A ratio of 2.0 is preferred so that any large bills can be paid.
Life Cycle Ratio	Average Age of Net Fixed Assets (Age) $= \frac{\text{Acccumulated Depreciation}}{\text{Annual Depreciation Expense}}$ Life Cycle Ratio $= \frac{\text{Age}}{\text{Age} + \frac{(\text{Net Fixed Assets})}{\text{Annual Depreciation Expense}}}$	

Source: Key Financial Indicators for Water and Wastewater Systems, Environmental Finance Blog of the School of Government, University of North Carolina

[84] The quick ratio was a variable present in the dataset.

Table 4. 3. Descriptive Statistics (Oversight Versus No Oversight)

	Oversight (N=120)			No Oversight (N=311)			Difference
Variables	**Mean**	**Median**	**S.D.**	**Mean**	**Median**	**S.D**	**t-statistic**
Long Term Debt Per Capita	1.33	1.07	1.12	0.68	0.57	0.54	0.41***
Quick Ratio	3.84	2.94	3.12	4.65	3.06	4.40	-0.49
%Revenue for Debt Service	0.41	0.43	0.11	0.43	0.43	0.13	0.024*
Operating Ratio	1.29	1.27	0.16	1.32	1.27	0.31	-0.031
Life Cycle Ratio	0.36	0.35	0.09	0.29	0.29	0.085	0.062***
Population	67328.4	50434	69374.89	80608.31	39278	94267.43	9172.95
Median Income	52612.8	45896.6	16624.42	59594.44	54177.54	19723.54	-6981.75***
Unemployment Rate	7.16	6.3	3.23	5.68	5.4	2.47	1.72***

4.4 Results

The descriptive statistics reveal that those water-sewer utilities that must go through an oversight process have a statistically significant higher long-term debt per capita than those without oversight. This trend remains the same across all the years in the analysis. It is important to examine whether this significant difference remains after the control variables have been included.

Table 4.3 also displays the financial health ratios that are important to assess financial health of water-sewer utilities. The results shows that the mean values of the quick and operating ratios, in both categories, have a value greater than 1. This means that utilities in this dataset, on average, have greater in-flow of revenue than their costs and has enough liquidity to pay its current bills, an indication of a financially healthy position. However, there is no statistically significant difference between the two categories for the quick and operating ratios. Non-oversight utilities have a greater percentage of total revenue for debt service than oversight utilities, a lower unemployment rate, higher median income and lower age of assets.

The first question asks whether there is an association between financial health and utility debt among utilities subject to an oversight process. Table 4.4 shows the results for this analysis. The quick ratio and the age ratio have a statistically significant impact on the long-term debt per capita in both categories. For the non-oversight utilities, the quick ratio is significant only at the 10% level and for the oversight utilities, the quick ratio is significant at the 1% level. However, contrary to the hypothesis, there is a negative association between quick ratio and long- term debt issued for both oversight and non-oversight utilities.[85] One potential way of explaining this lies in prior literature. Wang et al. (2007) find that in the presence of a fiscal institution such as a

[85] Regressions were run for the entire sample, without the oversight classification and the impact of quick ratio on the overall borrowing was not significant.

debt limit or voter referendum there is a preference for using cash over debt financing. Moreover, an S&P report suggests that utilities prefer to use cash over debt financing.[86] Since a high quick ratio indicates that there is more cash in the system utilities might prefer to use cash than issuing debt. Total operating ratio and the percentage of revenue allocated for debt service is not significant. This is contrary to the expectation that these ratios would have a significant impact on debt issued because most of the oversight states collect this information to determine and review a utility's ability to pay. Of the socio-demographic variables, the only characteristic that is significant is median income in Model 1. It is significant at the 10% level in Model 1 and indicates that as income increase by 10% the debt per capita increases by 3.2%. These results indicate that oversight might not be restricting the ability of a utility to issue debt based on financial health. Debt has also been standardized by income for robustness checks (Table C1-Appendix).

The previous analysis suggests that financial health indicators may not have an influence on long term borrowing. This is an indication that the oversight process, which provides approval based on ability to pay, may not be incorporating the financial health in their decision making even though they collect this information. Table 4.5 assesses the difference in debt per capita between those utilities that are subject to an oversight process versus those that are not. Holding everything else constant, funds that are subject to an oversight process have a higher debt per capita than those that are not subject to an oversight process. These results are constant across the different systems: small, large, single, and multipurpose.[87] A potential explanation for this

[86] U.S. Municipal Water and Sewer Utility Sector is Stable as Median Ratios Show Improved Finances. Accessed: April, 2022. URL: https://www.spglobal.com/ratings/en/research/articles/190823-u-s-municipal-water-and-sewer-utility-sector-is-stable-as-median-ratios-show-improved-finances-11105713.

[87] There is a possibility that oversight on utilities exists because utilities have a history of fiscal profligacy as evidenced by higher debt. This analysis controls for socio-economic factors that could result in higher borrowing. However, this only weakly addresses the problem of endogeneity causing a potential upward bias in the results.

could be that oversight utilities have older assets therefore having more demand for borrowing. Moreover, as is seen in the descriptive statistics, oversight utilities face higher unemployment rates and lower median income which could make them more dependent on borrowing. However, even after controlling for these economic characteristics, oversight utilities have higher borrowing than non-oversight utilities. This supports what the previous finding suggests that oversight agencies may not be restricting the overall borrowing based on financial health. This may be because the oversight authorities provide approval to utilities in the oversight category, irrespective of financial health. A more important factor in the decision to approve may be the borrowing requirements of the utility. Further, as seen in chapter two, the approval process may result in lower borrowing costs for the oversight utilities, leading to higher overall borrowing.

Table 4. 4. Impact of Financial Health Variables on Debt Per Capita

VARIABLES	(1) Debt per Capita (Ln) Oversight	(2) Debt per Capita (Ln) No Oversight
Quick Ratio	-0.0463***	-0.0197*
	(0.0165)	(0.0119)
% Revenue for Debt Service	1.652	1.340
	(1.727)	(0.996)
Age Ratio	-3.638**	-7.332***
	(1.551)	(1.215)
Total Operating Ratio	-0.478	-0.157
	(0.705)	(0.512)
Population (Ln)	-0.0425	-0.252
	(0.200)	(0.190)
Median Income(Ln)	0.769*	-0.211
	(0.461)	(0.361)
Unemployment Rate(Ln)	-0.00279	0.359
	(0.426)	(0.232)
Constant	-6.786	5.408
	(5.323)	(4.498)
Observations	120	316
Number of Funds	22	54

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4. 5. Debt Per Capita and Oversight

	(1)	(2)	(3)	(5)	(6)
VARIABLES	Debt per Capita (All Funds)	Debt per Capita (Single Purpose Funds)	Debt per Capita (Multi-Purpose Funds)	Debt per Capita (Small Funds)	Debt per Capita (Large Funds)
Oversight	0.853***	0.651*	0.679**	1.510***	0.809***
	(0.244)	(0.376)	(0.270)	(0.388)	(0.270)
Life Cycle Ratio	-7.061***	-5.938***	-8.393***	-6.391***	-8.552***
	(1.170)	(1.387)	(1.115)	(1.503)	(1.935)
Operating Ratio	0.263	0.508**	0.000547	-0.0708	0.633**
	(0.170)	(0.221)	(0.164)	(0.139)	(0.298)
Population (Ln)	-0.272*	-0.317	-0.0401	0.0164	-0.0874
	(0.161)	(0.216)	(0.109)	(0.537)	(0.194)
Median Income (Ln)	-0.0291	0.0402	-0.169	-0.686	0.161
	(0.352)	(0.482)	(0.399)	(0.522)	(0.380)
Unemployment Rate (Ln)	0.305	0.336	0.0546	0.0404	0.474*
	(0.226)	(0.262)	(0.193)	(0.233)	(0.281)
Year Dummies	Yes	Yes	Yes	Yes	Yes
Observations	425	285	140	114	311
Number of Utilities	75	52	23	20	57

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

4.5 Discussion

Borrowing by the water-sewer sector is one source of financing that local governments use to plug the gap in infrastructure investment created by the lack of financial support from the state and federal government. The debt can be of two types: general obligation (backed by the full faith and credit of governments) or revenue bonds (backed by the user fee). The latter has become the most popular option to borrow funds from the capital markets. However, increasingly, these utilities are facing rising costs due to aging infrastructure, changes in economic conditions, scaling populations and rising labor costs. COVID-19 has added further stress to their revenues. Drinking water utilities are expected to lose approximately $13.9 billion in revenue due to reasons such as increased delinquencies, reductions in non-residential water demands and low customer growth.[88] Borrowing provides these systems with an alternative source of financing, however, with increased financial stress, it may become difficult for local governments to repay the amount borrowed, leading to further fiscal stress. In this context, the state oversight rule becomes very important as oversight authorities provide approval based on ability to pay.

Water-sewer utilities or enterprise funds are discussed in the literature as a source of a soft budget constraint. The literature suggests that local governments circumvented debt limits through the issuance of non-guaranteed debt in enterprise funds. Since debt oversight rules were established to complement debt limits and since the rules govern non-guaranteed debt as well, this chapter sought to assess whether the oversight process has an impact on the borrowing of water-sewer utilities. If the state oversight rules acted as a hard budget constraint, then that could indicate that oversight authorities base their approval on the financial conditions of the local

[88] https://www.awwa.org/Portals/0/AWWA/Communications/AWWA-AMWA-COVID-Report_2020-04.pdf

governments. This would lead to a positive association between financial health ratios and overall borrowing. However, the ability of the oversight authority to approve borrowing, even if a utility may not have the ability to repay introduces a source of softness to the budget constraint. The results suggest that apart from the quick ratio, no other financial indicator has a significant association with the overall borrowing. The quick ratio, which is a measure of liquidity, is negatively associated with borrowing indicating that utilities prefer to utilize their liquidity instead of borrowing to avoid going through the oversight process. However, this is an indirect effect of the oversight process. This is an indicator that oversight authorities may not be actively incorporating the financial health ratios in their decision to approve borrowing.

Furthermore, debt per capita in oversight utilities is higher than non-oversight utilities. This is contrary to the expectations that debt oversight would limit the amount of debt leading to the conclusion that state oversight does not act as a hard budget constraint. Since all the utilities in the sample, on average, have good financial health, the debt per capita seems to be dictated by the requirements of each utility rather than the oversight process. Even if a utility might not have the ability to pay, they may receive approval based on their requirements, an indication of the flexibility of the oversight process in monitoring debt issuance. An alternative explanation is that utilities subject to state oversight may have lower borrowing costs, as seen in chapter two. The lower borrowing costs might be contributing to higher borrowing.

Overall, this chapter concludes that state oversight does not act as a hard budget constraint for water-sewer utilities. This maybe because of the flexible nature of an oversight process which would provide approval to utilities to issue bonds despite their financial condition.

Chapter V

Conclusion

5.1 Summary and Contributions

The study of fiscal institutions in the United States has a rich history, with many scholars examining its adoption and impacts under various economic and political conditions. On one hand, scholars examine the impact of various numerical limits such as tax and expenditure limits, balanced budget requirements and debt limits. On the other hand, is the research on the rules that states have established to assist local governments in case of fiscal distress. This reveals a gap in understanding the proactive role of the state in local government finance, specifically in debt financing.

This dissertation introduces a new fiscal institution that states established to proactively monitor local government borrowing. These rules require local governments to report to their respective state oversight authorities at different points of the debt issuance process, each time a local government wants to borrow from the capital markets. These rules are important as U.S state and local governments issue municipal bonds in capital markets to fund infrastructure projects. With more than 50,000 different issuers, an average of nearly $435 billion in new municipal securities were issued each year in the last decade.[89] The dissertation also examines the impact of these rules on three fiscal outcomes, therefore contributing to the literatures on borrowing costs, overlapping governments and enterprise funds.

The theoretical basis of this dissertation lies in the second-generation theory of fiscal federalism which discusses the importance of fiscal institutions in the context of fiscal decentralization. The theory stresses that that the effectiveness of an institution depends upon its

[89] http://www.msrb.org/msrb1/pdfs/MSRB-Muni-Facts.pdf

design, which further dictates whether the fiscal institution is a hard or a soft budget constraint. Therefore, the first essay, parses out the variation in the design of the oversight rules through a national analysis of the statutory codes of each state government. This analysis reveals that there exists differences in the design of the oversight roles in three main ways: when local governments are required to submit information, for what purpose and to whom. Each aspect of the design of these rules have its own purpose. For some states the oversight process allows regular collection of debt related information about local governments keeping them updated about local level borrowing. For other states, in addition to the collection of information, the oversight process ensures a more involved process of debt issuance where states give local governments approval each time they want to borrow. These rules therefore allow states to monitor their local governments, while also maintaining a local government's freedom to borrow as per their requirements. This marks the differential approach that states take to oversee their local government borrowing, providing the opportunity to assess the impact of these rules on three fiscal outcomes.

The second generation theorists consider well-established capital markets to be a source of fiscal discipline for local governments. Poor fiscal performance by a local government would lead to reduced access to credit and high interest rates. However, the municipal bond market suffers from problems of information asymmetry leading to different information for investors and issuers about the value of the securities. The second essay therefore examines the impact of state oversight rules on the borrowing costs for local governments. These rules could mitigate this information asymmetry to some extent as it requires local governments to regularly submit information to the state. Moreover, many states governments publish this information annually on the websites allowing the participants of the municipal bond market to access borrowing

information about the local governments. The results vary with the procedure, type of oversight agency, as well as timing of the submission of information. Borrowing costs are lower for those local governments that go through an approval process, report to a state appointed commission, or are subject to an annual monitoring process. This essay finds that oversight rules do have an impact on the costs of borrowing. However, more than the presence of a rule, it is the design that matters, confirming the argument of the second-generation theory.

The relationship between fiscal institutions and borrowing costs are based on signals of fiscal health from the local government to the capital markets. The questions that the next two chapters sought to answer was whether state oversight rules had an impact on borrowing. According to the second-generation theory, the effectiveness of a constraint depends on whether the fiscal institution acts as a soft budget constraint (one that can be circumvented) or a hard budget constraint. Two contexts that are typically seen in the literature on borrowing as a source of "softness" in the budget constraint is the system of overlapping governments in the United States and the second is that of enterprise funds. Therefore, the third essay assesses whether state oversight rules have an impact on borrowing, in the context of overlapping governments while the fourth examines this question in the context of water-sewer enterprise funds.

The third essay assesses the impact of the oversight rules on county government borrowing, in the context of overlapping governments. This structure of governments complicates local debt management as multiple governments borrow against a shared tax base. Building on existing theoretical literature that views a shared tax base as a common pool resource, this chapter assesses whether the borrowing of counties subject to an oversight process are responsive to their sub-county borrowing, leading to overall lower borrowing. This could occur through two main mechanisms: the first is through the oversight authorities itself. As all local governments are

required to report to their states, each time they borrow, states have a comprehensive view of local government borrowing, giving them the opportunity to coordinate borrowing. The second mechanism is through the transparent provision of debt related information of local governments. Results show that the long-term debt of county governments in the sample does reduce as sub-county overlapping debt increases. A comparison of counties subject to different types of debt oversight reveals that this effect is primarily driven by counties that go through an oversight process, especially a rigorous one.

The last essay is an exploratory study assessing the impact of state oversight rules on enterprise borrowing. It is a contribution to the literature on water-sewer utilities and the literature on fiscal institutions and enterprise funds. The existing literature in the latter area discusses enterprise funds as a way to circumvent existing fiscal institutions. There is limited research examining the enterprise funds itself. Limiting the analysis to only those states that provide their local governments approval on the basis of ability to pay, this essay examines how oversight affects water-sewer utility borrowing. This oversight rule is especially important in the context of water-sewer utilities as there is substantial variation in their financial health. The results suggest that financial health ratios are not associated with the borrowing of utilities. This indicates that oversight authorities may not be incorporating the financial health indicators in their decision making to approve borrowing. In fact, oversight utilities have higher borrowing than non- oversight utilities after controlling for financial health characteristics. This provides a glimpse into the flexible nature of state oversight rules where oversight authorities may be giving approval to the utilities based on their requirements and not on the financial health of the utility.

To conclude, this dissertation is a contribution to the study of fiscal institutions. It introduces a new institution that states use to proactively monitor their local government borrowing and

provides a comprehensive overview of the design of state oversight rules. The essence of these rules is about information transfer from local to the state governments, providing states with a comprehensive view of local government borrowing. The dissertation shows that these rules do play a signaling role to the capital markets, however, its impact on local government borrowing costs vary by design. Moreover, state oversight rules do have an impact on county borrowing in the context of overlapping governments. However, with water-sewer utilities, the effectiveness of these rules is limited as utilities rely heavily on borrowing for infrastructure purposes and therefore may be allowed to borrow even if their ability to repay the debt is limited.

5.2 Limitations

One of the limitations frequently discussed in the literature on fiscal institutions is the problem of endogeneity. There are two sources of endogeneity that researchers need to be aware of while empirically analyzing their impact. The first source is the decision to enact fiscal institutions. The endogeneity arises from the fact that institutions are not fixed but can be changed by voters or legislators (Johnson and Kriz, 2005). For example, a state or local government could implement a tax limit if there is an underlying aversion to tax increases. Therefore, the impact of a fiscal institution may be explained by the underlying aversion. State oversight rules were implemented by each state during different years starting from 1913 in Massachusetts. These rules, once implemented, remained the same. Therefore, this partly mitigates the endogeneity problem that arises due to the ability of a legislature or citizenry to enact/ change fiscal rules.

The second source of endogeneity is that the presence of fiscal institutions is a function of past fiscal performance. As far as is known from the literature, state oversight rules have come

up due to historical debt problems. Therefore, those states that have these rules might have worse financial conditions that those states that do not have these rules.

One of the common econometric methods used to address the problem of endogeneity is instrumental variable analysis. Instruments that are commonly used in the fiscal institutions literature are constitutional or legal provisions that make it more or less difficult for voters to propose rules such as voter referenda, the requirement for voter signatures or passage rate of citizen initiatives (Poterba and Rueben, 1999; Sun, 2014). State oversight rules are not introduced by the voters and therefore the afore-mentioned instruments would not be a valid to use in this analysis. To partly mitigate the problem of endogeneity, the analysis in each chapter controls for fiscal and economic conditions of the unit of analysis. In chapter two, the linear regression controls for the economic and fiscal positions of local government using population, debt per capita and region. Chapter three and four uses controls for economic and financial variables such as population, unemployment and median income.

The second limitation of this dissertation is the small sample size. The nature of the research questions in chapter three and four reduced the number of observations that could be in the sample. As a result of this, the sample size was small, therefore limiting the flexibility with which more robust modelling could be utilized. The third limitation relates to the water and sewer utilities. It is unclear whether these enterprises are the monopoly providers of water and sewer services, although highly likely. There is no information available about private water providers or other competitors and therefore the results are limited by the exclusion of that factor. The data also did not have information on the loans or grants provided to utilities by the state or federal governments (apart from the associated city) and therefore the analysis does not reflect the impact of such grants.

5.3 Future Research

This dissertation builds on a framework created by conducting an analysis based on state statutory code. While this is the most objective source of information available on these rules across states, a longitudinal case study approach to study how these rules work in reality would greatly enhance the knowledge on this topic. Some areas that could be examined are the usage of the data submitted by local governments, by the respective state authority. For example, exploring the use of the information collected by states that just require their local governments to submit information, without going through an approval process would greatly enhance the understanding that exists regarding the importance of information disclosure. It would also be interesting to examine how these rules interact with other fiscal institutions to determine overall fiscal health of a local government.

Furthermore, future research can build on this framework to examine how state oversight rules affect the frequency and the timing of reporting information. At its core, the rules are about information transfer from the local to the state government, therefore it would be likely that local governments subject to these rules are more likely to disclose their financial information.

More research is also needed to examine water and sewer enterprise funds. Various descriptive work has been done to examine the financial health of water utilities. However, more empirical research is necessary to understand the financing of these utilities. Borrowing is one major source of investment financing, however, utilities are also dependent upon grants, subsidies and other sources of funds. Understanding the overall financial management of water utilities could greatly enhance the literature on water and sewer utilities.

Appendix A: List of Key Words

Table A.1. Key Words Used to Categorize States

Category	Key Words Used
Timing of Reporting Information	
Phase 1	CA, RI, DE: Prior to the sale of any debt issue; FL: Advance Notice of Impending Sale; NM: Before Initiating any proceedings for such issue; SC, NC, KY, MA, LA: No Bonds issued/authorized until; KS, MO, OK, MS, PA: Before any bonds are issued/become valid; WV, NJ, MI: Municipality may issue bonds when; TX: Before the issuance of a public security[90]
Phase 2	WA, AZ, IN: Supply bond information within (x[91]) number of days of issuance
Phase 3	GA: Annual Report of Indebtedness; NH, NE: After the delivery of bonds; IA, SD: No clear mention of when the information needs to be submitted; NV: On or before August 1 of each year.
Purpose of Reporting Information	
Approval	**Common key word: Approval**; KS: Determining sufficiency of transcript; MO, OK, PA: Proceedings comply with the laws; WV: Submit recordings of all proceedings; NC: Submit documents concerning financial condition of issuing Unit; NJ: Ability of municipality to supply other essential public improvements[92]; MS: MI: Municipality did not end the preceding fiscal year with a deficit in any fund[93] LA: Ability

[90] These are words that are general since they are drawn from multiple statutes.
[91] 20 and 60 days for WA and AZ respectively, IN: One month
[92] See N.J. Stat. § 40A:3-4 for additional factors.
[93] See MCLS § 141.2303 for additional factors.

	to repay indebtedness[94]; MA: Description of the fiscal health of economy considered during approval process[95];
Submission	States that did not have any procedure once the local government submitted debt/bond information were categorized as states that only had to submit information.
Basis of Approval	
Compliance with Law	KS; Transcript of Proceedings, MO: Conditions of the laws have been complied with, OK: Issued in accordance with forms of procedures; WV: Copy of Proceedings, Texas: Record of Proceedings, TN: Contract is in compliance with guidelines, rules, regulations
Ability to Pay	NC: Financial Condition of Issuing Unit, MA: Description of the fiscal health of economy considered during approval process [96] , LA: Ability to repay indebtedness[97], MI: Information on operating revenues, expenditures to be submitted[98], PA: Examines calculation of the borrowing base which is the average of total revenues for the immediately prior three fiscal years[99],

[94] Taken from the website: https://www.treasury.la.gov/state-bond-commission; since basis of approval could not be determined from statutes.
[95] Information received from the Municipal Finance Oversight Board Minutes of Meeting's since this information was not available in the statutes.
[96] Information received from the Municipal Finance Oversight Board Minutes of Meeting's since this information was not available in the statutes
[97] Taken from the website: https://www.treasury.la.gov/state-bond-commission; since basis of approval could not be determined from statutes.
[98] Data retrieved from Michigan Department of Treasury's Application to Issue Long Term Securities
[99] Pennsylvania's Debt Management Handbook

Appendix B: Detailed Figures on Borrowing by Counties

Figure B. 1. Long Term Debt Outstanding

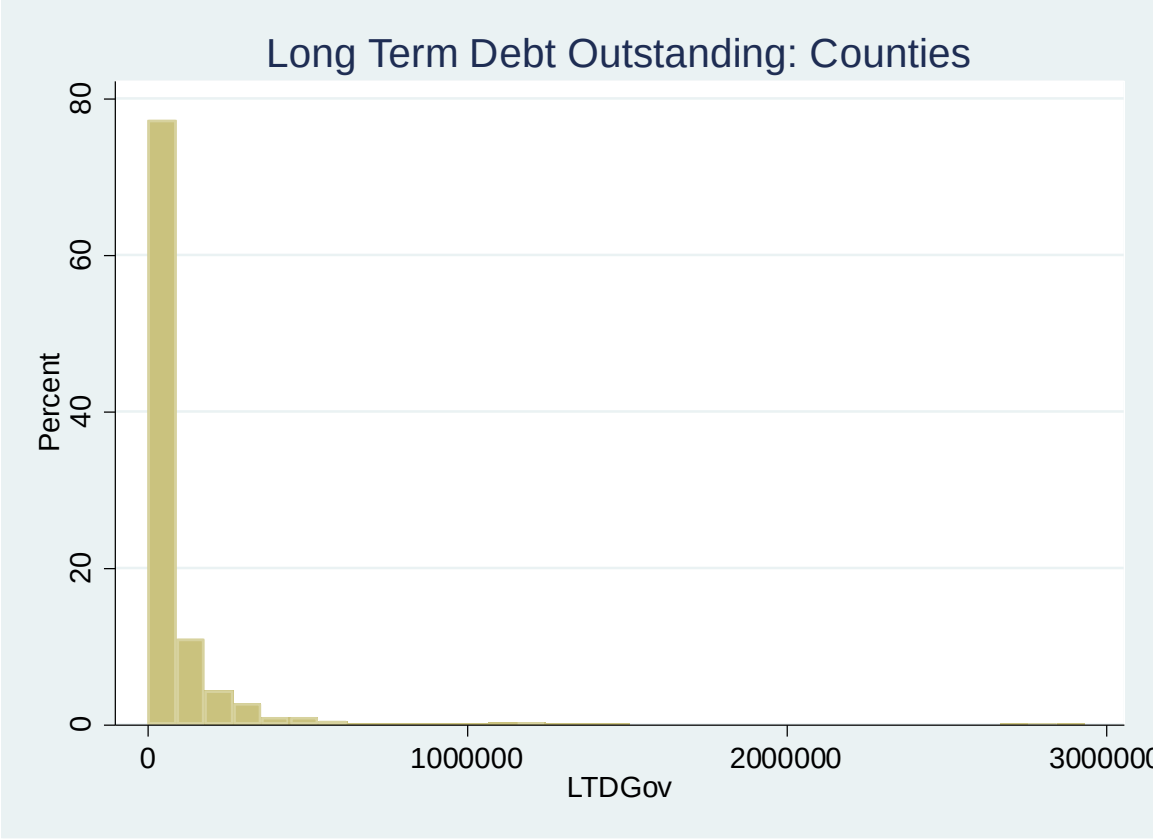


Figure B. 2. Log (Long Term Debt Outstanding)

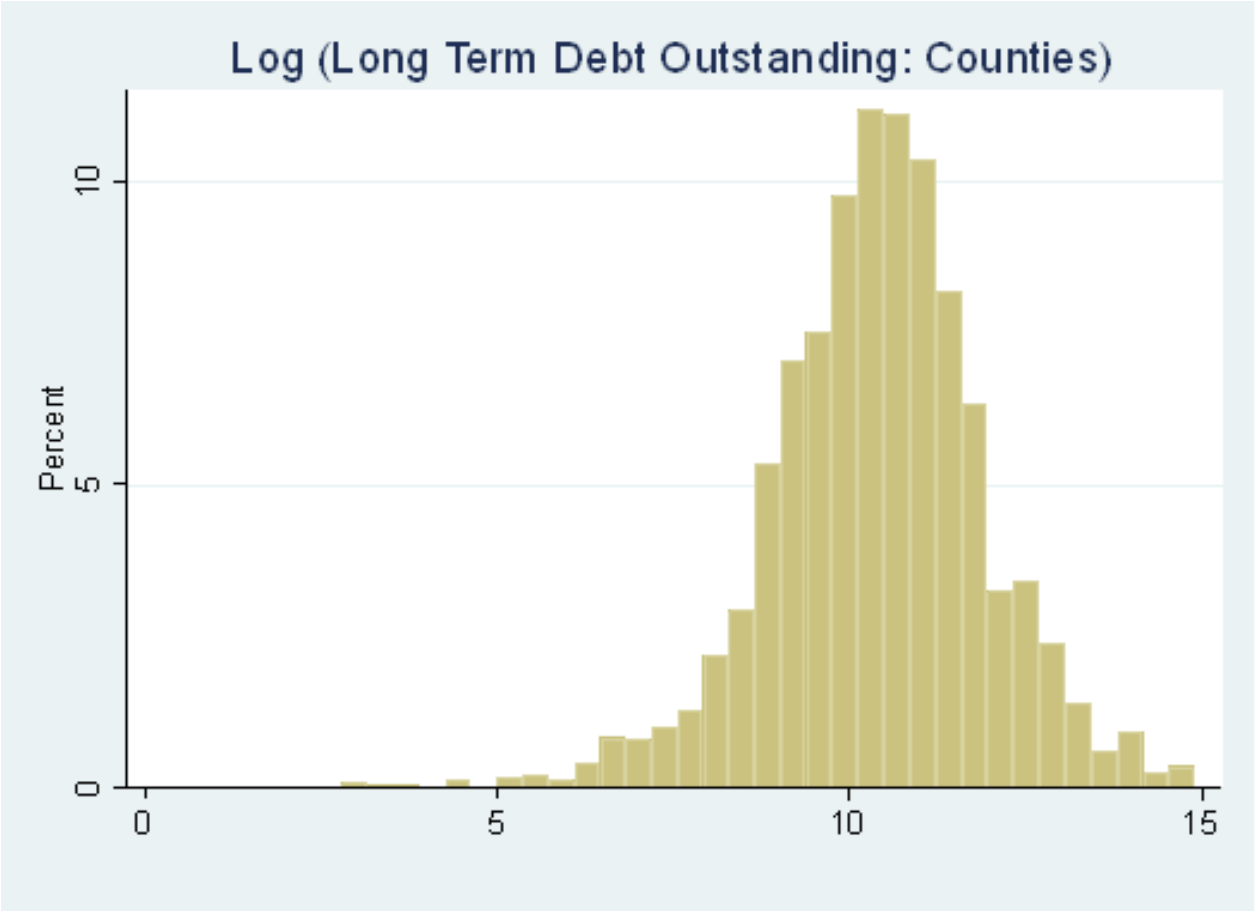


Figure B. 3. Counties in Louisiana

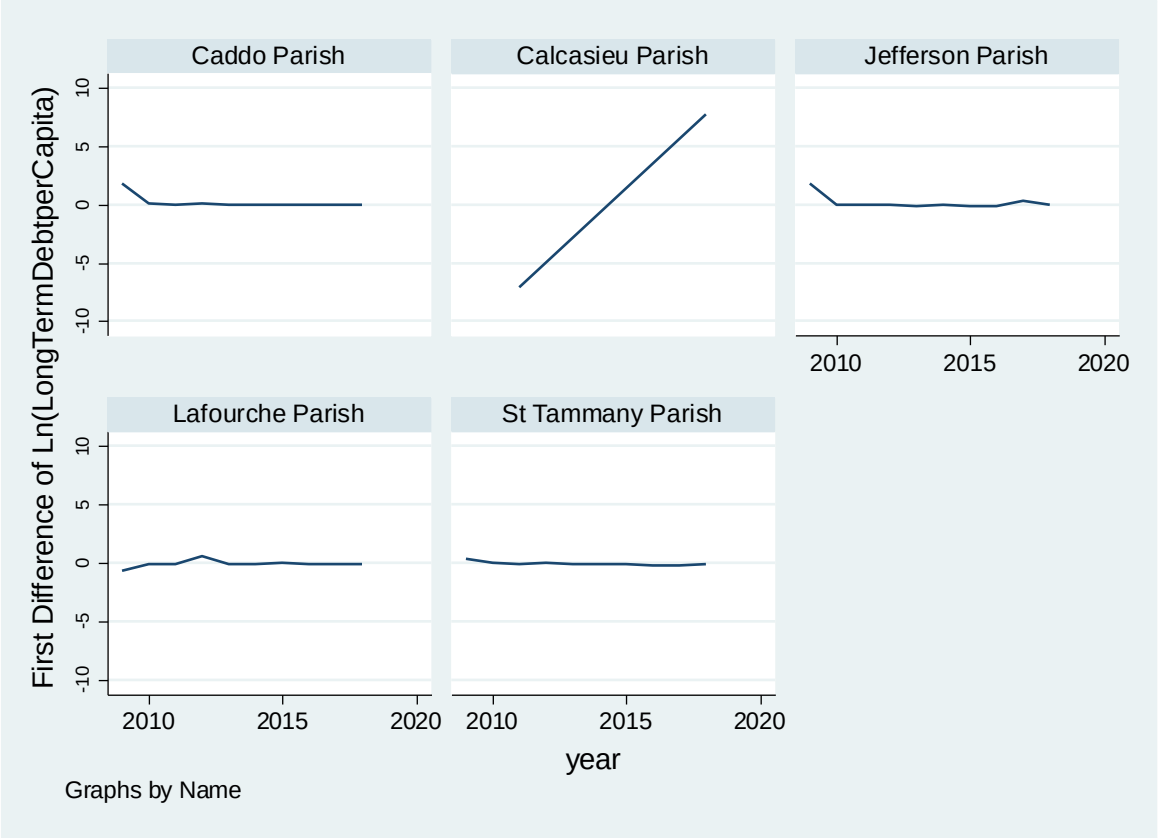


Figure B. 4. Counties in Pennsylvania

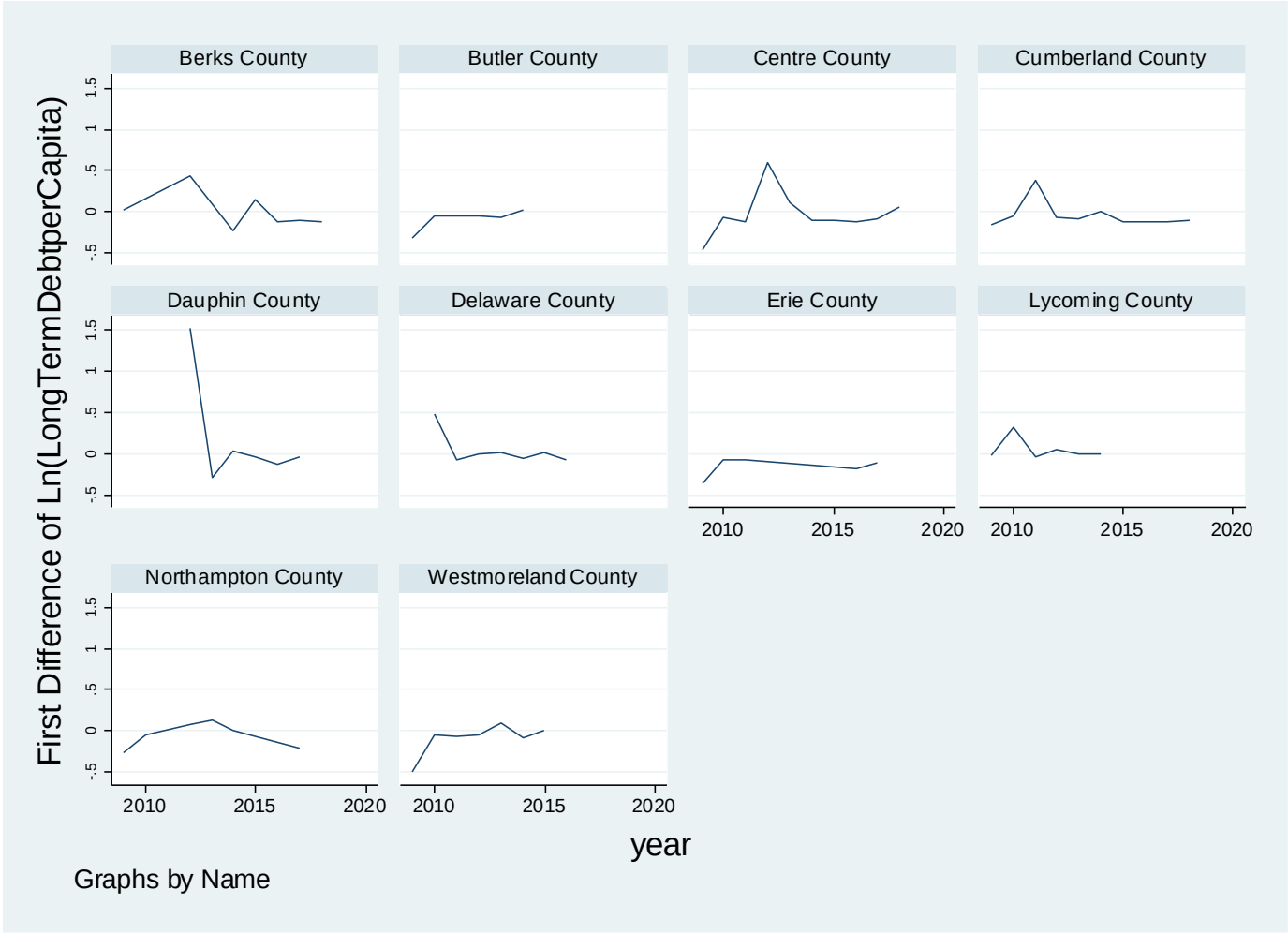


Figure B. 5. Counties in North Carolina

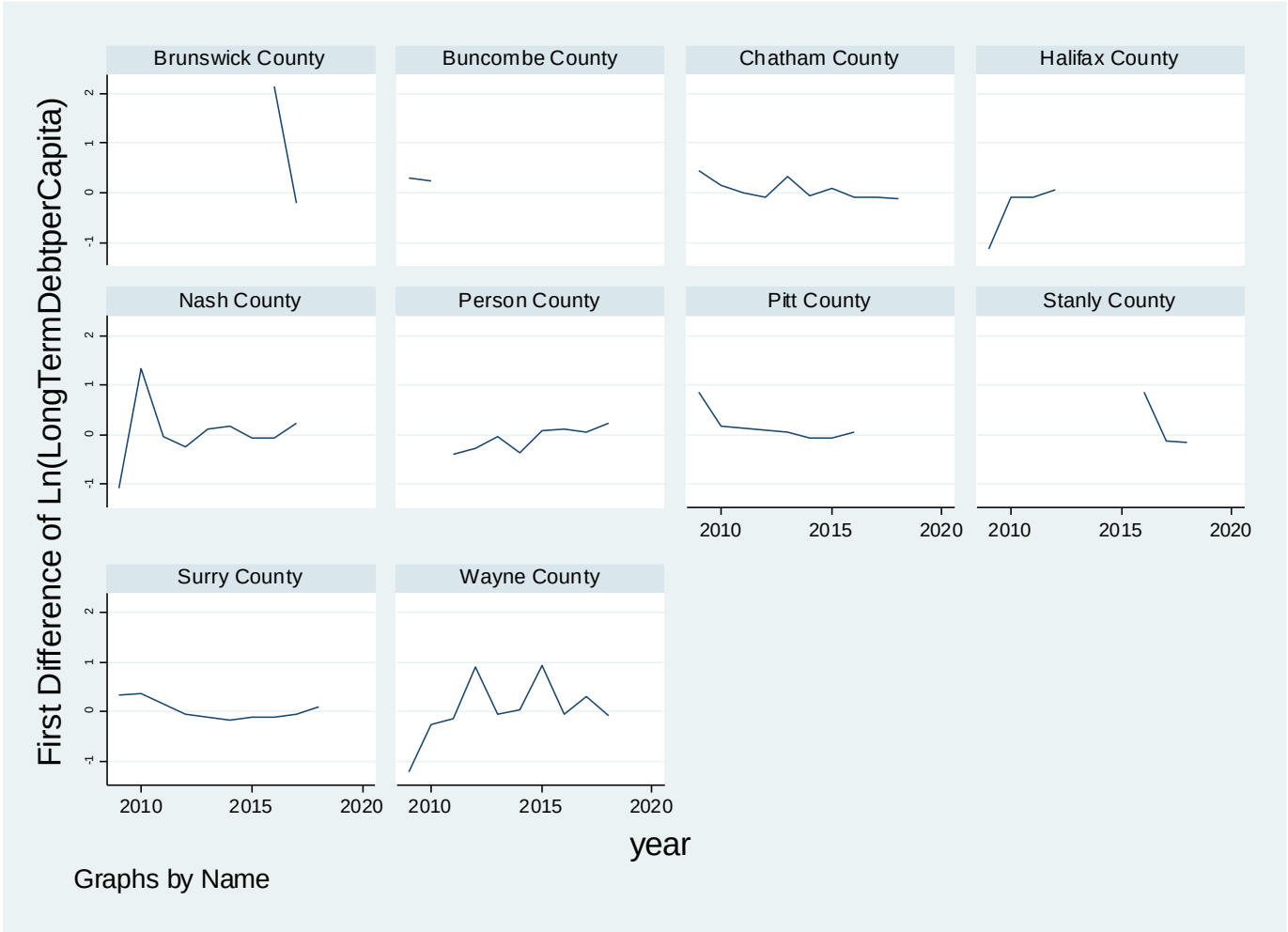


Figure B. 6. Counties in Michigan

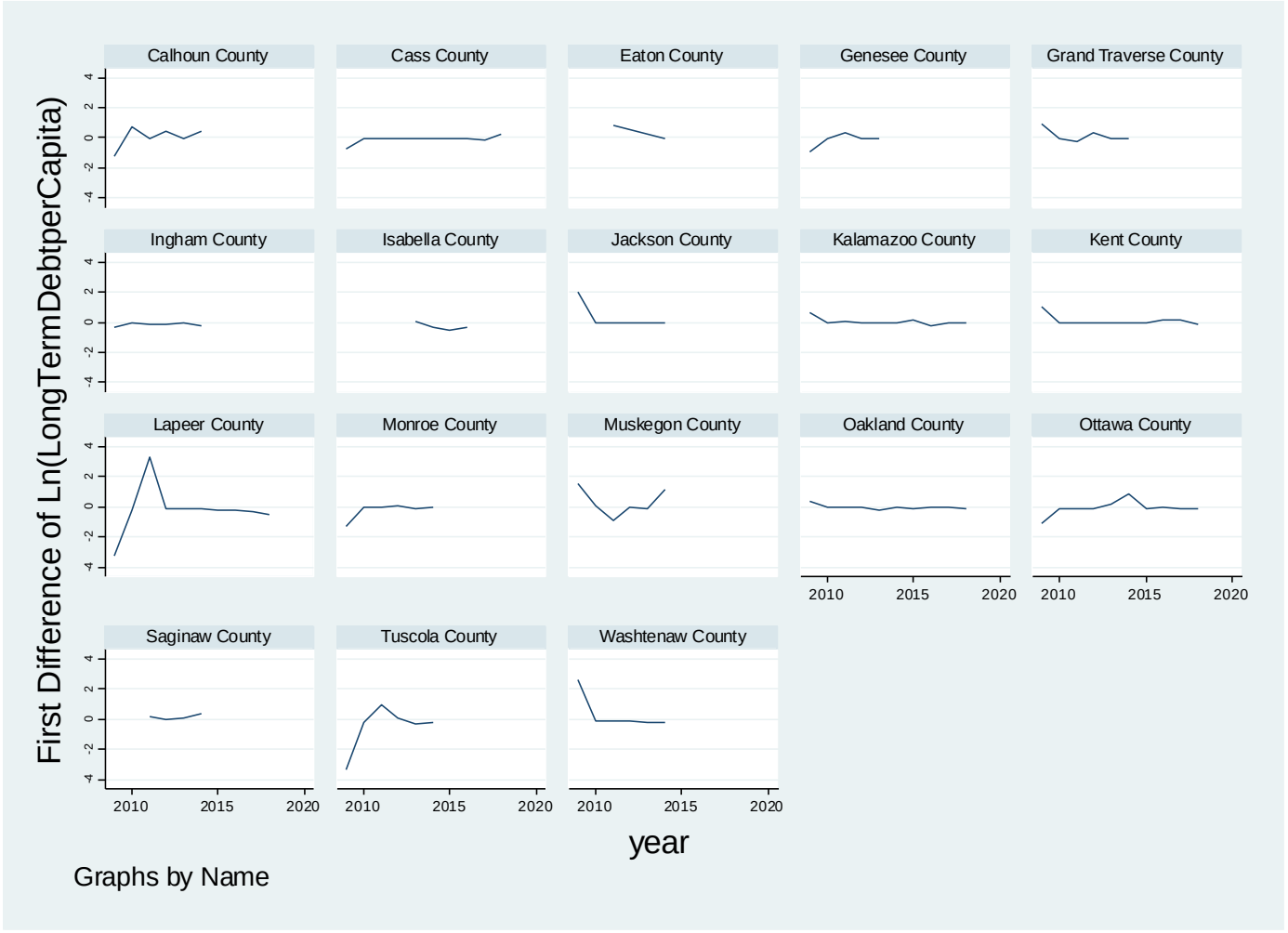
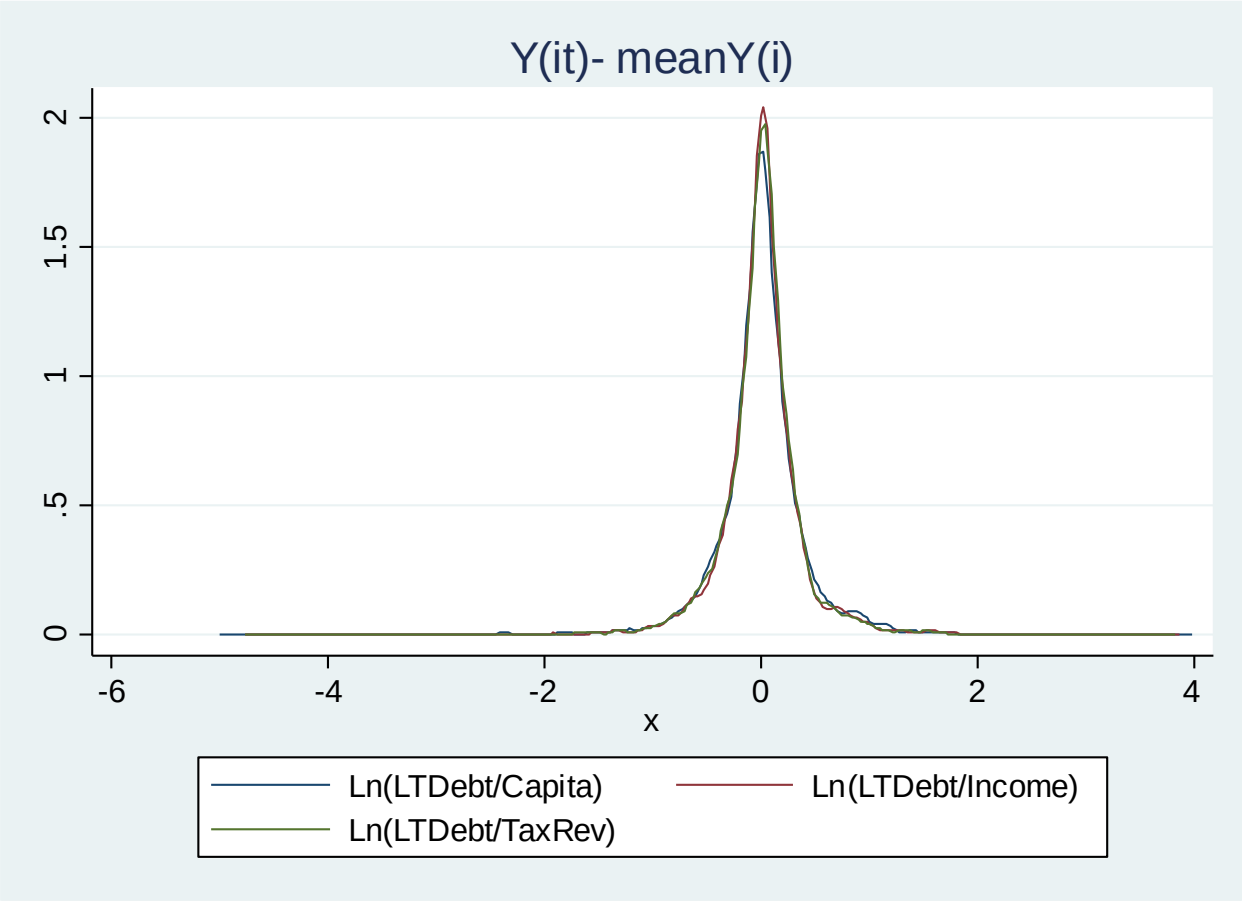


Figure B. 7. K- Density Plots for Long Term Debt (Standardized by Population, Income and Tax Revenue)



Appendix C: Analysis of Data on Debt of Water-Sewer Utilities

Table C. 1. Impact of Financial Health Variables on Debt Per Dollar of Income

	(1)	(2)
VARIABLES	Oversight	No Oversight
Quick Ratio	-0.0463***	-0.0197*
	(0.0165)	(0.0119)
% Revenue for Debt Service	1.652	1.340
	(1.727)	(0.996)
Age Ratio	-3.638**	-7.332***
	(1.551)	(1.215)
Total Operating Ratio	-0.478	-0.157
	(0.705)	(0.512)
Population (Ln)	0.957***	0.748***
	(0.200)	(0.190)
Median Income(Ln)	-0.231	-1.211***
	(0.461)	(0.361)
Unemployment Rate(Ln)	-0.00279	0.359
	(0.426)	(0.232)
Constant	-6.754	5.579
	(5.380)	(4.545)
Observations	120	316
Number of Funds	22	54

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C. 2. Long Term Debt (Standardized by Income)

	(1)	(2)	(3)	(5)	(6)
VARIABLES	(All Funds)	(Single Purpose Funds)	(Multi-Purpose Funds)	(Small Funds)	(Large Funds)
Oversight	0.892***	0.708*	0.717***	1.381***	0.939***
	(0.249)	(0.382)	(0.277)	(0.375)	(0.282)
Life Cycle					
Ratio	-6.511***	-5.810***	-8.949***	-4.913**	-9.607***
	(1.292)	(1.363)	(1.112)	(2.047)	(1.917)
Operating					
Ratio	0.330**	0.502***	0.0142	0.178	0.532**
	(0.162)	(0.188)	(0.167)	(0.217)	(0.250)
Population					
(Ln)	0.652***	0.584**	0.953***	0.920	0.862***
	(0.167)	(0.229)	(0.116)	(0.592)	(0.214)
Median					
Income (Ln)	-1.062***	-1.134**	-1.199***	-1.299**	-1.107***
	(0.377)	(0.513)	(0.379)	(0.584)	(0.410)
Unemployment					
Rate (Ln)	0.299	0.286	0.0585	-0.0190	0.463*
	(0.207)	(0.241)	(0.191)	(0.239)	(0.243)
Year Dummies	Yes	Yes	Yes	Yes	Yes
Observations	465	321	144	120	345
Number of					
Utilities	77	54	23	20	59

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Figure C. 1. Median Debt Per Capita by Oversight States

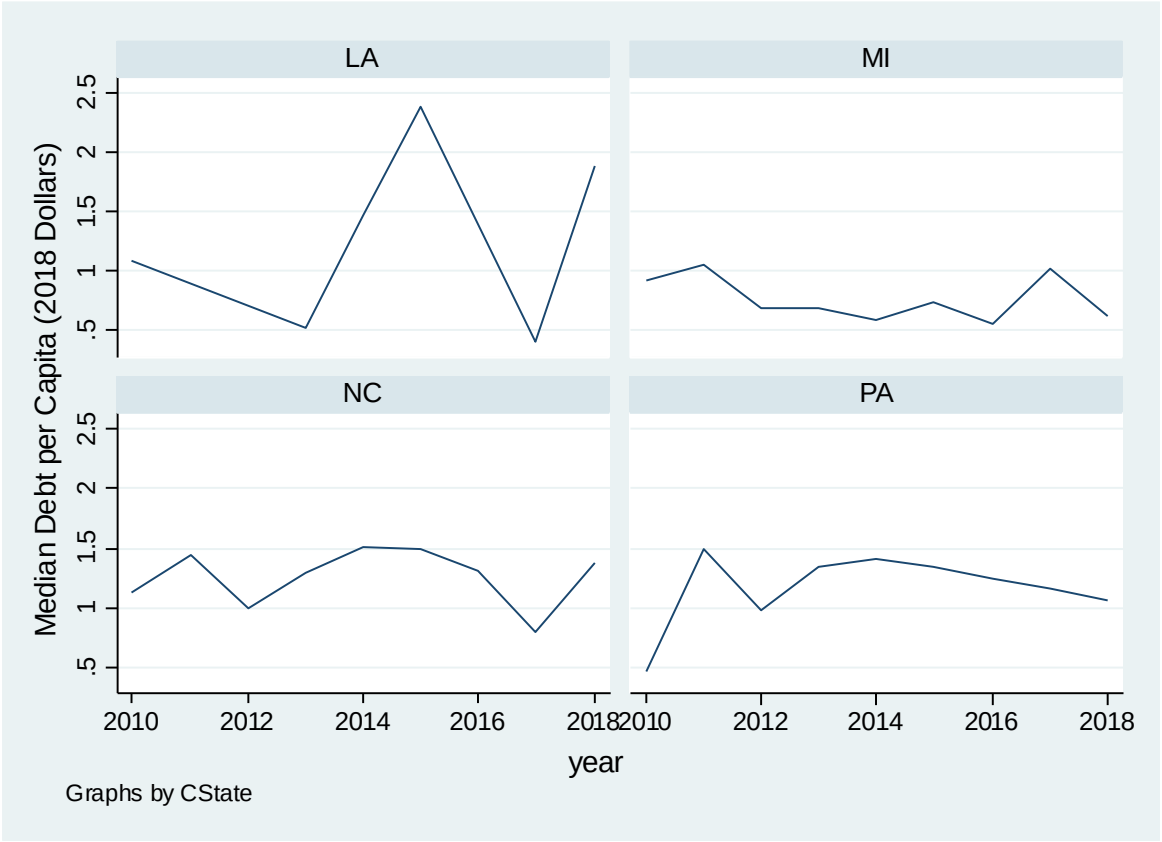
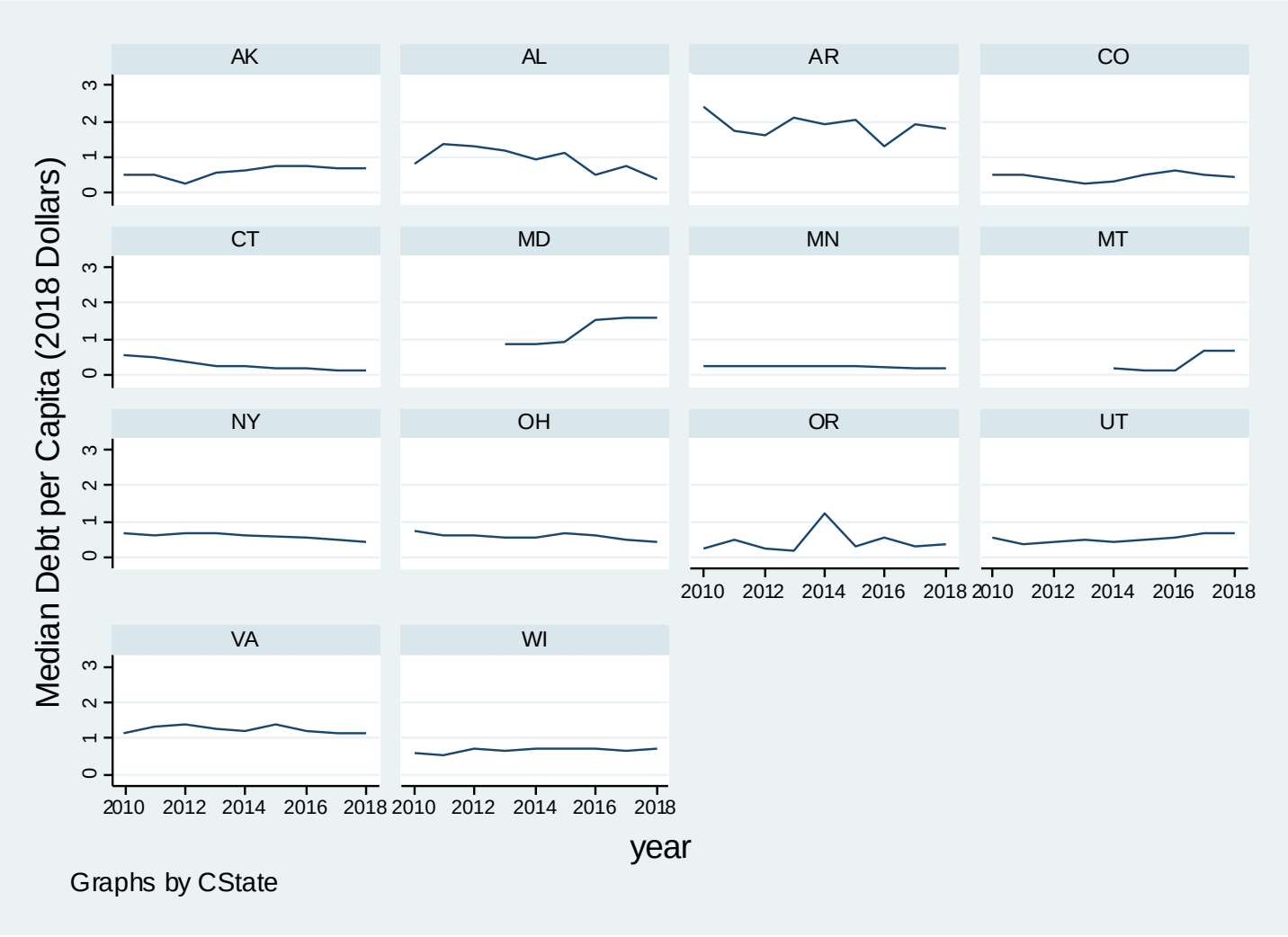


Figure C. 2. Median Debt Per Capita by Non- Oversight States



Appendix D: About the Merritt Dataset

Merritt Research Services, LLC is a data and research provider focused on providing credit information related to municipal bonds. It is a repository of financial data tailored to be used by anyone concerned about the credit of municipal bond obligors. This dataset is predominantly used by institutional investors, investment bankers and credit analysts. Some of the analysis by Merritt Research Services has also appeared in the Wall Street Journal.[100] This proprietary dataset is made available only to Georgia State University researchers through the Municipal Securities Laboratory under contract with Merritt and Investortools, Inc which holds the data copyright.

The firm collects and aggregate official audit and continuing disclosure information from over 10,000 individual municipal borrowers. This is done by actively requesting financial statements and documents from the borrower and official repositories and other delivery agents. This data is then entered into the database after a highly trained team of accountant and finance experts standardize the financial data. Each entry is double checked and subject to a variety of data anomaly tests before it becomes an entry to the dataset. This ensures that the data is accurate, thorough and methodically examined.

Some of the entities that they aggregate data on are states, counties, cities, electric utilities, water-sewer utilities, community colleges, school district. The dataset contains detailed financial and pension information on each of the entities mentioned. This includes data from the Statement of Net Position, Statement of Activities, Balance Sheets, Statement of Revenues, Expenditures and Changes in Fund balances. Data exists on both governmental activities as well as business-type activities. The financial data is complemented by socio-economic information such as

[100] https://www.wsj.com/articles/risk-creeps-into-municipal-bond-market-yet-prices-stay-high-11599211800

median income, median housing value, population, poverty and unemployment rate. This dataset presents researchers with the opportunity to explore questions best answered at the local government level. Moreover, the coverage of the data to include counties across states allows researchers to assess financial behavior/ conditions both across and within states; allowing a comparison of counties across different fiscal, historical and political settings.

This dissertation uses two types of datasets provided by Merritt. Chapter 3 uses county government financial data and Chapter 4 uses water-sewer enterprise fund data. The former chapter investigates the impact of the state oversight function for multiple states in the context of overlapping governments. This is possible through the detailed financial information available in the dataset for the years 2008-2020, including overlapping debt of each county. Utilizing this data helps to make a unique contribution to the research investigating the fiscal spillover effects of overlapping governments. Table D.1 below contains details on the percentage of counties in the Merritt dataset by State.

Table D. 1. Percentage of Counties in the Merritt Dataset by State

States	Number of Counties (Merritt)	Total Number of Counties (Census- GEOID[101])	% of counties in Merritt Dataset
AK	3	30	10%
AL	36	67	54%
AR	4	75	5%
AZ	11	15	73%
CA	43	58	74%
CO	16	64	25%
CT	0	8	0%
DC	0	1	0%
DE	3	3	100%
FL	39	67	58%
GA	47	159	30%
HI	4	5	80%
IA	21	99	21%
ID	7	44	16%
IL	43	102	42%
IN	42	92	46%
KS	18	105	17%
KY	33	120	28%
LA	22	64	34%
MA	3	14	21%
MD	21	24	88%
ME	5	16	31%
MI	50	83	60%
MN	35	87	40%
MO	30	115	26%
MS	30	82	37%
MT	7	56	13%
NC	65	100	65%
ND	5	53	9%
NE	11	93	12%
NH	8	10	80%
NJ	21	21	100%
NM	13	33	39%
NV	5	17	29%
NY	53	62	85%
OH	72	88	82%
OK	11	77	14%
OR	20	36	56%
PA	56	67	84%

[101] Numbers match with the FIPS Data

Table D.1 (Continued)

States	Number of Counties (Merritt)	Total Number of Counties (Census- GEOID[102])	% of counties in Merritt Dataset
SC	33	46	72%
SD	3	66	5%
TN	48	95	51%
TX	89	254	35%
UT	12	29	41%
VA	36	133	27%
VT	0	14	0%
WA	27	39	69%
WI	42	72	58%
WV	7	55	13%
WY	3	23	13%

Chapter 4 uses the data on water-sewer enterprise funds to assess the impact that state debt oversight has on borrowing. Research has typically focused on the borrowing of general purpose governments as a whole. This chapter dives deeper to investigate the borrowing for the provision of water-sewer services. The lack of data on this topic is one potential reason for the limited research in this area. Merritt data on water-sewer funds is advantageous as it includes comprehensive financial information on various type of water, sewer, wastewater and stormwater entities including districts, funds, commissions, authorities and boards nationally across years. At the most basic, this data allow an assessment of the financial conditions of the entities over a period of time. The existing ratios in the dataset such as the quick ratio, cash on hand, and operating ratio allows for a quick understanding of the financial conditions of the water-sewer entities. The use of this data to study business-type activities provides an important contribution to the rich literature on the impact of fiscal institutions on public finance outcomes. Table D.2 below shows the distribution of the number of funds by state.

[102] Numbers match with the FIPS Data

Table D. 2. Total Number of Water-Sewer Enterprise Funds by State

States	Number of Funds(Merritt)
AK	3
AL	11
AR	3
AZ	20
CA	191
CO	25
CT	1
DC	0
DE	1
FL	94
GA	15
HI	0
IA	14
ID	1
IL	18
IN	21
KS	4
KY	5
LA	8
MA	0
MD	4
ME	0
MI	32
MN	2
MO	21
MS	7
MT	2
NC	24
ND	6
NE	8
NH	1
NJ	1
NM	6
NV	3
NY	1
OH	32
OK	0
OR	14
PA	9
SC	12
SD	2

Table D.2 (Continued)

States	Number of Funds(Merritt)
TN	7
TX	78
UT	26
VA	8
VT	0
WA	29
WI	34
WV	1

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VITA

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Justina's research lies in two main areas of public financial management. First, she studies fiscal governance structures that constrain the budgets of state and local governments. Second, she examines applied questions to study the use of scarce public finances to address challenges that federal, state and local governments are currently facing. Her research has appeared in journals such as Journal of Public Budgeting, Accounting and Financial Management and Environment and Urbanization Asia. She is a regular attendee of conferences such as the Association for Budgeting and Financial Management (ABFM) and Association for Public Policy Analysis and Management (APPAM).

At the Andrew Young School, Justina has taught courses related to public budgeting and finance, both at the graduate and undergraduate level. She also managed the Municipal Securities Laboratory where she was responsible for the purchase, organization and overall management of the databases. Justina has now accepted a position as Assistant Professor at San Diego State University, California.