Consequences of GAAP Disclosure Regulation: Evidence from Municipal Debt Issues

William R. Baber
School of Business
The George Washington University
2201 G Street NW, suite601
Washington, D.C. 20052
baber@gwu.edu

Angela K. Gore
Lundquist College of Business
University of Oregon
Eugene, OR 97403-1208
agore@uoregon.edu

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Abstract

We compare characteristics of municipal debt issues in states that mandate GAAP for municipalities with characteristics of issues in states that impose no annual municipal disclosure requirements. The investigation is motivated by interest in whether GAAP standards influence the cost, and thus the use, of municipal debt financing. The study is also relevant to more general issues of how regulating accounting and reporting methods influences contracting between borrowers and lenders. Cross-sectional comparisons indicate that the use of public (versus private) debt is greater, and public municipal debt costs are lower by 13 to 25 basis points in states where GAAP is required. Moreover, states that mandate GAAP for the first time during the period encompassed by the study realize lower mean municipal debt costs following the effective date of the regulation. As a whole, the results suggest that GAAP disclosure regulation is associated with lower municipal debt costs.

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1. Introduction

The Governmental Accounting Standards Board (GASB) was established by the Financial Accounting Foundation in 1984 in response to demand for standard accounting and reporting procedures specifically applicable to state and local governments. The authority of the GASB is well established since 1986 when the AICPA recognized GASB as the primary body for setting Generally Accepted Accounting Practices (GAAP) for municipalities. By 2000, fifteen U. S. states required their municipalities to file annual financial statements using GAAP as defined by the GASB.

The objective of this study is to consider whether state requirements that municipalities use GAAP influence municipal debt financing decisions. Addressing this objective is relevant because "those who finance government or who participate in the financing process" are among the primary users of state and local government financial reports that GASB is obligated to serve (GASB 2005). In addition, because compliance with GAAP is costly, if tangible benefits of GAAP regulation do not accrue, then decisions to impose GAAP reporting appear to contradict the public interest.[1]

Implications of the study extend beyond the municipal sector. Specifically, the current status of municipal reporting facilitates investigation of the consequences of mandatory disclosure requirements in a relatively controlled environment, as not all states regulate

[1] The analysis is confined to measurable financial costs and benefits to the municipality, and as such, ignores social welfare issues. The focus on costs and benefits in this context is consistent with both GASB-commissioned focus groups and characterizations in prior research that bond market participants are primary users of GAAP financial statements (Gore 2004).

municipal disclosure. Thus, the investigation potentially informs deliberations of more general issues about the consequences of imposing accounting and disclosure regulation.

The empirical analysis compares municipal debt issues in states that require GAAP (designated GAAP states) with issues in states that do not regulate municipal disclosure (non-GAAP or unregulated states). The underlying proposition is that, if state GAAP requirements are associated with lower debt financing costs, then the characteristics of debt issues should differ between GAAP states and non-GAAP states.

We begin by investigating whether the amount of municipal debt issued differs between GAAP and non-GAAP states. This analysis is predicated on the expectation that GAAP disclosure regulation reduces the costs of contracting between municipal borrowers and lenders, which suggests greater use of debt by municipalities in GAAP than in non-GAAP states. Notwithstanding this expectation, we find relatively little evidence of differences between GAAP and non-GAAP states in the use of debt financing, even in multivariate specifications designed to control for other state-imposed regulations, municipal size, growth, and voluntary disclosure.

Next we consider whether municipalities issue debt publicly or negotiate arrangements with private lenders (e.g., banks, insurance firms, or pension funds). We expect that GAAP has greater value in public debt markets, where many borrowers and lenders compete, than in privately-negotiated arrangements. This expectation is guided by studies of the use of debt in the private sector context, which predict and find greater proportions of privately negotiated lending arrangements when disclosure costs are high (Dhaliwal, Khurana, and Pereira 2005). Thus, we anticipate greater use of public versus private debt (e.g., bank debt or private placements) financing by municipalities in GAAP states than in non-GAAP states. The empirical analysis indicates greater use of public debt by municipalities in GAAP states, which suggests that

reductions in municipal debt costs associated with state mandated GAAP are greater for public than for private debt issues.

We then compare debt costs (bond yields) for a sample of 439 municipal debt issues, 212 from the GAAP states and 227 from the non-GAAP states. After controlling for market and issue-specific factors that affect municipal yields, including voluntary disclosure, we find that mean municipal debt costs are lower by 13-25 basis points in states that mandate GAAP.

Finally, for two states that recently imposed GAAP regulation, Montana and Nevada, we compare municipal debt costs before and after GAAP is mandated. Although the sample of 33 debt issues is relatively small, we find that municipal debt costs are significantly lower following the GAAP requirement. This result corroborates the cross-sectional comparisons of municipal debt costs in GAAP states versus non-GAAP states.

Three prior studies examine whether state regulation of municipal disclosure affects municipal bond interest costs. Ingram and Copeland (1982) document negative associations between ordinal measures of state requirements and the change in offering yield premiums (i.e., secondary market *Blue List* quotes less the corresponding U. S. Treasury yields). In an extension, Benson, Marks and Raman (1984) find no statistically significant associations between bond yields and state regulation of accounting for a sample of new issues. The authors do find, however, that associations between bond yields and accounting-based measures of municipal government financial viability are lower for municipalities in states that impose accounting or financial reporting requirements.[2]

[2] In another study, Benson, Marks, and Raman (BMR 1991) find that, for state governments with relatively more short-term debt, state government general obligation bond interest costs are lower cross-sectionally for states that voluntarily disclose GAAP information in their financial reports. In this case, however, GAAP disclosure is voluntary rather than imposed. In contrast, our focus is on the consequences of state regulation of municipal disclosure. Moreover, our paper differs from BMR (1991) in the focus on municipal-level government. BMR note

In contrast with Ingram and Copeland (1982) and Benson et al. (1984), Fairchild and Koch (1998) find that yields on primary market municipal bond issues are lower in states where so-called *Blue Sky Laws* require "official statement" filings in anticipation of municipal debt issues. Official statements are comparable to prospectus filings required by the SEC for public security issues in the private sector. Analysis reported in the study indicates that net interest costs are 14 basis points lower for municipalities in states that require official statement filings, compared to those in states that do not require such filings.

The current study contributes to prior literature that examines whether state disclosure regulation affects municipal debt costs in at least four ways. First, we go beyond documenting associations between state disclosure requirements and municipal interest costs to investigate whether disclosure regulation influences both the issuance of municipal debt and the use of public debt markets versus private placement. These associations have not been investigated previously.

Second, we consider the role of state-mandated GAAP in the context of other state regulations designed to monitor or control municipal financing decisions, including official statement regulations. The results suggest that state GAAP requirements contribute incrementally toward determining municipal debt characteristics. In contrast, prior studies do not consider the effects of alternative state regulations or state characteristics that can also affect municipal debt costs.

Third, the study advances the literature methodologically. Specifically, we address a larger sample that includes debt characteristics not considered in prior studies, and compare mean municipal debt costs surrounding the implementation of GAAP disclosure regulation.

(p. 309) that results for empirical studies of state government issues often differ from results for municipal issues.

These analyses more comprehensively and definitively establish a role of GAAP accounting requirements in the context of municipal debt markets.

Finally, we use more recent data than prior studies which primarily investigate municipal debt costs during the 1970s and 1980s. New federal regulations which encourage voluntary disclosure – for example, the Single Audit Act (discussed in section 2.1 below) – potentially obviate the need for state disclosure regulation. On the other hand, the involvement of the GASB has led to a richer and more comprehensive set of GAAP requirements, which can strengthen the relations found in prior studies (Reck et al. 2004; Hildreth and Zorn 2005).[3] Thus, the current municipal reporting environment differs substantially from periods investigated in prior studies, and therefore, the relation between GAAP disclosure regulation and municipal bond interest costs using recent data is not obvious.

As a whole, the analysis supports the proposition that state-imposed requirements on municipalities to use GAAP accounting are associated with lower municipal debt costs. Moreover, the evidence suggests that the consequences of state-imposed GAAP tend to be more substantial for small municipalities. This evidence should be interpreted cautiously, however, as we do not consider the costs of disclosure regulation, which potentially exceed benefits realized in debt markets. For example, while we find that differences in debt costs in GAAP states tend to be more substantial for smaller municipalities, disclosure costs are likely to be more substantial as well.

The next section (Section 2) provides institutional background and poses three hypotheses regarding the relation between disclosure regulation and municipal debt

[3] As examples, newly implemented disclosure standards -- including standards regarding investment disclosure (GASB 3 and 31), pension disclosure (GASB 5, 25, and 27), risk financing disclosure (GASB 10), and a standard financial reporting model (GASB 34) -- are potentially useful for assessing risk.

characteristics. Sample selection and measures used in the analysis are in Section 3. Results for multivariate specifications are in Section 4. Concluding remarks are in Section 5.

2. *Hypothesis development*

2.1 *Background*

Prior to the 1970's, oversight of municipal accounting and bond issuance was inconsistent and frequently ineffective (Gellis 1996). High profile defaults by New York City in the 1970s, the Washington Public Power Supply System (WPPSS) in the 1980s, and Orange County in the 1990s brought municipal accounting under scrutiny and created a demand for regulation to remedy alleged abuses. In response, financial disclosure and audit requirements were implemented at both the federal and state levels.

Consistent with state sovereignty guarantees in the U. S. Constitution, the 1933 and 1934 Securities Acts specifically exempt municipal securities from federal regulation. The U. S. Congress reaffirmed this proscription regarding federal government oversight of municipal debt issues in 1975 by passing the Tower Amendment, which specifically prohibits the Securities Exchange Commission (SEC) from requiring issuers of municipal securities to file with the SEC (Hildreth and Zorn 2005). The trading environment for U. S. municipal debt, which exceeded $2 trillion at the beginning of 2005 (Hildreth and Zorn 2005), therefore differs in important ways from that for corporate debt. More specifically, unlike publicly-traded securities issued by private sector firms, securities issued by state and local governments – and more to the point of this study, accounting and reporting practices used by municipalities that issue publicly traded debt – are not directly regulated by the federal government.

The federal government can influence municipal financial reporting practices indirectly, however, and has increasingly done so since New York City's 1975 financial crisis (Soybel

1992; Reck and Wilson 2006). A salient example is the Single Audit Act of 1984, which requires audited financial statements for municipalities receiving federal funding in excess of $500,000.[4] While the Act requires audits for certain large municipalities, it does not require specific municipal accounting and disclosure methods, including GAAP standards, which remain the purview of state regulators. In fact, municipalities in non-GAAP states are free to follow alternative accounting methods, including the cash basis.[5]

Moreover, the SEC issued rule 15c2-12 in 1994, exploiting anti-fraud provisions in the 1934 Securities Act. The Rule requires brokers, dealers, and underwriters to obtain commitments from municipal borrowers in excess of $1 million to disclose financial information annually (Fairchild and Koch 1998; Reck and Wilson 2006). Rule 15c2-12 is clearly intended to force municipalities to disclose information to secondary bond market participants. The underlying legislation does not provide for an enforcement mechanism, however, and as a result, many municipalities do not comply (Hume 2002), and brokers, dealers, and underwriters lack incentives to force compliance (Gellis 1996).

Although neither of these federal regulations requires municipalities to use GAAP financial reporting practices, they do potentially encourage voluntary GAAP compliance by municipalities in states where disclosure is unregulated. These recent changes in the municipal financial reporting environment raise issues about whether state-imposed GAAP disclosure regulations are necessary or effective.

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[4] The original Act applies to municipalities receiving Federal funding greater than $100,000. The threshold was increased to $300,000 in 1996 and to $500,000 in 2003 (Reck and Wilson 2006).

[5] To illustrate, consider the following excerpt from the U. S. Department of Housing and Urban Development (HUD): "Neither the Act nor A-128 require financial statements to be presented in accordance with Generally Accepted Accounting Principles (GAAP). If a government entity reports on the cash basis, those reports, with an appropriate auditor's opinion, will satisfy the single audit requirements" (HUD, 1984).

In contrast with the federal government, states can directly dictate financial reporting practices for municipalities (Benson, Marks and Raman 1991). Some states apparently adopted GAAP following the high-profile bankruptcy filings of New York City of $600 million in 1975 and the WPPSS of $2.5 billion in 1988, as in both of these cases, inadequate financial disclosure was cited as a contributing factor (Gellis 1996). Coincidentally or not, several states adopted GAAP regulations within five years following the New York City default (i.e., Rhode Island, Florida, and Kentucky), while two others (Connecticut and Ohio) adopted GAAP shortly after the WPPSS default. On the other hand, some states (e.g., Massachusetts and New Jersey) impose state-specific accounting practices that differ from methods established and promulgated by the GASB, while other states require GAAP for some, but not all, municipalities.[6] Finally, some states – for example, Texas – impose no disclosure requirements on municipalities.

Addressing why some states require GAAP while other states require virtually nothing is beyond the scope of this study; however, some non-GAAP states appear reluctant to mandate disclosure due to cost considerations. For example, communication with the authors suggests that the State of Iowa does not require GAAP because they "have a large number of small communities who would not see any benefit from this requirement." Another state regulator suggests that municipalities that issue bonds have incentives to voluntarily comply with GAAP, while smaller municipalities, who seldom issue debt, could avoid the cost of GAAP compliance. Such reasoning is used to justify piecemeal GAAP requirements in some states where population, revenue, or debt thresholds determine which municipalities are exempted from GAAP requirements.

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[6] New Jersey, which accepts reports from municipalities using three different bases of municipal accounting, recently debated whether to begin requiring GAAP for all municipalities, citing comparison within the state and with municipalities in other states as a motive for doing so (Higgenbotham 2001).

Regardless of specific state requirements, and in contrast with federal regulators, state regulators can insure compliance with state-imposed accounting and disclosure regulations. For example, in the State of Michigan, which requires GAAP, state auditors routinely test GAAP compliance by reviewing municipal reports. If a financial report is not in compliance, then the municipality must submit a revised financial report (Gore 2004).

To summarize, in contrast with markets for most publicly-traded securities where federal regulation dominates, state governments primarily establish and enforce municipal accounting and disclosure practices[7]. Thus, information transparency and disclosure in municipal debt markets varies substantially and is typically less than that for private sector debt issues.

2.2 Consequences of disclosure regulation

Prior studies, set primarily in the context of federally regulated securities markets, suggest that borrowers have private incentives to disclose voluntarily when voluntary disclosure is beneficial to contracting parties (Leftwich 1980; Easterbrook and Fischel 1996; Healy and Palepu 2001). Empirical studies of factors that influence the cost of debt financing in the private sector indicate inverse associations between voluntary disclosure and the cost of capital (Sengupta 1998; Botosan and Plumlee 2004). Such results raise questions about whether regulation is justified when accounting and disclosure practices can be used voluntarily.

On the other hand, Bushee and Leuz (2005) suggest circumstances where even voluntary disclosers can benefit from disclosure regulation. First, regulation pre-commits regulators to enforcement and borrowers to future disclosure. Lacking such commitment, voluntary disclosers can withhold information opportunistically. If lenders demand compensation for the risk that borrowers behave opportunistically, then borrowers potentially benefit from disclosure

[7] In addition to annual disclosure requirements, states can impose other municipal regulations such as audits or official statement disclosures. We discuss implications of such alternatives in section 2.5.

requirements. A second benefit of disclosure regulation arises when information availability influences the overall search and transaction costs and thus influences liquidity in lending markets. If disclosure improves market liquidity, then decisions to disclose voluntarily fail to incorporate public benefits that accrue to other lenders from liquid capital markets. That is, voluntary disclosure decisions fail to consider "information spillover," a positive externality that accrues when borrowers act collectively. If either of these scenarios applies, then disclosure regulation potentially provides benefits beyond those that result from voluntary disclosure.

Requiring public financial disclosure can have adverse consequences beyond the out-of-pocket bookkeeping costs of compliance, as requirements to report information publicly can increase agency costs of an organization in important, but subtle, ways. As examples, the disclosure of proprietary information in the private sector can undermine an organization's position with respect to competitors or contracting with other external parties (Bowen, DuCharme, and Shores 1995). Moreover, Dhaliwal, Khurana, and Pereira (2005) document positive associations between the relative use of private (versus public) debt financing and measures that suggest high costs of public disclosure. Private financing typically does not require public financial disclosure; therefore, such evidence supports the premise that public disclosure is costly. Further, managers can respond to disclosure regulation by reducing reliance on other less costly mechanisms that could be implemented voluntarily in an unregulated environment. For example, Gore et al. (2004) describes the use of bond insurance as a substitute for public disclosure to reduce municipal debt costs. Thus, notwithstanding evidence that voluntary disclosure reduces the costs of debt financing, the consequences of mandating financial disclosure are not straightforward.

2.3 GAAP disclosure regulation and decisions to use municipal debt financing

Potentially important differences between the public and private sectors suggest caution when importing results from publicly-traded companies into the context of municipal debt. As examples, existing studies posit relatively less liquidity (Downing and Zhang 2004) and higher transaction costs (Harris and Piwowar 2006) in municipal bond markets, which implies greater information asymmetry than in corporate debt markets. Moreover, municipal governments do not compete for market share in the usual sense (although see Tiebout 1956), so municipal managers are less likely than their private sector counterparts to be concerned about disclosure of proprietary information.

These differences suggest that net benefits to disclosure regulation are potentially greater in the context of municipal debt markets than in private debt markets. On the other hand, public disclosure can adversely influence transactions costs incurred under implicit contracts, such as those with suppliers and employees (as in Bowen, DuCharme, and Shores 1995). Thus, predicting how disclosure regulation influences the use and characteristics of municipal debt requires thinking comprehensively about how disclosure regulation affects decisions about debt-financed municipal spending. More specifically, a municipality's use of debt financing can be endogenous to the financial reporting environment in the sense that the marginal cost of debt influences incentives to undertake debt-financed capital projects. If GAAP disclosure regulations are associated with lower debt costs, then municipalities potentially respond by undertaking more activities that use debt financing. Given this scenario, we expect greater use of debt financing in states that impose GAAP.

Alternatively, since GAAP requirements are only one of a variety of potentially less costly mechanisms that states can impose to reduce municipal financing costs, state requirements that municipalities follow GAAP may not affect municipal incentives to use debt financing. This

might be the case, for example, if alternative mechanisms reduce adverse selection costs to the efficient minimum such that GAAP reporting provides lenders with no incremental assurance (Gore 2004; Gore et al. 2004).

Thus, the effect of state-mandated GAAP on the use of municipal debt is not straightforward. The related null hypothesis is

> *Hypothesis 1: The issuance of municipal debt is independent of whether GAAP is required by the state government.*

Next we consider that municipal debt financing can be either issued publicly or negotiated with private lenders. Although debt cost savings from GAAP potentially accrue to municipalities that engage all types of lenders, the benefits of GAAP are likely greater in the context of public markets because the value of public debt is determined by many potential traders. Municipalities in unregulated states can, at some cost, disclose GAAP information to public lenders voluntarily, but municipalities in states that require GAAP incur no incremental cost of disclosure. Thus, if GAAP disclosure regulation reduces the costs of contracting with public lenders, we expect relatively greater use of private than public debt financing in non-GAAP states than in GAAP states. This characterization suggests the following null hypothesis.

> *Hypothesis 2: The relative use of private (versus public) municipal debt financing is independent of whether GAAP is required by the state government.*

Rejecting hypotheses 1 or 2 in favor of finding greater use of municipal debt or relatively greater use of public debt in GAAP states supports the proposition that the GAAP requirement reduces the marginal cost of municipal debt financing. On the other hand, not rejecting these

hypotheses, or rejecting in favor of the alternative hypotheses that the use of debt financing or public debt is less for GAAP states, implies that GAAP regulation is not an important determinant of municipal debt costs beyond what is provided through voluntary disclosure.

2.4 *GAAP disclosure regulation and the cost of debt financing*

Notwithstanding evidence from prior literature that voluntary disclosure reduces state government bond interest costs (Benson et al. 1991), associations between GAAP regulation and mean public debt costs are not obvious. One perspective is that the marginal cost of new debt is unchanged when states mandate GAAP because federal regulations encourage adequate disclosure indirectly among municipalities in non-GAAP states. Moreover, if regulation reduces marginal debt costs, then municipalities may pursue additional debt financing to the point where cross-sectional differences between average debt costs for regulated versus voluntary regimes are not detectable.

On the other hand, consistent with discussion in section 2.2, state-mandated GAAP potentially assures lenders of continuing disclosure and enforcement and/or promotes municipal debt market liquidity such that benefits to municipal lenders and borrowers can go beyond what exists when GAAP disclosure is voluntary. If so, we anticipate lower municipal debt costs when GAAP is state-mandated. The following null hypothesis applies.

> *Hypothesis 3: The cost of municipal debt financing is independent of whether GAAP is required by the state government.*

Rejecting the null hypothesis 3 in favor of lower debt costs in GAAP states supports the premise that GAAP disclosure regulation reduces average municipal debt costs.

2.5 *The GAAP requirement as part of a comprehensive state governance policy*

Finally, we recognize that GAAP disclosure is only one of many mechanisms that state governments can use to oversee and control the actions of municipalities and assure prospective lenders regarding the risk of debt issues. Thus, the GAAP requirement potentially distinguishes municipalities where the state government centralizes fiscal control over municipalities. If so, then differences between GAAP and non-GAAP states can indicate the consequences of comprehensive state policies that include mandated GAAP, rather than direct effects of the GAAP requirement itself.[8]

To address these possibilities, we consider statutory differences among the states that potentially influence contracting between municipal borrowers and lenders. More specifically, following the international governance literature (La Porta et al. 1998), we consider measures of regulation, creditors' rights, and enforcement. To consider regulation, we identify states that mandate official statement requirements (Fairchild and Koch 1998). To consider creditor rights, we ascertain whether state law proscribes municipal bankruptcy. We use three indicators of enforcement. Specifically, we consider whether municipal audits are mandated, whether the percentage of CPAs on the state auditor's staff is above the median, and whether the state has a corruption index that exceeds the sample median.[9]

3. Sample and Data

Following Gore and Trzcinka (2004), who survey each state to determine the municipal disclosure regulations, we identify 15 states that require municipalities to prepare annual GAAP-

[8] This point is also relevant in the context of international studies. La Porta et al. (1997; 1998) conjecture that "strong" financial disclosure laws potentially compensate for relatively weak investor protection laws. Consistent with this conjecture, Miller and Puthenpurackal (2002) find that yields on public debt offerings in the U.S. by foreign firms (or "Yankee" bonds) are greater by 52 basis points for issues from countries with relatively weak investor protection laws. As in the international context, disclosure requirements vary among states, but in contrast with international markets, the municipal debt market has the same general underlying system of investor protection laws. In this regard, the consequences of accounting regulation are potentially easier to document in the municipal debt context.

[9] The corruption index measures indictments of state and local officials. See Butler (2004) for details.

based financial statements (regardless of whether they issue debt) and 11 states that do not require annual financial reporting by municipalities.[10] Table 1 shows state size (1998 population), state marginal personal income tax rates, and the number of municipal bond issues for each GAAP state (panel A) and each unregulated state (panel B). The remaining 24 states require piecemeal, hybrid, or inconsistent state-specific disclosure regulations. As a result, state disclosure requirements for these 24 states are ambiguous and contain relatively high cross-sectional variation such that comparisons with GAAP states or unregulated states are not meaningful. We therefore restrict the primary investigation to municipalities within the states that clearly and definitively either require or do not require GAAP for all municipalities.[11]

We select and classify sample observations based on state requirements, not individual municipal disclosure practices. Municipalities can, and frequently do, disclose financial information voluntarily – including information not required by GAAP – and therefore, the extent of *actual* financial disclosure by specific municipalities in either GAAP or unregulated states both varies and potentially exceeds GAAP standards (Gore 2004). Thus, we control for individual municipal disclosure in the multivariate tests.

We use data from several sources to address the hypotheses: Hypothesis 1 considers the amount of total debt issued (both public and private) for each municipality. These data are obtained from the U.S. Bureau of Census (Census data) for 1995 to 2002, resulting in 5,030

[10] The Gore and Trzcinka (2004) survey supplements a 2000 survey conducted by the National Association of State Auditors, Comptrollers and Treasurers (NASACT). The 2000 NASACT survey is often incomplete and/or apparently contradicts the NASACT survey taken in 1996. Further, NASACT surveys do not distinguish states that are unregulated from states that require state-specific disclosure, nor do they distinguish regulations for municipalities from regulations for other types of government entities (schools, counties, and authorities). Thus, we rely primarily on the Gore and Trzcinka, rather than the NASACT, classification. When differences exist, however, we researched relevant state statutes and contacted state regulators to ensure that states are correctly classified. Results from alternate classifications, including straightforward use of the NASACT classifications (2002, 2000, and 1996), do not differ qualitatively from those reported.

[11] Municipalities in Montana and Nevada, which implemented the GAAP requirement during 2001, are excluded and analyzed separately in section 4.4.

observations.[12] Data for individual municipal disclosure (i.e., the GFOA certificate of achievement) are from the Government Finance Officer's Association.

Hypothesis 2 involves the relative use of public versus private debt. These details are from the Thomson Financial SDC Platinum database (SDC data). Combining SDC data with Census data yields 2,111 observations with complete data.

Hypothesis 3 requires details of public bond issues. We obtain complete information for 1,849 new bond issues (that is, bonds issued in the primary market) in GAAP and unregulated states during 1995 to 2002 from the SDC data. Observations are either general obligation or revenue bonds issued in the primary market by municipal governments (cities, towns, villages, or boroughs). We focus on primary market bond issues because municipalities have direct incentives to reduce the costs of debt at the original issue. In contrast, debt costs in secondary market transactions are borne by market participants, and therefore municipalities lack direct incentives to minimize secondary market yields. To mitigate concern about statistical independence of the sample observations, we select the most recent bond issue for each of 439 municipalities in the GAAP or unregulated states (Sengupta 1998). These procedures yield 212 public debt issues in GAAP states and 227 issues in non-GAAP states.[13]

State-imposed auditing requirements and the percentage of CPAs on the state auditor's staff are from NASACT (1996; 2000; 2002); state official statement requirements are from Fairchild and Koch (1998); municipal bankruptcy requirements are from the Public Law

[12] Following Figlio and O'Sullivan (2001), we exclude municipalities with population less than 2,000, as Census data are often incomplete.

[13] The 439 observations do not include three observations consistently identified as influential in regressions reported later using Cook's D statistic (Belsley, Kuh and Welsch 1980). Results are comparable when the earliest, rather than the most recent, debt issue is selected. We also estimate specifications that omit each state separately, as well as omit the largest two GAAP and non-GAAP states, in order to determine whether results are influenced by the inclusion of any individual state. Results for these procedures are consistent with those reported.

Research Institute, University of California (2005); and corruption measures are from the U. S. Department of Justice, Public Integrity Section.

Table 2 compares characteristics of GAAP and non-GAAP states. The use of debt and the use of private versus public debt are considered in Panel A. We use one observation (mean or median) per state; therefore, statistical tests compare samples of thirteen GAAP state observations (fifteen GAAP states less two that first mandate GAAP in 2001) with eleven observations of unregulated states. The first four rows indicate measures relevant for hypothesis 1. Differences in measures of the amount of debt issued are not statistically significant, perhaps owing to small sample sizes. Even so, except for the median debt outstanding, the overall use of municipal debt in GAAP states exceeds that of non-GAAP states. The last three rows in Panel A indicate that GAAP states are more likely to issue public debt, although comparisons are not always statistically significant.

Panel B of Table 2 summarizes select features of the sample of 439 public debt issues used to consider whether the GAAP requirement varies cross-sectionally with debt costs (Hypothesis 3). The first row of Panel B indicates that true interest cost (*TIC*) – defined as the rate of return that equates the proceeds of the issue with the present value of interest and principal payments (Benson 1979; Sengupta 1998) – is lower for municipal bond issues in GAAP states than in unregulated states. This comparison is consistent with the premise that mandating GAAP reporting requirements is associated with lower municipal debt costs. Conclusions are premature, however, as debt costs are influenced by factors other than state regulation (Kessel 1971; Benson 1979; Wilson and Howard 1984; Sengupta 1998; Mansi et al. 2004). In particular, the table shows that bond issues in GAAP states are less likely to be insured, more likely to be competitively bid, and are less likely to have call provisions. Finding

greater use of bond insurance for unregulated municipalities is consistent with findings in Gore et al. (2004) that bond insurance and financial disclosure are substitute determinants of municipal debt costs. On the other hand, we find no significant between-sample differences in overall bond ratings (t-statistic = 0.11), although potentially important differences exist in individual rating categories. Finally, differences in the use of general obligation (*GO*) versus revenue debt and whether or not the issue is bank qualified are not statistically significant.

Panel C of Table 2 indicates whether GAAP states are more likely than non-GAAP states to require annual independent municipal audits, require official statement filings with municipal debt issues, or prohibit municipalities from declaring bankruptcy. These characteristics are used to address concerns about the extent that empirical results reported later can be attributed to state imposed requirements that may be correlated with the GAAP disclosure requirement. Evidence in Panel C indicates that these state requirements are imposed independently of the GAAP requirement. Again, relatively small sample sizes potentially compromise statistical power, and therefore, we incorporate these requirements into the multivariate specifications, which are considered next.

4. Multivariate Specifications

4.1 Tests of hypothesis 1

We use the following specification to investigate associations between GAAP disclosure regulation and the use of municipal debt financing.

$$DEBTUSE_i = \alpha_0 + \alpha_1\, GAAP\ state_i + \sum \alpha_j\, CONTROL_{j,i,}, \quad (1)$$

where the dependent variable $DEBTUSE_i$ is a measure of municipal i's 1995-2002 use of debt financing (described later), and $CONTROL_{j,i}$ represents eight $j = (2,\ldots,9)$ control variables.

Parameter estimates α_1 on the dummy variable *GAAP state*, which is set to one (zero) for bond issues in GAAP (non-GAAP) states, are the focus of the investigation. Specifically, $\alpha_1 > 0$ indicates municipal debt use is greater for GAAP than for non-GAAP states.

Results for specification *(1)* are displayed as Table 3.[14] The dependent variable $DEBTUSE_i$ for specifications in the first three columns distinguishes 2,259 municipalities that issue public or private debt during 1995-2002 from 2,771 municipalities that do not issue debt during the period. Parameter estimates in these columns are from a logit specification of the probability of debt issue. Results in the fourth through sixth columns are for an OLS specification of $DEBTUSE_i$ computed as the total new debt per capita issued during the same period. For both dependent variables, we show parameter estimates for sub-samples delineated according to size (municipal population). Size partitions consider the possibility that differences in the reporting environment between large and small municipalities causes the consequences of state regulation to manifest differentially between the sub-samples. For example, potential lenders may be better informed about large than small municipalities or incentives to comply with GAAP voluntarily may differ between large and small municipalities.

We control for municipal size (log population), 1995-2002 population growth, state regulation of municipal practices other than state GAAP requirements, and individual municipal disclosure (GFOA certificate). The GFOA certificate is awarded to municipal governments that satisfy financial reporting standards set by the GFOA (formerly the Municipal Finance Officers Association). GFOA standards require both GAAP compliance and additional non-GAAP

[14] Standard errors for all multivariate specifications are adjusted for within-state clustering using procedures advanced by Rogers (1993) as described in Cohen, Polk and Vuolteenaho (2003).

disclosures, although participation in the program is voluntary. Thus, the GFOA variable indicates both GAAP compliance and the extent of voluntary disclosure.

The positive associations between the use of debt financing and the GFOA certificate are consistent with evidence in Evans and Patton (1983) and Gore (2004). Size is associated with greater use of debt financing, while population growth is not significant. Two measures of enforcement (i.e., whether municipal audits are mandated and a high percentage of CPA's on the state auditor's staff), and bankruptcy proscription are associated with significantly less debt financing.

Except for the specification in the second column, the estimate α_1 is not statistically significant ($p < 0.10$, two-tailed). These results, particularly when combined with the univariate comparisons displayed in Table 2A, do not consistently and reliably support rejecting hypothesis 1, although we achieve statistical significance for the logit specification of small municipalities, where potential lenders are likely to be less well informed and/or incentives to disclose voluntarily are less substantial. Therefore, we find no consistent evidence that GAAP disclosure regulation significantly influences debt issuance beyond what is achieved through voluntary disclosure and other state-imposed mechanisms. Failure to detect statistically significant differences indicates that decisions to implement debt-financed municipal projects are more complex than what is suggested by the characterization in Section 2. For example, such decisions are certainly influenced by political considerations, as well as by the costs of debt financing.

4.2 *Tests of hypothesis 2*

We use the following specification to consider the use of private versus public municipal debt.

$$PRIVDEBT_i = \beta_0 + \beta_1\ GAAP\ state_i + \sum \beta_j\ CONTROL_{j,i,}, \qquad (2)$$

where $PRIVDEBT_i$ is computed as municipal i's ratio of private debt issued to total debt issued during 1995-2002, and the subscript $j = (2,\ldots,12)$ indicates a vector of municipal-specific control variables that potentially explain variation in the use of private versus public debt. The dependent variable $PRIVDEBT_i$ is obtained by comparing municipal i's total debt issued from the U.S. Census data with the total public debt issues from the SDC data. We compute the proportion of private debt as the complement of the proportion of publicly issued debt (Krishnaswami et al. 1999; Dhaliwal et al. 2005).[15] Parameter estimates β_1 on the *GAAP state* dummy variable indicate tests of the null hypothesis 2. Specifically, rejecting the null in favor of $\beta_1 < 0$ supports the proposition that municipalities in GAAP states are more likely to issue public debt than municipalities in states where municipal accounting practices are not regulated.

Results for specification (2) are in Table 4. Estimates for the full sample are in the first column; results for small and large municipalities are in the second and third columns, respectively. Control variables – beyond those discussed previously in the analysis of the use of debt financing – are inspired by arguments in Dhaliwal, Khurana and Pereira (DKP 2005), who consider the use of private versus public debt issue in the corporate context. More specifically, DKP distinguish issues with BBB or higher bond ratings, arguing that firms with lower bond ratings are more inclined to use private debt. The distribution of municipal bond ratings is skewed high relative to corporate ratings, and thus, we distinguish issues with AAA ratings from the others. DKP also posit that larger issues (the size of the debt issue) are more likely to be

[15] Consistent with Dhaliwal, Khurana, and Pereira (2005) we compute the ratio of private to total debt using the entire sample period, as annual financing decisions can temporarily deviate from the true underlying profile. Results for specifications using sample observations for each municipality-year are consistent with those presented, however.

issued publicly than privately. Absolute municipal debt issues during 1995-2002 are highly collinear with population (see evidence in Table 3), and therefore, we use the mean debt per capita issued from 1995-2002. DKP include return on assets as a financial performance measure, positing that performance varies directly with the use of public debt. The notion of accounting income lacks substantive interpretation for municipalities; therefore, to consider financial performance, we distinguish municipalities that experience at least one deficit during 1995-2002. Finally, to consider voluntary financial disclosures, we include the fraction of observations during 1995-2002 that earn the GFOA certificate. Notwithstanding these differences in measures, results in Table 4 are consistent with the DKP characterization. In particular, we find negative associations for mean municipal debt per capita, the AAA bond rating, and voluntary disclosure, and a positive association for the deficit dummy variable.

Turning to the primary focus of the analysis, parameter estimates β_1 on the GAAP versus non-GAAP state distinction are consistently negative. Moreover, the estimate is robust to considering other state-imposed statutory controls for municipalities. As examples, results are comparable regardless of whether state law requires independent audits, official statement disclosure, proscribes municipal bankruptcy, or whether the state has a high corruption index or a high percentage of CPAs on the state auditors' staff. Thus, the null hypothesis 2 is rejected in favor of the alternative that municipalities in GAAP states are less likely to place debt issues privately (more likely to issue public debt) than municipalities in unregulated, non-GAAP states. This evidence is consistent with the premise that disclosure regulation lowers public debt costs, beyond what is achieved through voluntary disclosure and other state-imposed regulations.

4.3 Tests of hypothesis 3

We estimate cross-sectional regressions of the following general form to consider associations between GAAP disclosure regulation and bond yields.

$$TIC_i = \gamma_0 + \gamma_1\ GAAP\ state_i + \gamma_2\ INDEX_i + \sum \gamma_j\ CONTROL_{j,i}, \qquad (3)$$

where the subscript i distinguishes the most recent bond issue for municipality i during 1995-2002, and the subscript $j = (2,\ldots,20)$ indicates a vector of control variables that potentially explain variation in true interest costs (*TIC*).

Parameter estimates γ_1 for the dummy variable *GAAP state* are the principal focus of the investigation. In particular, finding $\gamma_1 < 0$ supports rejecting hypothesis 3 in favor of the alternative hypothesis that interest costs are lower for municipalities in GAAP states than for municipalities in unregulated states.

The variable *INDEX,* which is the prevailing Bond Buyer market yield at the time of the issue, considers interest rate fluctuations.[16] We use indicator variables to distinguish issue-specific qualitative features that we expect influence bond yields (Kessel 1971; Benson 1979; Wilson and Howard 1984; Sengupta 1998; Mansi et al. 2004). In particular, competition among underwriters reduces bond yields, and therefore, we distinguish issues that are competitively bid. General obligation issues, which are guaranteed by the municipal government and typically also by the state government, sell at lower yields than revenue debt issues, which are backed only by specific revenue streams. Similarly, bank-qualified issues – that is, issues where the total debt issued by the municipality in the year is less than $10,000,000 – receive favorable federal income tax treatment, and therefore, typically sell at lower yields. Because lenders require

[16] Following Kessel (1971), we also consider specifications (not reported) of risk premia *(TIC-INDEX)*, or the true interest cost net of the appropriate Bond Buyer index. Results using this measure are comparable qualitatively to reported results. Results are also comparable when the dependent variable is computed as net interest costs, a measure that ignores the time value of money, but is commonly used in early studies of municipal borrowing costs.

compensation for the related interest rate risk, callable debt typically sells at higher yields. Recall that the GFOA certificate indicates the extent of voluntary disclosure (and GAAP compliance) by the municipality.

Evidence in prior studies finds that bond yields vary directly, albeit not linearly, with bond maturity. Maturities of municipal issues in unregulated states tend to be greater than maturities in GAAP states (result not reported). Following Gande et al. (1999), we classify the issues into three groups according to maturity. In particular, we use two dummy variables to distinguish both short-term maturities (< 5 years) and long-term maturities (> 15 years) from issues with five to fifteen year maturities.

We use bond ratings to control for credit risk. Following Anderson et al. (2003) and Mansi et al. (2004), we convert default ratings into a single control variable. More specifically, we assign a value of one if the Moody's bond rating is Aaa, and as the bond rating declines, the ratings variable increases by one (Anderson et al. 2003), with the highest number assigned to unrated issues.[17] As with prior analysis, we use a series of dummy variables to investigate how state requirements other than GAAP disclosure regulation are associated with *TIC*. In addition, we include marginal personal income tax rates and state gross product per capita, two measures of state economic condition that potentially influence debt costs.[18] Finally, specifications include seven dummy variables to consider mean effects of factors correlated with the year of issue (1995-2002). To ease the presentation, estimates are not tabulated for year indicator variables.

[17] Results are comparable when the log of maturity is used rather than the Gande et al. (1999) classification, and when a series of dummy variables is used to consider bond ratings categories. Results are also comparable when observations are distinguished according to whether the municipality purchases bond insurance. The effects of bond insurance are apparently subsumed by bond ratings variables, however, as the correlation between the insurance dummy and the bond ratings variable is -0.73.

[18] Results are consistent for specifications that include measures of state disposable income per capita, state population, and the volume of municipal bonds. Note that continuous measures of state characteristics are unique to each state, and thus distinguish state fixed effects. Hence, we construct dummy variables that partition municipalities according to how corresponding state characteristics compare with median state characteristics.

Specification (3) applied to the sample of 439 municipal debt issues is in Table 5. Consistent with prior literature, we find that most control variables that consider characteristics of the debt issue are statistically significant in predicted directions. On the other hand, with the exception of the *GAAP state* variable, most of the state-level control variables are not significant. Estimates on the parameter γ_1 for the entire sample, displayed in the first column, indicate that mean true interest costs in GAAP states are 16 basis points lower than in unregulated disclosure states. For partitions established by comparing municipal population with the sample median, displayed in the second and third columns, the GAAP-versus-unregulated state mean difference in true interest costs (parameter estimates -0.25 versus -0.13) indicates that the benefit to the GAAP requirement is approximately 12 basis points greater for small municipalities than for large municipalities. This difference, which is statistically significant (two-tailed $p < 0.05$), supports a characterization where greater benefits accrue to small municipalities where lenders are less well-informed or where federal regulation is less likely to apply. Overall, we can confidently reject the null hypothesis 3 in favor of the alternative hypothesis that borrowing costs are lower for GAAP states than for non-GAAP states. Such evidence is consistent with the premise that state-imposed GAAP disclosure regulation reduces municipal debt costs incrementally beyond what is achieved through voluntary municipal disclosure and other state-imposed regulations. Further, the results indicate that state-level GAAP regulations are effective despite the recent federal regulations that encourage voluntary disclosure in unregulated states.

4.4 Evidence regarding the implementation of GAAP regulation

The preceding approach uses cross-sectional comparisons to consider associations between GAAP disclosure regulation and municipal debt costs. Although we consider measures that control for the influence of variation in other state-imposed statutory mechanisms, we are

concerned about whether results can be attributed to unidentified state-level factors not considered in the specifications. To address such concerns, we consider municipal debt issues in Montana and Nevada, states that first imposed GAAP accounting regulations on 7/1/01 and 6/27/01, respectively.

For these analyses, we use the SDC data to construct a sample of 33 municipal debt issues – eleven in Montana and 22 in Nevada – during the calendar year preceding the state GAAP requirement (2000), the year that the requirement is imposed (2001), and the year following the requirement (2002). Note that we execute the analysis using relatively long windows because municipal debt is issued infrequently, and also because regulation is inevitably anticipated, which undermines our ability to confidently identify a unique event date. We use two sets of dummy variables to partition the sample observations according to how the bond issue date compares with the effective date of the state-imposed GAAP regulation.

First, we consider specifications of TIC that include a dummy variable equal to one for issues during the one and one-half year period following the effective date of the regulation. Negative parameter estimates on this variable indicate lower mean TIC following the effective date. Second, we consider specifications that include two dummy variables that classify debt issues according to calendar year. In particular, we set a dummy variable equal to one for 2001 issues (set to zero, otherwise), and another dummy variable equal to one for 2002 issues (zero, otherwise). Negative parameter estimates on the first dummy variable indicate lower mean TIC for issues during 2001, the calendar year that the requirement is imposed, than for issues during 2000, the year prior to the disclosure regulation. Negative parameter estimates on the second dummy variable indicate lower mean TIC for issues during 2002, the calendar year after the requirement is imposed than for issues during 2000. For either classification scheme, negative

parameter estimates on dummy variables are consistent with the premise that the implementation of GAAP disclosure regulation reduces municipal debt costs.

Results for these specifications are in Table 6. Panel A of the table shows results for Montana (first two columns), Nevada (third and fourth columns), and the two states combined (last two columns), where the dependent variable is computed as TIC less the corresponding Bond Buyer Index of market yields (BBI). Estimates displayed in the first, third and fifth columns indicate that mean post-regulation TIC (net of BBI) are significantly lower than mean pre-regulation means. Estimates displayed in the second, fourth, and sixth columns indicate that means are significantly lower in the year following the regulation year than in the year prior to the regulation year. Results for comparisons of the regulation year with contiguous years are not always statistically significant, although all estimates are negative.

Panel B of Table 6, which shows estimates for multivariate specifications of TIC when factors considered in the cross-sectional analysis in Table 5 are included, demonstrates that estimates in panel A are not attributable to differences in issue-specific factors. Estimates for dummy variables that classify observations according to how the issue date compares with the effective date of the GAAP requirement support results in Panel A. In particular, estimates in the first column indicate that mean TIC during the 18 months after the requirement is significantly lower than mean TIC during the 18 months prior to the regulation, and estimates in the second column indicate that mean TIC is significantly lower during the year following the regulation year.[19]

4.5 Other procedures

[19] Adjusting TIC for BBI (Panel A in Table 6), or including BBI in the multivariate specification (Panel B), addresses concerns about whether interest costs for all states decreased after 2001. Moreover, pooling the Montana and Nevada samples with the GAAP state sample in Table 5 indicates that Montana and Nevada municipalities have significantly lower interest costs than non-GAAP states in the post-adoption period.

Additional procedures validate the robustness of the results. First, we consider that, prior to issuing debt, municipalities choose between public versus private debt. This sequencing of the decision process raises concerns about how selection bias influences TIC specifications in Table 5. To consider this possibility, we estimate a first-stage probit specification of the choice to issue public versus private debt, and include the inverse Mills ratio in the TIC specification.[20] We find that the negative estimate for the *GAAP state* variable is robust to the two-step procedure; moreover, the inverse Mills ratio is not consistently significant.

Second, we examine whether the Table 4 and 5 results hold for the subset of municipalities that undergo Single Audits according to the U. S. Census. This procedure has two objectives. First, to address the issue of whether municipalities voluntarily comply with GAAP but choose not to apply for a GFOA certificate, we use the audit opinion per the Single Audit report, rather than GFOA certification, as a measure of voluntary GAAP compliance. We include an indicator variable equal to one if the municipality received an unqualified opinion, indicating material compliance with GAAP, and zero otherwise.[21]

Second, examining the subset of municipalities that are subjected to Single Audits considers whether GAAP disclosure regulation adds incrementally beyond what is provided by federal statutes. Results using the Single Audit opinion are consistent with those presented, in that both the relative use of private debt is significantly higher ($t=-2.11$; $p < .05$, two-sided) and

[20] Results are comparable for two alternative approaches. First, we construct the probit specification to distinguish *municipalities* that issue only private debt from municipalities that issue only public debt during 1995-2002. Second, we distinguish *municipality-years* where the municipality issues only private or only public debt for a given year.

[21] The single audit opinion is a noisy measure of GAAP compliance. We find a significant positive correlation between this measure and GFOA certification, however. Further, prior studies indicate that the majority of qualified municipal audit opinions indicate GAAP violations – specifically, inconsistent application of GAAP or a lack of appropriate fixed asset disclosures (Wilson and Howard 1984).

TIC is significantly lower in GAAP states ($t = -2.07$; $p < 0.05$, two-sided). The Single Audit opinion indicator variable is insignificant in all specifications, however.

Finally, the analysis focuses on states that unequivocally require GAAP or are unregulated, even though some states, while not requiring GAAP, do impose unique state-specific disclosure requirements. This raises issues about whether interstate disclosure regulation in the form of GAAP disclosure requirements or intrastate standardization of accounting methods matters more in terms of reducing debt costs. Although addressing this issue comprehensively is beyond the objective of the study, we can offer some preliminary insight. To this end, we supplement the sample used to execute the Table 5 analysis by including municipalities in five states that require state-specific disclosure and examine the effect of interstate versus intrastate disclosure regulations. We include an indicator variable equal to one if the municipality is in a state requiring state-specific disclosure, and zero otherwise. We find that, while the *GAAP state* indicator variable continues to be negative and statistically significant (estimate = -0.20; t-statistic = -2.49), mean debt costs are 54 basis points higher for municipalities in states that require state-specific non-GAAP disclosure (estimate = 0.54; t-statistic=3.31).[22] Such evidence supports the proposition that comparability in interstate, not intrastate, disclosure is associated with lower municipal debt costs.

5. *Concluding Remarks*

Changes in the municipal debt environment, including the 1984 establishment of GASB as the authority for setting municipal accounting standards, and the imposition of a variety of

[22] For a specification of the ratio of private to total debt which also includes municipalities with state-specific disclosure requirements, the *GAAP state* indicator t-statistic is -2.29, while the state-specific indicator variable is not significant. Results are also consistent with tabulated results for samples that include, and specifications that distinguish municipalities in all 24 states that neither impose GAAP nor are unregulated (that is, have state-specific, piecemeal, or hybrid regulations). In particular, the GAAP state variable is associated with lower interest costs and lower relative use of private versus public debt when these observations, which are omitted from the primary analysis, are included and distinguished.

new federal and state regulations, are reasons to reconsider the costs and benefits of disclosure regulation in the municipal government context. Overall, we find that municipalities in states that mandate GAAP accounting and reporting are more likely to pursue public debt than private debt financing options, and that municipal debt financing costs are 13 to 25 basis points lower in GAAP states than in states with unregulated disclosure. We find no evidence that lower financing costs lead to an increased use of debt financing in general, but we do find some limited evidence that the use of debt is greater for small municipalities where contracting costs between municipal borrowers and lenders are likely to be high. We further demonstrate that these results are robust to considering other state-imposed requirements that can affect debt costs. Moreover, in corroborating analysis we find that two states which first require GAAP during the period encompassed by the study realize significantly lower mean municipal debt costs following the effective date of the regulation. Such evidence indicates that the effects of GAAP reporting and other state requirements are independent of, and incremental to, the effect of each other.

Finally, it is perhaps important to emphasize that the costs of GAAP regulation potentially outweigh benefits that accrue in municipal debt markets, and therefore, we cannot conclude that specific practices recommended by the GASB dominate other possible reporting procedures. Nor can we meaningfully compare the costs of GAAP compliance with other voluntary mechanisms that potentially yield greater reductions in municipal financing costs. Thus, the analysis does not definitively support conclusions regarding the costs of regulation or decisions by the states to mandate GAAP accounting for municipalities. Even so, the results consistently support the efficacy of GAAP disclosure regulation as a determinant of the cost of municipal financing.

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Table 1

Characteristics of States that Require GAAP Reporting (GAAP States) and States that do not Impose Reporting Requirements (non-GAAP States)

Panel A: GAAP States (n = 15)

State	*Population*	*Highest Marginal Personal Income Tax Rate*	*Number of Bond Issues Outstanding*
Arizona	4,667,277	5.04	812
Connecticut	3,272,563	4.50	750
Florida	14,908,230	0.00	3,300
Georgia	7,636,522	6.00	1,410
Kentucky	3,934,310	6.00	740
Michigan	9,820,231	4.20	2,392
Montana*	879,533	11.00	151
Nevada*	1,743,772	0.00	550
New Hampshire	1,185,823	5.00	348
New Mexico	1,733,535	8.20	456
North Carolina	7,545,828	7.75	846
Ohio	11,237,752	6.98	1,332
Rhode Island	987,704	9.90**	264
South Dakota	730,789	0.00	148
Tennessee	5,432,679	6.00	1,092

Panel B: Non-GAAP States (n = 11)

Alabama	4,351,037	5.00	862
Delaware	744,066	5.95	144
Idaho	1,230,923	8.20	294
Missouri	5,437,562	6.00	858
Nebraska	1,660,772	6.68	252
North Dakota	637,808	5.54	176
Pennsylvania	12,002,329	2.80	3,515
South Carolina	3,839,578	7.00	832
Texas	19,712,389	0.00	5,633
Vermont	590,579	9.50**	85
Virginia	6,789,225	5.75	800

GAAP States require municipalities to prepare financial statements that comply with Generally Accepted Accounting Practices (GAAP) as specified by the Governmental Accounting Standards Board. Non-GAAP States impose neither GAAP nor other, state-specific disclosure regulations. The remaining states, which are not shown, impose hybrid, and/or state-specific disclosure requirements. *Population* is the 1998 U. S. Census Bureau estimate. *Highest Marginal Personal Income Tax Rate* is for 1998 per the Federation of Tax Administrators (http://www.taxadmin.org). *Number of Bond Issues Outstanding* is from the 1998 Moody's bond record.

* Montana and Nevada impose GAAP in 2001 during the period encompassed by the analysis. Thus, observations for these states are omitted from cross-sectional tests and analyzed separately.

** Rhode Island's and Vermont's marginal rates are 25.5% and 24% of federal taxable income, respectively.

Table 2
Comparisons of GAAP and Non-GAAP States

Panel A: mean (median) state-level municipal bond activity, 1995-2002

	All states (n = 24)	*GAAP states (n=13)*	*Non-GAAP states (n= 11)*	*t-statistic*
Fraction of municipalities that issue debt	0.59	0.59	0.59	0.02
New debt per capita, all municipalities	225.6 (220.9)	237.7 (231.5)	211.3 (213.1)	0.76
New debt per capita, issuing municipalities only	245.0 (245.2)	257.5 (252.7)	230.3 (232.6)	0.78
Outstanding debt per capita	1603.8 (1434.9)	1676.3 (1400.6)	1518.2 (1469.2)	0.54
Fraction of total new debt that is public debt	0.24	0.28	0.19	1.59
Fraction of municipalities that use private debt only	0.59	0.55	0.63	0.85
Fraction of municipalities that use public debt only	0.07	0.10	0.02	2.52***

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Fraction of municipalities that issue debt is the percentage of municipalities in the state that issued debt from 1995-2002; *New debt per capita, all municipalities* is the 1995-2002 mean (median) for all municipalities in the state; *New debt per capita, issuing municipalities only* is the 1995-2002 mean (median) for all municipalities that issued debt; *Outstanding debt per capita* is the 1995-2002 mean (median); *Fraction of total new debt that is public debt* is the 1995-2002 ratio of the total new public debt to total new debt; *Fraction of municipalities that use private debt only* is the 1995-2002 percentage of municipalities in each state that borrow only from private lenders *(banks or institutional lenders such as pension funds or insurance firms)*; and *Fraction of municipalities that use public debt only* is the 1995-2002 percentage of municipalities in each state that issue only publicly-traded debt.

Table 2
(continued)

Comparisons of GAAP and Non-GAAP States

Panel B: mean (median) characteristics of public debt issues

	All Issues (n=439)	*GAAP States (n=212)*	*Non-GAAP States (n=227)*	*t-statistic*
TIC	4.59	4.39	4.80	5.68***
	(4.59)	(4.46)	(4.76)	
Bond ratings:				
Unrated	0.20	0.19	0.21	0.42
Baa	0.01	0.01	0.02	0.36
A	0.05	0.07	0.06	1.03
Aa	0.12	0.17	0.08	3.15***
Aaa	0.62	0.56	0.66	2.12**
Insured	0.58	0.52	0.63	2.44**
Competitively bid	0.83	0.91	0.75	4.79***
Bank qualified	0.68	0.65	0.71	1.32
GO bond	0.73	0.74	0.72	0.64
Call	0.84	0.75	0.92	4.76***

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

TIC is the true interest cost, computed as the interest rate that sets the present value of the principal and interest payments equal to the issue proceeds received by the issuer; *Rating* is the Moody's bond ratings; *Insured* is a dummy variable equal to one if any part of the bond issue is insured, and 0 otherwise; *Competitively bid* is a dummy variable equal to 1 if the bond is issued through competitive bid, and 0 if the bond is sold using a negotiated sale; *Bank qualified* is a dummy variable equal to 1 if the bond issue is bank qualified, and 0 otherwise; *GO bond* is a dummy variable equal to 1 if the issue is a general obligation bond, and 0 if the issue is a revenue bond; and *Call* is a dummy variable equal to 1 if any part of the bond issue is callable, and 0 otherwise.

Panel C: distributions of state-imposed requirements by GAAP requirements

	All states (n=24)	*GAAP states (n=13)*	*Non-GAAP states (n=11)*	*X^2-statistic*
Require audits	9	5	4	0.03
Require official statements	10	6	4	0.04
No bankruptcy	4	3	1	0.58

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Require audits indicates states that require municipal audits; *Require official statements* indicates states that require official statements when municipal bonds are issued; and *No bankruptcy* indicates the state law proscribes municipal bankruptcy.

Table 3
Associations between the Use of Debt Financing and GAAP Disclosure Requirements

	Logit model			*OLS model*		
	Full sample (n = 5,030)	*Small (n =2,515)*	*Large (n =2,515)*	*Full sample (n =5,030)*	*Small (n =2,515)*	*Large (n =2,515)*
Intercept	-9.43	-11.26	-8.92	-2.38	-1.54	-3.55
	(-10.71)***	(-7.31)***	(-6.36)***	(-6.00)***	(-2.47)**	(-7.69)***
Ln population (+)	1.13	1.37	1.05	0.32	0.21	0.46
	(11.66)***	(7.70)***	(7.08)***	(6.73)***	(2.78)***	(10.04)***
Population growth (+)	-0.19	-0.47	-0.11	-0.05	-0.05	-0.04
	(-0.85)	(-0.71)	(-1.01)	(-1.91)*	(-1.02)	(-1.40)
GFOA certificate (+)	0.88	0.59	0.96	0.30	0.20	0.30
	(3.06)***	(1.36)	(3.17)***	(3.50)***	(1.57)	(3.68)***
Audits (?)	-1.36	-1.67	-1.10	-0.41	-0.39	-0.22
	(-1.88)*	(-2.10)**	(-1.50)	(-1.47)	(-1.05)	(-0.44)
Official statements (?)	-0.59	-0.72	-0.46	-0.23	-0.12	-0.41
	(-1.20)	(-1.39)	(-0.88)	(-1.27)	(-1.11)	(-1.66)
No bankruptcy (?)	-0.77	-0.98	-0.56	-0.18	-0.12	-0.08
	(-1.67)*	(-2.75)***	(-0.93)	(-0.99)	(-0.67)	(-0.25)
Corruption (?)	-0.23	-0.31	-0.17	-0.04	0.05	-0.29
	(-0.56)	(-0.66)	(-0.41)	(-0.30)	(0.31)	(-1.79)*
Percentage of CPA's (?)	-0.71	-1.22	-0.29	-0.16	-0.16	0.00
	(-1.72)*	(-2.61)***	(-0.60)	(-1.19)	(-0.96)	(0.01)
GAAP state (?)	0.27	0.67	-0.04	0.20	0.24	0.03
	(0.76)	(1.72)*	(-0.09)	(1.44)	(1.08)	(0.13)
Adjusted R^2				0.11	0.01	0.17
Model likelihood ratio	1381.56	155.77	543.32			

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Entries in the first three columns are estimates for a logit specification of the probability of using debt financing (public or private) during 1995-2002. Entries in columns four through six are for an OLS specification of the 1995-2002 amount of new debt per capita. "Small" and "Large" partitions are at the sample median population. *Ln population* is log of mean 1995-2002 population; *Population growth* is the change in population over the preceding five years; *GFOA certificate* is a dummy variable equal to 1 if the GFOA certificate is awarded in any of the prior four years; *Audits* is a dummy variable equal to 1 if the state requires municipal audits; *Official statements* is a dummy variable equal to 1 if the state mandates official statements; *No Bankruptcy* is a dummy variable equal to 1 if state law proscribes municipal bankruptcy; *Corruption* is a dummy variable equal to 1 if the ratio of the number of indicted state and local government officials deflated by total state population exceeds the sample median; *Percentage of CPA's* is a dummy variable equal to 1 if the fraction of CPA's on the state auditor's staff are above the sample median; and *GAAP state* is a dummy variable equal to 1 if the issuing municipality is in a GAAP state, and zero if the municipality is in an unregulated state. Standard errors are adjusted for clustering within states using procedures advanced in Rogers (1993).

Table 4
Associations between GAAP Requirements and the Ratio of Private to Total Debt

Variable (expected sign)	*Full sample (n = 2,111)*	*Small (n = 1,056)*	*Large (n = 1,055)*
Intercept	1.34	1.87	1.25
	(7.37)***	(6.10)***	(4.63)***
Ln population (-)	-0.05	-0.12	-0.05
	(-4.26)***	(-3.30)***	(-2.15)**
Population growth (?)	0.03	0.01	0.04
	(2.38)**	(0.95)	(2.04)**
AAA bond rating (-)	-0.39	-0.61	-0.37
	(-7.38)***	(-4.66)***	(-5.48)***
Mean debt issued (-)	-0.06	-0.07	-0.03
	(-2.51)***	(-2.33)**	(-1.30)
Deficit (+)	0.04	0.01	0.08
	(1.49)	(0.67)	(1.84)*
GFOA certificate (-)	-0.06	0.01	-0.08
	(-2.06)**	(0.33)	(-2.96)**
Audits (?)	0.11	0.13	0.10
	(1.34)	(1.89)*	(0.98)
Official statements (?)	-0.01	-0.07	0.05
	(0.12)	(-1.16)	(0.71)
No bankruptcy (?)	-0.01	-0.04	0.02
	(-0.22)	(-0.84)	(0.23)
Corruption (?)	0.06	0.08	0.04
	(0.82)	(1.28)	(0.46)
Percentage of CPA's (?)	0.02	0.02	0.04
	(0.25)	(0.31)	(0.30)
GAAP state (-)	-0.12	-0.10	-0.15
	(-2.45)***	(-2.10)**	(-2.52)***
Adjusted R^2	0.20	0.18	0.17

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Entries are parameter estimates for an OLS specification of the ratio of new private debt to total new debt issued during 1995-2002. "Small" and "Large" partitions are at the sample median population. *Ln population* is the log of the mean annual municipal population during the period; *Population growth* is the change in population over the preceding five years; *AAA bond rating* is a dummy variable equal to 1 if the municipality's most recent bond rating is AAA, and 0 otherwise; *Mean debt issued* is the mean 1995-2002 total new debt per capita; *Deficit* is a dummy variable equal to 1 if the municipality reports at least one deficit during 1995-2002; *GFOA certificate* is the fraction of years during 1995-2002 the municipality is awarded the GFOA certificate; *Audits* is a dummy variable equal to 1 if the state requires municipal audits; *Official statements* is a dummy variable equal to 1 if the state mandates official statements; *No Bankruptcy* is a dummy variable equal to 1 if the state does not allow municipal bankruptcy; *Corruption* is a dummy variable equal to 1 if the ratio of the number of indicted state and local government officials deflated by total state population exceeds the sample median; *Percentage of CPA's* is a dummy variable equal to 1 if the percentage of CPA's on the state auditor's staff exceeds the sample median; and *GAAP state* is a dummy variable equal to 1 for municipalities in GAAP states, and 0 for municipalities in unregulated states. Predicted signs are shown parenthetically. Standard errors are adjusted for clustering within states using procedures advanced in Rogers (1993).

Table 5

Associations between True Interest Cost (TIC) and GAAP Disclosure Requirements

Independent variable (expected sign)	*Full sample (n=439)*	*Small (n=216)*	*Large (n=223)*
Intercept	-2.13	-1.48	-2.66
	(-3.28)***	(-1.71)*	(-3.71)***
Bond Buyer Index (+)	1.25	1.11	1.32
	(10.59)***	(6.88)***	(9.97)***
Competitively bid (-)	-0.17	-0.08	-0.18
	(-2.40)**	(-0.77)	(-2.38)**
GO issue (-)	-0.29	-0.19	-0.35
	(-5.05)***	(-2.07)**	(-5.38)***
Bank qualified (-)	-0.13	-0.10	-0.03
	(-2.13)**	(-1.19)**	(-0.49)
Call provision (+)	0.34	0.29	0.34
	(5.18)***	(2.60)***	(3.26)***
GFOA certificate (-)	0.04	-0.01	0.02
	(0.81)	(-0.15)	(0.34)
Maturity < 5 years (-)	-0.63	-0.67	-0.61
	(-2.43)***	(-1.38)	(-2.55)***
Maturity >15 years (+)	0.57	0.49	0.63
	(12.69)***	(6.42)***	(7.95)***
Ln issue amount (-)	-0.06	-0.04	-0.04
	(-1.98)**	(-0.95)	(-1.48)
Ln population (-)	-0.07	-0.08	-0.05
	(-4.33)***	(-2.09)**	(-2.11)**
Population growth (-)	-0.00	0.01	-0.00
	(-1.13)	(1.15)	(-1.47)
Tax rates (+)	0.01	0.02	0.04
	(0.14)	(0.30)	(0.64)
State gross product per capita (?)	0.12	0.26	-0.05
	(1.57)	(3.58)***	(-0.61)
Bond rating (-)	0.02	0.02	0.00
	(5.27)***	(5.11)***	(0.75)
Audits (-)	0.01	0.02	-0.11
	(0.08)	(0.17)	(-1.54)
Official statements (-)	0.03	-0.02	0.14
	(0.45)	(-0.21)	(1.85)*
No bankruptcy (-)	-0.11	-0.14	-0.01
	(-1.11)	(-0.88)	(-0.07)
Corruption (?)	0.02	0.12	-0.15
	(-0.27)	(1.10)	(-2.63)***
Percentage of CPA's (?)	0.05	0.15	-0.01
	(0.92)	(1.17)	(-0.17)
GAAP state (-)	-0.16	-0.25	-0.13
	(-3.40)***	(-3.69)***	(-2.70)***
Adjusted R^2	0.80	0.78	0.79

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Table 5, continued

Entries are OLS estimates for specifications of true interest cost (*TIC*), computed as the discount rate that equates the present value of the bond principal and interest payments with proceeds. "Small" and "Large" partitions are at the sample median population. Independent variables are the *Bond Buyer Index* of market yields for municipal general obligation or revenue bonds; *Competitively bid* is a dummy variable set to 1 for sales through a competitive bidding process, and 0 for negotiated sales; *GO issue* is a dummy variable set to 1 for general obligation issues, and 0 for revenue issues; *Bank qualified* is a dummy variable set to 1 if the issue qualifies for preferential tax treatment by bank lenders; *Call provision* is a dummy variable set to 1 if any part of the issue is callable; *GFOA certificate* is a dummy variable equal to 1 if the municipality is awarded the GFOA certificate; *Maturity < 5 years* (*Maturity > 15 years*) is a dummy variable set to 1 if the years to maturity are less than 5 (exceeds 15); *Ln issue amount* is the log of the face value of the issue; *Ln population* is the log of population; *Population growth* is the change in population over the preceding five years; *Tax rates* is an indicator variable set to 1 if the state marginal tax rates are above the sample median; *State gross product per capita* is an indicator variable equal to 1 if the state gross product per capita exceeds the sample median; *Bond rating* indicates Moody's ratings, where Aaa=1, and the numerical rating increases by 1 as the bond rating declines; *Audits* is a dummy variable equal to 1 if the issuing municipality is in a state that mandates audits; *Official statements* is a dummy variable equal to 1 if the issuing municipality is in a state that mandates official statements; *No bankruptcy* is a dummy variable equal to 1 if the issuing municipality is in a state that does not allow municipal bankruptcy; *Corruption* is a dummy variable equal to 1 if the ratio of the number of indicted state and local government officials deflated by total state population exceeds the sample median; *Percentage of CPA's* is a dummy variable equal to 1 if the percentage of CPA's on the state auditor's staff exceeds the sample median; and *GAAP state* is a dummy variable equal to 1 for municipalities in GAAP states, and 0 for municipalities in unregulated states. Predicted signs are shown parenthetically. Specifications include year dummy variables to consider mean effects of unspecified time-variant factors (estimates not reported). Standard errors are adjusted for clustering within states using procedures advanced in Rogers (1993).

Table 6

Regression Specifications of True Interest Cost (TIC) and GAAP Disclosure Requirements for States Newly Adopting GAAP

Panel A. Dependent variable: TIC less bond buyer index

Event date:	*Montana* (n=11)		*Nevada* (n=22)		*Full sample* (n=33)	
Intercept	-0.42 (-4.76)***	-0.26 (-4.71)***	-0.29 (-1.25)	-0.30 (-1.23)	-0.34 (-2.39)***	-0.29 (-1.75)*
Issues post-regulation	-0.23 (-1.77)*		-0.83 (-2.84)***		-0.65 (-3.28)***	
Issues during the regulation year		-0.35 (-3.16)***		-0.12 (-0.45)		-0.24 (-1.37)
Issues year after the regulation year		-0.38 (-6.01)***		-0.92 (-2.67)***		-0.84 (-3.40)***
Adjusted R^2	0.17	0.36	0.21	0.20	0.19	0.22

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Entries are OLS estimates for specifications of true interest cost (*TIC*), computed as the discount rate that equates the present value of the bond principal and interest payments with proceeds, less the *Bond Buyer Index* of market yields for municipal general obligation or revenue bonds. "Montana" and "Nevada" indicate bonds issued by municipalities Montana and Nevada, respectively. Independent variables are as follows: *Issues post-regulation* is a dummy variable set to 1 if the municipal bond is issued within 1 ½ years after the effective date of regulation, and 0 if issued within 1 ½ years prior to the effective date of regulation; *Issues during the regulation year* is a dummy set to 1 if the municipal bond is issued within the year of the effective date of regulation (2001), and 0 otherwise; *Issues year after the regulation year* is a dummy variable set to 1 if the municipal bond is issued within 1 year following the effective date of regulation (2002), and 0 otherwise. Predicted signs are shown parenthetically along with independent variables. Standard errors are adjusted for clustering within municipality using procedures advanced in Rogers (1993).

Table 6 (continued)

Panel B. Dependent variable: TIC; Controlling for other variables associated with TIC

	Full sample (n=33)	
Intercept	-0.14	7.08
	(-0.04)	(1.36)
Bond Buyer Index (+)	1.02	-0.05
	(2.79)***	(-0.08)
Competitively bid (-)	-0.26	-0.44
	(-0.93)	(-1.81)*
GO issue (-)	-0.07	-0.39
	(-0.37)	(-1.27)
Bank qualified (-)	-0.12	-0.64
	(-0.34)	(-1.80)*
Call provision (+)	0.21	-0.02
	(1.39)	(-0.15)
GFOA certificate (-)	0.09	-0.59
	(0.38)	(-2.36)**
Maturity < 5 years (-)	-0.39	-0.72
	(-0.50)	(-1.24)
Maturity >15 years (+)	0.66	1.02
	(3.96)***	(5.90)***
Ln issue amount (-)	-0.20	-0.31
	(-2.71)***	(-3.73)***
Ln population (-)	-0.03	0.01
	(-0.18)	(0.04)
Population growth (-)	0.06	0.11
	(1.11)	(2.25)**
Bond rating (-)	-0.01	-0.02
	(-0.42)	(-1.32)
Issues post-regulation (-)	-0.61	
	(-2.35)**	
Issues during the regulation year (-)		-0.61
		(-1.60)
Issues year after the regulation year (-)		-1.62
		(-2.82)***
Adjusted R^2	0.63	0.68

*, **, *** indicate statistical significance (two-tailed) at p <.10, .05, and .01.

Table 6 (continued)

Entries are OLS estimates for specifications of true interest cost (*TIC*), computed as the discount rate that equates the present value of the bond principal and interest payments with proceeds. Independent variables are the *Bond Buyer Index* of market yields for municipal general obligation or revenue bonds; *Competitively bid* is a dummy variable set to 1 for sales through a competitive bidding process; *GO issue* is a dummy variable set to 1 for general obligation issues, and 0 for revenue issues; *Bank qualified* is a dummy variable set to 1 if the issue qualifies for preferential tax treatment by bank lenders; *Call provision* is a dummy variable set to 1 if any part of the issue is callable; *GFOA certificate* is a dummy variable equal to 1 if the municipality is awarded the GFOA certificate; *Maturity < 5 years* (*Maturity > 15 years*) is a dummy variable set to 1 if the years to maturity are less than 5 (exceeds 15); *Ln issue amount* is the log of the face value of the issue; *Ln population* is the log of population; *Population growth* is the change in population over the preceding five years; *Bond rating* indicates Moody's ratings, where Aaa = 1, and the numerical rating increases by 1 as the bond rating declines; *Issues post-regulation* is a dummy variable set to 1 if the municipal bond is issued within 1 ½ years after the effective date of regulation, and 0 if issued within 1 ½ years prior to the effective date of regulation; *Issues during the regulation year* is a dummy set to 1 if the municipal bond is issued within the year of the effective date of regulation (2001), and 0 otherwise; *Issues year after the regulation year* is a dummy variable set to 1 if the municipal bond is issued within 1 year following the effective date of regulation (2002), and 0 otherwise. Predicted signs are shown parenthetically along with independent variables. Standard errors are adjusted for clustering within municipality using procedures advanced in Rogers (1993).