

CFR working paper no. 22-05

Limits of disclosure regulation in
the municipal bond market

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Limits of Disclosure Regulation in the Municipal Bond Market^{*}

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March 5, 2025

Abstract

We examine the effectiveness of recent federal disclosure regulation aiming to improve transparency in the \$4 trillion municipal bond market. Governments fail to disclose material private placements 50—60% of the time and, conditional on disclosure, filings often omit contract details essential for bond pricing. Non-compliant issuers are significantly riskier than compliers, with disclosure decreasing in the potential of privately placed debt to adversely affect bondholders. We show that disclosure reveals positive news and is especially informative to investors in low-rated bonds or during market crises. Overall, privately placed debt continues to pose significant risks to municipal bond investors.

Keywords: Municipal bond pricing, disclosure regulation, private debt

^{*}The views stated herein are those of the authors and are not necessarily the views of the Federal Reserve Board or the Federal Reserve System. Sam Dreith, Andrew Elsner, Lina Haas, Christian Meyer, and Ali Tintera provided excellent research assistance. We thank seminar participants at the Congressional Research Service, the Federal Reserve Board, the Federal Reserve Bank of Richmond, the 10th annual Municipal Finance Conference at Brookings, the Mannheim Taxation Conference, University of Bonn, University of Cologne, U.S. Securities & Exchange Commission, the 2022 Virtual Municipal Finance Workshop, Ahmed Abonamah, John Bagley, Dan Bergstresser, Emily Swenson Brock, Bob Chirinko, Nancy Fitzgerald, Dan Garrett, Giulio Girardi, Grey Gordon, Kent Hiteshew, David Hodapp, Victoria Ivashina (the editor) Steve Karolyi, Abby Kim, Ernesto Lanza, Xuelin Li, John McNally, Dermot Murphy, Borghan Narajabad, Rebecca Olsen, Marc Painter, Marcelo Vieira, Adam Wendell, Simon Wu, an anonymous associate editor, and two anonymous referees for helpful comments. Tom Zimmermann has received support from the Deutsche Forschungsgemeinschaft (DFG) under Germany's Excellence Strategy EXC2126/139083886.

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1 Introduction

In the presence of informational asymmetry, disclosure of investor-relevant information helps facilitate efficient and well-functioning capital markets (Jensen and Meckling, 1976; Diamond and Verrecchia, 1991; Healy and Palepu, 2001). As a result, timely and accurate disclosure is at the core of U.S. securities regulation. Since the U.S. Securities Act of 1933, the scope of financial disclosure has improved tremendously and investors in publicly-traded companies can now access most material information in a matter of days.

By contrast, investor-relevant information is still scarce in the \$4 trillion municipal bond market. This market is of immense importance to less sophisticated retail investors, holding over 75% of outstanding municipal bonds as of 2020 (MSRB, 2020).¹ Yet, the scant disclosure is likely to put these investors at significant disadvantage to informed market participants such as investment companies and banks. Even the most basic disclosure of financing arrangements that are fixtures of corporate securities markets has been virtually non-existent in this market until recently.²

The federal securities markets regulator in the US, the Securities and Exchange Commission (SEC), has attempted to remedy this gap by mandating timely disclosure of private debt obligations of municipal issuers starting in 2019 (see Rule 15c2-12). Using granular data from the confidential Federal Reserve’s Y-14 Collection, we study whether such regulation may have alleviated informational asymmetries associated with private placements in the municipal bond market.

We show that issuers required to disclose private debt agreements do so in only 40%–50% of reportable private placement events. Non-compliant issuers tend to be smaller and significantly riskier than compliers. Disclosure of private placements, therefore, remains scant where it is most needed to alleviate informational asymmetries. Finally, we show that investors react positively to disclosures, consistent with a certification channel that signals the issuer’s high credit worthiness or its access to financing in times of stress. The indirect and fragmented nature of municipal securities regulation as well as the failure of the regulation to capture important institutional specifics of private placements appear to be the primary reasons behind the ineffectiveness of the current disclosure regime.

¹Ang et al. (2010) and Cornaggia et al. (2020) discuss the importance of retail investors in this market.

²U.S. SEC takes aim at municipal bank loan disclosure

Given the risks to municipal bond investors posed by bank loans are rooted in loan contract structure, we explore the importance of major loan terms for underreporting. Shorter loan maturities, higher interest rates, collateral, and guarantee provisions effectively reduce the priority of the claims of municipal bond holders, and likely to driven down bond valuations. We show that issuers facing higher financing and contracting costs in the private placement market are more likely to underreport obligations. For example, a one percent higher interest rate is associated with a two- to eight-fold lower probability of disclosing, while a one-year reduction in remaining maturity translates to approximately a 1 to 2 percentage points reduction in disclosure probability. Similarly, loan utilization rates and the incidence of contract guarantees are negatively related to disclosure propensity. Overall, issuers are significantly less likely to disclose risky loans, indicating that municipal bond investors still face large dilution risks from sophisticated private lenders.

We also investigate whether municipal bond underwriters, bond counsels, and financial advisers help alleviate underreporting. As the US federal government does not have direct authority to oversee the municipal bond market, the SEC disclosure regulation applies to underwriters of municipal bonds. Underwriters enter into continuing disclosure agreements (CDAs) with issuers at the settlement date of each qualified offering, making a “reasonable determination” that issuers commit to provide investor-relevant information in accordance with Rule 15c2-12. However, the ability of underwriters to ensure compliance with Rule 15c2-12 is limited as they are only required to report issuer noncompliance at offerings subsequent to the one triggering continuing disclosure. As bonds issuance is highly infrequent for most governments, market discipline exercised by underwriters is only likely to have limited effect on disclosure rates. Similarly, while issuers often retain bond counsels and financial advisers, the role of these intermediaries tends to be limited to advice on the optimal financing structure and timing of bond offerings (Cestau et al., 2019; Bergstresser and Luby, 2018; Garrett, 2021).

In addition to substantial underreporting, the coverage of the SEC rule only extends to about 40%–50% of municipal issuers. The low coverage of the rule is a byproduct of the regulation requiring continuing disclosure only for municipalities with bonds issuance since February 27th 2019 and the infrequent issuance among small and mid-sized issuers. Alternatively, the rule could have required the disclosure of new privately placed debt for all issuers with pre-existing continuing disclosure agreements. This would have substantially expanded the set of covered issuers as all governments

with currently outstanding bonds settled since July 1995 have enforceable CDAs.

We find that underwriters, and to a lesser extent, bond counsels and financial advisers matter for underreporting of private debt obligations. Underreporting rates for issuers working with high market share intermediaries are significantly lower than those of issuers working with less reputable intermediaries. In addition, intermediary fixed effects significantly improve the explanatory power of our disclosure specifications.

In the remainder of the paper, we explore the information content of disclosure filings. We find that there is substantial heterogeneity in the information content and complexity across filings, with a large fraction of filings missing key investor-relevant information such as interest rates, maturities, or renegotiations of privately placed debt. Furthermore, the majority of disclosure filings lack easily accessible summaries of the underlying private debt agreement, making it difficult for less sophisticated investors to assess the posted information.³

In a perfect compliance equilibrium, the private placement disclosures may reveal dilution of pre-existing municipal bondholders as shown in Ivanov and Zimmermann (2021) and may also contain adverse information about the issuer’s ability to access bond markets or its expected future income. Returns to disclosing are, therefore, likely to be negative for most issuers and positive only in the case of financially weak issuers or in times of economic stress such as the Covid crisis when municipal bond financing dries up. For the latter issuers or instances disclosing private placements reveals that issuers have greater access to liquidity/financing than previously thought.

Actual compliance, however, is low and all disclosure is effectively voluntary. In this setting, high-quality issuers are likely to reveal information on private debt agreements or “certify” to markets that they are of high credit quality, while issuers with adverse private information are unlikely to report private debt (Akerlof, 1970). Thus, disclosure is substantially costlier to riskier issuers as their filings are more likely to reveal adverse information to market participants.

Our empirical tests corroborate this idea—the market interprets disclosures as positive news. In a benign economic environment such as the pre- or post-Covid periods, disclosing positively revises the valuations of affected municipal bonds by approximately 29–34 basis points. The certification associated with disclosure appears to be more valuable whenever disclosures are more comprehensive as the corresponding abnormal bond returns are substantially higher in these instances.

³See, for example: A Word to Wall Street: ‘Plain English,’ Please.

Abnormal returns to disclosure jump to nearly 70 basis points in the aftermath of the Covid crisis and then decline to pre-pandemic levels since the final implementation of the Federal Reserve’s Municipal Liquidity Facility (MLF). These results suggest that returns are positive because the disclosures convey issuer access to liquidity/financing in a time stress. Finally, both mandatory and voluntary disclosures are associated with similar returns because the low compliance with the rule renders all disclosures voluntary.

We also examine the reasons behind low compliance rates. First, the SEC does not have a direct regulatory authority over state and local governments. In addition, the SEC rule misses important institutional specifics of the private placement market—it does not sufficiently distinguish between originations and renegotiations and leaves substantial ambiguity as to what may constitute a reportable loan event. This ambiguity may lead market participants to narrowly interpret the SEC rule as only covering loan originations or distressed debt renegotiations. Consistent with this idea, we find lower underreporting in the subset of loan originations, but even then municipalities fail to report about half of private debt obligations.

An important implication of our study is that any regulation that aims to comprehensively capture contracting activity in the municipal private placement market should cover both originations and renegotiations. In fact, renegotiations represent the overwhelming majority of debt contracting activity as renegotiation is frequent and substantially changes major contracts terms such as loan amount, maturity, interest rates, or required collateral. For example, in the Y14 data, contracting activity such as loan originations or renegotiations accounts for over a quarter of all loan-quarters between 2018Q4 and 2022Q4, the bulk of which is renegotiations.

Our study contributes to the literature on financial frictions and emerging risks in the municipal bond market. This work documents investor segmentation, market power of underwriters, over-reliance on credit ratings, low issuer sophistication, and the lack of investor sophistication that are all costly for investors (Babina et al., 2021; Garrett et al., 2021; Cornaggia et al., 2017, 2022; Pirinsky and Wang, 2011; Ang et al., 2017; Butler et al., 2009; Cornaggia et al., 2020; Chen et al., 2021). Relatedly, despite improvements in intermediation costs and reporting, the secondary market transactions costs remain high (Biais and Green, 2019; Schultz, 2012; Chalmers et al., 2021). Our study contributes to this literature by showing that recent disclosure regulation may have had little effect in mitigating the poor information environment in the municipal market. Importantly, many

of the above frictions are likely to be exacerbated by the lack of disclosure.

We also add to the literature on the role of disclosure in the municipal bond market. This literature has shown disclosure is informative to market participants (Cuny et al., 2022), and improves municipal bond yields (Fairchild and Koch, 1998; Baber and Gore, 2008; Cuny, 2018), credit ratings (Park et al., 2020), and issuance activity (Baber et al., 2020). Municipal market disclosure, however, is still in a nascent state (Reck and Wilson, 2006) and even when granted amnesty for past omissions and inaccuracies few issuers comply (Maffett et al., 2021).⁴ This literature also shows that issuers’ decision to disclose could be driven by strategic motives such as elections (Cuny, 2016) or competition (Cheng et al., 2021). Our results imply that despite the benefits of disclosure, the recent SEC initiative to improve transparency for municipal bond investors may have failed to ensure the availability of even the most fundamental pricing-relevant information.

Finally, our paper is also related to the recent studies on the impact of the Covid crisis on the municipal bond market. This literature finds that fiscal support and liquidity guarantees in the municipal bond market during the Covid crisis such as the MLF has led to lower financing costs for issuers in the primary market and decreased yields in the secondary market (Bernhardt et al., 2021; Fritsch et al., 2021; Li and Lu, 2020; Bordo and Duca, 2021; Haughwout et al., 2021; Bi and Marsh, 2020). Similarly, this strand of work also shows that direct government transfers during the Covid crisis have substantially mitigated the effect of the pandemic on state and local government employment (Green and Loualiche, 2021). We complement these studies by showing that disclosure significantly mitigates the effect of the pandemic on municipal bond yields in the secondary market. This suggests that supervisory efforts to increase disclosure may be an effective tool for normalizing spreads in the secondary bond market that complements government interventions.⁵

2 Institutional Background

The Securities & Exchange Commission (SEC) as an agency of the U.S. federal government does not have direct supervisory authority over state and local governments issuing bonds. Specifically, the 1975 Tower Amendment to the Securities Exchange Act of 1934 gave the SEC direct supervisory authority over the financial institutions underwriting municipal bonds and created the Municipal

⁴See also Muni Bond Market: In Dogged Pursuit Of A Disclosure Framework.

⁵See The Importance of Disclosure for our Municipal Markets.

Standards Rulemaking Board.⁶ The Tower Amendment allowed the SEC to enact Rule 15c2-12 in 1989, requiring the filing of annual finance statement information by issuers of municipal securities since 1996.⁷ Specifically, Rule 15c2-12 prohibits municipal bond underwriters from purchasing municipal bonds unless they make a “reasonable determination” that the issuer commits to provide investor-relevant information set forth in Rule 15c2-12.⁸ In practice, underwriters enter into continuing disclosure agreements (CDAs) with issuers to disclose material information such as annual financial statements. Underwriters are required to do so whenever the principal amount of a bond issuance exceeds \$1 million. Additionally, the rule does not apply to municipal issues that were sold to 35 or fewer sophisticated investors in denominations of at least \$100,000, or to those maturing within nine months or less and sold in denominations of at least \$100,000. Rule 15c2-12 has had multiple amendments since 1989, with the latest amendment in 2019 addressing continuing disclosure of private debt obligations.

The SEC does not have the ability to impose any penalties on issuers in the event of non-compliance with CDAs. Instead, such issuers may face adverse market consequences when attempting to raise follow-on financing from the municipal bond market. Specifically, Rule 15c2-12 requires that underwriters describe previous instances of issuer compliance failures and again make a “reasonable determination” that the issuer will honor its CDAs in subsequent offerings. Underwriters may find it difficult to make such determination in the presence of previous violations, which according industry sources may jeopardize the ability of issuers to raise municipal bond financing (Brock, 2018).

Although most municipal bond issuers have been required to provide comprehensive annual financial reports (CAFRs) since the late 1990s, these statements did not contain sufficiently granular information on bank loans, privately-placed debt, and other material financial obligations until late 2018. Additionally, municipal financial statements are often made public with substantial delays, rendering some of the financial information obsolete (see Edmonds et al. (2017)).

The lack of timely investor-relevant information on municipal bank loans became apparent in the aftermath of the Great Recession of 2008–2009 with the rapid growth of municipal bank loans and private placements (Bergstresser and Orr, 2014; Ivanov and Zimmermann, 2021). The shortage of such information was considered sufficiently severe by market participants that Standard & Poor’s

⁶See Section 15B of the Securities Exchange Act of 1934.

⁷<https://www.sec.gov/files/rules/final/adpt6.txt>

⁸Municipalities Continuing Disclosure Cooperation Initiative

issued a statement warning of ‘negative ratings implications’ for issuers not voluntarily disclosing bank loans, and called for the SEC to begin working on regulation addressing the lack of such disclosures.^{9,10} Relatedly, very few issuers chose to disclose their bank loans voluntarily, and such disclosures were heavily redacted, not allowing investors to understand the extent or the price of such additional debt.

To alleviate the lack of investor-relevant information on private debt in the municipal debt market, in 2018, both the Government Accounting Standards Board (GASB) and the SEC finalized rules that require detailed disclosure upon incurring material financial obligations. GASB Statement Number 88 requires additional detail on privately placed debt in notes to governments’ CAFRs, including information on unused lines of credit.¹¹ The amendments to SEC Rule 15c2-12 require disclosure of material financial obligations to the Municipal Standards Rulemaking Board (MSRB) within ten business days of occurrence for issuers with CDAs entered into after February 27th, 2019.¹² In this paper, we focus on the SEC Rule, as even if CAFRs are presently more complete, it is not clear whether they may supply market participants with timely and relevant information.

The amendments to Rule 15c2-12 include two additional disclosure event types: “the incurrence of a financial obligation” (clause 15) and “events reflecting financial difficulties” (clause 16). Clause (15) is defined broadly to include “agreements to covenants, events of default, remedies, priority rights, or other similar terms of a financial obligation of the obligated person, any of which affect security holders, if material,” while clause (16) includes “. . . modification of terms . . . of a financial obligation of the obligated person, any of which reflect financial difficulties.”¹³ Financial obligations in the context of both clauses include virtually all types of private debt obligations such as private placements of bonds, bank loans, leases and other financial arrangements.

While the SEC rule defines private debt obligation agreements types broadly, there is substantial ambiguity as to what constitutes a reportable event. Properly capturing the economic reality of municipal private placements entails observing both contract origination and renegotiation. Specifically, due to the fluid nature of bank lending to state and local governments, renegotiation is frequent and changes contracts terms such as loan amount, maturity, interest rates, or collateral/guarantee

⁹S&P Calls for More Disclosure of Municipal Bank Loans

¹⁰U.S. SEC takes aim at municipal bank loan disclosure

¹¹Summary of Statement No. 88

¹²Amendments to Municipal Securities Disclosure

¹³See clauses (15) and (16) of Securities Exchange Act Rule 15c2-12(b)(5)(i)(C).

requirements in a significant manner. For example, in our confidential supervisory data of bank loans to municipal entities, originations or renegotiations account for more than a quarter of all loan-quarters between 2018Q4 and 2022Q4. Of these, renegotiations represent the majority of such economic activity in municipal bank loans with 75% of loan quarters, while the remaining observations are associated with loan originations.

Although private placement renegotiation generally result in new contracts between the lender and the municipal issuer, the SEC rule could be narrowly interpreted by both issuers and underwriters to only include originations under clause (15) and distressed debt renegotiations under clause (16). Such an interpretation is likely to miss the vast majority of economic activity in the private placement market. This problem is exacerbated by the lack of clarity on the type of events that constitute “financial difficulties” in clause (16). Given this overall ambiguity of clauses (15) and (16), the extent to which the SEC rule will capture the dynamics of the municipal private placement market is unclear. Our analysis in Section 5 studies private placement reporting rates for both originations and renegotiations to gauge the effectiveness of the rule.

3 Data Description

We obtain the universe of municipal bond issuances settled between January 2000 and February 2023 from the Mergent Municipal Bond Securities Database. We exclude bond denominations exceeding \$100,000 and placed with sophisticated investors as the SEC rule does not apply to such issuance.¹⁴

Given the 15c2-12 reporting requirements apply at the issuer level, it is essential to correctly identify distinct issuers. The 6-digit CUSIP and the issuer names in Mergent are often more granular than individual governments. This may lead to understating reporting rates if a bank loan is narrowly linked to some entities belonging to a given government but not to others. To address this shortcoming of Mergent, we use the Cross Reference Services—Business Entity and Company Family Tree from Standard & Poor’s. These data detail the parent-subsidary structure of over 3 million public and private entities globally since 2016, also providing the issuer CUSIPs, Employer Identification Number (EIN), and the Legal Entity Identifier (LEI), if available, and a unique S&P identifier for each entity. Using issuer CUSIPs we are able to assign S&P IDs to over 97% of issuers

¹⁴<http://www.msrb.org/msrb1/pdfs/SECRule15c2-12.pdf>

in Mergent. This results in 44,656 unique governments based on the S&P ID as compared to 65,631 and 64,240 unique entities based on issuer CUSIP and issuer long name, respectively.

To better understand disclosure requirements in relation to issuer characteristics, we match issuers in Mergent to governments in the last four complete surveys from the U.S. Census Bureau’s Census of Governments.¹⁵ We do so by using string matching techniques combined with manual verification of each potential match.¹⁶ We obtain income statement and balance sheet characteristics from the 2017 Census, the most recent complete survey.

The continuing disclosure data on privately placed debt obligations pursuant to SEC Rule 15c2-12 (see Section 2) come from the Municipal Securities Rulemaking Board (MSRB) Subscription Service. These data include all disclosure filings posted on the MSRB website in PDF format together with the basic information about the filer and its related entities in XML format. We identify a filing by its unique submission ID. A typical continuing disclosure filing under clauses (15) and (16) of Rule 15c2-12 includes the submission date, the date and type of the underlying debt obligation, the submitter’s contact information, all issuer CUSIPs associated with the filing, and a link to the complete filing document. Documents vary widely in content from a brief event description to the full boilerplate text of the debt contract. In the best case scenario issuers include a term sheet of the underlying obligation that details the lender, the obligation amount, maturity, interest rate, and other relevant contractual provisions in addition to the contract document. Figure 1 provides one such example for the private placement of West Lampeter Township with S&T Bank. To gain insight into the characteristics of disclosures, we also hand-collect information on obligation amount, interest rate, maturity, amendments, and term sheets from over 2,300 filing documents.¹⁷

Our sample includes a total of 19,778 unique filings submitted to the EMMA system between 2018 and 2023. We link these data to the municipal bond issuance data from Mergent as nearly all filings has issuer CUSIP (19,182 out of 19,778 total filings). We use the obligation agreement date to determine if a filing is mandatory. “Mandatory” filings have at least one associated bond issue triggering continuing disclosure requirements settled since the implementation date of the rule and prior to the private placement date. Appendix Figure D.I shows substantial heterogeneity in the

¹⁵The Census identifies and surveys the full set of state and local governments in years ending in “2” and “7” and only a subset of governments in other years, predominantly the most populous ones. See <https://www.census.gov/programs-surveys/cog/data/tables.All.html>

¹⁶Appendix A describes the matching algorithm.

¹⁷Appendix B provides additional details on the manual collection process.

type of privately placed debt reported in the filings including bond anticipation notes (BANs), term loans, credit lines, leases, and other private placements. Figure 2 shows that the typical number of continuing disclosure filings per month climbs to at most 200 right after the implementation of Rule 15c2-12 and that it rises steeply after the onset of Covid-19 to about 300-400. The figure also shows that the vast majority of filings are mandatory. This is consistent with the incidence of disclosure increasing with high market uncertainty and with a greater fraction of issuers triggering continuing disclosure requirements over time. However, the 8,808 issuer CUSIPs with disclosure since the implementation of the SEC rule pale in comparison to the over 55,000 issuer CUSIPs associated with municipal bonds since 2000, suggesting low potential compliance rates.

To formally assess compliance with the rule, we obtain granular information on bank loans to municipalities from the confidential Federal Reserve’s Y-14Q Collection. These data cover all outstanding municipal bank loans with commitment amounts exceeding \$1 million made by all banks in the United States exceeding \$100 billion in total holding company assets. The reporting panel covers all bank holding companies with at least US \$50 billion in total assets—37 institutions until 2018Q1. The coverage threshold increased to \$100 billion in 2018Q2, leading to the exclusion of four institutions.¹⁸ In addition, banks provide their internal risk ratings for each loan contract together with the equivalent S&P rating in a ten-grade scale. These contract-level data allow us to study individual borrowers and loans, as well as the riskiness and cost of bank loan financing to state and local governments.

We match municipal loan borrowers in Y-14 to the entities in the Census of Governments using string matching techniques combined with manual verification of each potential match. This allows us to link the loan events data to bond issuers from Mergent, using the unique Census identifier as a bridge between the two data sets. We supplement this bridge with the S&P cross reference data. We link the Y-14 borrower entities to the S&P cross reference data, thereby assigning Y-14 borrowers S&P IDs, via issuer 6-digit CUSIPs, TINs, and LEIs available in the Y-14 Collection. By construction our data set is restricted to bank loans such as credit lines, term loans, and leases, and does not include other private placements such as those with nonbanks or smaller banks.

Overall, 212,090 out of the 241,845 total loan quarters between 2019Q1 and 2022Q4 have either S&P or Census IDs. Furthermore, 193,185 loan-quarter observations have either an S&P identifier

¹⁸For additional details see: Instructions for the Capital Assessments and Stress Testing information collection.

or corresponding match in Mergent through the Census bridge. Finally, 162,441 loan-quarters have a corresponding match in Mergent through either the Census bridge or the S&P bridge.

We restrict the sample to all new loans or renegotiations of existing loans as these are likely to constitute reportable events under CDAs. We define a loan to be renegotiated if it experiences changes in any of the five major contractual terms – maturity, amount, interest rates, or the presence of collateral or guarantee requirements – from one quarter to the next. To ensure we detect economically significant renegotiations, we require that loan amount changes by at least 5% from quarter to quarter. This results in a total of 8,746 entities with 57,333 loan events between 2019Q1 and 2022Q4. We provide additional details on the identification of these events in Appendix D.

Similar to the corporate loan market, renegotiations in our sample account for about three quarters contracting activity (Roberts and Sufi, 2009; Roberts, 2015). This implies studying originations alone is insufficient to capture the dynamics of the municipal private placement market. Separately, the fluid nature of bank lending to municipalities makes it infeasible to distinguish between renegotiations of existing and new municipal loan contracts as both originations and renegotiations typically generate new legally binding agreements. As some issuers may narrowly interpret the SEC rule to only apply to originations, our analysis also considers compliance rates with the subset of originations.

Finally, to test for the information content of continuing disclosure events, we use secondary market municipal bond trading data published on the EMMA website. We limit the sample to fixed-rate bonds and drop primary market transactions as well as transactions where the price is a weighted average, is not verified by the MSRB, with maturities or coupons that differ from those in Mergent, with coupons that are missing, that occur after a bond’s maturity date, that have negative yields, or associated with takedown. If both buyer- and seller-initiated trades are available for a given bond-date, we compute the average price for that date as the midpoint of the average seller-initiated trade prices and the average of buyer-initiated trade prices. If both buyer- or seller-initiated prices are not available but dealer quotes are available, we then compute the average price for that date to be the simple average across all dealer quotes. Finally, if only buyer- or seller-initiated prices are available on a given date but not both, we compute the average price on that date as the average purchase price or the average sale price, in that order.

4 Regulatory Coverage of Municipal Bond Issuers

A bond issuance triggers continuing disclosure requirements under the amendment of Rule 15c2-12 if it settles on or after February 27th 2019 and has total outstanding amount exceeding \$1 million. If the settlement date is not available, we use the date 30 days after the offering date. We exclude issues sold to sophisticated investors in large denominations or issues with maturities of less than nine months in large denominations as such issues do not trigger continuing disclosure (see Section 2 for more detail). Overall, 69,063 completed issuances by 20,647 unique 6-digit CUSIPs since February 27th 2019 trigger disclosure requirements.

Figure 3 shows the cumulative share of issuers in the municipal bond market (in terms of S&P identifiers) subject to private placement disclosure requirements since the implementation of Rule 15c2-12, conditional on previous activity in the municipal bond market. The red solid (the black dashed) line shows the percent of issuers required to disclose among issuers with at least one bond issue settled between January 2000 (2010) and February 26th 2019. Using issuance since 2000 is likely to provide an upper bound on the number of issuers with bond market access or a lower bound on the fraction of issuers subject to continuing disclosure. This is because fiscal conditions for some governments have been deteriorating since the Global Financial Crisis leading to inability of these issuers to access bond markets. By contrast, the black dashed line represents a more recent and accurate estimate of the fraction of issuers facing disclosure requirements. As of February 2023 only between 40%–50% of municipal issuers were required to disclose privately placements.

As disclosure requirements for privately placed debt claims derive from public municipal bonds issuance activity, they are likely to be correlated with greater access to the municipal bond market. Columns 1-3 of Table 1 provide a simple comparison of local governments with and without previous bond issuance since January 1st 2000. Unsurprisingly, previous issuers are substantially larger in terms of average general revenue (\$35 vs \$4 million), have higher average debt-to-revenues, and face lower interest costs than issuers without bond market access. Columns 4-6 of Table 1 compares governments with bond market access based on whether they have issued bonds since February 2019, thereby triggering continuing disclosure requirements. This comparison generates similar differences that are less stark than in Panel A but still significant. On average, governments required to disclose are significantly larger and have lower interest costs than those not required.

Table 2 explores the incremental relevance of these characteristics in explaining rule coverage. These tests confirm the descriptive patterns established in Table 1. We find that less opaque issuers with greater bond market access are more likely to trigger continuing disclosure requirements. Once we condition on government type and state fixed effects, the most relevant predictor of whether an issuer is subject to disclosure requirements is size and debt-to-revenue. These associations are robust across government type (see Appendix Table D.I). Similarly, issuers subject to continuing disclosure have larger bank loans and appear to be less risky than bond issuers not required to disclose (Appendix Table D.II). Overall, the disclosure regulation is likely to be less applicable to the exact segments of the municipal market facing the most severe information problems and likely to see the greatest benefits of such regulation.

5 Privately Placed Debt, Regulation Compliance, and Issuer Type

5.1 Do issuers underreport privately placed debt?

In this section we examine the extent to which bond issuers comply with continuing disclosure requirements. We deem a municipal issuer to be in compliance with continuing disclosure regulation if the issuer is required to disclose, has bank loan events in a given quarter in the Y-14 data, and also has filed any private placement activity contemporaneously (in the same quarter) on the MSRB website. This assumption is likely to overstate the compliance rate with continuing disclosure requirements as issuers might disclose different private placements from the ones we identify in our loan data set. Overall, our estimates should be viewed as a lower bound on the under-reporting of required obligations.

Panels (a) and (b) of Figure 4 show compliance rates over time for all bank loan events and loan originations, respectively. Panel (a) shows that disclosure of loan events has remained low throughout the entire sample period, including the most recent quarters of the data. In the vast majority of bank loan events where disclosure is required, the associated issuer makes no EMMA disclosure. For example, out of the 21,884 bank loan events, only 36% have associated disclosures filings. Panel (b) shows that compliance rates within the subset of loan originations are higher at approximately 50%, suggesting that some issuers may narrowly interpret the continuing disclosure regulation to only apply to loan originations. Nonetheless, even within loan originations over half of reportable bank

loan events remain undisclosed. Compliance rates also remain low across local government type (Appendix Figure D.V) or geography (Appendix Figure D.VI). Therefore, municipal bond investors only appear to observe a very limited fraction of private placement activity.

In Panels (c) and (d) of Figure 4 we also test whether the observed underreporting might be a byproduct of renegotiations changing loan terms in a manner that is immaterial for bondholders. We separate renegotiations into favorable or adverse from the standpoint of borrowers and require large associated changes in loan terms – loan amount changes of at least 10%, interest rate changes exceeding 50 basis points, maturity changes of 4 or more quarters. We define renegotiations to be unfavorable to borrowers if they increase loan interest rates, increase loan amounts, or decrease loan maturities. Conversely, favorable renegotiations increase maturities, decrease amounts, or decrease interest rates. Figure 4 shows that compliance rates for unfavorable renegotiations are significantly lower than those among favorable renegotiations. That said, compliance rates rarely exceed 50% even among favorable renegotiations, suggesting large potential to affect municipal bond holders.

5.2 Determinants of underreporting

In a regulatory setting in which disclosure requirements are ambiguous and the regulation is difficult to enforce, the disclosure decision may in effect be voluntary with only high credit quality issuers choosing to disclose. To this end, in Table 3 we study the determinants of the propensity to disclose, conditional on being required to do so. We collapse the Y-14 loan-quarter panel to the government-quarter level and, given we are interested in studying the relation between loan characteristics and disclosure choice conditional on government characteristics, we restrict the sample to the entities we can match to the Census of governments. Columns (1) through (3) present results for the full sample of events, while columns (4) through (6) restrict the sample to loan originations.

Interest rates factor prominently in the decision to disclose across most specifications. For example, a one percent higher interest rate is associated with between two- to eight-fold lower probability of disclosing. Similarly, shorter maturities and higher incidence of contract guarantees are associated with lower disclosure rates among originations, while higher utilization rates negatively predict disclosure choice in the full sample. Table 3 also shows that these associations are very similar after controlling for time-invariant issuer characteristics with issuer fixed effects. This suggests time-invariant government characteristics appear to be far less important determinants of

disclosure than loan contract structure. Overall, issuers are less likely to disclose loan events that are riskier to bondholders.

This difference in risk stands in stark within loan origination events – the issuer is rated BBB or lower in 28% of bank loan events of non-disclosers as compared to 25% for disclosers (see Appendix Tables D.II and D.III and Figure D.II). In other words, issuers not compliant with Rule 15c2-12 are substantially riskier and therefore have the subset of bank loan events most likely to dilute public bonds.

Table 3 also shows weak evidence that that the size of loan commitments relative to government revenues positively predicts disclosure probability. This association, however, only holds for renegotiations as we fail to find a statistically significant association within loan originations. This finding suggests that the materiality of loan contracts positively predicts disclosure probability. We further explore materiality in Figure 5. Specifically, bank loan events that are not reported may represent an immaterial fraction of the issuers’ bonds that trigger continuing disclosure requirements. To alleviate these concerns, we construct the ratio of the total dollar amount of loan commitments with renegotiations/originations and outstanding municipal bonds triggering continuing disclosure requirements for each issuer-quarter . Not surprisingly, bank loans are economically significant for reporting issuers – the median reporting issuer has bank loan originations that are roughly 50% the size of the issuer’s outstanding bonds triggering continuing disclosure (see Panel (c) of Figure 5). Furthermore, over one quarter of issuers’ reported bank loans are larger than the issuer’s bonds.

Panel (b) of Figure 5 shows a non-reporting issuer has reportable loans that are smaller on average with only a quarter of loans exceeding 25% of the issuer’s outstanding bonds. By contrast, most originations of non-reporters are material (see Panel (d)). Finally, to ensure the low compliance rates are not driven by immaterial loan agreements, replicating Panels (a) and (b) in Figure 4 when requiring that the loans represent at least 20% or 50% of the issuer’s bonds triggering continuing disclosure shows very similar results (Appendix Figure D.III).

We also explore whether municipal bond underwriters, bond counsels, and financial advisers may help facilitate compliance with Rule 15c2-12. Underwriters enter into CDAs with issuers at the settlement date of each qualified offering. Although underwriters have to verify issuers disclose material financial obligations in accordance with Rule 15c2-12, they only have to do so at offerings subsequent to the one triggering continuing disclosure. Given issuance is infrequent for most

governments, such due diligence conducted by underwriters may only have limited effectiveness.

Nonetheless, in Table 4 and in Appendix Table D.V we examine the possibility that issuers working with the highest market share underwriters, bond counsels, and municipal financial advisers (in the top 5% of market share in a given year) are more likely to be compliant with continuing disclosure regulation.¹⁹ Similar to the corporate finance setting, compliance rates are higher for issuers working with high market share intermediaries as these intermediaries are likely to engage in greater issuer due diligence to maintain reputation (Fang, 2005).

In addition, underwriters and financial advisers appear to also jointly determine compliance rates, suggesting the intensity of interaction between underwriter and financial advisor may also be important for compliance rates. Specifically, column 4 of Table 4 shows that high market share underwriters and financial advisers are associated with higher likelihood of reporting loan renegotiations as long as the issuer does not simultaneously work with reputable underwriters and advisers. Similarly, including underwriter-financial adviser pairwise fixed effects significantly improves the adjusted R-squareds relative to models that only include underwriter or financial adviser fixed effects separately (see Tables D.VI and D.VII). Overall, the interaction between underwriters and financial advisers appears to be important for issuer compliance with disclosure requirements.

Finally, the intensity of interaction between issuers and underwriters is substantially higher within the subset of negotiated offerings and it is possible this facilitates ongoing communication and improves disclosure of private placements. We explore this possibility by comparing disclosure rates among the subset of issuers with greater historical reliance on negotiations—either those with above the sample median of 31.88% historical share of negotiations or above 50% share of negotiations within the offerings triggering continuing disclosure.

Compliance is significantly higher for issuers with high historical share of negotiations or where disclosure requirements are triggered by negotiated offerings. Specifically, Figure 6 shows that issuers with low historical share of negotiated offerings disclose less than 32% of all agreements, which stands in stark contrast with the 42% reporting rate of issuers with high historical negotiations share. We find similar reporting rates of about 36% around the 50% negotiated share cutoff, likely because historical reliance on negotiated offerings is a better proxy for the intensity of interactions between

¹⁹Most issues are intermediated by the 30 largest underwriters (Figure D.VII).

issuers and municipal advisers. We also find small differences in the same direction within the sample of loan originations in Figure 6. These results further corroborate the idea that underwriters are important for compliance with Rule 15c2-12.

Using a simple back-of-the-envelope calculation, we also quantify the share of the municipal bond market that is likely to be affected by the noncompliance with the SEC disclosure regulation. Out of the over \$3 trillion in outstanding bonds as of August 2023 and covered in our analysis, in nearly \$264 billion the issuer has bank loan events that it never discloses. This suggests that investors in the majority of outstanding bonds may face significant adverse consequences as a result of privately placed debt.

5.3 Do filings omit information relevant for bond pricing?

We also examine whether conditional on disclosure, filings are likely to omit information relevant to municipal bond investors. We hand-collect obligation characteristics from a subset of around 2,500 disclosure filings. We describe the hand-collection procedure in Appendix B and show summary statistics of contract characteristics across filing types in Appendix Table D.VIII. Figure 7 shows that although most filings provide information about the amount of the underlying debt obligation, a significant share does not provide information about interest rates or maturities. Furthermore, the text of the underlying private placement contracts is also missing in the majority of cases and even basic summaries are unavailable in about a third of filings. Lastly, a term sheet briefly summarizing contract terms is only provided for less than half of filings. The availability of a term sheet is crucial for understanding the extent to which private placement agreements affect bondholders, especially for less sophisticated retail investors. Even if available, the text of privately-placed debt contracts is typically boilerplate and spanning hundreds of pages, making it difficult to process for less sophisticated retail investors. This echoes calls by regulators and market participants for greater transparency and simplicity of municipal bond disclosures given the significant presence of retail investors.²⁰

Furthermore, despite the frequent and significant renegotiation of private placements as documented earlier, only a small minority of filings detail private placements that is an amendment of a previous agreement (see Appendix Table D.VIII). Overall, the information in filing documents is

²⁰See A Word to Wall Street: 'Plain English,' Please.

often not sufficiently detailed to be (fully) informative about the nature of the disclosed obligations. While Rule 15c2-12 does not stipulate the exact information to be disclosed, even the most basic information necessary to make informed investment choices in response to disclosures is often not included.

In light of the systemic deficiencies in information content of disclosure filings, one additional potential area of concern is that there is space for issuers to narrowly interpret the rule to only apply to private placement terms that were previously disclosed. For example, if the issuer does not detail the maturity of a private placement contract in the initial disclosure filing but renegotiates the contract to substantially extend maturity, that issuer is unlikely to view the modification as something that is required to be disclosed. While fully assessing the importance of this possibility is difficult as the rule has been in effect for less than three years, the significant ambiguity surrounding the provisions of Rule 15c2-12 may also affect the availability of key investor-relevant information in the municipal bond market in both the near and the intermediate term.

6 Information Content of Private Placement Disclosures

We formally study the information content of continuing disclosures in an event study framework. As there is significant information asymmetry between municipal bond issuers and bond investors, there are at least three major mechanisms through which disclosure may affect bond returns. The disclosures may reveal dilution of pre-existing municipal bondholders by private placement investors as shown in Ivanov and Zimmermann (2021) or adverse information about issuers' ability to access bond markets or its expected future income. Both of these channels are likely to lead to negative revisions in bond prices around disclosure events, conditional on full compliance. However, given compliance is low, all disclosure is in effect voluntary. In this setting, high quality issuers will choose to reveal private placement agreements, thereby signaling high quality, while riskier issuers will choose not to report privately placed debt because of high disclosure costs (Akerlof, 1970). Disclosing is costly to risky issuers because it is likely to reveal adverse information to market participants. Municipal bond investors will therefore interpret private placement disclosure as positive news.

While the relation between abnormal bond returns and private placement disclosures is an empirical question, the presence of abnormal returns will suggest that disclosures are informative to

municipal bond investors. Section 6.1 describes our methodology and section 6.2 discusses results.

6.1 Methodology

We compute bond returns around disclosure events using trades that occur within 30 days of the related disclosure. If there are multiple trades satisfying that condition, we keep the trades closest to the disclosure event date. Using information on coupons, prices and remaining maturity we compute the yield-to-maturity, y_{bt} and duration, D_{bt} for each bond and trade date.

Due to infrequent trading of municipal bonds, we calculate returns between adjacent trades dates following the approach in Cornaggia et al. (2022). The return on bond b between two trades s and k (with $k < s$) is computed based on the duration-adjusted change in yield-to-maturity:

$$r_{b,s,k} = -(D_{bs} \times y_{bs} - D_{bk} \times y_{bk}) \quad (1)$$

To calculate abnormal bond returns, we construct bond return indexes based on remaining maturities, credit ratings, and liquidity using the method of repeat sales regressions (Bailey et al., 1963; Peng, 2012; Cornaggia et al., 2022). In particular, we define a bond sub-index l in a given rating, maturity, or liquidity group (or combinations of these groups) and estimate the index return R_t^l for that sub-index on date t using the following specification:

$$r_{b,s,k} = \sum_{t=k+1}^s \mathbb{1}_t^l \times R_t^l + \sum_{t=k+1}^s \epsilon_{b,t}, \forall b \in l \quad (2)$$

Equation (2) is effectively a binary-variable regression with indicators for each trading date as regressors. Given our sample of disclosures starts in August of 2018, we include all trades that occur since July of 2018. The sub-indexes are defined for 6 maturity categories (up to 2 years, 2-5 years, 5-10 years, 10-15 years, 15-20 years, and greater than 20 years), 4 rating categories based on the most conservative agency rating among Moody's, Standard& Poor's, and Fitch (AAA-AA, A, BBB or lower, and unrated), 3 liquidity categories (having less than 1, 1-5, or greater than 5 trades per month), and for the combination of rating, maturity, and liquidity for a total of 72 sub-indexes. In each of these sub-indexes we have a sufficiently large number of trades so that we can estimate equation (2) and obtain the estimated sub-index return R_t^l .

We calculate the abnormal bond return between two dates as the difference between the raw bond return in equation (1) and the estimated sub-index return over the same time period from Equation (2):

$$ar_{b,s,k} = r_{b,s,k} - \sum_{t=k+1}^s \widehat{R}_t^l, \forall b \in l. \quad (3)$$

As the abnormal returns span different trading windows (typically 10 business days), we compute the equivalent 10-day return for each bond-event pair. Our main regression specification is:

$$ar_{b,e} = \alpha + u_{b,e}. \quad (4)$$

In equation (4), $ar_{b,e}$ is the abnormal return of bond b around the disclosure event e , and $u_{b,e}$ is an error term. We double cluster standard errors at the bond issuer and disclosure date levels. α is the average abnormal return around disclosure events. We estimate Equation (4) within different subsets of the data to explore whether abnormal returns vary across event or issuer types. We also study whether abnormal returns differ prior to and after the onset of the pandemic.

6.2 Results

Table 5 shows our first set of event study results, splitting the sample into three time periods around the onset of the Covid crisis. The Pre-Covid period runs from the implementation of the SEC rule through March 9th, before the onset of the Covid crisis caused a sell-off in the municipal bond market.²¹ The Covid period starts right after the passage of the CARES Act, March 28th, and ends right before the last modification to the Federal Reserve’s Municipal Liquidity Facility, August 10th 2020.²² Even though the CARES Act ended the sell-off in the municipal bond market, the “Covid” period defined above was characterized by substantial uncertainty about issuer liquidity and solvency that the MLF gradually alleviated (Haughwout et al., 2021). Finally, the Post-Covid period runs from August 12th 2020 through the end of the sample period, February 28th 2023.

Given the information content of voluntary and mandatory disclosures may differ, we also split the sample along this dimension in Panel A of Table 5. Specifically, during the pre-Covid period,

²¹How the Muni Market Became the Epicenter of the Liquidity Crisis

²²<https://www.federalreserve.gov/monetarypolicy/muni.htm>

mandatory disclosures of privately placed debt are associated with positive abnormal returns of approximately 34 basis points. Post-covid abnormal bond returns return to pre-Covid levels of about 29 basis points. The 29–34 basis points returns to disclosure in benign economic times provides evidence in favor of the certification channel as it is unlikely that private placement disclosure reveals positive private information in normal economic times.

Abnormal returns to disclosure jump to nearly 70 basis points in the aftermath of the Covid crisis and then decline to pre-pandemic levels since the final implementation of the Federal Reserve’s Municipal Liquidity Facility (MLF). These result suggest that returns are positive because the disclosures convey issuer access to liquidity/financing in a time stress. Overall, despite the potentially dilutive effects of private placed debt, disclosures appear to be highly informative and constitute positive news for municipal bond investors. Finally, both mandatory and voluntary disclosures are associated with similar returns because the low compliance with the rule renders all disclosures voluntary.

Returns to disclosure are also likely to vary across the issuer credit quality distribution. Specifically, issuers with observably lower credit quality that have positive private information are likely to earn greater returns to disclosure if such disclosure helps them better differentiate themselves from other low credit quality issuers. We test this idea by estimating the event studies within sub-samples based on the issuer’s most conservative credit rating from the three major credit agencies (Standard & Poor’s, Moody’s, and Fitch). Panel B of Table 5 shows that abnormal returns are substantially larger for disclosures within lower credit quality categories. For example, bonds rated ‘AAA’, ‘AA’, ‘A’, or ‘BBB’ are monotonically increasing with risk and earn over 26-48 basis points of positive abnormal returns to disclosure. Such abnormal returns to disclosure accelerate even further to roughly 69 basis points for below-investment grade bonds. Therefore, disclosing may help issuers credibly signal to credit markets that they have favorable future prospects, especially among observably low credit quality issuers.

Finally, we study whether the returns to disclosure vary with the level of detail provided in filings, for the set of filings for which we hand collect contract information. Abnormal returns to disclosure of more comprehensive filings should arguably be larger to the extent these filings are more informative to investors. We study abnormal bond returns based on whether filings contain maturity or interest rates (given most filings detail loan amounts), or whether the filing is an

amendment of a prior credit agreement. Observing loan terms is essential for understanding the impact of privately placed debt on outstanding bonds. Additionally, in light of the ambiguity of disclosure requirements, disclosing renegotiations may be associated with greater abnormal returns as renegotiations may represent commitment to market participants to provide privately placed debt information more frequently.

Panel A of Table 6 shows that abnormal bond returns are larger for disclosures that detail both the maturity and interest rate of private placement agreements than for those that do not. These results provide support for the idea that more comprehensive disclosures are likely to be more informative to market participants. Also in line with expectations, we show that private placement amendments translate to significantly larger abnormal returns than originations.

One key dimension of information content is the timeliness of the disclosed information as disclosure relevance generally increases with timeliness. According to rule 15c2-12, issuers have to disclose privately placed debt on the EMMA system within 10 business days of incurrence (see Section 2). While Appendix Figure D.VIII shows that the majority of disclosures occur within the mandated 10 business day window, a significant fraction of agreements take longer to reach market participants. Panel B of Table 6 shows that disclosure informativeness as measured by the magnitude of abnormal bond returns is not significantly correlated with disclosure timeliness, albeit returns are larger for more timely disclosures. Specifically, disclosure filings posted publicly within 10 business day of private placement agreements are associated with 34 and 44 basis points of abnormal bond returns for AAA-AA and \leq A-rated issuers, respectively. Abnormal returns are slightly smaller, but not significantly different for less timely filings across the credit risk spectrum. Overall, the municipal bond market places significant value on disclosures, irrespective of timing.

7 Conclusion

This paper sheds light on the effectiveness and market impact of the recent changes to the SEC's disclosure regulation in the municipal bond market. Relying on confidential supervisory information from the Federal Reserve, we present evidence that issuers significantly underreport privately placed debt. For example, only 40% to 50% of agreements on private placements are publicly filed among issuers required to report private debt.

Whenever privately placed debt is disclosed, such disclosures are highly informative to market participants but there is substantial heterogeneity in their information content and complexity. Event studies suggest that disclosure reveals positive news and is especially informative to investors in low-rated bonds or during market turmoil episodes. However, a large fraction of filings miss key investor-relevant information such as interest rates, maturities, or renegotiations of agreements. We show such omissions matter to bond market participants as more comprehensive and timely filings tend to earn greater positive abnormal returns.

Our results imply that recent continuing disclosure regulation has had limited success in ensuring issuers make the disclosures the SEC itself deemed necessary for investors. The low compliance with the regulation is consistent with the ambiguity of reporting requirements and potential inability of the federal government to enforce the regulation. Overall, private placement disclosure remains largely voluntary, highlighting challenges to recent initiatives to increase transparency for municipal bond investors.

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Figures and Tables

Dear Vicki:

Pursuant to your interest in obtaining financing for West Lampeter Township, S&T Bank is proposing the following terms and conditions:

Borrower:	West Lampeter Township
Amount:	\$2,000,000
Rate:	3.35% (tax-free) fixed for the duration of the loan; the taxable equivalent rate would be 4.18%.
Commitment Fee:	\$3,000; to include all attorney's fees.
Repayment:	Interest only for the 1 st year, followed by principal and interest per month
Amortization:	1 year interest only; followed by a 4 year amortization
Term:	5 years
Security:	Full faith, credit, and available taxing power of West Lampeter Township.
Guarantors:	None.
Purpose:	To establish a Series 2019 note for the purposes of renovating Village Park.

Figure 1: An example of a continuing disclosure filing. This figure presents a simple example of a term sheet within a continuing disclosure filing.

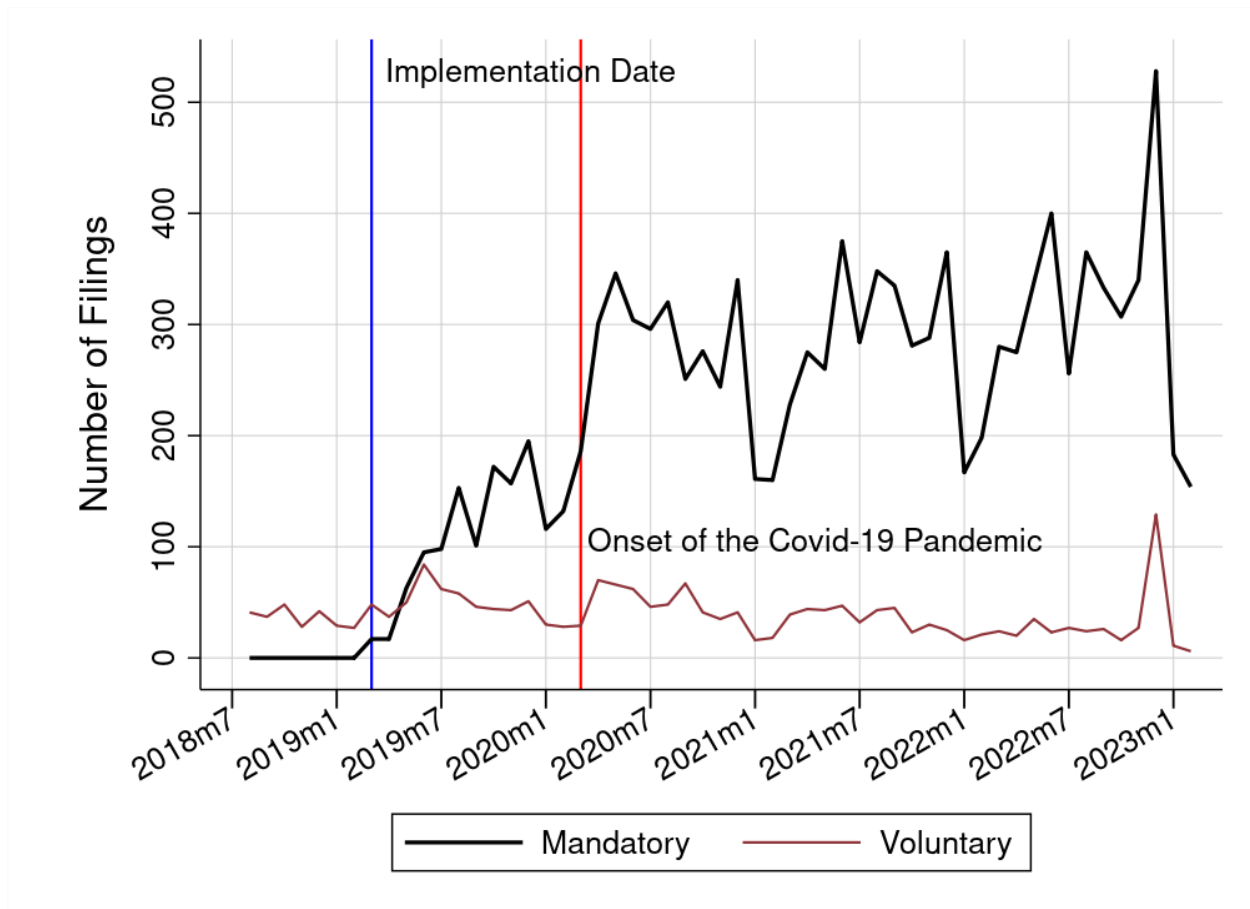


Figure 2: Continuing disclosure filings over time. This figure shows monthly total municipal disclosures of privately placed debt, split into mandatory (the black solid line) and voluntary (the red solid line) disclosures.

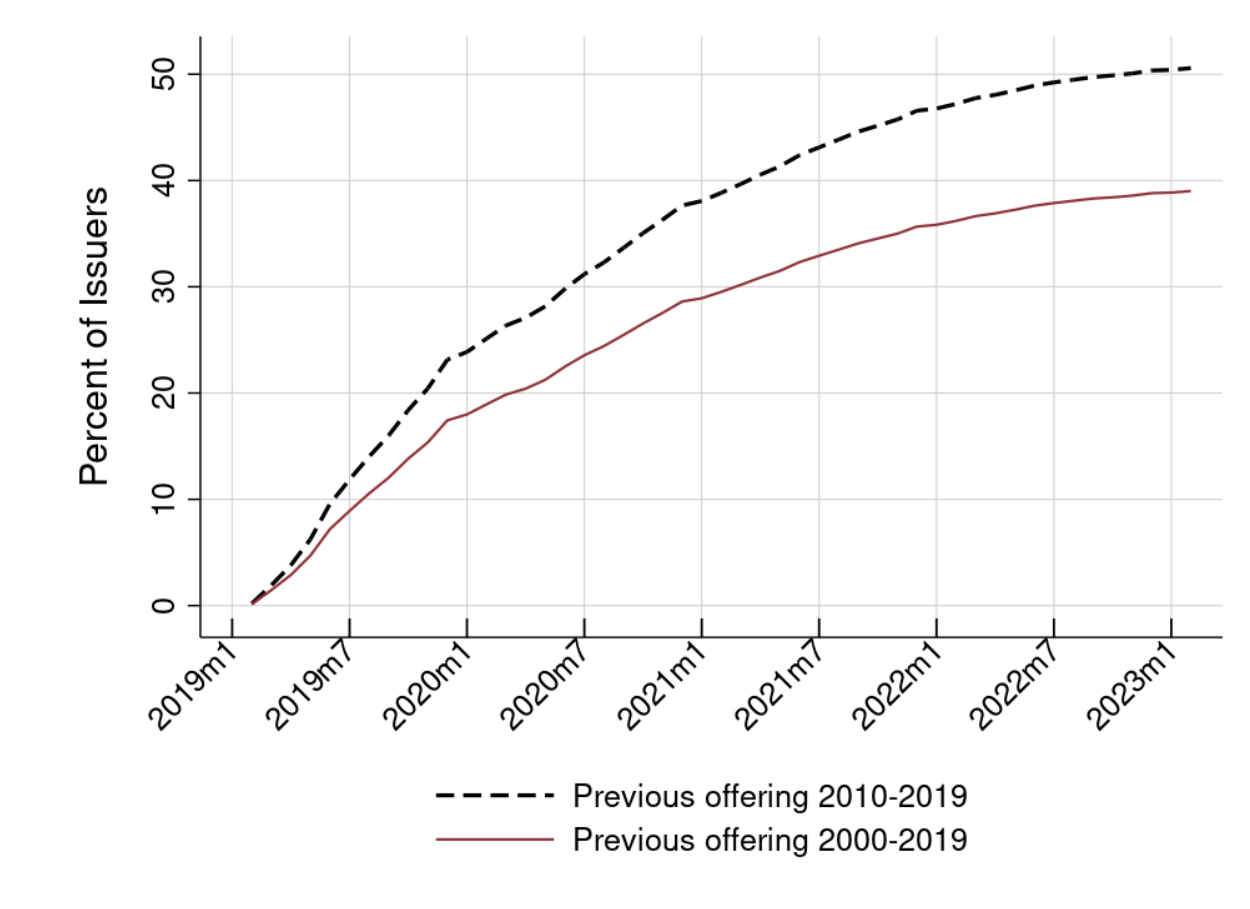


Figure 3: Continuing disclosure requirements over time. This figure presents the cumulative share of issuers in the municipal bond market over time that are required to comply with Rule 15c2-12. The black dashed line shows the fraction of issuers required to disclose among issuers with at least one previous bond offering between January 1st 2000 and February 26th 2019. The red solid line depicts that fraction for issuers with at least one previous bond offering between January 1st 2010 and February 26th 2019.

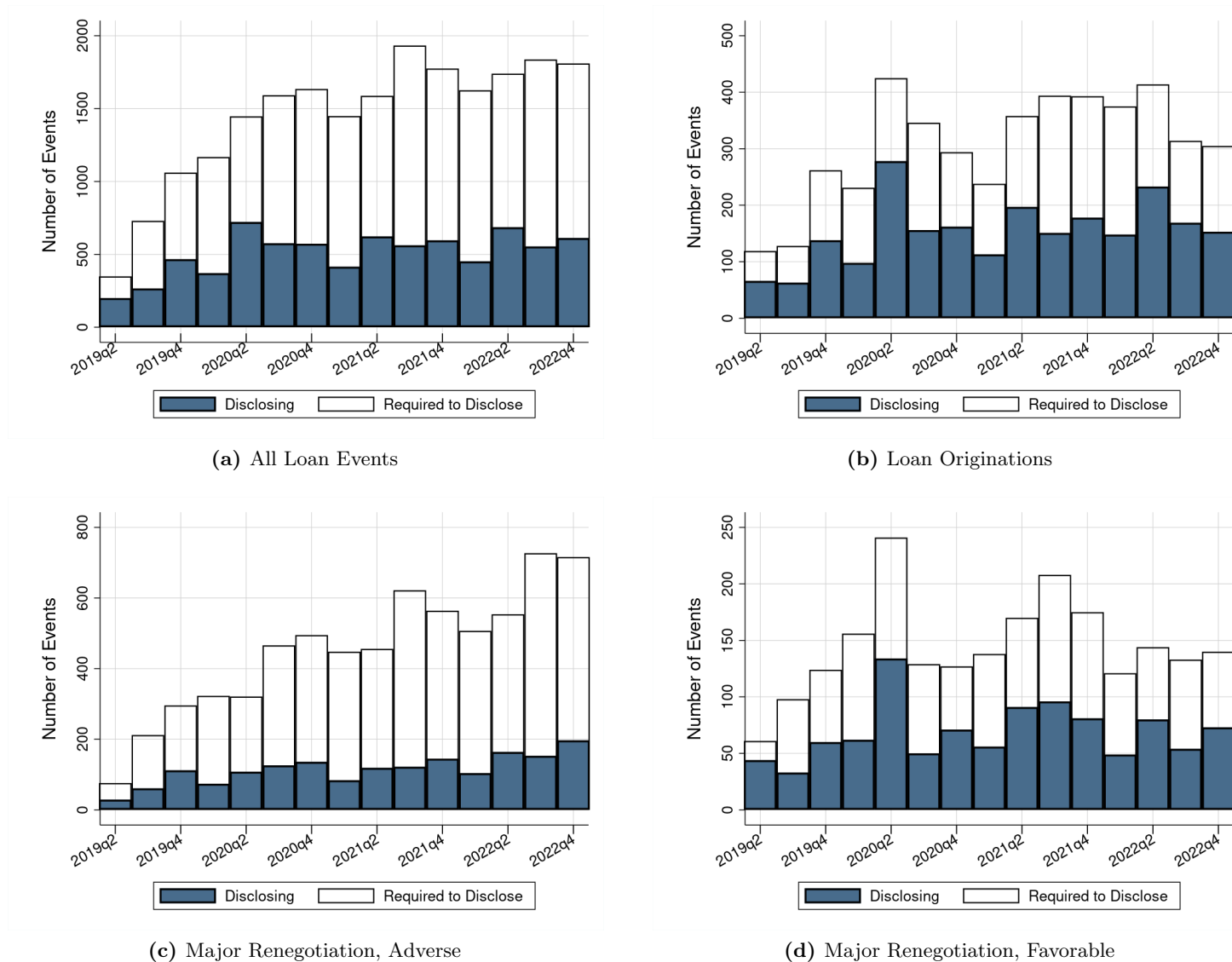
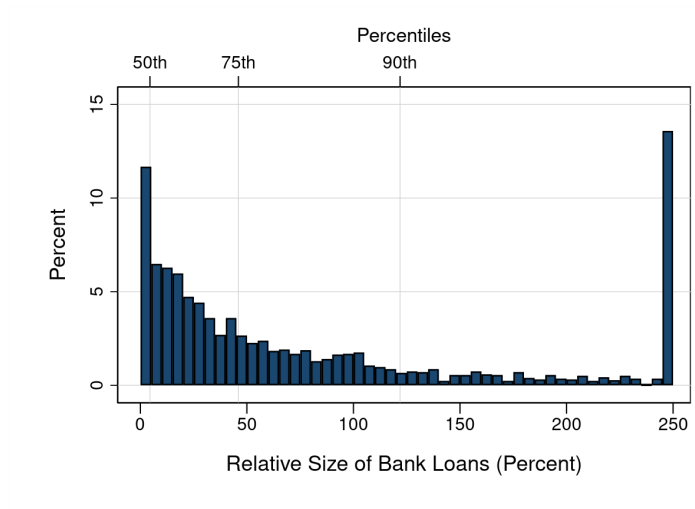
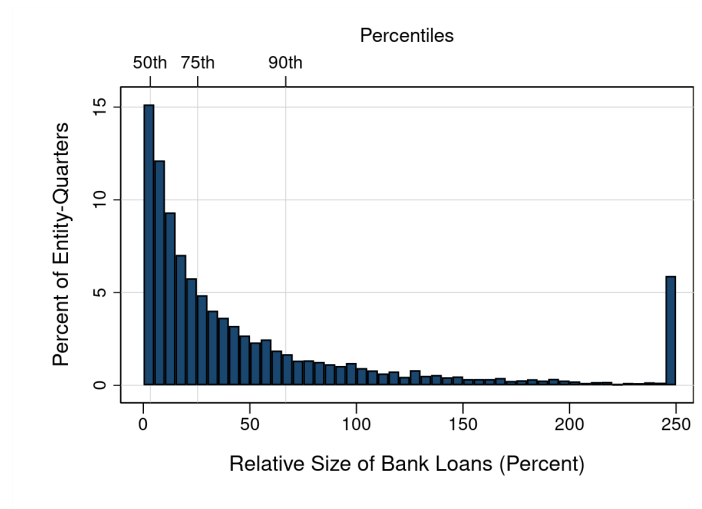


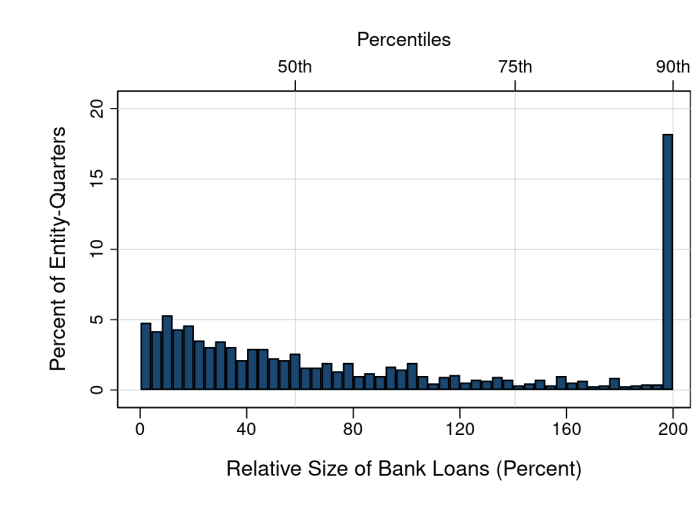
Figure 4: Compliance with continuing disclosure requirements. This figure shows the time series evolution of compliance with Rule 15c2-12. The white bars show the number of bank loan events in the Y-14 Collection that are subject to disclosure pursuant to CDAs/Rule 15c2-12, while the blue bars show the number of bank loan events in which the issuer has filed any disclosures on the EMMA system when required to disclose. Panel (a) includes both originations and renegotiations, panel (b) includes only loan originations. Panel (c) shows renegotiations associated with reductions in loan maturities of more than 4 quarters, increases in loan amounts of at least 10%, or increases in interest rates of at least 50 bps, while panel (d) shows renegotiations associated with reductions in loan amounts of at least 10%, increases in maturity of more than 4 quarters, or reductions in interest rate of at least 50 bps.



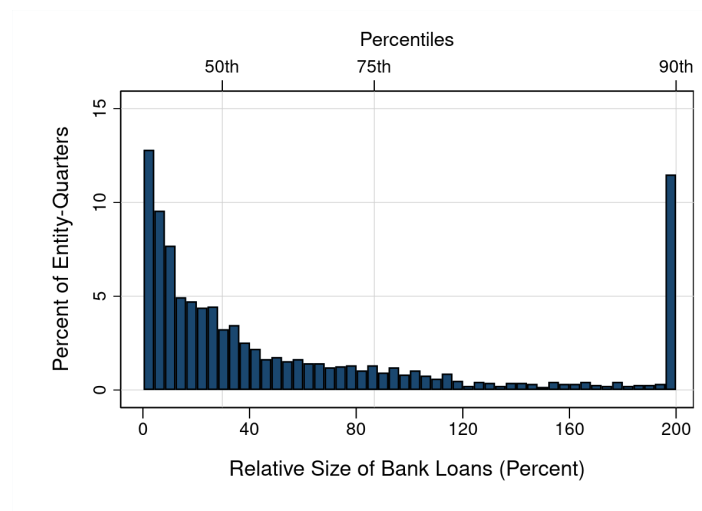
(a) All Events: Associated EMMA Disclosures



(b) All Events: No Associated Disclosures

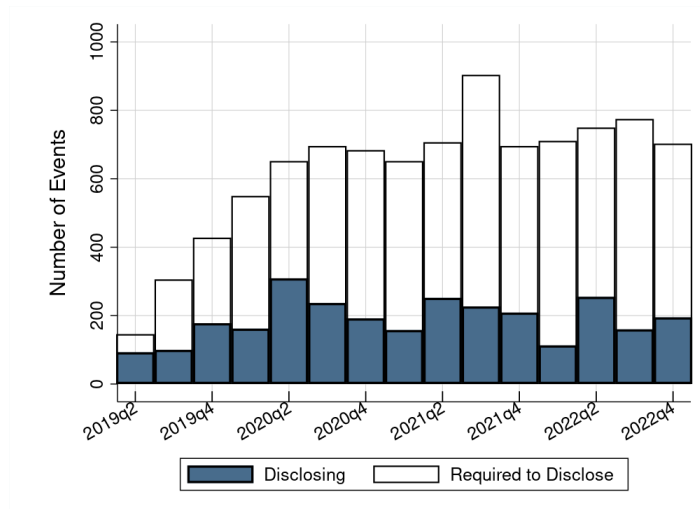


(c) Originations: Associated EMMA Disclosures

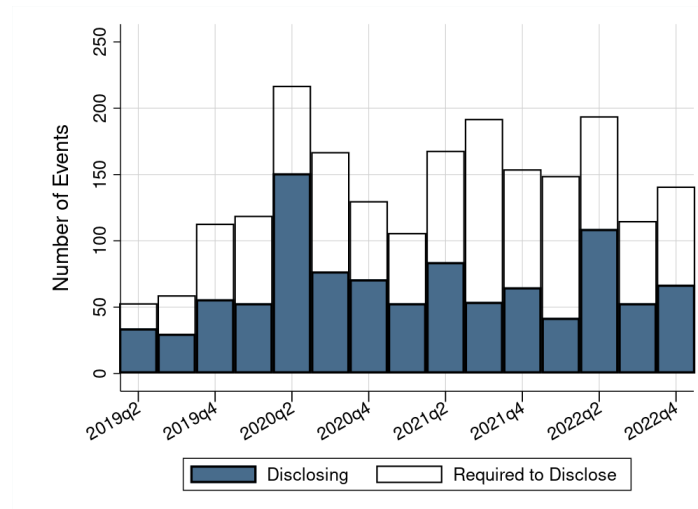


(d) Originations: No Associated Disclosures

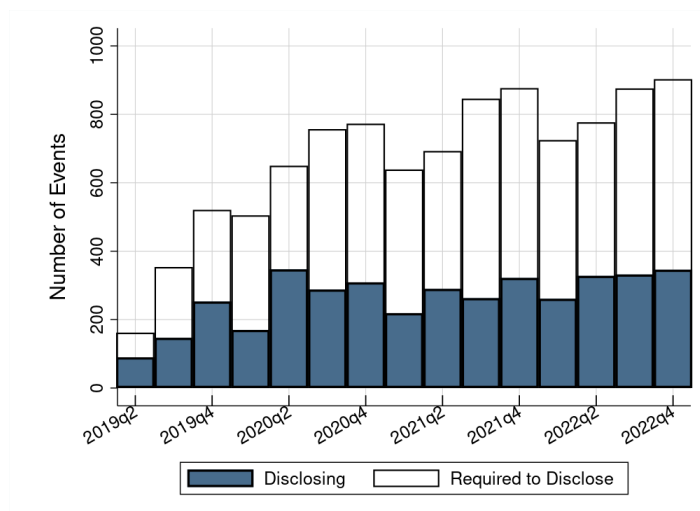
Figure 5: Materiality of Loan Commitments. This figure shows the size of total (renegotiated or newly-originated) loan commitments of a given issuer-quarter relative to the total outstanding amount of bonds triggering continuing disclosure requirements. Panel (a) presents that distribution for issuers that disclose privately placed debt on the EMMA system, while Panel (b) shows issuers that do not report the privately placed debt agreements. Panels (c) and (d) mirror the distributions in (a) and (b), restricting the sample to loan originations.



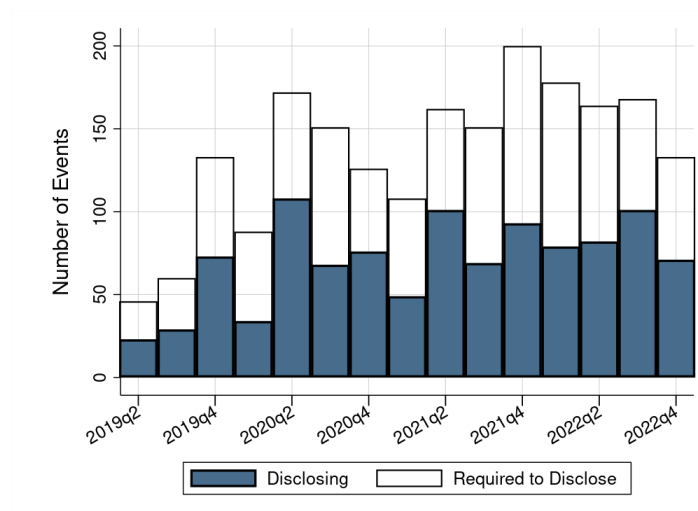
(a) All Loan Events, Low Negotiated Share



(b) Loan Originations, Low Negotiated Share



(c) All Loan Events, High Negotiated Share



(d) Loan Originations, High Negotiated Share

Figure 6: Compliance with continuing disclosure requirements and negotiated offerings. This figure shows the time series evolution of compliance with Rule 15c2-12. The white bars show the number of bank loan events in the Y-14 Collection that are subject to disclosure pursuant to Rule 15c2-12, while the blue bars show the number of bank loan events in which the issuer has filed any disclosures on the EMMA system when required to disclose. Panels (a) and (c) include both originations and renegotiations, where the issuer has low or high historic reliance on negotiated offerings (up to February 27th 2019), respectively. Panels (b) and (d) include analogous analysis but only loan originations.

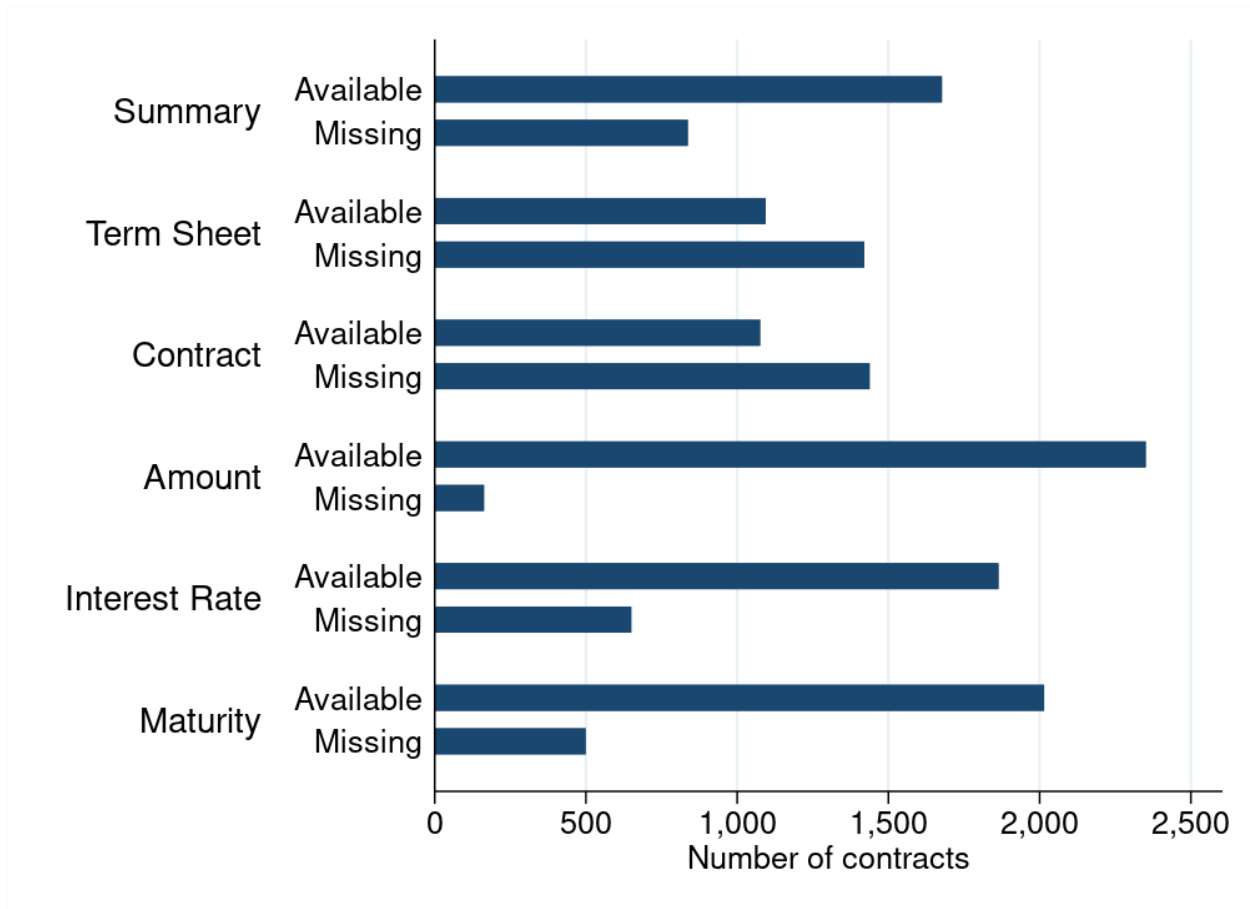


Figure 7: The information content of CD filings. This figure presents the number of debt disclosure filings with available or missing information across a number of key filing dimensions such as the availability of a summary statement, term sheet, the underlying privately placed debt contract, or major contract characteristics (issuance amount, interest rate, interest rate).

Table 1: Bond market access and private debt disclosure requirements. This table presents summary statistics and t-tests for differences in means for major characteristics of local governments. Columns (1)-(2) split the sample based on whether governments have access to the municipal bonds market. Columns (4)-(5) restrict the sample to governments with bond market access and compare governments according to whether they are required to disclose private debt agreements. Total Expenditures, Capital Outlays, Outstanding Debt, and Total Taxes are scaled by each government's total revenues. Sales Tax Share and Property Tax Share are computed by dividing sales or property taxes by total taxes, while Interest Expense is scaled by total outstanding debt. Finally, Revenue Gov Sources is defined as the difference between transfers from and transfers to other governments, scaled by total revenues. The data on government characteristics come from the 2017 Census of Governments. All variables are defined in Appendix C.

	(1)	(2)	(3)	(4)	(5)	(6)
	No Bonds	Bonds	t-stat	Not Required	Required	t-stat
General Revenue, \$m	4.22 (19.70)	34.90 (63.49)	-108.23	18.01 (39.12)	52.28 (77.51)	-44.51
Total Expenditures	1.00 (0.72)	1.03 (0.56)	-4.85	1.02 (0.60)	1.03 (0.53)	-1.21
Capital Outlays	0.12 (0.28)	0.13 (0.23)	-5.12	0.14 (0.25)	0.13 (0.21)	0.59
Revenue Gov Sources	0.24 (0.32)	0.28 (0.29)	-14.81	0.26 (0.29)	0.29 (0.29)	-7.70
Total Taxes	0.44 (0.37)	0.40 (0.27)	15.06	0.39 (0.28)	0.41 (0.25)	-7.40
Sales Tax Share	0.08 (0.22)	0.12 (0.22)	-18.20	0.12 (0.23)	0.11 (0.21)	3.50
Property Tax Share	0.82 (0.31)	0.81 (0.28)	0.79	0.81 (0.28)	0.82 (0.27)	-4.34
Outstanding Debt	0.70 (2.50)	1.56 (3.26)	-41.93	1.54 (3.37)	1.57 (3.13)	-0.61
Interest Expense	0.05 (0.03)	0.04 (0.03)	14.91	0.04 (0.03)	0.04 (0.02)	5.61
Observations	62026	25221	87247	12790	12431	25221

Table 2: Bond Market Access, Government Characteristics, and Disclosure Requirements.

This table reports the relation between bond market access (columns 1 through 3) or being required to report privately placed debt (columns 4 through 6) and government characteristics from the 2017 Census of Governments. The sample in columns 1 through 3 includes all governments with the exception of state governments. The sample in columns 4 through 6 is further restricted to governments with bond market access. A government in the sample is considered to have bond market access if it has at least one bond issuance since 2000. Additionally, an issuer is required to disclose private if it has at least one bond issuance since February 27th 2019 that triggers continuing disclosure requirements pursuant to Rule 15c2-12. The standard errors are clustered at the state level. All variables are defined in Appendix C.

	Bond Market Access			Required to Disclose		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(General Revenue)	0.089*** [0.005]	0.110*** [0.007]	0.121*** [0.005]	0.107*** [0.007]	0.118*** [0.008]	0.141*** [0.007]
Total Expenditures	0.033*** [0.007]	-0.003 [0.006]	-0.009 [0.006]	0.073*** [0.015]	0.015 [0.015]	0.014 [0.013]
Revenue Gov Sources	-0.130*** [0.040]	-0.113** [0.055]	-0.085* [0.046]	-0.026 [0.079]	-0.044 [0.079]	-0.016 [0.063]
Total Taxes	0.005 [0.033]	0.004 [0.042]	-0.007 [0.039]	0.092** [0.043]	0.042 [0.045]	0.014 [0.040]
Sales Tax Share	-0.057 [0.071]	-0.036 [0.076]	-0.144 [0.086]	-0.035 [0.073]	-0.029 [0.074]	-0.111 [0.088]
Property Tax Share	0.060 [0.038]	0.121** [0.051]	-0.004 [0.040]	0.082 [0.063]	0.109 [0.066]	0.004 [0.066]
Debt-to-Revenue		0.024*** [0.005]	0.024*** [0.004]		0.033*** [0.008]	0.032*** [0.005]
Interest Expense		-0.334 [0.220]	-0.315** [0.119]		0.020 [0.334]	0.157 [0.136]
N	69,657	40,520	40,519	22,784	21,123	21,123
Adj. R-Squared	0.390	0.312	0.390	0.145	0.167	0.239
Government Type FE	Y	Y	Y	Y	Y	Y
State FE			Y			Y

Table 3: Disclosure regulation compliance and loan contract terms. This table reports the relation between the decision to disclose privately placed debt when required and bank loan characteristics, controlling for government characteristics. The loan characteristics come from the Y-14 Collection and correspond to newly-originated/renewed loans to a given borrower in a given quarter; we aggregate all loan characteristics to the Census Government ID level. Some specifications also include balance sheet data on governments from the 2017 Census of Governments (Log(General Revenue), Total Expenditures, Revenue Gov Sources, Total Taxes, Debt-to-Revenue, Interest Expense) or loan characteristics (Remaining Maturity, Interest Rate, Commitments-to-Revenue, Commitment Utilization, Secured, or Guaranteed). The standard errors are clustered at the state level. All variables are defined in Appendix C.

Dependent variable:	<i>Disclosing</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	All Events			Originations		
Rem. Maturity	0.008*** [0.003]	0.010*** [0.003]	0.020*** [0.003]	0.008*** [0.002]	0.009*** [0.003]	0.007** [0.003]
Interest Rate	-2.909*** [0.568]	-2.864*** [0.559]	-2.361*** [0.701]	-7.439*** [1.062]	-7.641*** [1.159]	-5.607*** [1.268]
Committed-to-Rev	-0.003 [0.019]	0.043** [0.019]	0.095** [0.037]	-0.007 [0.034]	0.084** [0.039]	0.091 [0.073]
Utilization	-0.188*** [0.028]	-0.150*** [0.024]	-0.059** [0.029]	-0.048 [0.044]	-0.034 [0.039]	0.025 [0.045]
Secured	-0.062** [0.027]	-0.058** [0.026]	-0.045 [0.028]	-0.012 [0.039]	0.002 [0.035]	0.049 [0.044]
Guaranteed	-0.059* [0.030]	-0.092*** [0.030]	-0.155*** [0.051]	-0.236*** [0.080]	-0.276*** [0.058]	-0.244** [0.099]
N	8,817	8,706	8,109	2,518	2,489	1,537
Adj. R-Squared	0.131	0.151	0.291	0.134	0.157	0.335
Issuer Characteristics		Y			Y	
Issuer FE			Y			Y

Table 4: Disclosure regulation compliance and municipal underwriters, bond counsels, and advisers. This table reports the relation between the decision to disclose privately placed debt and intermediary characteristics. The loan characteristics come from the Y-14 Collection and correspond to newly-originated/renegotiated loans to a given borrower in a given quarter; we aggregate all loan characteristics to the Census Government ID level. All specifications include government type, state, calendar quarter, and loan type fixed effects. All specifications also include balance sheet data on governments from the 2017 Census of Governments (Log(General Revenue), Total Expenditures, Revenue Gov Sources, Total Taxes, Debt-to-Revenue, Interest Expense), as well as loan characteristics (Rem. Maturity, Interest Rate, Committed-to-Rev, Utilization, Secured, Guaranteed). The standard errors are clustered at the state level. All variables are defined in Appendix C.

Dependent variable:	<i>Disclosing</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Events					Originations				
Top 5 Underwriter	0.015 [0.013]			0.038** [0.018]	0.014 [0.013]	0.051** [0.021]			0.075* [0.037]	0.045** [0.021]
Top 5 Bond Counsel		0.007 [0.013]			0.004 [0.014]		0.053* [0.029]			0.045 [0.031]
Top 5 Financial Adviser			0.015 [0.013]	0.048*** [0.016]	0.014 [0.013]			0.042 [0.027]	0.076 [0.050]	0.037 [0.025]
Top 5 UW \times Top 5 FA				-0.046** [0.022]					-0.049 [0.055]	
N	8,632	8,632	8,632	8,632	8,632	2,348	2,348	2,348	2,348	2,348
Adj. R-Squared	0.152	0.151	0.152	0.152	0.152	0.162	0.162	0.161	0.162	0.163

Table 5: Event study results. This table presents average abnormal returns for bonds with associated continuing disclosure events. Panel A presents results within sample partitions in three time periods and based on whether disclosures are mandatory. The Pre-Covid period runs from the implementation of the SEC rule, February 27th 2019, through March 9th 2020. The Covid period starts right after the passage of the CARES Act, March 28st, and ends right before the last modification to the Federal Reserve’s Municipal Liquidity Facility, August 10th 2020. The Post-Covid period runs from August 12th 2020 through the end of the sample period, February 28th 2023. Panel B presents results within partitions into different credit quality groups based issuer credit ratings. All abnormal returns are adjusted for bond duration and for the average return on sub-indexes based on credit risk and maturity. The standard errors are double clustered by trade date and issuer CUSIP.

Panel A: Mandatory vs. Voluntary Disclosures						
	Mandatory			Voluntary		
	Pre-Covid	Covid	Post-Covid	Pre-Covid	Covid	Post-Covid
Bond Return	0.336*** (0.036)	0.657*** (0.054)	0.294*** (0.017)	0.373*** (0.067)	0.817*** (0.272)	0.343*** (0.065)
Observations	30,681	59,882	224,420	9,848	1,179	2,528
Number of Events	1,589	2,004	9,304	635	141	391

Panel B: Disclosures and Credit Quality					
	AAA	AA	A	BBB	Non-IG
Bond Return	0.262*** (0.026)	0.355*** (0.021)	0.382*** (0.027)	0.483*** (0.110)	0.686*** (0.184)
Observations	39,471	187,908	82,029	15,569	7,415
Number of Events	1,816	8,600	3,354	496	459

Table 6: The information content of disclosures and abnormal returns. This table presents average abnormal returns for bonds with associated continuing disclosure events, in subsamples based on whether disclosed private debt contracts contain maturity, interest rates, and amendment information or based on disclosure timeliness. Disclosure timeliness is defined in terms of the difference between the filing date and the private debt contract date (in business days). All abnormal returns are adjusted for bond duration and for the average return on sub-indexes based on credit risk, maturity, and liquidity. The sample is limited to mandatory disclosure events. The standard errors are double clustered by trade date and issuer CUSIP.

Panel A: Abnormal Bond Returns and Filings Granularity					
Bond Return	0.479*** (0.107)	0.503*** (0.072)	0.642*** (0.060)	0.547*** (0.047)	0.654*** (0.113)
Has Maturity	No	-	-	-	-
Has Interest Rate	No	-	-	-	-
Has Interest or Maturity	-	Yes	No	-	-
Has Interest and Maturity	-	No	Yes	-	-
Amendment	-	-	-	No	Yes
Observations	18,217	19,144	36,135	60,848	12,648
Number of Events	590	563	1,537	2,378	312

Panel B: Abnormal Bond Returns and Disclosure Timeliness				
Bond Return	0.348*** (0.021)	0.289*** (0.054)	0.439*** (0.030)	0.354*** (0.080)
Days since incurrence	≤10	10+	≤10	10+
Rating	AAA-AA	AAA-AA	≤A	≤A
Observations	208,236	11,539	97,395	6,163
Number of Events	8,863	707	3,552	308

Appendix Description

- Appendix A: Name matching algorithm for municipalities
- Appendix B: Hand-collection of information from continuing disclosure filings
- Appendix C: Variable definitions
- Appendix D: Is the Matched Sample Representative of Y14 Loan Events?
- Appendix E: Additional analyses

Appendix A Name Matching Algorithm

Municipal Entity Name Matching Procedure

Since municipal bond issuers in Mergent and municipal entities with bank loans in the FR Y-14 data collection do not share a common identifier (CUSIP is available for a small subset of observations in the Y-14 data), we rely on a name matching algorithm to identify entities across datasets.

We first match each data set to the Census of Governments which provides a near-complete universe of state and local governments. Our matching strategy proceeds in a series of steps, outlined below for each of the two datasets.

Matching Municipal Bond Issuers from Mergent to the Census of Governments

The Mergent data set provides two types of names for each issuer: the “`issuer_long_name`” and the “`issuer_short_name`”. We use the “`issuer_long_name`” as this field is more likely to include district numbers (for school and special districts) and details the type of bond obligation, which we employ in some of the manual verification processes. Our sample includes all issuers that have at least one municipal bond offering in Mergent from January 2000 through present.

In the initial stage of the algorithm, we remove any suffixes from the issuer name that mainly detail the type of the municipal bond obligation (“GO”, “REV”, ...) from a list of approximately 300 suffixes. We then identify the government type of each issuer based on different sets of keywords and the following multistep process:

1. Check for keywords identifying school districts (“sch dist”, “school district”, “schools”, “pubsch”, “schs”, ...). If any of these keywords is present in the issuer name, classify the issuer as a school district. If no keyword is present, proceed to the next step.
2. Check for keywords identifying special districts (“district”, “dist”, “dists”, ...). If any of these keywords is present, classify the issuer as a special district. If not, proceed to the next step.
3. Check for keywords identifying authorities (“auth”, ...) or corporations (“corp”, “corpus”, “ltd”). If any of these phrases is present in the issuer name, classify the issuer as an authority or a corporation. If not, proceed to the next step.

4. Check for keywords identifying townships (“twp”, “vlg”, “township”, ...). If any of these keywords is present, classify the issuer as a township. If not, proceed to the next step.
5. Check for keywords identifying cities (“city of”, “ city”, “town of”, “town” ...). If any of these phrases is present in the issuer name, classify the isuer as a city. If not, proceed to the next step.
6. Check for keywords identifying counties (“county”, “parish”, “cnty”, ...). If any of these phrases is present in the issuer name, classify the isuer as a county. If not, proceed to the next step.
7. Check for keywords identifying state governments (“ state ”, “ st ”). If any of these phrases is present in the issuer name, classify the isuer as a state. If not, proceed to the next step.
8. Check if city or township names from all names in the Census of Governments shows up in the Mergent issuer name. If so, classify the issuer as a city or a township. If not, assign entity to the “unclear” category.

In the second step, we match the Mergent issuers within each government type to the municipal entities that appear in at least one Census of Governments in full census year (2002, 2007, 2012, and 2017) within the same government type. The government type of each entity is readily available in the Census of Governments. The exact name matching algorithm depends on the government type as follows:

- School Districts: For all steps below, if we arrive at multiple matches for each issuer name, we keep the match with the lowest associated Jaro-Winkler string distance score.
 1. We require an exact match on state, the first word in the issuer/Census names, and district number.
 2. If the previous step produces no match for a given issuer name, we then require an exact match on state and district number.
 3. If the previous step produces no match, we require an exact match on state, the first word of the issuer and Census names, and county name (only if the county name is present in the Mergent issuer name).

4. If the previous step produces no match, we then require an exact match on state and the first word of the issuer and Census names.
 5. If the previous step produces no match, we then require an exact match on state and require the first word of the Census name to appear anywhere in the issuer string.
 6. We then manually check each potential match produced by the string matching algorithm above. We verify, correct, or discard each potential match produced by the algorithm.
- **Special Districts:** Nearly identical to the matching algorithm for school districts with one modification due to the institutional specifics of special district names. We augment the second step to require exact match on state and the first word of the issuer and Census names, and also require at least half of all words in both strings to overlap.
 - **General purpose entities:** We consider county, state, township and city governments jointly. We again match in a series of steps and in the case of multiple matches for each issuer name we keep the match with the lowest Jaro-Winkler string distance score.
 1. We first require an exact match on state, the first word of the issuer and Census names, and government type.
 2. If the previous step produces no match, we attempt to match exactly on state and first word.
 3. If there is no match in the previous step, we require an exact match on state and that the first word of the Census name appears anywhere in the issuer string.
 4. We then manually verify, correct, or discard each potential match produced by the algorithm.
 - **Authorities:** For all steps below, if we arrive at multiple matches for each issuer name, we keep the match with the lowest associated Jaro-Winkler string distance score.
 1. We require an exact match on state, the first word in the issuer/Census names, and the two words preceding the word "authority" in the census name.

2. If the previous step produces no match for a given issuer name, we then require an exact match on state, the first word in the issuer/Census names, and one word preceding the word "authority".
3. If the previous step produces no match, we require an exact match on state, the first word of the issuer and Census names, and we require the *three* words preceding "authority" to show up in the issuer string.
4. If the previous step produces no match, we require an exact match on state, the first word of the issuer and Census names, and we require the *two* words preceding "authority" to show up in the issuer string.
5. If the previous step produces no match, we then require an exact match on state and require the first word of the Census name and the two words preceding the word "authority" to appear anywhere in the issuer string.
6. We then manually check each potential match produced by the string matching algorithm above. We verify, correct, or discard each potential match produced by the algorithm.

Matching Y-14 Borrowers to the Census of Governments

The Y-14 Collection provides the name of each borrower in the "obligor_name" field. We first clean this field by removing punctuation, non-letter characters, and extra spaces between words. We require that all borrowers are domiciled in the United States. We remove all borrower name entries in which the borrower name is not available or unknown; whenever the borrower receives guarantees from the Small Business Administration as those borrowers are unlikely to be state and local government borrowers; or whenever the borrower is a U.S. government entity. Finally, we standardize borrower names by expanding common abbreviations such as "INC", "CORP", "CO", and "LTD" and abbreviating phrases such as "LIMITED LIABILITY COMPANY" or "LIMITED PARTNERSHIP."

In the initial stage of the algorithm, we identify the government type of each Y-14 borrower based on different sets of keywords. We first identify private corporations using keywords such as: "INCORPORATED", "LLP", "LLC", "COMPANY", "CORPORATION",; hospitals as all entities with three-digit NAICS 2007 codes of "622"; colleges as all entities with three-digit NAICS

2007 codes of “611”. We then classify the remaining entities using the following sequence of steps:

1. Check for keywords identifying municipal corporations, authorities, or agencies (“commission”, “agency”, “auth”, “redevelopment”, “agy”, “port of”, “”, “economic development”, “industrial development”, “public facilities corp”, “building corporation”, ...). For positive keyword hits such as “industrial development”, we require that we have not classified the entity as a private corporation. Overall, if any of these keywords is present in the issuer name, classify the issuer as a municipal corporation. If no keyword is present, proceed to the next step.
2. Check for keywords identifying school districts (“sch dist”, “school district”, “schools”, “pubsch”, “schs”, “isd”, “csd”, “psd”, “usd”, “hsd”, ...). If any of these keywords is present in the issuer name, classify the issuer as a school district. If no keyword is present, proceed to the next step.
3. Check for keywords identifying special districts (“district”, “dist”, “wcid”, “mud”, “municipal wd”, ...). If any of these keywords is present, classify the issuer as a special district. If not, proceed to the next step.
4. Check for keywords identifying cities/towns/townships (“twp”, “township”, “city of”, “city”, “town of”, “village of”, “borough” ...), while requiring that the entity is not an authority, college, or a corporation. If any of these keywords is present, classify the issuer as a township. If not, proceed to the next step.
5. Check for keywords identifying counties (“county”, “parish”, “cnty”, “cty”, “prsh”), while requiring that the entity is not an authority or a college. If any of these phrases is present in the issuer name, classify the issuer as a county. If not, proceed to the next step.
6. Check for keywords identifying state governments (“state of”, “commonwealth of”, ...). If any of these phrases is present in the issuer name, classify the issuer as a state. If not, proceed to the next step.
7. Assign all other entities to the “unclear” category.

We also drop federal government entities, which we identify using keywords such as “united states”, “federal”, “us governm”, ... In addition, we select entities that remain unmatched in the

keysearch algorithm above, but that we are able to match to Mergent via the 6-digit CUSIP, or to the set of municipal entities in the S&P cross reference data set via the 6-digit CUSIP, tax identification number, or the legal entity identifier (LEI). Finally, we manually inspect the entities identified as governments and manually remove entities that are private corporations.

In the second step, we match the Y-14 borrowers within each government type to the municipal entities that appear in at least one Census of Governments in full census year (2002, 2007, 2012, and 2017) within the same government type. The advantage of the Y-14 data relative to Mergent is that each borrower has an associated 5-digit zip code, which we could use to identify the county of the borrower. We could then use the county to make the pool of potential matches between the Y-14 and the Census more similar. The exact name matching algorithm depends on the government type as follows:

- School Districts: For all steps below, if we arrive at multiple matches for each borrower name, we keep the match with the lowest associated Jaro-Winkler string distance score.
 1. We require an exact match on state, county, the first word in the issuer/Census names, and district number.
 2. If the previous step produces no match for a given borrower name, we then require an exact match on state, the first word in the issuer/Census names, and district number.
 3. If the previous step produces no match for a given borrower name, we then require an exact match on state, county, and district number.
 4. If the previous step produces no match for a given borrower name, we then require an exact match on state, county, and the first word in the issuer/Census names.
 5. If the previous step produces no match for a given borrower name, we then require an exact match on state and county, and that the first word of the Census name appears anywhere in the borrower name.
 6. We then manually check each potential match produced by the string matching algorithm above. We verify, correct, or discard each potential match produced by the algorithm.
- Special Districts: Similar to the matching algorithm for school districts with a few modifications due to the institutional specifics of special district names:

1. We require an exact match on state, the first word in the issuer/Census names, and district number.
 2. If the previous step produces no match for a given borrower name, we then require an exact match on state, county, and the first word in the issuer/Census names. Here, we also require at least half of all words in both strings to overlap.
 3. If the previous step produces no match for a given borrower name, we then require an exact match on state and the first word in the issuer/Census names and that at least half of all words in both strings to overlap.
 4. If the previous step produces no match for a given borrower name, we then require an exact match on state, county, and the first and the second words in the issuer/Census names.
 5. If the previous step produces no match for a given borrower name, we then require an exact match on state, county, and the first and the third words in the issuer/Census names.
 6. If the previous step produces no match for a given borrower name, we then require an exact match on state and the first word in the issuer/Census names, and that the first word of the Census district type appears anywhere in the borrower name.
 7. We then manually check each potential match produced by the string matching algorithm above. We verify, correct, or discard each potential match produced by the algorithm.
- Authorities, Agencies, Commissions, and Public Corporations. For all steps below, if we arrive at multiple matches for each borrower name, we keep the match with the lowest associated Jaro-Winkler string distance score.
 1. We require an exact match on state, the first word in the issuer/Census names, and the two words preceding the keyword “authority”.
 2. If the previous step produces no match for a given borrower name, we then require an exact match on state, the first word in the issuer/Census names, and the two words preceding the keyword “agency”.

3. If the previous step produces no match for a given borrower name, we then require an exact match on state, the first word in the issuer/Census names, and the two words preceding the keyword “commission”.
 4. If the previous step produces no match for a given borrower name, we then require an exact match on state, the first word in the issuer/Census names, and the two words preceding the keyword “corporation”.
 5. If the previous step produces no match for a given borrower name, we then require an exact match on state, county, the first word in the issuer/Census names, and the two words preceding the keyword “district”.
 6. If the previous step produces no match for a given borrower name, we then require an exact match on state, the first word in the issuer/Census names, and the two words preceding the keyword “district”.
- General purpose entities: We consider county, township and city governments jointly. We again match in a series of steps and in the case of multiple matches for each issuer name we keep the match with the lowest Jaro-Winkler string distance score.
 1. We require an exact match on state, county, the first word in the issuer/Census names, and entity type (city/township/village or county).
 2. If the previous step produces no match for a given borrower name, we then require an exact match on state, the first word in the issuer/Census names, and entity type.
 3. We then manually check each potential match produced by the string matching algorithm above. We verify, correct, or discard each potential match produced by the algorithm.

Appendix B Hand-collection of information from continuing disclosure filings

We supplement the MSRB filings data with individual filing characteristics that we hand collect from reading around 2,300 filing documents. To select the filing documents that we read in detail, we use a simple initial screening algorithm:

1. We assign all non-machine-readable pdfs to manual reading (436 documents)
2. For the machine-readable documents, we automate reading the first three pages and look for keywords identifying potential obligation types:
 - Bond: revenue bond; general obligation bond; refunding bond; bond indenture; construction and improvement bond; bonds, series; go bond; new issue
 - Loan: revolving line; revolving credit; revolving; term loan; loan agreement; loan purpose; loan amount; amortizing loan; line of credit; direct placement; credit agreement; loan and security agreement; paycheck protection program; ppp
 - Lease: lease/purchase agreement; lease agreement; master lease
 - Bond anticipation note: anticipation note
3. We read all documents that contain one or more of the keywords above (or are non-machine readable) and identify the actual obligation type, the obligation amount, interest rate and maturity, whether the filing includes a term sheet, and whether the filing amends an existing obligation.

Appendix C Variable definitions

Below we present variable definitions for the government balance sheet data from the Census of Governments and the municipal loan data coming from the FR-Y-14Q Collection. The item numbers of data fields refer to Schedule H1 of the Y-14Q data on the Federal Reserve’s website:

https://www.federalreserve.gov/reportforms/forms/FR_Y-14Q20210331_i.pdf

Credit Line – an indicator variable that takes the value of one if a given bank loan is a credit line, based on field #20.

CL Utilization – The drawn amount under a given municipal bank credit line as a fraction the commitment amount of the same loan.

Term Loan – an indicator variable that takes the value of one if a given bank loan is a term loan, based on field #20.

Lease – an indicator variable that takes the value of one if a given bank loan is a lease, based on field #20.

Committed Amt – The commitment amount of a given municipal bank loan in millions of U.S. dollars (field #24 in Schedule H1).

Interest Rate – The interest rate of a given municipal bank loan (field #38 in Schedule H1).

Remaining Maturity – The difference between the maturity date of a given municipal bank loan (based on the maturity date field #19 in Schedule H1) and the current observation date expressed in quarters.

Secured – We define a municipal bank loan to be secured if either the bank has first-lien or second-lien security on the borrower’s assets or cash flows (based on fields #35 and #36 in Schedule H1).

Guaranteed – We define a municipal bank loan to be guaranteed if it is fully or partially guaranteed by a third party (based on field #44 in Schedule H1).

Fixed Rate – We define a municipal bank loan to be fixed rate if the loan interest rate does not vary with base rate indexes such as the LIBOR or prime rates (field #37 in Schedule H1 takes the value of one).

Prepayment Penalty – We define a municipal bank loan to have a prepayment penalty if the loan currently has a prepayment penalty or it had a prepayment penalty in the past that has expired

(field #94 in Schedule H1 takes the value of 1 or 2).

Tax-Exempt – A municipal bank loan is identified in the Y-14 data as tax-exempt if the interest income the bank receives from the loan is tax-exempt (field #43 in Schedule H1 takes the value of 2).

Internal Rating – This variable is only defined for all municipalities with bank debt in Schedule H1 of the Y-14Q data. This is the municipal borrower internal credit rating assigned by the bank (field #10 in Schedule H1 of the Y-14Q data) converted to a 10-grade S&P ratings scale, with 1 denoting AAA and 10 denoting D.

$\leq BBB$ – This variable takes the value of one whenever a state or local government is rated \leq BBB in terms of the lenders internal risk rating.

High – yield – This variable takes the value of one whenever a state or local government is rated \leq BB in terms of the lenders internal risk rating.

Below we present variable definitions for the governments' balance sheet data coming from the 2017 Census of Governments at the Census Bureau:

<https://www.census.gov/programs-surveys/cog.html>

General Revenue, \$m – The total general revenue of a state or local government government.

Total Expenditures – The total expenditures of a given state or local government scaled by the government's total revenues.

Capital Outlays – The total capital outlays of a given state or local government scaled by the government's total revenues.

Revenue Gov Sources – The total revenue coming from government sources of a given state or local government scaled by the government's total revenues.

Total Taxes – The total tax revenue of a given state or local government scaled by the government's total revenues.

Sales Tax Share – The sales tax revenue of a given state or local government scaled by the government's total tax revenues.

Property Tax Share – The property tax revenue of a given state or local government scaled by the government's total tax revenues.

Debt – to – Revenue – The total outstanding debt of a given state or local government scaled by the government’s total revenues.

Interest Expense – The total interest expense incurred by a given state or local government scaled by the government’s total outstanding debt.

Commitments – to – Revenue – The total loan commitments from the Y-14 data of a given state or local government divided by the government’s total revenues.

Appendix D Is the Matched Sample Representative of Y14 Loan Events?

We classify a loan to be a new origination if it either has a new loan ID or the loan origination date falls within the loan observation quarter. This results in a total of 8,749 entities with 57,219 loan events between 2019Q1 and 2022Q4—25,850 events and 5,360 entities only have a Census ID, 13,801 events and 1,424 entities only have an S&P ID, while 17,568 events and 1,965 entities have both.²³ Furthermore, 43,014 events corresponding to the 6,546 entities have municipal bonds. Of those, a total of 21,740 events corresponding to 3,370 entities are required to disclose between 2019Q2 and 2022Q4.

We also examine the extent to which the Y14 loan observations matched to the Census are representative of all Y14 loan observations. The solid red line in Appendix Figure D.IX shows that entities in the Y-14 data that we can map to either the Census or the S&P data account for 90-91% of total Y-14 exposure in terms of loan commitments. Loan commitments are the most representative metric of loan exposure because they incorporate term loans, leases, and both drawn and undrawn portions under lines of credit. That said, we find exposure of matched borrowers at around 86-88% in terms of utilized commitments that do not include undrawn credit lines. Because municipal bond issuers in Mergent have nearly perfect coverage of S&P IDs but imperfect coverage of Census IDs (at about 80%), we also show similarly high coverage of Y-14 commitments with either S&P ID or Census IDs *that are also in Mergent* of 86-88% (see Appendix Figure D.X). Finally, 73-75% of loan exposure in Y14 has related municipal bonds in Mergent (Appendix Figure D.XI), which means that governments frequently use both the loan and the municipal bond market.

²³We are unable to match 9,238 out of the total of 66,457 events to either the S&P data or the Census data.

Appendix E Additional analyses

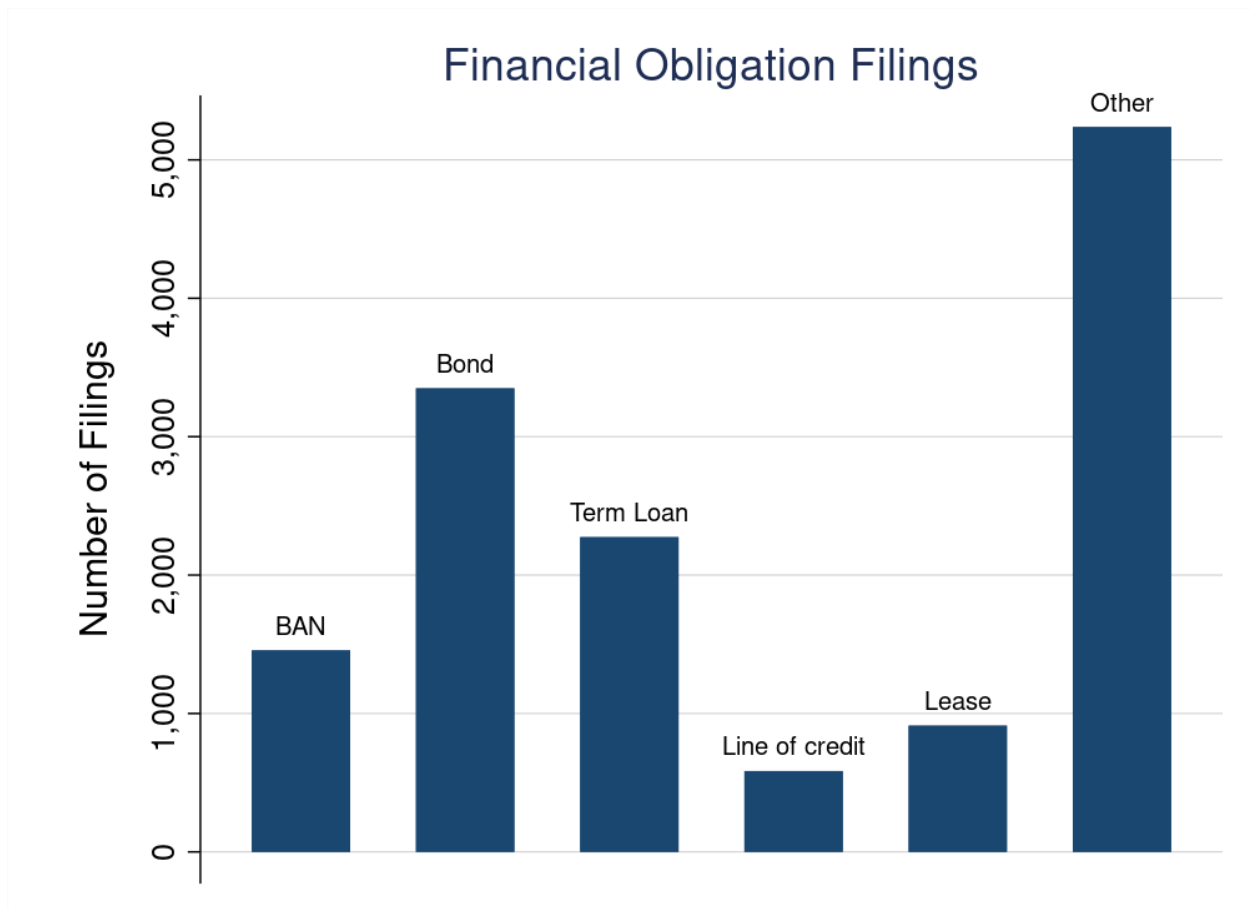
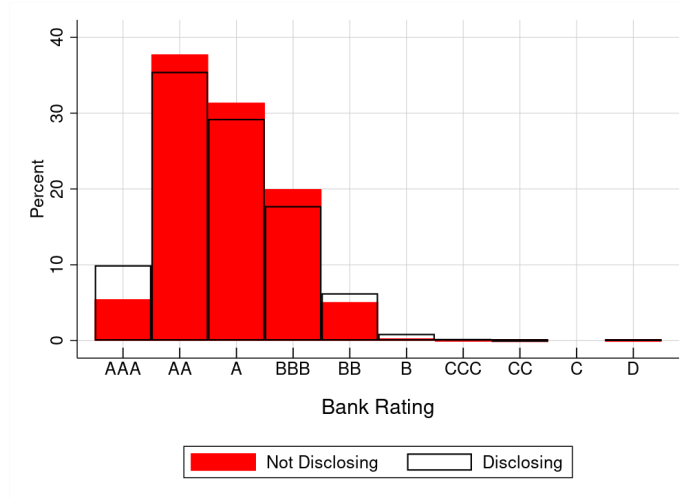
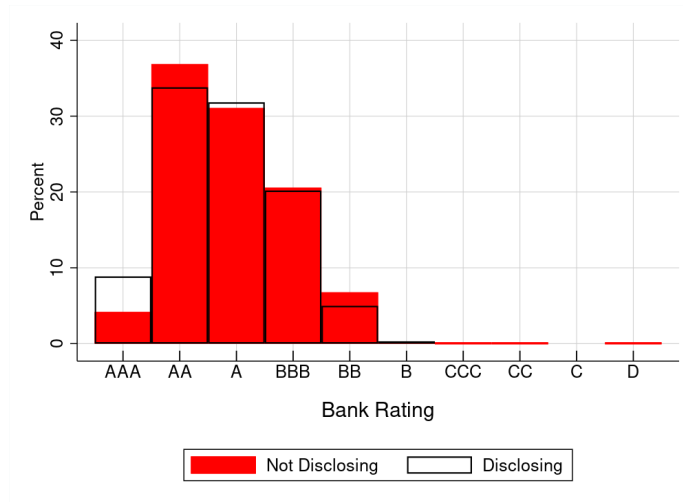


Figure D.I: Private placement type associated with continuing disclosure filings. In this figure we explore the heterogeneity in the type of debt detailed in continuing disclosure filings. Specifically, private placements of municipal bonds and term loans are the most prevalent ones. Other frequent types include bond anticipation notes, credit lines, and leases. We are not able to identify the debt type in over a third of filings. Manually inspecting randomly selected filings from the “Other” group indicates that these obligations typically bear resemblance to term loans or to private placements.

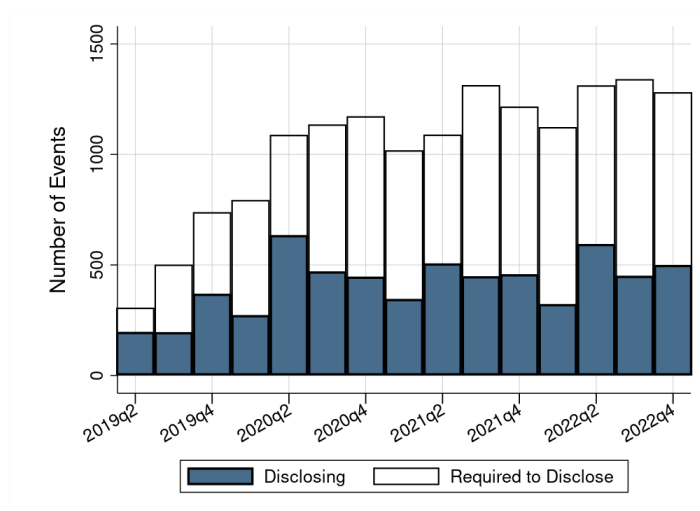


(a) All Loan Events

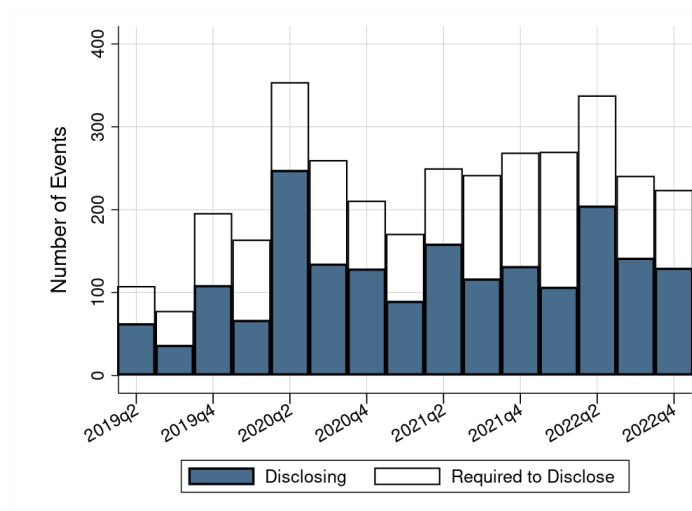


(b) Loan Originations

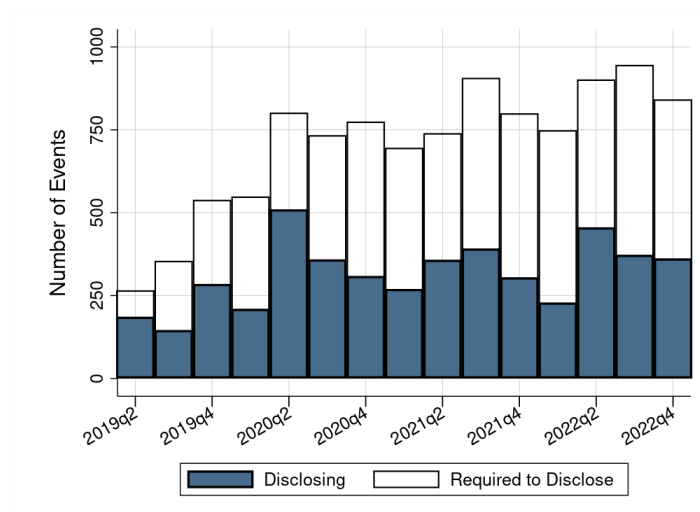
Figure D.II: Issuer credit quality and continuing disclosure. This figure compares the issuer credit quality distributions (in terms of the lenders' internal risk ratings from the Y-14 Collection) for bank loan events that belong to disclosers or non-disclosers. The 'Disclosing' group includes issuers that are required to disclose bank loan events and that provide continuing disclosure filings on the EMMA system. Issuers in the 'Not Disclosing' group do not provide continuing disclosures even though they are required to disclose bank loan events. Panel (a) includes all loan events (originations and renegotiations), while panel (b) includes originations only.



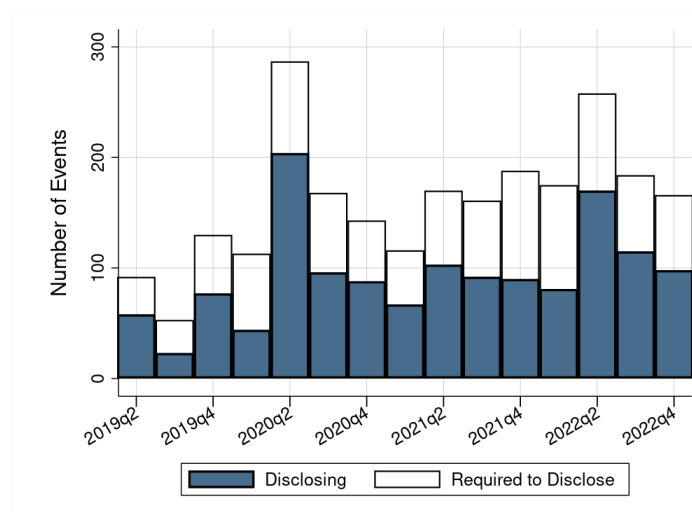
(a) All Loan Events, Loan Amt > 20%



(b) Loan Originations, Loan Amt > 20%

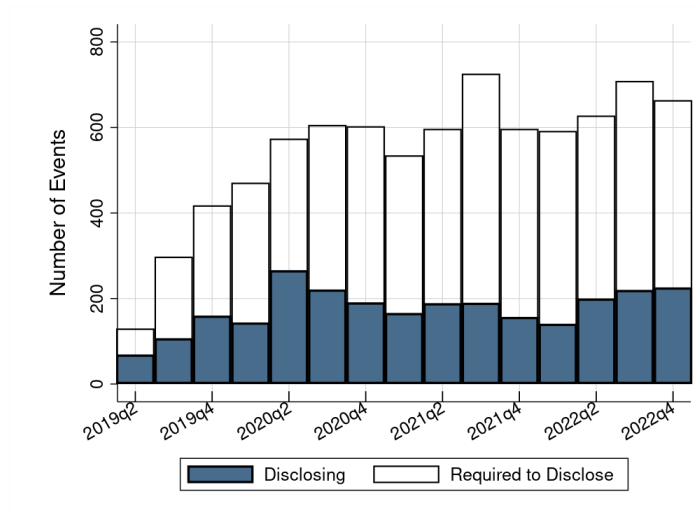


(c) All Loan Events, Loan Amt > 50%

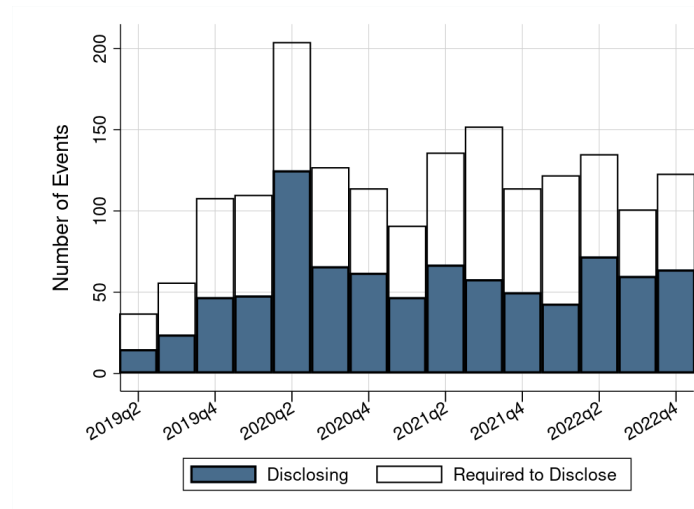


(d) Loan Originations, Loan Amt > 50%

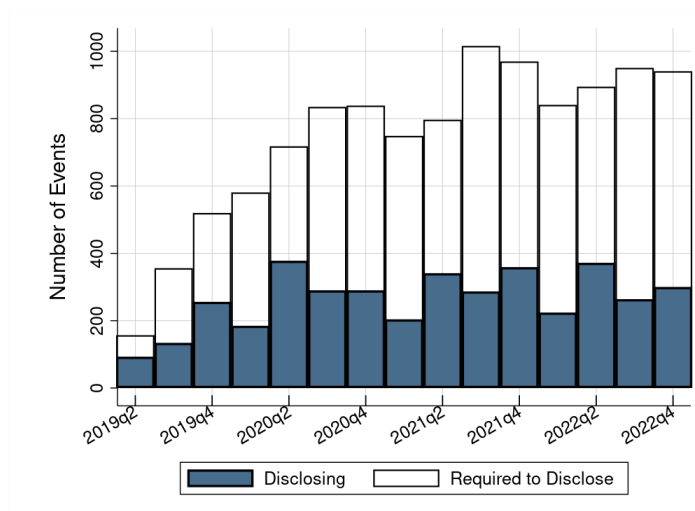
Figure D.III: Compliance with continuing disclosure requirements and loan materiality. This figure shows the time series evolution of compliance with Rule 15c2-12. The white bars show the number of bank loan events in the Y-14 Collection that are subject to disclosure pursuant to Rule 15c2-12, while the blue bars show the number of bank loan events in which the issuer has filed disclosures on the EMMA system when required to disclose. Panels (a) and (c) include both originations and renegotiations, where the loan amount exceeds 20% or 50% of the issuer's outstanding bonds triggering continuing disclosure, respectively. Panels (b) and (d) includes only loan originations, where the loan amount exceeds 20% and 50%, respectively.



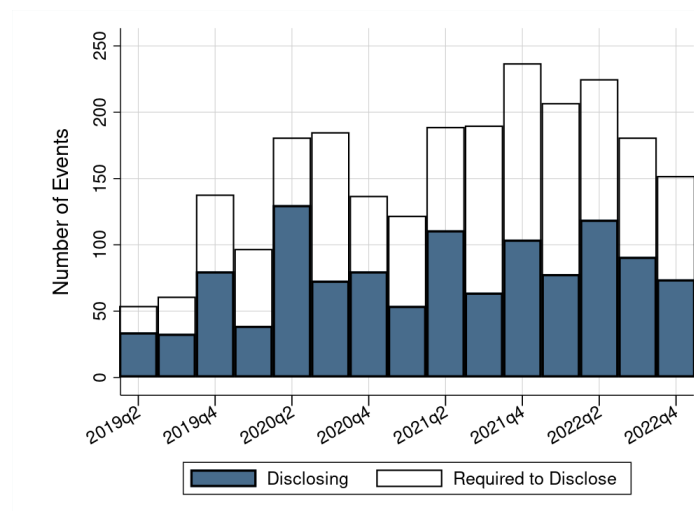
(a) All Loan Events, Low Negotiated Share



(b) Loan Originations, Low Negotiated Share

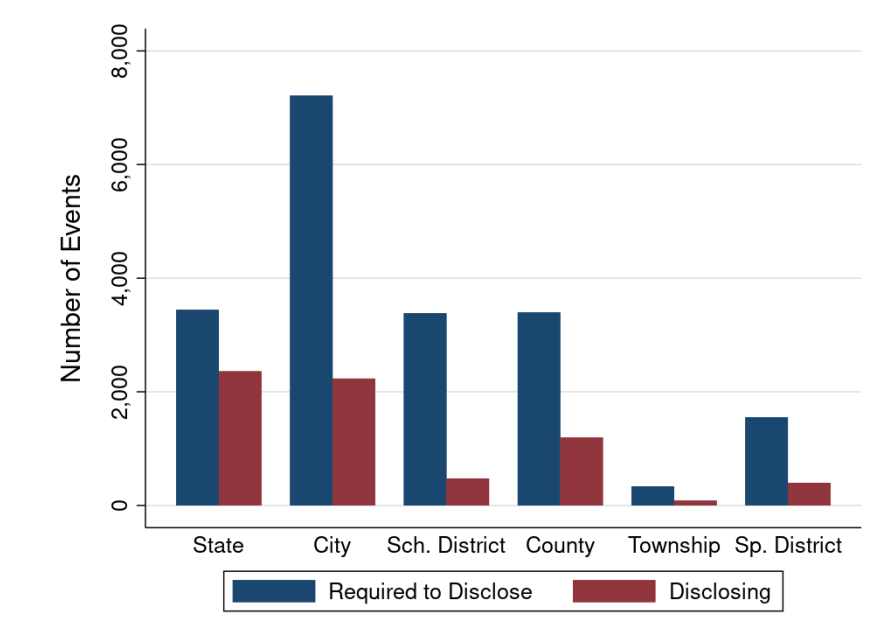


(c) All Loan Events, High Negotiated Share

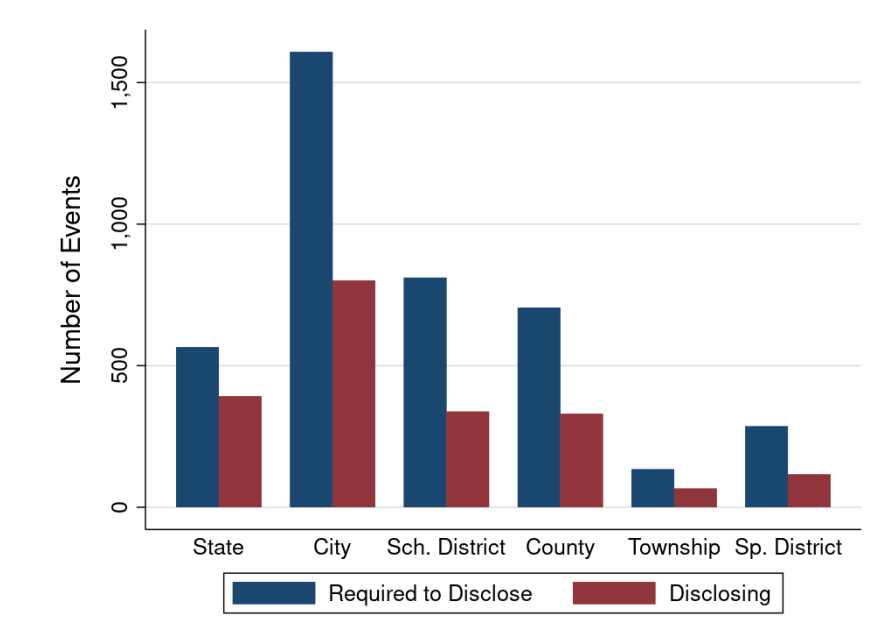


(d) Loan Originations, High Negotiated Share

Figure D.IV: Compliance with continuing disclosure requirements and negotiated offerings. This figure shows the time series evolution of compliance with Rule 15c2-12. The white bars show the number of bank loan events in the Y-14 Collection that are subject to disclosure pursuant to Rule 15c2-12, while the blue bars show the number of bank loan events in which the issuer has associated disclosures on the EMMA system when required to disclose. Panels (a) and (c) include both originations and renegotiations, where the negotiated share of offering(s) triggering continuing disclosure requirements is below or above 50%, respectively. Panels (b) and (d) include analogous analysis but only loan originations.

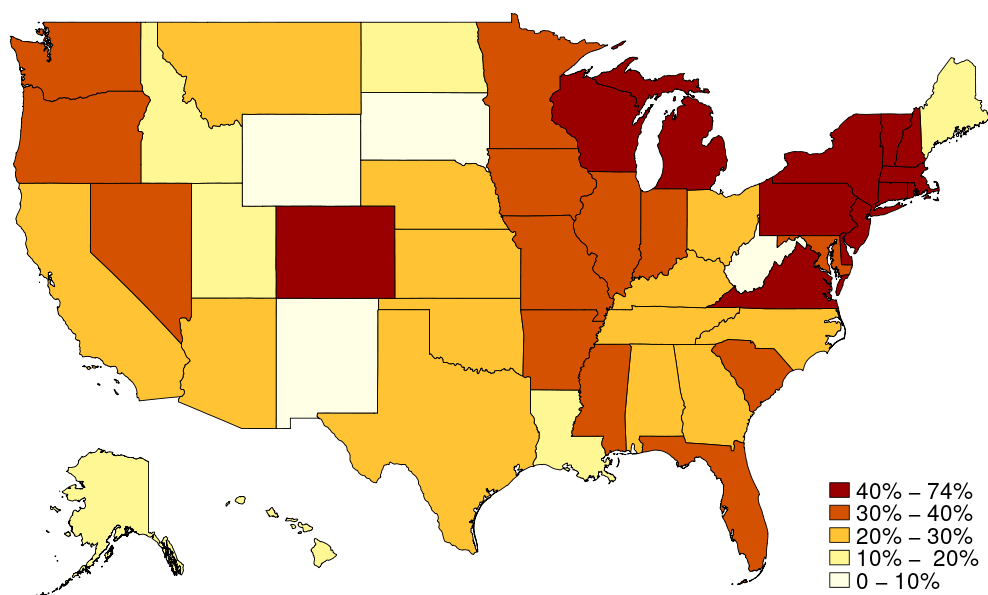


(a) All Events

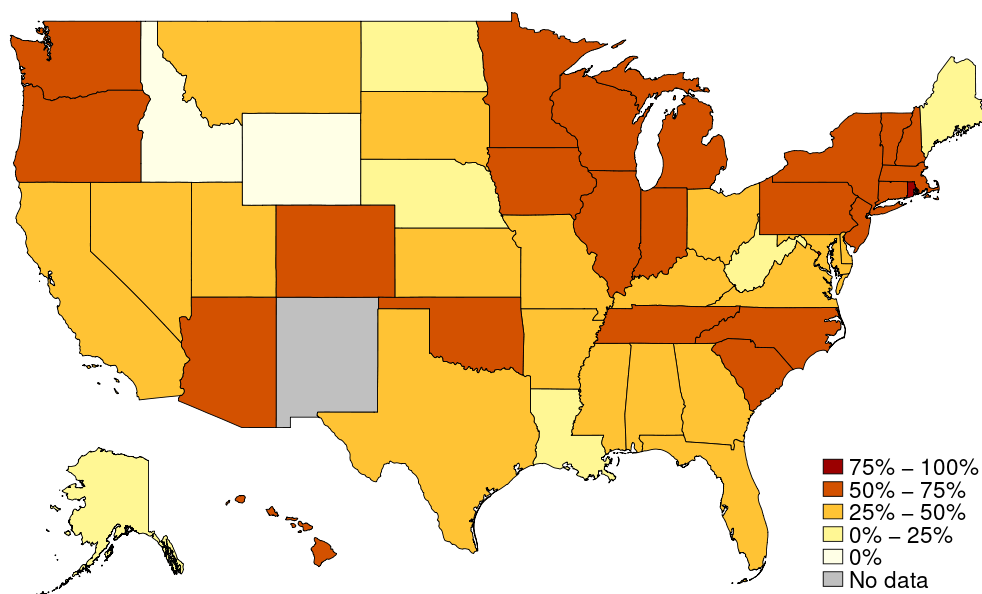


(b) Originations

Figure D.V: Compliance with continuing disclosure requirements and government type. This figure presents summary statistics of compliance with Rule 15c2-12 across government type. The blue bars show the number of bank loan events in the Y-14 Collection that are subject to disclosure pursuant to Rule 15c2-12, while the red bars show the number of bank loan events in which the issuer has associated disclosures on the EMMA system when required to disclose. Panel (a) includes all loan events (originations and renegotiations), while panel (b) shows only loan originations.



(a) All Events



(b) Originations

Figure D.VI: Compliance with continuing disclosure requirements across states. This figure presents the percentage of bank loan events in which the issuer submits a disclosure filing on the EMMA system conditional on the issuer being required to disclose pursuant to Rule 15c2-12 across states. Panel (a) defines bank loan events as all loan renegotiations and originations, while panel (b) restricts the sample to loan originations.

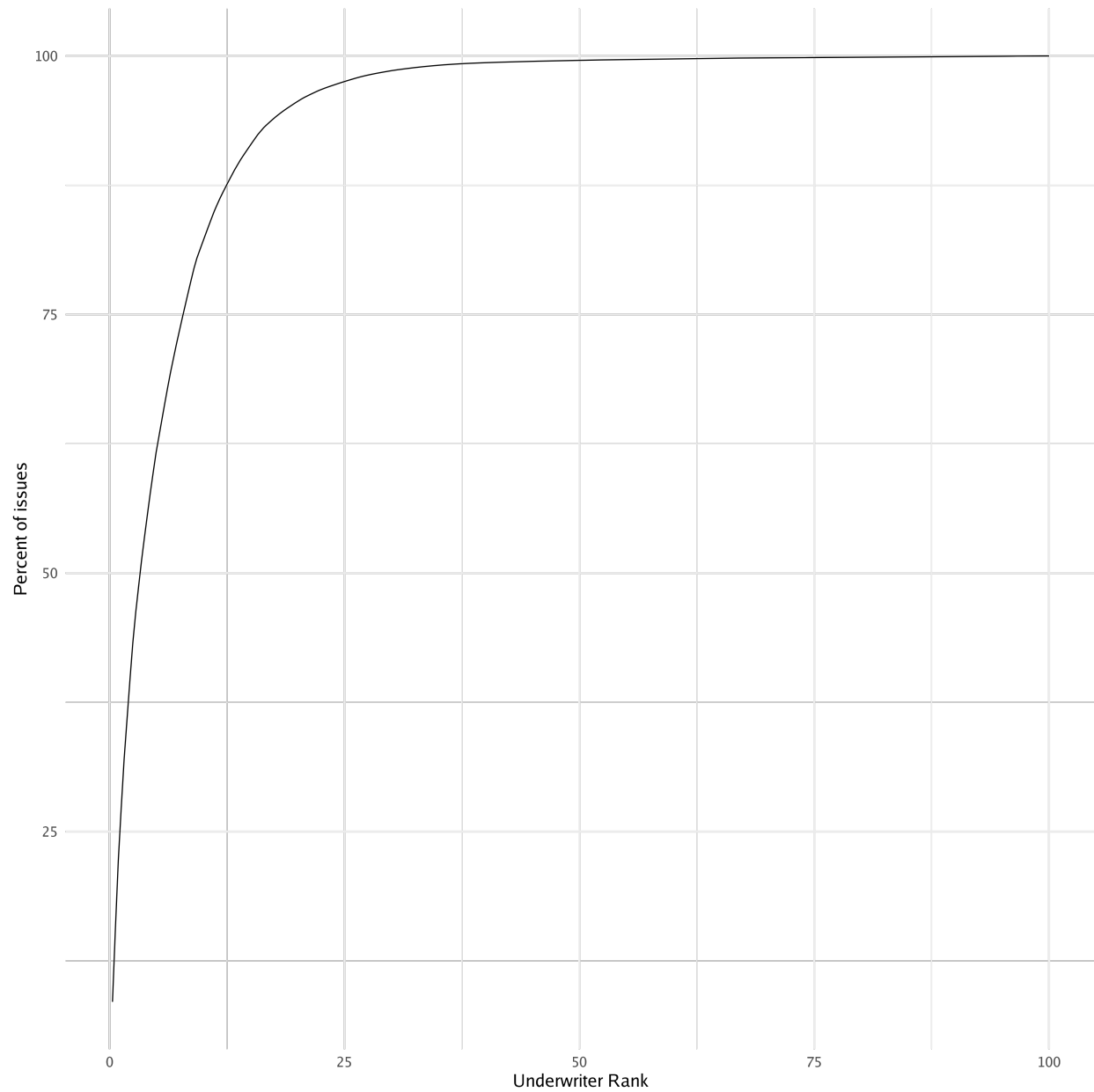
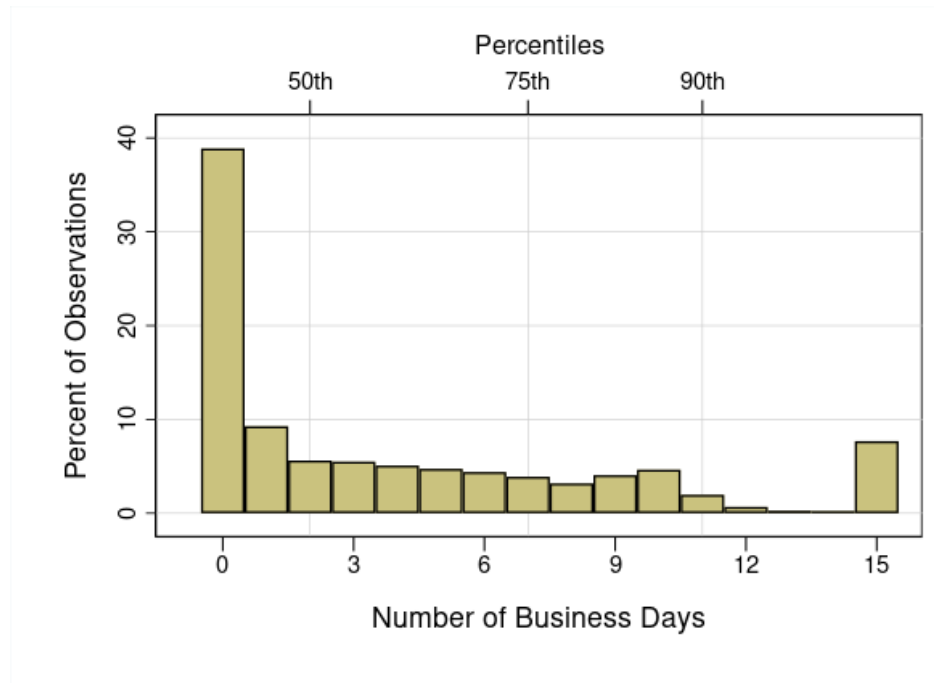
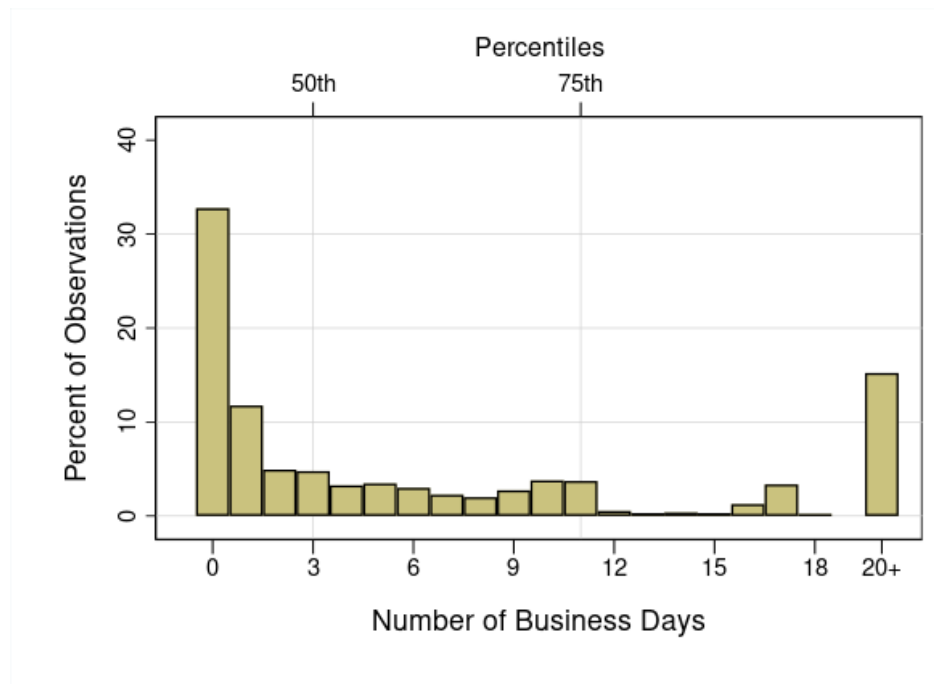


Figure D.VII: Share of municipal bonds underwritten by the top 100 underwriters during our sample period This figure presents the share of municipal offerings underwritten by the top 100 underwriters by offering count. Source: Mergent Municipal Securities Database.



(a) Time Since Private Placement Agreement (Mandatory)



(b) Time Since Private Placement Agreement (Voluntary)

Figure D.VIII: The timeliness of continuing disclosure filings. Panels (a) and (b) of this figure shows the distribution of time (in business days) between the obligation agreement date and obligation disclosure date for mandatory and voluntary filings, respectively. The sample includes all continuing disclosure filings since February 27th 2019.

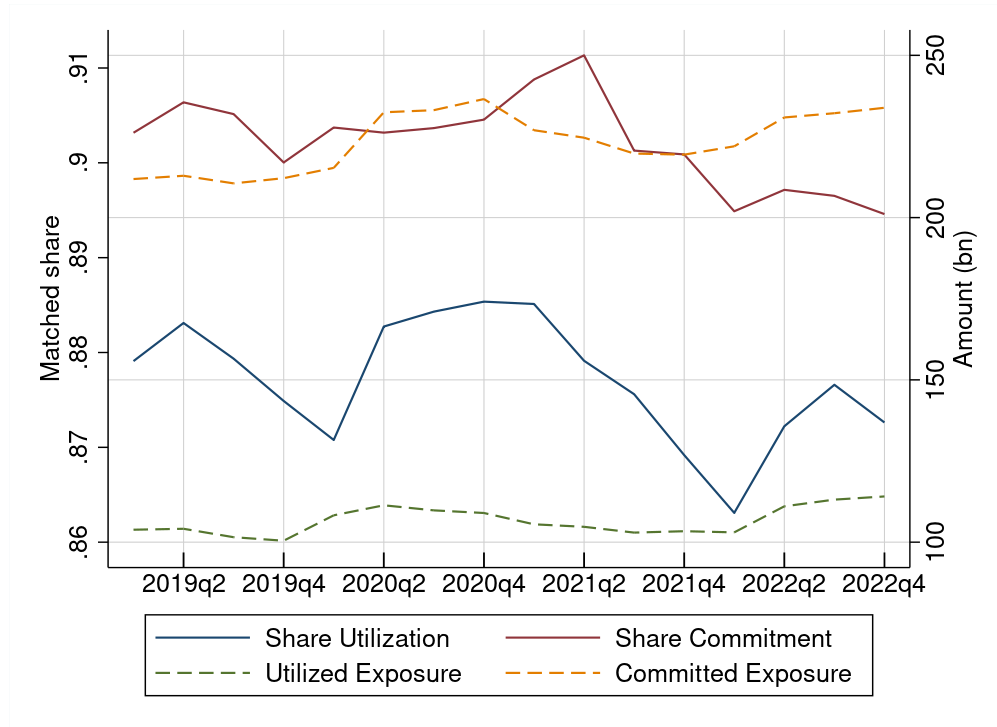


Figure D.IX: Share of exposure in the Y-14 data with either an S&P ID or a Census ID. This figure presents the share of commitment or utilized municipal exposure in the Y-14 Collection that we can match to either the S&P cross reference link or the Census Annual Survey of State and Local Government Finances between 2019Q1 and 2022Q4 inclusive (the solid lines, left y-axis). The dashed lines show the total commitment or utilized municipal exposure on banks' books over time in billions of U.S. dollars (right y-axis).

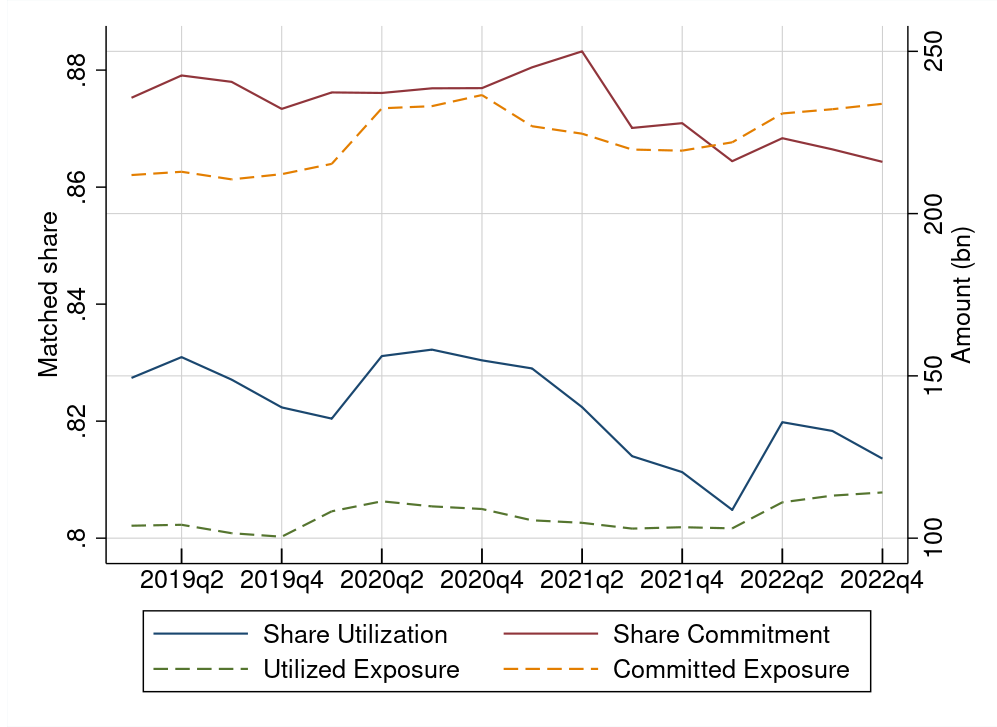


Figure D.X: Share of exposure in the Y-14 data with either an S&P ID or municipal bonds (via the Census ID). This figure presents the share of commitment or utilized municipal exposure in the Y-14 Collection that we can match to either the S&P cross reference link or has bonds in Mergent (via the ID in the Census Annual Survey of State and Local Government Finances) between 2019Q1 and 2022Q4 inclusive (the solid lines, left y-axis). The dashed lines show the total commitment or utilized municipal exposure on banks' books over time in billions of U.S. dollars (right y-axis).

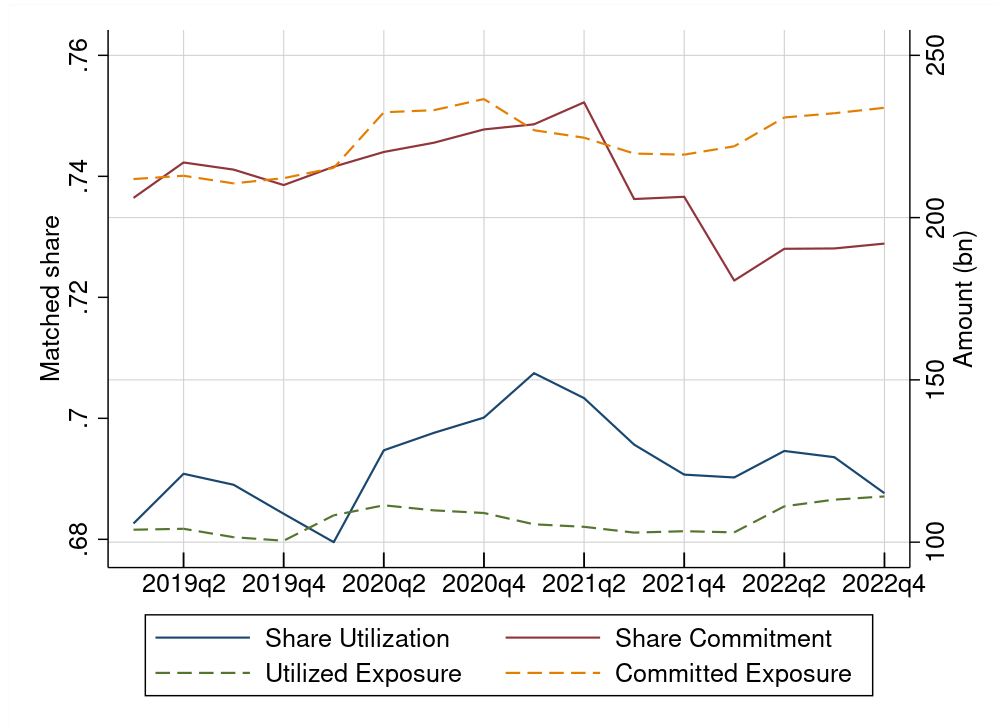


Figure D.XI: Share of exposure in the Y-14 data where the obligor has bonds in Mergent. This figure presents the share of commitment or utilized municipal exposure in the Y-14 Collection where the obligor has bonds in Mergent (via the S&P ID or the ID in the Census Annual Survey of State and Local Government Finances) between 2019Q1 and 2022Q4 inclusive (the solid lines, left y-axis). The dashed lines show the total commitment or utilized municipal exposure on banks' books over time in billions of U.S. dollars (right y-axis).

Table D.I: Determinants of disclosure requirements and government type. This table reports the relation between being required to report privately placed debt and government characteristics from the 2017 Census of Governments. The sample in columns 1 through 5 is restricted to county, city, township, special district, and school district governments, respectively. A government in the sample is required to disclose if it has at least one bonds issuance since February 27th 2019, triggering continuing disclosure requirements pursuant to Rule 15c2-12. The standard errors are clustered at the state level. All variables are defined in Appendix C.

Dependent variable:	<i>Required to Disclose</i>				
	(1)	(2)	(3)	(4)	(5)
	County	City	Twp	Sp Dist	Sch Dist
Log(General Revenue)	0.153*** [0.010]	0.153*** [0.006]	0.164*** [0.017]	0.045*** [0.007]	0.150*** [0.009]
Total Expenditures	0.052 [0.047]	0.018 [0.016]	0.056 [0.037]	0.003 [0.009]	-0.129*** [0.047]
Revenue Gov Sources	0.099 [0.097]	-0.241*** [0.051]	0.195* [0.100]	-0.154*** [0.040]	0.088 [0.065]
Total Taxes	0.245*** [0.063]	0.041 [0.032]	0.156** [0.065]	-0.071* [0.038]	0.145 [0.094]
Debt-to-Revenue	0.021*** [0.006]	0.036*** [0.006]	0.047* [0.025]	0.012*** [0.003]	0.093*** [0.016]
Interest Expense	-0.170 [0.340]	-0.215 [0.155]	0.775 [0.472]	-0.304 [0.287]	0.298 [0.285]
N	1,887	7,238	1,476	4,640	7,971
Adj. R-Squared	0.230	0.306	0.330	0.163	0.263
State FE	Y	Y	Y	Y	Y

Table D.II: Private debt events and disclosure requirements: originations and renegotiations.

This table presents comparisons of loan terms for all loan renegotiations and originations events for which continuing disclosure is required. Columns 1-2 and 4-5 present means and standard deviations (in parentheses), while columns 3 and 6 present t-statistics for differences in means. Columns 3-6 restrict the sample to loan events for which disclosure is required and compare loan terms based on whether there is associated disclosure on EMMA. All variables are defined in Appendix C.

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Not Required</i>	<i>Required</i>	t-stat	<i>No disclosure</i>	<i>Disclosure</i>	t-stat
Credit Line	0.24 (0.43)	0.38 (0.49)	-31.66	0.35 (0.48)	0.44 (0.50)	-14.25
Term Loan	0.66 (0.47)	0.52 (0.50)	29.15	0.56 (0.50)	0.45 (0.50)	15.31
Lease	0.06 (0.24)	0.06 (0.24)	0.74	0.06 (0.23)	0.07 (0.26)	-5.66
Committed Amt, \$m	11.06 (24.54)	21.25 (40.11)	-31.69	15.78 (32.96)	31.28 (49.10)	-27.71
Utilized Amt, \$m	6.24 (11.58)	7.66 (15.00)	-11.04	6.67 (13.02)	9.49 (17.93)	-13.33
CL Utilization	0.54 (0.47)	0.40 (0.46)	17.66	0.47 (0.47)	0.29 (0.42)	18.12
Share drawn	0.69 (0.46)	0.54 (0.50)	17.10	0.63 (0.48)	0.42 (0.49)	18.71
Interest Rate	0.03 (0.01)	0.03 (0.01)	0.36	0.03 (0.01)	0.03 (0.02)	-5.06
Rem. Maturity	6.12 (4.39)	5.04 (4.19)	26.04	5.15 (4.03)	4.84 (4.47)	5.35
Secured	0.78 (0.42)	0.72 (0.45)	13.76	0.75 (0.43)	0.66 (0.47)	14.06
First lien	0.69 (0.46)	0.66 (0.47)	5.09	0.69 (0.46)	0.62 (0.49)	9.82
Guaranteed	0.03 (0.18)	0.03 (0.18)	0.10	0.03 (0.18)	0.04 (0.18)	-1.10
Fixed Rate	0.86 (0.35)	0.76 (0.43)	25.14	0.80 (0.40)	0.69 (0.46)	17.97
Prepayment Penalty	0.47 (0.50)	0.43 (0.50)	8.10	0.45 (0.50)	0.41 (0.49)	5.53
Tax Exempt	0.68 (0.47)	0.60 (0.49)	15.77	0.65 (0.48)	0.51 (0.50)	20.78
Fr. \leq BBB	0.38 (0.49)	0.26 (0.44)	27.49	0.26 (0.44)	0.25 (0.43)	1.79
Fr. High-yield	0.11 (0.32)	0.06 (0.24)	19.53	0.05 (0.23)	0.07 (0.26)	-5.57
Observations	21274	21740	43014	14065	7675	21740

Table D.III: Private debt events and disclosure requirements: originations. This table presents comparisons of loan terms for all loan originations events for which continuing disclosure is required. Columns 1-2 and 4-5 present means and standard deviations (in parentheses), while columns 3 and 6 present t-statistics for differences in means. Columns 3-6 restrict the sample to loan events for which disclosure is required and compare loan terms based on whether there is associated disclosure on EMMA. All variables are defined in Appendix C.

	(1)	(2)	(3)	(4)	(5)	(6)
	Not Required	Require	t-stat	No disclosure	Disclosure	t-stat
Credit Line	0.17 (0.38)	0.27 (0.45)	-12.73	0.26 (0.44)	0.29 (0.45)	-2.01
Term Loan	0.61 (0.49)	0.49 (0.50)	11.94	0.44 (0.50)	0.55 (0.50)	-7.21
Lease	0.14 (0.35)	0.16 (0.36)	-2.59	0.19 (0.39)	0.13 (0.33)	5.59
Committed Amt, \$m	13.94 (31.20)	25.49 (48.50)	-14.66	16.11 (34.98)	34.84 (57.47)	-13.34
Utilized Amt, \$m	7.08 (14.09)	9.42 (19.00)	-7.18	6.53 (14.15)	12.29 (22.47)	-10.41
CL Utilization	0.33 (0.43)	0.28 (0.40)	3.00	0.31 (0.42)	0.25 (0.39)	2.90
Share drawn	0.55 (0.50)	0.51 (0.50)	1.61	0.58 (0.49)	0.45 (0.50)	4.57
Interest Rate	0.03 (0.01)	0.02 (0.01)	6.80	0.03 (0.01)	0.02 (0.01)	6.05
Rem. Maturity	6.98 (5.25)	6.07 (5.31)	8.72	5.81 (5.15)	6.33 (5.45)	-3.29
Secured	0.74 (0.44)	0.71 (0.45)	4.05	0.72 (0.45)	0.70 (0.46)	0.94
First lien	0.68 (0.47)	0.66 (0.47)	1.41	0.68 (0.47)	0.65 (0.48)	1.58
Guaranteed	0.04 (0.18)	0.03 (0.16)	2.37	0.04 (0.19)	0.02 (0.13)	4.29
Fixed Rate	0.87 (0.34)	0.75 (0.43)	14.69	0.75 (0.43)	0.76 (0.43)	-0.85
Prepayment Penalty	0.41 (0.49)	0.33 (0.47)	8.42	0.32 (0.47)	0.34 (0.47)	-1.32
Tax Exempt	0.62 (0.49)	0.55 (0.50)	6.83	0.54 (0.50)	0.56 (0.50)	-1.53
Fr. \leq BBB	0.40 (0.49)	0.26 (0.44)	15.43	0.28 (0.45)	0.24 (0.43)	2.76
Fr. High-yield	0.12 (0.33)	0.06 (0.24)	10.55	0.07 (0.25)	0.06 (0.23)	1.46
Observations	5760	4596	10356	2294	2302	4596

Table D.IV: Disclosure regulation compliance and loan contract terms. This table reports the relation between the decision to disclose privately placed debt when required and bank loan characteristics, controlling for government characteristics. The loan characteristics come from the Y-14 Collection and correspond to newly-originated/renewed loans to a given borrower in a given quarter; we aggregate all loan characteristics to the Census Government ID level. The standard errors are clustered at the state level. All variables are defined in Appendix C. The sample here is larger than that in our main specifications because we use the S&P ID whenever the Census ID is not available.

Dependent variable:	<i>Disclosing</i>	
	(1)	(2)
Log(Committed Amt)	0.085*** [0.007]	0.083*** [0.011]
Rem. Maturity	0.004* [0.002]	0.004** [0.002]
Interest Rate	-1.144* [0.638]	-4.540*** [1.107]
Utilization	-0.064** [0.027]	0.027 [0.052]
Secured	-0.048* [0.026]	0.013 [0.039]
Guaranteed	-0.073 [0.047]	-0.243*** [0.069]
N	9,706	2,710
Adjusted R-Squared	0.147	0.153

Table D.V: Disclosure regulation compliance and municipal underwriters, bond counsels, and advisers. This table reports the relation between the decision to disclose privately placed debt and intermediary characteristics. The loan characteristics come from the Y-14 Collection and correspond to newly-originated/renewed loans to a given borrower in a given quarter; we aggregate all loan characteristics to the Census Government ID level. All specifications include government type, state, calendar quarter, and loan type fixed effects. All specifications also include loan characteristics (Rem. Maturity, Interest Rate, Committed-to-Rev, Utilization, Secured, Guaranteed). The standard errors are clustered at the state level. All variables are defined in Appendix C. The sample here is larger than that in our main specifications because we use the S&P ID whenever the Census ID is not available.

Dependent variable:	<i>Disclosing</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Events					Originations				
Top 5 Underwriter	0.013 [0.014]			0.029 [0.020]	0.011 [0.014]	0.050** [0.023]			0.069* [0.036]	0.042* [0.022]
Top 5 Bond Counsel		0.000 [0.017]			-0.003 [0.018]		0.049* [0.029]			0.039 [0.031]
Top 5 Financial Adviser			0.026** [0.012]	0.051** [0.021]	0.025** [0.012]			0.052* [0.031]	0.082 [0.049]	0.046 [0.029]
Top 5 UW \times Top 5 FA				-0.036 [0.026]					-0.045 [0.048]	
N	9,626	9,626	9,626	9,626	9,626	2,560	2,560	2,560	2,560	2,560
r2_a	0.147	0.146	0.147	0.147	0.147	0.157	0.157	0.158	0.159	0.160

Table D.VI: Disclosure regulation compliance and municipal underwriters, bond counsels, and financial advisers fixed effects. This table reports the relation between the decision to disclose private placements when required and bank loan characteristics, controlling for government characteristics. The loan characteristics come from the Y-14 Collection and correspond to newly-originated/renewed loans to a given borrower in a given quarter; we aggregate all loan characteristics to the Census Government ID level. All specifications include government type, state, calendar quarter, and loan type fixed effects. All specifications also include balance sheet data on governments from the 2017 Census of Governments (Log(General Revenue), Total Expenditures, Revenue Gov Sources, Total Taxes, Debt-to-Revenue, Interest Expense), as well as loan characteristics (Rem. Maturity, Interest Rate, Committed-to-Rev, Utilization, Secured, Guaranteed) and some include underwriter, bond counsel, or financial adviser fixed effects. The standard errors are clustered at the state level. All variables are defined in Appendix C.

Dependent variable:	<i>Disclosing</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Events					Originations				
Rem. Maturity	0.010*** [0.003]	0.011*** [0.003]	0.011*** [0.003]	0.010*** [0.003]	0.013*** [0.003]	0.008*** [0.002]	0.009*** [0.002]	0.010*** [0.003]	0.009*** [0.002]	0.008*** [0.002]
Interest Rate	-2.890*** [0.563]	-2.952*** [0.605]	-2.885*** [0.647]	-3.023*** [0.602]	-2.974*** [0.584]	-7.609*** [1.250]	-7.217*** [1.130]	-7.399*** [1.351]	-7.369*** [1.378]	-7.218*** [1.363]
Committed-to-Rev	0.042** [0.020]	0.036* [0.019]	0.049** [0.021]	0.039* [0.020]	0.061*** [0.022]	0.076* [0.045]	0.063 [0.042]	0.092** [0.045]	0.084* [0.047]	0.152*** [0.045]
Utilization	-0.149*** [0.024]	-0.153*** [0.026]	-0.136*** [0.028]	-0.132*** [0.028]	-0.093*** [0.027]	-0.029 [0.040]	-0.037 [0.043]	-0.017 [0.040]	-0.011 [0.044]	0.032 [0.049]
Secured	-0.058** [0.026]	-0.060** [0.024]	-0.058** [0.023]	-0.049* [0.025]	-0.065** [0.026]	0.003 [0.034]	0.004 [0.030]	0.016 [0.031]	0.004 [0.032]	-0.010 [0.044]
Guaranteed	-0.092*** [0.031]	-0.101*** [0.029]	-0.103*** [0.031]	-0.098*** [0.029]	-0.100** [0.041]	-0.297*** [0.062]	-0.292*** [0.060]	-0.281*** [0.071]	-0.325*** [0.058]	-0.264*** [0.089]
N	8,632	8,632	8,632	8,632	8,471	2,349	2,349	2,349	2,349	2,083
Adj. R-Squared	0.151	0.164	0.176	0.171	0.234	0.159	0.184	0.197	0.192	0.248
Issuer Characteristics	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Underwriter FE		Y					Y			
Bond Counsel FE			Y					Y		
Adviser FE				Y					Y	
UW \times FA FE					Y					Y

Table D.VII: Disclosure regulation compliance and municipal underwriters, bond counsels, and financial advisers fixed effects. This table reports the relation between the decision to disclose private placements when required and bank loan characteristics, controlling for government characteristics. The loan characteristics come from the Y-14 Collection and correspond to newly-originated/renewed loans to a given borrower in a given quarter; we aggregate all loan characteristics to the Census Government ID level. All specifications include government type, state, calendar quarter, and loan type fixed effects. All specifications loan characteristics (Log(Committed Amt), Rem. Maturity, Interest Rate, Utilization, Secured, Guaranteed) and some include underwriter, bond counsel, or financial adviser fixed effects. The standard errors are clustered at the state level. All variables are defined in Appendix C. The sample here is larger than that in our main specifications because we use the S&P ID whenever the Census ID is not available.

Dependent variable:	<i>Disclosing</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All Events					Originations				
Log(Committed Amt)	0.084*** [0.007]	0.079*** [0.007]	0.089*** [0.006]	0.077*** [0.007]	0.077*** [0.007]	0.084*** [0.011]	0.078*** [0.010]	0.083*** [0.011]	0.078*** [0.012]	0.083*** [0.015]
Rem. Maturity	0.004* [0.002]	0.006** [0.003]	0.004 [0.002]	0.004* [0.002]	0.007** [0.003]	0.005** [0.002]	0.005*** [0.002]	0.006*** [0.002]	0.005** [0.002]	0.003* [0.002]
Interest Rate	-1.181* [0.648]	-1.500** [0.643]	-0.933 [0.673]	-1.313** [0.627]	-1.488*** [0.536]	-4.349*** [1.183]	-4.157*** [1.080]	-4.054*** [1.217]	-4.255*** [1.313]	-3.912*** [1.268]
Utilization	-0.063** [0.027]	-0.070*** [0.025]	-0.042 [0.026]	-0.052** [0.025]	-0.018 [0.023]	0.034 [0.052]	0.015 [0.049]	0.035 [0.050]	0.047 [0.051]	0.065 [0.055]
Secured	-0.049* [0.026]	-0.055** [0.023]	-0.049** [0.023]	-0.044* [0.025]	-0.064*** [0.022]	0.013 [0.040]	0.010 [0.034]	0.025 [0.037]	0.015 [0.034]	0.010 [0.041]
Guaranteed	-0.070 [0.049]	-0.091** [0.044]	-0.101** [0.048]	-0.101** [0.042]	-0.086** [0.039]	-0.251*** [0.075]	-0.239*** [0.074]	-0.249*** [0.070]	-0.288*** [0.064]	-0.268*** [0.082]
N	9,626	9,626	9,626	9,626	9,447	2,560	2,560	2,560	2,560	2,276
r ² .a	0.146	0.163	0.179	0.177	0.242	0.156	0.180	0.196	0.195	0.254
Issuer Characteristics	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Underwriter FE		Y					Y			
Bond Counsel FE			Y					Y		
Adviser FE				Y					Y	
UW × FA FE					Y					Y

Table D.VIII: Characteristics of private placement contracts. This table reports summary statistics for the hand-collected financial obligations from continuing disclosure filing documents. We manually read a sample of approximately 2,300 filing documents, see Appendix B for a description of the initial screening procedure. For each filing we identify the underlying obligation type (the column headers), the obligation amount, maturity, and interest rate, as well as whether the filing includes a term sheet, or whether the referenced obligation amends an existing obligation. We also show the fraction of contracts that have missing values for each contract term.

	BAN	Bond	Lease	Credit line	Term loan
N	414	704	188	298	704
Amount (USD Mill.)					
Mean	12.15	40.92	5.22	141.32	26.94
SD	50.29	123.36	14.79	303.33	88.74
Median	1.33	5.08	1.00	73.00	1.71
Missings	0.00	0.02	0.03	0.03	0.03
Maturity (years)					
Mean	0.93	14.45	7.81	2.46	15.57
SD	0.95	9.06	5.30	3.33	73.48
Median	1.00	13.80	5.02	1.01	10.01
Missings	0.03	0.15	0.53	0.18	0.12
Interest rate					
Mean	1.88	2.31	2.97	1.67	2.41
SD	0.61	1.16	1.11	1.59	1.25
Median	1.89	2.13	2.77	1.20	2.49
Missings	0.09	0.34	0.36	0.60	0.22
Has Term Sheet					
Mean	0.40	0.54	0.71	0.02	0.56
SD	0.49	0.50	0.46	0.15	0.50
Median	0.00	1.00	1.00	0.00	1.00
Missings	0.00	0.00	0.00	0.00	0.00
Amendment					
Mean	0.02	0.01	0.06	0.20	0.02
SD	0.13	0.10	0.24	0.40	0.15
Median	0.00	0.00	0.00	0.00	0.00
Missings	0.00	0.00	0.00	0.00	0.00



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