When the Thin Bench Gets Thinner: The Effects of Investment Bank Consolidation on Municipal Finance *

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Abstract

Antitrust regulations in banking have historically targeted commercial banking activities. Does the consolidation of investment banks have anti-competitive effects? Using the geographically fragmented municipal bond underwriting market as a natural laboratory and employing a stacked difference-in-differences specification, I find that the underwriting spread increases by 4.8% of its sample mean following within-market consolidation. The effects double for larger M&As or in more concentrated markets and do not dissipate over time. These M&As do not generate efficiency gains that manifest as lower bond yields or substitution of other issuer-paid services. The findings remain robust when examining M&As less prone to endogeneity concerns and are absent in several placebo tests. Further, Census data suggest that such consolidation is followed by higher financing costs and reduced new issuance. My findings offer a novel perspective on bank antitrust regulations, which are currently in the spotlight for revision and modernization.

Keywords: Security issuance, municipal bond, M&A, antitrust

JEL Classification: G24, G34, L22, H74

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1 Introduction

Security issuance is a pillar of the financial system. In 2022, the U.S. saw the issuance of \$102 billion in corporate equity, \$883 billion in corporate bonds, and \$410 billion in municipal bonds. Economists have found that imperfect competition and market power play significant roles in many parts of the financial system. However, the influence of underwriters' market structure and market power in security issuance is relatively underexplored. Theoretically, underwriters with market power could charge underwriting spreads above the competitive levels. They could also influence offering terms in ways that facilitate easier marketing and distribution of securities but at the cost of issuers.

In this paper, I use M&As as a shifter of underwriter market power and examine the setting of municipal bond issuance. Notably, studying these M&As is important in its own right, as investment banking activities have historically been overlooked in bank antitrust regulations and a regulatory gap appears to exist. Several features make the municipal bond market an ideal natural laboratory for studying the effects of shifting market power on security underwriting outcomes. First, its size rivals corporate securities and it finances essential public services and infrastructure. Second, anecdotal evidence suggests that local governments are vulnerable to powerful underwriters and can "easily be taken advantage of—urged to issue needless or poorly structured bonds, pushed to accept high interest rates or duped into paying hundreds of thousands in unreasonable fees" (The Hechinger Report, 2019). Joffe (2015) estimates the annual total municipal bond issuing costs in the U.S. to amount to \$3-4 billion. Third, this market also features a vast number of heterogeneous issuers, high geographical fragmentation (Butler, 2008; Cestau, 2020; Babina et al., 2020), stable issuance flows, and, importantly, significant consolidation among local and regional underwriters over the past several decades.

I obtain a sample of U.S. municipal bonds issued during 1970-2022 from the SDC Global Public Finance Database and hand-collect a sample of M&As among municipal bond underwriters. I find 258 M&A deals, among which 162 are between underwriters with overlapping geographic operations. Next, I define a market as a geographical unit and identify treated and control markets. Treated markets consist of those that experience M&As that would lead to a greater than 100 points increase in their underwriter Herfindahl–Hirschman Index (HHI). For each treated market, I find a matched control market that most resembles the treated in terms of local economic and demographic characteristics. I assemble a sample of issuances in treated and control markets and estimate a stacked difference-in-differences model (Gormley and Matsa, 2011, 2016).

I find that the underwriting spread increases by 5.0 basis points following within-market consolidation, rising from a sample mean of 103.0 basis points. There is a sharp increase in the year of the M&A and no pre-consolidation differential trend. For a median bond issuance with a principal amount of $8.9 million, the increase translates to an additional $4,436 financial burden on the issuing government. On average, a Combined Statistical Area (CSA), of which the U.S. Census Bureau designates 181 in total, issues $1,312 million in municipal bonds annually. My estimate implies an extra annual financial burden of $653,989 per CSA per year following consolidation. These findings are robust to adding control variables, hold when controlling for issuer-underwriter-match or time-varying underwriter characteristics, and are present in both the earlier and the later halves of the sample period. Effects are similar when I define treated markets as cases where both the acquiror and the target hold market shares above 5%, or where M&As would lead to a greater than 5% increase in the combined market share of the top five underwriters in a market. Additionally, the effects do not dissipate over time when examining a longer post-consolidation horizon of up to ten years.

My findings go against an alternative hypothesis that M&As create synergies, reducing marginal costs of providing underwriting services and thereby translating into a lower underwriting spread through competition. Consistent with investment banks wielding their enhanced pricing power in more concentrated markets, the effects double for more significant M&As that would lead to an HHI increase of more than 300 points or in already concentrated markets with HHI above 2,500. Additionally, effects are stronger when issuers do not employ a financial advisor (Garrett, 2024) and hold regardless of the method of sales, source of repayment, refunding status, and the size and maturity length of the bond issue. Furthermore, both underwriters involved in the M&As and other underwriters in the same market raise their underwriting spreads, indicating an overall shift in the structure of the market.

The primary challenges to a causal interpretation of my findings are that local economic dynamics could be driving both M&As and underwriting spreads, and also underwriters might choose to merge in anticipation of future changes in underwriting spreads. To address these endogeneity concerns, I first demonstrate that the effects hold when examining scenarios where the consolidation-affected markets constitute only a small fraction of the merging underwriters' total businesses. In these cases, the M&A decisions are less likely to be influenced by contemporaneous or anticipated local economic dynamics (Garmaise and Moskowitz, 2006; Dafny et al., 2012; Sunderam and Scharfstein, 2017). Second, adopting the narrative approach (Romer and Romer, 2010), I classify M&As based on the rationales reported in news articles. Common rationales include "the acquiror's desire to gain local or regional dominance" (17.8%), "the acquiror's desire to expand geographically" (14.1%), "the acquiror's desire to gain industry-wide dominance" (11.9%), "synergy from combining different lines of business" (11.1%), and "synergy from cost management" (8.9%). While the first two could be related to the local economy, it is hard to argue so for the other three. Effects hold when focusing on M&As likely not a result of the influence of local economic conditions according to the news reports.

To further rule out potential confounding factors, I conduct three placebo tests. First, I find that consolidation among investment banks operating in different geographical areas does not lead to an increase in the underwriting spread. This confirms that it is within-market consolidation rather than consolidation in general that has price effects. Second, I trace out the geographic distribution of commercial banks using the Summary of Deposits data from FDIC and show that within-market consolidation among purely commercial banks do not lead to a higher underwriting spread, rendering it unlikely that my results are driven by omitted variables prompting any financial institution consolidation. Third, I find that withdrawn within-market investment bank M&As are not followed by an increase in the underwriting spread.

While I have established that within-market consolidation leads to a higher underwriting spread, a natural follow-up question is the overall welfare effects of consolidation on issuers. I next investigate whether there are efficiency gains from consolidation that benefit issuers and offset the rise in the underwriting spread. Since the total costs of financing for local governments encompass the underwriting spread and the bond yield at the time of offering, I first examine the offering terms. I do not find statistically significant changes in the yield or yield spread over Treasury securities following underwriter consolidation. However, in the subsample where secondary market transaction data are available, I observe a small increase in initial underpricing of \$0.09 per \$100 face value. The effects are concentrated among issues where underwriters have greater influence over the offering terms. Such initial underpricing could make the bonds easier to market and distribute but are detrimental to issuers. Notably, the evidence contradicts the hypothesis that underwriters, operating in a two-sided market, profit from monopsony power over initial investors.

To further investigate potential efficiency gains that could benefit issuers, I examine the usage of other issuer-paid services. M&As may enhance underwriters' abilities to market and distribute bonds, potentially reducing the necessity for issuers to use credit ratings, a form of third-party certification (Ramakrishnan and Thakor, 1984; Millon and Thakor, 1985; Boot et al., 2006). Similarly, bond insurance, which is a form of credit guarantee where the insurance company promises to step in and repay in case of government default (Gore et al., 2004; Vanda and Singh, 2004; Cornaggia et al., 2024), may become less essential. M&As may also endow underwriters with certain expertise that typically resides within the domain of financial advisors (Bergstresser and Luby, 2018). This kind of in-house integration could reduce the issuers' demand for formally hiring a financial advisor.

I find that issuers are less likely to use credit ratings, bond insurance, or financial advisors after consolidation, suggesting potential efficiency gains. However, these effects are small and not statistically significant under conventional thresholds. To assess the overall impact, I calculate a total issuing cost that includes the underwriting spread, credit rating fee, bond insurance fee, and financial advisor fee. The analysis reveals that the reduction in other costs is insufficient to offset the increase in the underwriting spread. An all-inclusive measure that also accounts for the bond yield corroborates this finding.

Finally, I examine the effects of investment bank consolidation on local governments using data from the Annual Survey of State and Local Government Finances conducted by the U.S. Census Bureau. I show a quantity effect in that the amount of new debt issuance drops in treated areas. The effects are concentrated in school districts, amounting to \$178.9 per student per year, with no pre-treatment differentials observed. I also find a 5.4% increase in interest paid relative to the sample average for municipalities/townships/counties, which do not show a decline in new issuance. Overall, the evidence aligns with my findings from the bond issuance data, confirming that local governments are adversely impacted by underwriter consolidation.

My paper is the first to study investment bank consolidation. The existing literature has examined the economic effects of consolidation among commercial banks that engage in deposit-taking and lending activities. Some research finds that commercial bank consolidation has negative impacts on consumers. For example, Prager and Hannan (1998) and Pakes et al. (2024) document a drop in deposit rates, Garmaise and Moskowitz (2006) find increased interest rates on commercial loans and negative real economic consequences, and Ratnadiwakara and Yerramilli (2022) show that mortgage credit access worsens for borrowers in under-served communities. Some research, on the other hand, finds evidence of efficiency gains in different contexts or time horizons. For instance, Focarelli and Panetta (2003) find that deposit rates increase in the long run after bank consolidation, Sapienza (2002) observes lowered interest rates when the acquired bank has a small market share, and Erel (2011) demonstrates that consolidation reduces the average loan spreads for U.S. industrial and commercial loans, attributing these effects to cost savings from consolidation. Despite the extensive research on commercial banks, there is a paucity of research on the effects of consolidation among investment banks. My findings indicate that issuers are overall adversely affected in the context of municipal bond underwriter consolidation.

My paper contributes to the literature on the determinants of financing costs in the municipal bond market.[1] Regarding the role of underwriters, Cestau et al. (2020) provide esti-

[1] Prior research finds that better credit ratings per se (Adelino et al., 2017; Cornaggia et al., 2017) and access to renewable natural resources (Cornaggia and Iliev, 2024) reduce reoffering yields, while corruption (Butler et al., 2009), racial discrimination (Dougal et al., 2019), political uncertainty (Gao et al., 2019b), impaired information production (Gao et al., 2020), and climate risks (Painter, 2020; Goldsmith-Pinkham et al., 2023) increase reoffering yields. Additionally, studies by Butler and Yi (2022), Cheng et al. (2023), Gao et al. (2019a), Gustafson et al. (2023), Han (2021), Li and Zhu (2019), Cornaggia et al. (2021), and Lu and Ye (2023) show the effects of various demographic and legislative factors on reoffering yields. Corruption, discrimination, and climate risks have also been shown to inflate underwriting spreads (Butler et al., 2009; Dougal et al., 2019; Painter, 2020). For a comprehensive review of prior research on the determinants of underwriting spreads and offering yields for municipal bonds, please refer to Table A1 in the Online

mates for the effects of using negotiated sales on reoffering yields. Garrett et al. (2022) find a greater-than-unity pass-through elasticity from tax subsidies to the borrowing cost, attributing this to the imperfectly competitive nature of auctions and the endogenous participation of underwriters. Additionally, Garrett (2024) finds that banning dual advisor-underwriters significantly reduces reoffering yields. Cao et al. (2024) show that fund-underwriter connections are influential, as connected funds secure larger allocations of new issuances, which also tend to be more underpriced. It also echoes prior findings on the geographical fragmentation of municipal bond underwriting (Butler, 2008; Cestau, 2020).

My paper contributes to the literature on the role of market structure and market power in security issuance. Regarding corporate security underwriting, Chen and Ritter (2000) argue that the prevalent 7% IPO underwriting spread is a collusive outcome. Hansen (2001) challenges this collusion argument, while Liu and Ritter (2011) develop a theory of differentiated underwriting services and localized competition to explain the apparent lack of competition in IPO underwriting. Lyandres et al. (2018) develop tests for conducts of IPO underwriters and find evidence supportive of collusion. Gande et al. (1999) and Kim et al. (2008) find that underwriting spreads for corporate securities decrease after commercial banks become eligible to underwrite by law. Ellis et al. (2011) evaluate the competition among investment banks in the setting of follow-on offerings. Manconi et al. (2019) show that powerful corporate bond underwriters can extract rents at the expense of issuers. In the context of municipal bonds, Cestau (2019) finds that the use of competitive bidding reduces underwriters' market concentration. Cestau (2020) further demonstrates that underwriters tend to specialize in either competitive bidding or negotiated sales, and their specialization investments in respective fields contribute to their market power. Garrett and Ivanov (2024), the closest study to mine, find that anti-ESG legislation in Texas, which leads to a shrinkage in the pool of underwriters, significantly increases local governments' borrowing costs. My paper also relates to the broader literature on competition and market power in the financial system.[2]

Appendix.

[2]For related studies, see Gissler et al. (2020) and Yannelis and Zhang (2023) for consumer lending, Petersen and Rajan (1995) and Boot and Thakor (2000) for relationship banking, Bustamante and D'Acunto (2024) for firm lending, Azar et al. (2022) for common ownership among banks, Becker and Milbourn (2011) for credit rating agencies, Hinzen (2022) for non-bank financial institutions, Griffin et al. (2023) for security

I proceed as follows. Section 2 describes my data and sample construction. Section 3.1 presents my main findings, followed by tests to address endogeneity concerns and placebo tests in Sections 3.2 and 3.3, respectively. In Section 3.4, I examine effects on the offering terms and efficiency gains. In Section 4, I examine local government finances using Census data. Section 5 provides some additional tests and discussion. Finally, Section 6 delves into the policy relevance and implications and concludes the paper.

2 Data and Sample Construction

2.1 Data

I obtain data on municipal bond issuance from the SDC Platinum Global Public Finance Database (GPF), which features the identity of the issuer and the underwriter, purpose of debt, amount, maturity, underwriting spread, reoffering yield, and other characteristics. I provide summary statistics in Table 1 and variable definitions and data sources in Table A2 in the Online Appendix. My main variable of interest is the underwriting spread, defined as "the difference between an underwriter's purchase price and resale price" (SDC Platinum, 2024), which represents a major source of revenue for the underwriter. Prior research (e.g., Butler 2008; Dougal et al. 2019) has used the underwriting spread recorded in SDC Platinum as a primary outcome variable. The GPF database also records the county in which the issuer is located. Using the Core-Based Statistical Areas Delineation Files provided by the U.S. Census Bureau, I identify the Combined Statistical Area (CSA) in which the issuer is located.

I define a "local market" as a CSA, as it is, by definition, economically and socially interconnected while being relatively isolated from other CSAs. As of 2023, the Census Bureau designates 181 CSAs in the U.S. I will later demonstrate that my findings are robust to alternative market definitions. On average, an issuer makes 1.7 bond issuances annually, and all issuers in a county makes 12.3 issues combined. Figure A1 in the Online Appendix displays the distribution of the number of active underwriters in a CSA. A median CSA has 8 active underwriters per year, with more underwriters in larger CSAs. I also obtain the

brokerage, Fazio and Žaldokas (2023) for public procurement, and Hong and Kacperczyk (2010) for analyst forecasts.

bidding outcomes for municipal bond auctions from The Bond Buyer (Garrett et al., 2022; Garrett, 2024). In my sample, 47.7% of the bond issuances are sold via such auctions, i.e., through competitive bidding.[3] An auction has a median (mean) number of 4.0 (4.1) bidders.

I hand-collect data on M&As among municipal bond underwriters active in 1970-2022 from public records, including national and local newspapers, Wikipedia, firm websites, and corporate filings. I then complement this sample with two standard M&A databases, the SDC Platinum M&A Database and the SNL Financial M&A Database (a part of S&P Global). I match underwriters in the GPF database to these M&As using both exact and fuzzy matching by the name string. I identify 258 M&A deals, of which 162 involve underwriters with geographic overlaps in operations. I list the M&As in Table A3 in the Online Appendix.

I also review the news articles on the M&As to identify the reported rationales for the deals. I find articles with sufficient information to determine the rationales for 101 deals (out of the 162 with geographic overlaps). Table A4 in the Online Appendix summarizes these findings. The top five reasons mentioned for M&As are "the acquiror's desire to gain local or regional dominance", "the acquiror's desire to expand geographically", "the acquiror's desire to gain industry-wide dominance", "synergy from combining different lines of business", and "synergy from cost management". Table A5 in the Online Appendix provides some examples as described in the news articles. Importantly, the vast majority of the deals do not appear to be explicitly driven by local economic conditions.

I obtain credit rating fees, bond insurance fees, and financial advisor fees from the California Debt and Investment Advisory Commission and the Texas Bond Review Board. While the GPF database includes information on whether an issuer is using credit ratings, bond insurance, or financial advisors for a bond issuance, the fees for these services are only available for the states of California and Texas. Additionally, I obtain data on local government finances from the Annual Survey of State and Local Government Finances conducted by the U.S. Census Bureau.

[3]In Section III of the Online Appendix, I introduce the issuing process and the two commonly used methods of sales, competitive bidding and negotiated sales.

2.2 Sample construction

Next, I measure the exposure of each CSA to M&As and identify "local consolidation episodes". For each CSA and starting from the year 1970, I calculate the HHI of the CSA $a \times$ year t based on the market shares of municipal bond underwriters in the three years prior to year t. Then, I extract all M&A deals from the period t to $t+3$ and calculate the would-be HHI if the acquiror and the target in these M&As became a single firm, also based on bond issuances in CSA a in the three-year period prior to year t. I then take the difference between this *predicted* HHI and the actual HHI as the *predicted* Δ_{HHI}. Naturally, only within-market consolidation, i.e., M&As among underwriters that operate in the same CSA, could lead to a *predicted* increase in the HHI. If the *predicted* Δ_{HHI} exceeds 100 points, I say that CSA a experiences a local consolidation episode that starts in t. I continue this process with $t+4$ if I find t to be the onset of a local consolidation episode in CSA a, and with $t+1$ if not.[4]

I identify 219 local consolidation episodes and refer to the CSAs affected by these episodes as "treated" CSAs. Next, I construct a treated-control matched sample. For each treated CSA, I find a control CSA that most closely resembles the treated CSA in terms of average income and population, using the Mahalanobis distance. Furthermore, the control CSA must not be affected by within-market consolidation themselves in the period from $t-4$ to $t+4$, centering around the onset of the local consolidation episode. Later, I will show my findings to be robust to a range of alternative matching schemes. Each treated CSA and its corresponding control form a cohort. I then assemble a "stacked sample" comprising all bond issuances in the year of the onset of a local consolidation episode, as well as four years before and four years after, for both the treated and control CSAs.

Figures 1 and 2 illustrate how the treated-control matched sample is constructed. Panel A of Figure 1 shows the market shares in each CSA in 1995 of SunTrust Bank and Equitable Securities, two underwriters that later engaged in an acquisition transaction. While SunTrust Bank underwrote municipal bonds in many states in the U.S. Southeast, Equitable Securities

[4] My methodology parallels the criteria of evaluating commercial bank M&As used by the Department of Justice, which states in the 2023 Merger Guidelines that a commercial bank M&A warrants antitrust attention if it is *predicted* to raise the HHI based on pre-consolidation deposit market shares in a given market by more than 100 points (Department of Justice, 2023).

was more localized, focusing on the state of Tennessee. The acquisition would affect the CSAs where they both operated, such as the CSA "Nashville-Davidson–Murfreesboro, TN", but not the CSAs where only one side operated, such as those in Florida. Figure 2 shows that based on average income and population, the CSA "Sacramento-Roseville, CA" is the closest match to the CSA "Nashville-Davidson–Murfreesboro, TN".

2.3 Fragmentation of the municipal bond underwriting market

The municipal bond underwriting market is much more geographically fragmented compared to corporate security underwriting (Cestau, 2020; Chen et al., 2024). While corporate security underwriting is predominantly served by large, national players typically headquartered on the Wall Street, the municipal bond market features a plethora of underwriters whose geographical coverage can be only one or several states. Table A6 in the Online Appendix shows the top 10 underwriters in California and Massachusetts for each type of security. While there is significant overlap in corporate security underwriters between the two states, the underwriters for municipal bonds are far more dissimilar. For example, none of the top three municipal bond underwriters in Massachusetts during 2010-2020 — Eastern Bank, Century Bank, or TD Bank — appears in the top ten in California, nor vice versa.

To quantitatively assess the fragmentation of the municipal bond underwriting market, I calculate the cosine similarity of underwriters' market shares in each pair of states. I represent the market shares in state s in year t of all B underwriters as a vector $v_{s,t}$ of length B. For any pair of states s_1 and s_2, the cosine similarity in year t is calculated as

$$c_{s_1,s_2,t} = \frac{v_{s_1,t} \cdot v_{s_2,t}}{\|v_{s_1,t}\| \|v_{s_2,t}\|}. \tag{1}$$

I find that the average cosine similarity of municipal bond underwriters for a state-pair is 0.193, while it is 0.613 for corporate bond underwriters and 0.508 for corporate equity underwriters. I confirm the differences in Table A7 in the Online Appendix in a regression framework, which also shows that the similarity of municipal bond underwriters decreases with a greater geographic distance of the state-pair. Figure A2 in the Online Appendix further shows that the pattern holds throughout the sample period.

Such fragmentation might seem surprising at first, as municipal bond underwriting might appear to be a rather generic task. However, several factors contribute to the highly fragmented form. First, by using local or regional underwriters and keeping the business activities of underwriting in close geographic proximity, local governments can potentially promote local businesses, create more job opportunities, and even collect more income tax revenues from those underwriters. Second, in most states, the interest income on municipal bonds is exempt from state taxation for investors residing in the same state, but not for out-of-state investors. This makes the ownership fraction of same-state investors disproportionately high (Babina et al., 2020). Incumbent underwriters might have better knowledge about and access to local investors, giving them an advantage in marketing and distributing the securities (Cestau, 2020). Third, incumbent underwriters tend to have substantial experience in underwriting for nearby governments. When selecting an underwriter under negotiated sales, a key criterion that the issuers consider is past experience in serving the local area (U.S. Securities and Exchange Commission, 2012). Even under competitive bidding, an incumbent underwriter with greater local experience can have an informational advantage when formulating its bid. Such accumulated experience reinforces the entry barriers for non-incumbent underwriters.

3 Evidence from Bond Issuance

3.1 Effects of M&As on underwriting spread

3.1.1 Main results

I begin by examining how the underwriting spread evolves around consolidation. If consolidation leads to more concentrated local markets and enhances the pricing power of underwriters, we would expect an increase in the underwriting spread afterwards. Conversely, if consolidation creates synergies and lowers the marginal cost of providing underwriting services, then these cost savings could be passed on to local governments through competition in the form of a lower underwriting spread.

I run the following regression,

$$y_{d,c} = \beta_1 Post_{c,t} + \beta_2 Treated_{a,c} \times Post_{c,t} + \theta_{i,c} + \theta_t + e_{d,c}. \tag{2}$$

Here d is the subscript for each bond issuance, i.e., each deal, a is the subscript for each Combined Statistical Area (CSA), c is the subscript for each cohort of a treated CSA and its matched control CSA, i is the subscript for each issuer, and t is the subscript for the calendar year. The variable $Treated$ equals one for issues in treated CSAs and $Post$ equals one in the year of the onset of local consolidation episodes and afterwards. My methodology of pooling cohorts of treated and control observations together into a "stacked sample" and estimating a difference-in-differences model follows Gormley and Matsa (2011), Gormley and Matsa (2016), and Gormley et al. (2024). *Treated* variable is not included in the model as it is absorbed by the issuer times cohort fixed effects $\theta_{i,c}$. Standard errors are double-clustered at both the CSA and calendar year levels.

I report my findings in Table 2. In column (1) of panel A, I show that the underwriting spread increases by 5.0 basis points (t = 3.15) in the four years following consolidation from a sample mean of 103.0 basis points. This effect amounts to 4.8% of the sample mean. For a bond issuance with the median principal amount of $8.9 million, this increase translates into an additional $4,436 in underwriting spread. For a CSA with a median (mean) annual total issuance of $238 million ($1,312 million), this rise in the underwriting spread would imply an extra financial burden of $118,749 ($653,989). To put my estimates into context, I also provide a list of other variables that prior research has shown to influence the financing costs in the municipal bond market and the magnitudes of their effects in Table A1 in the Online Appendix. My findings are comparable in magnitude to these established determinants.

I also estimate a dynamic version of Equation (2) using the year prior to consolidation as the baseline and plot the coefficients in Figure 3. I observe a sharp increase in the underwriting spread at the onset of the local consolidation episodes and find no pre-treatment differential trends between bond issuances in treated and control CSAs. Panels B and C of Table 2 and panel A of Figure 4 show that these effects do not dissipate even over longer horizons of up to 10 years.

I provide an estimate of the elasticity of the underwriting spread to the HHI of the local market in Table A8 in the Online Appendix. Using the $Treated \times Post$ dummy as an instrumental variable for HHI, I find the elasticity to be 0.04. Hypothetically, going from 5 equal-sized underwriters to 4 equal-sized underwriters, which raises the HHI by 500, is predicted to increase the underwriting spread by 22.3 basis points.[5] Notably, I also obtain the OLS estimates of this elasticity and I do not find a statistically significant correlation between the underwriting spread and HHI. In the OLS regression of the underwriting spread on HHI, a key omitted variable—demand by local governments for the issuance of municipal bonds—could cause a bias. In areas with weaker local demand, fewer underwriters would enter the local market, resulting in a higher HHI. Simultaneously, with weaker demand, local governments would accept only lower underwriting spreads. Such a demand factor biases the OLS estimate in the negative direction.

3.1.2 Robustness tests

I confirm the robustness of my findings concerning the definition of local consolidation episodes. Instead of using cases where M&As would lead to an increase of more than 100 in the *predicted* HHI, I utilize cases where the local market shares of both the acquiror and the target in the previous three-year period exceed 5% and show the estimate in column (3) of Table 2. Additionally, I use cases where M&As would lead to an increase of more than 5% in the *predicted* total local market share of the top five underwriters and report the estimate in column (5). The effects hold under both definitions. Panels B and C of Figure 3 show that the pre-consolidation parallel trend continues to hold. I also show that my findings are robust to defining the market at the finer Core-Based Statistical Area (CBSA) level, with results reported in columns (2), (4), and (6) of Table 2. As of 2023, the Census Bureau designates 927 CBSAs in the U.S.

Table 3 shows in column (1) that the effects hold when I include state-by-calendar-year fixed effects, leveraging the fact that within a state, some CSAs might be affected by underwriter consolidation while others might not be at the same time. The effects also hold when I include the underwriter-by-calendar-year fixed effects in column (2), which control for

[5] While illustrative of the economic magnitudes of the findings, I acknowledge that a higher HHI does not necessarily equate to less competition, and this example is only valid internally (Jiang, 2017).

any time-varying, underwriter-specific factors that could affect the underwriting spread. The effects are also robust to including fixed effects for each issuer-underwriter pair in column (3), which control for any fixed characteristics of the issuer-underwriter match. Furthermore, the results are robust to adding fixed effects for each method of sales, taxable status, source of repayment, and their interactions with the calendar year in column (4). These alleviate concerns that certain compositional effects might be driving my findings.

The effects are also robust to controlling for the principal amount, length of maturity, and their squared terms in column (5). In column (6), I control for whether commercial banks are eligible to underwrite the bond issue by law. While the 1933 Glass-Steagall Act prohibited banks from underwriting most Revenue bonds on the premise that they are riskier than General Obligation (GO) bonds, the passage of the Gramm-Leach-Bliley Act in 1997 removed all restrictions preventing commercial banks from underwriting municipal bonds (U.S. Congress, 1999).[6] I find that the underwriting spread is 15.9 basis points lower (t = -8.2) when commercial banks are allowed to underwrite, likely due to increased competition. The main effect of consolidation is unaffected by adding this control variable. Finally, to address the critique in Wing et al. (2024) that a basic stacked difference-in-differences estimator does not identify the target causal effect because it applies different implicit weights to treatment and control trends, I apply their suggested corrective weights in column (7) and find that my estimate hardly changes.

Table A9 in the Online Appendix confirms that my findings are robust when using three matched control CSAs for each treated CSA, as shown in column (1). Moreover, the findings are robust when using alternative co-variates in the matching process. Column (2) demonstrates that the findings are robust when using a control CSA with the closest local income, population, and the growth rates of these two variables. While I avoid matching on issuance outcomes in my baseline estimates to prevent potential overfitting (Bonaimé and Wang, 2024), column (3) shows that the findings hold when matching on the past average gross spread and reoffering yield in the CSA. In column (4), I calculate the propensity score of being treated as the fitted value from a Probit regression introduced in Section 5.1. The

[6]The source of funding for the repayment of GO bonds is the overall revenue of a whole government. For Revenue bonds, it is the revenue of a specific project. Revenue bonds are in general perceived to be riskier than GO bonds.

findings hold when I use a matched CSA with the propensity score closest to the treated CSA as control. In column (5), I show that my findings remain robust in a stacked sample that uses all other CSAs not affected by concurrent investment bank consolidation as controls.

Finally, I note that some markets are treated more than once, as shown in Figure A3 in the Online Appendix. Since estimation based on these markets can be biased if effects are time-variant or differ for secondary treatments, I consider a subsample where the markets experience only a single local consolidation episode throughout the sample period. The point estimate, as shown in column (6), is similar to my main findings, although there is a reduction in statistical power in this subsample. In untabulated tests, I find that the coefficients are statistically significant if I use a longer post-treatment period, such as seven years. I also address the critique in Baker et al. (2022), which notes that estimates in stacked difference-in-differences designs can be biased if previously treated units act as control. The effects hold steady when I require the controls to be never treated previously, as shown in column (7).

3.1.3 Heterogeneities in effects

I report three groups of cross-sectional heterogeneities. First, I examine scenarios where ex-ante I predict the effects to be stronger based on an enhanced market power explanation (Table 4). Second, I analyze cross-sections of particular interest in the institutional setting of the municipal bond market (Table A10 in the Online Appendix). Third, I study cases where the issues fall within the expertise of the merging underwriters, in which case the issues should be more severely impacted (Table A12 in the Online Appendix). I employ the following specification, which produces the estimated effects in each group.

$$y_{d,c} = \sum_{g=1}^{G} \mathbb{1}_{\text{issue } d \text{ is in group } g} \times (\gamma_{0,g} + \gamma_{1,g} Post_{c,t} + \gamma_{2,g} Treated_{a,c} \times Post_{c,t}) + \theta_{i,c} + \theta_t + e_{d,c}. \tag{3}$$

Significance of M&As, market concentration, and financial advisors Panel A of Table 4 shows that the point estimates are larger for more significant M&As, i.e., those that would lead to a greater increase in the *predicted* HHI. For local consolidation episodes with a *predicted* Δ_{HHI} greater than 300 and looking at a horizon of ten years after consolidation, the estimate is 11.3 basis points (t = 2.7). Panel B shows that the point estimates are larger in more concentrated markets, which is also consistent with underwriters wielding their bolstered pricing power after consolidation. The estimate doubles to 14.3 basis points (t = 2.8) when the CSA is a highly concentrated market with an HHI greater than 2,500. Additionally, panel C reveals that the point estimates are larger when the issuer is not employing a financial advisor, in which case the issuer can be more susceptible to the increased pricing power (Garrett, 2024).[7]

Other heterogeneities of interest Table A10 in the Online Appendix shows that both underwriters involved in the M&As and other underwriters operating in the same market charge a higher underwriting spread post-consolidation. This is consistent with a shift in the overall structure of the local market and also aligns with the coordination explanation. The effects are present for municipal bonds sold under both competitive bidding and negotiated sales. The underwriting spread increases for tax-exempt bonds, taxable bonds, and also bonds subject to the Alternative Minimum Tax.[8] Additionally, the effects are observed irrespective of whether the repayment source is the overall revenue of a government (i.e., General Obligation bonds) or the revenue of a specific project (i.e., Revenue bonds). Notably, the effects are stronger for Revenue bonds, which is consistent with these bonds being riskier and more challenging to underwrite. Furthermore, the effects are observed for both non-refunding and refunding bond issuances. These findings are detailed in Panels A to E.

Panel F shows that the effects hold when the sample is divided into pre-2000 and post-2000 periods. The effects are similar for bond issuances with principal amounts and maturity lengths above or below the median, as shown in Panels G and H, respectively. In Panel I, I find similar effects for counties with the Black population ratio in the top quartile or in the bottom three quartiles. Finally, Figure A4 in the Online Appendix examines whether the

[7] I investigate whether and when having a financial advisor can mitigate the effects of consolidation in Table A11 in the Online Appendix. I find that having an advisor can only nullify the effects of consolidation in highly competitive markets with an HHI less than 1,000.

[8] The Alternative Minimum Tax (AMT) is "a separate tax system that requires some taxpayers to calculate their tax liability twice — first, under ordinary income tax rules, then under the AMT — and pay whichever amount is highest" (Tax Foundation, 2023).

effects differ by the main use of proceeds, including “general purpose”, “education”, “utilities”, “housing”, “economic development”, “health care”, “transportation”, and “pollution control”. The effects are strongest for bond issuances with the purpose of housing and are present across most categories.

Whether bond issuances fall within the expertise of merging underwriters In my baseline specification, I define markets as geographic units. However, one might argue that the markets can be further segmented based on bond issue characteristics, and dividing markets solely at the geographic level may overstate the degree of market concentration. For example, underwriters may specialize in either competitive bidding or negotiated sales (Cestau, 2020), in issues serving a specific purpose such as education or healthcare, or in either large issues that require an extensive distribution network or smaller issues. The baseline empirical framework does not adopt a finer market definition for several reasons. First, not observing an underwriter for certain kinds of bonds does not necessarily imply its absence; such an underwriter might still compete in this more specific market but may have failed to establish a market share. Therefore, further segmenting the markets can be somewhat arbitrary. Second, the sample size of issues within a more narrowly defined market may be limited, leading to imprecise measurements of market concentration.

To explore such possibilities, I look into heterogeneities in effects when the bond issue falls within a certain category in which the merging underwriters hold expertise. In such cases, the effects should be stronger as the bond issuances are more likely to be impacted by consolidation. I categorize bond issuances into brackets based on five characteristics: (1) amount; (2) maturity; (3) the main use of proceeds; (4) the method of sales; and (5) the presence of credit ratings. My findings are presented in Table A12 in the Online Appendix. For almost all bond characteristics, the point estimates are indeed greater when the bond issuances fall within the areas of expertise of the merging underwriters. These findings suggest that further specialization within a geographic unit may exist, which may amplify the effects of underwriter consolidation.

3.2 Addressing endogeneity concerns

The primary challenge to a causal interpretation is that investment bank consolidation is not random, and local economic conditions could be influencing both consolidation and the underwriting spread. Additionally, investment banks may pursue consolidation in anticipation of future changes in the underwriting spread of the local market. To address these concerns of omitted variable bias and reverse causality, I conduct two tests.

My first test takes the "narrative approach" and utilizes the reasons for M&As mentioned in news articles, as described in Table A4 in the Online Appendix. I categorize these reasons into those that may correlate with the local economic conditions and those that are more orthogonal to such conditions. It is possible that an acquiror's desire to gain local or regional dominance or to expand to a new area could be driven by local economic conditions, which could also affect the underwriting spread. However, it is challenging to argue how M&As motivated by "the acquiror's desire to gain industry-wide dominance", "synergy from combining different lines of business", or "synergy from cost management" would correlate with local economic conditions.

In panel A of Table 5, I focus on local consolidation episodes where the M&As are driven by reasons less likely to correlate with local economic conditions. That is, I exclude M&As driven by "the acquiror's desire to gain local or regional dominance" or "the acquiror's desire to expand geographically", as well as M&As for which the driving reasons are not available in a news article. There are 81 local consolidation episodes that meet these criteria. The main findings still hold, and panel C of Figure 4 provides a consistent message. Moreover, although Table A4 in the Online Appendix suggests that most cases of "financial distress of the target" are not related to local economic conditions, I additionally exclude all such M&As in panel B and the findings remain robust.

Prior research has used the "narrative approach" to identify changes in fiscal and monetary policies that are unrelated to national or state economic conditions (Romer and Romer, 2010; Mertens and Ravn, 2012; Mukherjee et al., 2017; Romer and Romer, 2023). I also examine the effects of consolidation by each reported reason in Figure A5 in the Online Appendix. While there are some variations, the effects are present across most categories.

In the second test, I examine scenarios where the affected CSA itself constitutes only a small fraction of the merging underwriters' overall operations. In such scenarios, it is less likely that the current or anticipated economic conditions in the CSA are a significant driver of the M&A. More specifically, I focus on local consolidation episodes where the affected CSA accounts for less than 5% of the merging underwriters' total businesses in the three years preceding the M&A. This criterion is applied to both parties involved in the M&A. For local consolidation episodes involving multiple M&As that cumulatively lead to within-market consolidation, I require the affected CSA to constitute less than 5% of each merging underwriter's total businesses for every M&A. This approach is similar to the methodology used by Garmaise and Moskowitz (2006), Dafny et al. (2012), and Sunderam and Scharfstein (2017) to address the endogeneity of financial institution M&As to local economic conditions.

There are 96 local consolidation episodes that satisfy these criteria. I estimate Equation (2) using only these cases and report the estimates in panel C of Table 5. The findings from Section 3.1.1 continue to hold. Interestingly, the magnitude of the effect is 8.5 basis points (t = 2.4), which is larger than my baseline estimates. This could be because CSAs tend to be smaller when they account for a minor percentage of the underwriters' total businesses, and such CSAs often have a more concentrated underwriting market where the effects of consolidation are more pronounced. Panel D of Figure 4 shows no pre-trends. In untabulated tests, I alternatively require the affected CSA to constitute less than 3% or 10% of the underwriter's total businesses and obtain similar findings.[9]

In summary, the underwriting spread increases in scenarios where the M&A decisions are less likely to be driven by current or anticipated local economic conditions, which is consistent with a causal interpretation of my main findings.

[9]One might further argue that a CSA could be adjacent to a larger CSA with correlated economic fundamentals that could drive underwriters' M&A decisions. To address this concern, in panel D of Table 5, I examine cases where both the affected CSA and all of its neighbouring CSAs account for less than 5% of the merging underwriters' total businesses. The findings remain robust.

3.3 Placebo tests

3.3.1 Cross-market consolidation

In this section, I conduct three placebo tests to further rule out alternative explanations. The first placebo test examines the effects of cross-market consolidation that does not lead to greater local concentration. For each local consolidation episode, I identify all CSAs where the acquiror in the M&A has a market share greater than 10%, the target has no market share, *and* the CSA does not experience any other within-market consolidation in a time window around the onset of the local consolidation episode, and then I randomly select one. These CSAs experience cross-market consolidation where an in-market underwriter consolidates with an out-of-market underwriter. Similarly, I also identify CSAs where the target operates and the acquiror does not. Together, these form my treated CSAs, for which I find control CSAs using the same criteria as in Section 2.

Panel A of Table 6 presents the estimated effects of such cross-market consolidation. In column (1), I do not find any statistically significant effects on the underwriting spread. Given that randomly selected CSAs tend to be small, as an underwriter is more likely to have market shares above 10% in a small market, I also assemble a sample where cross-market-consolidation-affected CSAs are chosen to be the closest in population size to within-market-consolidation-affected CSAs. Column (2) shows that the sample size increases, but I still observe no effects. In addition, I find null effects when I require merging underwriters to have any positive market share in cross-market-consolidation-affected CSAs, rather than imposing a 10% threshold, as shown in columns (3) and (4). These findings confirm that it is within-market investment bank consolidation, rather than consolidation among investment banks in general, that has price effects. This is consistent with the explanation that greater post-consolidation pricing power drives my main findings.

Moreover, while cross-market consolidation could arguably pool expertise and widen the distribution channels of underwriters, potentially lowering the marginal costs of providing underwriting services, I do not observe a decrease in the underwriting spread following such consolidation. Hence, the synergies from cross-market consolidation, if any, are not passed through to issuers in the form of a lower underwriting spread.

3.3.2 Within-market commercial bank consolidation

My second placebo test examines the effects of within-market commercial bank (CB) consolidation. I obtain commercial bank M&As from the SDC Platinum M&A Database and the SNL Financial M&A Database. Additionally, I acquire the county-bank-year level deposit data from the Summary of Deposits survey provided by the FDIC for the period 1994-2022. Prior research, including Cetorelli and Strahan (2006), Bouwman and Malmendier (2015), Goetz et al. (2016), and Kundu et al. (2022), has used this data to trace out the geographic presence of commercial banks.

I aggregate the deposit data to the CSA-bank-year level and calculate the local market shares of CBs. I match M&As and deposit data using a combination of exact matching, fuzzy matching, and manual verification. Next, I identify local CB consolidation episodes using a similar approach as in Section 2, but substituting the market shares of municipal bond underwriters with those of CBs. Additionally, I require that the CSA is not affected by any within-market municipal bond underwriter consolidation during the same period. My sample includes 1,424 pairs of CBs that engaged in within-market consolidation, and I identify 148 local CB consolidation episodes that lead to an increase in the *predicted* CB HHI by more than 100 points.

I report the estimated effects of these CB consolidation on municipal bond underwriting spreads in Panel B of Table 6. I do not find any significant effects. The patterns are similar when I consider local CB consolidation episodes that would lead to an increase in the *predicted* CB HHI by more than 20 or 50 points, or when I define a local market as a CBSA. These results indicate that my findings are specific to within-market consolidation among municipal bond underwriters and are unlikely to be driven by factors that lead to any within-market financial institution consolidation in general.

3.3.3 Withdrawn M&As

My third placebo test examines the effects of withdrawn M&As. I obtain M&As among municipal bond underwriters that were withdrawn from both the SDC Platinum M&A Database and the SNL Financial M&A Database. Next, I construct a sample of "local withdrawn M&A

episodes" by calculating the would-be increase in HHI if these M&A deals had gone through. My sample includes 12 instances of withdrawn M&As between within-market peers, and I identify 4 "local withdrawn M&A episodes" where the withdrawn M&As would have resulted in an increase in HHI by more than 50 points if they had been completed. Prior research, such as Seru (2014), Bena and Li (2014), and Bernstein (2015), has utilized withdrawn mergers as a control group to identify mergers' effects on firm outcomes.

In Panel C of Table 6, I show that there is no evidence of an increase in the underwriting spread following withdrawn M&As. The sample size is smaller than the other two placebo tests though. I see similar patterns when using "local withdrawn M&A episodes" that would lead to an HHI increase of more than 10 or 20 points, or when defining a local market as a CBSA. These findings support the conclusion that my main findings are not driven by confounding factors influencing both successful and withdrawn M&As.

3.4 Offering terms, non-price efficiency gains, and overall cost of finance

The debate on antitrust issues in M&As constantly revolves around two major themes: market power and efficiency gains. M&As could create synergies and lower firms' marginal cost, which could pass through to consumers (service users) in the form of lower prices or better products and services (Focarelli and Panetta, 2003; Sapienza, 2002; Erel, 2011). In this section, we examine whether and to what extent these M&As create synergies that benefit issuers.

3.4.1 Offering terms

The ex-ante theoretical prediction regarding the effects of consolidation on the reoffering yield is also ambiguous, similar to the underwriting spread.[10] Underwriters incur significant inventory risks and exert substantial efforts in the marketing and distribution of the municipal bonds (Kidwell and Sorensen, 1983; Joehnk and Kidwell, 1984). Consequently,

[10] Reoffering yield is the yield calculated based on the reoffering price. I distinguish between "issuer's proceeds' and "reoffering price", the formering pertaining to the price that underwriters promise to issuers and the latter pertaining to the price that initial investors pay to underwriters, following Green et al. (2007).

holding the underwriting spread constant, underwriters naturally prefer a higher reoffering yield—i.e., a lower reoffering price—as it facilitates the distribution process and reduces inventory risks. A report by Wall Street Journal (Wall Street Journal, 2019) suggests another possibility how underwriters could benefit from a lower reoffering price: a considerable amount of bonds changed hand multiple times among investors and dealers within the first month of issuance. Dealers, who are often underwriters on the same bonds, earned significant markup in the process.[11] Under negotiated sales, underwriters with great market power could pressure issuers into accepting a lower reoffering price.[12] Conversely, if the synergies from combining two businesses are substantial enough to significantly improve underwriters' abilities, they could market and distribute the same bonds to investors at a higher reoffering price, thereby benefiting issuers. For example, underwriters benefiting from synergies might agree on a higher reoffering price under negotiated sales, or submit higher bids under competitive pricing.

I first examine how consolidation affects the yield spread over the treasury rates. Following the methodology of Schwert (2017) and Li and Zhu (2019) as outlined in Section IV.I of the Online Appendix, I calculate the tax-adjusted spread of the reoffering yield of each municipal bond relative to the yield of a comparable synthetic treasury security. The findings are presented in column (1) of Table 7. The yield spread changes by -2.72 basis points (t = -1.14), which is not statistically significant under conventional thresholds. Additionally, I do not observe a statistically significant effect of consolidation when examining bond issuances sold via competitive bidding or negotiated sales separately, or when using the yield spread over the Municipal Market Advisors AAA-rated curve ("MMA curve") or the reoffering yield itself as outcome variables.

Next, following Garrett (2024), I calculate the initial underpricing, a common measure of the quality of security underwriting. A high-quality underwriter is able to price a security

[11] This displays similarity to the dynamics observed after corporate equity issuances (Ellis et al., 2000).

[12] Under negotiated sales, the underwriting spread is largely agreed upon when the underwriter is employed and prior to setting the reoffering price. Given a fixed underwriting spread, underwriters' revenues do not diminish with a lower reoffering price. However, under competitive bidding, a lower reoffering price reduces the underwriting spread. Therefore, the reoffering price under competitive bidding is expected to be primarily influenced by investor demand rather than the underwriters' market power over issuers. Consequently, under competitive bidding, there is no ex-ante rationale to expect underwriter consolidation to affect the reoffering yield through the market power channel.

close to its fundamental value, thereby keeping interest costs low for issuers. Conversely, a low quality underwriter or an underwriter with the ability to manipulate offering terms would price the bonds at a discount, which is reflected in the dynamics of trading prices as initial underpricing. I calculate the difference between the day-15-to-day-30 average price of each bond and its price on the initial trading day. Column (6) of Table 7 shows that, for each unit of face value of $100, the initial underpricing increases by $0.09 (t = 2.61) in markets affected by consolidation. The finding that bonds are more underpriced post-consolidation is inconsistent with the idea that issuers benefit from higher-quality underwriting services; instead, it aligns with the notion that powerful underwriters manipulate issuance outcomes. The effects are concentrated among negotiated sales with a magnitude of $0.15 (t = 3.37), in which cases the underwriter has the ability to influence offering terms.[13]

In the final column, I examine how underwriter consolidation affects the number of bids in auctions for bond issuances sold via competitive bidding. The change is 0.04 (t = 0.43), which is not statistically significant. This test may lack statistical power, as The Bond Buyer started publishing bidding outcome data only after 2008, or it may indicate that a reduction in the number of bids is not necessary for consolidation to hinder competition. The dynamics of the reoffering yield, the yield spread, and initial underpricing are presented in Figure A6.

Overall, while my findings are mixed, they do not indicate that M&As create synergies that translate into lower reoffering yields. Notably, the findings oppose the possibility that underwriters, operating in a two-sided market as the intermediaries between issuers and initial investors, capitalize on enhanced market power over initial investors. The consolidation endows underwriters with the ability to depress issuers' proceeds, but does not appear to increase their monopsony power over initial investors. A likely explanation is that there are many other classes of assets constituting the competition of municipal bonds, eliminating underwriters' market power as sellers.

[13] One caveat is that the data for constructing initial underpricing are limited to 2005 and onwards in the author's institutional subscription of Municipal Securities Transaction Data provided by Municipal Securities Rulemaking Board (MSRB).

3.4.2 Non-price efficiency gains

While I have documented an adverse price effect and show that, on average, the reoffering yield does not change after consolidation, issuers could still benefit in other aspects of the issuing procedure, thereby compensating for the higher prices. Therefore, I next examine how consolidation affects the usage of other issuer-paid services—credit ratings, bond insurance, and financial advisors. Based on issues in California and Texas, and conditional on using any of these services, the costs of credit ratings, bond insurance, and financial advisors as a fraction of the principal amount are 12.4, 80.4, and 49.8 basis points, respectively.

I first examine how consolidation affects the use of credit ratings. The cost of credit ratings, despite smaller than the underwriting spread, can still pose a financial burden for local governments (Joffe, 2017). I hypothesize that if underwriters, through consolidation, improve their ability to market and distribute the bonds—potentially due to the economies of scale or the transfer of expertise and investor relations—they could underwrite the same bonds without the third-party credit rating certification. Consequently, issuers might find it optimal to avoid incurring the costs associated with soliciting credit ratings. In column (1) of Table 8, I observe a -1.6% (t = -1.0) change in the probability of having credit ratings for issues in treated markets after consolidation.[14]

I also hypothesize that issuers are less likely to purchase bond insurance when faced with a more efficiently-operating underwriter, as the same bond can now be distributed without additional credit guarantees. Furthermore, through consolidation, underwriters may have acquired expertise that typically resides in the domain of financial advisors. This kind of in-house integration may reduce the issuers' demand for formally hiring a financial advisor. I find that the fraction insured changes by -1.4% (t = -1.4) and the probability of formally hiring an advisor changes by -1.2% (t = -1.2) after consolidation. While the direction of

[14]Prior research indicates that having credit ratings substantially lowers the reoffering yield (Cornaggia et al., 2017; Adelino et al., 2017). Consequently, I expect that changes in the use of credit ratings induced by consolidation should be concentrated in issues where the added benefits of having credit ratings are minimal. For instance, when a bond issuance is insured, investors tend to view it as having risk comparable to the insurer rather than the issuer, the former often having excellent credit ratings (Cornaggia et al., 2024). In such cases, credit ratings on the bond issue provide smaller benefits. In untabulated tests, I find that for insured issues, the frequency of using credit ratings changes by a larger -2.3% (t = -1.12) after consolidation, while it almost does not alter for uninsured issues (coefficient = 0.1%, t = 0.14). These findings are consistent with Cornaggia et al. (2022) which show that ratings and bond insurance are substitutes.

the estimates is consistent with efficiency gains from consolidation, they are not statistically significant under conventional thresholds. Hence, the evidence of efficiency gains, if any, is weak.[15]

3.4.3 Overall cost of financing

Next, I formally investigate whether any efficiency gains can benefit issuers and offset the rise in the underwriting spread. While I can observe *if* an issuer uses credit ratings, bond insurance, or financial advisors for all bond issuances, the data on credit rating fees, bond insurance fees, and financial advisor fees are only available for the states of California and Texas. To overcome this challenge, I devise a statistical model of these fees and estimate it using the California and Texas samples combined. I incorporate the explanatory variables for expected fees as outlined in Cornaggia et al. (2022), including the population size and income of the county and dummy variables for brackets of the average maturity length, the principal amount, the method of sales, the taxable status, the source of repayment, and whether the issuer has a prior relationship with the credit rating agency, bond insurer, or financial advisor.

I then impute these costs for every issue in my sample using predicted values from the model. With these, I calculate a total issuing cost, which is the underwriting spread plus the credit rating fee, the bond insurance fee, and the financial advisor fee if the issuer uses these services. Using my treatment-control matched sample, I find in panel A of Table 9 that the total issuing cost increases by 5.1 basis points (t = 2.5) after consolidation. This finding is consistent with the limited evidence of efficiency gains.

I also develop an all-inclusive measure of the overall cost of financing for local governments, termed as the "modified true interest cost" ("modified TIC"), which incorporates the reoffering yield, the underwriting spread, the credit rating fee, the financial advisor fee, and the bond insurance fee. It is the annualized discount rate that equates the present value of all future coupon and principal payments to the reoffering price minus the underwriting spread and the predicted credit rating fees, financial advisor fees, and bond insurance fees,

[15] In untabulated tests, I find the T-statistics to be -3.0, -2.6, and -1.9 for columns (1), (3), and (5) of Table 8 if I cluster standard errors at the issuer level, instead of double-clustering at the CSA and calendar year levels.

if applicable. Compared to the commonly used "true interest cost" measure, it additionally accounts for the other three types of fees (Municipal Securities Rulemaking Board, 2013). I then calculate its spread relative to a comparable synthetic risk-free bond.

Consistent with my findings on the increase of the underwriting spread and the small, insignificant changes in the reoffering yield spread and the use of credit ratings, financial advisors, and bond insurance, I observe a rise in the "modified TIC" spread of 8.2 basis points (t = 1.7) following within-market investment bank consolidation, as shown in Panel C of Table 9. Notably, this coefficient has relatively larger standard errors compared to the estimated effects on the underwriting spread, which might reflect the greater statistical noise in bond yields. The findings are similar when I use *predicted* credit rating fees, financial advisor fees, and bond insurance fees with year fixed effects, as shown in panel D, or under other definitions of local consolidation episodes, as show in columns (2) and (3). Overall, the efficiency gains I document, if any, are too small to offset the rise in the underwriting spread from the standpoint of issuers. Consequently, there is an increase in the overall cost of financing.

4 Evidence from Local Government Finances

I next investigate how municipal bond underwriter consolidation affects local governments using data from the Annual Survey of State and Local Government Finances conducted by the U.S. Census Bureau. One motivation for these tests is to further validate my prior findings. Another motivation is that bond-issue-level outcomes may not fully capture the total effects of consolidation on local government finances. As Brancaccio and Kang (2024) demonstrate, municipal bond issuances can have complex features beyond the underwriting spread and reoffering yield, such as call provisions, sinking fund provisions, irregular interest payment frequencies, and floating or variable interest rates. These features can be difficult to price accurately and may either increase or decrease the financial burden on local governments, depending on the specific features and prevailing economic conditions. Consequently, quantifying the total costs to local governments using issuance outcomes alone can be challenging and insufficient. Therefore, examining census-based local government finances data might give a more comprehensive understanding of the economic impact of consolidation.

Each year, the Census Bureau surveys states, counties, townships, municipalities, special districts, and school districts regarding their revenues, expenditures, and other aspects of their finances. I construct outcome variables including the interest paid, new issuance of debt, and budget surplus. I exclude special districts from my sample as their finances measures may not be comparable to other local governments. The number of distinct counties, townships, municipalities, and school districts in the sample are 1,778, 14,019, 10,233, and 12,903, respectively.[16] I provide summary statistics in Table A13 and variable definitions in Table A2 in the Online Appendix. For counties, townships, and municipalities, the average annual revenue per capita is $1,290, and the expenditure per capita is $1,314. Interest payments account for 3.0% of all expenditures, and the quantity of new debt issuance is equivalent to 5.9% of total expenditures. As for school districts, they collect an average of $13,321 per student per year and spend $14,947. Interest payments account for 2.0% of all expenditures and the average ratio of new debt issuance to total expenditures equals 5.5%.

I construct a treated-control matched sample similar to the one in Section 2, except that I use local-government-year-level observations rather than bond-issue-level observations. I estimate the following model,

$$y_{l,t,c} = \beta_1 Post_{c,t} + \beta_2 Treated_{a,c} \times Post_{c,t} + \theta_{l,c} + \theta_t + e_{l,t,c}, \tag{4}$$

where the new index l represents each local government. I double-cluster standard errors at both the CSA and calendar year levels. I report my findings in panel A of Table 10. In panels B and C, I divide the sample into school districts and municipalities/townships/counties. These two categories of local governments may be differentially impacted by investment bank consolidation as they differ in their funding sources, creditworthiness, and decision-marking processes. All variables are expressed as ratios to the total expenditures of the local government.

[16]The school districts in the Annual Survey of State and Local Government Finances are all independent school districts. They have substantial autonomy in collecting taxes and charges and issuing debt for the provision of educational services. They often levy and collect property taxes separately from counties, townships, and municipalities. Dependent school districts, whose finances are controlled by the county, township, or municipality that they depend on, are not part of the survey (U.S. Census Bureau, 2006).

My first finding is that new debt issuance, expressed as a ratio to the total expenditures, drops by 0.66 percentage points (p.p.) (t = -2.15) and does not exhibit pre-treatment differential trends, as shown in panel B of Figure A7 in the Online Appendix. A median county affected by consolidation reduces new debt issuance by $1.97 million. The effects are concentrated among school districts, where the new issuance changes by -1.20 p.p. (t = -2.70). Using dollar amounts as the outcome variable, panel A of Table A14 shows that new debt issuance drops by $178.9 (t = -2.19) per student per year. For municipalities/townships/counties, the change is -0.31 p.p. (t = -1.14) or -$4.8 (t = -0.65), and is not statistically significant.

Second, I find that the interest paid changes on average by 0.05 p.p. for local governments in CSAs affected by underwriter consolidation, which is not statistically significant at conventional thresholds (t = 0.91). However, for municipalities/townships/counties, there is an increase of 0.16 p.p (t = 1.84), amounting to 5.4% of their average interest paid, and is statistically significant at the 10% level. I do not observe pre-trends for this increase either, as shown in panel A of Figure A9 in the Online Appendix. This may be consistent with the absence of quantity effects for these types of local governments, resulting in them effectively bearing greater underwriting spreads.[17]

The budget surplus ratio, defined as the difference of total revenues and total expenditures scaled by total expenditures, changes by -1.09 p.p. to the negative direction (t = -1.47).[18] While the direction is consistent with an overall deterioration of local government financial health, the change is, however, not statistically significant at conventional thresholds. For school districts and municipalities/townships/counties, the changes are -0.07 p.p. (t = -0.15)

[17]The increase in the interest paid variable may reflect an increase in the underwriting spread (rather than the bond yield). In the accounting of local governments, interest payment equals the coupon rate times the principal amount. When facing a higher underwriting spread, local governments can set a higher coupon rate, resulting in larger interest payments. For example, consider a scenario where a government requires $100 in cash, the underwriting spread is 1% of the face value, the prevailing market interest rate is 4%, and the government issues a bond with a one-year maturity, a one-time coupon payment at the maturity date, and a face value of $100. The reoffering price will then be $101 and the interest payment will be $(\$100 + \$1) \times (100\% + 4\%) - \$100 \approx \$100 \times 5\%$. The issuer can thus set the coupon rate to 5%. If the underwriting spread rises to 2%, to obtain the same $100 in cash, the interest payment will then be $(\$100 + \$2) \times (100\% + 4\%) - \$100 \approx \$100 \times 6\%$, and the issuer can set the coupon rate to 6%.

[18]The Government Finance and Employment Classification Manual (U.S. Census Bureau, 2006) states that the Census data "are purely statistical in nature" and "cannot be used as financial statements, or to measure a government's fiscal condition". Hence, a "surplus ratio" less than 0 does not necessarily indicate that the government is running a deficit.

and -1.55 p.p. (t = -1.48), respectively.

The expenditure per student for school districts in affected areas changes by -$279.7 (t = -1.60) and the revenue per student changes by -$227.4 (t = -1.33). For municipalities/-townships/counties, the expenditure and revenue per capita change by $46.9 (t = 2.03) and $28.2 (t = 1.18), respectively, to the positive direction. Table A15 in the Online Appendix shows that the findings are largely robust when accounting for endogeneity concerns or confounding factors. I examine additional outcome variables in Table A16 in the Online Appendix. Total taxes, primarily property tax, change by 1.50 p.p (t = 1.35) overall, and by 3.64 p.p. (t = 2.09) and -0.28 p.p. (t = -0.43) for school districts and municipalities/townships/counties, respectively.[19]

Overall, evidence from the Census data confirms an increase in financing costs following underwriter consolidation, and indicates a reduction in some local governments' usage of the public financing market.

5 Other Tests and Discussion

5.1 Predictive factors of local market consolidation

In this section, I examine which local demographic, economic, and market characteristics predict within-market consolidation. In Table A17 of the Online Appendix, I regress the *predicted* Δ_{HHI} over the next three years and also a dummy variable for whether the *predicted* Δ_{HHI} exceeds 100 on variables including prior HHI, local population, population growth rate, local income, income growth rate, population age, minority ratio, and past issuance per capita. Columns (1) and (2) show that while some local demographic, economic, and market characteristics significantly predict future changes in HHI, the magnitudes are generally

[19] I hesitate to attribute the increase in taxes for school districts as a substitution for debt issuance though, as treated CSAs seem to display a pre-existing trend of substituting inter-governmental transfer with local taxation relative to control CSAs. I argue that this pre-existing trend is unlikely to explain my main findings. First, while panels E and F of Figure A8 in the Online Appendix show that these trends are gradual, in Figure 3 I observe a sharp increase in the underwriting spread in the year of the M&As. Second, a rise in property taxes can push local investors away from investing in housing, potentially increasing their demand for alternative investments such as municipal bonds. This increased demand could lower the marginal costs of providing underwriting services, which would lead to a decrease rather than an increase in underwriting spread.

small. For example, a 1% higher population growth rate is associated with a 3.2 increase in the *predicted* Δ_{HHI}. A $1,000 decrease in issuance per capita over the previous three years predicts a 2.2 increase in the *predicted* Δ_{HHI}. Next, I re-estimate Equation (2) while controlling for factors that significantly predict the *predicted* Δ_{HHI} in column (3) and for all local demographic, economic, and market factors in column (4). The main findings hold in both cases, further increasing my confidence that the main findings are not driven by local demographic, economic, and market factors affecting both consolidation and underwriting spread.

5.2 Controlling for effects of commercial bank consolidation

Prior research has documented the negative effects of commercial bank consolidation on local communities. Garmaise and Moskowitz (2006) find that large commercial bank M&As result in higher interest rates, diminished local construction, lower property values, an influx of poorer households, and higher property crime rates. Nguyen (2019) report similar findings regarding local small business lending using a later sample from the 2000s. Commercial bank consolidation, by reducing loan creation and decreasing business dynamism, could put strains on property and other tax revenues, create extra expenditures, and thereby decrease local governments' creditworthiness. Consequently, underwriters might demand higher compensation for their service. Furthermore, some local governments rely on private bank lending (Bergstresser and Orr, 2014; Ivanov and Zimmermann, Forthcoming), and commercial bank M&As may force these governments out of private financing and raise their demand for issuing municipal bonds, which could also lead to a higher underwriting spread.

While I show in Section 3.3 that commercial bank M&As do not lead to higher underwriting spreads, this alone may not sufficiently address the above concern. For instance, the effects of commercial bank M&As could be heterogeneous, increasing the underwriting spread only when there is also concurrent investment bank consolidation. Therefore, I restrict the sample of local consolidation episodes to cases where there is no concurrent commercial bank M&As that increase the local commercial bank HHI by more than 100 (50) within a nine-year window centered around the onset of the local consolidation episode. Consistent with

Section 3.3, I again define commercial bank concentration using the Summary of Deposits data from the FDIC. I report my findings in panel E (F) of Table 5, and my main findings remain robust.

5.3 Discussion

5.3.1 Regulatory attention on security underwriter competitiveness

Initiatives for scrutinizing the competitiveness among security underwriters are limited. Following the research of Chen and Ritter (2000), the Department of Justice (DOJ) launched an investigation in 1999 to determine whether there was a conspiracy among investment banks to fix IPO underwriting spreads, but dropped the probe two years later after finding no evidence of collusion (Wall Street Journal, 2001). A similar investigation by UK authorities in 2010 reached the same conclusion (The Times, 2011). Despite these findings, concerns about potential collusion in IPO underwriting persist. For instance, the OECD noted in a report that in the IPO market, "high levels of fees and parallel pricing (akin to tacit collusion) appear to have increased" (Financial Times, 2017). In particular, underwriter market power might be one of the contributing factors to the apparent decline in U.S. IPOs in recent decades, along with the regulatory costs of being public (Ewens et al., 2024) and the supply of private capital (Ewens and Farre-Mensa, 2020).

Impediments to competition in other types of security underwriting receive even less attention from regulators. Rare exceptions include the prohibition of municipal advisors from simultaneously acting as bond underwriters (Garrett, 2024). Recently, a class-action lawsuit by Baltimore, Philadelphia, and San Diego alleged that eight big banks conspired to raise the rates on variable-rate demand obligations, possibly causing billions of dollars in damage (Reuters, 2019; Banking Dive, 2023).

5.3.2 Generalizability of the findings

I acknowledge that my findings in the municipal bond underwriting market may not necessarily generalize to corporate security underwriting. Comptrollers in counties and cities and superintendents in school districts, who oversee bond issuance in these local governments, might have less specialized or effective financial training compared to CFOs and other financing staffs in corporations. Consequently, local governments might be more susceptible to the market power of underwriters compared to corporations. Conversely, corporate security underwriting typically involves larger deal sizes, which can provide greater per-deal collusive benefits, thus giving underwriters more incentive to coordinate. I look forward to future research on corporate securities issuance that builds upon the contributions of Chen and Ritter (2000), Hansen (2001), Liu and Ritter (2011), and Manconi et al. (2019), which will offer a more comprehensive answer to the overarching question of the economic implications of underwriter market power.

5.3.3 General industry trends

Figure A10 in the Online Appendix shows that the average HHI initially dropped from around 2,000 in 1970 to approximately 1,000 in 1990, and then gradually rose back to around 1,500 by 2022. The average underwriting spread, on the other hand, increased from around 140 basis points in 1970 to its peak of over 200 basis points in the early 1980s, and has experienced a secular decline since then, reaching around 60 basis points in 2022. The simultaneous increase in the HHI and decline in the underwriting spread are not at odds with my findings. Rather, the shrinking spread has been driven by factors such as the entrance of commercial banks (The American Banker, 1988) hastened by the Gramm-Leach-Bliley Act (U.S. Congress, 1999), the advancement of business automation technologies, increased market transparency (Hund et al., 2024), and anti-corruption initiatives (Butler et al., 2009). By design, my findings are interpreted as, holding everything else constant, greater market concentration leads to a higher underwriting spread. I also predict that, under the counterfactual scenario of no simultaneous consolidation, the underwriting spread would have decreased even more.

5.3.4 Efficiency gains for underwriters

Underwriters may have benefited from M&As in several ways. They may avoid redundancy and spread regulatory and compliance costs over larger operations, strengthen their investor relationships, and expand their distribution networks. The rationales from news articles support these possibilities. However, I establish that any such gains to the firms do not translate into lower costs or better services for issuers. From the standpoint of the general public and taxpayers, to whom the repayment obligations of municipal bonds eventually fall upon, the effects of underwriter consolidation are detrimental.

6 Conclusion

Using issuance data in the geographically fragmented municipal bond underwriting market, I find that underwriting spreads increase following underwriters consolidation. My examinations of M&As less likely to be influenced by local economic conditions, combined with several placebo tests, help establish causality. Cross-sectional heterogeneities point to enhanced market power resulting from consolidation as the underlying mechanism. From the issuers' standpoint, the efficiency gains from consolidation, if any, are insufficient to offset the increase in underwriting spreads. Additionally, based on Census data, I confirm that local governments face higher financing costs following underwriter consolidation, and show that some issuers reduce their new issuance.

Amidst a new and wide-ranging antimonopoly movement, concerns regarding the structure of the American banking system and concentrated financial power have taken center stage (Grischkan, 2024). The current administration has expressed support for a bank antitrust reform (Reuters, 2023) and President Biden signed an executive order directing the DOJ to work with bank regulators and heighten the scrutiny of bank M&As (Reuters, 2021). The discussion, however, has focused on deposit-taking and lending activities (Tarullo, 2022; Kress, 2022).

My paper highlights an often-overlooked aspect of bank antitrust scrutiny—investment banking activities—which fall beyond traditional regulatory focus yet have significant implications for security issuers. There appears to be a regulatory gap concerning investment bank consolidation in the U.S. While regulators have scrutinized M&As among deposit-taking financial institutions, many of which also engage in investment banking activities, they typically consider how such transactions affect the welfare of depositors and borrowers, but not their investment banking customers. The SEC, the primary regulator of investment banks in the U.S., has predefined obligations that do not include M&A scrutiny. Additionally, investment bank M&As, particularly those among local and regional firms, often fall below the Hart-Scott-Rodino filing thresholds for pre-notification to the Federal Trade Commission and the DOJ, which is $119.5 million for a transaction in 2024.

Calling for antitrust attention on investment banking activities, my findings lead to several specific suggestions. First, regulators should consider the competitive landscape of more narrowly defined markets, especially in settings with geographic segmentation and entry barriers. This echoes the insights of Benson et al. (2024) for commercial banking and Wollmann (2019, 2023) for healthcare markets. Second, to identify scenarios where the price effects of consolidation are more pronounced and warrant greater antitrust attention, regulators can follow simple rules based on the market concentration and the *predicted* increase in underwriter HHI. This approach parallels the current test based on deposit market shares that regulators use for commercial bank M&As. Third, my analysis underscores the necessity of considering both the benefits and costs of M&As via an evidence-based approach. In the case of municipal bond underwriter consolidation, on average there is little evidence of efficiency gains translating into benefits for issuers, and the costs of investment bank M&As significantly outweigh the benefits from issuers' perspective.

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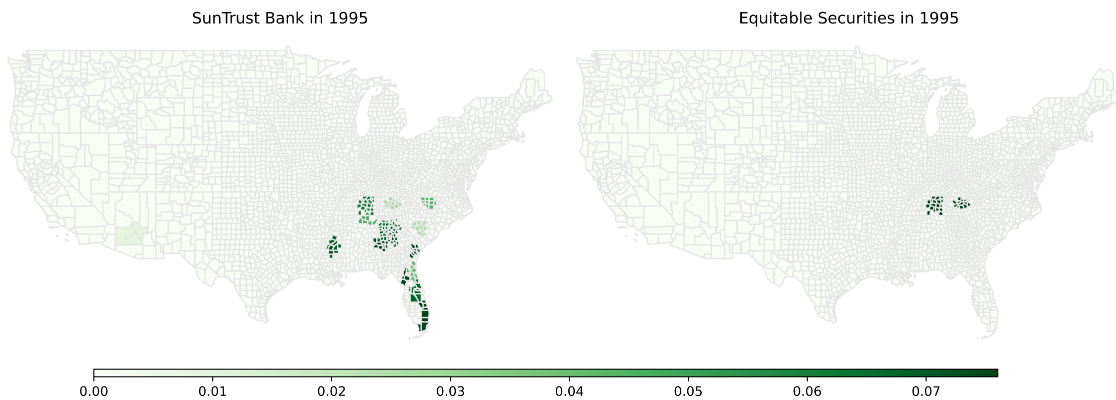
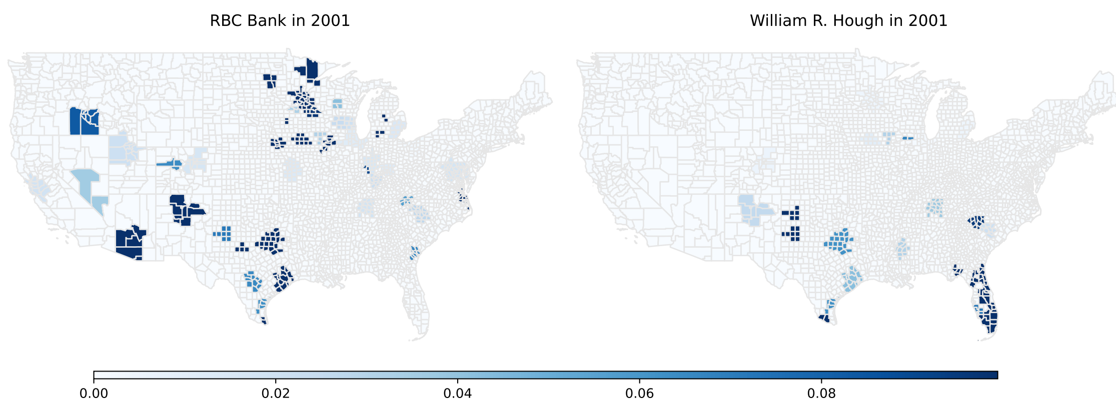
A. Figures

Figure 1: Local Market Shares of Merging Underwriters

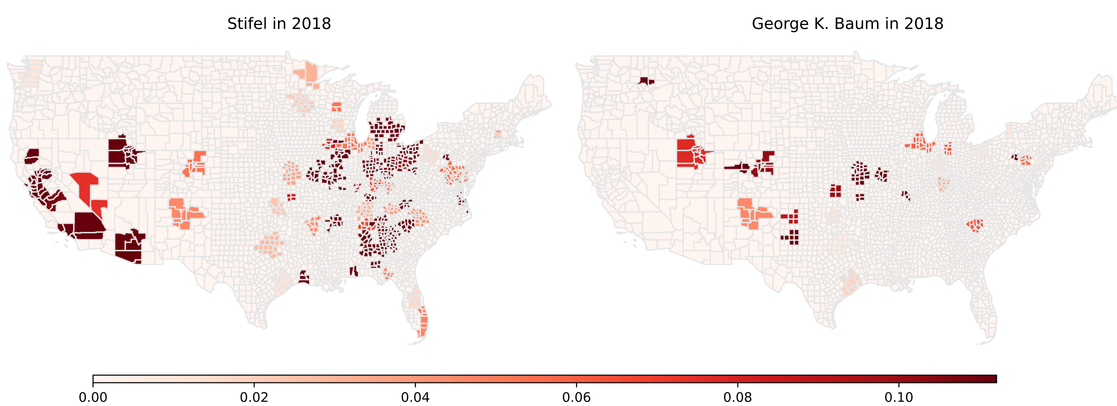
Panel A: Example 1, SunTrust Bank and Equitable Securities



Panel B: Example 2, RBC Bank and William R. Hough

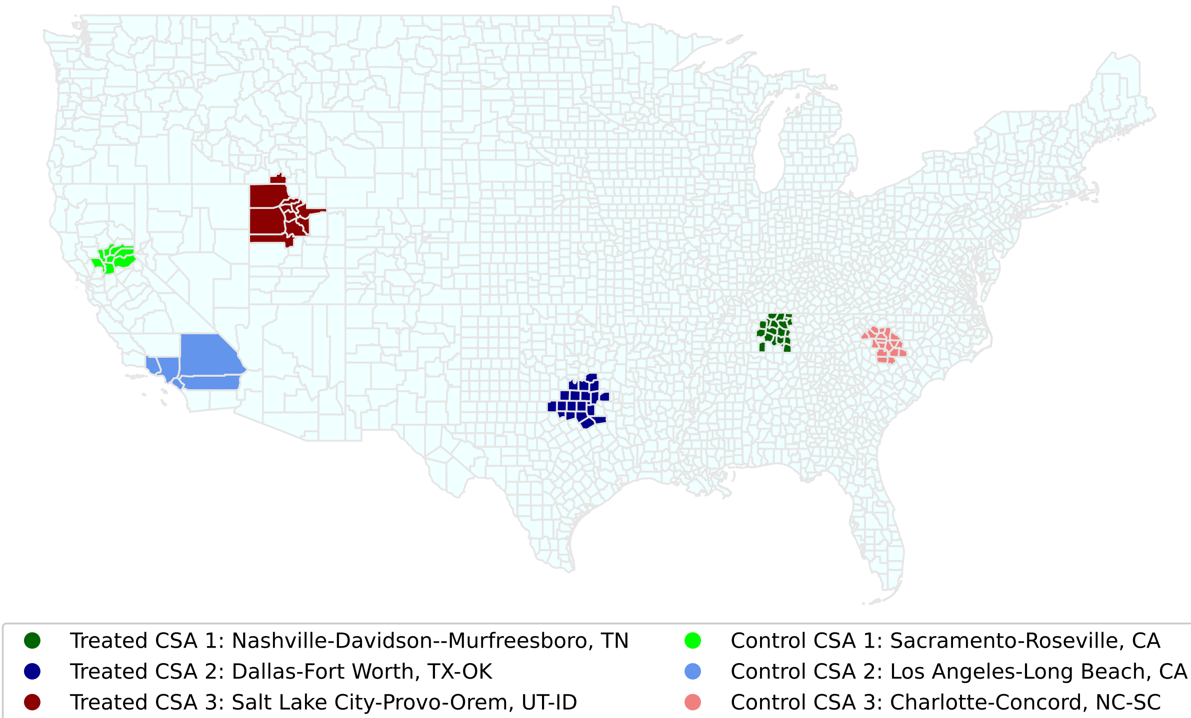


Panel C: Example 3, Stifel and George K. Baum



Note: This figure shows three randomly selected examples of municipal bond underwriter M&As. I plot the CSA-level market shares of each bank in the year prior to consolidation. Darker shades represents higher market shares.

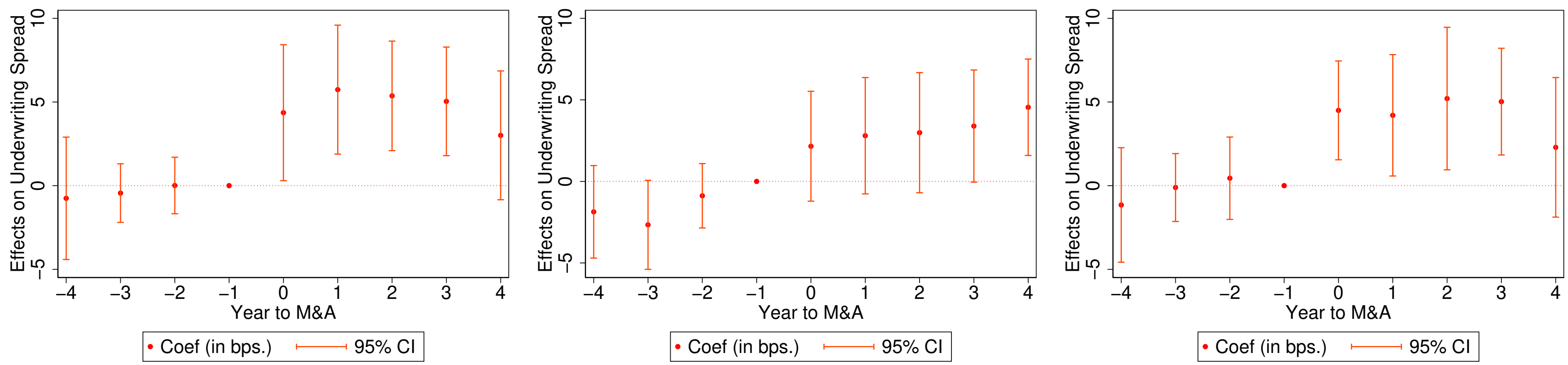
Figure 2: Illustration of Treated-Control Matched Sample



Note: This figure shows three randomly selected consolidation-affected CSAs along with their matched controls. For each treated CSA, I find a control CSA that most closely resembles the treated CSA in terms of average income and population based on the Mahalanobis distance, *and* does not experience within-market consolidation in a time period centering around the onset of the local consolidation episode. Theses three groups of treated and control CSAs correspond to the three panels in Figure 1 above.

Figure 3: Effects of Consolidation on Underwriting Spread

Panel A: *Predicted* $\Delta_{HHI} >= 100$ Panel B: Local market shares $>= 5\%$ Panel C: *Predicted* $\Delta_{Top\ 5\ Share} >= 5\%$



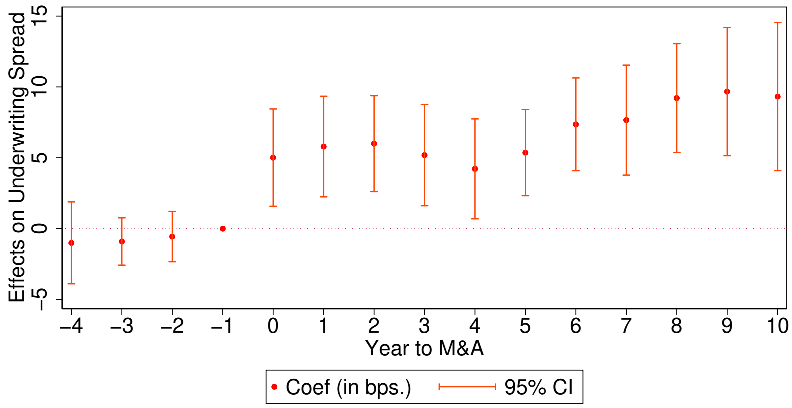
Note: This figure plots the evolvement of the underwriting spread for issues in treated CSAs relative to issues in control CSAs. Panel A uses M&As with *predicted* $\Delta_{HHI} >= 100$. Panel B uses M&As with local market shares of both the acquiror and the target $>= 5\%$. Panel C uses M&As with *predicted* $\Delta_{Top\ 5\ Share} >= 5\%$. I estimate the following regression

$$Y_{d,c} = \beta \times Post_{c,t} + Treated_{a,c} \times (\sum_{s=-4}^{-2} \gamma_s \times \mathbb{1}(\tau = s)_{c,t} + \sum_{s=0}^{4} \gamma_s \times \mathbb{1}(\tau = s)_{c,t}) + \theta_{i,c} + \theta_t + e_{d,c}. \quad (5)$$

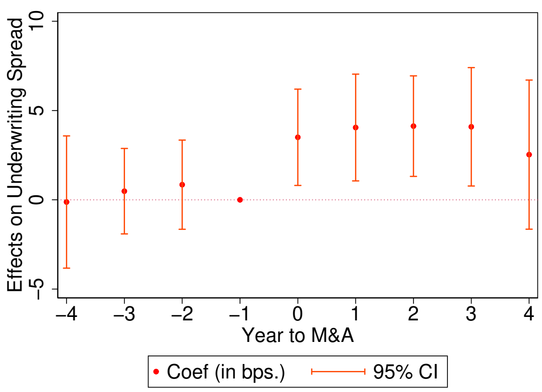
Here t represents the calendar year and τ represents the year relative to the treatment. $\mathbb{1}(\tau = s)_{c,t}$ is a dummy variable that turns on if the bond issuance occurs $-s$ years before the treatment (for $s = -4, -3, -2$) or if the bond issuance occurs s years after the treatment (for $s = 0, 1, 2, 3, 4$). I plot the estimates for each γ_s, along with their 95% confidence intervals. Standard errors are double-clustered at the CSA and year levels.

Figure 4: Robustness of Effects of Consolidation on Underwriting Spread

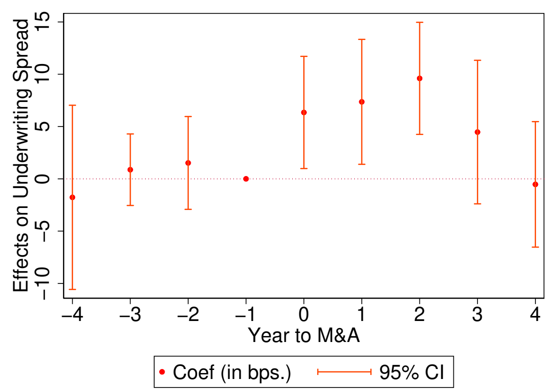
Panel A: Using a longer time window



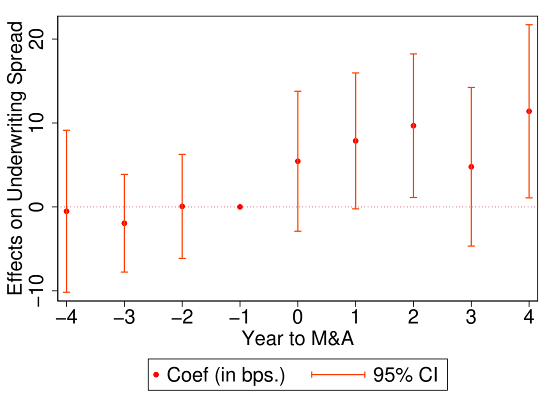
Panel B: Using a sample without matching



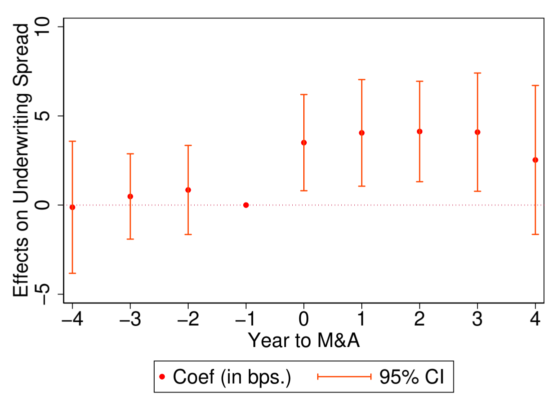
Panel C: Requiring that reasons for M&As are unrelated to local economy according to news articles



Panel D: Requiring that CSA makes up less than 5% of total businesses



Panel E: Using local consolidation episodes that are not confounded by CB M&As



Note: This figure plots the evolvement of the underwriting spread for issues in treated CSAs relative to issues in control CSAs. Panel A uses a longer post-treatment period of 10 years. Panel B utilizes a stacked sample where all CSAs not affected by concurrent within-market investment bank consolidation serve as the control. Panel C requires that the M&As are not be driven by reasons that could potentially correlate with local economic conditions according to the news articles. Panel D requires that treated CSAs make up a small fraction (less than 5%) of the merging underwriters' total businesses. Panel E requires that there is no concurrent commercial bank consolidation around the onset of local consolidation episodes that increases the degree of local commercial bank concentration. I plot coefficient estimates along with their 95% confidence intervals. Standard errors are double-clustered at the CSA and year levels.

B. Tables

Table 1: Summary Statistics

	Mean	SD	25%	Median	75%	N
Panel A: SDC Sample						
Amount ($ Million)	28.9	64.2	3.1	8.5	23.5	442,091
Maturity (Years)	5.9	7.6	1.0	1.6	9.2	278,700
Underwriting Spread (bps.)	103.0	65.4	55.0	89.0	140.0	162,001
Reoffering Yield (bps.)	351.0	216.4	165.0	355.0	497.4	277,964
Reoffering Yield Spread over Treasury (bps.)	90.1	83.1	30.9	66.5	133.3	255,201
Reoffering Yield Spread over MMA (bps.)	47.2	73.8	5.0	23.0	63.4	176,499
Modified TIC Spread (bps.)	76.6	140.8	–27.6	57.8	150.3	107,289
Modified TIC Spread, Year FE (bps.)	107.2	141.7	6.9	84.6	175.2	81,568
Initial Underpricing ($)	0.4	1.4	–0.2	0.3	1.2	82,195
Total Issuing Cost (bps.)	138.1	84.1	75.0	125.0	190.0	156,304
Total Issuing Cost, Year FE (bps.)	131.5	90.0	64.1	110.0	181.5	103,208
HHI	1232.1	882.9	720.5	991.8	1427.9	442,091
Number of Bidders (Competitive Bidding only)	4.07	2.56	2.00	4.00	5.00	59,548
Method of Sale: Competitive Bidding	0.48	0.50	0.00	0.00	1.00	442,091
Method of Sale: Negotiated Sales	0.48	0.50	0.00	0.00	1.00	442,091
Method of Sale: Private Placement	0.04	0.20	0.00	0.00	0.00	442,091
Tax Status: Tax Exempt	0.91	0.29	1.00	1.00	1.00	442,091
Tax Status: Taxable	0.06	0.24	0.00	0.00	0.00	442,091
Tax Status: Alternative Minimum Tax	0.03	0.17	0.00	0.00	0.00	442,091
Soource of Repayment: General Obligation	0.66	0.47	0.00	1.00	1.00	442,091
Soource of Repayment: Revenue	0.34	0.47	0.00	0.00	1.00	442,091
Has Advisor	0.49	0.50	0.00	0.00	1.00	442,091
Has Dual Advisor	0.01	0.12	0.00	0.00	0.00	442,091
Has Credit Rating	0.15	0.36	0.00	0.00	0.00	442,091
Insured Ratio	0.18	0.39	0.00	0.00	0.00	442,091
If Insured	0.19	0.39	0.00	0.00	0.00	442,091
If Callable	0.50	0.50	0.00	1.00	1.00	442,091
If Commercial Banks Eligible	0.87	0.34	1.00	1.00	1.00	442,091
Panel B: Local M&A Episodes						
Acquiror Market Share	0.12	0.09	0.05	0.09	0.17	219
Target Market Share	0.11	0.09	0.04	0.08	0.15	219
Delta HHI	285.8	295.3	124.9	187.3	308.2	219
Panel C: California & Texas Sample						
Financial Advisor Fee (bps.)	72.0	69.6	18.0	45.5	101.3	25,920
Credit Rating Fee (bps.)	15.7	12.5	7.5	12.0	19.8	30,131
Insurance Fee (bps.)	59.2	72.2	3.3	33.8	82.3	18,710

Note: All variables are winsorized at the 1% and 99% percentiles. The complete definitions are available in Table A2 in the Online Appendix.

Table 2: Effects of Consolidation on Underwriting Spread

	Predicted Δ_{HHI} >= 100		Market Share >= 5%		*Predicted* $\Delta_{Top\ 5\ Share}$ >= 5%	
	(1)	(2)	(3)	(4)	(5)	(6)
	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)
Panel A: [-4, +4]						
Treated × Post	4.98***	7.04***	4.48***	5.84***	4.42***	7.71***
	(3.15)	(4.18)	(4.47)	(3.79)	(2.68)	(4.81)
Observations	79,642	76,821	148,352	125,303	74,250	63,450
Adjusted R-squared	0.529	0.536	0.513	0.528	0.506	0.531
Panel B: [-4, +7]						
Treated × Post	6.08***	7.83***	5.39***	6.40***	5.47***	8.81***
	(4.51)	(3.75)	(5.57)	(3.65)	(3.90)	(4.68)
Observations	111,785	106,706	211,005	177,275	104,252	88,929
Adjusted R-squared	0.516	0.524	0.508	0.517	0.498	0.519
Panel C: [-4, +10]						
Treated × Post	7.18***	9.80***	6.72***	7.92***	6.61***	10.71***
	(4.42)	(3.77)	(5.98)	(3.71)	(4.06)	(4.42)
Observations	142,244	135,832	274,122	226,818	133,269	113,628
Adjusted R-squared	0.511	0.516	0.499	0.508	0.492	0.513
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CBSA & Year	CSA & Year	CBSA & Year	CSA & Year	CBSA & Year

Note: In this table, I report the estimates from a double-differences specification using the underwriting spread as the outcome variable. Columns (1) and (2) use local consolidation episodes with *predicted* Δ_{HHI} >= 100. Columns (3) and (4) use local consolidation episodes with local market shares of both acquiror and target >= 5%. Columns (5) and (6) use local consolidation episodes with *predicted* $\Delta_{Top\ 5\ Share}$ >= 5%. The market is defined as a CSA in columns (1), (3), and (5) and as a CBSA in columns (2), (4), and (6). The time window spans from 4 years before to 4 (7/10) years after the onset of local consolidation episodes in panel A (B/C). T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels in columns (1), (3), and (5) and at CBSA and calendar year levels in columns (2), (4), and (6). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Robustness Checks of Effects of Consolidation on Underwriting Spread

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)
Treated × Post	5.79*	3.69**	3.91*	3.84**	4.50***	4.41***	5.22***
	(1.98)	(2.32)	(2.00)	(2.21)	(2.82)	(2.78)	(3.21)
If Commercial Banks Eligible						-15.92***	
						(-8.17)	
Observations	79,552	78,417	57,112	79,641	64,664	79,642	79,642
Controls	No	No	No	No	Yes	No	No
Year FE	No	No	Yes	No	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	No	Yes	Yes	Yes	Yes
State × Year FE	Yes	No	No	No	No	No	No
Underwriter × Year FE	No	Yes	No	No	No	No	No
Issuer × Underwriter × Cohort FE	No	No	Yes	No	No	No	No
Taxable × Year FE	No	No	No	Yes	No	No	No
Method of Sale × Year FE	No	No	No	Yes	No	No	No
Source of Repayment × Year FE	No	No	No	Yes	No	No	No
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Weighting	No	No	No	No	No	No	Yes
Adjusted R-squared	0.540	0.621	0.671	0.548	0.577	0.533	0.553

Note: In this table, I report the estimates from double-differences specifications using local consolidation episodes with *predicted* $\Delta_{HHI} >= 100$ and the underwriting spread as the outcome variable. Column (1) additionally includes state-by-calendar-year fixed effects. Column (2) includes underwriter-by-calender-year fixed effects. Column (3) includes fixed effects for each issuer-underwriter pair interacted with each treatment-control cohort. Column (4) includes fixed effects for the interaction of the method of sales, taxable status, and source of repayment with the calendar year. Column (5) controls for the amount and maturity of the issue and their squared terms. Column (6) controls for whether commercial banks are eligible to underwrite the bond issue. Column (7) implements the corrective weights for stacked difference-in-differences as proposed in Wing et al. (2024). More robustness tests are provided in Table A9 in the Online Appendix. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Cross-Sectional Heterogeneities in Effects of Consolidation on Underwriting Spread

	(1) Underwriting Spread (bps.) [–4, +4]	(2) Underwriting Spread (bps.) [–4, +7]	(3) Underwriting Spread (bps.) [–4, +10]
Panel A: By the size of M&A			
Predicted Δ_{HHI} in [100,200)	3.91**	5.28***	6.01***
	(2.50)	(3.56)	(3.52)
Predicted Δ_{HHI} in [200,300)	8.44***	8.37***	10.18***
	(3.13)	(4.15)	(4.76)
Predicted $\Delta_{HHI} \geq 300$	7.86*	9.02**	11.34***
	(1.93)	(2.28)	(2.72)
Panel B: By HHI			
HHI in [0,1000)	4.76**	5.65***	7.28***
	(2.59)	(4.00)	(4.02)
HHI in [1000,2500)	4.96***	6.26***	7.04***
	(2.89)	(3.34)	(3.52)
HHI $\geq$ 2500	10.88	12.14**	14.27***
	(1.48)	(2.03)	(2.83)
Panel C: By whether using financial advisor			
If has advisor	3.70**	3.90**	5.30***
	(2.13)	(2.66)	(3.03)
If no advisor	5.11**	7.07***	7.59***
	(2.11)	(3.13)	(3.23)
Issuer × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In this table, I report the findings from estimating Equation (3) using the underwriting spread as the outcome variable. Column (1) presents findings when the sample is divided by the significance of merging underwriters in the treated CSA, measured as the *predicted* Δ_{HHI} for the treated CSA due to consolidation. Column (2) presents findings when the sample is divided by the degree of market concentraion in the CSA, measured as the HHI of the CSA. Column (3) presents findings when the sample is divided by whether the issuer is using a financial advisor. The time window spans from 4 years before to 4 (7/10) years after the onset of local consolidation episodes in column (1) ((2)/(3)). T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Effects of Consolidation on Underwriting Spread, Using Sample of M&As Less Confounded by Endogeneity Concerns or Alternative Explanations

	(1) Underwriting Spread (bps.) [–4, +4]	(2) Underwriting Spread (bps.) [–4, +7]	(3) Underwriting Spread (bps.) [–4, +10]
Panel A: M&As are driven by reasons likely unrelated to local economic conditions according to news articles			
Treated × Post	5.18	5.83*	6.33*
	(1.60)	(1.96)	(1.93)
Observations	26,478	37,631	48,517
Adjusted R-squared	0.536	0.524	0.512
Panel B: Further exclude M&As driven by financial distress of the target			
Treated × Post	4.66	4.96	4.69
	(1.42)	(1.62)	(1.46)
Observations	20,571	28,604	36,857
Adjusted R-squared	0.540	0.514	0.501
Panel C: CSA makes up ≤ 5% of the total businesses of the merging underwriters			
Treated × Post	8.46**	9.88***	10.26***
	(2.42)	(3.15)	(3.28)
Observations	7,807	11,245	14,702
Adjusted R-squared	0.555	0.542	0.539
Panel D: Affected and neighbouring CSAs make up ≤ 5% of the total businesses of the merging underwriters			
Treated × Post	7.12	7.38**	7.58*
	(1.64)	(2.05)	(1.94)
Observations	3,309	4,891	6,482
Adjusted R-squared	0.624	0.591	0.576
Panel E: Exclude cases with concurrent CB bank M&As ≥ 100			
Treated × Post	7.30***	8.53***	10.26***
	(3.64)	(4.28)	(4.15)
Observations	38,941	51,876	63,289
Adjusted R-squared	0.482	0.472	0.469
Panel F: Exclude cases with concurrent CB bank M&As ≥ 50			
Treated × Post	7.24***	8.12***	9.76***
	(3.62)	(4.10)	(4.17)
Observations	36,138	47,864	58,125
Adjusted R-squared	0.486	0.478	0.475
Issuer × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In panels A and B, I report the estimates from a double-differences specification where the M&As are not driven by reasons possibly related to local economic conditions according to the news articles. Panel A excludes all M&As driven by "acquiror's desire to gain local/regional dominance" and "acquiror's desire to expand geographically", and also M&As for which reported reasons are unavailable. Panel B additionally excludes M&As driven by "financial distress of the target". In panel C, I report the estimates from a double-differences specification where the treated CSAs account for a small percentage (less than 5%) of the underwriter's total businesses. In panel D, I further require that both the treated CSA and all its neighbouring CSAs make up less than 5% of the underwriter's total businesses. In panel E (F), I require that there is no concurrent commercial bank consolidation around the onset of local consolidation episodes that increases the degree of local commercial bank concentration by more than 100 (50). The time window spans from 4 years before to 4 (7/10) years after the onset of local consolidation episodes in column (1) ((2)/(3)). T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Placebo Tests for the Effects of Consolidation on Underwriting Spread

Panel A: Effects of cross-market consolidation

	Market Share >= 10%		Market Share >= 0%	
	(1)	(2)	(3)	(4)
	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)
Treated × Post	-3.01	-0.26	-0.22	1.19
	(-1.36)	(-0.13)	(-0.14)	(0.67)
Observations	33,997	54,052	118,497	113,959
Year FE	Yes	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year
If Similar Population	No	Yes	No	Yes
Adjusted R-squared	0.607	0.608	0.588	0.580

Note: In this table, I report the estimates from a double-differences specification where the treatment is a cross-market M&A that would not increase the *predicted* HHI of the CSA, using the underwriting spread as the outcome variable. In columns (1) and (3), I randomly select a CSA where no within-market consolidation takes place *and* an underwriter that engaged in within-market consolidation in another CSA has a market presence. Columns (2) and (4) also use CSAs affected by cross-market consolidation but additionally require the population size to be similar to CSAs treated with within-market consolidation. In columns (1) and (2), I require the underwriter involved in the cross-market consolidation to have a more than 10% local market share. In columns (3) and (4), I require the underwriter involved in the cross-market consolidation to have an above 0% local market share. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Panel B: Effects of commercial banks consolidation

	Predicted $\Delta_{CB\ HHI}$ >= 100		*Predicted* $\Delta_{CB\ HHI}$ >= 50		*Predicted* $\Delta_{CB\ HHI}$ >= 20	
	(1)	(2)	(3)	(4)	(5)	(6)
	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)
Treated × Post	1.45	-1.20	3.76	-0.46	3.33	-1.30
	(0.55)	(-0.82)	(1.41)	(-0.37)	(1.44)	(-1.36)
Observations	10,969	16,759	15,883	24,360	20,014	28,284
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CBSA & Year	CSA & Year	CBSA & Year	CSA & Year	CBSA & Year
Market Definition	CSA	CBSA	CSA	CBSA	CSA	CBSA
Adjusted R-squared	0.521	0.524	0.535	0.527	0.547	0.525

Note: In this table, I report the estimates from a double-differences specification where the treatment is within-market consolidation among commercial banks that would lead to an increase above a certain threshold in terms of the *CB HHI*, i.e., the HHI based on local deposit market shares of commercial banks. The threshold is 100 (50/20) in columns (1) and (2) ((3) and (4)/(5) and (6)). The market is defined as a CSA in columns (1), (3), and (5) and as a CBSA in columns (2), (4), and (6). The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels in columns (1), (3), and (5) and at the CBSA and calendar year levels in columns (2), (4), and (6). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Panel C: Effects of withdrawn M&As

	Predicted $\Delta_{HHI} >= 50$		*Predicted* $\Delta_{HHI} >= 20$		*Predicted* $\Delta_{HHI} >= 10$	
	(1)	(2)	(3)	(4)	(5)	(6)
	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)	Underwriting Spread (bps.)
Treated × Post	-5.80	-4.13	-9.85	-23.22**	6.02	-11.77
	(-0.49)	(-0.31)	(-1.71)	(-2.44)	(0.58)	(-0.94)
Observations	129	475	1,358	1,102	3,972	1,862
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CBSA & Year	CSA & Year	CBSA & Year	CSA & Year	CBSA & Year
Market Definition	CSA	CBSA	CSA	CBSA	CSA	CBSA
Adjusted R-squared	0.168	0.342	0.471	0.465	0.384	0.576

Note: In this table, I report the estimates from a double-differences specification where the treatment is withdrawn M&As among municipal bond underwriters that would have led to an increase in the *predicted* HHI above a certain threshold if they had been completed. I use withdrawn M&As that would hypothetically lead to an implied Δ_{HHI} greater than 50 (20/10) in columns (1) and (2) ((3) and (4)/(5) and (6)). The market is defined as a CSA in columns (1), (3), and (5) and as a CBSA in columns (2), (4), and (6). The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels in columns (1), (3), and (5) and at the CBSA and calendar year levels in columns (2), (4), and (6). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Effects of Consolidation on Offering Terms

	(1) Yield Spread over Treasury (bps.)	(2) Yield Spread over Treasury (bps.)	(3) Yield Spread over MMA (bps.)	(4) Reoffering Yield (bps.)	(5) Initial Under-pricing	(6) Initial Under-pricing	(7) N of Bids
Treated × Post	-2.72		-0.46	-4.69	0.09**		0.04
	(-1.14)		(-0.14)	(-0.78)	(2.61)		(0.43)
Treated × Post × Competitive Bidding		-5.37				-0.02	
		(-1.24)				(-0.30)	
Treated × Post × Negotiated Sales		-1.70				0.15***	
		(-0.84)				(3.37)	
Observations	143,905	143,905	83,886	157,522	33,248	33,248	22,112
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Adjusted R-squared	0.393	0.406	0.421	0.693	0.131	0.140	0.452

Note: In this table, I use local consolidation episodes with *predicted* $\Delta_{HHI} >= 100$. Columns (1) uses the tax-adjusted reoffering yield spread over treasury securities as the outcome variable. Column (2) uses the tax-adjusted reoffering yield spread over treasury securities as the outcome variable and examines effects separately under different methods of sales. Column (3) uses the reoffering yield spread over the Municipal Market Advisors AAA-rated curve ("MMA curve") as the outcome variable. Column (4) uses the reoffering yield as the outcome variable. Column (5) uses initial underpricing for each unit of $100 face value as the outcome variable. Column (6) uses initial underpricing as the outcome variable and examines effects separately under different methods of sales. Column (7) uses the number of bids in auctions for bond issuances sold via competitive bidding as the outcome variable (Garrett et al., 2022; Garrett, 2024). T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Effects of Consolidation on Use of Credit Rating, Bond Insurance, and Financial Advisor

	(1) Has Rating	(2) Has Rating	(3) Insured Ratio	(4) Insured Ratio	(5) Has Advisor	(6) Has Advisor
Treated × Post	-0.016		-0.014		-0.012	
	(-1.05)		(-1.00)		(-1.24)	
Treated × Post × Bank not in M&A		-0.014		-0.011		-0.011
		(-0.89)		(-0.72)		(-1.06)
Treated × Post × Bank is in M&A		-0.023		-0.024		-0.020
		(-1.46)		(-1.58)		(-1.45)
Observations	249,168	249,168	249,168	249,168	249,168	249,168
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Adjusted R-squared	0.401	0.401	0.419	0.419	0.625	0.625

Note: In this table, I use local consolidation episodes with *predicted* Δ_{HHI} >= 100 and a dummy variable indicating whether the bond issue has credit ratings, the insured ratio of the bond issue, or a dummy variable indicating whether the issuer is hiring a financial advisor as the outcome variable. Columns (1), (3), and (5) report the estimates from the double-differences specification of Equation (2). Columns (2), (4), and (6) report the findings from estimating Equation (3) when the sample is divided by whether the bond is underwritten by an underwriter involved in M&As. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9: Effects of Consolidation on Total Issuing Cost and "Modified True Interest Cost"

	Predicted Δ_{HHI} >= 100	Market Share >= 5%	*Predicted* $\Delta_{Top\ 5\ Share}$ >= 5%
	(1)	(2)	(3)
Panel A: Using total issuing cost			
	Total Issuing Cost (bps.)	Total Issuing Cost (bps.)	Total Issuing Cost (bps.)
Treated × Post	5.15**	3.40**	4.07*
	(2.48)	(2.31)	(1.93)
Observations	78,549	146,195	73,388
Adjusted R-squared	0.497	0.479	0.481
Panel B: Using total issuing cost based on a model with year FE			
	Total Issuing Cost, Year FE Model (bps.)	Total Issuing Cost, Year FE Model (bps.)	Total Issuing Cost, Year FE Model (bps.)
Treated × Post	5.57**	2.76	5.10*
	(2.41)	(1.24)	(2.03)
Observations	49,632	93,415	45,972
Adjusted R-squared	0.516	0.506	0.510
Panel C: Using "Modified TIC" spread			
	"Modified TIC" Spread (bps.)	"Modified TIC" Spread (bps.)	"Modified TIC" Spread (bps.)
Treated × Post	8.22*	10.41**	9.83**
	(1.70)	(2.09)	(2.31)
Observations	55,132	99,728	50,860
Adjusted R-squared	0.410	0.390	0.407
Panel D: Using "Modified TIC" spread based on a model with year FE			
	"Modified TIC" Spread, Year FE Model (bps.)	"Modified TIC" Spread, Year FE Model (bps.)	"Modified TIC" Spread, Year FE Model (bps.)
Treated × Post	7.81	12.55*	8.44*
	(1.63)	(2.05)	(1.74)
Observations	36,246	66,789	33,311
Adjusted R-squared	0.397	0.375	0.387
Issuer × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In panel A, I report the estimates from a double-differences specification using the total issuing cost as the outcome variable. Panel B uses the total issuing cost based on predicted fees with year fixed effects as the outcome variable. Panel C uses the "modified TIC" spread as the outcome variable. Panel D uses the "modified TIC" spread based on predicted fees with year fixed effects as the outcome variable. Column (1) uses local consolidation episodes with *predicted* Δ_{HHI} >= 100. Column (2) uses local consolidation episodes with local market shares of both the acquiror and the target >= 5%. Column (3) uses local consolidation episodes with *predicted* $\Delta_{Top\ 5\ Share}$ >= 5%. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 10: Effects of Consolidation on Local Government Finances

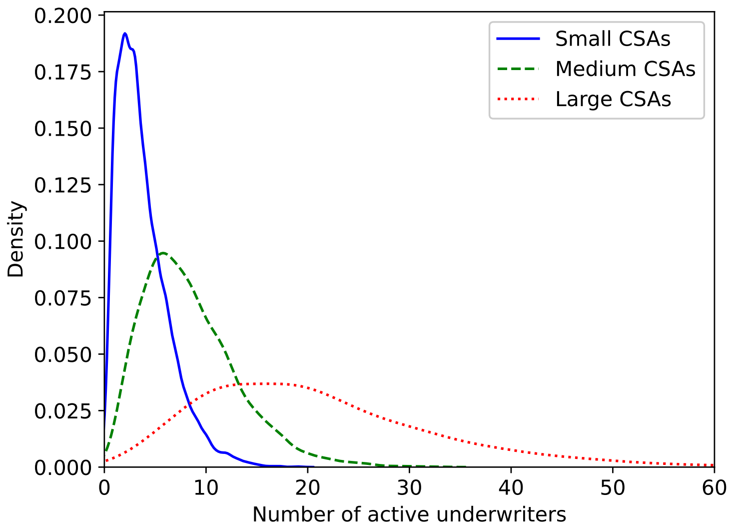
	(1) Interest Paid/ Exp. (in %)	(2) New Issuance/ Exp. (in %)	(3) Budget Surplus/ Exp. (in %)
Panel A: Overall			
Treated × Post	0.05	–0.66**	–1.09
	(0.91)	(–2.15)	(–1.47)
Observations	361,463	361,463	361,463
Adjusted R-squared	0.733	0.100	0.420
Panel B: School district			
Treated × Post	–0.02	–1.20***	–0.07
	(–0.53)	(–2.70)	(–0.15)
Observations	169,584	169,584	169,584
Adjusted R-squared	0.695	0.064	0.546
Panel C: Municipality/township/county			
Treated × Post	0.16*	–0.31	–1.55
	(1.84)	(–1.14)	(–1.48)
Observations	191,879	191,879	191,879
Adjusted R-squared	0.727	0.145	0.310
Government × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In this table, I report the estimates from a double-differences specification as described in Equation (4) and using various local government finances outcomes as the outcome variable. I pool school districts and other types of local governments together in panel A and separate them in panels B and C. All variables are expressed as ratios to the total expenditures of the local government. Table A14 in the Online Appendix confirms the robustness of the findings when using the dollar amounts per capita or per student. The definitions of the variables are provided in Table A2 in the Online Appendix. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Online Appendix

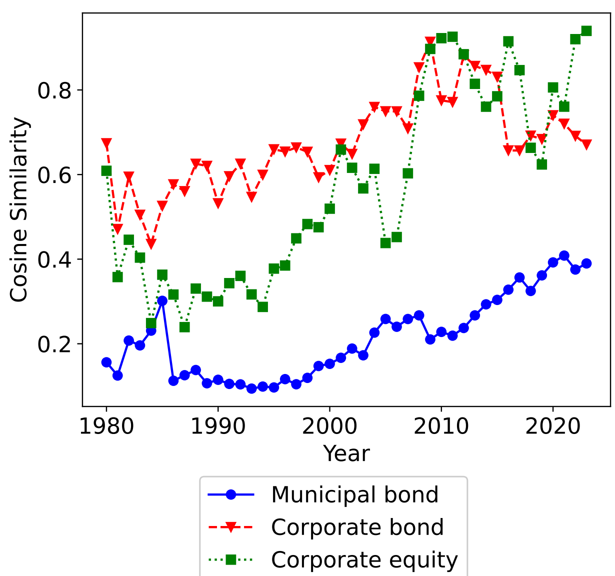
I. Figures in the Online Appendix

Figure A1: Distribution of the Number of Active Underwriters in a CSA



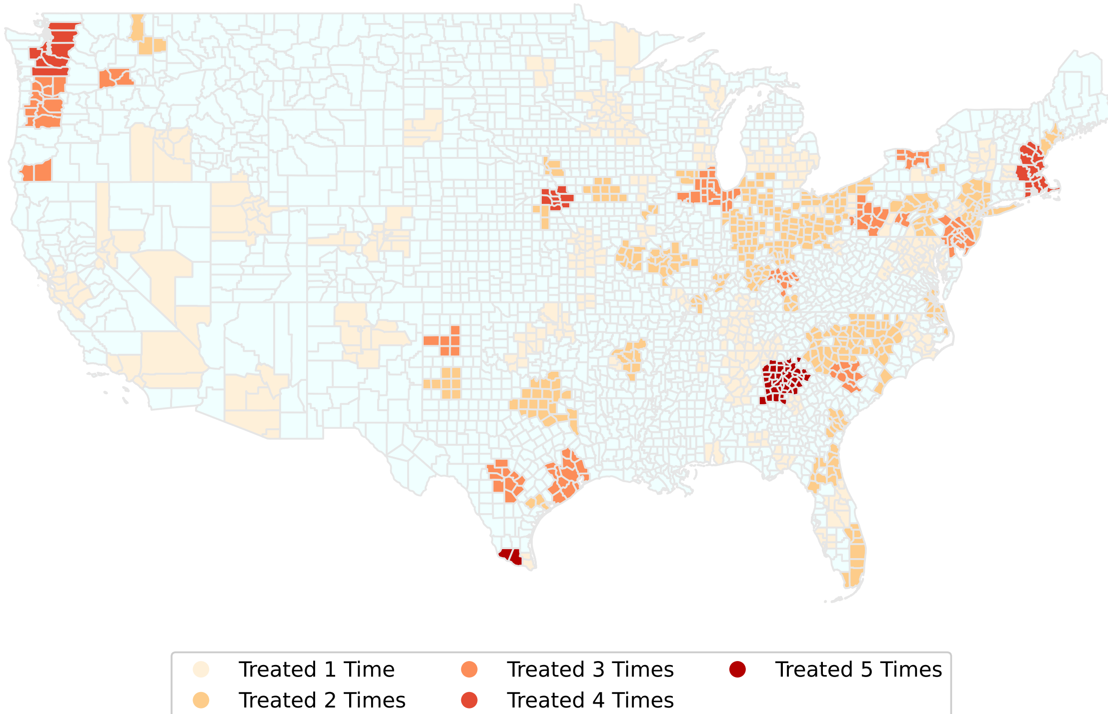
Note: This figure plots the kernel density of the distribution of the number of active underwriters in a CSA in a given year. I divide all CSAs into three equal-sized groups based on total issue sizes and plot the kernel density within each group.

Figure A2: Underwriter Similarity for State-Pairs by Each Security Type



Note: This figure plots the average cosine similarity of underwriters' market shares in each pair of states for municipal bonds, corporate bonds, and corporate equity, respectively, from 1980 to 2022.

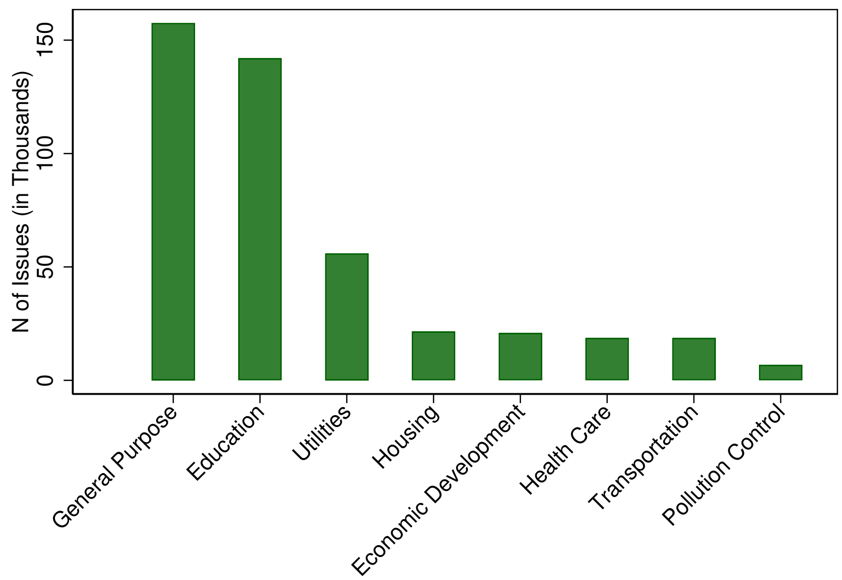
Figure A3: Frequency of Treatments by CSA



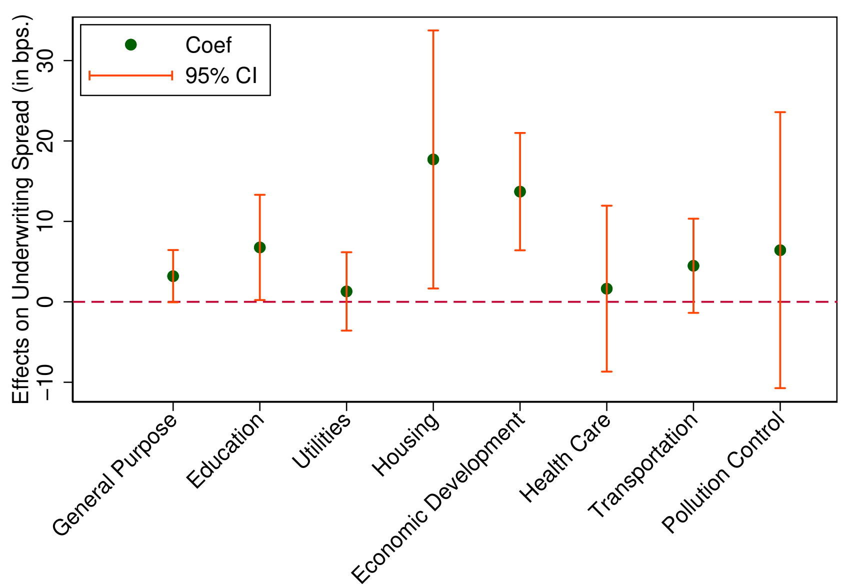
Note: This figure plots the frequency of treatments, i.e., experiencing a local consolidation episode, for each CSA in the U.S. during the sample period of 1970 to 2022.

Figure A4: Effects of Consolidation on Underwriting Spread by the Main Use of Proceeds

Panel A: Number of issues by the main use of proceeds

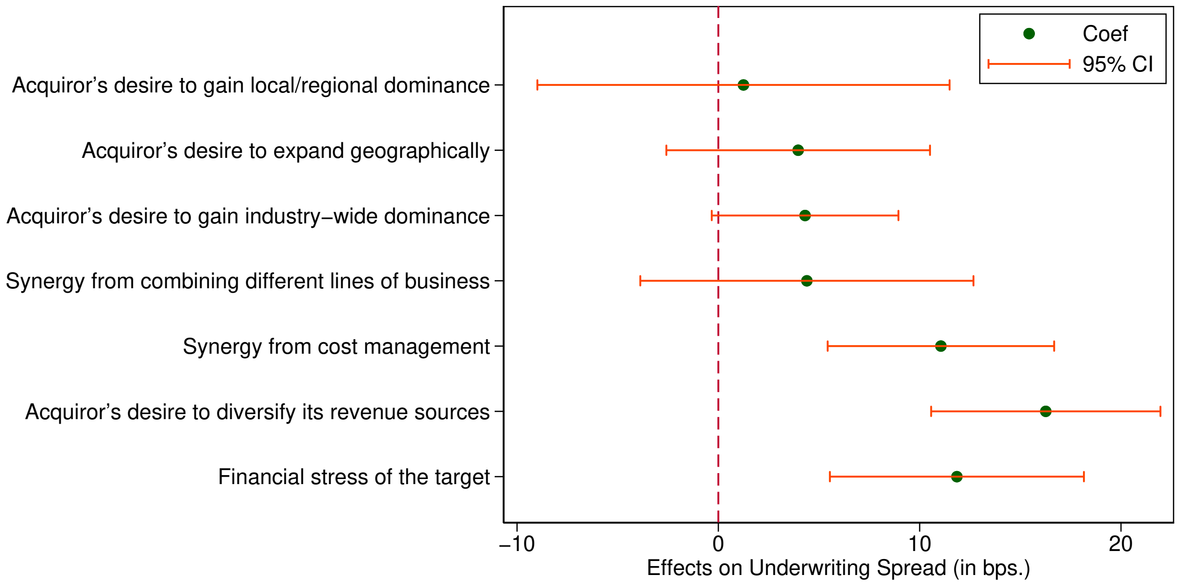


Panel B: Estimated effects by the main use of proceeds



Note: Panel A shows the number of bond issuances by the main use of proceeds during 1970-2022. Bond issues are classified into different groups according to the "Main Use of Proceeds" variable in GPF. Panel B shows the break down of the effects of consolidation on the underwriting spread by the main use of proceeds of the issue. I estimate a version of Equation (3) and plot each $\gamma_{2,g}$ from left to right, along with their 95% confidence intervals. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. Standard errors are double-clustered at the CSA and year levels.

Figure A5: Effects of Consolidation on Underwriting Spread by Driving Reasons According to News Reports

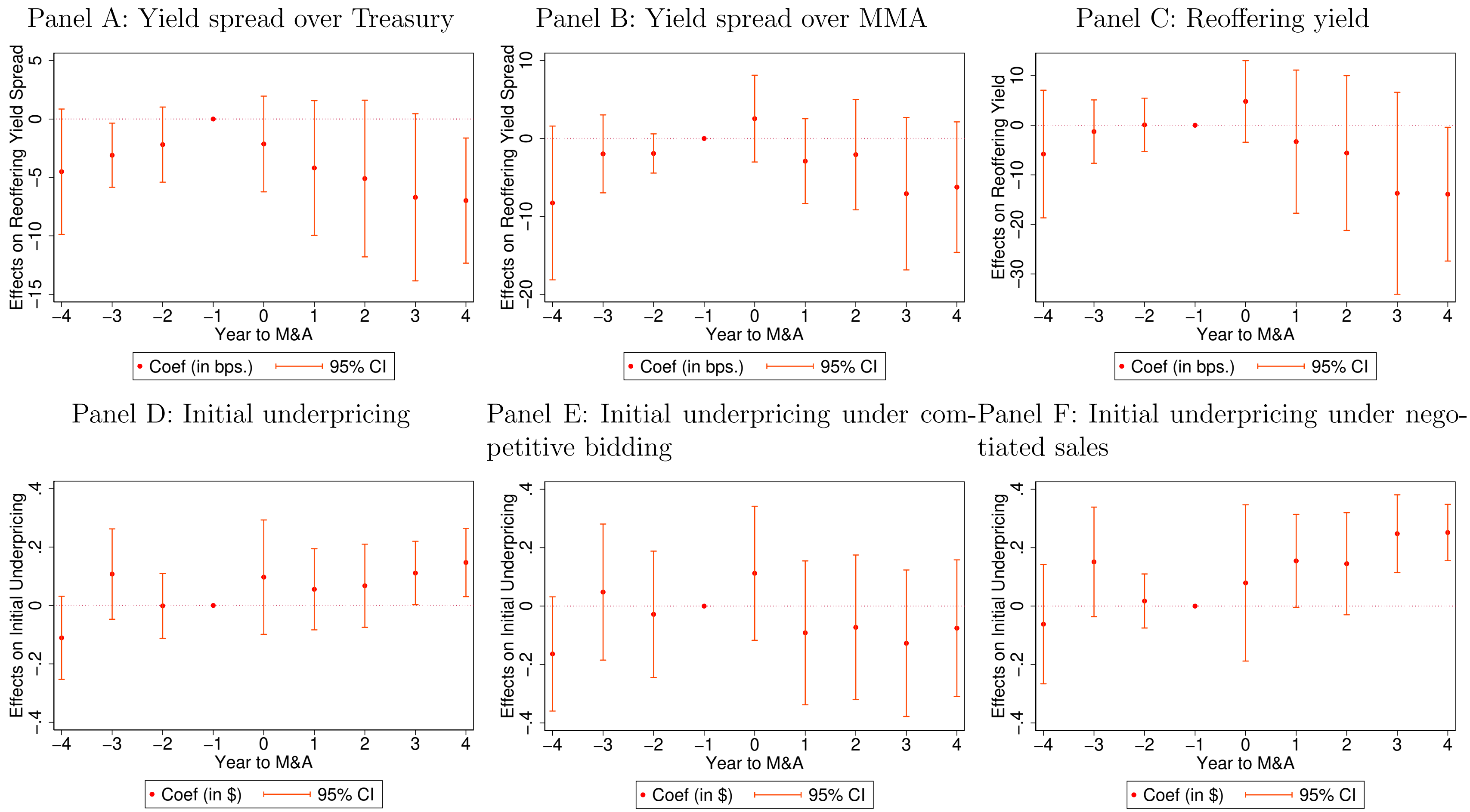


Note: This figure plots the effects of consolidation on underwriting spread by each category of driving reasons according to news reports. To obtain the first coefficient in the figure, I divide the local consolidation episodes based on whether the main M&A is driven by "acquiror's desire to gain local/regional dominance" according to the news articles. Within each local consolidation episode, if it involves multiple M&As, I define the main M&A as the one that involves the most market share. I run the following regression,

$$y_{d,c} = \beta_1 Post_{c,t} + \beta_2 TreatedLocalDominance_{a,c} \times Post_{c,t} + \beta_3 TreatedNotLocalDominance_{a,c} \times Post_{c,t} + \theta_{i,c} + \theta_t + e_{d,c}.$$

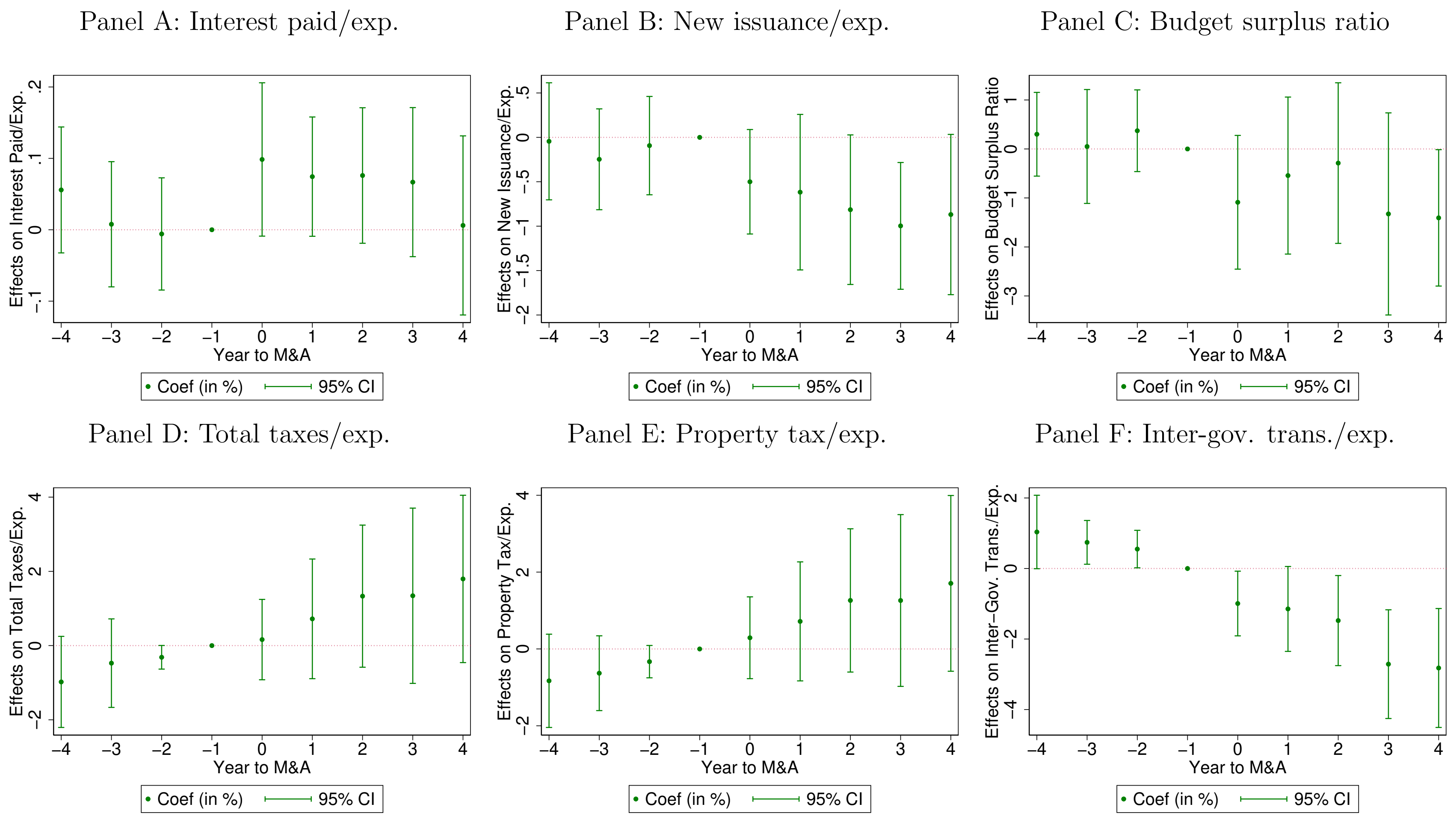
Here $TreatedLocalDominance$ equals one for issues in treated CSAs in a local consolidation episode where the main M&A is driven by "acquiror's desire to gain local/regional dominance" according to the news articles. $TreatedNotLocalDominance$ equals one for issues in treated CSAs in a local consolidation episode where the main M&A is driven by "acquiror's desire to gain local/regional dominance". I repeat the process for each category of driving reasons. I then plot each β_2, the estimated effects of M&As for which the driving reason falls into a certain category, along with their 95% confidence intervals. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. Standard errors are double-clustered at the CSA and year levels.

Figure A6: Effects of Consolidation on Offering Terms



Note: This figure plots the evolvement of the offering terms for issues in treated CSAs relative to issues in control CSAs. Panel A plots the evolvement of the reoffering yield spread relative to a comparable synthetic treasury security. Panel B uses the reoffering yield spread over the Municipal Market Advisors AAA-rated curve ("MMA curve") as the outcome variable. Panel C uses the reoffering yield as the outcome variable. Panel D uses initial underpricing for each unit of \$100 face value as the outcome variable. Panels E and F use initial underpricing as the outcome variable and plots the estimated effects under competitive bidding and negotiated sales separately. I plot the estimates for each γ_s along with their 95% confidence intervals. Standard errors are double-clustered at the CSA and year levels.

Figure A7: Effects of Consolidation on Local Government Finances

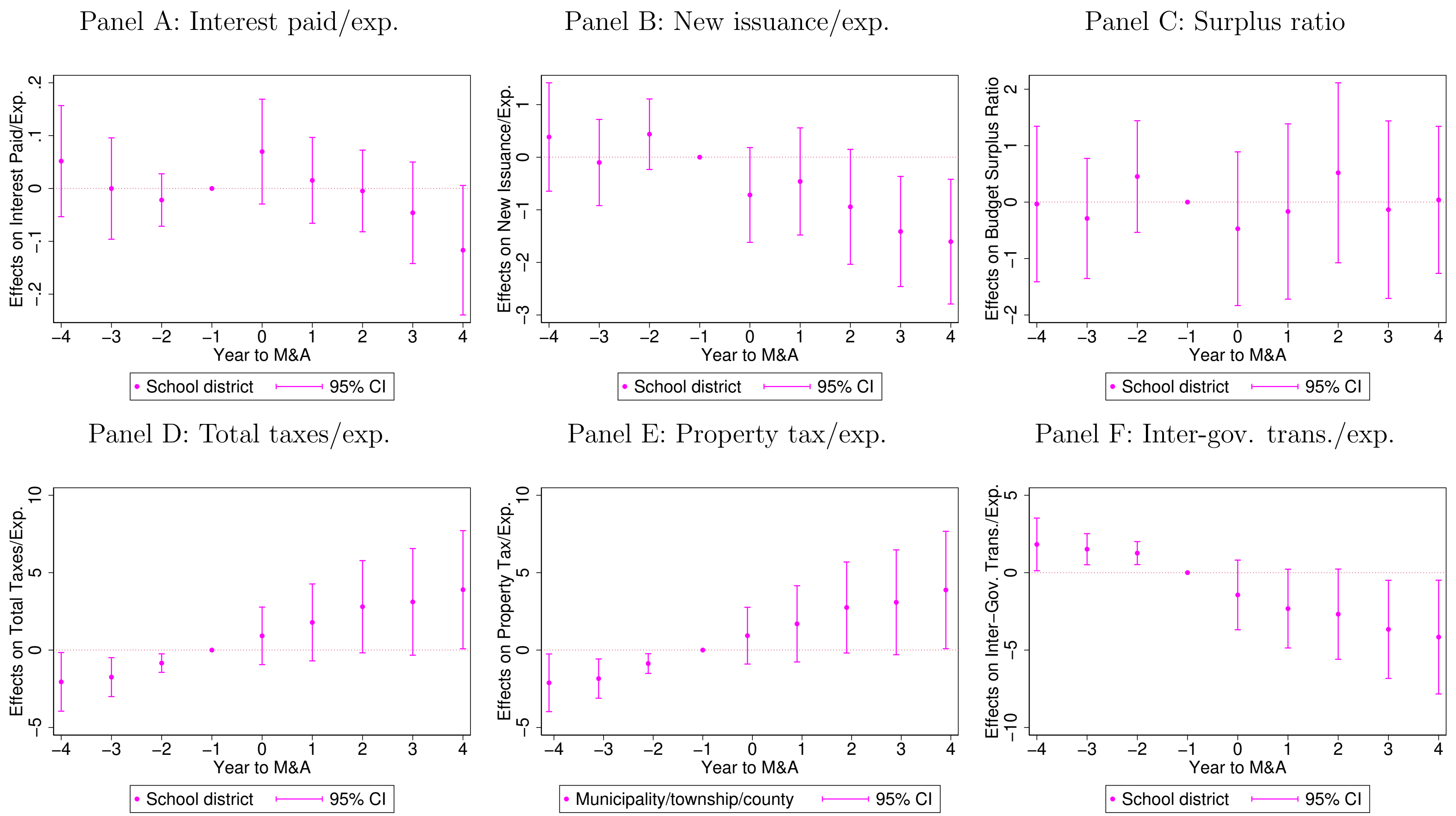


Note: This figure plots the evolvement of local government finances outcomes for local governments in treated CSAs relative to local governments in control CSAs. All variables are expressed as ratios to the total expenditures of the local government. I estimate the following regression

$$Y_{l,t,c} = \beta \times Post_{c,t} + Treated_{a,c} \times (\sum_{s=-4}^{-2} \gamma_s \times \mathbb{1}(\tau = s)_{c,t} + \sum_{s=0}^{4} \gamma_s \times \mathbb{1}(\tau = s)_{c,t}) + \theta_{l,c} + \theta_t + e_{l,t,c}. \quad (6)$$

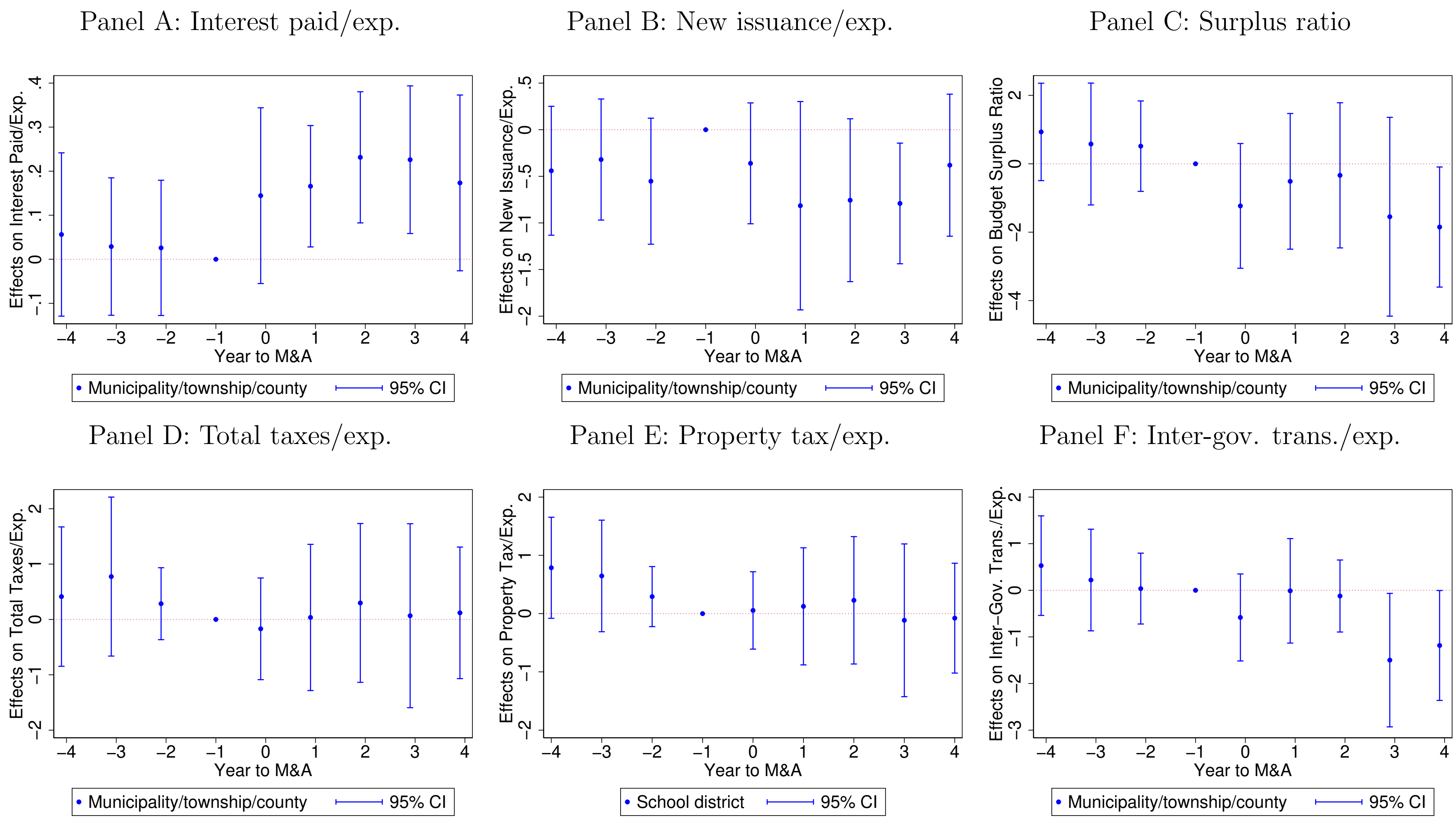
Here t represents the calendar year and τ represents the year relative to the treatment. $\mathbb{1}(\tau = s)_{c,t}$ is a dummy variable that turns on if the observation is $-s$ years before the treatment (for $s = -4, -3, -2$) or if the observation is s years after the treatment (for $s = 0, 1, 2, 3, 4$). Then I plot the estimates for each γ_s, along with their 95% confidence intervals. Standard errors are double-clustered at the CSA and year levels.

Figure A8: Effects of Consolidation on School District Finances



Note: This figure plots the evolvement of school district finances outcomes for school districts in treated CSAs relative to school districts in control CSAs. I estimate a version of Equation (6) for school districts and I plot the estimates for each γ_s, along with their 95% confidence intervals. Standard errors are double-clustered at the CSA and year levels.

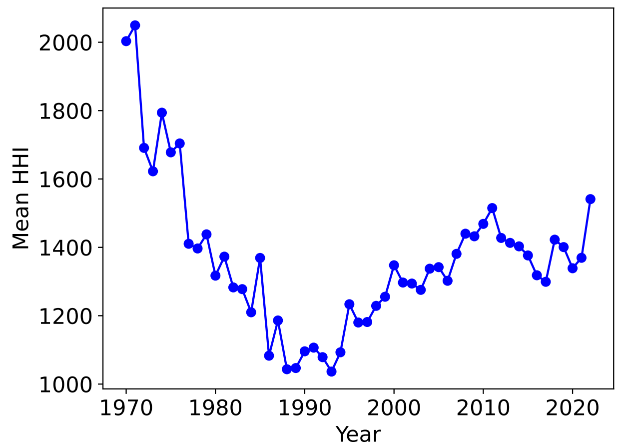
Figure A9: Effects of Consolidation on Municipality/Township/County Finances



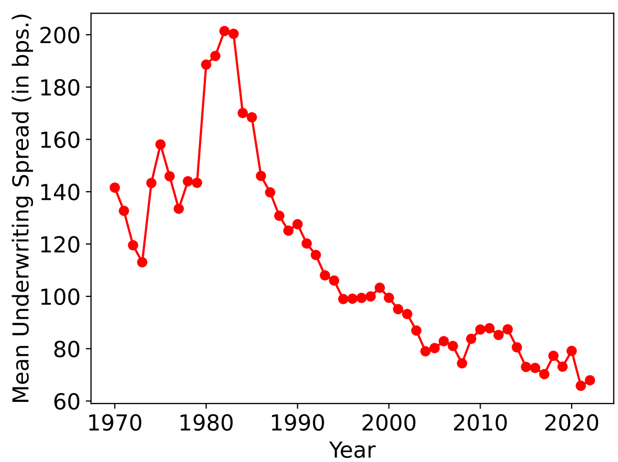
Note: This figure plots the evolvement of municipality/township/county finances outcomes for municipalities/townships/counties in treated CSAs relative to municipalities/townships/counties in control CSAs. I estimate a version of Equation (6) for municipalities/townships/counties and I plot the estimates for each γ_s, along with their 95% confidence intervals. Standard errors are double-clustered at the CSA and year levels.

Figure A10: Time Trends of HHI and Underwriting Spread

Panel A: Trend of HHI, 1970-2022

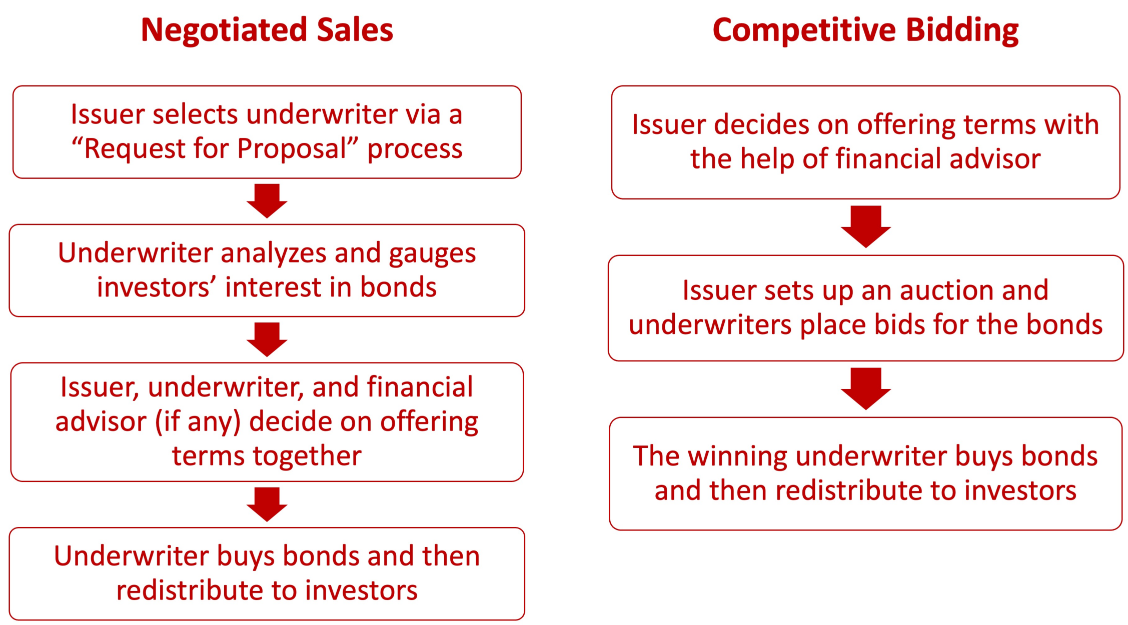


Panel B: Trend of underwriting spread, 1970-2022



Note: Panel A shows the average CSA-level HHI in each year from 1970 to 2022. Panel B shows the average underwriting spread in each year from 1970 to 2022.

Figure A11: Illustration of Negotiated Sales and Competitive Bidding



Note: This figure illustrates the steps in the process of negotiated sales and of comptitive bidding.

II. Tables in the Online Appendix

Table A1: Literature on the Determinants of Underwriting Spread and Reoffering Yield

		Outcome Variable	Effects
Adelino et al. (2017)	Upward adjustment of ratings due to the recalibration of bond rating scale by Moody's	Reoffering yield	-14 bps.
Butler et al. (2009)	Whether corruption (proxied for using federal convictions per capita) is in the top quartile	Reoffering yield	7 to 10 bps.
	Being in the pay-for-play era and for negotiated sales	Underwriting spread	12 to 14 bps.
Butler and Yi (2022)	A one-standard-deviation increase in the population age	Reoffering yield	23 bps.
Cestau et al. (2020)	The use of negotiated sales	Reoffering yield	15 to 17 bps.
Cheng et al. (2023)	The passage of state medical marijuana laws	Reoffering yield	7 to 11 bps.
Cornaggia et al. (2017)	Upward adjustment of ratings due to the recalibration of bond rating scale by Moody's	Reoffering yield	-33 to -19 bps.
Cornaggia et al. (2021)	Counties highly affected relative to less affected by opioid crisis	Reoffering yield	17 bps.
Cornaggia and Iliev (2024)	An interquartile range increase in wind speed among states that produce or consume more than 20% of their energy from wind	Trading yield	-7 bps.
Dougal et al. (2019)	HBCU relative to non-HBCU	Trading yield	5 to 11 bps.
		Underwriting spread	11 bps.
Farrell et al. (2023)	A one-standard-deviation increase in official statement complexity	Reoffering yield	5 bps.
Gao et al. (2019a)	The existence of state assistance programs for municipalities in distress	Trading yield	-5 bps.

Table A1: Literature on the Determinants of Underwriting Spread and Reoffering Yield (continued)

		Outcome Variable	Effects
Gao et al. (2020)	The closure of local newspapers	Reoffering yield	5 to 11 bps.
		Trading yield	6 to 10 bps.
Gao et al. (2019b)	Political uncertainty around gubernatorial elections	Reoffering yield	7 bps.
Garrett et al. (2022)	A one p.p. increase in the personal income tax subsidy	Reoffering yield	-7 bps.
Garrett and Ivanov (2024)	A one-standard-deviation increase in reliance on banks targeted by Anti-ESG policies in Texas	Reoffering yield	10 bps.
Garrett (2024)	The ban of dual advisor-underwriters	Reoffering yield	-11 bps.
Goldsmith-Pinkham et al. (2023)	A one-standard-deviation (approximately 10 p.p.) increase in the fraction of properties exposed to six feet of sea-level rise	Trading yield	5 bps.
Gustafson et al. (2023)	A one-standard-deviation increase in COVID migration shock	Reoffering yield	-12 to -6 bps.
Han (2021)	A one-standard-deviation increase in public-sector union membership	Reoffering yield	3 bps.
	The passage of Right to Work	Reoffering yield	4 bps.
	Closely won union elections	Trading yield	50 bps.
Li and Zhu (2019)	A one-standard-deviation increase in drug (opioid) mortality rate	Reoffering yield	6 bps.
Lu and Ye (2023)	The passage of state "trigger" bans on abortion	Trading yield	7 to 11 bps.
		Reoffering yield	20 to 23 bps.
Painter (2020)	A one-standard-deviation increase in climate change risk	Reoffering yield	7 to 16 bps.
		Underwriting spread	0 to 10 bps.

Note: I provide an incomplete list of prior research on determinants of underwriting spread, reoffering yield, and trading yield of municipal bonds, along with the magnitudes of the effects.

Table A2: Definition of Variables

Panel A: SDC Platinum Global Public Finance	
Underwriting Spread	The difference between the reoffering price to initial investors and the proceeds that the government receives, expressed as a fraction of the principal amount. It constitutes a major source of revenue for the investment banks.
Reoffering Yield	The yield of the bond issue calculated based on the reoffering price that initial investors pay to underwriters. I outline the details in Section IV.I in the Online Appendix.
Reoffering Yield Spread over Treasury	The spread between the yield of a municipal bond issue and its comparable U.S. treasury securities. I outline the details in Section IV.I in the Online Appendix.
Reoffering Yield Spread over MMA	The spread between the yield of a municipal bond issue and the Municipal Market Advisors AAA-rated curve. I outline the details in Section IV.I in the Online Appendix.
Total Issuing Cost	The sum of underwriting spread and *predicted* credit rating fees, *predicted* financial advisor fees, and *predicted* bond insurance fees, if any.
Total Issuing Cost, Year FE	A version of total issuing cost. When predicting the credit rating fees, financial advisor fees, and bond insurance fees, I include calendar year fixed effects.
Initial Underpricing	The average day-15-to-day-30 trading price minus the average initial trading price. I outline the details in Section IV.I in the Online Appendix.
"Modified TIC"	The "modified true interest cost", which is the annualized discount rate that sets the present value of all future coupon payments and the principal amount equal to the price that underwriters pay to issuers minus *predicted* credit rating fees, financial advisor fees, and bond insurance fees, if any. I outline the details in Section IV.I in the Online Appendix.
"Modified TIC, Year FE"	A version of "modified true interest cost". When predicting the credit rating fees, financial advisor fees, and bond insurance fees, I include calendar year fixed effects.
Amount	The principal amount of the bond issue. It is inflation-adjusted in 2022 dollars.
N of Bids	The number of bids in an auction for bond issuances sold via competitive bidding, which is obtained from The Bond Buyer and available after 2008 (Garrett et al., 2022; Garrett, 2024).

Table A2: Definition of Variables (continued)

Maturity	The maturity length of the bond issue. If a bond issuance contains multiple bonds, the maturity length of the bond issue is the weighted average maturity of the individual bonds, weighted by the principal amounts.
Method of Sales	Whether the underwriting process is carried out through competitive bidding, negotiated sales, or private placement.
Tax Status	Whether the interest payments received by investors are exempt from federal taxation, taxable, or subject to the Alternative Minimum Tax.
Source of Repayment	Whether the source of funding for repayment comes from the overall revenue of a whole government (i.e., a General Obligation bond) or from the revenue of a specific project (i.e., a Revenue bond).
Has Credit Rating	Whether a bond issuance has credit rating.
Insured Ratio	The fraction of the bond issue for which the repayment is guaranteed by an insurance company. Most of the time, a bond issuance is either fully insured, i.e., insured ratio = 1, or not insured, i.e., insured ratio = 0.
Has Advisor	Whether the issuer formally hires an advisor for this bond issue.
Has Dual Advisor	Whether the issuer formally hires an advisor that is also an underwriter for this bond issue (Garrett, 2024).
If Callable	Whether the issuer can retire the bond issue prior to the maturity date by paying off the principal early.
If Commercial Bank Eligible	Whether commercial banks are allowed to underwriter the bond issue by law.
HHI	The HHI of a CSA × year based on the market shares of municipal bond underwriters. The market share is based on the number of deals of each underwriter. For a bond issuance underwritten by a group of, for example, N underwriters, I add $1/N$ to the number of deals of each underwriter in the group.
Panel B: Local M&A Episodes	
Acquiror Market Share	The market share of the acquiring underwriter in the consolidation-affected CSA in the three-year period before the onset of the local consolidation episode. If a local consolidation episode consists of multiple within-market M&As, I use the market share based on the largest M&A.
Target Market Share	The market share of the target underwriter in the consolidation-affected CSA in the three-year period before the onset of the local consolidation episode. If a local consolidation episode consists of multiple within-market M&As, I use the market share based on the largest M&A.

Table A2: Definition of Variables (continued)

Predicted Δ_{HHI}	The *predicted* increase in HHI due to the M&As. Based on bond issuances in the three-year period before the onset of the local consolidation episode, I calculate the would-be HHI if the acquiror and the target in the M&As become a single firm. I then obtain the difference between this *predicted* HHI and the actual HHI of this three-year period.
Panel C: California and Texas State Agencies	
Credit Rating Fee	The cost of obtaining credit ratings expressed as a fraction of the principal amount, conditional on using this service.
Insurance Fee	The cost of purchasing bond insurance expressed as a fraction of the principal amount, conditional on using this service.
Financial Advisor Fee	The cost of formally hiring a financial advisor expressed as a fraction of the principal amount, conditional on using this service.
Panel D: Local Government Finances	
Revenue Per Student	Total revenues (in $) scaled by the number of students enrolled in a school district. For years prior to 2013, total revenues are obtained from the field "Total Revenue" in "Data Files on Historical Finances of Individual Governments: Fiscal Years 1967 and 1970 - 2012". For the year 2013 and onwards, using the annually released "Annual Survey of State and Local Government Finances" and following the guidance in "Government Finance and Employment Classification Manual" (U.S. Census Bureau, 2006), total revenues is calculated as the aggregation of all items starting with "A" (various charges), "B" (inter-governmental transfer from the federal government to the local government), "C" (inter-governmental transfer from the state government to the local government), "D" (inter-governmental transfer from other local governments), "T" (various taxes flowing to local governments), "U" (miscellaneous revenues), along with "X01", "X02", "X05", "X08" (various contributions to employee retirement fund), "Y01", "Y02", "Y04" (various contributions to unemployment benefits), "Y11", "Y12" (various contributions to workers' compensation), "Y51", and "Y52" (various contributions to the insurance trust system). The amount is then inflation-adjusted into 2022 dollars.

Table A2: Definition of Variables (continued)

Expenditure Per Student	Total expenditures (in $) scaled by the number of students enrolled in a school district. For years prior to 2013, total expenditures are obtained from the field "Total Expenditure" in "Data Files on Historical Finances of Individual Governments: Fiscal Years 1967 and 1970 - 2012". For the year 2013 and onwards, total expenditures is calculated as the aggregation of all items starting with "E" (various expenditures for the current operation of public facilities), "F" (various expenditures for the construction of public facilities), "G" (various expenditures for other capital overlay of public facilities), "I" (interest on debt), "J" (subsidies), "L", "M", "Q", "S" (various inter-governmental transfers out from the local government), along with "X11", "X12" (various withdrawals of employee retirement fund), "Y05", "Y06" (various withdrawals of unemployment benefits), "Y14" (workers' benefit payments), "Y53" (benefit payments from the insurance trust system), and "Z00" (total salaries and wages). The amount is then inflation-adjusted into 2022 dollars.
Revenue Per Capita	Total revenues (in $) scaled by the population in a municipality, township, or county. The amount is then inflation-adjusted into 2022 dollars.
Expenditure Per Capita	Total expenditures (in $) scaled by the population in a municipality, township, or county. The amount is then inflation-adjusted into 2022 dollars.
Interest Paid/Exp.	Total interest paid on debt scaled by total expenditure.
New Issuance/Exp.	Total new issuance of long-term debt scaled by total expenditure.
Budget Surplus Ratio	$\frac{\text{Total Revenue}}{\text{Total Expenditure}} - 1$.
Total Taxes/Exp.	Total taxes scaled by total expenditure.
Property Tax/Exp.	Property tax scaled by total expenditure.
Inter-Gov. Trans.	Total inter-governmental transfers to the local government scaled by total expenditure.

Table A3: M&As in the Sample

Acquiror	Target	Year
Rauscher Pierce Refsnes	First of Texas	1974
Blyth Eastman Dillon	Moore Leonard & Lynch	1978
Merrill Lynch	White Weld	1978
Paine Webber	Blyth Eastman Dillon	1979
E F Hutton	Carleton D Beh	1981
Shearson/American Express	Boston Safe Deposit & Trust	1981
Shearson/American Express	Loeb Rhoades Hornblower	1981
Shearson/American Express	Shearson Hayden Stone	1981
Shearson/American Express	American Express	1981
Paine Webber	Rotan Mosle	1983
Paine Webber	First Mid America	1983
Shearson/American Express	Chiles Heider	1983
BMO Bank	Harris Bank	1984
First Chicago Bank	American National Bank & Trust	1984
Lehman Brothers	Shearson/American Express	1984
Merrill Lynch	AG Becker	1984
Kemper Securities	Boettcher	1985
Lehman Brothers	E F Hutton	1987
Bank of New York Mellon	Irving Trust	1988
Fleet Bank	Adams McEntee	1988
Prudential Securities	Thomson Mckinnon Sec	1989
Banc One	MBank Capital Mkts Dallas NA	1990
Bank South	Lex Jolley	1990
Kemper Securities	Underwood Neuhaus	1990
Kemper Securities	Lovett Mitchell Webb	1990
Raymond James	Arch W Roberts	1990
Fifth Third Bank	The Ohio	1991
Fleet Bank	Bank of New England	1991
McDonald	Gradison	1991
Banc One	Team Bank	1992
Chemical Bank	Manufacturers Hanover Trust	1992
Piper Jaffray	Zahner	1992
PNC Bank	First Eastern	1993
Smith Barney	Shearson/American Express	1993
Dain Bosworth	Clayton Brown & Associates	1994
Mellon Bank	Dreyfus	1994
Mellon Bank	Scheetz Smith	1994
NatWest Bank	Citizens First National Bank	1994
CoreStates Bank	Meridian Bank	1995
First Chicago Bank	National Bank of Detroit	1995
Fleet Bank	Shawmut Bank	1995
National City Bank	Raffenspergerhughes & Coinc	1995
NationsBank	Bank South	1995
PNC Bank	Midlantic Bank	1995
Southwest Securities	Barre	1995
Chase Bank	Chemical Bank	1996
Firstsouthwest	Masterson Moreland Sauer	1996
Fleet Bank	NatWest Bank	1996
Siebert Cisneros Shank	Grigsby Brandford	1996
Southwest Securities	Masterson Moreland Sauer	1996
Summit Bank	United Jersey Bank	1996
US Bank	West One Bank Oregon	1996
Banc One	First National Bank of Commerce	1997
Banc One	First Commerce Capital	1997
First Union National Bank	Signet Bank Richmond	1997
First Union National Bank	Wheat First Butcher Singer	1997
M&T Securities	OnBank	1997
Miller Johnson & Kuehn	Juran & Moody	1997
Morgan Stanley	Dean Witter Reynolds	1997
National City Bank	First of America Bank	1997
Ross Sinclaire & Associates	Johnston Brown Barnett & Knight	1997
Banc One	First National Bank of Lafayette	1998
Banc One	First Chicago Bank	1998
Bank of America	NationsBank	1998
BB&T	Scott & Stringfellow	1998
BOK Financial	Leo Oppenheim	1998
Citigroup	Salomon Brothers	1998
Citigroup	Smith Barney	1998
Commerce Bank New Jersey	A H Williams	1998
First Union National Bank	CoreStates Bank	1998
Key Bank	McDonald	1998
Tucker Anthony Sutro	Hopper Soliday	1998
UBS Financial Services	Dillon Read	1998
US Bank	Northwest Bank	1998
US Bank	Piper Jaffray	1998
Wells Fargo	Norwest Investment Services	1998

Table A3: M&As in the Sample (Continued)

Acquiror	Target	Year
Bank of America	Seafirst Bank	1999
First Union National Bank	Kemper Securities	1999
Fleet Bank	BankBoston	1999
US Bank	John Nuveen	1999
Wachovia Bank	Interstate/Johnson Lane	1999
JP Morgan	Chase Bank	2000
RBC Bank	Rauscher Pierce Refsnes	2000
RBC Bank	Dain Bosworth	2000
SunTrust Bank	Equitable Securities	2000
SunTrust Bank	Crestar Bank	2000
UBS Financial Services	J C Bradford	2000
UBS Financial Services	Paine Webber	2000
US Bank	Firstar Bank	2000
Wells Fargo	First Security	2000
Wells Fargo	National Bank of Commerce	2000
Citigroup	European American Bank	2001
Fleet Bank	Summit Bank	2001
Regions Bank	Morgan Keegan	2001
SunTrust Bank	The Robinson Humphrey	2001
Wachovia Bank	Central Fidelity Bank	2001
Wachovia Bank	First Union National Bank	2001
RBC Bank	Tucker Anthony Sutro	2002
JP Morgan	RRZ Public Markets	2003
RBC Bank	William R Hough	2003
Wachovia Bank	Prudential Securities	2003
Bank of America	Fleet Bank	2004
Citizens Bank	TGH Securities	2004
JP Morgan	Banc One	2004
SunTrust Bank	NBC Capital Markets Group	2004
TD Bank	Cape Cod Bank	2004
Wachovia Bank	SouthTrust Securities	2004
Janney Montgomery Scott	Parker Hunter	2005
Merrill Lynch	Advest	2005
Ferris Baker Watts	Arthurs Lestrange	2006
Regions Bank	Amsouth Bank	2006
Morgan Keegan	Shattuck Hammond Partners	2007

Acquiror	Target	Year
RBC Bank	Seasongood & Mayer	2007
RBC Bank	J B Hanauer	2007
TD Bank	Commerce Bank New Jersey	2007
UBS Financial Services	McDonald	2007
Wachovia Bank	A G Edwards & Sons	2007
Bank of America	Merrill Lynch	2008
Capital One Financial	North Fork Bank	2008
Huntington National Bank	Sky Bank	2008
JP Morgan	Bear Stearns	2008
Park National Bank	First Knox National Bank	2008
PNC Bank	Red Capital Markets	2008
PNC Bank	National City Bank	2008
RBC Bank	Ferris Baker Watts	2008
Southwest Securities	M L Stern Investments Sec	2008
Stifel Nicolaus	Butler Wick	2008
Wells Fargo	Wachovia Bank	2008
D A Davidson	Ruan Securities	2009
US Bank	Park National Bank	2009
BMO Bank	M & I Bank	2010
Stifel Nicolaus	Stone & Youngberg	2011
Raymond James	Morgan Keegan	2012
Piper Jaffray	Seattle Northwest Securities	2013
Sterne Agee & Leach	Merchant Capital	2014
Hilltop Securities	Southwest Securities	2015
Piper Jaffray	BMO Bank	2015
D A Davidson	Smith Hayes Financial Services	2016
Huntington National Bank	First Merit Bank	2016
Stifel Nicolaus	City Securities	2016
StoneX Group	Sterne Agee & Leach	2017
NBH Bank	People's National Bank	2018
Robert W Baird	JJB Hilliard WL Lyons	2019
Stifel Nicolaus	George K Baum	2019
Eastern Bank	Century Bank	2021
PNC Bank	BBVA Compass	2021
M&T Securities	People's United Bank	2022
Commerce Bank of Kansas City	LJ Hart	2023

Note: This table lists the M&As among municipal bond underwriters that are used in the main results of Section 3.1.1. Due to copyright restrictions, M&As obtained from SDC Platinum or S&P are omitted. Only M&As obtained via hand-collection from public records, i.e., Wikipedia, national and local newspapers, firm websites, corporate filings, and other public information sources, are listed.

Table A4: Reasons Behind M&A Deals According to News Articles

Reason for M&A	Count
Acquiror's desire to gain local/regional dominance	24
Acquiror's desire to expand geographically	19
Acquiror's desire to gain industry-wide dominance	15
Synergy from combining different lines of business	14
Synergy from cost management	12
Acquiror's desire to diversify its revenue sources	12
Financial distress of the target (exposure to subprime mortgage)	5
Financial distress of the target (inadequate capital)	1
Financial distress of the target (high inventory)	1
Financial distress of the target (unsuccessful prior M&As)	1
Financial distress of the target (the sharp volatility in prices of fixed-income securities and the slump in trading volume of stocks)	1
Financial distress of the target (bad loans)	1
Financial distress of the target (vulnerability to the rate environment)	1
Financial distress of the target (general reasons)	1
Financial distress of the target (pressure to repay TARP funds)	1
Acquiror or target's desire to fend off a hostile takeover	1

Note: This table summarizes the rationales for the M&A deals mentioned in the news articles for the M&As among municipal bond underwriters that are used in the main findings of Section 3.1.1.

Table A5: Examples of Rationales for M&A Deals According to News Articles

Acquiror	Target	Source	Reason	Summary
PNC Bank	Midlantic Bank	The Morning Call	"The move, along with PNC Bank's pending acquisition of 84 branches of Chemical Bank New Jersey, will strengthen PNC Bank's position in the New Jersey and Philadelphia markets, placing it second in those areas."	Acquiror's desire to gain local/regional dominance
RBC Bank	Dain Bosworth	The Wall Street Journal	"The acquisition, which is subject to approval by regulators and Dain Rauscher shareholders, would give Royal Bank the toehold it has long sought in the U.S. wealth-management market."	Acquiror's desire to expand geographically
JP Morgan	Banc One	The New York Times	"The merger would create a financial behemoth and a true rival to the world's largest banking company, Citigroup , with $1.1 trillion in assets and 2,300 branches in 17 states."	Acquiror's desire to gain industry-wide dominance
Morgan Stanley	Dean Witter Reynolds	The New York Times	"In recent years, as the securities markets have changed, however, both firms started to covet what the other had. Dean Witter's 9,300 brokers needed more products to sell to the firm's Main Street customers, specifically the initial public offering stocks and municipal bonds that Morgan Stanley frequently underwrites. Morgan Stanley, meanwhile, wanted to broaden its customer base beyond its corporate clients and large institutions to the individual investors who have been flocking to the market."	Synergy from combining different lines of business
Stifel Nicolaus	City Securities	Indianapolis Business Journal	" 'Post Dodd-Frank, one of the effects that it had on the entire industry was to lay a lot of additional regulatory costs on everybody—probably disproportionately on smaller firms,' Bosway (City Securities CEO Mike Bosway) said. 'So that was clearly a factor in considering this more so than I had in the past. The need for scale today, because of that, is greater than it ever had been.' "	Synergy from cost management

Note: This table gives some examples on the top rationales for the M&A deals among municipal bond underwriters, as mentioned in the news articles.

Table A6: Top Underwriters in California and Massachusetts

Panel A: Top ten municipal bond underwriters

Underwriter in CA	Market Share in CA	Underwriter in MA	Market Share in MA
Stifel Nicolaus	14.9%	Eastern Bank	15.4%
Piper Sandler	11.8%	Century Bank	7.2%
Citigroup	7.1%	TD Bank	7.1%
RBC Bank	6.6%	Robert W Baird	5.9%
Morgan Stanley	5.6%	Jefferies	5.1%
Raymond James	5.4%	JP Morgan	4.6%
Stone & Youngberg	5.3%	Morgan Stanley	4.4%
Bank of America	4.8%	Bank of America	4.2%
De La Rosa	3.6%	Fidelity Capital Markets	3.9%
JP Morgan	3.4%	Janney Montgomery Scott	3.6%

Panel B: Top ten corporate bond underwriters

Underwriter in CA	Market Share in CA	Underwriter in MA	Market Share in MA
Bank of America Merrill Lynch	6.8%	JP Morgan	8.1%
JP Morgan	6.7%	Bank of America Merrill Lynch	6.3%
Morgan Stanley	4.8%	Barclays	4.5%
Citigroup	4.6%	Morgan Stanley	4.3%
Goldman Sachs	4.4%	Goldman Sachs	3.5%
Barclays	3.9%	Citigroup	3.1%
Deutsche Bank	3.2%	RBC Bank	2.3%
Wells Fargo Bank	2.8%	US Bank	1.7%
RBC Bank	2.4%	Deutsche Bank	1.7%
US Bank	2.2%	Wells Fargo Bank	1.6%

Panel C: Top ten corporate equity underwriters

Underwriter in CA	Market Share in CA	Underwriter in MA	Market Share in MA
Cowen	2.7%	JP Morgan	3.8%
JP Morgan	2.6%	Cowen	3.8%
Morgan Stanley	2.0%	Jefferies	3.1%
Jefferies	2.0%	HC Wainwright	2.9%
Roth Capital Partners	2.0%	Goldman Sachs	2.8%
Goldman Sachs	1.7%	Morgan Stanley	2.8%
HC Wainwright	1.7%	Canaccord Genuity	2.6%
Citigroup	1.7%	Barclays	2.0%
William Blair	1.5%	Oppenheimer	1.9%
Stifel Nicolaus	1.5%	Citigroup	1.8%

Note: This table lists the top ten underwriters with the highest market shares during 2010-2020 in the states of California and Massachusetts. Panel A examines municipal bond underwriters. Panel B examines corporate bond underwriters. Panel C examines corporate equity underwriters.

Table A7: State-Pair Cosine Similarities of Underwriters by Security Type

	(1) Cosine Similarity	(2) Cosine Similarity
Corporate Bond Over Municipal Bond	0.42***	
	(109.32)	
Corporate Equity Over Municipal Bond	0.32***	
	(84.59)	
Geographic Distance, in 1,000 Miles		-0.03***
		(-4.82)
Observations	97,242	32,414
State-Pair FE	Yes	No
Year FE	Yes	Yes
Clustering	State-Pair	State-Pair
Adjusted R-squared	0.644	0.285

Note: This table examines the cosine similarity of underwriters' market shares for pairs of states. Column (1) examines how the similarity differs by the type of securities, with municipal bonds as the reference group. Column (2) examines how geographic distance affects the cosine similarity in terms of municipal bond underwriters. For corporate securities, the issuer and underwriter data are obtained from the Global New Issuance Database by SDC Platinum. The geographic distance between two states is defined as the distance between each state-pair's geographic centers. T-statistics are in parentheses. Standard errors are clustered at the state-pair level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A8: Estimating the Elasticity of Underwriting Spread to HHI

	(1) Underwriting Spread (bps.)	(2) Underwriting Spread (bps.)	(3) HHI	(4) Underwriting Spread (bps.)
HHI	-0.00	-0.00		0.04**
	(-0.97)	(-0.64)		(2.11)
Treated × Post			111.60**	
			(2.59)	
Observations	79,642	154,609	79,642	79,642
Year FE	Yes	Yes	Yes	Yes
Issuer FE	No	Yes	No	No
Issuer × Cohort FE	Yes	No	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Adjusted R-squared	0.529	0.465	0.823	

Note: This table shows the elasticity of the underwriting spread with respect to the HHI of the local market. Column (1) reports estimates from an OLS regression of the underwriting spread on HHI using the sample as in Table 2. Column (2) reports estimates from an OLS regression of the underwriting spread on HHI using the sample of all issues in SDC's Global Public Finance Database. Column (3) reports estimates from a double-differences specification using HHI as the outcome variable. Column (4) reports estimates of the elasticity of the underwriting spread to HHI, using an IV regression with the dummy variable *Treated* × *Post* as the instrumental variable for HHI. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A9: Additional Robustness Tests of Effects of Consolidation on Underwriting Spread

	(1) Underwriting Spread (bps.)	(2) Underwriting Spread (bps.)	(3) Underwriting Spread (bps.)	(4) Underwriting Spread (bps.)	(5) Underwriting Spread (bps.)	(6) Underwriting Spread (bps.)	(7) Underwriting Spread (bps.)
Treated × Post	3.84**	3.80***	3.90***	6.02***	3.36**	4.94	4.31*
	(2.51)	(2.79)	(2.89)	(4.23)	(2.52)	(1.19)	(1.98)
Observations	123,364	76,104	79,527	71,247	1,000,870	17,419	70,402
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Number of Matches	3	1	1	1	Unlimited	1	1
Matching Co-variates	Local Income and Population	Local Income and Population plus Growth Rates	Local Income and Population plus Issuance Outcomes	Propensity Score	None	Local Income and Population	Local Income and Population
Restrictions							Requiring No Prior Treatment
Adjusted R-squared	0.511	0.535	0.529	0.524	0.537	0.492	0.522

Note: This table reports estimates from double-differences specifications using local consolidation episodes with a *predicted* $\Delta_{HHI} >= 100$ and the underwriting spread as the outcome variable. Column (1) uses three matched control CSAs for each treated CSA. Columns (2), (3), and (4) use one matched control CSAs for each treated CSA. The matching uses local income and population at the CSA-level in column (1), local income, population, and growth rates of local income and population relative to the prior year in column (2), and local income, population, and average gross spread and reoffering yield at the CSA level in column (3). Column (4) uses matched CSAs with propensity scores of being treated closest to the treated CSAs as control. Column (5) constructs a stacked sample using as control all CSAs not affected by concurrent investment bank consolidation that raises the local degree of concentration. Column(6) uses only local consolidation episodes where the affected markets experience only one local consolidation episode throughout the sample period. Column (7) require that the control market was never treated previously to address to concern over difference-in-differences raised by Baker et al. (2022). The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A10: Other Cross-Sectional Heterogeneity in Effects of Consolidation on Underwriting Spread

	(1) Underwriting Spread (bps.) [–4, +4]	(2) Underwriting Spread (bps.) [–4, +7]	(3) Underwriting Spread (bps.) [–4, +10]
Panel A: By whether bank is in M&A			
Bank is in M&A	2.47	3.37**	4.32**
	(1.63)	(2.20)	(2.38)
Bank is not in M&A	4.86***	5.96***	7.15***
	(2.97)	(4.71)	(4.82)
Panel B: By method of sales			
Competitive Bidding	6.52*	6.87**	6.87**
	(1.97)	(2.41)	(2.58)
Negotiated Sales	4.42**	5.59***	6.93***
	(2.50)	(3.61)	(3.89)
Panel C: By taxable status			
Tax-Exempt	4.69***	6.01***	7.26***
	(2.91)	(4.27)	(4.19)
Taxable	5.94**	5.61*	5.71*
	(2.08)	(1.95)	(1.86)
Alternative Minimum Tax	7.17	7.15**	7.36**
	(1.53)	(2.01)	(2.28)
Panel D: By source of repayment			
REV	6.19***	7.17***	7.39***
	(2.74)	(3.36)	(3.29)
GO	2.73	3.82	5.85**
	(1.07)	(1.56)	(2.18)
Panel E: By if refunding issue			
If refunding issue	4.99**	7.55***	9.55***
	(2.13)	(3.29)	(4.22)
If not refunding issue	5.10***	5.13***	5.53***
	(3.28)	(3.62)	(3.17)
Panel F: Dividing the sample period			
Pre-2000	4.60*	5.21**	5.54*
	(1.71)	(2.03)	(1.81)
Post-2000	5.50***	7.28***	9.60***
	(3.21)	(4.72)	(5.49)
Issuer × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Table A10: Other Cross-Sectional Heterogeneity in Effects of Consolidation on Underwriting Spread (Continued)

	(1) Underwriting Spread (bps.) [−4, +4]	(2) Underwriting Spread (bps.) [−4, +7]	(3) Underwriting Spread (bps.) [−4, +10]
Panel G: By size of issue			
Issue amount below median	6.20*	8.36***	9.39***
	(1.98)	(3.18)	(3.19)
Issue amount above median	4.16**	4.75***	5.95***
	(2.50)	(3.33)	(3.65)
Panel H: By maturity length of issue			
Maturity length above median	4.85**	5.60***	6.87***
	(2.54)	(3.62)	(4.22)
Maturity length below median	5.73**	6.78***	7.35**
	(2.35)	(2.86)	(2.53)
Panel I: By area racial composition			
Black population ratio in top quartile	5.42**	6.67***	7.52***
	(2.38)	(3.15)	(3.48)
Black population ratio not in top quartile	4.77***	5.82***	6.89***
	(2.87)	(3.88)	(3.85)
Issuer × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In this table, I report the findings from estimating Equation (3) using the underwriting spread as the outcome variable. Panel A divides the sample by whether the issue is underwritten by a bank engaging in M&As. Panel B divides the sample by whether the method of sales is competitive bidding or negotiated sales. Panel C divides the sample by the taxable status of the bond (Taxable, Tax Exempt, or subject to Alternative Minimum Tax). Panel D divides the sample by whether the source of repayment of the bond is Revenue or General Obligation. Panel E divides the sample by whether it is a refunding issue. Panel F divides the sample by whether the M&As are prior to or post 2000. Panel G divides the sample by whether the deal amount is less than median when sorted within each year. Panel H divides the sample by whether the maturity length of the deal is longer than the median when sorted within each year. Panel I divides the sample by whether the county of the issuer is in the top quartile in terms of the Black population ratio when sorted within each year. The time window spans from 4 years before to 4 (7/10) years after the onset of local consolidation episodes in column (1) ((2)/(3)). T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A11: Can Having an Advisor Mitigate the Effects of Consolidation?

	(1) Underwriting Spread (bps.)	(2) Underwriting Spread (bps.)	(3) Underwriting Spread (bps.)
Treated × Post × Has Advisor × *Predicted* Δ_{HHI} in [0.01,0.02)	2.49		
	(1.50)		
Treated × Post × Has Advisor × *Predicted* Δ_{HHI} in [0.02,0.03)	7.64***		
	(2.95)		
Treated × Post × Has Advisor × *Predicted* $\Delta_{HHI} \geq 0.03$	9.01**		
	(2.66)		
Treated × Post × Has Advisor × HHI $\leq$ 1000		0.21	
		(0.07)	
Treated × Post × Has Advisor × HHI in [1000,2500)		2.83	
		(1.57)	
Treated × Post × Has Advisor × HHI $\geq$ 2500		12.42**	
		(2.04)	
Treated × Post × Has Independent Advisor			3.75**
			(2.16)
Treated × Post × Has Dual Advisor			4.03
			(0.36)
Treated × Post × No Advisor	5.05**	8.65***	5.13**
	(2.48)	(3.68)	(2.12)
Observations	79,642	79,642	79,642
Year FE	Yes	Yes	Yes
Issuer × Cohort FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year
Adjusted R-squared	0.533	0.530	0.532

Note: This table investigates whether having an advisor can mitigate the effects of consolidation on the underwriting spread. Column (1) reports estimates from a version of Equation (3) with a dummy variable for whether the issuer is using a financial advisor, a dummy variable for whether the issuer is not using a financial advisor, and the former interacted with dummy variables for the significance of merging entities in the treated CSA. Column (2) reports estimates from a version of Equation (3) with a dummy variable for whether the issuer is using a financial advisor, a dummy variable for whether the issuer is not using a financial advisor, and the former interacted with dummy variables for the HHI of the CSA. Column (3) reports estimates from a version of Equation (3) with dummy variables for whether the issuer is using an independent advisor, a dual advisor (Garrett, 2024), or no advisor. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A12: Effects of Consolidation on Underwriting Spread When Bond Issues Fall into the Expertise of Merging Underwriters

	(1) Underwriting Spread (bps.) [–4, +4]	(2) Underwriting Spread (bps.) [–4, +7]	(3) Underwriting Spread (bps.) [–4, +10]	(4) Underwriting Spread (bps.) [–4, +4]	(5) Underwriting Spread (bps.) [–4, +7]	(6) Underwriting Spread (bps.) [–4, +10]
Panel A: By amount brackets						
Treated × Post × Merging Underwriters are Experts	6.90***	8.74***	10.18***	3.51	4.40	6.71*
	(3.44)	(4.72)	(4.91)	(1.18)	(1.38)	(1.85)
Treated × Post × Merging Underwriters not Experts	3.40*	3.87**	4.60**	4.93***	6.06***	7.02***
	(1.99)	(2.48)	(2.66)	(3.17)	(4.40)	(4.19)
Panel B: By maturity brackets						
Treated × Post × Merging Underwriters are Experts	6.83**	8.97***	10.86***	11.87*	12.65*	14.30**
	(2.33)	(3.84)	(4.54)	(1.82)	(1.99)	(2.26)
Treated × Post × Merging Underwriters not Experts	4.17**	5.19***	6.30***	4.39***	5.86***	7.24***
	(2.33)	(3.06)	(3.20)	(2.94)	(4.24)	(4.07)
Panel C: By the main use of proceeds						
Treated × Post × Merging Underwriters are Experts	4.65**	5.80***	7.56***	8.76	8.57	10.84**
	(2.61)	(4.39)	(4.89)	(1.54)	(1.60)	(2.23)
Treated × Post × Merging Underwriters not Experts	4.77**	5.60***	6.17***	4.37***	5.47***	6.45***
	(2.49)	(3.14)	(3.04)	(2.86)	(4.14)	(3.98)
Panel D: By the method of sales						
Treated × Post × Merging Underwriters are Experts	6.25***	7.07***	8.42***	5.95**	5.40**	6.19**
	(3.20)	(4.68)	(4.98)	(2.24)	(2.40)	(2.55)
Treated × Post × Merging Underwriters not Experts	2.13	3.49*	4.15**	4.62***	5.98***	7.19***
	(1.24)	(1.92)	(2.07)	(3.03)	(4.43)	(4.44)
Panel E: By whether the bond issue has credit ratings						
Treated × Post × Merging Underwriters are Experts	5.92***	7.16***	8.58***	8.30**	8.85**	10.66***
	(3.33)	(4.78)	(5.35)	(2.36)	(2.59)	(3.04)
Treated × Post × Merging Underwriters not Experts	1.98	2.50	2.85	4.27***	5.52***	6.55***
	(0.93)	(1.12)	(1.11)	(2.95)	(4.04)	(3.89)
Issuer × Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Ranking of Underwriters	US	US	US	CSA	CSA	CSA

Note: This table investigates whether the effects of consolidation on the underwriting spread are stronger when the bond issuances fall into the expertise of the merging underwriters. I take the following steps:

1. First, I sort all bond issuances within the whole country or a CSA in a year into brackets based on bond issue characteristics. I use five characteristics in panels A to E, repsectively: (1) amount, which I divide into four brackets: mega (top 5%), large (top 25%-top 5%), medium (top 50%-top 25%), and small (bottom 50%); (2) maturity length, which I divide into three equal-sized terciles; (3) the main use of proceeds, as in Figure A4; (4) the method of sales; and (5) whether the bond issue has credit ratings.

2. Second, for each bracket, I rank the underwriters within the whole country or a CSA by the number of bond issuances they underwrite. If an underwriter is within the top 5% of underwriters in terms of underwriting bond issuances in a category, I classify the underwriter as an expert in this category.

3. Third, for bond issuances in treated markets, I define a bond-issue level indicator variable *Merging Underwriters are Experts*. It equals one if the merging underwriters on both sides are experts for this bond issue when sorted within the whole country (within a CSA), in terms of underwriting for the category that the bond issue belongs to in columns (1), (2), and (3) ((4), (5), and (6)). For bond issuances in treated markets, I also define a variable *Merging Underwriters not Experts*, which equals one minus the prior variable. These two variables equal zero in control markets.

I then run the following regression

$$\begin{aligned} y_{d,c} = {} & \beta_1 MergingUnderwritersAreExperts_{d,c} + \beta_2 Post_{c,t} \\ & + \beta_3 Treated_{a,c} \times Post_{c,t} \times MergingUnderwritersAreExperts_{d,c} + \beta_3 Treated_{a,c} \times Post_{c,t} \times MergingUnderwritersNotExperts_{d,c} \\ & + \theta_{i,c} + \theta_t + e_{d,c}. \end{aligned}$$

The time window spans from 4 years before to 4 (7/10) years after the onset of local consolidation episodes in columns (1) and (4) ((2) and (5)/(3) and (6)). T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A13: Summary Statistics For Local Governments

	Mean	SD	25%	Median	75%	N
Panel A: School Districts Sample						
Revenue Per Student	13321.0	6756.9	8818.4	11960.9	15717.3	439,514
Expenditure Per Student	14947.2	9234.0	8713.4	12248.2	18447.5	439,514
Interest Paid/Exp. (%)	2.0	2.2	0.3	1.3	3.0	439,514
New Issuance/Exp. (%)	5.5	16.1	0.0	0.0	0.0	439,514
Surplus Ratio (%)	–4.8	17.7	–14.4	0.1	5.8	439,514
Total Taxes/Exp. (%)	36.5	22.8	19.0	32.7	50.5	439,514
Property Tax/Exp. (%)	35.6	22.6	18.4	31.5	49.2	439,514
Inter-Gov. Trans./Exp. (%)	51.5	22.9	35.1	52.0	68.4	439,514
Inter-Gov. Trans. from Federal/Exp. (%)	0.8	2.9	0.0	0.0	0.3	439,514
Inter-Gov. Trans. from State/Exp. (%)	47.7	21.9	31.5	48.3	64.0	439,514
Inter-Gov. Trans. from Local/Exp. (%)	2.6	5.9	0.0	0.5	2.5	439,514
Panel B: Municipalities/Townships/Counties Sample						
Revenue Per Capita	1290.4	1369.7	368.1	847.0	1697.6	555,975
Expenditure Per Capita	1313.7	1468.7	347.0	822.0	1716.4	555,975
Interest Paid/Exp. (%)	3.0	4.4	0.0	1.3	4.1	555,975
New Issuance/Exp. (%)	5.9	16.4	0.0	0.0	0.2	555,975
Surplus Ratio (%)	6.1	26.6	–8.1	2.9	15.4	555,975
Total Taxes/Exp. (%)	44.5	25.9	25.3	40.8	59.5	555,975
Property Tax/Exp. (%)	32.3	25.7	12.7	25.4	46.4	555,975
Inter-Gov. Trans./Exp. (%)	28.9	22.3	12.0	23.6	40.6	555,975
Inter-Gov. Trans. from Federal/Exp. (%)	4.5	7.2	0.0	1.4	6.0	555,975
Inter-Gov. Trans. from State/Exp. (%)	20.7	19.1	6.7	14.9	29.2	555,975
Inter-Gov. Trans. from Local/Exp. (%)	3.2	7.7	0.0	0.1	2.1	555,975

Note: All variables are winsorized at the 1% and 99% percentiles. The complete definitions are available in Table A2 in the Online Appendix.

Table A14: Effects of Consolidation on Local Government Finances, Using Alternative Specifications of Outcome Variables

	(1)	(2)	(3)	(4)	(5)
Panel A: School districts, using per student variable					
	Interest Paid/ Per Student	New Issuance/ Per Student	Budget Surplus/ Per Student	Rev. Per Student	Exp. Per Student
Treated × Post	–3.80	–178.94**	49.14	–227.37	–279.75
	(–0.40)	(–2.19)	(0.64)	(–1.33)	(–1.60)
Observations	169,584	169,584	169,584	169,584	169,584
Adjusted R-squared	0.721	0.082	0.721	0.909	0.897
Panel B: Municipality/township/county, using per capita variable					
	Interest Paid/ Per Capita	New Issuance/ Per Capita	Budget Surplus/ Per Capita	Rev. Per Capita	Exp. Per Capita
Treated × Post	2.65	–4.80	–20.91***	28.22	46.91**
	(1.46)	(–0.65)	(–2.76)	(1.18)	(2.03)
Observations	191,879	191,879	191,879	191,879	191,879
Adjusted R-squared	0.815	0.219	0.372	0.923	0.909

Note: Panel A reports estimates from a double-differences specification for the effects of consolidation on school district finances outcomes, constructed on a per-student basis. Panel B reports estimates from a double-differences specification for the effects of consolidation on municipality/township/county finances outcomes, constructed on a per-capita basis. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. The definitions of the variables are provided in Table A2 in the Online Appendix. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A15: Effects of Consolidation on Local Government Finances, Using Sample of M&As Less Confounded by Endogeneity Concerns or Alternative Explanations

	(1) Interest Paid/ Exp. (in %)	(2) New Issuance/ Exp. (in %)	(3) Budget Surplus/ Exp. (in %)
Panel A: M&As are driven by reasons likely unrelated to local economic conditions according to news articles, School Districts			
Treated × Post	0.01	–1.66**	0.27
	(0.19)	(–2.60)	(0.43)
Observations	67,321	67,321	67,321
Panel B: M&As are driven by reasons likely unrelated to local economic conditions according to news articles, Municipalities/Townships/Counties			
Treated × Post	0.30**	–0.37	–0.79
	(2.22)	(–1.05)	(–0.71)
Observations	91,279	91,279	91,279
Panel C: CSA makes up a small fraction of the total businesses of the merging underwriters, School Districts			
Treated × Post	–0.01	–1.18*	0.05
	(–0.14)	(–1.69)	(0.09)
Observations	46,486	46,486	46,486
Panel D: CSA makes up a small fraction of the total businesses of the merging underwriters, Municipalities/Townships/Counties			
Treated × Post	0.08	–0.45	–0.74
	(0.55)	(–1.27)	(–0.87)
Observations	52,240	52,240	52,240
Panel E: M&As are not confouned by concurrent commercial bank M&A, School Districts			
Treated × Post	–0.01	–1.38**	0.19
	(–0.15)	(–2.73)	(0.40)
Observations	78,913	78,913	78,913
Panel F: M&As are not confouned by concurrent commercial bank M&A, Municipalities/Townships/Counties			
Treated × Post	0.09	–0.12	–0.02
	(1.09)	(–0.32)	(–0.02)
Observations	61,961	61,961	61,961
Government × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In this table, I report the estimates from a double-differences specification as in Equation (4) and using various local government finances outcomes as the outcome variable. The definitions of the variables are provided in Table A2 in the Online Appendix. In panels A and B, I use the subsample where the M&As are not driven by reasons that could potentially correlate with local economic dynamics, according to the news articles. In panels C and D, I use the subsample where the treated CSAs account for less than 10% of the underwriter's total businesses. In panels E and F, I require that there is no concurrent commercial bank M&A around the onset of local consolidation episodes that raises the degree of local commercial bank concentration. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A16: Effects of Consolidation on Local Government Finances Using Other Outcome Variables

	(1) Total Taxes/ Exp. (in %)	(2) Property Tax/ Exp. (in %)	(3) Inter-Gov. Trans./ Exp. (in %)
Panel A: Overall			
Treated × Post	1.50	1.48	–2.38***
	(1.35)	(1.36)	(–3.15)
Observations	361,463	361,463	361,463
Adjusted R-squared	0.809	0.867	0.853
Panel B: School district			
Treated × Post	3.64**	3.65**	–3.97**
	(2.09)	(2.12)	(–2.35)
Observations	169,584	169,584	169,584
Adjusted R-squared	0.888	0.891	0.875
Panel C: Municipality/township/county			
Treated × Post	–0.28	–0.36	–0.83**
	(–0.43)	(–0.60)	(–2.13)
Observations	191,879	191,879	191,879
Adjusted R-squared	0.734	0.846	0.719
Government × Cohort FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year

Note: In this table, I report the estimates from a double-differences specification as in Equation (4) and using various local government finances outcomes as the outcome variable. I pool school districts and other types of local governments together in panel A and separate them in panel B. All variables are expressed as ratios to the total expenditures of the local government. The definitions of the variables are provided in Table A2 in the Online Appendix. The time window spans from 4 years before to 4 years after the onset of local consolidation episodes. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A17: Predictive Factors of Local Market Consolidation

	(1) *Predicted* Δ_{HHI}	(2) $1_{\textit{Predicted}\ \Delta_{\text{HHI}} \geq 100}$ $\times 100$	(3) Underwriting Spread (bps.)	(4) Underwriting Spread (bps.)
Treated × Post			5.12***	4.60**
			(3.16)	(2.49)
Prior HHI	-0.0016	-0.0012***	0.00	0.00
	(-0.84)	(-4.13)	(1.28)	(1.46)
Population	0.0001	-0.0000		-0.01**
	(0.12)	(-0.17)		(-2.47)
Population Growth Rate	324.0629	68.8836*	-4.13	40.94
	(1.65)	(1.98)	(-0.05)	(0.55)
Income	0.0185	0.0820		0.00
	(0.02)	(0.56)		(0.01)
Income Growth Rate	-18.6023	-5.8455		-32.58
	(-0.20)	(-0.36)		(-1.01)
Age	2.1907	-0.0606		-2.37
	(1.19)	(-0.20)		(-0.68)
Minority Ratio	64.4586	2.8297		232.36
	(1.03)	(0.34)		(1.58)
Past Issuance Per Capita	-0.0022	0.0000		-0.00
	(-1.30)	(0.01)		(-0.57)
Observations	8,357	8,357	79,109	79,109
Year FE	Yes	Yes	Yes	Yes
CSA × Cohort FE			Yes	Yes
Clustering	CSA & Year	CSA & Year	CSA & Year	CSA & Year
Adjusted R-squared	0.064	0.082	0.529	0.529

Note: This table investigates which local economic and demographic characteristics predict future within-market consolidation. Column (1) uses the *predicted* ΔHHI over the next three years as the outcome variable. Column (2) uses a dummy variable for whether the *predicted* ΔHHI exceeds 100. Columns (3) and (4) use the underwriting spread as the outcome variable. In columns (1) and (2), I investigate the local demographic, economic, and market characteristics that predict within-market consolidation. In Column (3), I estimate the regression in Table 2 while controlling for variables that statistically significantly predict within-market consolidation. In Column (4), I estimate the regression in Table 2 while controlling for all local demographic, economic, and market characteristics. In columns (1) and (2), the explanatory variables are lagged by one period, while in columns (3) and (4) the variables are contempraneous. Prior HHI is the HHI calculated based on the market shares of municipal bond underwriters in the three years prior. Population is in thousands, and population growth rate is calculated as $\frac{\text{Population}_t - \text{Population}_{t-1}}{\text{Population}_{t-1}}$. Income is in thousands of dollars, and income growth rate is calculated as $\frac{\text{Income}_t - \text{Income}_{t-1}}{\text{Income}_{t-1}}$. Past issuance per capita uses the past three years' data and is in dollars. T-statistics are in parentheses. Standard errors are double-clustered at the CSA and calendar year levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

III. Introduction to the Issuing Process

Negotiated sales and competitive bidding are the two most commonly used methods of sales for municipal bonds in the primary market. I illustrate the two methods in Figure A11 in the Online Appendix. Specifically,

- Under negotiated sales, the underwriter is selected via a "request for proposals" process. First, governments interested in new issuance put out a "request for proposal". Underwriters can then submit proposals that include their experience, credentials, other qualitative information, and a proposed underwriting spread. Governments review these proposals and select an underwriter based on criteria that may include the proposed underwriting spread and subjective factors such as the quality of proposals, the credentials of the underwriter, and their experience. Following selection, a process known as a "presale" occurs, during which underwriters seek customer indications of interest in the issue. The final bond pricing is then agreed upon and established jointly by the issuer, their financial advisor (if any), and the underwriter.

- Under competitive bidding, the issuer and its financial advisor decide on the amount, maturity, coupon rate, and other features of the bond issue (but not the underwriting spread or the reoffering yield). A public first-price sealed-bid auction is then set up, where underwriters bid for the bonds and the issuer sells the bonds to the underwriter with the highest bid. The underwriter then resells the bonds to investors at a reoffering price. The profit, i.e., the underwriting spread, is the difference between the reoffering price and the winning bid (U.S. Securities and Exchange Commission, 2012).

Negotiated sales are generally more common for larger, lower-rated, and more customized bonds, while competitive bidding is more common for smaller, higher-rated, and more standardized bonds. Cestau et al. (2020) discuss the merits of each method, the current landscape of their usage, and also their market implications.

There is scope for M&As affecting the underwriting spread under either negotiated sales or competitive bidding.

- Under negotiated sales, the underwriting spread is largely agreed upon in the "request for proposal" stage, where potential underwriters submit proposals that include proposed underwriting spreads. Reduced competition could lead to a higher underwriting spread in this process.

- Under competitive bidding, the underwriting spread is the difference between the reoffering price and the winning bid. The reoffering price is primarily driven by investor demand and should not be affected by competition among underwriters. Assuming the reoffering price remains relatively fixed, less competition in the auction process could result in a lower winning bid, thereby widening the underwriting spread.

IV. Variable Construction

In this Section, I provide further details on the variable construction in addition to Table A2.

IV.I. Reoffering yield and yield spread

IV.I.I. Reoffering yield

A bond issue can contain multiple bonds with different maturities. I take the following steps to calculate the reoffering yield of each individual bond, provided there is sufficient data for the calculation. I use the fields "Dated Date", "Maturity Date", "Maturity Amount", "Coupon Type", "Coupon of Maturity", and "Price/Yield of Maturity" in the Global Public Finance (GPF) database provided by SDC.

1. I calculate the reoffering yield if the type of coupon payment is "fixed rate" or "zero coupon". I do not calculate the reoffering yield for bonds with variable rate coupon payments, for which the dollar amount of the coupon depends on the general interest rate and other contingent factors.

2. For bonds with a "zero coupon" type of payment, I code the coupon rate as 0. In the raw data, the coupon rate for such bonds is null.

3. If an issue contains multiple bonds but only one coupon rate is given, I assume that the coupon rate applies to all bonds within the issue.

4. I do not calculate the reoffering yield for a bond issuance if there is a missing value for the maturity date of any bond within the bond issue.

5. I do not calculate the reoffering yield for a bond issuance if there is a discrepancy in the number of entries for maturity, coupon rate, and price/yield. In these cases, it is unclear how many bonds are in the bond issue.

6. For a bond within a bond issuance:

   (a) If the "price/yield" field is less than 20, I assume it is the reoffering yield of the bond.

   (b) If the "price/yield" is in between 80 and 120, I assume it is the reoffering price of the bond. I assume that there are $M = \text{round}(\frac{m}{365/2})$ biannual coupon payments on the bond, where m is the number of days from the dated date to the maturity date, and the principal amount is repaid at the end. I calculate the reoffering yield as $(1+r)^2 - 1$, where r solves

   $$0 = -P + \sum_{\tau=1}^{M} \left(\frac{C/2}{(1+r)^{\tau}}\right) + \frac{100}{(1+r)^{M}},$$

   P is the reoffering price quoted in reference to each \$100 face value, and C is the coupon rate.

   (c) If the "price/yield" is any value other than those, I are not certain if the value corresponds to a reoffering price or a reoffering yield. I do not calculate the reoffering yield for this bond.

7. If a bond issuance contains multiple bonds, the reoffering yield of the bond issue is the weighted average across bonds, weighted by the principal amount times the maturity length of each bond.

IV.I.II. Yield spread relative to Treasury securities

To calculate the tax-adjusted reoffering yield spread, i.e., the spread between the yield of a municipal bond issue and its comparable U.S. Treasury securities, I follow the steps outlined by Schwert (2017) and Li and Zhu (2019).

1. I obtain the interpolated U.S. Treasury yield curve provided by Gürkaynak et al. (2007) at `https://www.federalreserve.gov/econres/feds/the-us-Treasury-yield-curve-1961-to-the-present.htm`.

2. I match each bond within the bond issue to a synthetic risk-free bond that has the same payoff structure.

3. I calculate the price of the synthetic bond by discounting its future cash flows using the Treasury yield curve piece by piece. The maximum Treasury yield is for 30 years, and data for such long maturities are only available in recent decades. I set the reoffering yield spread to missing if the corresponding Treasury yield is unavailable.

4. Using the price and maturity of the synthetic bond, I compute its risk-free yield to maturity.

5. I take the difference between a municipal bond's tax-adjusted yield and the yield of its matched synthetic risk-free bond to obtain the yield spread. Specifically, for a bond exempt from federal taxation, i.e., the vast majority:

$$s_i = r_i - r_i^{\text{risk-free}} \times (1 - \tau_t^{fed}),$$

   where s_i is the reoffering yield spread for bond i, r_i is the reoffering yield for bond i, $r_i^{\text{risk-free}}$ is the yield of the synthetic risk-free bond, and τ_t^{fed} is the top-bracket federal income tax rate in year t, the year of the bond sale. The downward adjustment $(1-\tau_t^{fed})$ on the yield of the synthetic risk-free bond accounts for the fact that Treasury securities are subject to federal taxation. For a bond not exempt from federal taxation, the spread is:

$$s_i = r_i \times (1 - \tau_t^{fed}) - r_i^{\text{risk-free}} \times (1 - \tau_t^{fed}).$$

6. If a bond issuance contains multiple bonds, the reoffering yield spread of the bond issue is the weighted average by the bond years of each bond. The bond years of a bond equal the maturity of the bond multiplied by its principal amount.

I am able to calculate the yield spread for all bond issuances from November 25, 1985, to the most recent date, within which Treasury yields for maturities up to 30 years are available.

IV.I.III. Yield spread relative to MMA curve

I also use the Municipal Market Advisors AAA-rated curve (MMA curve) as a tax-exempt benchmark for calculating the municipal bond credit spread following Goldsmith-Pinkham et al. (2023). This curve is reported daily on Bloomberg from 2001 onward, resulting in a shorter sample period compared to Treasury securities. I take the following steps:

1. I match each bond within a bond issuance to a point on the MMA curve for the closest maturity on the same date, which serves as the comparable yield for this bond.

2. I calculate an average comparable yield for all bonds in the issue, weighted by the bond years of each bond.

As the MMA curve is available only after 2001, the sample size for the yield spread relative to the MMA curve is smaller compared to the yield spread relative to Treasury securities.

IV.II. "Modified true interest cost"

I calculate an overall measure of a local government's financial cost, "modified true interest cost" ("modified TIC"), which takes into account the reoffering yield, the underwriting spread, the credit rating fee, the financial advisor fee, and the bond insurance fee. I take the following steps:

1. I calculate the net proceeds of the local government from the bond issue, which I define as be the reoffering price minus the underwriting spread, the *predicted* credit rating fee, the *predicted* financial advisor fee, and the *predicted* bond insurance fee. I use

two versions of the *predicted* fees, with or without year fixed effects. *Predicted* fees with year fixed effects are not available before 1985, as neither the California Debt and Investment Advisory Commission nor the Texas Bond Review Board provides fee data before that year.

2. I aggregate the future repayment obligations, i.e., coupon and principal payments, of all bonds within the bond issue.

3. I calculate the annualized discount rate that sets the present value of the future repayment obligations equal to the net proceeds of the local government.

4. I calculate the spread of "modified TIC" over a comparable synthetic risk-free bond, constructed in the same manner as described in Section IV.I.II.

Compared to the commonly used true interest cost (TIC) mesure (Municipal Securities Rulemaking Board, 2013), I additionally take into consideration the credit rating fees, financial advisor fees, and bond insurance fees as part of the cost.

IV.III. Initial underpricing

A common measure of the quality of security underwriting is initial underpricing, which manifests in the secondary market trading prices. A high-quality underwriter can price a security close to its actual market value, thereby keeping interest costs low for issuers. To calculate initial underpricing, I follow Garrett (2024) and use the Municipal Securities Transaction Data provided by the Municipal Securities Rulemaking Board (MSRB). This data contain detailed trade-level information, including the security identifier (CUSIP), the timestamp of the trade, and the execution price. Prices are quoted in reference to each $100 face value. I calculate the initial price of a CUSIP as the trade-size-weighted dollar price on the first day of trading. I then calculate the day-15-to-day-30 price as the trade-size-weighted dollar price in a $[+15, +30]$ days window post the initial trading date. Initial underpricing is computed as the difference between the day-15-to-day-30 price and the initial price. The data are available from 2006 to 2023.