Distance Still Matters: Evidence from Municipal Bond Underwriting

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Using a sample of municipal bond offerings, I find that "local" investment banks have substantial comparative and absolute advantages over nonlocal counterparts—locals charge lower fees and sell bonds at lower yields. Local investment banks' strongest comparative advantage is at underwriting bonds with higher credit risk and bonds not rated by rating agencies. These findings suggest that high-risk bonds and nonrated bonds are more difficult to evaluate and market, and that investment banks with a local presence are better able to assess "soft" information and place difficult bond issues. (*JEL* G24, G28, D80)

How do financial intermediaries gather and process information? This question is at the heart of the academic literature on why commercial banks are "special" (see Bhattacharya and Thakor, 1993, for a review). As technology has advanced, commercial banks have come to rely more upon "hard" information—information that can be measured, recorded, and transferred to others—rather than "soft" information—information that is more subtle and arises through familiarity and relationship lending (Petersen and Rajan, 2002). As a result, lending arrangements between commercial banks and borrowers have evolved from strict *ex ante* screening and costly *ex post* monitoring to more frequent *ex post* monitoring and quick intervention (Petersen and Rajan, 2002).

Like commercial banks, investment banks are also in the business of gathering and processing information. However, a critical difference between investment banks and commercial banks is that investment banks generally do not maintain a position in the securities they sell, and hence have little reason or opportunity to engage in *ex post* monitoring. Instead, investment banks rely almost solely upon *ex ante* screening and evaluation. Investors in new issues rely upon investment bank underwriters to evaluate and synthesize information in both its "soft" and "hard" forms and to convey this information to the market.

I thank an anonymous referee for very detailed and helpful comments. Jim Angel, Utpal Bhattacharya, Long Chen, Josh Coval, Jeff Desimone, Gustavo Grullon, George Oldfield, David T. Robinson, Kim Rodgers, Chip Ryan, Mark Seasholes, and James Weston made helpful suggestions, and Kristy Freeman and Lindsay Altazin provided superb research assistance. Brenda Priebe provided editorial assistance. Seminar participants at Rice University, Texas State University, Baylor University, University of Kentucky, University of New Orleans, and University of Texas at San Antonio, and session participants at the 2003 Western Finance Association meetings, the 2004 Batten Young Scholars conference, and the 2006 International Conference on Management Sciences made valuable comments. I am especially grateful for substantial input from Lee Ann Butler and others at the Louisiana Department of the Treasury. Any errors are my own. Address correspondence to: Alexander W. Butler, Department of Finance and Managerial Economics, School of Management, SM 31, The University of Texas at Dallas, Richardson, TX 75083; telephone: (972) 883-5929; fax: (972) 883-2799; e-mail: butler@utdallas.edu.

doi:10.1093/rfs/hhn002 Advanced Access publication 11 February 2008

This paper examines the ability of investment banks to evaluate and exploit information in the municipal bond underwriting arena. Because a municipal issuer has a well-defined location, whereas a corporate issuer might have numerous and geographically disperse offices or branches, municipal issuers provide a useful laboratory to study whether the location of a financial intermediary matters.

Specifically, I ask the following question: do *local* underwriters—i.e., those with an ongoing presence in a particular state—offer municipal bond issuers more competitive pricing as a result of a soft information advantage, or do local underwriters exploit their connections to the detriment of municipal bond issuers? Local investment banks may have more soft information about the issuers of bonds than nonlocal investment banks. For instance, daily exposure to local news stories, firsthand knowledge of the local economy, and personal relationships with key people at the issuing body are all likely to give local underwriters a soft information advantage. Similarly, local underwriters may have better knowledge of local investors who might be interested in buying the bonds, and more relationships with local money managers, bankers, and institutional investors who could assist in the placement of the securities. Such soft information advantages may allow local investment banks to be more competitive underwriters of local bond issues, charging lower fees and securing better prices (that is, better interest rates) on the bonds they sell, *ceteris paribus*. In contrast, to the extent that local underwriters may have valuable political connections that better enable them to win underwriting bids, local investment banks might try to capture economic rents by charging higher fees, *ceteris paribus*.

To determine which of the above two effects dominates, I employ a large sample of municipal bond offerings from 41 states and the District of Columbia during the period from 1997 to 2001. I find that, on average, local underwriters charge lower fees and place municipal bonds at lower yields than their nonlocal counterparts, with gross spreads and yields both statistically significantly lower for bonds underwritten by locals than nonlocals. Interestingly, these benefits are the greatest for the most opaque issuers. In particular, although bonds with lower credit ratings pay higher investment banking fees and higher yields, this penalty is substantially lower for bonds brought to market by a local underwriter: the increase in all-in costs (yield plus underwriting spread) per credit rating notch is approximately 4.4 basis points for bonds underwritten by a local underwriter compared to 18.7 basis points for bonds underwritten by a nonlocal underwriter. Similarly, although bonds that are not rated require substantially higher fees and yields, as the lack of external certification from a bond rating agency renders them more difficult to place, the effect is lower if the issue is placed by a local underwriter: the average all-in cost for a nonrated bond is 272 basis points higher than a rated bond, but is only 176 basis points higher if the underwriter is a local underwriter. These results suggest that local investment banks have a strong comparative advantage at underwriting municipal bonds with higher credit risk. Note that these results are not driven by an endogenous choice of local versus nonlocal underwriters, as a specification that models both the choice of underwriter and the costs of the issue produces even stronger results, and the results continue to hold when I control for various factors. Hence, the findings of this paper support the conjecture that investment banks with a local presence are better able to evaluate and/or market "difficult" bond issues than underwriters without a local presence.

This paper, which is most closely related to the literatures on the importance of commercial bank location (Almazan, 2002; Hauswald and Marquez, 2006), and how commercial banks evaluate soft and hard information (Petersen and Rajan, 2002; Stein, 2002; Berger et al., 2005), is among the first to examine the ability of investment banks to evaluate soft information and to document that investment bank location matters.[1] First, although commercial banks may be able to exploit their locational advantage by charging higher rates to borrowers that are geographically more proximate (Degryse and Ongena, 2005), I find precisely the opposite for investment banks. I attribute this difference to the fact that commercial banks can informationally capture and exploit client firms, as a result of their relationship banking activities (see Sharpe, 1990; Rajan, 1992; and Boot, 2000), whereas investment banks cannot. Thus, in contrast to Petersen and Rajan (2002), this paper provides evidence that "distance matters" for financial intermediation and the production of soft information when *ex post* monitoring is not feasible.

The remainder of this paper is organized as follows. Section 1 gives a brief description of municipal bonds, a generalization of the underwriting process, and a discussion of underwriter selection. Section 2 describes the data, Section 3 presents the results, and Section 4 provides concluding remarks.

1. Municipal Bonds and Underwriting

In a typical "firm commitment" security issuance, investment banks purchase directly from the issuer all the securities that are to be sold to investors.[2] The underwriting group buys the securities at a price that is discounted from the price at which the securities will be sold to investors (the offer price). The offer price minus the price at which the securities are bought from the issuer is referred to as the gross spread. The gross spread, which is often reported as a percentage of the offer price, compensates underwriters for all the services they provide.

The municipal bond (muni) market is inherently different than other new-issues markets. First, the issuer is a state or local government, at least indirectly,

[1] Malloy (2005) shows that geographically proximate security analysts provide better earnings forecasts. Coval and Moskowitz (2001) show that local mutual fund managers earn abnormal returns when investing in local stocks. Their findings are broadly consistent with those presented in this paper, showing that proximity enhances information production. None of these papers addresses the underwriting role of investment banks.

[2] See Ellis, Michaely, and O'Hara (1999) for a detailed description of the institutional details of the investment banking process for initial public offerings of stock.

rather than a corporation. Second, the bonds typically fund public projects, such as roads, bridges, buildings, airports, and utilities. Third, every state has statutes that require "open meetings" or other disclosure of the terms of municipal bond offerings. Fourth, the Securities and Exchange Commission (SEC) has little power to regulate municipal bond issuers (Beckett, 1997).

Before issuing a bond, the issuer must evaluate how much money is needed to finance the project, what debt capacity is available, and what financial institutions and advisers to use. This paper focuses on the issuer's choice of investment bankers. Investment bankers are generally selected by government entities via competitive bidding or a negotiated contract.[3] Under competitive bidding, the government entity solicits and receives sealed bids, and then opens the bids at a public hearing, reading aloud the deal terms submitted by each potential underwriter; contracts are awarded on the basis of the lowest bid received. Under a negotiated contract, the government entity first issues a Request for Proposals (RFP) or similar solicitation; potential underwriters submit written proposals that are "graded" by the staff of the governmental unit; oral presentations or question and answer sessions may follow the grading or the government may award the contract on the basis of the proposals alone.

Although taxable munis are a small proportion of the total municipal issues market, for purposes of this study, they are not inherently different from their more common tax-exempt counterparts. Municipal bonds can be taxable for several reasons. Bonds that are used to finance loans to nongovernment entities must be taxable, and a state's unfunded pension liabilities can be financed with taxable (but not tax-exempt) munis. Atwood (2003) provides a detailed description, and the following discussion closely paraphrases some of the information in her paper.[4] Tax-exempt securities usually face severe restrictions on how the proceeds can be used in order to prevent tax arbitrage, and municipal bonds are fully taxable if they are "arbitrage bonds"—that is, those where any portion of the proceeds is reasonably expected to be used to acquire higher yielding investments. Nonqualified private activity bonds are those bonds where more than 10% of the proceeds are used directly or indirectly by a nongovernment unit. To be tax-exempt, private activity bonds must meet certain use-of-funds guidelines, where acceptable uses include funding of airports, utilities, student loans, and providing property for use by qualified tax-exempt organizations. Even if private activity bonds meet the qualified use requirements for tax-exempt status, they are still subject to a state volume cap: in 2001, the cap was $62.50 multiplied by the state's population. (I note that interest income on private activity bonds that qualify for tax exemption is a preference item for calculating alternative minimum taxable income.)

3 In the data, negotiated deals outnumber competitive bids by about 11 to 1. All the results are unchanged when I restrict my attention to only negotiated deals or when I use a negotiated dummy as a control variable in the regressions.

4 Additional descriptions of the taxable muni market can be found in Bland and Chen (1990); Watson and Vocino (1990); and Petersen (1987).

2. Data

I obtain information for taxable municipal bond offerings that postdate the pay-to-play era; specifically, I use the period 1997 to 2001.[5] The choice to use taxable munis is a pragmatic one, as the data are readily available from the commonly subscribed Securities Data Company (SDC) New Issues Database.[6] The initial sample contains 2,283 bonds for which data are available for both issue size and the gross spread paid to investment banks.

Each bond has a lead investment bank, or bookrunner, and many have a syndicate of other investment banks that help sell the bonds. For each investment bank in the sample, I hand-collect information on the company's principal locations of business. I determine these locations primarily from official state websites listing companies that have principal business offices in each respective state, and secondarily from the websites of the Bond Market Association and Virtual Finance Library. I exclude those states for which the location information is not available—that is, Nebraska, New Hampshire, Oklahoma, and Virginia, which account for 13, 4, 49, and 41 bonds in the initial sample, respectively. I further eliminate from the sample those states that have five or fewer bond issues during the sample period. This filter removes Delaware, Hawaii, South Dakota, Vermont, and Wyoming, which after the initial screen account for 2, 1, 2, 1, and 0 bonds, respectively. The final sample consists of 2,191 bonds from 41 states and the District of Columbia. I discuss summary statistics in the next section.

Among the sample bonds, one or more bond rating agencies rate 1,724 bonds. I use Standard and Poor's ratings where they are available. If Standard and Poor's ratings are unavailable, I use Moody's ratings, and if neither is available, I treat the bond as nonrated.[7] Following Cantor and Packer (1997), I transform the agencies' ratings to a numeric scale, assigning a value of 1 to the highest-rated bonds (Aaa or AAA), a value of 2 to the next highest credit rating (Aa1 or AA+), and so on. Thus, higher numerical bond ratings denote higher credit risk.

Following Megginson and Weiss (1991), I measure an investment bank's reputation by its annual market share, where market share is calculated as the total gross proceeds of the municipal bond offerings the investment bank manages in a year divided by the total gross proceeds of all municipal bond

[5] Until the mid-1990s, pay-to-play was the common practice for municipal bond underwriters to make substantial campaign and other political contributions to politicians who would allocate underwriting business for their municipality or state.

[6] SDC also provides data on tax-exempt municipals, though in a different (and less commonly subscribed) database, the Global Public Finance database. A cursory examination of the Global Public Finance database indicates that the main findings of this paper also obtain when using tax-exempt municipal data.

[7] I give preference to Standard and Poor's because Moody's is more likely to assign unsolicited ratings, which may be biased downward during the sample period. For a discussion of solicited versus unsolicited ratings in the United States, see Butler and Rodgers (2003); and Woolley, Schroeder, and Yang (1996).

issuances in the year. Note, however, that traditional measures of investment bank reputation may not be relevant in the municipal bond market. For example, issuers of municipal bonds (state and local governments) may base their decision of which investment banks to hire on factors such as a particular bank having an office in and employing residents of the state, rather than the bank's ability to value, market, and place the bonds. In that case, the decision of which bank to hire may be independent of any reputation, ability, or market share the investment bank enjoys.

3. Results

3.1 Market concentration

The market for underwriting municipal bonds is fragmented relative to other new-issues markets, such as seasoned equity offerings (SEOs), convertible bond issues, and initial public offerings (IPOs)—that is, the market share of investment banks is less concentrated in the municipal bond market. This is consistent with investment banks being unable to reap rents from reputation, and hence not attempting to build market share in the municipal bond market. Using SDC data to compute investment bank market shares, I find that the top 10 investment banks' market shares average only 73% for municipal bond offerings, but 86%, 87%, and 98%, respectively, for IPOs, SEOs, and convertible bond issues. Of the sample investment banks, 55 are the lead managers for only one offering in the sample. The most prominent investment banks by number of issues for which they are the lead managers are Goldman Sachs (116 offerings) and William R. Hough (105 offerings). Goldman Sachs is a national "bulge bracket" investment bank that is routinely at the top of the underwriting league tables (Johnson and Miller, 1988). Hough specializes in fixed-income securities, including municipal bonds. Hough is headquartered in Florida and has major offices in Maryland, Texas, Arizona, South Carolina, and Ohio.

3.2 Sample characteristics

Table 1 presents descriptive statistics. The average issue size in the sample is \$16.8 million. Approximately 82.5% of the bonds in the sample have local bookrunners, with 1,810 bonds underwritten by local bookrunners and 381 by nonlocal bookrunners. Rhode Island and Florida have the largest percentage of local bookrunners, with 100% and 97.2%, respectively. In only seven states (Connecticut, District of Columbia, Michigan, Mississippi, Nevada, North Dakota, and South Carolina) are there fewer municipal bond issues managed by local bookrunners than by nonlocal underwriters. Note that while William R. Hough, for instance, is headquartered in Florida, it has offices in Maryland, Texas, Arizona, South Carolina, and Ohio, and thus is considered "local" for bond issues in any of those states.

Table 1
Descriptive statistics by state

State	Max Obs	Local	Instate	Spread%	Size	YTM%	Maturity	Rating	Nonrated
Alabama	40	0.850	0.844	1.287	11.5	7.066	12.8	1.83	0.275
Alaska	5	0.800	0.732	1.729	53.0	7.297	23.6	2.00	0.000
Arizona	34	0.647	0.726	1.380	66.3	7.124	13.6	3.28	0.147
Arkansas	27	0.519	0.668	1.019	8.8	6.751	16.6	1.74	0.296
California	252	0.810	0.800	1.045	23.8	6.831	20.9	2.14	0.155
Colorado	103	0.961	0.937	1.082	18.6	6.636	18.1	2.35	0.136
Connecticut	33	0.455	0.513	0.754	85.5	6.429	8.9	2.39	0.152
District of Columbia	6	0.333	0.333	0.549	46.2	6.562	24.0	1.00	0.000
Florida	142	0.972	0.965	1.084	6.2	7.093	16.7	1.55	0.134
Georgia	62	0.742	0.750	1.228	12.4	6.919	12.1	2.76	0.210
Idaho	27	0.926	0.926	1.064	5.9	6.885	11.4	1.36	0.185
Illinois	122	0.820	0.784	1.208	29.2	6.653	14.8	1.89	0.279
Indiana	44	0.864	0.763	0.993	186.8	6.274	15.2	1.92	0.409
Iowa	87	0.494	0.486	1.572	28.3	6.532	4.7	4.40	0.402
Kansas	37	0.892	0.869	1.753	4.5	6.792	11.7	3.04	0.324
Kentucky	22	0.682	0.722	1.014	102.4	8.020	13.0	1.63	0.273
Louisiana	35	0.886	0.821	1.129	7.9	6.675	19.6	1.00	0.143
Maine	8	0.875	0.820	1.076	12.7	6.501	9.1	2.57	0.125
Maryland	23	0.870	0.870	1.142	7.1	6.576	16.8	2.50	0.217
Massachusetts	20	0.900	0.799	0.987	19.6	7.278	14.5	2.35	0.000
Michigan	45	0.444	0.470	1.189	21.3	6.852	14.8	2.16	0.311
Minnesota	93	0.957	0.953	1.477	24.4	6.831	8.2	3.84	0.387
Mississippi	30	0.467	0.528	1.290	13.4	6.751	11.2	2.00	0.333
Missouri	62	0.984	0.940	1.106	21.8	6.741	19.6	1.15	0.226
Montana	6	0.833	0.883	1.102	24.3	5.700	18.5	3.83	0.000
Nevada	19	0.158	0.322	0.815	17.4	6.359	14.1	1.24	0.105
New Jersey	58	0.914	0.886	1.229	94.5	7.086	14.6	2.33	0.207
New Mexico	33	0.697	0.598	1.147	6.3	6.680	22.6	1.00	0.121
New York	108	0.954	0.951	0.780	34.5	6.470	15.2	4.15	0.157
North Carolina	19	0.789	0.690	1.024	20.1	6.285	9.6	2.94	0.053
North Dakota	7	0.429	0.429	1.141	4.3	6.475	8.6	4.14	0.000
Ohio	44	0.773	0.787	1.215	237.8	6.620	11.2	1.57	0.318
Oregon	40	0.825	0.871	1.154	18.8	6.752	13.6	2.85	0.350
Pennsylvania	87	0.862	0.836	0.941	26.6	6.122	12.8	1.95	0.057
Rhode Island	7	1.000	0.879	0.721	8.8	6.585	14.7	1.57	0.000
South Carolina	15	0.467	0.640	1.066	55.4	7.497	18.1	2.00	0.133
Tennessee	48	0.813	0.830	1.132	10.9	6.652	10.8	2.16	0.333
Texas	160	0.969	0.971	1.361	17.7	6.892	13.6	2.12	0.194
Utah	26	0.962	0.964	0.870	15.0	6.513	23.2	1.00	0.077
Washington	63	0.952	0.829	1.062	7.0	6.161	19.6	2.81	0.063
West Virginia	14	0.786	0.807	2.430	3.9	6.859	7.9	5.50	0.714
Wisconsin	78	0.846	0.777	1.236	10.4	6.128	11.0	3.35	0.308
All	2,191	0.826	0.814	1.160	31.2	6.711	14.8	2.35	0.213

Each row shows the mean value for each variable for each state. *Local* denotes a dummy variable that takes a value of 1 if the lead bookrunner for an offering has an office in the state. *Instate* denotes the proportion of the underwriting syndicate, including the lead bookrunner, that has a local presence. *Spread* denotes the investment banking gross spread for the issues, expressed in percentage (%). *Size* reflects the proceeds of the bond issues expressed in millions of dollars. *YTM* denotes the yield to maturity for the bonds in percent. *Maturity* reflects the life of a bond in years. *Rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc. *Nonrated* refers to the fraction of bonds that are not rated by Moody's or Standard and Poor's.

The average percentage gross spread in the sample is 1.16%. This is substantially lower than the spreads for equity issuances, which are typically 7.00% for initial public offerings and around 5–6% for seasoned equity offerings. The highest average percentage spread for a state is 2.46% (West Virginia) and the lowest average percentage spread is 0.55% (District of Columbia). Unlike in

Table 2
Descriptive statistics by categories

Category	Yield	Spread	All-in cost	% Local	Max Obs
Rating = 1	6.482	0.973	7.496	85.0%	1,092
Rating = 2, 3, or 4	6.292	0.808	7.129	83.9%	342
Rating = 5, 6, or 7	6.431	1.283	7.803	78.2%	238
Rating = 8 or higher	6.964	1.395	8.295	80.4%	51
Nonrated bond	7.688	1.692	9.621	78.5%	465
Local underwriter	6.667	1.107	7.841		1,807
Nonlocal underwriter	6.906	1.318	8.348		381
Issued in 1997	6.777	1.237	8.034	83.8%	346
Issued in 1998	6.365	1.237	7.652	80.6%	480
Issued in 1999	6.863	1.188	8.130	80.8%	556
Issued in 2000	7.677	1.048	8.819	84.2%	406
Issued in 2001	5.982	0.986	7.071	84.9%	384
Local underwriter and rated	6.457	0.971	7.466		1,442
Local underwriter and nonrated	7.556	1.644	9.426		365
Nonlocal underwriter and rated	6.477	1.122	7.674		281
Nonlocal underwriter and nonrated	8.147	1.868	10.300		100

Each row shows the mean value for each variable for each category. *Local* denotes a dummy variable that takes a value of 1 if the lead bookrunner for an offering has an office in the state; *% Local* denotes the percentage of local bookrunners in each category. *Spread* denotes the investment banking gross spread for the issues, expressed in percent. *Yield* denotes the yield to maturity for the bonds in percent. *All-in cost* denotes the sum of yield and spread where both data are available. *Rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc. *Nonrated* refers to the fraction of bonds that are not rated by Moody's or Standard and Poor's.

the case of equity markets, there is no substantial clustering of spreads at any particular level (see Chen and Ritter, 2000).

Yield data are unavailable for several observations. For the 1,680 observations with yield data, the average yield in the sample is 6.7%, and the average rating is 2.35, which corresponds to slightly better than Aa2-rated or AA-rated bonds. Several issuing states have average ratings of 1.00, or Aaa—Louisiana, New Mexico, and Utah, as well as the District of Columbia. Note that the average ratings presented in the tables are the ratings for the *bonds* that are issued, not the states' ratings. For instance, Table 2 reports that the average rating for bonds issued by municipalities in Louisiana is Aaa, but the state's credit rating is A in January 2001 (source: the Louisiana state legislature website, www.legis.state.la.us). The state ratings can be different from the bond ratings because municipalities, not the states, are issuing the bonds, and the credit risk of a municipality can be different from that of its corresponding state. Also, many bonds are insured; insured bonds have a rating that reflects the insurer's creditworthiness (generally Aaa) rather than the municipality's creditworthiness. Approximately 79% of the bonds in the sample are rated.

3.3 Spreads and yields by categories

Table 2 presents descriptive statistics for yield, spread, all-in cost (i.e., yield plus spread), and percentage underwritten locally by rating, proximity of underwriter, year, and several subcategories. Yields and spreads are higher for bonds rated AAA or Aaa than for bonds with slightly worse ratings, because it is not uncommon for insured bonds to have top ratings, but to have issuance costs that are higher than those associated with bonds that are "naturally" AAA rated (that is, that merit an AAA rating even without insurance). In this sample, the average yield on credit-enhanced AAA bonds is 6.46% versus 6.69% for "natural" AAA bonds (i.e., those that are not credit enhanced). Nonrated bonds have the highest costs (average 9.62% all-in cost) and a relatively low proportion of local underwriters (78.5%). Most bonds (1,442) are underwritten by locals and are rated.

On average, bonds underwritten by local underwriters have lower yields, lower gross spreads, and lower all-in costs. The differences are all statistically significant. For yields, the difference is 24 basis points on average (t-statistic for difference of means assuming unequal variance across groups is 2.67; not tabulated), for gross spreads, the difference is 21 basis points on average (t-statistic = 4.48; not tabulated), and for all-in costs, the difference is about 51 basis points on average (t-statistic = 4.20; not tabulated). The sum of the gross spread and yield differences do not sum to exactly the difference in all-in costs because there are more data points for gross spreads than for yield or all-in cost. These results suggest that local underwriters are able to improve the offer prices of bond issues with lower fees.

These differences across local and nonlocal underwriters are more pronounced when I look specifically at the bonds that are most informationally opaque—namely, nonrated bonds. For gross spreads, the differences are about the same, at 22 basis points. But for yields and all-in costs on nonrated bonds, the differences between locally underwritten and nonlocally underwritten bonds are quite large, 59 and 87 basis points for yields and all-in costs, respectively. Each of these differences is significantly different from zero. These results are consistent with local underwriters' advantage being more pronounced for informationally opaque bonds.

3.4 Correlations

Table 3 presents pairwise correlations between variables. Issue proceeds (size) and the log of proceeds are related to percentage spread and dollar spread. Consistent with other studies (e.g., Chen and Ritter, 2000; Hansen, 2001), percentage investment banking fees decrease as offer size increases, although the total dollar fees increase with offer size. Size is also related to bond rating—larger issues are associated with better ratings. This is consistent with issuers taking advantage of strong credit ratings to issue large bond issues, and less creditworthy issuers being unable to issue larger bond offerings. Higher reputation underwriters tend to be used for larger issues, and larger issues tend to have longer maturities.

The percentage gross spread is strongly related to bond yield, bond rating, and bookrunner reputation (market share). Consistent with the findings of Jewell and Livingston (1998), investment banks charge higher spreads to underwrite less creditworthy bonds. Further, higher reputation investment banks tend to

Table 3
Correlations

	Ln(Size)	Size	Local	Instate	Spread%	Yield	Rating	Maturity	Ln(Mkt Share)
Size	0.4115 0.0000								
Local	0.1106 0.0000	0.0153 0.4752							
Instate	0.1001 0.0000	0.0142 0.5056	0.9011 0.0000						
Spread%	−0.4113 0.0000	−0.0625 0.0034	−0.0901 0.0000	−0.0754 0.0004					
Yield	−0.1658 0.0000	−0.0210 0.3880	−0.0683 0.0051	−0.0567 0.0199	0.2905 0.0000				
Bond Rating	−0.1193 0.0000	−0.0569 0.0181	−0.0551 0.0221	−0.0495 0.0400	0.1275 0.0000	0.0290 0.2887			
Maturity	0.4438 0.0000	0.1297 0.0000	0.0802 0.0002	0.0675 0.0017	−0.2320 0.0000	0.1128 0.0000	−0.1669 0.0000		
Ln(Mkt Share)	0.4498 0.0000	0.0420 0.0496	0.1045 0.0000	0.0907 0.0000	−0.3391 0.0000	−0.0744 0.0023	−0.1430 0.0000	0.3313 0.0000	
Market Share	0.3395 0.0000	0.0723 0.0007	0.1085 0.0000	0.0806 0.0002	−0.2071 0.0000	−0.0250 0.3051	−0.0877 0.0003	0.2275 0.0000	0.7327 0.0000

Data are for the entire sample of 2,191 municipal bond issues, but the number of observations for each variable varies with data availability. Correlations among variables are shown, with p-values given below. *Size* denotes the proceeds of a bond issue, and *Ln*(*Size*) denotes the natural logarithm of *Size*. *Local* is a dummy variable that takes a value of 1 if the lead manager is "local" (i.e., has an office in that state) and 0 otherwise. *Instate* is the percentage of the underwriting syndicate that is "local." *Spread%* is the investment bank gross spread as a percentage of the proceeds. *Yield* is the yield to maturity on the bonds. *Rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc. *Maturity* reflects the life of a bond in years. *Market share* is the percent proportion of all proceeds a bookrunner managed in a year. *Ln*(*Mkt Share*) is the natural log of ((*market share* * 10) + 1).

underwrite safer bonds. Interestingly, higher reputation investment banks charge *lower* spreads, on average, than their lower reputation counterparts. This is consistent with a competitive market in which underwriting firms are unable to earn rents through reputation building.

Where there are local bookrunners, the composition of the entire underwriting syndicate tends to be local as well; the correlation between the local dummy variable for a local bookrunner and the in-state variable, which denotes the percentage of the underwriting syndicate that is local, is over 90%. All the regressions described below use the local dummy, but they produce very similar results (not tabulated) if the local dummy is replaced with the in-state variable.

3.5 The effect of local investment banks on gross spreads, yields, and all-in costs

As discussed earlier, I hypothesize that local investment banks have an advantage over nonlocal investment banks at providing underwriting services. Because gross spread is related to several bond and underwriter characteristics as described above, it is important to control for these characteristics in order to

Table 4
Total effects of local underwriters on gross spreads, yields, and total costs

	Gross spread	Yield	Total cost
Local bookrunner	−0.080	−0.228	−0.334
	(0.145)	(0.040)	(0.018)
Bond rating	0.010	0.040	0.069
	(0.296)	(0.076)	(0.015)
Nonrated dummy	0.398	1.270	1.939
	(0.000)	(0.000)	(0.000)
Ln(Issue size)	−0.137	−0.105	−0.234
	(0.000)	(0.000)	(0.000)
Ln(Market share)	−0.070	−0.014	−0.073
	(0.000)	(0.542)	(0.012)
Maturity	0.001	0.032	0.037
	(0.438)	(0.000)	(0.000)
Credit-enhanced dummy	−0.160	−0.234	−0.256
	(0.000)	(0.015)	(0.018)
Year and state dummies, constant	Yes	Yes	Yes
Observations	2148	1669	1669
R-squared	0.384	0.406	0.454

The dependent variable is the percent gross spread, percent yield to maturity, or total cost (the sum of spread and yield). *Gross spread* denotes the investment banking gross spread, expressed in percent. *Yield* denotes the yield to maturity in percent. *Total cost* denotes the sum of yield and gross spread where both data are available. *Local* takes a value of 1 if the lead manager is "local" (i.e., has an office in that state) and 0 otherwise. *Ln*(*Size*) denotes the natural logarithm of the proceeds of the bond issue. *Nonrated* is a dummy variable that takes a value of 1 if the bond is not rated and 0 otherwise. *Bond rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc.; this variable takes a value of 0 if the bond is not rated. (Note that by including the nonrated dummy, assigning nonrated bonds a value of 0 is arbitrary.) *Maturity* reflects the life of a bond in years. *Ln*(*Market Share*) is the natural log of ((market share * 10) + 1), where market share is the proportion of all proceeds a bookrunner managed in a year. The *Credit-enhanced* dummy variable takes a value of 1 if the bond is insured or has letter of credit backing, 0 otherwise. Robust standard errors (see White, 1980) corrected for state-year clustering are used to calculate the *p*-values that appear in parentheses below the coefficient estimates.

test this hypothesis. Accordingly, I regress various measures of offering costs on a local bookrunner dummy variable designed to capture the effects of local underwriters and on several control variables. Specifically, I regress

$$\mathit{Offering\ costs} = \alpha + \beta_1 \mathit{Local} + \gamma\, \mathit{Controls} + \varepsilon, \qquad (1)$$

where offering costs is one of gross spread, yield to maturity, or all-in cost. The vector of control variables comprises Ln(size), underwriter reputation as proxied by a log transformation of an investment bank's market share, bond rating, a dummy variable for nonrated bonds, years to maturity, a dummy variable for whether the bonds are credit enhanced (i.e., insured or backed by a letter of credit), dummy variables for each year and state in the sample, and a constant term. (I note that similar results are obtained if the state dummies are omitted, except as noted below.) Because the residuals of these regressions could be correlated across issuing environments, all of the regressions in the paper allow for state-year clustering of standard errors. Table 4 presents the regression results.

The coefficient on the local bookrunner dummy is of the greatest interest in these regressions, as it allows one to ascertain whether and to what extent local underwriters have an effect on issuance costs. Requiring data for each control variable reduces the usable sample size in these regressions. For regression in which gross spread is the dependent variable, I have 2,148 observations. For regressions in which yield or all-in cost is the dependent variable, I have 1,669 observations; many observations are excluded in these cases because the data field for yield to maturity is missing for a large number of observations.

As expected, percentage gross spreads decline with the size of the bond issue, reflecting economies of scale to larger bond issues. Investment bank market share is also negatively related to gross spreads. Bonds with higher numerical ratings—that is, with more credit risk—and bonds that are not rated are associated with higher spreads. For each incremental rating notch, gross spreads increase by one (statistically insignificant) basis point. The absence of a rating increases fees by about 40 basis points. These findings are consistent with underwriters having more difficulty placing higher risk bonds and requiring more compensation for the additional work. Credit enhancement results in a statistically significant decrease in gross spreads of 16.0 basis points.

The presence of a local underwriter, after controlling for other determinants of fees, decreases gross spreads, though insignificantly, so $p = 0.145$. (I note that the relation becomes statistically significant when standard errors are not corrected for clustering.) This advantage, albeit perhaps a weak one, may manifest itself as a better network of potential investors, or as a superior ability to evaluate municipal bond offerings and certify them to investors. I examine this possibility in more depth in the next section.

The second regression model in Table 4 regresses yield to maturity on the same variables. The results indicate that yields decline with the size of the bond issue, and that investment bank market share is unrelated to yields. Bonds with higher numerical ratings—that is, with more credit risk—and bonds that are not rated are associated with significantly higher yields. For each incremental rating notch, yields increase by 4.0 basis points. The absence of a rating increases yields by 127 basis points. These findings are consistent with investors requiring a premium to hold higher risk bonds and bonds without a rating. Credit enhancement decreases yields on average by a statistically significant 23.4 basis points ($p = 0.003$). When I exclude state dummies, the effect is a statistically insignificant 9.1 basis points (not tabulated).

The presence of a local underwriter, after controlling for other determinants of yields, statistically significantly decreases yields. This local underwriter effect is a decrease of 22.8 basis points ($p = 0.040$). That is, the effect of a local underwriter's presence on yields is roughly as large as the effect that credit enhancement has on yields, holding other factors constant.

The last regression model uses all-in costs (spread plus yield to maturity) as the dependent variable. Consistent with the regressions that use spreads and yields as dependent variables separately, these results indicate that all-in costs decline with the size of the bond issue, and that bonds with more credit risk and bonds that are not rated are associated with significantly higher yields. For each incremental rating notch, all-in costs increase by 6.9 basis points. The absence of a rating increases all-in costs by 194 basis points. Credit enhancement decreases all-in costs by 25.6 basis points (versus a statistically insignificant 9.4 basis points when omitting state dummies).

The presence of a local underwriter, after controlling for other determinants of costs, statistically significantly decreases all-in costs by 33.4 basis points ($p = 0.018$), providing further evidence of a local investment bank advantage over nonlocals. The magnitude of this effect is of the same magnitude or slightly larger than the effect that credit enhancement has on all-in costs and, roughly speaking, has an equivalent effect on all-in costs as an improvement in bond rating of five rating notches.

3.6 The marginal effect of local underwriters on offering costs

In the regressions described above, I use a dummy variable for bonds underwritten by local investment banks to capture the impact that investment bank "locality" has on fees and yields. Those regressions indicate that local investment banks have an absolute advantage over nonlocal counterparts. For which bonds is this advantage the strongest? This subsection sheds light upon this question, providing the main results of the paper.

In Table 5, I add two variables to the regressions described above. Specifically, I regress a measure of offering costs (gross spread, yield to maturity, or all-in cost) on the same controls as above, the local bookrunner dummy, and two variables that capture (1) the interaction between locality and bond rating, and (2) the interaction between locality and nonrated bonds. In this table, I report separately results that include and that exclude state dummies, as the conclusions are not always the same. The regression is

$$\begin{aligned} \textit{Offering cost} = \alpha + \beta_1 \textit{Local} + \beta_2(\textit{Local} \times \textit{Bond Rating}) \\ + \beta_3(\textit{Local} \times \textit{Nonrated}) + \gamma \textit{Controls} + \varepsilon. \end{aligned} \tag{2}$$

The coefficients on the interaction terms are the *marginal* effects of a local bookrunner for bonds of differing credit risk and opacity.

The results indicate that local investment banks have the strongest advantage at underwriting bonds that are extremely difficult to place or are informationally opaque. Though higher credit risk bonds are associated with higher investment bank fees, this risk penalty is much lower for bonds underwritten by local investment banks. Although on average, gross spreads increase by about 3.2 basis points (statistically insignificant) per incremental notch in credit rating; local investment banks charge about 2.6 basis points (statistically insignificant) less in gross spreads per credit rating notch than nonlocal underwriters. The coefficients increase in magnitude and become statistically significant if state dummies are excluded: on average, gross spreads increase by about 5.2 basis points ($p = 0.007$) per incremental notch in credit rating; local investment

Table 5
Marginal effects of local underwriters on gross spreads, yields, and total costs

	Gross spread	Gross spread	Yield	Yield	Total cost	Total cost
Local bookrunner	0.095	0.021	0.166	0.119	0.256	0.182
	(0.108)	(0.761)	(0.205)	(0.444)	(0.129)	(0.359)
Local × Bond rating	−0.048	−0.026	−0.070	−0.091	−0.139	−0.143
	(0.035)	(0.253)	(0.034)	(0.016)	(0.001)	(0.003)
Local × Nonrated	−0.263	−0.193	−0.762	−0.680	−1.078	−0.952
	(0.066)	(0.182)	(0.007)	(0.013)	(0.003)	(0.007)
Bond rating	0.052	0.032	0.094	0.115	0.184	0.187
	(0.007)	(0.104)	(0.002)	(0.001)	(0.000)	(0.000)
Nonrated dummy	0.639	0.555	1.924	1.823	2.887	2.715
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Issue size)	−0.138	−0.138	−0.113	−0.106	−0.245	−0.236
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Market share)	−0.077	−0.071	0.018	−0.015	−0.045	−0.075
	(0.000)	(0.000)	(0.432)	(0.517)	(0.123)	(0.010)
Maturity	0.002	0.001	0.032	0.032	0.037	0.037
	(0.299)	(0.429)	(0.000)	(0.000)	(0.000)	(0.000)
Credit-enhanced dummy	−0.141	−0.159	−0.079	−0.225	−0.077	−0.244
	(0.000)	(0.000)	(0.383)	(0.019)	(0.466)	(0.022)
Year dummies, constant	Yes	Yes	Yes	Yes	Yes	Yes
State dummies	No	Yes	No	Yes	No	Yes
Observations	2148	2148	1669	1669	1669	1669
R-squared	0.352	0.385	0.357	0.411	0.414	0.460

The dependent variable is the percent gross spread, percent yield to maturity, or total cost (the sum of spread and yield). *Gross spread* denotes the investment banking gross spread, expressed in percent. *Yield* denotes the yield to maturity in percent. *Total cost* denotes the sum of yield and gross spread where both data are available. *Local* takes a value of 1 if the lead manager is "local" (i.e., has an office in that state) and 0 otherwise. The *Local × Bond Rating* and *Local × Nonrated* variables are *Local* multiplied by the bond rating or nonrated dummy, respectively. *Ln(Size)* denotes the natural logarithm of the proceeds of the bond issue. *Nonrated* is a dummy variable that takes a value of 1 if the bond is not rated and 0 otherwise. *Bond rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc.; this variable takes a value of 0 if the bond is not rated. (Note that by including the nonrated dummy, assigning nonrated bonds a value of 0 is arbitrary.) *Maturity* reflects the life of a bond in years. *Ln(Market Share)* is the natural log of ((market share * 10) + 1), where market share is the proportion of all proceeds a bookrunner managed in a year. The *Credit-enhanced* dummy variable takes a value of 1 if the bond is insured or has letter of credit backing, 0 otherwise. Robust standard errors (see White, 1980) corrected for state-year clustering are used to calculate the *p*-values that appear in parentheses below the coefficient estimates.

banks charge about 4.8 basis points ($p = 0.035$) less, or about half a basis point net, in gross spreads per credit rating notch than nonlocal underwriters.

Bonds that are not rated are also associated with higher gross spreads. Nonrated bonds have fees that are roughly 55 to 65 basis points higher, on average, than rated bonds. Again, local investment banks impose a much smaller penalty for underwriting nonrated bonds—about one-third less than their nonlocal counterparts. This difference is statistically significant when state dummies are excluded ($p = 0.066$). That is, the average increase in gross spreads for nonrated bonds is about 60 basis points if the bond is underwritten by a nonlocal, but only about 36 basis points for locally underwritten bonds.

The impact that locals have is even larger on the bonds' yields. In the second pair of columns in Table 5, I present regressions like that described above, except that here the dependent variable is the yield on the bonds. When I include the two interaction terms, the coefficient on the local dummy becomes statistically indistinguishable from zero. This result suggests that, holding other things constant, local investment banks' yield-reducing effect is the greatest for nonrated bonds and high credit-risk bonds. I find that though yields increase, on average, 9.4 to 11.5 basis points per credit rating notch for bonds underwritten by nonlocals, local underwriters obtain significantly better yields for high-risk bonds. The per-rating-notch penalty for bonds underwritten by local bookrunners is about 7.0 to 9.1 basis points *less* than that for bonds underwritten by their nonlocal counterparts, for a net per-notch penalty of about 2.4 basis points. In other words, for bonds underwritten by nonlocals, the penalty per rating notch on yields is about four times the magnitude of that for bonds underwritten by local bookrunners, other things being equal.

Yields of nonrated bonds are about 182 to 192 basis points higher than those of rated bonds. However, local investment banks are able to reduce this "no-rating penalty" by about 70 basis points. These results suggest that local investment banks are better able to evaluate and/or market difficult bond issues, and this manifests itself in lower yields for the issuer.

The effect of locality on all-in costs is even sharper than the separate effects on yields and spreads. In the last pair of columns in Table 5, I regress all-in costs on the same independent variables as above. Consistent with the results above, local investment banks' all-in cost reducing impact (holding other things constant) is also strong for nonrated bonds and high credit-risk bonds. I find that, although all-in costs increase by about 18.5 basis points per credit rating notch on average, local investment banks significantly reduce all-in costs for high-risk bonds. For local bookrunners, the net per-rating-notch penalty is only 4.4 basis points. The difference is statistically significant at the 1% level. Figure 1 summarizes this result graphically.

Nonrated bonds' all-in costs are about 272 to 289 basis points higher than those of rated bonds. Local investment banks reduce this "no-rating penalty" by about 95 to 108 basis points, or over one-third. These results suggest again that local investment banks are better able to evaluate and/or market difficult bond issues, and this manifests itself in significantly lower costs for the issuer.

3.7 Endogenous choice of underwriters

Because the choice of underwriter might be endogenous, I use a two-stage least squares method that considers such endogeneity; the results are generally consistent with those of the ordinary least squares (OLS) models above. In the first stage, I use a probit framework to model the choice of local versus nonlocal underwriter, using as an instrument an indicator variable that takes the value of one if the state has more than 100 issues in the sample period (high volume issuing state) and zero otherwise. I include in the first-stage regression all of the exogenous variables from the second-stage regression. I discuss the validity of the instrument below.

I take the predicted value of the local dummy from the first stage for use in the second-stage regressions. I interact the instrumented local dummy with

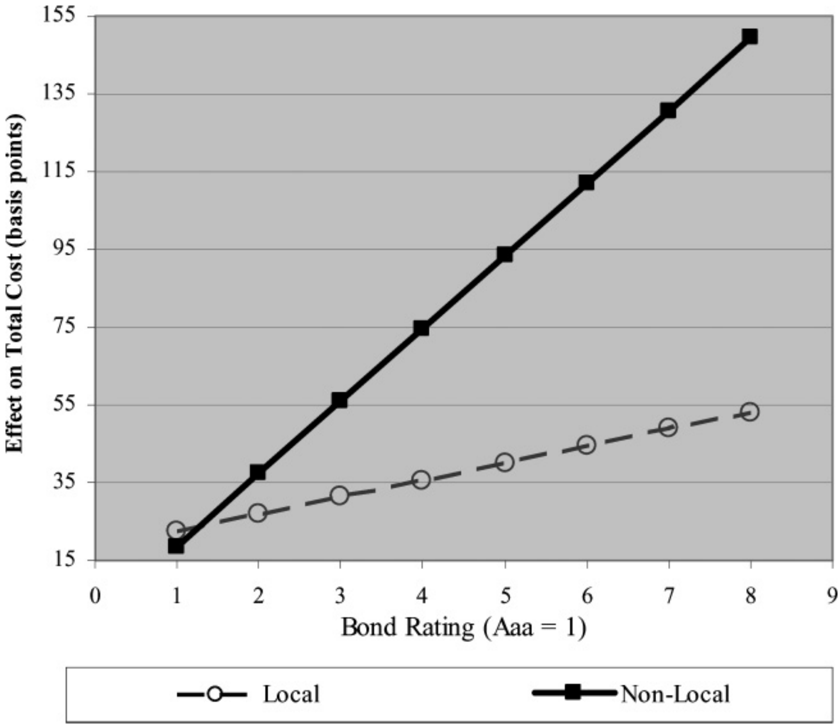

Figure 1
Average effects of bond ratings on total costs
This figure plots the average incremental effects of credit ratings on total costs of issuance (yield to maturity plus investment bank gross spread) for locally underwritten and nonlocally underwritten bonds. Slope and intercept coefficients derive from the last column of Table 5.

the bond rating and nonrated variables, and then regress all-in cost on these variables and the usual vector of control variables, including state dummies.

Table 6 presents the results from the first- and second-stage regressions. The broad conclusions from the previous sections go through when controlling for endogeneity. The differences between coefficients on many of the control variables (e.g., issue size, underwriter reputation, maturity, credit enhancement) in the second-stage and OLS regressions are very small, though there are some differences in the coefficients on the bond rating and nonrated variables, as well as on the local dummy and the interactions with the instrumented local dummy.

In the corresponding OLS regression in the last column in Table 5, the effect of an increase in the bond rating variable is associated with an increase in all-in costs of about 18.7 basis points for a nonlocally underwritten bond and 4.4 basis points for a locally underwritten bond, for a difference of approximately 14.3 basis points per rating notch. Here, the increase is 41 basis points for

Table 6
Effects of local underwriters on total costs, controlling for endogeneity

	First stage: Probit with dependent variable = local	Second stage: Dependent variable = total cost
Local bookrunner (instrumented)		0.28
		(0.869)
Local × Bond rating (instrumented)		−0.419
		(0.005)
Local × Nonrated (instrumented)		−1.49
		(0.173)
Bond rating	−0.015	0.41
	(0.495)	(0.002)
Nonrated dummy	0.03	3.157
	(0.819)	(0.001)
Ln(Issue Size)	0.125	−0.225
	(0.000)	(0.000)
Ln(Market Share)	0.046	−0.069
	(0.113)	(0.032)
Maturity	−0.006	0.037
	(0.134)	(0.000)
Credit-enhanced dummy	0.134	−0.251
	(0.180)	(0.041)
Instrument: High-volume issuer	0.685	
	(0.017)	
Constant, state, and year dummies	Yes	Yes
Observations	2141	1663
Pseudo/adjusted R-squared	0.211	0.460

The first-stage regression models the choice of underwriter (local or nonlocal) using a *High-volume issuer* dummy as an instrument (dummy = 1 if the state has more than 100 issues in the sample period, 0 otherwise). Year and state dummies are included in both stages. The dependent variable in the second-stage regressions is *Total cost*. The instrumented variable *Local* is the predicted value from the first stage. The dependent variable in the second stage is the *total cost* (the sum of spread and yield). *Ln*(*Size*) denotes the natural logarithm of the proceeds of the bond issue. *Nonrated* is a dummy variable that takes a value of 1 if the bond is not rated and 0 otherwise. *Bond rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc.; this variable takes a value of 0 if the bond is not rated. (Note that by including the nonrated dummy, assigning nonrated bonds a value of 0 is arbitrary.) *Maturity* reflects the life of a bond in years. *Ln*(*Market Share*) is the natural log of ((market share * 10) + 1), where market share is the proportion of all proceeds a bookrunner managed in a year. The *Credit-enhanced* dummy variable takes a value of 1 if the bond is insured or has letter of credit backing, 0 otherwise. Robust standard errors (see White, 1980) corrected for state-year clustering and (for the second stage) corrected for the bias inherent in two-stage least squares estimators are used to calculate the p-values that appear in parentheses below the coefficient estimates.

a bond underwritten by a nonlocally underwritten bond and −1 basis points for a locally underwritten bond. Thus, on average there is no "bad rating" penalty for bonds that are underwritten by local underwriters once endogeneity is taken into account. This underscores the important impact that local underwriters have on total issuance costs, particularly for the informationally opaque bonds.

The magnitude of the local underwriter effect on the nonrated penalty increases as well, from a regression coefficient of −0.95 (i.e., reducing the nonrated penalty by 95 basis points) in the OLS specification to a coefficient of −1.49 (i.e., reducing the nonrated penalty by 149 basis points) here. This difference is economically large but, due to the loss of efficiency in the estimation, is statistically insignificant. (I note, however, that when standard errors are not corrected for clustering, the results become statistically significant ($p = 0.056$)).

The fact that the results become stronger in magnitude here suggests that the residuals from the OLS regression are positively related to the local dummy. Indeed, the correlation between the OLS residuals and the local dummy is 0.238. This means that, to the extent that they can choose, the kinds of issuers who hire local underwriters do so precisely because they are more opaque and higher credit risks.[8]

The instrument I use appears to be a good instrument for the local dummy. States with a high issuance volume seem more likely to have underwriting firms establish offices in the state, thereby increasing the pool of local underwriters. There is no reason to expect that a high issuance volume is likely to be related to all-in issuance costs after controlling for other factors, such as the bond rating and issue size. The t-statistic for the instrument indicates that this is not a weak instrument (see Wooldridge, 2002, pp. 104–5).[9] I also note that these results are robust to using alternative instruments. Using a variable for a low-volume issuing state (less than 30 issues) or the population of the state that resides in large cities or combinations of these variables as instruments provides generally similar results.

3.8 Distance versus presence in the state

Though the findings above consistently indicate that local underwriters have an advantage at underwriting municipal bonds, so far the results do not allow one to cleanly distinguish whether the source of this advantage derives from physical *proximity per se*, or from simply having a *presence* in the state. If it is physical proximity that matters for information production, then for states that are either very large or very small, locality should show a weaker effect on issuance costs for opaque bonds. That is, in a very big state (e.g., Texas), the underwriter is likely to be farther away from the typical issuer than is the case in a medium or small state, and thus locality is less valuable if it is physical proximity that matters. Conversely, in a very small state (e.g., Massachusetts), an underwriter in one state might be sufficiently close to issuers in a neighboring state to enjoy a proximity-related information advantage in spite of nonlocal status (and this is less likely for a medium-sized state or a large state). Thus, the empirical predictions of these two effects are that the marginal impact of an underwriter with a presence in the state is lower in very large states and in very small states.

To test this prediction, I first define "big states" as those with more than 100,000 square miles and "small states" as those with less than 15,000 square miles. Under these definitions, there are 8 big states (Alaska, Texas, California, Montana, New Mexico, Arizona, Nevada, Colorado) and 10 small states

[8] I thank the referee for pointing this out.

[9] Wooldridge (2002) presents a textbook discussion of Staiger and Stock's (1997) analysis of the bias that can arise from using weak instruments. Also see discussions in Stock, Wright, and Yogo (2002); and Andrews and Stock (2005). If the instrument were weak, instrumental variables estimates are biased in the same direction as the OLS estimates (Bound, Jaeger, and Baker, 1995).

Table 7
State size and the marginal effects of local underwriters on total costs

	Total cost
Local bookrunner	0.026
	(0.879)
Local × Bond rating	−0.171
	(0.000)
Local × Nonrated	−1.121
	(0.001)
Local × Bond rating × Big state	0.118
	(0.044)
Local × Nonrated × Big state	1.018
	(0.014)
Local × Bond rating × Small state	0.116
	(0.092)
Local × Nonrated × Small state	1.012
	(0.146)
Local × Big state	0.354
	(0.361)
Local × Small state	0.724
	(0.081)
Bond rating	0.175
	(0.000)
Nonrated dummy	2.623
	(0.000)
Controls: Ln(issue size), maturity, Ln(market share), credit-enhanced dummy, state and year dummies, constant	Yes
Observations	1669
R-squared	0.473

The dependent variable is the *total cost* (the sum of spread and yield). Control variables are *Ln*(*Size*), *Maturity, Ln*(*Market Share*), a dummy for *Credit-enhanced* bonds, and dummies for each state and each year, and are defined in the previous tables. Coefficients on control variables are not reported. *Nonrated* is a dummy variable that takes a value of 1 if the bond is not rated and 0 otherwise. The variable denoted *Bond rating* reflects a bond rating agency's credit assessment: 1 denotes an AAA rating, 2 denotes an AA+ or Aa1 rating, etc.; this variable takes a value of 0 if the bond is not rated. Note that assigning nonrated bonds a value of 0 is arbitrary, and any value other than numerical ratings assigned to the bonds would produce identical results. *Local* denotes a dummy variable that takes a value of 1 if the lead manager is "local" (i.e., has an office in that state) and 0 otherwise. *Big state* is a dummy for states with more than 100,000 square miles (Alaska, Texas, California, Montana, Arizona, Nevada, Colorado); *Small state* is a dummy for states with less than 15,000 square miles (DC, Rhode Island, Connecticut, New Jersey, Massachusetts, and Maryland; Delaware, New Hampshire, Vermont, and Hawaii are also small states, but are not in my sample). Robust standard errors (see White, 1980) corrected for state-year clustering are used to calculate the p-values that appear in parentheses below the coefficient estimates.

(DC, Rhode Island, Connecticut, New Jersey, Massachusetts, and Maryland; Delaware, New Hampshire, Vermont, and Hawaii are also small states, but are not in this sample).[10] I then construct the following interaction variables: *Big State* × *Local, Small State* × *Local, Big State* × *Local* × *Bond Rating*, *Big State* × *Local* × *Nonrated*, *Small State* × *Local* × *Bond Rating*, and *Small State* × *Local* × *Nonrated*. Regressing these along with the original interaction variables (*Local* × *Bond Rating*, *Local* × *Nonrated*) allows me to infer whether the marginal effect of a local underwriter is stronger or weaker in big/small

[10] The results remain unchanged regardless of whether I include or exclude the marginal states (i.e., adding the next one or deleting the last one) in the definitions of "big" and "small" states. Note that small states are disproportionately concentrated in the Northeast, while large states are disproportionately concentrated in the West. Although I do not expect a difference for East versus West versus South versus Midwest, etc., I cannot distinguish between "size" effects and these "directional" effects.

states. That is, in addition to giving a local underwriter's "direct" effect (characterized by the local dummy) and "main" marginal effects (characterized by the interaction variables *Local* × *Bond Rating* and *Local* × *Nonrated*), the regression now also indicates how these marginal effects vary by state size. Table 7 reports the regression of all-in costs on all the variables from the regressions in Table 5, adding the new interaction terms for state size. As the table illustrates, the main marginal effects of a local underwriter are qualitatively very similar to what the previous analysis shows.

To determine whether a local advantage derives from physical proximity or simply a presence in the state, I examine the coefficients on the state size interaction terms. If it is simply a presence in the state that matters, then these coefficients should be statistically indistinguishable from zero. In contrast, if it is distance that matters, then on average, local underwriters in big states and small states should lose some of their competitive edge, in which case the coefficients on the state size interaction terms should be positive.

Consistent with proximity (as opposed to an in-state presence) mattering, the marginal effects of big and small states are both positive. That is, while local underwriters have a comparative advantage at underwriting informationally opaque bonds, *overall* this comparative advantage is weak in both the smallest and the largest states. This is consistent with the idea that in small states, local underwriters may face competitors that are classified as nonlocal, but who have a proximity-based information advantage all the same, and that in large states, the information advantage that local underwriters might enjoy is diminished by greater-than-average physical distance between underwriters and issuers.

4. Conclusion

The impact that local investment banks have on municipal bond costs is nontrivial. Despite the bad reputation municipal bond underwriters earned in the pay-to-play era, I find that investment banks with local connections have substantial comparative and absolute advantages over their nonlocal counterparts. Using a large sample of municipal bond offerings from 1997 to 2001, I find that investment banks with an in-state presence charge lower fees and sell bonds at lower yields than nonlocal underwriters. This local advantage is especially strong for the underwriting of high-risk and nonrated municipal bonds. One interpretation of these results is that risky and nonrated bonds are more difficult to evaluate and market, and that investment banks with a local presence are better able to assess soft information and hence can better handle "difficult" bond issues than their nonlocal counterparts.

Consistent with the observation that over 80% of the municipal bonds are underwritten by an investment bank with a local office, the findings of this paper suggest that investment banks with active municipal bond underwriting departments might find it useful to open branch offices in several states. Proximity could enable municipal bond underwriters to better evaluate local issuers and to establish long-term connections with local banks, insurance companies, and others who are regular purchasers of municipal bonds. Furthermore, because many states evaluate commitment to the state when selecting among investment banks vying for deals, a local presence might further benefit investment bankers looking for deal flow.

The results also provide indirect evidence on the distinctiveness of relationship lending by commercial banks. Other researchers show that commercial banks are able to exploit informationally captured borrowers by charging higher rates. In contrast, I find that local investment banks charge lower fees and sell bonds at lower yields than their nonlocal counterparts. That investment banks are unable to informationally capture client firms highlights the importance of ongoing *ex post* monitoring of commercial banks and indicates that "distance matters" for financial intermediation and the production of soft information when *ex post* monitoring is not feasible.

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