FEDERAL RESERVE BANK of ATLANTA

Does Geography Matter to Bondholders?

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Abstract: We find that the location of corporate headquarters significantly affects the firm's bondholders. Similar to Loughran and Schultz (2006) and others, who show that investors are better able to obtain information on nearby companies, we look at firms located in large metropolitan cities, small cities, and rural areas and find that firms located in remote rural areas exhibit significantly higher costs of debt capital (of up to 65 basis points) in comparison to their urban counterparts. Unlike other studies that focus on the role of information asymmetries in the local bias of investors and decision makers, we are able to show that firms in remote areas experience greater costs of debt capital primarily because of a greater difficulty of monitoring their activities. We find that the adverse impact of bad corporate governance on bondholders is magnified in geographically remote firms, primarily because geographic distance reduces the effectiveness of external monitoring. Consistent with that, we show that in the private placement market, where firms are closely monitored by institutional investors, location plays no role in explaining the cross-sectional variation in the cost of debt capital across companies. We also find that the passage of the 2002 Sarbanes-Oxley Act, which brought about regulatory improvements in monitoring and governance, significantly reduced the agency costs of debt in rural firms. Taken together, our results indicate that the firm's information environment interacts with the impact of corporate governance, particularly affecting the effectiveness of external monitoring in alleviating agency problems between insiders and debt holders.

JEL classification: G10, G14, G34, G38

Key words: geographic location, cost of debt capital, corporate governance

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Does Geography Matter to Bondholders?

1. Introduction

A recent and growing body of literature documents the importance of geographic location in affecting investor behavior and corporate decision-making. Proximity of the firm's headquarters to investors, corporate divisions, banks, analysts and market makers, is associated with a more efficient information flow reflected in higher investor returns (Ivkovic and Weisbenner, 2005), resolution of information problems in bank lending (Petersen and Rajan, 2002; Degryse and Ongena, 2005), greater employee friendliness (Landier, Nair, Wulf, 2006), and more accurate earnings forecasts by analysts (Malloy 2005). Yet surprisingly, although debt is the primary source of external financing for most firms, the impact of geography on bondholders has received no attention.

In a recent study, Loughran and Schultz (2006) find that rural firms, having a smaller base of close by investors and financial intermediaries, suffer from more information asymmetry problems than their urban counterparts. The authors show that as a result, these rural less visible firms are more likely to hold a greater proportion of debt in their capital structure in comparison to similar urban companies. These external financing differences between rural and urban firms have important implications for debt holders. The goal of this study is to take the Loughran and Schultz study one step further and examine whether the geographic proximity of a firm's headquarters to its investors and financial intermediaries affects the firm's cost of debt capital, proxied by its bond at-issue yield spreads. We base our study on the idea that a firm's geographical proximity to a large base of investors reduces the cost of understanding and monitoring both the firm's business and the ability and behavior of its management, and is therefore priced accordingly by debt holders. When bondholders perceive corporate information to be more difficult to obtain and monitor, they assign firms a higher likelihood of withholding value relevant unfavorable information, and as a result, charge a higher risk premium.

Based on Loughran and Schultz (2006), we classify urban firms as those located in one of the ten largest metropolitan areas in the United States, rural firms as those located at least 100 miles away from the center of any metropolitan area of 1 million or more people as defined by the 2000 census, and small city firms as a control group of companies located in all other areas. Using the Securities Data

Corporation (SDC) New Issues database to extract bond issuance data during the time period 1990-2004, we find that the difference in the bond at-issue yield spreads between rural and urban firms can be as high as 65 basis points. The existence of a statistically significant spread differential between rural and urban companies is robust to a host of endogeneity and sensitivity tests, including alternative measures of geographic location as well as sample selection criteria, such as differences in size, industry, listing location, bond rating quality, bond maturity and analyst coverage.

Our Study suggests two explanations as to why rural firms exhibit significantly higher costs of debt capital in comparison to urban companies. First, information quality may be compromised when the decision maker is further away from financial intermediates like banks, analysts and large institutional investors who are associated with reducing information asymmetries (e.g., Malloy, 2005; Coval and Moskovitz, 1999; Grinblatt and Keloharju, 1999). Coval and Moskowitz (2001) show that geographic proximity affects the flow of soft information because it enables more frequent interaction and better personal acquaintance with firm managers within social settings outside work, fostering understanding and creating inside knowledge. If on average, the physical access to rural firms by their financial intermediaries is more difficult, then acquiring soft information, as opposed to hard information, becomes increasingly costly. In the words of Loughran and Schultz (2006): "Is a firm located in urban Los Angeles, or one located in rural Bismarck, North Dakota farther from institutional investors in New York City? Measured in miles, the company in Los Angeles is much farther away. But, it is also much easier for the institutional investor to reach. There are numerous direct flights from New York to Los Angeles every day. Getting to Bismarck is difficult, and once there, the analyst is almost certainly stuck for the night".

Since bondholders are mainly concerned with the default risk of the firm, and correspondingly, its ability to make scheduled interest and principle payments over the life of the bond, better access to information should signal a higher probability of payment over the life of the bond and better chances to reveal unfavorable information that might increase the default risk of the company (Sengupta 1998). As a result, bondholders take into consideration the information set of the company when assessing its information risk and incorporate it into their required at-issue yields.

We construct information proxies based on the analyst following of the firm. Mansi, Maxwell and Miller (2004), Sengupta (1998) and others find that analyst coverage and disclosure are inversely related to the firm's cost of debt capital. We find that although the information flow contained in analyst following reduces the spread differential between rural and urban companies, its effect is independent of whether the firm receives analyst coverage or not. Therefore, while we find that the information environment of the firm affects its bondholders, the significant impact of geographic location on the firm's cost of debt capital cannot be fully explained by information asymmetry considerations.

The second explanation is related to agency problems that could arise between managers and investors. Landier, Nair and Wulf (2006) find that decision makers in geographically dispersed firms make decisions that might not align with the company's shareholders. The authors show that employee dismissals are less likely in less populated counties, where the manager internalizes the impact of her decisions on local employees, the welfare of the community, and her social standing in the area. In a related study, Gao, Ng and Wang (2006) find that geographically dispersed firms are worth less than geographically focused ones. The authors show that agency problems could lead to geographic expansions that provide monetary and non-monetary benefits to management that are not value maximizing to shareholders. They further find that as geographic dispersion complicates the organizational structure of the corporation, it also increases the difficulty of external monitoring by shareholders, which leads to greater agency problems between management and equity holders.

There are two channels in which corporate governance quality could contribute to the higher cost of debt capital of rural firms compared to that of urban ones. First, it may be possible that some badly governed companies choose to locate themselves in rural areas. That is, managers who wish to engage in opportunistic behavior or live a quiet life at the expense of the firm's capital providers may locate themselves in less visible rural areas. Second, it may be the case that monitoring rural companies is more difficult due to their distance from a large base of analysts, banks and institutional investors. For example, Dass and Massa (2006) find a positive association between geographic proximity and better monitoring by banks, resulting in reducing managerial rent appropriation and risk taking behavior. These stronger external monitoring mechanisms for proximate firms may result in lowering the agency costs between managers and debt holders in urban, more physically approachable companies.

We find evidence that is inconsistent with the first channel of the agency based explanation but consistent with the second one. That is, in general, managers do not make location decisions based on opportunistic interests, but location does affect external monitoring and hence agency costs of debt. Using the Bebchuk, Cohen and Ferrell (2005) managerial entrenchment index as a proxy for the severity of agency problems between managers and investors, we find no evidence that firms with weaker governance are more likely to be located in rural areas. Hence, differences in corporate governance do not determine location choices. It seems more apparent that proximity to customers, qualified employees and local resources, not firm governance, are the primary determinants of location decisions. We also find that for both well and poorly governed firms, rural companies exhibit significantly higher costs of debt capital than their urban counterparts. However, within urban firms, the at-issue spread difference between well and poorly governed companies is much smaller than the difference in the sample of rural firms. Such results are consistent with the interpretation that the adverse impact of bad corporate governance on bondholders is magnified in geographically remote firms, because geographic distance reduces the effectiveness of external monitoring.

We further explore the role of external monitoring in alleviating agency problems between firm insiders and bondholders by examining the at-issue yield spread differential between rural and urban firms in private debt markets. Consistently with Diamond (1984), Boyd and Prescott (1986) and others, who find that private placements are particularly effective in controlling agency conflicts between borrowers and lenders, we find an insignificant difference between rural and urban firms' at-issue yield spreads for private debt issues. This finding is consistent with stronger monitoring in private debt markets that serves to better align management and bondholder interests, even when the firm is located in distant rural areas. Hence we find that monitoring plays a significant role in explaining the cross sectional variation in the cost of debt capital across various locations of corporate headquarters.

As a final robustness check, we examine the impact of new governance rules that were mandated by the U.S. Congress on the difference in the cost of debt between rural and urban companies. Looking at the time period before and after legislation of these laws offers important insights on the relation between location and the cost of debt capital, because it allows us to examine how location affects bondholders given exogenous changes in the firm's monitoring and corporate governance environment. The main

changes were imposed by congress in late 2002 through the Sarbanes-Oxley (SOX) Act. Generally speaking, SOX has established new or enhanced standards for U.S. public company boards, management and accounting firms, ranging from additional corporate board responsibilities, auditor independence and certification of financial reports by CEOs and CFOs, to enhanced criminal penalties for violation of the securities law, etc.[1]

We find a significant at-issue spread differential between rural and urban firms before SOX, which was especially large for small and poorly governed firms, but an insignificant difference following SOX enactment. These findings are in the same line with the interpretation that improvements in the monitoring environment of the firm result in alleviating the agency problem between management and bondholders so that firms located further away from financial intermediaries can gain from improvements in relevant governance attributes.[2] We also find that the issuance of bonds by small rural companies has a positive and significant wealth effect on stockholders before the SOX period and an insignificant effect thereafter. These results suggest that before SOX, shareholders in small, remote firms that were less visible to large sets of investors, viewed bond issuance as an effective monitoring mechanism, even though issuing debt by such firms was more costly. However, following the regulatory improvements in monitoring and disclosure brought by SOX, issuing bonds by small rural firms not only became cheaper but also became a "no-news" event, regardless of firm size and location.[3]

Our study has several important implications. The results suggest that the geographic location of corporate activities is closely related to agency problem considerations. Existing studies of corporate location are generally motivated by the information and familiarity advantages of investments and managerial decisions, associated with geographically proximate firms.[4] Our paper contributes to this growing literature on the importance of geography in finance and economics by taking on a different

[1] See Chhaochharia and Grinstein (2006) for a discussion of the new regulations.
[2] Our findings are also consistent with a recent study by Aggarwal and Williamson (2006) who find that adopting these new regulations is associated with higher firm value, which suggests that the new regulations did target relevant governance attributes in badly governed firms.
[3] Ge and McVay (2005) find that disclosure of internal material weaknesses is negatively related to firm size. Based on an analysis of firms that report internal control deficiencies under SOX section 404, De Franco, Guan and Lu (2005) conclude that small investors benefit more from these disclosures than large investors.
[4] For example, Coval and Moskowitz (1999, 2001) demonstrate mutual fund local bias towards proximate firms due to better access to information, Huberman (2001), Grinblatt and Keloharju (2001), Zhu (2002), and others document similar phenomena for individual investors, and Kedia and Uysal (2006) find that acquirer returns in local transactions are more than twice than in non-local transactions, motivated at least partially by information issues.

approach. First, this is the first study that shows that the firm's headquarters location is an important determinant of agency problems between firm insiders and bondholders, and that locating the firm's headquarters in a rural area has significant negative implications for the firm's cost of debt capital. The results also provide evidence on the interaction between corporate governance and location and its impact on bondholders: being located in a rural area aggravates the agency problems between management and debt holders and leads to greater costs of debt capital. In the context of agency conflicts and geography, we only know of two other studies by Landier, Nair and Wulf (2006) and Gao, Ng and Wang (2006) that motivate corporate decision making by governance related concerns, looking at geographic expansion of the firm's subsidiaries. Our paper confirms the underlying intuition of the studies showing the ability to transmit "soft" versus "hard" information over distance, and in addition identifies the agency consequences of the fact that soft information is more prominently involved in the case of borrowing from proximate debt holders.

Second, no paper explores the importance of geography in the context of debt holders. Bondholders are an important class of stakeholders, who account for a significant portion of many firms' market capitalization and represent one of the world's largest securities markets. Further, the bond market provides a natural setting to study how information structures affect asset prices given the institutional nature of the bond market investor base.[5] Given that the marginal bond investor is likely to be well diversified and informed, our setting is well tailored to examine the prediction in Hughes, Liu and Liu (2005) that as the economy becomes large with well-diversified investors, there should be no relation between information risk and the cost of debt capital. Extending on research that generally focuses on equity holders, we are able to show that geography affects not only shareholders but bondholders as well, and that its impact is aggravated by agency conflicts.

The remainder of the paper is organized as follows. Section 2 describes the data, variables and methodology. Section 3 presents the empirical results on the relation between location and the firm's cost of debt capital. Section 4 explores the information asymmetry and governance explanations to the differences found between rural and urban at-issue yield spreads, discusses their implications and

[5] Flow of Funds Accounts of the United States: Flows and Outstandings, Fourth Quarter 2004, Board of Governors of the Federal Reserve System, Washington D.C. ,pp 89-90.

provides alternative specifications for robustness. Section 5 explores the role of external monitoring offered by private placement bond markets in alleviating agency problems between firm insiders and bondholders in rural firms. Section 6 examines the impact of SOX on the difference in the cost of debt capital between rural and urban companies. Section 7 concludes the paper.

2. Data

2.1. Sample and methodology

To classify firms as urban or rural, we follow a number of authors, including Coval and Moskowitz (1999), Zhu (2002), Ivkovic and Weisbenner (2005), Loughran and Schultz (2004, 2006) and others, and use a company's headquarters as a proxy for its location. We obtain the headquarters locations for companies from Compustat, SDC and Hoover's. We then find the latitude and longitude data for each firm's headquarters using the *U.S. Census Bureau's Gazetteer city-state files* (http://lii2.wested.org/pub/subtopic/51929). Following the definition in Loughran and Schultz (2006), a company is defined as an urban firm if its headquarters is in one of the ten largest metropolitan areas of the United States according to the 2000 census. These include New York City, Los Angeles, Chicago, Washington- Baltimore, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston. Companies located in a suburb of one of these cities are also included in the urban portfolio. A company is defined as rural if its headquarters is 100 miles or more from the center of any of the U.S. metropolitan areas of 1 million or more people according to the 2000 census. Companies located in all other areas, that is, companies within 100 miles of any of the metropolitan areas of at least 1 million people but not one of the ten top largest cities, are then defined as small city firms. Using the latitude and longitude data, we compute the distance between each firm's headquarters and the ten largest U.S. metropolitan areas including their suburbs, and between each firm and the U.S. metropolitan areas of at least 1 million people as defined by the 2000 census. We use the standard formula for computing the distance d(a,b) in statutory miles between two points, a and b as follows:

$$d(a,b) = \arccos[\cos(a_1)\cos(a_2)\cos(b_1)\cos(b_2) + \cos(a_1)\sin(a_2)\cos(b_1)\sin(b_2) + \sin(a_1)\sin(b_1)]r \quad \text{.....(1)}$$

Where a_1 and b_1 (a_2 and b_2) are the latitudes (longitudes) of the two points (expressed in radians), respectively, and r denotes the radius of the earth (approximately 3,963 statutory miles). Based on the

above location definitions, we are then able to identify each firm in our sample as rural, urban or small-city company.

The main data source we use for extracting bond data is the Securities Data Corporation (SDC) New Issues database during the time period 1990-2004. For the purpose of calculating bond yield spreads, we use the risk-free term structure of interest rates taken from Bloomberg including the monthly treasury benchmark yields with 2, 3, 5, 7, 10, and 30 year coupon bonds. We also collect stock daily returns around the bond SEC filing date reported in SDC from the Center for Research in Security Prices (CRSP) database for the purposes of examining shareholder wealth effects around bond issuances in rural and urban firms before and after the passage of the 2002 SOX Act.

We also collect analyst data from the Institutional Broker Estimation System (I/B/E/S) annual consensus earning forecast. Specifically, we look at the number of analysts following the firm, as previous research shows that the level of analyst following is positively related to the information structure of the firm (Land and Lundholm, 1996). Firms without I/B/E/S coverage are assigned a value of zero analysts.

For debt issues to be included in our analysis, data must be provided on the firm's headquarters location, leverage, assets, amount, yield, duration, time to maturity, lead underwriter and underwriter syndicate, and credit rating of the firm's fixed coupon rate, straight public debt securities. A total of 3,567 debt issues on 951 firms during the period 1990-2004 meet these criteria.

For debt issues to be included in our analysis of the impact of debt issuance on stock returns in rural and urban areas, data must include the announcement date of our public debt issues. For bond issuance announcement date we use the SEC registration filing date from SDC and Lexis/Nexis. If a firm registers two or more bond issues with the SEC on the same date, only the first bond issue is included in the final sample. An issuing firm's stock must be traded on the New York Stock Exchange, American Stock Exchange or Nasdaq. To be in our sample, 310-day sample period around the bond issuance date stock returns was required. In addition, other sufficient data, such as bond rating and coupon rate, must be available. 683 bond issues were selected based on these criteria. Data availability and screening for confounding events reduced our sample to 579 bond issues that had sufficient estimation and event window data for the corresponding bond filing date.

Finally, we collected private placement bond data from SDC for the period 1990-2004. All convertible bonds, variable rate bonds, and bonds with equity features such as warrants or rights were eliminated, leaving only fixed rate, straight bonds in our sample. Because credit rating data do not appear on non-144A private placement bonds in SDC, we collected data on non-144A, as well as 144A private placement bonds. The final sample consists of 759 private placement bond issues for 469 firms, from which 467 issues are 144A rule bonds and 292 are non-144A ones.[6] A discussion of the variables we use in the study follows.

2.2. Description of variables

The dependent variable is the at-issue yield spread (*Spread*), defined as the difference between the yield to maturity on a coupon paying corporate bond and the yield to maturity on a coupon paying government bond with the same maturity date. We use bond-specific variables and also firm-specific control variables in our analysis. Bond related measures include: Credit rating (*Rating*), issuance proceeds (*Proceeds*), bond time to maturity in years (*Time to maturity*) and a dummy variable to denote high yield, non-investment grade bonds with ratings below Baa3 (*High yield issues*). A firm's credit rating is measured by Moody's bond ratings at the issue date. Similar to Klockm Mansi and Maxwell (2005), we compute bond ratings using a linear conversion process in which Aaa ratings are assigned a value of 16 and B3 ratings are assigned a value of 1. Corporate bonds that are rated below B3 are excluded from our sample because data on these bonds are not available for most of our sample. All bond related data are obtained from SDC.

Our firm-specific variables are obtained from Compustat and include headquarters location; issue size (*Size*), measured by the natural log of the firm's issue size standardized by its total assets; firm leverage (*Leverage*), calculated as the ratio of long-term debt to total assets; and firm profitability (*ROA* and *market-to-book ratio*). We calculate ROA as the ratio of earnings before interest, tax, depreciation and amortization divided by total assets. For the market-to-book ratio we use the end of the previous year's CRSP market value of equity scaled by the prior fiscal year's book value (defined as Compustat

[6] Securities issued under Rule 144A do not have to file a public registration statement with the Securities and Exchange Commission, but can be sold only to qualified financial institutions.

book value of equity plus balance-sheet deferred taxes and investment credit minus the book value of preferred stock).

To control for issuance frequency, we create a dummy variable to denote firms that have issued bonds more than once during the sample period (*Multiple issuers*). We also create a dummy variable to denote prestigious lead underwriters in our sample (*Prestigious underwriters*). We determine lead underwriters' prestige based on the top-ten list in the Investment Dealer's Digest's annual league tables. Out of this list, we choose eight banks that appear almost every year in the recent ten years, namely: Goldman Sachs, Merrill Lynch, Morgan Stanley, Salomon Brothers, CSFB, Lehman Brothers, JP Morgan and DLJ.[7] Although in the existing literature, a popular measure of underwriter reputation is the Carter-Manaster ranking, we do not use this measure primarily because the bond underwriting market differs significantly from the equity underwriting market (Fang, 2005).

We also control for firm visibility by taking into account the listing location of the issuing firms, and create a dummy variable that is equal to 1 if the firm is listed on Nasdaq, and 0 otherwise. To control for firm-specific governance and managerial entrenchment issues, we include the Bebchuk, Cohen and Ferrell (2005) entrenchment index (*BCF index*). In general, the BCF index consists of six variables Bebchuk, Cohen and Ferrell (2005) report as having the greatest explanatory power in affecting managerial entrenchment and vulnerability to takeovers, based on the Gompers, Ishii and Metrick (2003) governance index from IRRC. The index can take on a score of 0 to 6 and is the sum of six dummy variables equaling 1 if the sample firm has a poison pill, requires supermajority approval of mergers, has a golden parachute, has limits to amend its bylaws, has a staggered board, and has limits to amend its charter.

Finally, we create dummy variables to track the headquarters location of each company, forming three groups: firms located in rural areas (Rural firms); firms located in urban areas (Urban firms) and firms that are not urban or rural (Small city firms), as a control group.

2.3. Summary statistics

[7] Similar to Fang (2005), instead of using a continuous measure of reputation, we convert the measure into a binary classification of the underwriters. Economically, the binary classification captures the empirically observed two tiered power structure in the investment banking industry, a bank either belongs to the "bulge bracket" club or it does not.

Table 1 provides summary descriptive statistics for rural, urban and small city firms. The data set is comprised of 951 firms and 3,567 bond issues, from which, the majority of issues was made by urban firms (1,773 issues), and the smallest proportion of issuance activity was made by to rural based companies (with 492 bond issues).

[Insert Table 1 about here]

Panel A presents the mean at-issue yield spreads across the three headquarters location groups. Rural firms have the highest at-issue spreads (165.43 basis points), in comparison to small city firms (155.94 basis points) and urban firms (141.02 basis points). All spread differentials are highly statistically significant at the 1% level.

A comparison of firm size across the three location groups indicates that rural firms are significantly smaller than urban and small city companies, with issue proceeds that are substantially lower as well. Consistently with findings in Loughran and Schultz (2006), who show that rural firms are less likely to issue seasoned equity offerings and thus hold a greater proportion of debt in their capital structure, rural firms in our sample are significantly more levered than other urban and small city companies (with 29.26%, 23.09%, and 25.37% leverage, respectively), issuing debt more frequently throughout the sample period (with 91% of rural firms issuing public debt more than once, in comparison to 88.09% of small city firms, and 84.63% of urban firms). Rural companies also hold longer maturity debt of 11.54 years to maturity on average, in comparison to 9.68 and 9.59 years to maturity for bonds issued by small city and urban firms, respectively. Like other studies (e.g., Malloy, 2005; Loughran and Schultz, 2006 and others), we find that rural companies are associated with Nasdaq listing, issuance activity that is accompanied by less prestigious underwriters, and less analysts coverage in comparison to firms located elsewhere.

Panel B of table 1 describes the industry distribution of the sample across location groups using the standard Security Industry Classification (SIC) codes. While about one third of rural and small city bond issuing firms are concentrated in the transportation industry, over 40% of urban firms are concentrated in manufacturing.

Panel C of table 1 and figure 1 summarize both empirically and graphically the distribution of public bond issuance activity over time across the three location groups. Consistent with their smaller

size, rural firms exhibit the lowest issuance volume during each year of the sample period, whereas urban companies present the highest issuance activity over time. The similarity of issuance patterns across the three location groups in Figure 1 indicates that the bond issuance volume of firms in various areas was not driven by macroeconomic conditions that were specific to only a certain area.

Panel A of table 2 reports the mean at-issue yield spreads across various rating categories for each of our three location groups: Rural, Small city, and Urban. The data are segmented into low risk, high to upper-medium quality debt (Aaa-A3), moderate risk, medium quality debt (Baa1-Baa3), and high-risk speculative debt (below Ba1).

[Insert Table 2 about here]

Interestingly, across all rating categories, rural firms have significantly higher at-issue yield spreads in comparison to all other firms, whereas urban companies have the lowest at-issue yield spreads, and the differences are highly significant for all rating groups.

In panel B of table 2 we report mean at-issue yield spreads across various bond maturity categories and location groups. We segment our sample into short, medium and long term bonds, with under 3, 3-10 and over 10 years to maturity, respectively. We find that for all location groups, the mean at-issue yield spread is increasing for longer maturity periods, consistent with bonds with longer maturity being more risky. Importantly, our findings regarding the adverse impact of rural location on bondholders hold throughout all maturity groups, indicating that for every bond maturity horizon, rural based firms present the highest mean at-issue yield spreads, whereas urban firms report the lowest mean at-issue yield spreads. Differences in at-issue yield spreads between rural bonds and bonds issued by firms located elsewhere are statistically significant for all maturity horizons, at least at the 10% level.

In general, the results in panels A and B of Table 2 indicate that location matters to bondholders, and that on average, at-issue bond yield spreads are higher for rural companies, regardless of their investment rating or maturity horizon.

3. The relation between corporate location and the cost of public debt capital

3.1. Corporate location and the cost of public debt capital

In this section, we test the cross sectional relation between corporate location and the cost of public debt financing, proxied by at-issue yield spreads, and controlling for firm and bond-specific measures, as defined above.[8] *Time_dummies* and *Industry_dummis* indicate time and industry dummies, respectively. The primary specification is:

$$Spread_{i,t} = \alpha_0 + \alpha_1(Rural\_dummy_{i,t}) + \alpha_2(Small\_city\_dummy_{i,t}) + \alpha_3(Size_{i,t}) + \ldots\ldots\ldots\ldots\ldots\ldots(2)$$
$$+\alpha_4(ROA_{i,t}) + \alpha_5(Leverage_{i,t}) + \alpha_6(Rating_{i,t}) + \alpha_7(Time\_to\_maturity_{i,t}) +$$
$$+\alpha_8(High\_yield\_dummy_{i,t}) + \alpha_9(\Pr estigious\_underwriter\_dummy_{i,t}) +$$
$$+\alpha_{10}(Nasdaq\_dummy_{i,t}) + \alpha_{11}[\log(1+Analysts)_{i,t}] + \alpha_{12}(Multiple\_issuer\_dummy_{i,t}) +$$
$$+\alpha_{13}(Time\_dummies_i) + \alpha_{14}(Industry\_dummies) + \varepsilon_{i,t}$$

We expect *Size* to be negatively related to the bond's at-issue yield spread, as issue proceeds are associated with larger firms that are presumed to be more stable and less risky. *Rating* is expected to be to be negatively related the cost of debt capital as higher levels of rating indicate lower default risks. *Time to maturity* is expected to be positively related to at-issue yield spreads as bonds with higher maturity are considered to be more risky. High yield, non-investment rated bonds should be associated with higher default risks and thus have higher costs of debt financing and at-issue yield spreads. Prestigious lead underwriters are expected to have a negative relationship to spreads as underwriting decisions reflect reputation concerns, and are thus informative of issue quality. Multiple bond issuance by the same company is expected to be negatively related to at-issue yield spreads because a more frequent issuing and trading pattern conveys more information to investors about the firm's performance and reduces adverse selection costs. We also expect the number of analysts covering the firm to be negatively associated with the at-issue spreads because greater disclosure of information is rewarded with lower costs of debt capital (Sengupta, 1998).

Turning to the firm-specific variables, *Leverage* should have a positive relationship with at-issue yield spreads, as higher debt usage is associated with an increased probability of default and thus higher costs of debt financing. We expect firm profitability (*ROA*) to be negatively related to the at-issue yield

[8] The results are robust to alternative specifications of the dependent variable, including the logarithm of at-issue yield spreads.

spread, as better performance indicates lower default risk and thus lower cost of debt financing. We expect a Nasdaq listing to be positively related with at-issue yield spreads, as Nasdaq firms tend to be smaller and thus perceived riskier by bondholders. Finally, we include year and industry dummy variables to control for possible time and industry effects. The expected sign of *Rural dummy* and *Small city dummy* is positive because being located further away from investors and financial intermediaries is expected to be associated with greater difficulties in obtaining information and monitoring firm insiders.

[Insert Table 3 about here]

Column (1) of Table 3 provides the primary regression specification. The rural dummy variable is equal to 1 if the firm's headquarters is located at least 100 miles away from metropolitan areas of at least 1 million people, as defined by the 2000 census, and 0 otherwise. The small city dummy variable is equal to 1 if the firm's headquarters is not located in a rural area or in one of the ten largest metropolitan areas in the U.S., and 0 otherwise. The results show strong evidence that corporate geographic location significantly affects the at-issue spreads of public bonds, even after controlling for bond and company specific characteristics. The evidence suggests that the cost of debt issued by firms located in rural areas is about 19 basis points higher than that of firms located in urban areas. This difference is significant at the 1% level with a t-statistic of 2.364. Bonds issued by firms located in small cities exhibit at-issue yield spreads that are 8 basis points higher than those of urban companies (t-statistic=1.995). The coefficient estimates of the other control variables all bear their expected signs with conventional significance levels. The explanatory power of the model is above 59% suggesting that the data explain a substantial portion of the spread variation.

Columns (2) and (3) present our primary specification looking at large and small firms, respectively, based on the median asset size of the firms in our sample (15 billion dollars). We find both the rural and small city dummies to be positive and highly significant in both sub samples, with lower coefficient sizes in the large firms sub sample. This is consistent with larger firms being associated with a lower risk of default.

Finally, in columns (4) and (5), we segment the data into investment rated and speculative bonds, respectively. Non-rated bonds are high risk, speculative bonds, with a Moody's bond rating below Baa3. The findings in columns (4) and (5) support our earlier findings that a rural or a small city location of the

firm's headquarters, significantly increases its cost of publicly issued debt capital in comparison to similar urban firms. The cost of issued debt capital is especially high when looking at rural firms. These are presumably the type of firms that are more difficult to observe and monitor, located further away from market makers and financial intermediaries.

3.2. Robustness tests

In this section we conduct a battery of robustness checks, including alternative sample selection criteria, alternative measures of geographic location, and tests to rule out the presence of endogeneity in our models. These various tests generate qualitatively similar results to the ones reported above. In Table 4 we provide robustness checks on the relation between corporate location and the cost of debt capital.

[Inset Table 4 about here]

Columns (1) and (2) segment the data into Nasdaq and non-Nasdaq listed firms. If firms listed on Nasdaq are perceived to be riskier than firms listed elsewhere, then all else equal, we should see a larger impact of rural location for bonds issued by Nasdaq listed firms. Consistent with this notion, we find that the rural dummy is positive and statistically significant for both Nasdaq and non-Nasdaq listed firms, with a higher coefficient for Nasdaq companies. Specifically, the spread differential between Nasdaq rural and urban companies is about 35 basis points, whereas the differential for non-Nasdaq firms is only about 14 basis points.

In columns (3) and (4) we segment the data into firms that issued bonds only once throughout the sample period (one-time-issuers) versus firms that issued bonds more than once during the sample years (multiple issuers), respectively. If bond spreads in urban firms are lower simply due to greater issuance activity, resulting in higher liquidity and visibility, we should not expect to find a significant relationship between at-issue yield spreads and our location dummies for one-time-issuers. The results indicate, however, that even for one-time-issuers there is a significant location effect.

In column (5), we follow Loughran and Schultz (2006) and look at a sub sample of utility companies (SIC 4900-4999, according to the Fama and French (1997) industry classification codes). In general, there are several methodological advantages of testing our model on a sample of utility companies. First, looking at a single industry segment controls for cross sectional variation in spreads that

is driven by industry effects. Second, as argued by Loughran and Schultz (2006), looking at utility firms can help us alleviate endogeneity concerns. Throughout our model, we make the assumption that corporate location decisions are exogenous. That is, location is not a choice variable that is affected by the company's perceived cost of debt capital in the area. Examining utilities gives the economic rationale for companies choosing their location based on local resources, skilled employees, customers, market competition, etc., rather than costs of debt capital. Since a utility serves a particular geographic area, it cannot economically locate its headquarters away from its customer base and power generation. Hence, it is implausible that results for utilities are biased by endogeneity. Indeed, as with our results above, we find a positive and significant association between a rural (and small city) location and the cost of debt financing for utility firms.

To correct for potential endogeneity problems, we follow the methodology in Loughran and Schultz (2006), and estimate the impact of location on the cost of debt capital using a two stage least square approach. For the first stage, we choose an instrument for rural location that is highly correlated with rural location, but uncorrelated with the error term from regressing bond at-issue yield spreads on location. Using data from the 2000 census on demographic profiles in the counties utilized in our sample, we employ the proportion of females that are 65 years and over, as an instrument for rural location.[9] While it is plausible that a firm may locate its headquarters in a certain area due to costs of debt considerations, it is implausible that a company will choose a certain location based on the proportion of elderly women in the area. Hence, while our instrument is positively and highly correlated with a rural location, it is uncorrelated with corporate location decisions. In the first stage regression, we run a logit model in which the dependent variable receives a value of 1 if the firm is located in a rural area, and 0 otherwise. The independent variables include our instrumental variable and the control variables employed in our original specification. The coefficient of the instrumental variable is positive and significant (t-statistic=7.475), indicating that in comparison to other areas, a larger proportion of the population of rural areas is comprised of females who are 65 years or older. In the second stage regression, we regress at-issue yield spreads on the instrumental variable and the other original control variables. The coefficient on the instrumental variable for a rural location is positive and highly

[9] Demographic data can be found at: http://www.census.gov/Press-Release/www/2002/dp_comptables.html

significant (t-statistic=4.330), indicating that after adjusting for endogeneity, rural location remains a significant factor in determining the cost of debt capital.[10]

As final robustness tests, we use different specifications for urban location. In column (6) we define urban firms as those located in New York City, and in Column (7), urban firms are those located in one of the five largest U.S. metropolitan areas, namely, New York, Los Angeles, Chicago, Washington-Baltimore, and San Francisco. Rural and small city locations are defined as before. Results hold for each specification, indicating that being located in a remote area adversely affects the firm's bondholders.

4. Causes for the cost of debt differential between rural and urban firms

So far, we have presented robust evidence that rural location is associated with higher costs of debt capital. In this section, we explore the possible sources of these higher costs. Specifically, we examine whether the information environment of the firm or the quality of its corporate governance can explain our finding of higher at-issue yield spreads for rural companies.

4.1. Information asymmetry

As we discussed in the introduction, a potential cost that comes with geographic remoteness is related to information asymmetry due to the distance barrier between corporate insiders and investors. Loughran and Schultz (2006) point out that "greater distance implies a meaningful disadvantage in obtaining information". In this subsection, we examine whether a firm's information environment affects the cost of debt capital associated with corporate location.

We characterize the information environment of firms based on the level of analyst following a firm receives. Mansi, Maxwell and Miller (2004) find that higher analyst coverage is associated with lower costs of debt capital, and that the economic impact of analyst activity is largest for firms with relatively larger amounts of private information, proxied by the level of intangible assets. Barth, Kasznik, and McNichols (2001) show that analysts expend significantly more effort in firms with greater amounts of private information, and Easley and O'Hara (2004) also argue that the flow of information has a greater impact on the cost of capital of firms with relatively less public information available. Finally, Malloy

[10] Results are available upon request.

(2005) finds that geographically proximate analysts are more accurate than remote ones, and that this effect is strongest for firms located in small cities and remote areas, and for small firms.

Companies in distant rural areas are presumably able to retain private information more successfully than proximate urban firms, due to the greater difficulty of direct observations of these companies and their employees, direct face-to-face constant interaction with their management, etc. (Coval and Moskowitz, 2001). However, if local analysts extend more effort in revealing private information, especially for firms in remote areas, then controlling for analyst coverage in our model should take away the significant relation between at-issue yield spreads and location dummies.

[Inset Table 5 about here]

In Table 5 we present regression results of the impact of the information environment on firms' cost of debt financing. Columns (1) and (2) segment the data into firms that have received analyst coverage and firms without analyst following, respectively. We note that although the impact of rural location on the cost of debt is weaker in firms receiving analyst coverage, it is still significant at the 5% level. Specifically, rural firms that receive analyst coverage have at-issue yield spreads that are 18 basis points higher than those of similar urban firms, and rural firms that did not receive analyst coverage exhibit at-issue yield spreads that are 24 basis points higher than those of comparable urban companies.

Since analyst coverage has been shown to increase in firm size (Barth, Kasznik, and McNichols, 2001), in columns (3)-(6) we control for firm size along with whether or not the firm received analyst coverage. Small firms are defined as those with asset size equal to or below the full sample median, and large firms are those with asset size above the median size of the full sample. In columns (3) and (4) we look at small firms with and without analyst coverage, respectively, and in columns (5) and (6) we look at large firms with and without analyst coverage, respectively. The results in columns (3)-(6) are consistent with those reported above, indicating that geographic remoteness is significantly and positively related to the firm's cost of debt capital, regardless of firm size and whether or not the company received analyst coverage.

Overall, the results in this section suggest that while the information environment of the firm affects its bondholders, the significant impact of geographic location on the firm's cost of debt capital cannot be fully explained by information asymmetry considerations. We next explore the role of

corporate governance and monitoring in explaining the significantly higher costs of debt capital in rural firms.

4.2. Corporate governance

Corporate governance can adversely affect bondholders in rural companies in two main ways. First, management of poorly governed firms could pursue corporate strategies that increase their own benefits to the detriment of bondholders. For example, locating the corporate headquarters further away from investors and analysts for the purpose of living a quiet life, instead of focusing on location choices based on economic considerations, such as easy access to local resources etc., can consequently provide both monetary and non-monetary gains to corporate executives at the expense of the firm's capital providers. Second, geographic remoteness increases the difficulty of external monitoring by shareholders, analysts, institutional investors and banks, who rely on a flow of hard, as well as soft information from corporate insiders. If the physical access to rural firms by their financial intermediaries is more difficult, then closely monitoring their management can potentially become increasingly costly, and might then result in greater agency problems between managers and bondholders. We consider both possibilities in our analysis.

We employ corporate governance information from Bebchuk, Cohen and Ferrell (2005), who create an entrenchment index based on six provisions from the Investor Responsibility Research Center (IRRC) data. The BCF index for each firm varies between 0 and 6, which is constructed by adding one point for every specific provision in place and zero otherwise. As a result, a higher value of the BCF index signifies higher levels of managerial entrenchment and agency costs.

We first investigate whether a firm's governance affects its location decisions. To investigate how a location choice relates to its governance quality, we run a logit regression (unreported) in which the dependent variable is equal to 1 if the firm is located in a rural area, and 0 otherwise. The independent variables include the BCF index along with our original control variables. The coefficient on the BCF index in the logit regression is statistically insignificant, suggesting that the firm's governance quality is not likely to affect its location decisions.

To examine the role of corporate governance in the relation between rural location and the cost of debt capital, we classify firms based on both corporate governance ranking and geographic location. First, we divide the whole sample into two sub samples: firms with good governance quality and firms with bad governance quality. The construction of the sub samples is as follows. We rank firms' BCF index and find its median within each year. All the firm-year observations for which the BCF index is lower or equal to the median are assigned to the good governance sub sample, while the other firm-year observations are assigned to the bad governance sub sample. Second, we further divide the two sub samples into three groups according to a firm's geographic location status (rural, small city or urban). As a result, we have six groups of sample firms. We then calculate the average at-issue yield spread for each group of firm-year observations. Table 6 shows the results.

[Inset Table 6 about here]

The results indicate that on average, the impact of geographic location on spreads varies with firms' governance quality. Particularly, being located in a rural area (urban area) is associated with the highest (lowest) costs of debt capital in comparison to being located in other areas, especially for firms with bad governance quality. The mean and median spread differential between rural firms and firms located elsewhere in both well and badly governed firms is statistically significant at least at the 5% level. Examined differently, corporate governance quality affects the spread associated with location. For example, for rural firms, those with bad governance have yield spreads that are about 20 basis points significantly higher than those with good governance. However, for urban (small city) companies, those with bad governance have yield spreads that are only about 10 (16) basis points significantly higher than their counterparts with good governance. Hence, on average, the adverse impact of bad governance on bondholders is magnified in geographic remoteness, which is consistent with the interoperation that geographic distance reduces the effectiveness of external monitoring.

We next conduct a multivariate analysis of the relationship between governance quality and the impact of geographic location on at-issue yield spreads. The results are reported in Table 7.

[Inset Table 7 about here]

The sample firms we employ in the regressions are those whose BCF index is available. The dependent variable is the firm's at-issue yield spreads. Independent variables include the control variables

used in the above regressions, and the *BCF index*. The results in Column (1) Table 7 indicate that the cost of debt capital is increasing with the entrenchment of the firm's management. One point increase in the BCF index would lead to a 8 basis points increase in firm at-issue yield spreads, implying that the better the corporate governance, the lower is the cost of debt financing. Column (2) expands Column (1) by including the rural and small city dummies in the regression. Being located in a rural or small city location is positively and significantly related to bond at-issue spreads, and the BCF index remains positive and statistically significant. It is evident that the impact of geographic location and corporate governance do not subsume each other's role in determining a firm's cost of debt capital. Column (3) allows for differential impacts of geographic location (rural or small city) with respect to firms' governance quality in a multivariate setting. The model therefore introduces two interaction terms, which are constructed by interacting governance quality with the two location dummies. The primary specification of the model in Column (3) is the following:

$$
\begin{aligned}
Spread_{i,t} &= \alpha_0 + \alpha_1(Good\_governance * Rural_{i,t}) + \alpha_2(Bad\_governance * Rural_{i,t}) + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)\\
&+\alpha_3(Good\_governance * Small\_city_{i,t}) + \alpha_4(Bad\_governance * Small\_city_{i,t}) +\\
&+\alpha_5(Size_{i,t}) + \alpha_6(ROA_{i,t}) + \alpha_7(Leverage_{i,t}) + \alpha_8(Rating_{i,t}) + \alpha_9(Time\_to\_maturity_{i,t}) +\\
&+\alpha_{10}(High\_yield\_dummy_{i,t}) + \alpha_{11}(\text{Prestigious\_underwriter\_dummy}_{i,t}) +\\
&+\alpha_{12}(Nasdaq\_dummy_{i,t}) + \alpha_{13}[\log(1+Analysts)_{i,t}] + \alpha_{14}(Multiple\_issuer\_dummy_{i,t}) +\\
&+\alpha_{15}(Time\_dummies_i) + \alpha_{16}(Industry\_dummies) + \varepsilon_{i,t}
\end{aligned}
$$

Consistent with the sample classifications in Table 6, the *Good governance* dummy is 1 if a firm's BCF index is below the median BCF index of all sample firms for each year, and 0 if otherwise. Similarly, the *Bad governance* dummy is 1 if a firm's BCF index is above or equal to the median BCF index of all sample firms for each year, and 0 if otherwise. The coefficients on the interaction terms show that the impact of being located in a rural or small city area on the firm's cost of debt capital is statistically significant for firms with both good and bad governance quality, but it is more pronounced in badly governed firms. More specifically, the coefficient of the interaction between bad governance and the rural (small city) dummy is about 26 (10) basis points and statistically significant. In comparison, the coefficient on the interaction between good governance and the rural (small city) dummy reduces to 10 (3) basis points and is statistically significant as well.

Overall, the evidence from the multivariate analysis confirms the conclusion from the univariate analysis of Table 6. Geographic remoteness is associated with a statistically significant increase in the

cost of debt capital for both well and badly governed firms, but the adverse impact of remoteness on bondholders is magnified in badly governed firms. Hence, it seems apparent that corporate governance contributes to the adverse effect of geographic remoteness on the firm's debt holders because of changes in the monitoring mechanism. Within urban and small city firms, the at-issue spread difference between good and bad governance firms is much smaller than the difference in the sample of rural firms. Such results are consistent with the interpretation that the adverse impact of bad corporate governance is magnified in geographically remote firms, because geographic distance reduces the effectiveness of external monitoring.

5. Exploring the role of external monitoring in rural firms

In the previous section we found that high quality corporate governance can alleviate some of the agency problems between management and bondholders in remote rural firms. In this section we aim to investigate the role of external monitoring in aligning the interests of firm insiders and debt holders. We begin by exploring the impact of corporate location on the cost of private debt. We then examine the impact of the 2002 Sarbanes-Oxley Act on the debt agency problems in rural companies.

5.1. Private placement bond issues

In general, private placement bonds are non-underwritten, unregistered corporate bonds that are sold directly to a single investor or a single group of investors. Most lenders in the private placement market are institutions such as commercial banks and life insurance companies that specialize in performing comprehensive credit evaluations before the debt issue and in monitoring firm performance after the debt issue.

Myers (1977) argues that short-term debt that comes up for renegotiation before completion of the project along with monitoring of the firm's operating and investment decisions can mitigate the moral hazard problem between bondholders and shareholders, caused by asset substitution and underinvestment. Such monitoring is typically achieved in privately placed debt by incorporating restrictive covenants that are not standard in public issues (Smith and Warner, 1979). Fama (1985) also argues that private debt investors have better access to private information, and Chemmanur and Fulghieri (1994), and Gertner

and Scharfstein (1991), contend that private debt financing has an advantage in terms of efficiency of liquidation and renegotiation in financial distress. These features make private placements particularly effective in controlling agency conflicts between borrowers and lenders.

5.1.1. Descriptive statistics of private debt issues

Table 8 reports the characteristics of the private debt sample, which contains a total of 759 issues during 1990-2004. The characteristics of the public debt issuances are also provided for comparison purposes. The total average amount of private and public debt raised by the sample firms is $375.0 million. Public debt accounts for $237.7 million and private debt $137.3 million. 292 firms issued Non-144A private debt that accounts for an average amount of $38.7 million and 467 firms issued 144A private debt that accounts for an average of $199 million. It appears that although, on average, private debt issues are smaller than public debt issues, they are economically important financing events for borrowing firms.

[Inset Table 8 about here]

We also note that the average proceeds for rule 144A issues and publicly traded debt are close in size, consistent with findings in other papers (see, e.g., Fenn, 2000). The average at-issue yield spread in basis points for public issues is 149.8 (median 100.5), and the median Moody's credit rating is 10.2, which is equivalent to a rating value A2. Average at-issue yield spreads are higher for private issuers (255.3 basis points), and are the highest for 144A private placements (315.9 basis points). The average Moody's rating for private debt issues (only for 144A) is significantly lower than for public debt issues (12.1, equivalent to Ba3) at the 1% level.

Firms making public debt issues are significantly larger than those making private debt issues. On average, firms issuing publicly traded debt have an asset size that is about twice as large as that of firms issuing private debt. Public bonds are also issued significantly more often than private bonds, with about 87% multiple issues in comparison to 53% multiple issues of private bonds. These differences in size and issuance frequency are consistent with firms issuing greater amounts to take advantage of the economies of scale in public debt issues (Blackwell and Kidwell, 1988; Carey et al.,1993).

About 80% of the private placements in our sample are high yield issues, in comparison to only 14% in the public bonds sample. Interestingly, Fenn (2000) reports that virtually all high-yield 144A private placements are registered for public sale within four to seven months after issuance. Once registered, these securities are essentially identical to the privately placed securities in terms of priority, maturity, and covenants. This suggests that at the time of issuance, there is something particularly advantageous about private placements. Fenn argues that the speed of issuance is the determining factor. This is consistent with our finding that firms issuing 144A private debt are characterized by low credit quality. Presumably, these are firms with the greatest need for speed of issuance to avoid costly default. Consistent with this notion, private placements are also on average significantly more leveraged than publicly traded bonds, with 34.3% versus 24.8%, respectively. The differences in leverage are driven by 144A issues, with a mean of 46.2%.

Up to this point, consistent with Denis and Mihov (2003), we find that public borrowers are larger and have higher credit ratings than firms borrowing from private lenders. Conversely, firms that borrow from private lenders tend to have the lowest credit rating and the highest ex-ante probability of default.

In Table 9 we control for the firm's credit rating and compare between at-issue yield spreads, for 144A private placements and publicly issued bonds in our three location groups.11 We find that the at-issue yield spread differences between rule 144A bonds and publicly traded bonds are mainly driven by the lowest speculative rating group, Ba1-B3. For all other rating categories, at-issue yield spreads are lower for private placements in comparison to public debt. Most important and consistent with our results for public debt issues, we find that across all rating categories, rural firms have the highest at-issue yield spreads, whereas urban firms have the lowest. We also find that in comparison to public debt at-issue yield spreads, investment grade private at-issue yield spreads are significantly lower, a finding which is consistent with the notion that private placement debt markets are an effective mechanism, which better aligns the interests of managers and bondholders.

[Insert Table 9 about here]

[11] Because SDC does not provide rating data for non-144A private placement bonds, we were not able to control for credit rating for this sample as well.

5.1.2. Regression analysis of private debt issues

In Table 10 we regress the at-issue yield spreads of 144A private bond placements on the rural and small city location dummies and the set of control variables as described above. However, since private bonds are mainly issued by small companies that analysts do not typically follow, we do not include a variable to indicate the level of analyst coverage as before.

[Insert Table 10 about here]

In column (1) we run our primary regression, using the 144A private bond sample of 467 issues. The results show that for private placements, the geographic location dummies insignificantly affect the at-issue yield spreads, both statistically and economically. We then run the regression on a sub sample of small firms (based on median asset size) and present our findings in Column (2). Firm size is often used as a proxy for the amount of public information available about a company, where small firms are typically associated with higher levels of information asymmetry (Harris, 1994). However, the results in column (2) reveal that location plays no significant role in explaining the variation in the cost of private debt for small firms. These results are consistent with the strong monitoring environment offered in private placement markets.

In column (3) we run the regression on a sub sample of badly governed firms, as defined above. These are the firms that suffer from the highest levels of agency problems. Results, however, indicate that private debt markets do a good job of monitoring managers, even when they are relatively entrenched.

Columns (4), (5), and (6) segment the data into highly levered firms (based on sample median), speculative issues, and one-time issuers, respectively. These are all bond issues/firms that that are perceived to be risky by bondholders. If geographic remoteness aggravates agency problems between firm insiders and bondholders, then these are exactly the type of bond issues that bondholders in rural companies should ask a higher risk premium for. Nevertheless, we find that location no longer plays a significant role in explaining at-issue bond spreads when looking at private placements. These findings support our previous ones that information asymmetry alone cannot explain the cross sectional differences in the cost of debt financing across firms in various locations, and that the external monitoring difficulty of remote firms aggravate the agency problems between bondholders and managers in public debt markets.

6. Exploring the role of regulation in rural firms

In this section we estimate the impact of the Sarbanes-Oxley (SOX) Act on the variation in the cost of debt capital across firms located in various areas. In general, the SOX Act was signed into law on July 30th 2002, and introduced highly significant legislative changes to financial practice and corporate governance regulation. It introduced stringent new rules with the stated objective: "to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws".[12] The legislation is wide ranging and establishes new or enhanced standards for all U.S. public company boards, management, and public accounting firms. The Act contains 11 titles, or sections, ranging from additional corporate board responsibilities to criminal penalties, and requires the Securities and Exchange Commission (SEC) to implement rulings on requirements to comply with the new law.

6.1. Regression analysis of the impact of SOX on agency problems in rural firms

We compare between the at-issue yield spreads of public bonds across companies in rural, small city and urban firms, before and after SOX enactment. Looking at the time period before and after legislation of these laws offers important insights on the relation between location and the cost of debt capital, because it allows us to examine how location affects bondholders given exogenous changes in the firm's monitoring and corporate governance environment.

Table 11 estimates coefficients from regressing public bonds at-issue yield spreads on the location dummies (*Rural dummy* and *Small city dummy*) and firm and bond specific control variables as before.

[Insert Table 11 about here]

Columns (1) and (2) of Table 11 segment the data into bonds issued before the SOX Act was signed into law (July 30, 2002) and bond issues after the SOX Act passage, respectively. The results indicate that location plays a significant role in explaining bond spreads before SOX, but an insignificant role thereafter. These results are consistent with the notion that improvements in corporate governance

[12] http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107_cong_reports&docid=f:hr610.107.pdf

and disclosure quality can mitigate agency problems between managers and debt holders caused by a difficulty of monitoring insiders' activities.

In columns (3) and (4) we look at a sub sample of small firms (based on the full sample's asset size median) before and after SOX, respectively. We find that rural firms issuing public debt before SOX passage were experiencing significantly higher costs of debt than their urban counterparts of about 65 basis points. Following SOX, however, these firms were no longer different than urban companies, with respect to the cost of issuing public debt.

Finally, columns (5) and (6) segment the data into poorly governed firms before and after SOX, respectively. Badly governed firms were identified as before, with a BCF index equal to or greater than the median BCF index of all the sample firms within each year. The results in columns (5) and (6) are consistent with the previous ones, indicating that before SOX, rural firms suffered from higher costs of debt financing in comparison to their urban counterparts, but following SOX, these differences had become both economically and statistically insignificant.

6.2. Shareholder reaction to bond issuance before and after SOX

Finally, we explore the shareholder reaction to bond issuance before and after SOX, across our three location groups. So far, our results indicate that corporate location has a statistically and economically significant impact on at-issue bond spreads and therefore on the firm's cost of capital. We show that firms located in rural areas have significantly higher costs of debt financing than firms located elsewhere, while the opposite is true for firms located in urban areas. We attribute our findings to the notion that bondholders in firms located in remote rural areas face a higher cost of debt financing due to the greater difficulty of monitoring these distant companies, which results in a greater likelihood of insiders withholding value relevant information from bondholders in such firms. In this section we test whether shareholders perceive bond issuance as a monitoring device in rural, less visible companies, and whether there is a difference between shareholder reaction to bond issuance before and after SOX.

To investigate shareholders' reaction to public bond issuance we estimate abnormal returns associated with the bond issue. To compute the abnormal returns we use standard event study methodology (see, e.g., Brown and Warner, 1985). The market model abnormal returns are computed

using the CRSP equally weighted index returns. The parameters for the market model are estimated over the (-250, - 20) day interval. Using these parameters, we estimate the abnormal returns over a three-day announcement period (-1, +1).

[Insert Table 12 about here]

An overview of the CARs for the three location groups of firms appears in Table 12. This table shows the mean and median cumulative abnormal returns (CARs-1, +1) for the event period. The full sample includes 579 bond issues, from which 69 belong to rural based firms, 190 to small city firms and 320 to urban companies. The results in Panel A show that CARs for all three location groups are insignificantly different from zero before and after SOX. However, when we look at a sub sample of small firms (Panel B), the results indicate that while after SOX passage, shareholders' reaction to bond issuance is insignificant across all location groups, before SOX, shareholders in small rural companies exhibit a positive and significant reaction of 0.841% (t=2.093). Taken together, these findings indicate that before SOX was passed, shareholders in small, less visible rural companies viewed debt issuance as a monitoring mechanism, however, after the SOX enactment, with improved monitoring and governance in place, bond issuance was no longer viewed as a news event by shareholders.

7. Summary and conclusions

We explore the impact of headquarters location on the firm's cost of debt capital. Looking at private and public debt issues from SDC, over the period 1990-2004 we find that being located in a rural area is associated with higher costs of debt financing, and the further the firm is from its investors and financial intermediaries, the greater are the costs of debt capital. Our study explores two potential causes for the higher cost of debt financing found for rural firms in comparison to their urban counterparts. We find evidence consistent with the agency cost based explanations. Firms located in rural areas experience higher costs of debt because it is more difficult to monitor insider activities in such firms. We find that agency problems that are caused by a greater difficulty to monitor remote firms are significantly mitigated in private debt issues and following the passage of the 2002 SOX Act. Taken together, these findings indicate that enhanced external monitoring and regulatory improvements in firm governance can

compensate for the difficulty of monitoring remote firms and transferring soft information across distance.

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Table 1: Sample description of variable measures, industry data, and issuance volume

Panel A provides mean summary statistics of the bond data employed in the analysis. The dataset is comprised of 951 firms and 3,567 public debt issues covering the period 1990-2004. Following Loughran and Schultz (2006), a company is located in an urban area if its headquarters is in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Rural companies are those located at least 100 miles away from the center of a metropolitan area of at least 1 million people, as defined by the 2000 census. Small city firms are defined as those that are not urban or rural. The variables include: At issue bond yield spreads (*Spread*) in basis points, issue proceeds (*Proceeds*) in $mil, Moody's rating, market-to-book ratio, bond time to maturity in years, asset size (*Assets*), return on assets (*ROA*), leverage in %, a dummy variable to denote non-investment rated bonds (*High yield issues*), a dummy variable to denote whether the issue was accompanied by a prestigious underwriters (*Prestigious underwriters*), a dummy variable to denote Nasdaq listed firms, and the number of analysts covering the company. Panel B includes the percentage of issues in each industry by headquarters' location. Panel C provides information regarding the volume of bond issues over time, by the location of the issuing firm. The labels ***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively.

Panel A: Descriptive statistics for mean variable measures by location, 1990-2004

Variables	Rural Firms (1)	Small Firms (2)	City Urban Firms (3)	T-statistic (1-2)	T-statistic (1-3)	T-statistic (2-3)
Spread (in basis points)	165.43	155.94	141.02	2.71***	3.45***	2.07***
Proceeds (in $mil)	209.93	235.96	246.74	-3.22**	-4.52***	-1.61
Moody's Rating [a]	10.86	9.99	10.13	3.48***	3.15***	-1.55
Market-to-book ratio	2.03	2.48	2.76	0.62	1.18	-0.46
Time to maturity (in years)	11.65	9.68	9.59	4.74***	4.99***	-0.14
Assets (in $bil)	11.54	18.98	22.65	-4.85***	-7.70***	-2.81***
ROA (in %)	5.20	6.03	8.46	-3.71***	-4.40***	-2.74***
Leverage (in %)	29.26	25.37	23.09	2.82***	3.45***	2.66***
High yield issues (in %)	8.00	12.98	15.87	-3.39***	-3.92***	-5.83***
% Prestigious underwriters [b]	78.00	80.77	82.62	-1.54	-1.79*	-1.36
% on Nasdaq	50.71	46.90	31.58	1.27	2.72***	2.26***
Multiple issues (in %)	91.00	88.09	84.63	3.44***	2.75***	3.17***
Number of analysts	4.62	5.33	7.24	1.73*	3.96***	2.62***
Number of bond issues	493	1,301	1,773			
Number of firms	142	352	457			

[a] Moody ratings were converted to discrete numerical values ranging from 1 for B3 ratings to 16 for Aaa ratings.

[b] Prestigious lead bond underwriters were denoted as JP Morgan, Morgan Stanley, Merrill Lynch &Co., Credit Suisse First Boston, Lehman Brothers, Goldman Sachs & Co., Salomon Brothers and Donaldson, Lufkin & Jenrette Inc.

Panel B: Industry data by location

SIC code	Title of industries	% Rural Firms	% Small city Firms	% Urban Firms
1	Mining and Construction	4.46	5.46	10.10
2	Manufacturing (Food-Petroleum)	16.63	24.90	23.07
3	Manufacturing (Plastics-Electronics)	17.44	12.45	20.02
4	Transportation	33.39	31.46	13.80
5	Wholesale Trade and Retail Trade	15.42	10.99	8.91
6	Finance, Insurance and Real Estate	9.21	4.36	3.41
7	Services (Hotels-Recreation)	1.83	7.15	15.62
8	Services (Health-Private Household)	1.01	3.00	3.38
9	Public Administration	0.61	0.23	1.68
Total		100%	100%	100%

Panel C: Issuance volume over time by location

Year	No. of issues by rural firms	No. of issues by small city firms	No. of issues by urban firms
1990	3	8	7
1991	1	1	5
1992	13	29	35
1993	9	35	54
1994	20	46	88
1995	29	53	95
1996	37	98	137
1997	32	97	272
1998	26	81	96
1999	27	89	138
2000	35	94	139
2001	101	231	223
2002	77	233	231
2003	57	136	160
2004	26	70	93
Total	493	1,301	1,773

Figure 1: Number of bond issues over time, by issuing firm location

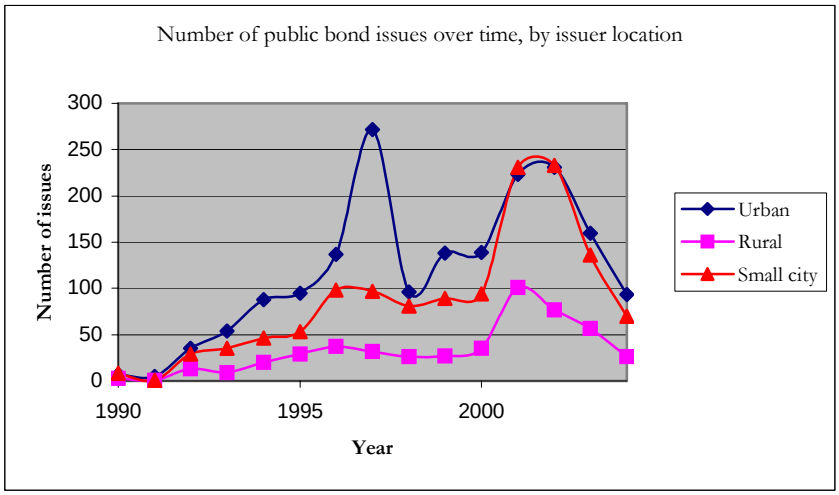

Table 2: Spread means by location across various rating and maturity categories

This table shows the mean at-issue yield spreads for each of the three location samples (rural, small city, and urban) across various Moody's rating categories and maturity horizons. Moody's rating categories segment the data into low risk, high to upper-medium quality bonds (Aaa-A3), moderate risk, medium quality bonds (Baa1-Baa3), and high-risk speculative bonds (Ba1-B3). Maturity categories include short (under 3 years to maturity), medium (3-10 years to maturity), and long-term bonds (over 10 years to maturity).

Panel A: Comparative statistics between spread means across various rating categories

	Moody Ratings	Rural (1)	Small City (2)	Urban (3)	T-statistic (1-2)	T-statistic (1-3)	T-statistic (2-3)
Investment Grade	Aaa-A3	N=18 95.22	N=48 76.44	N=344 71.43	2.81***	3.14***	2.02***
	Baa1-Baa3	N=436 163.14	N=1,084 152.38	N=1,148 147.59	2.61***	3.38***	2.14***
Speculative Grade	Ba1-B3	N=39 223.58	N=169 201.37	N=281 199.25	3.84***	4.02***	1.82***

Panel B: Comparative statistics between spread means across various maturity categories

Maturity in years	Rural (1)	Small City (2)	Urban (3)	T-statistic (1-2)	T-statistic (1-3)	T-statistic (2-3)
<3	N=25 84.67	N=114 81.27	N=186 76.36	1.71*	2.45***	1.94***
3-10	N=172 136.36	N=604 130.28	N=805 123.99	1.98***	3.32***	2.54***
>10	N=296 189.28	N=583 182.96	N=782 173.93	3.19***	3.76***	3.71***

Table 3: Bond at-issue yield spreads and location

This table estimates coefficients from regressing corporate yield spreads on the location dummies (A Rural dummy, for firms located at least 100 miles away from metropolitan areas of at least 1 million people; and a Small city dummy, for firms that are not rural or urban), and various control variables. Urban firms are defined as those a company is located in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Control variables include Moody's rating (Rating), bond time to maturity in years (Time to maturity), issue size estimated by the issue proceeds standardized by firm asset size (Size), return on assets in % (ROA), leverage in % (Leverage), a high-yield dummy (High Yield) to denote firms with non-investment grade debt (below Baa3), a bond underwriter dummy to denote bonds underwritten prestigious underwriters (Prestigious underwriter dummy), a Nasdaq dummy (Nasdaq dummy) to denote firms listed on Nasdaq, the logarithm of the number of analysts covering the issuing firm (Log(1+Analysts)), a multiple issuer dummy (Multiple issuer) to denote bonds issued more than once over the sample period, and year and industry dummies (not reported). The data covers the period 1990-2004, with 3,567 bond issues, from which 493 belong to rural firms, 1,301 to small city firms, and 1,773 to urban companies. Column (1) provides the primary OLS regression. Columns (2) and (3) divide the sample into large and small firms, respectively, according to the asset size median. Columns (4) and (5) segment the data into investment grade issues and speculative grade issues, respectively. White's heteroskedasticity-adjusted t-statistics are in parentheses.

Variable	Full sample (1)	Large firms (2)	Small firms (3)	Investment grade (4)	Non-rated bonds (5)
Intercept	239.534	331.249	235.770	233.819	343.485
	(12.475)	(14.178)	(11.914)	(16.612)	(12.441)
Rural dummy	19.282	9.508	36.361	15.156	30.957
	(2.364)	(4.699)	(2.784)	(2.281)	(5.475)
Small city dummy	8.222	6.475	11.694	-1.662	10.263
	(1.995)	(1.786)	(2.101)	(-1.165)	(3.283)
Size	-2.717	-1.788	-2.521	-1.565	-2.875
	(-1.926)	(-2.025)	(-1.922)	(-2.131)	(-3.120)
ROA	-1.446	-1.536	-5.257	-1.221	-4.010
	(-2.019)	(-2.647)	(-1.725)	(-2.181)	(-1.936)
Leverage	27.139	20.781	33.355	21.067	34.846
	(3.687)	(2.332)	(1.179)	(3.151)	(3.465)
Rating	-12.613	-11.368	-17.217	-12.475	-15.471
	(-5.539)	(-9.388)	(-4.230)	(-11.950)	(-14.980)
Time to maturity	5.442	5.105	5.415	5.162	6.942
	(3.101)	(3.412)	(2.476)	(1.969)	(1.931)
High yield dummy	69.940	50.716	127.173		
	(3.395)	(3.402)	(9.829)		
Prestigious underwriter dummy	-16.906	-4.730	-30.338	-17.410	-4.351
	(-1.962)	(-2.520)	(-4.847)	(-2.136)	(1.977)
Nasdaq dummy	14.384	8.075	20.071	4.827	6.830
	(1.836)	(1.474)	(1.937)	(2.470)	(3.264)
Log(1+Analysts)	-22.846	-12.374	-32.464	-24.363	-14.364
	(-2.037)	(-1.936)	(-3.263)	(-2.479)	(-1.915)
Multiple issuer dummy	-12.571	-57.452	-14.090	-19.298	-3.461
	(-1.746)	(-2.947)	(-1.846)	(-1.914)	(-1.902)
Adjusted R^2	0.598	0.597	0.509	0.374	0.318
No. of observations	3,567	1,859	1,708	3,077	490

Table 4: Bond at-issue yield spreads and location – robustness tests

This table estimates coefficients from regressing corporate yield spreads on location dummies (a Rural dummy, for firms located at least 100 miles away from metropolitan areas of at least 1 million people; and a Small city dummy, for firms that are not rural or urban), and various control variables. Urban firms are defined as located in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Control variables include Moody's rating (Rating), bond time to maturity in years (Time to maturity), issue size estimated by the issue proceeds standardized by firm asset size (Size), return on assets in % (ROA), leverage in % (Leverage), a high-yield dummy (High Yield) to denote firms with non-investment grade debt (below Baa3), a bond prestigious underwriter dummy to denote bonds underwritten prestigious underwriters (Prestigious underwriter dummy), a Nasdaq dummy (Nasdaq dummy) to denote firms listed on Nasdaq, the logarithm of the number of analysts covering the issuing firm (Log(1+Analysts)), a multiple issuer dummy (Multiple issuer) for bonds issued more than once over the sample period, and year and industry dummies (not reported). The data covers the period 1990-2004, with 3,567 bond issues, from which 493 belong to rural firms, 1,301 to small city firms, and 1,773 to urban companies. Columns (1) and (2) segment the data into Nasdaq and non-Nasdaq listed firms. Columns (3) and (4) divide the sample into firms that have only a single bond issuance (One-time issuers) vs. firms that have issued bonds more than once (Multiple issuers) throughout the sample period. In column (5) we run the primary regression on a sample of utility firms (SIC 4900-4999). Columns (6) and (7) run our primary specification using alternative definitions for urban firms: firms located in New York City, or firms located in one of the five largest U.S. cities (New York, Los Angeles, Chicago, Washington- Baltimore and San Francisco). White's heteroskedasticity-adjusted t-statistics are in parentheses.

Variable	Nasdaq firms (1)	Non-Nasdaq (2)	One-time issuers (3)	Multiple issuers (4)	Utility firms (5)	New-York only (6)	5 biggest cities (7)
Intercept	326.860	254.044	278.729	235.113	330.740	123.846	125.468
	(2.991)	(16.216)	(5.779)	(15.078)	(2.258)	(7.692)	(7.991)
Rural dummy	34.621	13.862	31.922	13.502	32.316	20.369	19.465
	(1.862)	(2.217)	(1.697)	(2.214)	(1.788)	(2.513)	(2.526)
Small city dummy	16.232	5.213	11.812	6.364	21.212	9.906	9.101
	(1.901)	(1.936)	(1.935)	(1.891)	(1.863)	(1.881)	(1.776)
Size	-3.673	-1.282	-3.284	-1.211	-0.295	-5.003	-5.021
	(-1.812)	(-1.813)	(-1.868)	(-2.861)	(-1.761)	(-5.081)	(-5.513)
ROA	-1.745	-1.622	-4.156	-4.454	-7.314	-1.296	-1.822
	(-2.465)	(-2.351)	(-2.619)	(-1.764)	(-2.334)	(-1.893)	(-1.829)
Leverage	41.682	43.183	48.210	36.727	27.917	47.608	44.992
	(3.283)	(2.465)	(1.974)	(2.384)	(3.250)	(6.287)	(5.572)
Rating	-25.095	-14.250	-15.913	-13.777	-11.211	-13.289	-13.850
	(-2.266)	(-12.958)	(-3.901)	(-11.413)	(-8.458)	(-10.454)	(-11.748)
Time to maturity	3.895	2.148	1.890	1.187	1.499	0.443	0.378
	(2.353)	(1.512)	(1.972)	(0.958)	(1.655)	(1.387)	(1.465)
High yield dummy	72.009	98.569	122.120	76.099	160.446	78.441	60.711
	(2.476)	(9.336)	(4.383)	(6.732)	(6.636)	(6.755)	(5.537)
Prestigious underwriter dummy	-5.409	-14.994	-36.764	-14.144	-10.287	-15.563	-18.511
	(-1.691)	(-2.718)	(-2.017)	(-2.558)	(-3.236)	(-2.504)	(-3.215)
Nasdaq dummy			20.460	10.930	9.924	17.186	16.013
			(2.147)	(1.747)	(1.476)	(1.740)	(1.629)
Log(1+Analysts)	-25.466	-12.846	-28.837	-10.374	-21.392	-12.464	-10.656
	(-2.353)	(-2.461)	(-3.253)	(-2.455)	(-2.376)	(-2.364)	(-2.013)
Multiple issuer dummy	-6.516	-19.009			-14.360	-25.310	-28.111
	(-1.952)	(-2.457)			(-1.926)	(-3.110)	(-3.558)
Adjusted R^2	0.620	0.507	0.434	0.589	0.484	0.573	0.576
No. of observations	1,420	2,147	472	3,095	465	1,962	2,209

Table 5: The impact of information flow on the relation between location and the cost of debt capital

This table estimates coefficients from regressing corporate yield spreads on location dummies (a Rural dummy, for firms located at least 100 miles away from metropolitan areas of at least 1 million people; and a Small city dummy, for firms that are not rural or urban), and various control variables. Urban firms are defined as located in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Control variables include Moody's rating (Rating), bond time to maturity in years (Time to maturity), issue size estimated by the issue proceeds standardized by firm asset size (Size), return on assets in % (ROA), leverage in % (Leverage), a high-yield dummy (High Yield) to denote firms with non-investment grade debt (below Baa3), a bond prestigious underwriter dummy to denote bonds underwritten prestigious underwriters (Prestigious underwriter dummy), a Nasdaq dummy (Nasdaq dummy) to denote firms listed on Nasdaq, the logarithm of the number of analysts covering the issuing firm (Log(1+Analysts)), a multiple issuer dummy (Multiple issuer) for bonds issued more than once over the sample period, and year and industry dummies (not reported). The data covers the period 1990-2004, with 3,567 bond issues, from which 493 belong to rural firms, 1,301 to small city firms, and 1,773 to urban companies. Columns (1) and (2) segment the data into firms with and without analyst coverage, respectively. Columns (3) and (4) divide the sample into small firms with or without analyst coverage, respectively, and columns (5) and (6) look at large firms with and without analyst coverage, respectively. White's heteroskedasticity-adjusted t-statistics are in parentheses.

Variable	Full sample with analyst coverage (1)	Full sample without analyst coverage (2)	Small firms with analyst coverage (3)	Small firms without analyst coverage (4)	Large firms with analyst coverage (5)	Large firms without analyst coverage (6)
Intercept	233.652	354.846	336.411	385.902	187.374	284.906
	(4.025)	(3.454)	(3.474)	(4.039)	(5.363)	(4.661)
Rural dummy	18.429	24.214	22.454	47.575	8.631	12.464
	(2.128)	(2.105)	(2.473)	(4.660)	(3.935)	(4.686)
Small city dummy	2.411	13.431	3.464	21.374	1.363	8.571
	(1.696)	(1.965)	(1.745)	(2.115)	(1.996)	(1.767)
Size	-1.563	-6.374	-1.856	-3.570	-1.274	-2.351
	(-1.953)	(-3.436)	(-1.769)	(-2.351)	(-2.846)	(-1.895)
ROA	-2.174	-3.626	-4.575	-7.365	-1.346	-3.647
	(-3.455)	(-2.131)	(-2.352)	(-1.967)	(-2.142)	(-3.012)
Leverage	38.099	79.155	47.365	51.124	19.731	22.745
	(1.987)	(1.769)	(2.749)	(3.909)	(1.738)	(2.846)
Rating	-11.952	-20.939	-15.644	-19.094	-7.867	-9.036
	(-9.672)	(-6.282)	(-8.757)	(-8.026)	(-10.756)	(-10.254)
Time to maturity	0.542	1.436	1.220	2.721	0.374	0.935
	(1.908)	(1.706)	(2.016)	(2.001)	(1.957)	(2.936)
High yield dummy	80.984	91.364	120.263	136.721	58.464	61.361
	(10.737)	(9.341)	(12.376)	(11.283)	(8.364)	(3.502)
Prestigious underwriter dummy	-3.253	-5.464	-2.346	-4.252	-3.182	-3.559
	(-1.937)	(-2.011)	(-3.260)	(-2.116)	(-1.660)	(-1.716)
Nasdaq dummy	5.086	18.210	8.353	9.027	3.263	5.363
	(0.437)	(2.373)	(1.956)	(2.001)	(0.258)	(1.908)
Multiple issuer dummy	-22.959	-23.877	-27.363	-32.027	-16.270	-19.273
	(-2.889)	(-2.881)	(-3.263)	(-3.265)	(-1.895)	(-1.896)
Adjusted R^2	0.548	0.546	0.668	0.663	0.671	0.673
No. of observations	220	3,347	220	1,708	220	1,859

Table 6: At-issue yield spreads and governance quality

This table presents the mean and median at-issue yield spreads associated with four different groups of firms formed on the basis of governance quality and geographic location. Good governance equals 1 if a firm's Bebchuk, Cohen and Ferrell (2005) six-measure entrenchment index (*BCF index*) is below the median BCF index of all the sample firms within each year; 0 if otherwise. Bad governance equals 1 if a firm's BCF index is above or equal to the median BCF index of all the sample firms within each year; 0 if otherwise. Urban firms are defined as firms that have their headquarters located in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Rural companies are those located at least 100 miles away from the center of a metropolitan area of at least 1 million people, as defined by the 2000 census. Small city firms are defined as those that are not urban or rural. We use a standard two-tailed t-test for differences in means and a Wilcoxon singed rank test for differences in medians. Medians and the rank test Z statistic are shown in brackets.

	Rural (1)	Small city (2)	Urban (3)	T-statistic [Rank test statistic] (1-2)	T-statistic [Rank test statistic] (1-3)	T-statistic [Rank test statistic] (2-3)
	N=90	N=315	N=437			
Good governance	152.222	144.841	134.362	2.562	3.016	2.863
	[141.327]	[132.986]	[122.893]	[2.274]	[3.161]	[2.715]
	N=179	N=360	N=351			
Bad governance	171.983	160.808	145.173	2.901	3.862	2.996
	[166.920]	[155.081]	[137.063]	[2.913]	[4.014]	[3.018]
T-Statistic for differences in Means	-3.211	-3.158	-2.764			
Wilcoxon Singed-Rank Z Statistic for differences in Medians	[-3.891]	[-3.686]	[-2.851]			

Table 7: The impact of governance quality on the relation between location and the cost of debt capital

This table reports regressions of bond at-issue yield spreads on governance quality for the period 1990 to 2004. The variable BCF index is the Bebchuk, Cohen and Ferrell (2005) six-measure entrenchment index, based on IRRC. The interaction terms in column 3 are constructed by interacting governance quality (good or bad) with the dummy of geographic location (Rural or Small city). Good governance equals 1 if a firm's BCF index is below the median BCF index of all the sample firms within each year; 0 if otherwise. Bad governance equals 1 if a firm's BCF index is above or equal to the median BCF index of all the sample firms within each year; 0 if otherwise. Control variables are as defined in Table 3. The data covers the period 1990-2004, with 1,732 bond issues, for which the BCF index data exists. White's heteroskedasticity-adjusted t-statistics are in parentheses.

Variable	(1)	(2)	(3)
Intercept	329.809	381.050	412.352
	(3.805)	(3.930)	(3.963)
BCF index	8.409	7.471	
	(3.253)	(3.102)	
Rural dummy		17.400	
		(2.610)	
Small city dummy		5.844	
		(2.103)	
Good governance*Rural			10.227
			(2.856)
Bad governance*Rural			25.987
			(2.467)
Good governance*Small city			3.362
			(2.381)
Bad governance*Small city			9.840
			(1.932)
Size	-4.040	-3.766	-3.747
	(-3.986)	(-3.691)	(-3.693)
ROA	-2.304	-2.269	-2.251
	(-0.379)	(-1.968)	(-1.950)
Leverage	35.375	36.943	36.369
	(3.898)	(3.981)	(4.114)
Rating	-13.594	-13.911	-14.105
	(-9.472)	(-9.668)	(-9.974)
Time to maturity	0.974	0.882	0.890
	(3.140)	(2.830)	(2.851)
High yield dummy	104.887	105.553	104.410
	(7.759)	(7.838)	(7.757)
Prestigious underwriter dummy	-10.677	-11.543	-11.124
	(1.703)	(-1.835)	(-1.761)
Nasdaq dummy	23.496	26.973	26.574
	(1.749)	(1.839)	(1.761)
Log(1+Analysts)	-18.454	-17.355	-17.570
	(-2.017)	(-1.981)	(-1.892)
Multiple issuer dummy	-4.808	-5.912	-5.661
	(-1.447)	(-1.699)	(-1.751)
Adjusted R^2	0.482	0.486	0.486
No. of observations	1,732	1,732	1,732

Table 8: Private vs. public debt summary statistics

Summary statistics of the characteristics for 3,567 publicly traded and 759 private placement bonds, from which 292 are non-144A and 467 are 144A private placement bonds. Data was collected from Securities Data Corporation's (SDC) New Issues database, for 1990-2004. The variables include: the bond yield spread in basis points (Spread), the amount issued in mil $ (Issue proceeds), Moody's rating (Rating), bond time to maturity in years (Time to Maturity), firm's asset size in billions $ (Assets), return on assets in % (ROA), the firm's leverage (Leverage), the percentage of speculative bond issues with rating below Baa3 (High yield issues), and the percentage of high yield bonds (High Yield), denoting non-investment grade debt (below Baa3). Means are reported with medians in parenthesis below.

	Private Placement Bonds			Publicly Traded Bonds (N=3,567)
	Full Sample (N=759)	Non-144A (N=292)	144A (N=467)	
Spread	255.33 [a] (119.90)	158.46 [a,b] (129.36)	315.90 [a,b] (113.98)	149.84[a] (100.50)
Issue proceeds (in $mil)	137.31 [a] (101.91)	38.67 [a,b] (25.00)	198.99 [b] (150.00)	237.72 (152.37)
Rating [c]	12.14 [a] (13.26)	N. A.	12.14 [a] (13.26)	10.18 [a] (11.00)
Time to maturity (in years)	10.810 (10.01)	11.961 [b] (9.81)	10.094 [b] (10.14)	9.91 (10.05)
Assets (in $bil)	7.22 [a] (1.33)	10.48 [a,b] (1.29)	5.18 [a,b] (1.35)	14.78[a] (4.60)
ROA	7.13% (4.47%)	6.03% (4.96%)	7.80% (4.17%)	7.12[a] (6.69%)
Leverage	34.31% [a] (29.37%)	15.34% [b] (8.33)	46.17% [a,b] (42.52%)	24.77% [a] (8.94)
High yield issues [c]	79.66% [a]	N. A.	79.66% [a]	13.73% [a]
Multiple Issuers	52.66% [a]	38.47% [a,b]	61.53% [a,b]	86.77% [a]

[a] Indicates significant difference at least at the 10% level between private placement and publicly offered bonds.
[b] Indicates significant difference at least at the 10% level between the sub-samples of non-144A and 144A of private placement bonds.
[c] Only for public and 144A bond issues.

Table 9: Comparison of spread means across rating categories – private vs. public debt

This table compares between the mean at-issue yield spreads of private placements (only 144A issues) and public bonds across headquarters location and Moody's rating categories. Moody's rating categories segment the data into low risk, high to upper-medium quality bonds (Aaa-A3), moderate risk, medium quality bonds (Baa1-Baa3), and high-risk speculative bonds (Ba1-B3).

		144A Private Placements (n=460)			Publicly Traded Bonds (n=3,567)		
	Moody Ratings	Rural (N=37)	Small City (N=98)	Urban (N=325)	Rural (N=493)	Small City (N=1,301)	Urban (N=1,773)
Investment Grade	Aaa-A3	N=4 83.44	N=11 67.28	N=20 60.69	N=18 95.22	N=48 76.44	N=344 71.43
	Baa1-Baa3	N=5 125.01	N=13 110.29	N=36 99.33	N=436 163.14	N=1,084 152.38	N=1,148 147.59
Speculative Grade	Ba1-B3	N=28 396.91	N=74 379.83	N=269 361.17	N=39 223.58	N=169 201.37	N=281 199.25

Table 10: Private debt at-issue yield spreads and location

This table estimates coefficients from regressing 144A private placement at-issue yield spreads on the Rural and Small city location dummies and various control variables. Data includes a sample of 467 private bond issues during 1990-2004. Control variables include: issue size standardized by its assets (Size), profitability (ROA), Moody's credit ratings (Rating), leverage (Leverage), time to maturity (Time to maturity), a high yield dummy to denote speculative bond issues (High yield dummy), and a Multiple issuer dummy, to denote firms that have issued bonds more than once throughout the sample period. Columns (1) provides the primary regression based on the private placement sample. Column (2) looks at small firms, based on the median asset size of the firm's in our data. Column (3) presents the primary regression on a sub sample of firms with highly entrenched managers (badly governed firms), for which the Bebchuk, Cohen and Ferrell (2005) entrenchment index (BCF index) is above or equal to the median BCF index of all the sample firms within each year. In column (4) we look at a sub sample of highly levered firms, with a leverage level above or equal to the sample's median. Column (5) presents the primary regression on a sub sample of speculative bond issues, and column (6) presents the results on a sub sample of firms that issued private placement bonds only once throughout the sample period. Control variables are as defined in Table 3. White's heteroskedasticity-adjusted t-statistics are in parentheses.

Variable	Full sample (1)	Small firms (2)	Badly governed firms (3)	Highly levered firms (4)	Non rated issues (5)	One time issuers (6)
Intercept	221.890	256.752	243.598	234.576	258.461	241.302
	(8.657)	(4.586)	(8.364)	(4.565)	(5.576)	(9.406)
Rural dummy	2.808	4.027	3.765	4.670	5.056	3.027
	(1.228)	(1.419)	(1.332)	(1.229)	(1.611)	(1.384)
Small city dummy	0.863	1.464	1.014	0.952	2.469	0.984
	(1.117)	(1.157)	(1.156)	(1.284)	(1.486)	(1.392)
Size	-1.374	-1.537	-1.429	-1.594	-1.641	-1.771
	(-1.773)	(-1.896)	(-1.873)	(-1.946)	(-1.997)	(-2.026)
ROA	-1.352	-1.464	-1.424	-1.463	-1.467	-1.480
	(-2.116)	(-2.213)	(-2.386)	(-2.119)	(-2.186)	(-2.402)
Leverage	14.319	18.745	17.382	15.373	17.370	14.942
	(3.587)	(3.904)	(3.209)	(3.907)	(3.967)	(3.856)
Rating	-8.371	-10.365	-9.476	-9.361	-10.471	-9.465
	(-3.092)	(-3.772)	(-3.221)	(-3.198)	(-3.576)	(-3.286)
Time to maturity	3.754	3.901	4.013	4.046	4.569	3.895
	(2.964)	(3.114)	(2.986)	(3.056)	(3.214)	(2.969)
High yield dummy	46.014	58.940	47.397	48.576		46.037
	(1.976)	(2.016)	(2.972)	(2.885)		(1.994)
Multiple issuer dummy	-8.947	-12.475	-9.460	-9.679	-9.318	
	(-1.931)	(-1.996)	(-1.994)	(-1.997)	(-2.005)	
Adjusted R^2	0.481	0.457	0.452	0.452	0.478	0.480
No. of observations	467	263	177	156	371	180

Table 11: The impact of regulation on the relation between location and the cost of public debt capital

This table estimates coefficients from regressing corporate yield spreads on location dummies (a Rural dummy, for firms located at least 100 miles away from metropolitan areas of at least 1 million people; and a Small city dummy, for firms that are not rural or urban), and various control variables. Urban firms are defined as located in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Control variables include Moody's rating (Rating), bond time to maturity in years (Time to maturity), issue size estimated by the issue proceeds standardized by firm asset size (Size), return on assets in % (ROA), leverage in % (Leverage), a high-yield dummy (High Yield) to denote firms with non-investment grade debt (below Baa3), a bond prestigious underwriter dummy to denote bonds underwritten by prestigious underwriters (Prestigious underwriter dummy), a Nasdaq dummy (Nasdaq dummy) to denote firms listed on Nasdaq, the logarithm of the number of analysts covering the issuing firm (Log(1+Analysts)), a multiple issuer dummy (Multiple issuer) for bonds issued more than once over the sample period, and year and industry dummies (not reported). The data covers the period 1990-2004, with 3,567 bond issues, from which 493 belong to rural firms, 1,301 to small city firms, and 1,773 to urban companies. Columns (1) and (2) segment the data into before and after the enactment of Sarbanes-Oxley (SOX) 2002, respectively. Columns (3) and (4) look at small firms before and after SOX, respectively. Columns (5) and (6) present the results for firms in which the Bebchuk, Cohen and Ferrell (2005) entrenchment index (BCF index) is above or equal to the median BCF index of all the sample firms within each year, before and after SOX, respectively. White's heteroskedasticity-adjusted t-statistics are in parentheses.

Variable	Full sample before SOX (1)	Full sample after SOX (2)	Small firms before SOX (3)	Small firms after SOX (4)	Poorly governed firms before SOX (5)	Poorly governed firms after SOX (6)
Intercept	214.859	267.210	339.461	253.480	262.404	269.509
	(4.680)	(2.376)	(3.946)	(3.265)	(3.013)	(3.394)
Rural dummy	26.205	8.363	64.920	10.013	28.018	9.575
	(2.673)	(1.517)	(2.979)	(1.515)	(3.003)	(1.411)
Small city dummy	11.977	4.390	14.243	6.116	14.977	6.484
	(1.790)	(1.550)	(2.016)	(1.452)	(2.298)	(1.365)
Size	-2.784	-2.746	-3.253	-2.153	-3.630	-3.735
	(-2.863)	(-2.793)	(-2.846)	(-2.113)	(-3.801)	(-3.837)
ROA	-1.385	-1.472	-1.353	-1.635	-1.308	-1.369
	(-2.313)	(-2.361)	(-2.331)	(-2.485)	(-2.128)	(-2.360)
Leverage	27.526	18.368	51.226	32.830	39.038	22.464
	(2.781)	(2.832)	(2.937)	(2.110)	(3.206)	(2.053)
Rating	-12.940	-12.353	-18.272	-11.319	-15.213	-13.261
	(-7.157)	(-2.463)	(-2.374)	(-2.093)	(-6.953)	(-1.952)
Time to maturity	0.706	0.757	0.826	0.637	1.416	0.926
	(2.588)	(2.589)	(2.469)	(2.902)	(3.501)	(2.787)
High yield dummy	101.959	45.378	143.474	98.742	196.245	88.387
	(10.243)	(4.283)	(12.746)	(6.376)	(9.675)	(4.364)
Prestigious underwriter dummy	-16.365	-15.340	-42.353	-19.390	-15.198	-16.273
	(-3.075)	(-3.086)	(-3.273)	(-3.291)	(-2.437)	(-2.975)
Nasdaq dummy	13.963	13.374	31.292	9.373	14.006	14.363
	(1.398)	(1.793)	(1.792)	(1.811)	(1.931)	(1.923)
Log(1+Analysts)	-23.464	-22.001	-41.380	-18.264	-25.283	-24.364
	(-2.351)	(-2.369)	(-2.902)	(-2.778)	(-2.192)	(-2.162)
Multiple issuer dummy	-25.012	-8.363	-37.387	-7.376	-29.946	-14.273
	(-3.428)	(-3.465)	(-3.273)	(-3.370)	(-3.798)	(-3.263)
Adjusted R^2	0.535	0.532	0.635	0.631	0.405	0.384
No. of observations	2,527	1,040	1,139	569	612	278

Table 12: Shareholder reaction to bond issuance before and after SOX, by location

Panel A shows the cumulative mean abnormal returns (in %) for a value-weighted portfolio of 579 bond issues over a [-1,1] day period relative to the bond issuance announcement date. Cumulative mean abnormal returns are compared across geographic locations, with the corresponding t-statistic in parentheses. Panel B shows the cumulative mean abnormal returns (in %) for a value-weighted portfolio of 324 bond issues of small firms over the [-1,1] day period relative to the bond issuance announcement date. Small firms are selected if their asset size is below that of the full sample's median. The issuance announcement date is the bond filing date with the SEC. a company is located in an urban area if its headquarters is in the metropolitan area of New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, or Houston. Rural companies are those located at least 100 miles away from the center of a metropolitan area of at least 1 million people, as defined by the 2000 census. Small city firms are defined as those that are not urban or rural.

Panel A: Full sample (N=579)

	Rural firms	Small city firms	Urban firms
	N=46	N=117	N=174
Pre SOX	0.298%	-0.074%	-0.389%
	(0.977)	(-0.420)	(-0.983)
	N=23	N=73	N=146
Post SOX	0.003%	-0.018%	-0.034%
	(0.136)	(-1.253)	(-1.335)

Panel B: Small firms (N=324)

	Rural firms	Small city firms	Urban firms
	N=31	N=75	N=98
Pre SOX	0.841%	-0.361%	-0.624%
	(1.698)	(-1.220)	(-0.253)
	N=18	N=42	N=60
Post SOX	0.008%	-0.218%	0.000%
	(0.253)	(-1.253)	(1.138)