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THREE ESSAYS ON CORPORATE FINANCE

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Nanyang Business School

2015

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A thesis submitted to Nanyang Technological University for the degree of Doctor of Philiosophy

2015

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Introduction

The dissertation contains three essays on empirical corporate finance. All of the paper explores the geographic aspects of shareholders and firms.

Essay 1 examines the impact of geographic concentration of institutional investors on corporate governance and firm value. We find that firms whose large institutions are closely located to each other experience higher forced CEO turnover-performance sensitivity, more frequent proxy voting against management, higher returns around CEO turnover announcements and Schedule 13D filings, larger increases in Tobin's q (ROA), and greater liquidity. These results are robust to using the introduction of new airline routes as an exogenous source of variation in proximity and to using an instrumental variable approach. Our results suggest that geographic concentration of investors increases monitoring effectiveness.

Essay 2 analyses the importance of investor risk preferences in shaping corporate risk taking. We exploit the male-female ratio among local residents to capture the variations in the risk preferences of firms' investor base. We find strong evidence that firms headquartered in counties with higher male-female ratio adopt higher leverage, more capital expenditure and less cash holding. They have higher idiosyncratic return volatility, initiate more M&A bids, and are less likely to engage in corporate hedging. As a result of higher risk taking, such firms face higher loan spreads and more stringent loan covenants. These effects are much stronger among smaller firms and firms with less institutional ownership. We further establish causality by using the minimum drinking age in the 1970s across different states as an instrument for the local male-female ratio and find consistent results in the instrumental variables estimation. Overall, our results support the argument that firms cater to investor preferences by taking higher risks in the regions with higher male-female ratio.

Essays 3 studies how the geographical distances between major debtholders and shareholders affect the firm's risk shifting behaviour. We argue that longer distances amplify the debtholder-shareholder conflict by reducing observability and increasing information asymmetry between the debtholders and the shareholders. We find consistent evidence that the debtholder-shareholder distance increases the likelihood of covenant violation, idiosyncratic stock volatility and expected default frequency. It also relates to higher cash dividend payout and lower likelihood of corporate hedging. Following the firm's covenant violation or dividend payout, the stock (bond) market reactions are positively (negatively) related to the debtholder-shareholder distance. We establish causality using an instrumental variable regression with the relative local equity and debt supply as instrument as well as using a difference-in-difference estimation based on a sudden reduction in travelling time between the shareholders and the debtholders following an increase in the number of direct flights.

Geographic Concentration of Intuitions, Corporate Governance, and Firm Value

ABSTRACT 9

I. Data, Variables, and Summary Statistics .... **Error! Bookmark not defined.**

A. Sample .... **Error! Bookmark not defined.**

B. Measures of Geographic Concentration .... **Error! Bookmark not defined.**

B.1. Measures of Top 10 Institutions' Geographic Concentration .... **Error! Bookmark not defined.**

B.2. Measures of Proxy Voting Institutions' Geographic Concentration .... **Error! Bookmark not defined.**

C. Summary Statistics .... **Error! Bookmark not defined.**

II. Geographic Concentration and Governance Activities .... **Error! Bookmark not defined.**

A. Likelihood of Forced CEO Turnover-Performance Sensitivity .... **Error! Bookmark not defined.**

A.1. Firm Fixed Effects Linear Probability Regression .... **Error! Bookmark not defined.**

A.2. Endogeneity Test: Introduction of New Airline Routes as an Exogenous Shock .... **Error! Bookmark not defined.**

B. Proxy Voting by Mutual Funds .... **Error! Bookmark not defined.**

III. Geographic Concentration and Firm Value .... **Error! Bookmark not defined.**

A. Valuation Effect of Forced CEO Turnover Announcements .... **Error! Bookmark not defined.**

B. Valuation Effect of Initial Schedule 13D Filings .... **Error! Bookmark not defined.**

C. Impact of Institutions' Geographic Concentration on Firm Performance **Error! Bookmark not defined.**

IV. Geographic Concentration and Liquidity .... **Error! Bookmark not defined.**

V. Robustness Tests .... **Error! Bookmark not defined.**

A. Instrument Approach .... **Error! Bookmark not defined.**

B. Institution Heterogeneity .... **Error! Bookmark not defined.**

C. Alternative Measure of Large Institutions .... **Error! Bookmark not defined.**

D. Controlling for Other Location Measures .... **Error! Bookmark not defined.**

E. Regulation Fair Disclosure and Information Advantage of Institutions .... **Error! Bookmark not defined.**

VI. Summary and Conclusion .... **Error! Bookmark not defined.**

Reference .... **Error! Bookmark not defined.**

Appendix .... **Error! Bookmark not defined.**

Local Clientele, Gender Difference and Firm Risk

ABSTRACT 72

I. Data and Summary Statistics 80

A. Data 80

B. Summary statistics 82

II. Local male-female ratio and Firm Risk 83

A. Impact of Local male-female ratio on Firm Risk 84

B. Impact of Local male-female ratio on Corporate Policies 85

C. Impact of Male-female ratio on M&A Bid Initiation 86

D. Impact of Local male-female ratio on Interest Rate Hedging Probability 88

E. Impact of Local male-female ratio on Bank Interest Rate Hedging 90

III. Benefit of Satisfying Local Gender Risk Preference 91

A. Impact of Local male-female ratio on Loan Spread 91

B. Impact of Local male-female ratio on Collateral Requirement 93

C. Impact of Local male-female ratio on Capital Expenditure Restriction 93

D. Impact of Local male-female ratio on Covenant Violation 94

IV. Interaction Analysis 95

V. Robustness Check 97

A. Endogeneity Concerns 97

B. Corporate Moving Headquarters 99

C. Additional Controls 101

VI. Conclusion 103

Reference 104

Appendix .... **Error! Bookmark not defined.**

Does Distance Matter for Debtholder-Shareholder Conflict?

I. Data, Variables and Univariate Tests 52

II. Debtholder-Shareholder Distance and Firm Risk Shifting 134

A. Covenant Violation .... **Error! Bookmark not defined.**

B. Idiosyncratic Volatility .... **Error! Bookmark not defined.**

C. Expected Default Frequency .... **Error! Bookmark not defined.**

D. Dividend Payout and Corporate Hedging .... **Error! Bookmark not defined.**

E.1 Covenant Violation .... **Error! Bookmark not defined.**

E.2 Dividend Payout .... **Error! Bookmark not defined.**

III. Debtholder-Shareholder Distance and Loan Contract Terms . **Error! Bookmark not defined.**

A. Loan Spread .... **Error! Bookmark not defined.**

B. Capital Expenditure Restriction and Collateral Requirement .. **Error! Bookmark not defined.**

IV. Endogeneity Concerns .... **Error! Bookmark not defined.**

A. Instrumental Variables Regression .... **Error! Bookmark not defined.**

V. Conclusion .... **Error! Bookmark not defined.**

Reference .... **Error! Bookmark not defined.**

Appendix: Variable Definitions .... **Error! Bookmark not defined.**

Geographic Concentration of Institutions, Corporate Governance, and Firm Value

ABSTRACT

We examine the impact of geographic concentration of institutional investors on corporate governance and firm value. We find that firms whose large institutions are closely located to each other experience higher forced CEO turnover-performance sensitivity, more frequent proxy voting against management, higher returns around CEO turnover announcements and Schedule 13D filings, larger increases in Tobin's *q*, and greater liquidity. These results are robust to using the introduction of **new direct airline** routes as an exogenous source of variation in proximity. Our results suggest that geographic concentration of investors increases monitoring effectiveness.

JEL Classification: G14, G20, G32, G34

Keywords: Geographic concentration, corporate governance, Institutional investors, Firm value, CEO turnover, Proxy voting, Liquidity

Previous studies document that the geographic proximity of institutional investors has a significant effect on portfolio selection and investment returns (Coval and Moskowitz (2001)), earnings forecasts (Malloy (2005)), financial policies (John, Knyazeva, and Knyazeva (2011)), and corporate governance (Lerner (1995), Gaspar and Massa (2007), Kang and Kim (2008), Uysal, Kedia, and Panchapagesan (2008), Chhaochharia, Kumar, and Niessen-Ruenzi (2012)). While these studies improve our understanding of the relation between geography and firm outcomes by showing that geographically proximate institutions have an information advantage over other institutions, they focus on institutional investors' physical distance from firms, paying little attention to their physical distance from each other. As a result, little is known about the role of institutions' relative location for corporate governance. In this study we fill this gap in the literature by investigating how the geographic concentration of a firm's large institutions affects corporate governance and firm value.

We argue that the geographic concentration of large institutions holding the same stocks should facilitate monitoring and in turn increase firm value. Institutions that are closely located to each other have more opportunities to network (Hong, Kubik, and Stein (2005)). Efficient information-sharing arising from networking effects decreases information asymmetry vis-à-vis firms (Pagano and Jappelli (1993), Doblas-Madrid and Minetti (2013)), which increases institutions' monitoring capabilities by improving their informational economies of scope. Supporting this view, Doidge et al. (2015) show that private engagements by the Canadian Coalition for Good Governance, a collective action organization comprised of institutional investors in Canada, improve firms' governance through creation and dissemination of value-relevant information. The geographic concentration of large institutions also increases institutions' incentives to pursue active monitoring by reducing their communication and transportation costs, and in turn the costs of taking coordinated governance actions. Moreover, by reducing coordination costs and increasing the observability of institutions' monitoring efforts, the geographic concentration of large institutions mitigates free-rider problems in corporate governance (Grossman and Hart (1980), Holmstrom (1982), Shleifer and Vishny (1986)) and thus further increases incentives to monitor portfolio firms.[1] Taken together, the above arguments suggest that geographic concentration of large institutions increases their incentives and ability to pursue active corporate governance. To the extent that more active governance translates into better firm performance, firms whose large institutional investors are closely located to each other are expected to have higher firm value than other firms.

In addition, we argue that reduced information asymmetry arising from close geographic concentration among large institutions increases portfolio firms' liquidity, which further reduces the costs of monitoring and thus increases institutions' monitoring incentives (Maug (1998), Edmans, Fang, and Zur (2013)).[2] Active monitoring by geographically proximate large institutions can also reduce a firm's information asymmetry by pressuring managers to improve information disclosure quality, which helps increase its stock liquidity. However, it is possible that geographically concentrated ownership results in lower liquidity due to adverse selection problems faced by other uninformed investors who tend to trade against informed concentrated shareholders. Han and Yang (2013) also argue that although information sharing (i.e, social communication) can enhance liquidity when information acquisition is exogenous, the reverse may incur with endogenous information acquisition. Thus, although it is clear that geographically concentrated shareholders can reduce information asymmetry through a monitoring channel, a priori, it is unclear whether close geographic concentration among large institutions increases stock liquidity through information sharing among these institutions.

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[1] According to Holmstrom (1982), free-rider problems occur when agents believe that they will bear all of the costs while the benefits are shared with other agents. Holmstrom (1982) argues that the source of such free-rider problems is information asymmetries that arise because individuals' actions cannot be observed. John, Knyazeva, and Knyazeva (2011) argue that geographic proximity makes it easier for monitors to observe agents' decisions and thus reduces the costs of shareholder oversight. Similarly, Stiglitz (1990) and Arnott and Stiglitz (1991) argue that peer monitoring in which neighbours monitor each other is an important mechanism for controlling moral hazard in insurance and credit markets. In our context, to the extent that the geographic concentration of large institutions decreases institutions' information asymmetry vis-à-vis each other, increasing the observability of their coordination efforts, it should reduce free-riding on the monitoring efforts of other institutions.

[2] Maug (1998) shows that higher liquidity leads to improved monitoring as more informed trading increases investors' ability to cover monitoring costs. Using decimalization as an exogenous shock to liquidity, Edmans, Fang, and Zur (2013) find that liquidity increases the frequency of hedge funds' voice and exit, and thus improves blockholder governance overall. See also Kyle and Vila (1991), Kahn and Winton (1998), Noe (2002), Edmans (2009), and Edmans and Manso (2011) for studies that show a positive effect of liquidity on corporate governance. Coffee (1991) and Bhide (1993), on the other hand, argue that liquidity hinders shareholder activism because high liquidity allows blockholders to sell their stakes when firms are in trouble.

To shed light on the role of the geographic concentration of large institutional investors, we first examine whether geographically proximate large institutions pursue more active monitoring, as measured by forced CEO turnover and proxy voting against management, than geographically remote institutions. The arguments above suggest that firms with large institutional investors that are closely located to each other have higher forced CEO turnover-performance sensitivity and more frequent proxy voting against management. Next, we examine whether the geographic concentration of large institutions increases firm value. We expect firms with geographically proximate institutions to have higher abnormal announcement returns around CEO turnover announcements and Schedule 13D filings, and larger increases in Tobin's *q*. We also examine the impact of large institutions' geographical concentration on firms' stock liquidity. Finally, we examine whether the effects of large institutions' geographic distance on corporate governance and firm value depend on institution type. To the extent that long-term or nontransient institutions (i.e., dedicated/quasi-index institutions) with large ownership have stronger incentives to take an active monitoring role than transient institutions (Chen, Harford, and Li (2007)), we expect the above effects to be more pronounced when nontransient institutions are closely located to each other than when transient institutions are.

We test the above predictions using various measures of the geographic distance between a firm's top 10 institutions[3] including the equally-weighted physical distance between a firm's top 10 institution pairs (*Ew Distances*), the ownership-weighted physical distance between a firm's top 10 institution pairs (*Vw Distances*), the sum of the standard deviations of the top 10 institutions' latitudes and longitudes (*Ew Std LatLon*), the sum of the ownership-weighted standard deviations of the top 10 institutions' latitudes and longitudes (*Vw Std LatLon*), the number of unique states in which the top 10 institutions are located (*Num States*), and one minus the Herfindahl index of institutional ownership in the states in which the top 10 institutions are located (*1 - Herfindahl State IO*).

Our results using these concentration measures provide consistent, strong support for the view that geographic concentration of large institutions improves corporate governance and in turn firm value. Specifically, we find that the sensitivity of forced CEO turnover to performance is significantly higher when a firm's top 10 institutions are closely located to each other. For instance, a one-standard-deviation reduction in *Vw Std LatLon* increases the probability of forced CEO turnover by 0.21% when the firm experiences a one-standard-deviation decrease in stock returns. This effect accounts for approximately 7.61% of the unconditional probability of forced CEO turnover (2.74%) for the full sample.

We also find an increase in proxy voting decisions against management by mutual funds located near each other relative to non-voting institutions.[4] For example, using the sum of the mean absolute difference between the longitude of a firm’s voting institution and the longitudes of the other top 10 institutions and the mean absolute difference between the latitude of a firm’s voting institution and the latitudes of the other top 10 institutions (*Ew Dif LatLon (voting)*) as the measure of geographic concentration, we find that a one-standard-deviation decrease in *Ew Dif LatLon (voting)* is associated with a 0.69 percentage-point increase in mutual funds’ proxy voting against management. Since the unconditional mean ratio of proxy voting against management by mutual funds for the full sample is approximately 10.3%, this increase accounts for almost 7% of the mean ratio.

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[3] The mean (median) equity ownership held by the top 10 institutional investors in our sample firms is 29.8% (30.0%), suggesting that they hold a substantial portion of a firm's outstanding shares. In Section 5, we use block institutions that own at least 5% of a firm's outstanding shares as an alternative definition of large institutions and find qualitatively similar results.

[4] For the tests of proxy voting decisions by mutual funds (Schedule 13D filings), we measure large institutions' geographic concentration by considering voting (13D filing) top 10 institutions' geographic locations relative to other top 10 institutions.

We further find that firms with more geographically proximate large institutions realize higher abnormal returns around forced CEO turnover announcements and Schedule 13D filings. These firms also experience higher firm value as measured by Tobin’s *q*. For example, a one-standard-deviation decrease in *Vw Std LatLon* is associated with a 2.35% higher announcement return (CAR (-20, 20)) for firms targeted by active institutions. Given that the mean CAR (-20, 20) for the full sample is 6.56%, this valuation effect is economically large and significant.

Turning to the prediction for firms’ stock liquidity, we find that the geographic concentration of large institutions is significantly positively related to firms’ stock liquidity as measured by the square root variant of the Amivest liquidity measure.[5] To the extent that greater liquidity increases shareholder activism (Kyle and Vila (1991), Kahn and Winton (1998), Maug (1998), Noe (2002), Edmans (2009), Edmans and Manso (2011)), this result further implies that geographic concentration of large institutional investors improves governance.

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[5] Using the Amihud (2002) illiquidity measure, the Gibbs measures from the market-adjusted and latent common factor models (Hasbrouck (2009), and the percentage of zero returns (Lesmond, Ogden, and Trzcinka (1999)) as alternative measures of firms’ stock liquidity does not change the results.

Finally, we find that the above results are particularly pronounced when firms face high information asymmetry, as measured by the number of analysts following. We also find that these results are driven mainly by nontransient institutions. We find no evidence that the geographic concentration of the transient investors among a firm’s top 10 institutions affects monitoring and firm value. Previous studies show that nontransient investors have a long-term focus with low portfolio turnover and thus are more likely to engage in active monitoring than transient investors, which have a short investment horizon and high portfolio turnover (Bushee (1998), Chen, Harford, and Li (2007)). Our results extend these studies by showing that the monitoring effectiveness of nontransient institutions increases with their geographic concentration.

To address potential omitted variable or reverse causality concerns, we rely on several approaches. First, in our main regressions, in addition to controlling for an extensive set of institution- (e.g., size, portfolio turnover, and performance) and firm-specific characteristics, we control for firm fixed effects to mitigate the possibility that time-invariant omitted variables affect both the geographic concentration of investors and corporate governance (or firm value). We also control for internal governance measures such as equity ownership held by blockholders, G-index (Gompers, Ishii, and Metrick (2003)), board size, and the proportion of outside directors on the board. Finally, we use the introduction of new direct airline routes that reduce the travel time between two of the top 10 institutional investors’ headquarters as an exogenous shock to their geographic concentration. We find that the geographic concentration effects of institutional shareholders are robust to using these approaches.

Our study contributes to the literature in several ways. First, we extend the literature on geographic proximity by providing new evidence on how the concentration of institutional investors affects corporate governance and firm value. Previous studies show that geographic proximity as measured by investors' physical distance from portfolio firms affects their portfolio selection decisions (Coval and Moskowitz (1999), Ivković and Weisbenner (2005), Baik, Kang, and Kim (2010)), governance activities (Lerner (1995), Gaspar and Massa (2007), Kang and Kim (2008), Uysal, Kedia, and Panchapagesan (2008), Becker, Cronqvist, and Fahlenbrach (2011), Chhaochharia, Kumar, and Niessen-Ruenzi (2012)), and financial and accounting policies (John, Knyazeva, and Knyazeva (2011), Ayers, Ramalingegowda, and Yeung (2011)), as well as analysts' earnings forecasting ability (Malloy (2005), Bae, Stulz, and Tan (2008)). In contrast to these studies, we show that geographic proximity as measured by institutional investors' physical distance from each other influences their monitoring of portfolio firms and in turn firm value.

Second, our study contributes to the literature on the monitoring role of institutions by identifying the geographic concentration of institutions as an important determinant of efficient institutional monitoring. Previous studies on free-rider problems among shareholders (Holmstrom (1982), Grossman and Hart (1980)) show that outside investors' large ownership positions increase their incentives to monitor portfolio firms and thus reduce free-rider problems associated with diffused ownership (Shleifer and Vishny (1986), Huddart (1993)). Our study extends this literature by showing that geographic concentration further increases institutions' incentives to monitor portfolio firms, due to increased observability of institutions' governance efforts (John, Knyazeva, and Knyazeva (2011)), and thus reduces free-rider problems associated with large ownership.

Third, our paper adds to a growing number of studies that examine how shareholder coordination improves corporate governance (e.g., Bradley et al. (2010), Kandel, Massa, and Simonov (2011), Chakraborty and Gantchev (2013), Huang (2014a, 2014b)). Bradley et al.

(2010) find strong and frequent attempts by activist arbitrageurs to open-end closed-end funds in the wake of the Securities and Exchange Commission's (SEC) 1992 proxy reform. Chakraborty and Gantchev (2013) show that private investments in public equity (PIPEs) reduce coordination frictions among shareholders and in turn the odds of firm default. Kandel, Massa, and Simonov (2011) find that, using age cohorts among non-controlling shareholders as a proxy for shareholder similarity, shareholder homogeneity acts as an implicit coordination device that disciplines managers. In more closely related work, Huang (2014a, 2014b) finds that geographic proximity among institutional shareholders measured using all institutions is associated with bidder announcement returns, CEO compensation, and the likelihood of CEO turnover. However, our study differs from Huang (2014a, 2014b) in that we focus on a different set of governance outcomes and investigate other important issues not addressed in his papers. In particular, we examine how institutions' geographic concentration affects firms' stock liquidity, identifying a potential channel through which it facilitates institutional monitoring. Moreover, while Huang (2014a, 2014b) uses geographic proximity among institutions and correlations in institutions' portfolio allocation decisions as two different proxies for shareholder coordination, we focus exclusively on institutions' geographic concentration as our key measure of shareholder coordination and construct several geographic concentration variables to provide extensive evidence on institutions' coordination efforts. By focusing exclusively on geography measures, we are able to use the exogenous event that is specific to geographic concentration (i.e., introduction of new direct airline routes) as a natural experiment.

The remainder of the paper proceeds as follows. Section 1 discusses our samples, provides details on our measures of geographic concentration, and presents summary statistics. In Section 2 we investigate the impact of institutions' geographic concentration on corporate governance as measured by forced CEO turnover-performance sensitivity and the proxy voting decisions of mutual funds. In Section 3 we study the impact of institutions' geographic concentration on firm value by examining announcement returns around forced CEO turnovers and initial Schedule 13D filings and Tobin's *q*. In Section 4 we investigate the impact of institutions' geographic concentration on firms' stock liquidity, Section 5 presents results of robustness tests, and we present concluding remarks in Section 6.

1. Samples, Measures of Geographic Concentration, and Summary Statistics

1.1 Samples

For analyses of the impact of institutions' geographic concentration on firm value (Tobin's *q*) and liquidity, our sample starts with the universe of firms covered in Thomson Reuters' CDA/Spectrum Institutional (13F) Holdings database over the 1993 to 2009 period. We omit firms with missing stock return data in the Center for Research in Security Prices (CRSP) and firms with missing financial data in Compustat. We also exclude firms in regulated industries (SIC codes between 4900 and 4999 and between 6000 and 6999). The final sample for the above tests comprises 52,914 firm-year observations.

Our sample of forced CEO turnover events comes from Peters and Wagner (2014) and Jenter and Kanaan (2015).[6] We restrict our sample to those firms that are covered in Thomson Reuters' CDA/Spectrum Institutional (13F) Holdings over the 1993 to 2009 period. Our final sample consists of 2,247 firms (14,748 firm-year observations). Using the date that a CEO turnover first appears on *Factiva* as the announcement date, we identify CEO turnover announcements for 413 of the sample 2,247 firms. To ensure that confounding corporate events (e.g., mergers and acquisitions, dividend payments, earnings announcements, security issuance, company name changes, and delistings) do not affect our results, we search *Factiva* and exclude news associated with such events within one trading day before and after the turnover announcement.

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[6] We thank Dirk Jenter and Florian Peters for providing us with forced CEO turnover data from 1993 to 2001 and from 1993 to 2009, respectively. Following Denis, Denis, and Sarin (1997) and Parrino (1997), Peters and Wagner (2014) and Jenter and Kanaan (2015) classify turnover events as forced turnovers if 1) the press reports that the CEO has been fired, has been forced to step down from the position, or has departed due to unspecified policy differences, 2) the departing CEO is under the age of 60 and the stated reason for the departure is not death, poor health, or acceptance of another position (outside or within the firm), or 3) the departing CEO is under the age of 60 and the stated reason for the departure is retirement but the firm does not announce the departure at least six months in advance.

For the analysis of the valuation effects of Schedule 13D filings, we manually retrieve information on initial Schedule 13Ds filed by 13F institutions targeting our sample firms from the SEC's Electronic Data Gathering, Analysis, and Retrieval system (EDGAR). We consider only 13D filings by a firm's top 10 institutions. We exclude observations associated with confounding events by searching *Factiva* over the 20 trading days before and 20 trading days after the initial 13D filing date. Our final sample of Schedule 13Ds comprises 1,213 initial Schedule 13D filings over the 1993 to 2009 period.

We obtain proxy voting records of mutual funds that belong to a firm's top 10 institutions from the Institutional Shareholder Services (ISS) Voting Analytics database. This sample starts in 2003 as this is the first year mutual funds were required to file Form N-PX, which contains their proxy voting records for each year. Our sample consists of 1,561,504 fund voting records of 132 mutual fund families (23,794 fund family-firm-year observations) that have 2,280 individual funds over 2003 the 2009 period.

Information on the state and city of firms' and institutional investors' headquarters comes from Compact Disclosure and the EDGAR database, respectively. Their latitude and longitude data are obtained from the Census 2000 U.S. Gazetteer Files. Information on boards of directors and the G-index (from 1993 to 2006) comes from Investor Responsibility Research Center (IRRC) databases.

1.2 Measures of Geographic Concentration

To capture the geographic concentration of our sample firms' institutional investors, we use the following six measures of geographic proximity among a firm's top 10 institutions: 1) the logarithm of the equally-weighted physical distance between top 10 institutional shareholder pairs (*Ew Distances*),[7] 2) the logarithm of the ownership-weighted physical distance between top 10 institutional shareholder pairs (*Vw Distances*), 3) the sum of the standard deviations of top 10 institutional shareholders' latitudes and longitudes (*Ew Std LatLon*), 4) the sum of the ownership-weighted standard deviations of top 10 institutional shareholders' latitudes and longitudes, where the weights are the ratio of the equity ownership held by a given institution to the total equity ownership held by all top 10 institutions (*Vw Std LatLon*), 5) the number of unique states in which the top 10 institutional shareholders are located (*Num States*), and 6) one minus the Herfindahl index of top 10 institutional shareholders' ownership in the states in which the top 10 institutions are located (*1 - Herfindahl State IO*).[8] The Appendix provides a detailed description of the construction of these geographic concentration variables. By examining the geographic concentration of institutions from several different perspectives, the above measures allow us to assess the robustness of our results.[9]

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[7] Distance (miles) between top 10 institutional shareholder pairs is measured as: 3,949.99 x arcos (sin (lon_i) x sin (lon_j) + cos (lon_i) x cos (lon_j) x cos (lat_i - lat_j)), where (lat_i, lon_i) *and* (lat_j, lon_j) are the latitudes and longitudes in radians for institutions *i* and *j*, respectively.

[8] We also perform our analyses using several alternative measures of institutions' geographic concentration. First, to further normalize the tail effect of distance, we measure *Ew Distances* as the equally-weighted average of the logarithm of the physical distance between a firm's top 10 institutional shareholder pairs, rather than the logarithm of the equally-weighted physical distance between the pairs. Second, in measuring *Vw Distances*, we use the product rather than the sum of two institutions' ownership holdings in the weight, to capture the fact that an institution with larger ownership has stronger incentives to monitor. Specifically, in measuring *Vw Distances*, weight w_{ij} is given by $(i\ (IOi) * \ j\ (IOj))/(\sum_{i>j}^{10} \sum_{j=1}^{10} \big(i\ (IOi) * \ j\ (IOj)\big))$. Finally, in calculating *Ew Std LatLon*, we use 9 [i.e., N (number of top 10 institutions) – 1] as the sample size in the denominator to account for a small sample size used in the calculation of institutions' geographic concentration. Our results do not change.

In the analysis on the impact of institutions' geographic proximity on firm governance (value) as captured by proxy voting (announcement effects of Schedule 13D filings), we measure the geographic proximity of a voting (13D filing) top 10 institution and the firm's other top 10 institutions using the following five variables: 1) the logarithm of the equally-weighted physical distance between a voting (13D filing) top 10 institutional shareholder and the other top 10 institutional shareholders (*Ew Distances_voting* (*filing*)), 2) the logarithm of the ownership-weighted physical distance between a voting (13D filing) top 10 institutional shareholder and the other top 10 institutional shareholders (*Vw Distances_voting* (*filing*)), 3) the sum of the mean absolute difference between the longitude of a firm's voting (13D filing) institutional shareholder and the longitudes of the other top 10 institutional shareholders and the mean absolute difference between the latitude of a firm's voting (13D filing) institutional shareholder and the latitudes of the other top 10 institutional shareholders (*Ew Dif LatLon_voting* (*filing*)), 4) the sum of the ownership-weighted mean absolute difference between the longitude of a firm's voting (13D filing) institutional shareholder and the longitudes of the other top 10 institutional shareholders and the ownership-weighted mean absolute difference between the latitude of a firm's voting (13D filing) institutional shareholder and the latitudes of the other top 10 institutional shareholders (*Vw Dif LatLon_voting* (*filing*)), and 5) the number of top 10 non-voting (non-filing) institutional shareholders located in the different state as the voting (13D filing) institution (*Num State_voting* (*filing*)).

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[9] Since our geographic concentration measures are based on a firm's top 10 institutions, it is possible that these measures are mechanically related to the number of institutions that holds firms' stocks, particularly, when many firms have fewer than 10 institutions. For example, for a firm with just one institution, the distance measures will all take the value of zero. However, we find that firms with top 10 institutions account for almost 99.6%, 98.9%, 91. 6%, and 100% of the samples of forced CEO turnover events, forced CEO turnover announcements, Schedule 13D filings, and proxy voting records, respectively. However, we find that about 20% of firms used in Tobin's *q* and liquidity analyses have fewer than 10 institutional shareholders. The results do not change if we exclude these firms from the analyses.

1.3 Summary Statistics

Table 1 provides summary characteristics for our geographic concentration measures as well as for the samples of firms, CEOs, and top 10 institutions. We highlight several of the summary measures here. For sample firms used in the analysis of Tobin's *q*, and liquidity, the mean market value of equity and mean book leverage ratio (total debt / total assets) are $1.8 billion and 20.8%, respectively. Tangible assets (PPE) and free cash flow account on average for 27.3% and -11.5% of total assets, respectively. About 28.2% of our sample firms pay dividends, and the sample firms have a mean Tobin's *q* of 1.81 and a mean ROA of -0.03. The mean square root variant of the Amivest liquidity measure and mean institutional block ownership (top 10 institutional ownership) and are 19.2 and 14.0% (29.9%), respectively.

Sample firms used in the analysis of forced CEO turnover-performance sensitivity have a mean firm age of 23.5 years, a mean standard deviation of the previous one-year daily stock return of 2.9%, and a mean market-adjusted stock return of 7.4%. CEOs on average hold 2.7% of the outstanding shares in firms, and their mean tenure is about 8 years. About 23.2% of CEOs are above the age of 60 and 58.9% serve as chairman of the board. The mean board size is 9.3, and on average 65.9% of board members are outside directors. The mean G-index is 9.3.

The mean churn rate of top 10 institutions' turnover and their mean quarterly buy-and-hold value-weighted portfolio return are 0.2 and 5.2%, respectively. The mean market value of portfolios managed by top 10 institutions is $64 billion. The Appendix provides detailed descriptions of the variables reported in Table 1.

2. Geographic Concentration and Corporate Governance

To examine whether large institutions that are closely located to each other perform an active monitoring role, in this section we examine how the measures of institutions' geographic concentration introduced above are related to institutions' corporate governance activities in portfolio firms. We focus on two types of governance activities. First, we examine forced CEO turnover events, as a forced turnover is considered one of the most influential governance activities that large shareholders can take (Denis, Denis, and Sarin (1997), Bethel, Liebeskind, and Opler (1998)). We also examine proxy voting by mutual funds that belong to a firm's top 10 institutions, as proxy voting is one of the few measures of shareholder activism that is directly observable (Morgan et al. (2011)).

2.1 Forced CEO Turnover-Performance Sensitivity

2.1.1 Firm Fixed Effects Linear Probability Regression

In our first test of the impact of institutions' geographic concentration on their corporate governance activities, we estimate regressions in which the dependent variable equals one if a forced CEO turnover event occurs in a given year and zero otherwise. We estimate the regressions using a linear probability model (LPM) as this approach allows us to control for firm fixed effects, which mitigates the concern that omitted firm characteristics simultaneously affect institutions' geographic concentration and monitoring activities.[10] We also include year fixed effects to control for time trends.

Table 2 presents the LPM regression results. Our independent variable of interest is the interaction term between a given measure of top 10 institutions' geographic concentration and a firm’s past stock performance. We control for the average physical distance between the firm and its top 10 institutional shareholders (*IF Distances*) to alleviate the concern that our results are driven by an information advantage due to institutions’ proximity to portfolio firms (Coval and Moskowitz (1999), Baik, Kang, and Kim (2010)). The regressions also control for the firm-, CEO-, and top 10 institution-specific characteristics reported in Table 1. In particular, we control for top 10 institutions’ portfolio turnover since institutions with a longer horizon tend to actively influence firm outcomes through direct involvement rather than voting with their feet, and thus their portfolio turnover may simply proxy for increased monitoring incentives (Gaspar, Massa, and Matos (2005)). We also include top 10 institutions’ past portfolio returns to reduce concerns that the geographic concentration of institutions simply proxies for their monitoring ability, and we control for top 10 institutions’ fund size, because large funds may have more financial resources available for monitoring, and economies of scale arising from large funds can affect institutions’ governance ability (Black (1990)). The regressions also include several corporate governance variables, including institutional block ownership, board size, the proportion of outside directors on the board, and G-index, to alleviate the concern that our results may be driven by these governance forces. We measure firm and CEO characteristics as of the fiscal year-end that immediately precedes CEO turnover events. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the event year.[11]

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[10] Using probit regressions with industry and year fixed effects does not change the results.

In regression (1), we examine the effect of *IF Distances* on the sensitivity of performance to forced CEO turnover. Consistent with previous studies, we find that the coefficient on prior market-adjusted stock returns is negative and significant at the 1% level, suggesting that poor performance increases the likelihood of nonroutine top executive turnover. More importantly, we find that the coefficient on the interaction term between *IF Distances* and past stock returns is positive and significant at the 5% level, indicating that institutions located near a firm are more likely to remove poorly performing top executives than remote institutions. This result is consistent with Kang and Kim (2008), who show that in-state block acquirers play a more active role in nonroutine top management turnover than out-of-state acquirers.[12]

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[11] Measuring all independent variables including the geographic concentration measures and institution characteristics as of the fiscal year-end that immediately precedes the event year does not change the results.

In regressions (2) through (7), we examine the effects of geographic concentration among top 10 institutions on CEO turnover-performance sensitivity. Consistent with our hypothesis, we find that after controlling for *IF Distances*, the coefficients on the interaction terms between past stock performance and the measures of institutions' geographic concentration (*Ew Distances, Vw Distances*, *Ew Std LatLon*, *Vw Std LatLon, Num States,* and *1 - Herfindahl State IO*) are positive and significant at the 5% level or better. These results suggest that forced CEO turnover-performance sensitivity is stronger when firms' top 10 institutions are closely located to each other.

In regression (8), we include both the interaction term between past stock performance and *IF Distances* and the interaction term between past stock performance and *Ew Distances*. The coefficient on the latter interaction term remains significantly positive at the 1% level but the coefficient on the former interaction term loses its significance.[13] In regression (9), we rerun regression (2) controlling for additional internal governance variables including board size, the percentage of outside directors on the board, and the G-index. Because these data are available for only firms covered in the IRRC database, this test is conducted over a smaller sample of 10,321 firm-year observations. We find that our results continue to go through.

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[12] While we find that the coefficient on *IF Distances* is insignificant, Chhaochharia, Kumar, and Niessen-Ruenzi (2012) show that it is positive and significant. To examine why the results are different between their and our studies, we follow their regression specification by replacing firm fixed effects with industry fixed effects and find that the coefficient on *IF Distances* is positive and significant.

[13] In untabulated tests, we replace *Ew Distances* with the other measures of geographic concentration among institutions and reestimate regression (8). We find that the results continue to hold except when we use *Num States*, providing further evidence that large institutions' geographic location relative to each other is a more important factor than their physical distance from the firm in terms of institutional monitoring effects.

The effect of institutions' geographic concentration on CEO turnover-performance sensitivity is also economically large and significant. For example, the interaction term between past stock performance and *Vw Std LatLon* in regression (5) has a coefficient of 0.006. This number suggests that a one-standard-deviation reduction in *Vw Std LatLon* increases the probability of forced CEO turnover by 0.21% (=0.006 x 0.692 x 0.603) when the firm experiences a one-standard-deviation decrease in stock returns. This effect accounts for approximately 7.61% of the unconditional probability of forced CEO turnover (2.74%) for the full sample.

Overall, the results in Table 2 suggest that the geographic concentration of large institutional shareholders increases their incentives to monitor poorly performing corporate managers, and this result is robust to controlling for a range of CEO, firm, institution, and governance characteristics as well as firm fixed effects.

2.1.2 Endogeneity Test: Introduction of New direct Airline Routes as an Exogenous Shock

Although inclusion of firm fixed effects in the previous regressions mitigate potential endogeneity bias caused by time-invariant omitted firm characteristics, they do not address potential endogeneity problems arising from the fact that institutional investors do not randomly choose which firms to invest in, or potential endogeneity driven by unobservable institution-level characteristics that affect both the geographic location and monitoring decisions of institutions. For example, institutions that are closely located to each other may have the same preference for stocks with certain characteristics that are highly correlated with governance quality or firm performance. Alternatively, an institution's ability to identify undervalued stocks may be correlated with both its location and monitoring incentives. It is also possible that a firm's governance or performance induces institutions located in the same area to buy its shares, rather than the other way around.

To address these concerns, we use the introduction of new direct airline routes between the institutional investors' headquarters locations as an exogenous shock to their geographic concentration. As argued by Giroud (2013), new airline routes can lead to a reduction in travel time that is exogenous to firm and institution characteristics, and thus using such an event as a natural experiment enables us to further address omitted variable bias and better identify causality between the geographic concentration of institutional shareholders and corporate governance (firm value).

An important concern with using the introduction of new direct airline routes as an exogenous shock to geographic concentration is that airlines do not randomly introduce new routes and local shocks affect both the introduction of new direct airline routes and firm performance. For example, suppose both the firm and its largest institutional shareholder are located in the same city, Michigan, while its second-largest institutional shareholder is located in New York. If the local economies in both cities are booming, firm performance is likely to increase due to high local demand for its products. At the same time, airlines may have strong incentives to introduce a new flight between these two cities because of an increase in the number of passengers or lobbying by the firm. In this case, our finding that firms with large institutions that are closely located to each other experience higher firm performance may be due to an omitted local shock that simultaneously affects both firm performance and the introduction of new direct airline routes. Thus, to alleviate this concern, we restrict the shocks to those new routes that do not involve the city in which the firm is headquartered.[14] For panel regressions, we consider the effects of the introduction of new direct airline routes on corporate governance and firm value being continued until at least one of institutions affected by a shock sells its stock.

Regression (10) of Table 2 reports results of a LPM specification in which the dependent variable equals one if a forced CEO turnover event occurs and zero otherwise, and the key independent variable of interest is the interaction term between *Airline Shock* and past stock return performance, where *Airline Shock* takes the value of one if at least one new direct airline route that reduces the travel time between the headquarters of two of a firm's top 10 institutional shareholders is introduced, and zero otherwise.[15] The introduction of a new direct airline route is measured during the year immediately prior to the event year.[16] We find that the coefficient on the interaction term is negative and significant at the 5% level. These results suggest that forced CEO turnover-performance sensitivity is more pronounced when travel time among firms' top 10 institutions is exogenously reduced. Thus, the results in regressions (1) through (9) of Table 2 are robust to controlling for endogeneity problems that are not addressed by firm fixed effects, and suggest that the geographic concentration of institutional shareholders facilitates active institutional monitoring.

2.2 Proxy Voting by Mutual Funds

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[14] In untabulated tests, we also include variables that capture the state of the economy, such as the average unemployment rate and the average personal income of the county in which the firm is located, in our main regressions. Our key results are not affected by including these variables.

[15] The airline time data are obtained from the T-100 Domestic Segment dataset. Following Giroud (2013), we compare the driving time between two institutions and the shortest flight time between them to determine whether the introduction of a new direct airline route reduces the travel time. The flight time includes: (1) the driving time to the departing airport, (2) the flight duration plus any layover time in the case of indirect flights, and (3) the driving time from the arriving airport. We consider all possible combinations of departing airports and arriving airports and identify the one with the shortest flight time between pairs of institutional shareholders.

[16] The average reduction in travel time among top 10 institutions due to the airline shocks is about 25% of the pre-shock travel time.

To provide further evidence on the role of geographic concentration among institutional shareholders for corporate governance, we examine proxy voting decisions of mutual fund families that belong to a firm's top 10 institutional shareholders. Specifically, we investigate how the geographic distances between a mutual fund family and a firm's other top 10 institutions influence its proxy votes against management recommendation. Since mutual funds that are closely located to other top 10 institutions can more easily share governance-relevant information and more efficient information-sharing reduces coordination costs in monitoring, these mutual funds are expected to exhibit greater monitoring effort and thus are more likely to vote against management recommendation.

Table 3 presents results of OLS regressions in which the dependent variable is the percentage of voting where mutual funds are against management recommendations (i.e., number of proposals that mutual funds vote against management recommendations divided by total number of proposals on which mutual funds cast votes (Davis and Kim (2007)). As a fund's proxy votes are usually clustered at the family level, following Davis and Kim (2007) we consider our dependent variable at the level of the mutual fund family firm. Our key independent variables of interest are the measures of proxy voting institutions' geographic concentration discussed in Section 1.2. The control variables included in the regressions follow previous studies (e.g., Davis and Kim (2007), Morgan et al. (2011)). We also control for voting institutional shareholders' characteristics such as portfolio turnover, portfolio return, and the logarithm of fund size. To mitigate omitted variables concerns, we include institution fixed effects and firm fixed effects in all regressions. The *t*-statistics are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within voting institutions.

In regression (1), we find that the coefficient on the equally-weighted physical distance between the firm and its voting institutional shareholders (*IF Distances_voting*) is not significant. In contrast, the coefficients on the physical distances between voting institutions and a firm's other top 10 institutions in regressions (2) through (6) (i.e., *Ew Distances_voting*, *Vw Distances_voting*, *Ew Dif LatLon_voting*, *Vw Dif LatLon_voting*, and *Num State_voting* are all highly negative and significant. The results are also economically significant. For example, in regression (4), the coefficient estimate on *EW Dif LatLon_voting* is -0.014, which number suggests that a one-standard-deviation decrease in *EW Dif LatLon_voting* is associated with an 0.69 (=0.493 x 0.014) increase in the percentage of voting where mutual funds are against management recommendations. Given that the unconditional mean percentage of mutual funds' votes against management is about 10.3, this number accounts for roughly 6.7% of the unconditional mean. In regression (7), we add governance characteristics to regression (2) and find that the coefficient on *Ew Distances_voting* is insignificant (*t*-statistic = -0.59), possibly due to the small sample size used in the regression.

In regression (8), we use *Airline Shock_voting* to capture the exogenous shock to the geographic distances between a firm's voting institutions and other top 10 institutions, where *Airline Shock (voting)* takes the value of one if at least one new direct airline route that reduces the travel time between the headquarters of a voting institutional shareholder and the headquarters of a firm's other top 10 institutional shareholders is introduced one year prior to the event quarter, and zero otherwise. We find that the coefficient on this indicator is 0.012, significant at the 5% level, suggesting that mutual funds experiencing a travel shock vote 1.2% more against management than those that do not experience such a shock. This result accounts for an economically significant 11.6% of the unconditional mean percentage of mutual funds' votes against management.

In untabulated tests, we estimate the above regressions using a Tobit approach and find that the results are almost identical to those reported in Table 3.[17] We also examine how a mutual fund family's geographic location affects its proxy votes for ISS recommendation. Previous studies suggest that ISS is committed to make recommendations on whether to vote for or against each proposal and its recommendations are generally consistent with shareholders' interests (Cai, Garner, and Walking (2009), Morgan et al. (2011)). Therefore, to the extent that geographic concentration among mutual funds increases their incentives to monitor due to lower coordination costs and fewer free-rider problems, we would expect them to vote more in line with ISS recommendations. Consistent with this expectation, we find that all of the geographic concentration measures used in the Table 3 regressions are significantly related to the ratio of the number of proposals that mutual fund family votes in line with the respective ISS recommendation each year to the total number of proposals on which the mutual fund family casts votes. Thus, mutual funds that are closely located to a firm's other top 10 institutional shareholders are more likely to vote against (for) proposals recommend by management (ISS), lending additional support to our hypothesis that geographic concentration among large institutions facilitates active institutional monitoring.

To further test whether the geographic concentration of institutional shareholders facilitates active institutional monitoring, we use only voting mutual funds in measuring institutions' geographic concentration and reestimate the regressions in Table 3. We find that the results are similar (not reported). In terms of economic significance, we find that a one-standard-deviation decrease in *Ew Distances_voting* is associated with a 0.69 (0.981*0.007) increase in the percentage of mutual funds' votes against management, which accounts for approximately 7% of the unconditional mean. We also examine how the introduction of new direct airline routes between pairs of voting mutual fund families that reduce their travel time affects the similarity in their proxy voting decisions against management. We find that the propensity of mutual fund families to vote against management increases almost 20% after the introduction of new direct airline routes: the propensity that two mutual fund families vote against management in each year is 0.25 after the introduction, while it is 0.21 before the introduction. When we regress this propensity on *Airline Shock_voting* and the controls used in Table 3 regression (8), we find that the coefficient on *Airline Shock_voting* is 0.023, which is significant at the 1% level.[18]

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[17] In untabulated tests, we also replace the concentration measures used in Table 3 with those used in Table 2 (e.g., *Ew Distances*, *Vw Distances*, *Ew Std LatLon*, *Vw Std LatLon*, and *Num States*) and find that our results do not change.

3. Geographic Concentration and Firm Value

In this section we examine the effect of institutions' geographic concentration on firm value by analyzing the valuation effects of CEO turnover announcements and 13D filings. To the extent that these events are unanticipated by market participants, these analyses should alleviate concerns that firm value influences institutions' geographic concentration, rather than the other way around. We also examine how institutions' geographic concentration affects firm value using annual Tobin's *q*.

3.1 Valuation Effect of Forced CEO Turnover Announcements

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[18] For each pair of voting mutual fund family per proposal, we construct a dummy variable that takes a value of one if the majority of both families (i.e., more than 50% of the funds) vote against a proposal and zero otherwise and use it as the dependent variable.

As a first test of the effect of geographic concentration on firm value, we analyze stock market reactions to the announcements of forced CEO turnover. If geographic proximity among institutional investors increases these investors' incentives to monitor portfolio firms and if in turn enhanced monitoring increases firm value, then firms with such institutions as large shareholders should experience higher abnormal returns around forced CEO turnover announcements than firms without these institutions. To examine the announcement effects of forced CEO turnover, we use a market model. We estimate market model parameters using days -210 to -11 relative to the announcement date. We use the CRSP value-weighted index as the proxy for the market portfolio. Three-day cumulative abnormal returns (CARs) are calculated from day -1 before the announcement date to day +1 after the announcement date. In untabulated tests, we find that the mean and median CAR (-1, 1) for our sample firms are -0.89% (*p*-value = 0.08) and -0.12% (*p*-value = 0.64), respectively.

Table 4 presents results from OLS regressions in which the dependent variable is the CAR (-1, 1) around the forced CEO turnover announcement date. Similar to the previous tables, our key independent variables of interest are the measures of geographic concentration among top 10 institutional shareholders.[19] We use the same control variables as in Table 2 and we also control for industry and year fixed effects. Standard errors are clustered by firm.

In regression (1), we find that *IF Distances* does not have a statistically discernible effect on CAR (-1, 1) around forced CEO turnover announcements. However, with the exception of *Num States*, in regressions (2) through (8) the coefficients on all of the measures of top 10 institutions' geographic concentration are highly significant and take the predicted signs. We also find that the valuation effect of institutions' geographic concentration is economically large and significant. For example, in regression (4), the coefficient on *Ew Std LatLon* is -0.044. This coefficient estimate suggests that ceteris paribus, a one-standard-deviation decrease in *Ew Std LatLon* is associated with an increase in CAR (-1, 1) of almost 2.36% (=0.044 x 0.536). Given that the mean CAR (-1, 1) is -0.89% for the full sample, this number is quite large and economically significant. In regression (9), we find that the coefficient on *Airline Shock* is 0.015, suggesting that all else being equal, firms whose large institutions experience a reduction in travel time realize a 1.5% higher CAR than other firms.

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[19] In untabulated tests, we use CAR (-2, 2) as the dependent variable and find that our results do not change.

Overall, these results, together with those in Table 2, suggest that close geographic concentration among large institutions facilitates active institutional monitoring and that the stock market incorporates increased monitoring effectiveness into firm value.

3.2 Valuation Effect of Initial Schedule 13D Filings

As a further test of the effect of institutions' geographic concentration on firm value, we investigate whether the concentration measures used in the previous sections are related to abnormal returns around initial Schedule 13D filings by activist institutions. The William Act of 1968 requires investors to file a Schedule 13D with the SEC within 10 days if they acquire more than 5% of the firm's voting equity with an intention to intervene in management (Mikkelson and Ruback (1985)). Anecdotal evidence suggests that activist shareholders form "wolf packs" that work collaborate to exert pressure on target firms when they file Schedule 13Ds.[20] For example, in a recent activist proxy fight initiated by Trian Fund Management LP against DuPont Co., Trian lined up support from one of DuPont's other large shareholders, California State

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[20] McCahery, Sautner, and Starks (2015) provide survey evidence that 59% of their sample activists are willing to coordinate with each other, which has become relatively easier since the **SEC's 1992 proxy reform** that lifted restrictions on shareholder communications (Bradley et al. (2010)).

Teachers' Retirement System.[21] Because use of Schedule 13D filings as a governance mechanism requires shareholder coordination, Schedule 13Ds are expected to convey information to the market about institutions' monitoring capabilities.

Table 5 presents results from OLS regressions in which the dependent variable is the CAR (-20, 20) around the initial schedule 13D filing (Brav et al. (2008)).[22] The regressions control for several firm (tangibility, firm size, leverage, Tobin's *q*, free cash flow, dividend-payer indicator, ROA, stock return volatility, and past market-adjusted stock return), governance (institutional block ownership, board size, proportion of outside directors on the board, and G-index), 13D filing institution (portfolio turnover, portfolio return, and the logarithm of fund size) characteristics as well as industry and year fixed effects, and cluster standard errors by firm.

We find that although the abnormal returns around the initial schedule 13D filings are not significantly related to *IF Distances_filing)* (regression (1)), they increase with geographic concentration between a firm's 13D filing institution and the other top 10 institutions (regressions (2) through (7)).[23] For example, in regression (4), the coefficient on *Ew Std LatLon_filing* is -0.026, and significant at the 5% level. This coefficient indicates that all else being equal, a one-standard-deviation decrease in institutional investors' geographic concentration increases announcement returns by 1.39 percentage points (= 0.026 x 0.536), which represents 21% of the sample mean CAR (-20, 20). Thus, the market's positive ex-ante valuation of geographic concentration effects is both statistically and economically significant, supporting the view that geographic proximity among institutions facilitates institutional monitoring. Using the introduction of a new direct airline route between a firm's 13D filing institution and the other top 10 institutions as a shock to institutions' geographic concentration leads to the same conclusion (regression (8)).

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[21] "Activist's Bid Sets Stage for Brawl for DuPont," *Wall Street Journal*, January 9, 2015.

[22] In untabulated tests, we find that our sample target firms earn statistically significant positive returns around the initial schedule 13D filings: the mean and median CAR (-20, 20) are 6.56% (*p*-value = 0.00) and 5.38% (*p*-value = 0.00), respectively.

[23] In untabulated tests, we also replace the concentration measures used in Table 5 with those used in Table 2 (e.g., *Ew Distances*, *Vw Distances*, *Ew Std LatLon*, *Vw Std LatLon*, and *Num States*) and find that our results do not change.

3.3 Impact of Institutions' Geographic Concentration on Firm Value

To further illustrate how institutions' geographic concentration affects firm value, in this subsection we examine how a firm's Tobin's *q* is related to the geographic concentration measures used in the previous sections.

Table 6 reports the results using annual Tobin's *q* as the dependent variable. The regressions are estimated using OLS with firm and year fixed effects. In regression (1), we find that the physical distance between the firm and institutional shareholders (*IF Distances*) does not have any significant effect on firm value. However, in regressions (2) through (7) we find that the coefficients on all of the concentration measures are highly significant with the predicted signs. The results do not change when we control for additional governance characteristics (regression (8)) or when we use *Airline Shock* to capture an exogenous shock to institutions' geographic concentration (regression (9)). In terms of economic significance, the coefficient estimate of -1.351 on *1 - Herfindahl State IO* (regression (7)) suggests that all else being equal, a one-standard-deviation decline in *1 - Herfindahl State IO* is associated with a 0.282 (= -1.351 x 0.209) increase in firm value, which represents 15.6% of the sample mean Tobin's *q* (1.805).

Overall, the results in Tables 6 confirm that the presence of geographically concentrated large institutional shareholders improves firm value.

4. Geographic Concentration and Liquidity

One of the important testable implications of our hypothesis is that active monitoring by geographically proximate large institutions reduces a firm's information asymmetry by pressuring managers to improve information disclosure quality, which helps increase its stock liquidity. Close geographic concentration among institutions may also improve their portfolio firms' stock liquidity as it facilitates efficient information-sharing among institutions, which helps mitigate information asymmetries vis-à-vis the firms. However, as discussed in the Introduction Section, information sharing among investors can also decrease stock price efficiency and liquidity when information acquisition is endogenous (Han and Yang (2013)), or when close geographic concentration among large institutions exacerbates the adverse selection problem faced by uninformed investors. Thus, whether the positive effects of institutions' geographic concentration on firms' stock liquidity dominate its negative effects is an empirical question.

Maug (1998), Kyle and Vila (1991), Kahn and Winton (1998), and Faure-Grimaud and Gromb (2004) show that liquidity can increase shareholder monitoring through intervention. Edmans (2009) further shows that liquidity improves corporate governance by enhancing the threat of blockholder exit. Thus, if the geographic concentration of institutional investors improves firms' stock liquidity, this result, together with those in the previous sections, suggests that improved liquidity may be an important channel through which geographically proximate institutional investors perform an active monitoring role.

To test whether institutional shareholders' geographic concentration enhances firms' stock liquidity, we regress the square root variant of the Amivest liquidity measure (i.e., annual mean of the square root of the daily ratio of volume to absolute return), which is widely used in academic literature (Amihud, Mendelson, and Lauterbach (1997), Berkman and Eleswarapu (1998), among others), on each of the six geographic concentration measures, equity ownership held by top 10 institutions, and the other control variables used in the previous analyses, including firm and year fixed effects. In addition, we include stock price and an indicator for S&P 500 Index inclusion used in Brockman, Chung, and Yan (2009 as additional controls.

The regression results are presented in Table 7. In regression (1), we do not find any evidence that *IF Distances* is significantly associated with a firm's stock liquidity. In contrast, in regressions (2) through (7), we find that institutional shareholders' geographic concentration has a significant effect on stock liquidity: the coefficients on *Ew Distances*, *Vw Distances*, *Ew Std LatLon*, *Vw Std LatLon*, *Num States*, *and 1 - Herfindahl State IO* are negative and significant at the 1% level. All else being equal, a one-standard-deviation decrease in *Ew Distances*, *Vw Distances*, *Ew Std LatLon*, *VW Std LatLon*, *Num States*, and *1 - Herfindahl State IO* account for approximately 5.9 %, 6.0%, 8.44%, 9.22%, 10.0%, and 11.0%, respectively, of the unconditional sample mean of firms' stock liquidity (19.25). Thus, firms whose large institutions are closely located to each other experience greater improvement in liquidity. In regression (8), we add governance characteristics to regression (2) and find that the coefficient on *Ew Distances* is still negative and significant at the 1% level. In regression (9), consistent with the results in regressions (2) through (8), we find that *Airline Shock* is associated with higher stock liquidity. In contrast, consistent with Brockman, Chung, and Yan (2009), we find that the coefficients on equity ownership held by top 10 institutions are significantly negative at the 1% level across all regressions, suggesting that ownership concentration reduces stock liquidity.[24]

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[24] Unlike our study, Brockman, Chung, and Yan (2009) use block ownership data created by Dlugosz et al. (2006) that includes three different types of block ownership (i.e., insiders, outsiders, and employee stock ownership plans) and show that block ownership decreases stock market liquidity mainly due to its adverse impact on trading activity.

In untabulated tests, we also experiment with several alternative measures of firms' stock liquidity including the Amihud (2002) illiquidity measure, the Gibbs estimate from the market-adjusted model (C^bma, Hasbrouck (2009)), the Gibbs estimate from the latent common factor model (Gamma 0, Hasbrouck (2009)), and the proportion of days with zero returns (Lesmond, Ogden, and Trzcinka (1999)).[25] We find that all geographic concentration measures except *Num States* and *1 - Herfindahl State IO* are significantly positively related to these four alternative measures of firms' stock liquidity. The coefficients on *Num States* and *1 - Herfindahl State IO* are positive and significant only in the regressions using the proportion of days with zero returns as the measure of firms' stock liquidity.

In sum, these results support our hypothesis that large institutions' geographical concentration mitigates information asymmetry about portfolio firms through efficient information-sharing, which has a positive effect on stock liquidity. Previous literature shows that while ownership concentration increases shareholders' incentives to monitor, it reduces stock liquidity (Brockman, Chung, and Yan (2009)). Our results indicate that large institutional investors' geographic concentration, together with their ownership concentration, increases stock liquidity, which helps improve incentives to monitor portfolio firms.

5. Robustness Tests

5.1 Institution Heterogeneity

Previous studies show that nontransient (dedicated/quasi-index) institutions are more likely to monitor management compared to transient institutions (e.g., Chen, Harvard, and Li (2007)), suggesting that our results on the effects of geographic proximity of large institutions on corporate governance and firm value are more pronounced when nontransient institutions are geographically concentrated than when transient institutions are. In this subsection we examine whether our results in previous sections are sensitive to concentration measures estimated using these two types of institutional investors. Specifically, following Bushee (1998), we first divide sample firms' top 10 institutions into transient and nontransient investors and then reconstruct our location concentration measures separately for these two types of institutions.[26]

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[25] Data on these alternative measures of firms' stock liquidity for the 1993 to 2006 period are obtained from Joel Hasbrouck's website, http://people.stern.nyu.edu/jhasbrou/Research/GibbsEstimates2006/Liquidity%20estimates%202006.htm.

Panels A and B of Table 8 report the regression results based on the nontransient institution sample and the transient institution sample, respectively. Regressions (1) through (6) use as dependent variables an indicator for forced CEO turnover, CAR (-1, 1) around forced CEO turnover announcements, CAR (-20, 20) around initial schedule 13D filings, Tobin's *q*, and the square root variant of the Amivest liquidity, respectively. We find that most of our previous results are driven by nontransient institutions: while the coefficients on the geographic concentration measures (*Ew Distances*, *Vw Distances*, *Ew Std LatLon*, *Vw Std LatLon*, *Num States*, *1 - Herfindahl State IO*, and *Airline Shock*) are significant with the predicted signs in Panel A (with the exception of the coefficients on *Num States* in regressions (1) and (2)), most of the corresponding coefficients in Panel B are insignificant except for those on the geographic concentration measures in regression (5). Given that transient institutions trade actively to maximize short-term profits, it is not surprising that we obtain significant results in regression (5) for both Panels A and B.

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[26] We classify an institution as a dedicated/quasi-index investor or a transient investor according to its expected investment horizon following the permanent transient /quasi-indexer/dedicated classifications of Bushee (1998).

Overall, the findings presented in Table 8 are consistent with those of Chen, Harvard, and Li (2007) and support the view that geographically concentrated long-term institutions (i.e., nontransient institutions) with large ownership have stronger incentives to perform an active monitoring role than geographically concentrated transient institutions.

5.2 Alternative Measure of Large Institutions

Thus far, we have used a firm's top 10 institutions to examine the importance of geographic concentration among large institutions to corporate governance and firm value. In untabulated tests, we instead define large institutions as block institutions that own at least 5% of a firm's outstanding shares and reestimate the previous regressions. Although using this alternative measure of large institutions reduces our sample size by almost half, we continue to find that our previous results hold, except for the tests of abnormal returns around Schedule 13D filings. With respect to the latter test, we find that only the coefficients on *Ew Distances* and *Vw Distances* are significant, with the expected signs. For the tests using *Airline Shock* and *Airline Shock_voting*, we find that with the exception of the tests of abnormal returns around forced CEO turnover announcements and liquidity, the results are similar to those using top 10 institutions as our measure of large institutions.

5.3 Controlling for Other Location Measures

Loughran and Schultz (2005) show that compared to rural firms, urban firms trade more frequently and attract larger institutional ownership, suggesting that an urban location allows firms to enjoy higher liquidity and greater institutional ownership, which facilitates institutional monitoring. To control for this urban location effect, in untabulated tests we include an urban indicator that takes the value of one if a firm's headquarters is located in one of the top 10 urban areas and zero otherwise. Following Loughran and Schultz (2005), the top 10 urban areas are taken to be the 10 largest consolidated metropolitan statistical areas based on population size reported in the 2000 Census: New York City, Los Angeles, Chicago, Washington-Baltimore, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston. Our results do not change when we include the urban location indicator in the regressions.

It is also possible that our results are driven by institutions that are disproportionately located in large metropolitan areas where the production and transmission of information are relatively easy. To address this concern, in untabulated tests we first exclude institutional investors located in New York, which is considered one of the largest metropolitan cities in the U.S., and reconstruct our geographic concentration measures using the remaining top 10 institutions. Second, we omit institutional investors located in top five metropolitan cities as in Loughran and Schultz (2005), and reconstruct the geographic concentration measures using the remaining top 10 institutions. Our main results do not change.

5.4. Governance Quality and Firm-Shareholder Distance

If the geographic concentration of large institutions increases monitoring effectiveness, we expect our results to be more pronounced for firms with poorer governance and firms that are difficult to monitor, such as those whose large shareholders are located at greater distance from the firm. To test this conjecture, in untabulated tests we interact *EW Distances* with G-index and *IF Distances* and reestimate all previous regressions. Consistent with our expectation, we find that the effect of the geographic concentration of institutional investors on both corporate governance and firm value is stronger for firms with a higher G-index (i.e., poorly governed firms) in all tests except for the test of announcement returns around Schedule 13D filings. We also find that our results in the previous sections are more pronounced for firms with larger *IF*

Distances in the tests of forced CEO turnover-performance sensitivity, announcement returns around Schedule 13D filings, Tobin's *q*, and liquidity.

5.5 Information Asymmetry and Firm-Shareholder Distance

To the extent that information-sharing among institutions alleviates information asymmetry vis-à-vis the firms and such a moderating effect can be more important for information-sensitive firms, we expect the predicted effects of institutions' geographic concentration on governance activities, firm value, and liquidity to be more pronounced for firms with high information asymmetry than for firms with low information asymmetry. Consistent with these predictions, in untabulated tests, we find that the coefficient on the interaction term between the indicator for firms with a number of analysts following below the sample median and *EW Distances* is negative and significant in the regressions using CAR (-1, 1) around forced CEO turnover announcements, Tobin's *q*, and the square root variant of the Amivest liquidity as the dependent variables. Similarly, we find that the coefficient on the interaction term between this indicator and *EW Distances_voting* (*EW Distances_filing*) is negative and significant in the regression using the percentage of proxy voting against management (CAR (-20, 20) around initial Schedule 13D filings) as the dependent variable. For the regression of forced CEO turnover-performance sensitivity, we find that firms with a number of analysts following below the sample median have a significantly larger positive coefficient on the interaction term between *EW Distances* and past stock returns than firms with a number of analysts following above the sample median. We also repeat all these analyses by replacing *EW Distances* and *EW Distances_voting* (*EW Distances_filing*) with the other measures of geographic concentration among institutions and find that the results are qualitatively similar except for the coefficient on the interaction term between the indicator for firms with a number of analysts following below the sample median and *1 - Herfindahl State IO* in a Tobin's *q* regression.

Taken together, these results indicate that the impact of geographic concentration of institutional investors on corporate governance, firm value, and liquidity is particularly pronounced when firms face high information asymmetry

5.6 Regulation Fair Disclosure and the Information Advantage of Institutions

Hwang and Qian (2014) and Bernile, Kumar, and Sulaeman (2014) document that the information advantage of institutional investors near corporate headquarters declines sharply following the adoption of Regulation Fair Disclosure (*Reg FD*), possibly due to the decline in institutions' access to firms' private information. To the extent that all institutions' private information about portfolio firms is affected by the passage of *Reg FD*, it is possible that information transfer among institutions is also affected by its passage, thus influencing the networking effects of geographic proximity among institutions. This argument suggests that our results above are likely to be weaker after the passage of *Reg FD*. To test this prediction, we divide the sample into two subperiods—pre-*Reg FD* (fiscal years ending in calendar years 1999 and before) and post-*Reg FD* (fiscal years ending in calendar years 2000 and onward) —and reestimate all previous regressions using *EW Distances* as our measure of institutions' geographic concentration. We find no difference in the results between the two subperiods for the forced CEO turnover-performance sensitivity, Tobin's *q*, and liquidity regressions. In the regression of CAR (-1, 1) around forced CEO turnover announcements on *EW Distances*, we find that the coefficient on *EW Distances* is significant only in the post-*Reg FD* period. However, we find the opposite result for the regression of CAR (-20, 20) around initial Schedule 13D filings on *EW Distances*.

In sum, we do not find any systematic evidence that our main findings are affected by the regulatory change limiting institutions' access to firms' private information. These results suggest that although the information advantage of institutions located near portfolio firms may have declined after the adoption of *Reg FD*, the ability of geographic concentration among institutions to facilitate information-sharing among them and their incentives to monitor have not been affected by the passage of this law.

6. Summary and Conclusion

In this paper we examine the impact of geographic concentration among large institutional investors on corporate governance and firm value. We argue that the geographic concentration of institutional investors increases monitoring effectiveness and firm value by reducing information asymmetry, coordination costs, and free-rider problems in institutional monitoring and increasing firms' stock liquidity and the observability of institutions' coordination efforts.

Consistent with this argument, we find that large institutions' geographic concentration improves corporate governance and enhances firm value. Specifically, we find that firms whose top 10 institutions are closely located to each other experience higher forced CEO turnover-performance sensitivity, higher abnormal returns around forced CEO turnover announcements, larger Tobin's *q*, and greater stock liquidity. Firms also experience more frequent proxy voting against management when voting mutual funds are closely located to other top 10 institutions, and higher abnormal returns around Schedule 13D filings when 13D filing institutions are closely located to other top 10 institutions. These results are robust to using alternative measures of geographic concentration among institutions, to various controls for endogeneity bias and other location measures, and to the passage of Reg FD. Finally, we find that these results are particularly pronounced when firms face high information asymmetry, as measured by the number of analysts following. We also find that these results concentrate among nontransient institutions that are closely located to each other, suggesting that geographically concentrated nontransient institutions have stronger incentives to perform an active monitoring role than geographically concentrated transient institutions.

Overall, our results suggest that large investors' geographic concentration increases their monitoring incentives and in turn firm value.

References

Amihud, Yakov, 2002, Illiquidity and stock returns: Cross-section and time series effects, *Journal of Financial Markets* 5, 31–56.

Amihud, Yakov, Haim Mendelson, and Beni Lauterbach, 1997, Market microstructure and securities values: Evidence from the tel aviv stock exchange, *Journal of Financial Economics* 45, 365-390.

Arnott Richard, and Joseph E. Stiglitz, 1991, Moral hazard and nonmarket institutions: Dysfunctional crowding out or peer monitoring, *American Economic Review* 81, 179-190.

Ayers, Benjamin C., Santhosh Ramalingegowda, and Eric P. Yeung, 2011, Hometown advantage: The effects of monitoring institution location on financial reporting discretion, *Journal of Accounting and Economics* 52, 41-61.

Bae, Kee-Hong, René M. Stulz, and Hongping Tan, 2008, Do local analysts know more? A cross-country study of the performance of local analysts and foreign analysts, *Journal of Financial Economics* 88, 581-606.

Baik, Bok, Jun-Koo Kang, and Jin-Mo Kim, 2010, Local institutional investors, information asymmetries, and equity returns, *Journal of Financial Economics* 97, 81-106.

Becker Bo, Henrik Cronqvist, and Rüdiger Fahlenbrach, 2011, Estimating the effects of large shareholders using a geographic instrument, *Journal of Financial and Quantitative Analysis* 46, 907-942.

Berkman Henk, and Venkat R. Eleswarapu, 1998, Short-term traders and liquidity: A test using Bombay Stock Exchange data, *Journal of Financial Economics* 47, 339-355.

Bernile, Gennaro, Kumar, Alok, and Sulaeman, Johan, 2014, Levelling the playing field: financial regulation and disappearing local bias of institutional investors, working paper, Singapore Management University.

Bethel, Jennifer E., Julia Porter Liebeskind, and Tim Opler, 1998, Block share purchases and corporate performance, *Journal of Finance* 53, 605-634.

Bhide, Amar, 1993, The hidden costs of stock market liquidity, *Journal of Financial Economics* 34, 31-51.

Black, Bernard, 1990, Shareholder passivity reexamined. *Michigan Law Review* 89, 520-608.

Bradley, Michael, Alon Brav, Itay Goldstein, and Wei Jiang, 2010, Activist arbitrage: A study of open-ending attempts of closed-end funds, *Journal of Financial Economics* 95, 1-19.

Brav, Alon, Wei, Jiang, Frank Partnoy, and Randall Thomas, 2008, Hedge fund activism, corporate governance, and firm performance, *Journal of Finance* 63, 1729-1775.

Brockman Paul, Dennis Y. Chung, and Xuemin Yan, 2009, Block ownership, trading activity, and market liquidity, *Journal of Financial and Quantitative Analysis* 44, 1403-1426.

Bushee, Brian J., 1998, The influence of institutional investors on myopic R&D investment behavior, *Accounting Review* 73, 19 - 45.

Campbell, T. Colin, Michael, Gallmeyer, Shane A. Johnson, Jessica, Rutherford, and Brooke W. Stanley, 2011, CEO optimism and forced turnover, *Journal of Financial Economics* 101, 695-712.

Cai, Jie, Jacqueline L. Garner, and Ralph A. Walkling, 2009, Electing directors, *Journal of Finance* 64, 2389-2421.

Chakraborty, Indraneel, and Nickolay Gantchev, 2013, Does shareholder coordination matter? Evidence from private placements, *Journal of Financial Economics* 108, 213-230.

Chen, Xia, Harford, Jarrad, and Li, Kai, 2007, Monitoring: Which institutions matter? *Journal of Financial Economics* 86, 279-305.

Chhaochharia, Vidhi, Alok Kumar, and Alexandra Niessen-Ruenzi, 2011, Local investors and corporate governance, *Journal of Accounting and Economics* 54, 42–67.

Coffee, John C., Jr., 1991, Liquidity versus control: The institutional investor as corporate monitor, *Columbia Law Review* 91, 1277-1368.

Coval, Joshua D., and Tobias J. Moskowitz, 1999, Home bias at home: Local equity preference in domestic portfolios, *Journal of Finance* 54, 2045-2073.

Davis, Gerald F., and E. Han Kim, 2007, Business ties and proxy voting by mutual funds, *Journal of Financial Economics* 85, 552-570.

Denis, David J., Diane K. Denis, and Atulya Sarin, 1997, Agency problems, equity ownership, and corporate diversification, *Journal of Finance* 52, 135-160.

Dirk, Jenter, and Fadi Kanaan, 2015, CEO turnover and relative performance evaluation, *Journal of Finance* 70, 2155-2184.

Jennifer Dlugosz, Rudiger Fahlenbrach, Paul Gompers, and Andrew Metrick, 2006, Large blocks of stock: Prevalence, size, and measurement, *Journal of Corporate Finance* 12, 594–618.

Doblas-Madrid, Antonio, and Minetti, Raoul, 2013, Sharing information in the credit market: Contract-level evidence from U.S. Firms, *Journal of Financial Economics* 109, 198-223.

Doidge Craig, Alexander Dyck, Hamed Mahmudi, and Aazam Virani, 2015, Can institutional investors improve corporate governance through collective action? working paper, Rotman School of Management.

Edmans, Alex, 2009, Blockholder trading, market efficiency, and managerial myopia, *Journal of Finance* 64, 2481-2513.

Edmans, Alex, and Gustavo Manso, 2011, Governance through trading and intervention: A theory of multiple blockholders, *Review of Financial Studies* 24, 2395-2428.

Edmans, Alex, Vivian W. Fang, and Emanuel Zur, 2013, The effect of liquidity on governance, *Review of Financial Studies* 26, 1443-1482.

Faure-Grimaud, Antoine, and Denis Gromb, 2004, Public trading and private incentives, *Review of Financial Studies* 17, 985-1014.

Gaspar, José-Miguel, and Massimo Massa, 2007, Local ownership as private information: Evidence on the monitoring-liquidity trade-off, *Journal of Financial Economics* 83, 751-792.

Gaspar, José-Miguel, Massimo Massa, and Pedro Matos, 2005, Shareholder investment horizons and the market for corporate control, *Journal of Financial Economics* 76, 135-165.

Giroud, Xavier, 2013, Proximity and investment: Evidence from plant-level data, *Quarterly Journal of Economics* 128, 861-915.

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107-155.

Grossman, Sanford J., and Oliver D. Hart, 1980, Takeover bids, the free-rider problem, and the theory of the corporation, *Bell Journal of Economics* 11, 42–64.

Han Bing, and Liyan Yang. 2013. Information acquisition, social networks, and asset prices. Management Science 59, 1444–1457.

Hasbrouck, Joel, 2009, Trading costs and returns for US equities: Estimating effective costs from daily data, *Journal of Finance* 64, 1479-1512.

Holmstrom, Bengt R., 1982, Moral hazard in teams, *Bell Journals of Economics* 13, 324-340.

Hong, Harrison, Jeffery D. Kubik, and Jerremy C. Stein, 2005, Thy neighbor's portfolio: word-of-mouth effects in the holdings and trades of money managers, *Journal of Finance* 6, 2801-2824.

Huang, Jiekun, 2014a, Shareholder coordination, corporate governance, and firm value, working paper, University of Illinois at Urbana-Champaign.

Huang, Jiekun, 2014b, Shareholder coordination and market for corporate control, working paper, University of Illinois at Urbana-Champaign.

Huddart, Steven, 1993, The effect of a large shareholder on corporate value, *Management Science* 39, 1407-1421.

Hwang, Chun-Yang, and Xiaolin, Qian, 2014, The effect of regulation FD on the information revisited asymmetry and the cost of capital, working paper, Nanyang Technological University.

Ivković, Zoran, and Scott Weisbenner, 2005, Local does as local is: Information content of the geography of individual investors' common stock investments, *Journal of Finance* 60, 267-306.

John, Kose, Anzhela Knyazeva, and Diana Knyazeva, 2011, Does geography matter? Firm location and corporate payout policy, *Journal of Financial Economics* 101, 533-551.

Kahn, Charles, and Andrew Winton, 1998, Ownership structure, speculation, and shareholder intervention, *Journal of Finance* 53, 99-129.

Kandel, Eugene, Massimo Massa, and Andrei Simonov, 2011, Do small shareholders count? *Journal of Financial Economics* 101, 641-665.

Kang, Jun-Koo, and Jin-Mo Kim, 2008, The geography of block acquisitions, *Journal of Finance* 63, 2817-2858.

Kyle, Albert S., and Jean-Luc, Vila, 1991, Noise trading and takeovers, *Rand Journal of Economics*, 22, 54-71.

Lerner, Josh, 1995, Venture capitalists and the oversight of private firms, *Journal of Finance* 50, 301-318.

Lesmond, David A., Joseph P. Ogden, and Charles Trzcinka, 1999, A new estimate of transaction costs, *Review of Financial Studies* 12, 1113-1141.

Loughran, Tim, and Paul Schultz, 2005, Liquidity: Urban versus rural firms, *Journal of Financial Economics* 78, 341-374.

Malloy, Christopher J., 2005, The geography of equity analysis, *Journal of Finance* 60, 719-755.

Maug, Ernst, 1998, Large shareholders as monitors: Is there a trade-off between liquidity and control?, *Journal of Finance* 53, 65-98.

McCahery, Joseph A., Zacharias, Sautner, and Laura T. Starks, 2015, Behind the Scenes: The corporate governance preferences of institutional investors, working paper, Tilburg Law School.

Mikkelson, Wayne H., and Richard S. Ruback, 1985, An empirical analysis of the interfirm equity investment process, *Journal of Financial Economics* 14, 523-553.

Morgan, Angela, Annette Poulsen, Jack Wolf, and Tina Yang, 2011, Mutual funds as monitors: Evidence from mutual fund voting, *Journal of Corporate Finance* 17, 914-928.

Noe, Thomas H., 2002, Investor activism and financial market structure, *Review of Financial Studies* 15, 289-318.

Pagano Marco, and Tullio Jappelli, 1993, Information sharing in credit market, *Journal of Finance* 48, 1693-1718.

Parrino, Robert, 1997, CEO turnover and outside succession a cross-sectional analysis, *Journal of Financial Economics* 46, 165-197.

Peters, Florian S., and Alexander F. Wagner, 2014, The executive turnover risk premium, *Journal of Finance* 69, 1529-1563.

Shleifer, Andrei, and Robert, Vishny, 1986, Large shareholders and corporate control, *Journal of Political Economy* 94, 461-488.

Stiglitz, Joseph E., 1990, Peer monitoring and credit markets, *World Bank Economic Review* 4, 351-366.

Uysal, Vahap B., Simi Kedia, and Venkatesh Panchapagesan, 2008, Geography and acquirer returns, *Journal of Financial Intermediation* 17, 256-275.

White, Halbert, 1980, A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, Econometrica 48, 817-838.

Appendix

The Appendix provides detailed descriptions of all the variables used in the tables.

Variable	Definition
Measures of top 10 institutional shareholders' geographic concentration:	
Ew Distances	Logarithm of the equally-weighted physical distance between a firm's top 10 institutional shareholder pairs. Specifically, if the geographic distances between top 10 institutional shareholder pairs are $dist_{12}$, $dist_{13}$,…, and $dist_{ij}$, then *Ew Distance* is the logarithm of the average of these distances for top 10 institution pairs.
Vw Distances	Logarithm of the ownership-weighted physical distance between a firm's top 10 institutional shareholder pairs. Specifically, if the geographic distances between top 10 institutional shareholder pairs are $dist_{12}$, $dist_{13}$,…, and $dist_{ij}$, and top 10 institutional shareholders' percentage equity holdings in a firm are IO_1, IO_2, …, and IO_{10}, then *Vw Distance* is the logarithm of the average of $w_{12}*dist_{12}$, $w_{13}*dist_{13}$,…, $w_{ij}*dist_{ij}$, ..., where w_{ij} is the sum of ownership held by institution *i* (IO_i) and institution *j* (IO_j) divided by the sum of ownership held by all top 10 institution pairs, $\sum_{i>j}^{10}\sum_{j=1}^{10}(i\ (IOi) +\ j\ (IOj))$.
Ew Std LatLon	Logarithm of the sum of the standard deviations of top 10 institutional shareholders' latitudes and longitudes. Specifically, if the latitudes of a firm's top 10 institutional shareholders are lat_1, lat_2, …, and lat_{10} and their longitudes are lon_1, lon_2,…, and lon_{10}, then *EW STD LatLon* is $\sqrt{\frac{1}{10}\sum_{i=1}^{10}(lat_i-\overline{lat})^2}+\sqrt{\frac{1}{10}\sum_{i=1}^{10}(lon_i-\overline{lon})^2}$, where $\overline{lat}$ and $\overline{lon}$ are the averages of top 10 institutions' latitudes and longitudes, respectively.
Vw Std LatLon	Logarithm of the sum of the ownership-weighted standard deviations of top 10 institutional shareholders' latitudes and longitudes, where the weight used is the ratio of the equity ownership held by each institution to the total equity ownership held by the top 10 institutions. Specifically, if the latitudes of a firm's top 10 institutional shareholders are lat_1, lat_2, …, and lat_{10}, their longitudes are lon_1, lon_2,…, and lon_{10}, and their percentage equity holdings in the firm are IO_1, IO_2, …, and IO_{10}, then *VW STD LatLon* is $\sqrt{\sum_{i=1}^{10}w_i(lat_i-\overline{lat})^2}+\sqrt{\sum_{i=1}^{10}w_i(lon_i-\overline{lon})^2}$, where w_i is the ownership held by institution *i* (IO_i) divided by the total ownership held by the top 10 institutions, $\overline{lat}$ is the average of top 10 institutions' latitudes, and $\overline{lon}$ is the average of top 10 institutions' longitudes.
Num States	Number of unique states in which a firm's top 10 institutional shareholders are located. For example, if a firm's top 10 institutional shareholders are located in seven states (i.e., four institutions are located in the one state and six institutions are located in six different states), then *Num States* equals seven.
1 - Herfindahl State IO	One minus the Herfindahl index of top 10 institutional shareholders' ownership in a firm in the number of states in which the firm's top 10 institutions are located. For example, if the number of unique states that top 10 institutional shareholders are located in (i.e., *Num States*) is seven and the sum of a firm's ownership held by the top 10 institutional shareholders in each of the seven states is $State\_IO_1$, $State\_IO_2$, …, and $State\_IO_7$, then *1 - Herfindahl State IO* is given by $1-\sum_{i=1}^{7}(State_{IO_i}\ /\ Top10\_IO)^2$, where *Top10_IO* is the total ownership held by top 10 institutions.
Airline Shock	Indicator that takes the value of one if at least one new direct airline route that reduces the travel time between the headquarters of two of a firm's top 10 institutional shareholders is introduced one year prior to the event year or event date, and zero otherwise. We restrict the shocks to those new direct routes that do not involve the city in which the firm is headquartered. For panel regressions, we consider the effects of the introduction of new direct airline routes on corporate governance and firm value being continued until at least one of institutions affected by a shock sells its stock.
Measures of voting (13D filing) institutional shareholders' geographic concentration:	
Ew Distances_voting (filing)	Logarithm of the equally-weighted physical distance between a voting (13D filing) top 10 institutional shareholder *v* and the other top 10

	institutional shareholders. Specifically, if the geographic distances between the voting (13D filing) institutional shareholder and the other institutional shareholders are $dist_{1v}$, $dist_{2v}$, …, and $dist_{10v}$, then *Ew Distance_voting (filing)* is the logarithm of the average of these distances.
Vw Distances_voting (filing)	Logarithm of the ownership-weighted physical distance between a voting (13D filing) top 10 institutional shareholder *v* and the other top 10 institutional shareholders. Specifically, if the geographic distances between the voting (13D filing) institutional shareholder and the other institutional shareholders are $dist_{1v}$, $dist_{2v}$,…, and $dist_{10v}$, and top 10 institutional shareholders' percentage equity holdings in a firm are IO_1, IO_2,…, IO_v,…, and IO_{10}, then *Vw Distance_voting (filing)* is the logarithm of the average of $w_{1v}*dist_{1v}$, $w_{iv}*dist_{iv}$,…, $w_{10v}*dist_{10v}$, where w_{iv} is the sum of the ownership held by the voting (13D filing) institution *v* (IO_v) and the other institution *i* (IO_i) divided by the sum of the ownership held by the voting (13D filing) institution and all other top 10 institution pairs, $\sum_{i=1,i\neq v}^{10} (IO_i + IO_v)$.
Ew Dif LatLon_voting (filing)	Logarithm of the sum of the mean absolute difference between the longitude of a firm's voting (13D filing) institutional shareholder *v* and those of the other top 10 institutional shareholders and the mean absolute difference between the latitude of a firm's voting (13D filing) institutional shareholder *v* and those of the other top 10 institutional shareholders. Specifically, if the latitudes of a firm's top 10 institutional shareholders are lat_1, lat_2, ⋯, lat_v⋯, and lat_{10} and their longitudes are lon_1, lon_2, …, lon_v, …, and lon_{10}, then *Ew Dif LatLon_voting (filing)* is $\frac{\sum_{i=1,i\neq v}^{10}\lvert lat_i - lat_v\rvert}{9} + \frac{\sum_{i=1,i\neq v}^{10}\lvert lon_i - log_v\rvert}{9}$, where lat_v is the latitude of voting (13D filing) institution *v*, lon_v is the longitude of voting (13D filing) institution *v*, lat_i is the latitude of the other institution *i*, and lon_i is the longitude of the other institution *i*.
Vw Dif LatLon_voting (filing)	Logarithm of the sum of the ownership-weighted mean absolute difference between the longitude of a firm's voting (13D filing) institutional shareholder *v* and those of the other top 10 institutional shareholders and the ownership-weighted mean absolute difference between the latitude of a firm's voting (13D filing) institutional shareholder *v* and those of the other top 10 institutional shareholders. Specifically, if the latitudes of a firm's top 10 institutional shareholders are lat_1, lat_2, ⋯, lat_v⋯, and lat_{10}, their longitudes are lon_1, lon_2,…, lon_v, …, and lon_{10}, and their percentage equity holdings in the firm are IO_1, IO_2,…, IO_v, …, and IO_{10}, then *Vw Dif LatLon_voting (filing)* is $\frac{\sum_{i=1,i\neq v}^{10} w_{iv}\lvert lat_i - lat_v\rvert}{9} + \frac{\sum_{i=1,i\neq v}^{10} w_{iv}\lvert lon_i - log_v\rvert}{9}$, where w_{iv} is the sum of the ownership held by voting (13D filing) institution *v* [i.e., IO_v] and the other institution *i* [i.e., IO_i] divided by the total ownership held by the top 10 institutions, lat_v is the latitude of voting (13D filing) institution *v*, lon_v is the longitude of voting (13D filing) institution *v*, lat_i is the latitude of the other institution *i*, and lon_i is the longitude of the other institution *i*.
Num State_voting (filing)	Number of top 10 non-voting (non-filing) institutional shareholders located in the different state as the voting (13D filing) institution.
Airline Shock_voting (filing)	Indicator that takes the value of one if at least one new direct airline route that reduces the travel time between the headquarters of a firm's voting (13D filing) institutional shareholder and those of its other top 10 institutional shareholders is introduced one year prior to the event quarter, and zero otherwise. We restrict the shocks to those new direct routes that do not involve the city in which the firm is headquartered. For panel regressions, we consider the effects of the introduction of new direct airline routes on corporate governance and firm value being continued until at least one of institutions affected by a shock sells its stock.

Measure of physical distances between the firm and its top 10 institutional shareholders (voting and 13D filing institutional shareholders):

IF Distances	Equally-weighted physical distance between the firm and its top 10 institutional shareholders.
IF Distances_voting (filing)	Equally-weighted physical distance between the firm and the voting (13D filing) institutional shareholders that belong to its top 10 institutional shareholders.

Firm, CEO, and, governance characteristics:

Book leverage	Total debt (data9) / book assets (data6).
Firm age	Number of years since a firm appears in CRSP.
Free cash flow	(Operating income before depreciation (data13) – interest and related expenses (data15) – income taxes (data16) – dividends common/ordinary (data21)) / book assets (data6).
Forced CEO turnover (indicator)	Indicator that takes the value of one if a forced CEO turnover occurs in a given year and zero otherwise. We obtain the forced CEO turnover sample from Peters and Wagner (2014), who classify turnover events as forced turnovers if 1) the press reports that the CEO has

	been fired, has been forced to depart from the position, or has departed due to unspecified policy differences, 2) the departing CEO is under the age of 60 and the stated reason for the departure is not death, poor health, or the acceptance of another position (outside or within the firm), or 3) the departing CEO is under the age of 60 and the stated reason for the departure is retirement but the firm does not announce the departure at least six months in advance.
Log (price)	Logarithm of stock closing price at the end of the year.
Market-adjusted stock return	One-year buy-and-hold market-adjusted stock return. Equally-weighted CRSP index return is used as the market return.
Market capitalization	Stock price (data199) * shares outstanding (data25).
Payer (indicator)	Indicator that takes the value of one if a firm pays dividends in the fiscal year and zero otherwise.
ROA	Income before extraordinary items (data18) / book assets (data6).
S&P_500 (indicator)	Indictor that takes the value of one if the firm is included in the S&P 500 index and zero otherwise.
Stock return volatility	Volatility of daily stock return over the year.
Tangibility	Net PPE (data8) / book assets (data6).
Tobin's *q*	(Book assets + market value of equity – book value of equity) / book assets (data6), where the book value of equity is calculated as (total stockholders' equity (data216) + deferred taxes (data74) + investment tax credit (data208) – preferred stock (combining data216, data 10, and data 130)) and the market value of equity is calculated as price per share (data 24) * common shares outstanding (data25).
CEO age>60 (indicator)	Indicator that takes the value of one if the CEO is older than 60 and zero otherwise.
CEO as chairman (indicator)	Indicator that takes the value of one if the CEO is the chairman of the board and zero otherwise.
CEO ownership	Equity ownership held by the CEO.
CEO tenure	CEO's tenure in the firm.
Board size	Number of board members.
G-index	Governance index constructed according to Gompers, Ishii, and Metrick (2003).
Institutional block ownership	Sum of the ownership held by all block institutional shareholders that own more than 5% of a firm's outstanding shares.
% of outside directors	Percentage of outside directors on the board.
Top 10 institutional shareholders' characteristics:	
Fund size	Logarithm of top 10 institutional shareholders' average asset holding value.
Turnover	Average churn rate for top 10 institutional shareholders, calculated as (aggregate purchase + aggregate sale – absolute value of total net flow) / equity asset holding value.
Return	Top 10 institutional shareholders' mean one-quarter buy-and-hold (monthly) value-weighted portfolio return.
Voting (13D filing) institutional shareholders' characteristics:	
Fund size_voting (filing)	Logarithm of voting (13D filing) institutions' asset holding value.
Turnover_voting (filing)	Churn rate of voting (13D filing) institutions, calculated as (aggregate purchase + aggregate sale – absolute value of total net flow) / equity asset holding value.
Return_voting (filing)	Voting (13D filing) institutions' one quarter buy-and-hold (monthly) value-weighted portfolio return.

Table 1
Summary Statistics

This table presents summary statistics and data sources for the main regression variables. The Appendix provides detailed variable descriptions.

	Sample size	Mean	Median	Standard deviation	Minimum	Maximum	Source
Measures of top 10 institutional shareholders' geographic concentration:							
Ew Distances	52,914	6.792	6.928	0.608	0.000	7.903	13F, Edgar
Vw Distances	52,914	6.801	6.941	0.621	0.000	7.901	13F, Edgar
Ew Std LatLon	52,914	2.949	3.066	0.536	0.000	3.881	13F, Edgar
Vw Std LatLon	52,914	2.790	2.982	0.692	0.000	4.151	13F, Edgar
Num States	52,914	5.837	6.000	1.876	1.000	10.000	13F, Edgar
1 - Herfindahl State IO	52,914	0.640	0.711	0.209	0.101	0.900	13F, Edgar
Airline Shock	49,019	0.235	0.000	0.414	0.000	1.000	13F, Edgar
Measures of voting institutional shareholders' geographic concentration:							
Ew Distances_voting	23,794	6.637	6.654	0.529	4.419	7.848	ISS, 13F, Edgar
Vw Distances_voting	23,794	6.638	6.671	0.551	4.133	7.853	ISS, 13F, Edgar
Ew Dif LatLon_voting	23,794	2.858	2.861	0.493	0.084	4.001	ISS, 13F, Edgar
Vw Dif LatLon_voting	23,794	2.860	2.878	0.511	0.083	4.014	ISS, 13F, Edgar
Num State_voting	23,794	8.101	9.000	1.024	1.000	9.000	ISS, 13F, Edgar
Airline Shock_voting	20,248	0.119	0.000	0.324	0.000	1.000	ISS, 13F, Edgar
Measures of 13D filing institutional shareholders' geographic concentration:							
Ew Distances_filing	1,213	6.531	6.561	0.701	1.466	7.844	13F,Edgar
Vw Distances_filing	1,213	6.543	6.585	0.700	1.466	7.845	13F,Edgar
Ew Dif LatLon_filing	1,213	2.769	2.767	0.610	0.062	3.983	13F,Edgar
Vw Dif LatLon_filing	1,213	2.781	2.801	0.608	0.062	3.990	13F,Edgar
Num State_filing	1,213	6.008	7.000	1.843	1.000	9.000	13F,Edgar
Airline Shock_filing	1,011	0.102	0.000	0.305	0.000	1.000	13F,Edgar
Measures of physical distance between the firm and its top 10 institutional shareholders (voting and 13D filing institutional shareholders):							
IF Distances	52,914	6.473	6.552	0.872	0.243	7.907	13F, Compact

							disclosure
IF Distances_voting	23,794	6.467	6.784	1.305	0.573	7.906	13F, Compact disclosure, Edgar
IF Distances_filing	1,213	8.829	8.794	0.156	8.562	9.173	13F, Compact disclosure, Edgar
Firm, CEO, and, governance characteristics:							
Tangibility	52,914	0.273	0.205	0.227	0.000	0.897	Compustat
Market capitalization (in billion U.S. dollars)	52,914	1.842	0.178	3.578	2.557	46.486	Compustat
Book leverage	52,914	0.208	0.177	0.190	0.000	0.805	Compustat
Payer (indicator)	52,914	0.282	0.000	0.450	0.000	1.000	Compustat
Free cash flow	52,914	-0.115	-0.060	0.159	-0.586	0.037	Compustat
Tobin’s *q*	52,914	1.805	1.357	1.615	0.552	10.283	Compustat
ROA	52,914	-0.029	0.032	0.243	-1.335	0.275	Compustat
Square root variant of the Amivest liquidity measure	56468	19.246	6.480	32.949	0.019	299.632	Compustat, CRSP
Institutional block ownership	52,914	0.140	0.101	0.140	0.000	0.596	13F
Top 10 Institutional ownership	52,914	0.299	0.300	0.181	0.007	0.775	13F
Firm age (year)	14,748	23.505	18.000	15.844	3.000	57.000	Compustat
Stock return volatility	14,748	0.029	0.025	0.014	0.010	0.080	CRSP
Market-adjusted stock return	14,748	0.074	-0.010	0.603	-0.994	7.956	CRSP
CEO ownership	14,748	0.027	0.004	0.060	0.000	0.339	ExecuComp
CEO tenure (year)	14,748	7.952	6.000	7.477	0.000	36.000	ExecuComp
CEO age>60 (indicator)	14,748	0.232	0.000	0.422	0.000	1.000	ExecuComp
CEO as chairman (indicator)	14,748	0.589	1.000	0.492	0.000	1.000	ExecuComp
Board size	10,321	9.293	9.000	2.460	5.000	17.000	IRRC
% of outside directors	10,321	65.9%	66.7%	16.3%	20.0%	90.9%	IRRC
G-index	10,321	9.299	9.000	2.617	4.000	15.000	IRRC
Top 10 institutional shareholder characteristics:							
Turnover	52,914	0.217	0.200	0.097	0.040	0.546	13F, CRSP
Return	52,914	0.052	0.060	0.106	-0.212	0.459	13F, CRSP
Fund size (in billion U.S. dollars)	52,914	63.952	47.801	51.475	0.934	255.811	13F, CRSP

Voting institutional shareholder characteristics:							
Turnover_voting	23,794	0.152	0.148	0.109	0.012	0.578	13F, CRSP, ISS, Edgar
Return_voting	23,794	0.015	0.025	0.078	-0.192	0.264	13F, CRSP, ISS, Edgar
Fund size_voting (in billion U.S. dollars)	23,794	232.512	208.117	192.436	2.229	600.103	13F, CRSP, ISS, Edgar
13D filing institutional shareholder characteristics:							
Turnover_filing	1,213	0.295	0.201	0.259	-0.092	1.440	13F, Edgar
Return_filing	1,213	0.059	0.050	0.146	-0.474	1.271	13F, Edgar
Fund size_filing (in billion U.S. dollars)	1,213	10.195	3.091	23.971	0.778	160.521	13F, Edgar

Table 2
Firm Fixed Effects Regressions of Forced CEO Turnover on Explanatory Variables

The table presents estimates of linear probability regressions in which the dependent variable is an indicator that takes the value of one if a forced turnover event occurs in a given year, and zero otherwise. The sample consists of 14,748 firm-year observations covered in the Compustat, CRSP, Thomson Reuters Institutional (13F) Holdings, and ExecuComp databases from 1993 to 2009. Firms that belong to the financial services or utilities industries are excluded. The main independent variables of interest are the interaction terms between the physical distance between the firm and its top 10 institutional shareholders and past stock performance and the interaction terms between top 10 institutional shareholders' geographic concentration measures and past stock performance. In regression (1), we examine the effect of the equally-weighted physical distance between a firm and its top 10 institutional shareholders on forced CEO turnover-performance sensitivity. In regressions (2) through (7), we examine the effect of geographic concentration among the top 10 institutional shareholders on CEO turnover-performance sensitivity. In regression (8), we examine the effects of the equally-weighted physical distance between a firm and its top 10 institutional shareholders and the equally-weighted physical distance between a firm's top 10 institutional shareholder pairs on CEO turnover-performance sensitivity. In regression (9), we add governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)) to regression (2) as additional controls. In regression (10), we use the introduction of new direct airline routes that reduce the travel time between two of the top 10 institutional shareholders' headquarters as an exogenous shock to geographic concentration. Firm fixed effects and year fixed effects are included in all regressions. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the event year. The other independent variables are measured as of the fiscal year-end that immediately precedes the event year. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Geographic concentration measure									Exogenous shock
	IF Distances	*Ew Distances*	*Vw Distances*	*Ew Std LatLon*	*Vw Std LatLon*	*Num States*	*1 - Herfindahl State IO*	Interaction of *IF Distances* and *Ew Distances* with past performance	*Ew Distances* and governance variables	Introduction of new direct airline route
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Physical distance between the firm and its top 10 institutional shareholders:										
IF Distances: A	-0.001	-0.001	-0.001	-0.080	-0.001	-0.001	-0.001	-0.000	-0.002	-0.001
	(-0.20)	(-0.38)	(-0.41)	(-1.36)	(-0.38)	(-0.21)	(-0.34)	(-1.18)	(-0.65)	(-0.28)
Top 10 institutional shareholders' geographic concentration measures:										
Ew Distances: *B*		0.007						0.007*	0.009*	
		(1.64)						(1.69)	(1.83)	
Vw Distances: *C*			0.007*							
			(1.66)							
Ew Std LatLon: *D*				0.009**						
				(2.51)						
Vw Std LatLon: *E*					0.008*					
					(1.62)					
Num States: *F*						0.000				
						(0.22)				
1 - Herfindahl State IO: *G*							0.051**			

							(2.53)			
Airline shock (indicator): *H*										0.004
										(0.77)
Market-adjusted stock return: *I*	-0.020***	-0.024***	-0.024***	-0.024***	-0.023***	-0.023***	-0.023***	-0.024***	-0.024***	-0.008***
	(-3.84)	(-4.27)	(-4.27)	(-5.89)	(-3.88)	(-4.30)	(-4.71)	(-3.82)	(-3.58)	(-3.06)
*IF Distances * I*	0.001**							0.000		
	(2.07)							(0.15)		
*Ew Distances * I*		0.002***						0.002***	0.001**	
		(2.75)						(2.72)	(2.32)	
*Vw Distances * I*			0.002***							
			(2.74)							
Ew Std LatLon: I*				0.006***						
				(3.89)						
Vw Std LatLon: I*					0.006***					
					(2.75)					
*Num States * I*						0.001**				
						(2.21)				
*1 - Herfindahl State IO * I*							0.010***			
							(2.62)			
*Airline shock (indicator) * I*										-0.029**
										(-2.26)
CEO characteristics:										
CEO ownership	-0.079	-0.080	-0.080	0.001**	-0.082	-0.078	-0.076	-0.081	-0.118*	-0.077
	(-1.53)	(-1.54)	(-1.56)	(2.52)	(-1.59)	(-1.50)	(-1.47)	(-1.56)	(-1.80)	(-1.49)
CEO tenure	0.001***	0.001***	0.001***	-0.022***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(3.00)	(3.00)	(3.00)	(-5.43)	(3.00)	(3.02)	(3.01)	(3.03)	(2.63)	(3.04)
CEO age>60 (indicator)	-0.022***	-0.022***	-0.022***	-0.012**	-0.022***	-0.022***	-0.022***	-0.022***	-0.018***	-0.022***
	(-4.98)	(-4.93)	(-4.93)	(-2.12)	(-4.94)	(-4.99)	(-4.98)	(-4.95)	(-3.70)	(-5.01)
CEO as chairman (indicator)	-0.011*	-0.012*	-0.012*	0.008	-0.011*	-0.012*	-0.012*	-0.012*	-0.013*	-0.012*
	(-1.80)	(-1.87)	(-1.88)	0.001**	(-1.82)	(-1.89)	(-1.89)	(-1.85)	(-1.78)	(-1.95)
Firm characteristics:										
Tangibility	0.009	0.008	0.008	(0.32)	0.009	0.008	0.008	0.012	0.008	0.009
	(0.39)	(0.37)	(0.37)	-0.002	(0.40)	(0.35)	(0.37)	(0.56)	(0.28)	(0.38)
Log (market capitalization)	-0.001	-0.002	-0.001	(-0.25)	-0.001	-0.001	-0.001	-0.003	0.000	-0.002
	(-0.33)	(-0.37)	(-0.33)	0.000	(-0.27)	(-0.31)	(-0.30)	(-0.61)	(0.01)	(-0.42)
Tobin’s *q*	0.000	0.000	0.000	(0.16)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.06)	(0.11)	(0.11)	0.024	(0.09)	(0.18)	(0.12)	(0.08)	(0.04)	(0.01)
Book leverage	0.025	0.024	0.024	(1.30)	0.024	0.025	0.024	0.025	0.044**	0.020
	(1.43)	(1.38)	(1.38)	0.009	(1.39)	(1.44)	(1.41)	(1.47)	(2.01)	(1.18)
Payer (indicator)	0.009	0.009	0.009	(0.93)	0.009	0.009	0.009	0.009	0.018	0.008
	(0.85)	(0.85)	(0.84)	0.001	(0.82)	(0.83)	(0.80)	(0.83)	(1.35)	(0.73)
Free cash flow	0.001	0.001	0.001	(0.03)	0.001	0.001	0.001	0.019	-0.047	0.000

	(0.03)	(0.02)	(0.02)	-0.046**	(0.02)	(0.03)	(0.04)	(0.78)	(-1.03)	(0.01)
ROA	-0.046*	-0.046*	-0.046*	(-2.38)	-0.046*	-0.046*	-0.047*	-0.043*	-0.023	-0.047*
	(-1.69)	(-1.70)	(-1.70)	0.099	(-1.68)	(-1.69)	(-1.74)	(-1.65)	(-0.44)	(-1.72)
Stock return volatility	0.102	0.100	0.098	(0.46)	0.087	0.096	0.111	0.151	0.241	0.105
	(0.43)	(0.42)	(0.41)	0.005**	(0.36)	(0.40)	(0.47)	(0.63)	(0.67)	(0.44)
Firm age	0.005**	0.005**	0.005**	(2.35)	0.005**	0.005*	0.004*	0.005**	0.003**	0.005**
	(2.14)	(1.96)	(2.03)	(0.32)	(2.19)	(1.91)	(1.67)	(1.99)	(2.19)	(2.04)
Governance characteristics:										
Institutional block ownership	-0.008	-0.008	-0.008	-0.008	-0.008	-0.008	-0.002	-0.009	0.005	-0.006
	(-0.46)	(-0.50)	(-0.49)	(-0.63)	(-0.47)	(-0.45)	(-0.12)	(-0.56)	(0.21)	(-0.36)
Board size									-0.000	
									(-0.04)	
% of independent directors									-0.001	
									(-0.04)	
G-index									-0.004	
									(-1.48)	
Top 10 institutional shareholders' characteristics:										
Turnover	-0.003	-0.001	-0.000	-0.002	-0.006	0.003	0.004	-0.003	0.004	-0.003
	(-0.08)	(-0.03)	(-0.01)	(-0.06)	(-0.18)	(0.09)	(0.13)	(-0.09)	(0.12)	(-0.10)
Return	-0.014	-0.018	-0.018	-0.018	-0.017	-0.012	-0.013	-0.012	0.013	-0.025
	(-0.25)	(-0.32)	(-0.32)	(-0.58)	(-0.30)	(-0.22)	(-0.24)	(-0.23)	(0.17)	(-0.45)
Fund size	-0.007	-0.006	-0.006	-0.006	-0.007	-0.007	-0.006	-0.006	-0.010*	-0.007
	(-1.64)	(-1.41)	(-1.41)	(-1.57)	(-1.57)	(-1.46)	(-1.36)	(-1.44)	(-1.66)	(-1.52)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,748	14,748	14,748	14,748	14,748	14,748	14,748	14,748	10,321	12,293
R-squared	0.171	0.185	0.182	0.170	0.171	0.171	0.170	0.184	0.179	0.170

Table 3
Firm and Institution Fixed Effects Regressions of Mutual Fund Proxy Voting against Management on Explanatory Variables

The table presents estimates of OLS regressions in which the dependent variable is the percentage of mutual fund families that vote against management each year, calculated as the ratio of the number of proposals that mutual fund families vote against management recommendations divided by total number of proposals on which mutual fund families cast votes each year. The sample consists of 23,794 institution-firm-year observations covered in the Compustat, CRSP, ExecuComp, Thomson Reuters Institutional (13F) Holdings, and ISS Voting Analytics databases from 2003 to 2009. Firms that belong to the financial services or utilities industries are excluded. In regression (1), we examine the effect of the equally-weighted physical distance between a firm and its top 10 institutional shareholders on mutual fund proxy voting against management. In regressions (2) through (6), we examine the effect of mutual funds' geographic concentration on their proxy voting against management. In regression (7), we add governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)) to regression (2) as additional controls. In regression (8), we use the introduction of new direct airline routes that reduce the travel time between the headquarters of a voting institution and the firm's other top 10 institutions as an exogenous shock to voting institutions' geographic concentration. Institution fixed effects, firm fixed effects, and year fixed effects are included in all regressions. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the voting quarter. The other independent variables are measured as of the fiscal year-end that immediately precedes the voting quarter. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within institutions. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Geographic concentration measure							Exogenous shock
	IF Distances_ voting	*Ew Distances_ voting*	*Vw Distances_ voting*	*Ew Dif LatLon voting*	*Vw Dif LatLon_ voting*	*Num State_ voting*	*Ew Distances_ voting* and governance variables	Introduction of new direct airline route
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Physical distance between the firm and the voting institutional shareholders:								
IF Distances_voting	0.001	0.002	0.003	0.002	0.003	0.002	0.004	0.002
	(0.52)	(0.90)	(0.95)	(0.93)	(0.97)	(0.60)	(0.96)	(0.51)
Voting institutional shareholders' geographic concentration measures:								
Ew Distances_voting		-0.012***					-0.003	
		(-3.40)					(-0.59)	
Vw Distances _voting			-0.012***					
			(-3.61)					
Ew Dif LatLon_voting				-0.014***				
				(-3.33)				
Vw Dif LatLon_voting					-0.015***			
					(-3.52)			
Num State_voting						-0.003**		
						(2.16)		
Airline Shock_voting								0.012**
								(1.97)
Firm characteristics:								
Tangibility	-0.005	-0.004	-0.005	-0.005	-0.005	-0.005	-0.124**	-0.027

	(-0.28)	(-0.27)	(-0.28)	(-0.28)	(-0.29)	(-0.30)	(-2.35)	(-1.53)
Log (market capitalization)	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.022***	-0.010***
	(-1.17)	(-1.22)	(-1.21)	(-1.28)	(-1.27)	(-1.23)	(-2.77)	(-3.23)
Tobin's *q*	0.002	0.002	0.002	0.002	0.002	0.002	0.011**	0.002
	(1.35)	(1.41)	(1.40)	(1.40)	(1.38)	(1.35)	(2.43)	(1.03)
Book leverage	0.041***	0.040***	0.040***	0.040***	0.040***	0.041***	0.045***	0.035**
	(3.01)	(2.96)	(2.94)	(2.97)	(2.96)	(3.04)	(2.92)	(2.40)
Payer (indicator)	0.003	0.003	0.003	0.003	0.003	0.003	-0.008	0.010
	(0.41)	(0.42)	(0.40)	(0.46)	(0.44)	(0.44)	(-0.71)	(1.24)
Free cash flow	0.027	0.028	0.027	0.027	0.027	0.027	0.005	-0.006
	(0.95)	(0.96)	(0.95)	(0.95)	(0.95)	(0.93)	(0.08)	(-0.18)
ROA	-0.043	-0.043	-0.043	-0.043	-0.043	-0.043	-0.133**	-0.000
	(-1.40)	(-1.39)	(-1.39)	(-1.39)	(-1.39)	(-1.40)	(-2.10)	(-0.01)
Market-adjusted stock return	-0.013***	-0.013***	-0.013***	0.003	0.004	-0.012***	-0.006	-0.009
	(-2.80)	(-2.87)	(-2.90)	(0.23)	(0.24)	(-2.68)	(-0.76)	(-0.53)
Governance characteristics:								
Institutional block ownership	0.003	0.004	0.004	-0.012***	-0.012***	0.003	0.006	0.003
	(0.21)	(0.24)	(0.25)	(-2.71)	(-2.74)	(0.22)	(0.22)	(0.22)
Board size							0.001	
							(0.53)	
% of independent directors							0.020	
							(0.80)	
G-index							-0.003	
							(-0.76)	
Voting institutional shareholders' characteristics:								
Turnover _voting	0.030	0.029	0.028	0.028	0.028	0.149**	-0.014	0.030
	(1.01)	(0.96)	(0.96)	(0.95)	(0.94)	(2.45)	(-0.34)	(0.87)
Return _voting	0.155**	0.156**	0.155**	0.149**	0.149**	0.001	-0.027	0.066***
	(2.54)	(2.55)	(2.55)	(2.45)	(2.44)	(0.25)	(-0.22)	(2.91)
Fund size_voting	0.003	0.001	0.001	0.000	0.000	-0.012***	0.003	-0.103***
	(0.71)	(0.17)	(0.14)	(0.11)	(0.09)	(-2.68)	(0.57)	(-11.31)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Institution fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,794	23,794	23,794	23,794	23,794	23,794	9,365	20,248
R-squared	0.285	0.286	0.285	0.285	0.285	0.285	0.223	0.285

Table 4
OLS Regressions of CAR (-1, 1) around Forced CEO Turnover on Explanatory Variables

The table presents estimates of OLS regressions in which the dependent variable is the cumulative abnormal return (CAR) from one day before and one day after the forced CEO turnover announcement date. The sample consists of 413 forced CEO turnovers by firms covered in the Compustat, CRSP, Thomson Reuters Institutional Holdings (13F), and ExecuComp databases from 1993 to 2009. Firms that belong to the financial services or utilities industries are excluded. Daily abnormal returns are calculated using a market model with a 189-trading day estimation period beginning 200 days before and ending 11 days before the forced CEO turnover announcement date, using the CRSP value-weighted return as a proxy for the market return. In regression (1), we examine the effect of the equally-weighted physical distance between a firm and its top 10 institutional shareholders on CAR (-1, 1). In regressions (2) through (7), we examine the effect of geographic concentration among the top 10 institutional shareholders on CAR (-1, 1). In regression (8), we add governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)) to regression (2) as additional controls. In regression (9), we use the introduction of new direct airline routes that reduce the travel time between two of the top 10 institutional shareholders' headquarters as an exogenous shock to geographic concentration. Industry fixed effects (at the two-digit SIC level) and year fixed effects are included in all regressions. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the event day. The other independent variables are measured as of the fiscal year-end that immediately precedes the event day. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Geographic concentration measure								Exogenous shock
	IF Distances	*Ew Distances*	*Vw Distances*	*Ew Std LatLon*	*Vw Std LatLon*	*Num States*	*1 - Herfindahl State IO*	*Ew Distances* and governance variables	Introduction of new direct airline route
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Physical distance between the firm and its top 10 institutional shareholders:									
IF Distances	-0.003	0.005	0.005	0.004	0.003	0.012	-0.002	0.035	0.009
	(-0.09)	(0.72)	(0.71)	(0.56)	(0.42)	(1.10)	(-0.22)	(0.90)	(1.16)
Top 10 institutional shareholders' geographic concentration measures:									
Ew Distances		-0.058***						-0.037*	
		(-3.25)						(-1.71)	
Vw Distances			-0.062***						
			(-3.19)						
Ew Std LatLon				-0.044***					
				(-3.27)					
Vw Std LatLon					-0.053***				
					(-3.08)				
Num States						-0.011			
						(-1.46)			
1 - Herfindahl State IO							-0.208***		
							(-2.66)		
Airline Shock									0.015*
									(1.65)
CEO characteristics:									
CEO ownership	0.250*	0.223*	0.193	0.226*	0.226*	0.179	0.194*	-0.016	0.211
	(1.95)	(1.91)	(1.64)	(1.93)	(1.89)	(1.38)	(1.68)	(-0.10)	(1.47)
CEO tenure	0.002**	0.002**	0.003**	0.002**	0.002**	0.003**	0.002**	0.000	0.003**
	(2.32)	(2.32)	(2.48)	(2.36)	(2.41)	(2.50)	(2.30)	(0.04)	(2.19)
CEO age>60 (indicator)	-0.014	-0.020	-0.029*	-0.017	-0.017	-0.015	-0.013	0.014	-0.018

	(-0.79)	(-1.14)	(-1.70)	(-1.01)	(-0.95)	(-0.77)	(-0.75)	(0.57)	(-0.92)
CEO as chairman (indicator)	-0.008	-0.003	-0.002	-0.003	-0.004	-0.012	-0.002	0.007	-0.004
	(-0.55)	(-0.25)	(-0.14)	(-0.24)	(-0.29)	(-0.81)	(-0.16)	(0.31)	(-0.29)
Firm characteristics:									
Tangibility	-0.053	-0.059	-0.050	-0.065	-0.062	-0.076*	-0.055	-0.020	-0.034
	(-1.23)	(-1.43)	(-1.21)	(-1.56)	(-1.50)	(-1.67)	(-1.31)	(-0.27)	(-0.79)
Log (market capitalization)	0.006	0.006	0.006	0.006	0.006	-0.002	0.006	0.009	0.005
	(1.25)	(1.14)	(1.23)	(1.18)	(1.09)	(-0.31)	(1.12)	(0.93)	(0.82)
Tobin's *q*	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***	-0.003	-0.014***	-0.008	-0.003
	(-3.96)	(-4.02)	(-3.94)	(-4.05)	(-4.12)	(-0.51)	(-4.02)	(-0.84)	(-0.48)
Book leverage	0.067*	0.074**	0.085**	0.077**	0.074**	0.112**	0.075**	0.055	0.069*
	(1.84)	(2.03)	(2.29)	(2.09)	(1.99)	(1.97)	(2.01)	(0.81)	(1.67)
Payer (indicator)	0.025	0.030*	0.030**	0.028*	0.030*	0.030**	0.029*	0.050**	0.030*
	(1.64)	(1.96)	(2.00)	(1.83)	(1.93)	(2.03)	(1.95)	(2.35)	(1.72)
Free cash flow	-0.103	-0.099	-0.040	-0.100	-0.094	-0.122	-0.106	0.060	-0.072
	(-1.17)	(-1.16)	(-0.48)	(-1.18)	(-1.06)	(-1.51)	(-1.18)	(0.33)	(-1.02)
ROA	0.143*	0.140*	0.108	0.138*	0.130	0.183**	0.150*	-0.132	0.104
	(1.68)	(1.66)	(1.34)	(1.65)	(1.49)	(2.27)	(1.72)	(-0.67)	(1.60)
Stock return volatility	0.980	1.111	1.086	1.063	1.053	1.398	0.934	0.571	1.200
	(1.14)	(1.38)	(1.35)	(1.31)	(1.30)	(1.63)	(1.11)	(0.36)	(1.28)
Firm age	-0.001	-0.001	-0.001	-0.000	-0.000	-0.000	-0.001	-0.002	-0.000
	(-0.97)	(-1.09)	(-1.26)	(-1.20)	(-1.21)	(-0.02)	(-1.30)	(-0.83)	(-0.94)
Governance characteristics:									
Institutional block ownership	-0.049	-0.034	-0.031	-0.038	-0.040	-0.033	-0.071**	0.058	-0.012
	(-1.34)	(-0.97)	(-0.90)	(-1.07)	(-1.16)	(-0.95)	(-2.00)	(0.96)	(-0.31)
Board size								-0.002	
								(-0.33)	
% of independent directors								-0.052	
								(-0.88)	
G-index								0.002	
								(0.48)	
Top 10 institutional shareholders' characteristics:									
Turnover	-0.110	-0.166	-0.153	-0.152	-0.143	-0.203	-0.122	-0.175	-0.086
	(-1.06)	(-1.56)	(-1.45)	(-1.47)	(-1.38)	(-1.58)	(-1.18)	(-0.88)	(-0.78)
Return	-0.102	-0.073	-0.091	-0.080	-0.081	0.048	-0.067	-0.152	-0.098
	(-1.28)	(-0.98)	(-1.22)	(-1.06)	(-1.09)	(0.37)	(-0.87)	(-1.17)	(-1.21)
Fund size	-0.006	-0.013	-0.014	-0.011	-0.010	-0.011	-0.011	-0.030	0.002
	(-0.39)	(-0.80)	(-0.86)	(-0.69)	(-0.59)	(-0.62)	(-0.65)	(-1.41)	(0.12)
year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.272	0.297	0.300	0.295	0.292	0.251	0.289	0.329	0.265

Table 5
OLS Regressions of CAR (-20, 20) around Initial Schedule 13D Filings on Explanatory Variables

The table presents estimates of OLS regressions in which the dependent variable is the cumulative abnormal return (CAR) from 20 days before to 20 days after the initial Schedule 13D filing. The sample consists of 1,213 initial Schedule 13D filings by institutional investors targeting the firms covered in the Compustat, CRSP, and Thomson Reuters Institutional Holdings (13F) databases from 1993 to 2009. Only 13D filings by a firm's top 10 institutions are included in the sample. Firms that belong to the financial services or utilities industries are excluded. Daily abnormal returns are calculated using a market model with a 169-trading day estimation period beginning 200 days before and ending 31 days before the Schedule 13D filings, using the CRSP value-weighted return as a proxy for the market return. In regression (1), we examine the effect of the equally-weighted physical distance between a firm and its top 10 institutional shareholders on CAR (-20, 20). In regressions (2) through (6), we examine the effect of 13D filing institutions' geographic concentration on CAR (-20, 20). In regression (7), we add governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)) to regression (2) as additional controls. In regression (8), we use the introduction of new direct airline routes that reduce the travel time between the headquarters of a 13D filing institution and the firm's other top 10 institutions as an exogenous shock to 13D filing institutions' geographic concentration. Industry fixed effects (at the two-digit SIC level) and year fixed effects are included in all regressions. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the event day. The other independent variables are measured at the fiscal year-end that immediately precedes the event day. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively. use the introduction of new direct airline routes that reduce the travel time between the headquarters of a voting institution and the firm's other top 10 institutions as an exogenous shock to voting institutions' geographic concentration

	Geographic concentration measure							Exogenous shock
	IF Distances_ filing	*Ew Distances_ filing*	*Vw Distances_ filing*	*Ew Std LatLon_filing*	*Vw Std LatLon_filing*	*Num States_ filing*	*Ew Distances_ filing* and governance variables	Introduction of new direct airline route
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IF Distances_filing	0.004	0.065	0.099*	0.061	0.093	0.057	0.121	0.040
	(0.06)	(1.13)	(1.83)	(0.93)	(1.58)	(1.06)	(1.01)	(0.65)
EW Distances_filing		-0.023*					-0.038*	
		(-1.85)					(-1.66)	
VW Distances_filing			-0.036***					
			(-2.67)					
EW Std LatLon_filing				-0.026 **				
				(-2.19)				
VW Std LatLon_filing					-0.042***			
					(-3.47)			
Num States_filing						-0.008*		
						(-1.67)		
Airline Shock_filing								0.025*
								(1.71)

Firm characteristics:								
Tangibility	-0.026	-0.025	-0.023	-0.024	-0.023	0.001	0.010	-0.004
	(-0.48)	(-0.48)	(-0.45)	(-0.45)	(-0.43)	(0.03)	(0.09)	(-0.10)
Log (market capitalization)	-0.013	-0.013	-0.013	-0.013	-0.013	-0.015*	-0.017	-0.016**
	(-1.61)	(-1.51)	(-1.49)	(-1.58)	(-1.58)	(-1.90)	(-0.88)	(-2.10)
Tobin's *q*	0.004	0.004	0.003	0.004	0.003	0.002	0.002	0.002
	(0.43)	(0.38)	(0.34)	(0.39)	(0.35)	(0.17)	(0.08)	(0.17)
Book leverage	-0.068*	-0.071*	-0.074**	-0.070*	-0.072*	-0.021	0.115	-0.035
	(-1.82)	(-1.96)	(-2.05)	(-1.87)	(-1.92)	(-0.52)	(1.22)	(-0.95)
Payer (indicator)	-0.028	-0.030	-0.030	-0.031	-0.031	-0.021	-0.055	-0.030
	(-1.02)	(-1.09)	(-1.09)	(-1.13)	(-1.14)	(-0.81)	(-1.36)	(-1.06)
Free cash flow	-0.016	-0.025	-0.027	-0.021	-0.021	-0.086	-0.311	-0.069
	(-0.12)	(-0.18)	(-0.19)	(-0.16)	(-0.16)	(-0.55)	(-1.21)	(-0.46)
ROA	-0.035	-0.023	-0.016	-0.026	-0.023	0.042	0.573	-0.002
	(-0.26)	(-0.16)	(-0.12)	(-0.19)	(-0.17)	(0.31)	(1.63)	(-0.02)
Stock return volatility	0.260	0.278	0.298	0.291	0.320	0.618	-1.889	-0.004
	(0.24)	(0.26)	(0.28)	(0.27)	(0.30)	(0.69)	(-0.65)	(-0.10)
Market-adjusted stock return	-0.026*	-0.027*	-0.027*	-0.027*	-0.027*	-0.031**	-0.068	-0.030*
	(-1.67)	(-1.67)	(-1.65)	(-1.70)	(-1.71)	(-2.14)	(-1.05)	(-1.83)
Governance characteristics:								
Institutional block ownership	0.053*	0.060**	0.064**	0.058*	0.061**	0.058*	0.064	0.060*
	(1.67)	(2.06)	(2.26)	(1.92)	(2.08)	(1.88)	(0.74)	(1.73)
Board size							-0.001	
							(-0.16)	
% of independent directors							0.136	
							(0.26)	
G-index							-0.006	
							(-0.82)	
13D filing institutions' characteristics:								
Turnover_filing	0.026	0.022	0.019	0.024	0.023	0.011	-0.031	0.026
	(0.61)	(0.51)	(0.45)	(0.56)	(0.54)	(0.25)	(-0.45)	(0.61)
Return_filing	-0.201**	-0.201**	-0.201**	-0.199**	-0.197**	-0.158**	0.282*	-0.201**
	(-2.40)	(-2.40)	(-2.39)	(-2.35)	(-2.32)	(-2.51)	(1.94)	(-2.40)
Fund size_filing	0.012***	0.011**	0.011**	0.012**	0.011**	0.009*	-0.005	0.012***
	(2.76)	(2.53)	(2.43)	(2.57)	(2.51)	(1.82)	(-0.39)	(2.76)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,213	1,213	1,213	1,213	1,213	1,213	273	1,011
R-squared	0.149	0.152	0.156	0.152	0.155	0.157	0.412	0.160

Table 6
Firm Fixed Effects Regressions of Tobin's *q* on Explanatory Variables

The table presents estimates of OLS regressions in which the dependent variable is the annual Tobin's *q*. The sample consists of 49,293 firm-year observations covered in the Compustat, CRSP, and Thomson Reuters Institutional (13F) Holdings databases from 1993 to 2009. Firms that belong to the financial services or utilities industries are excluded. In regression (1), we examine the effect of the equally-weighted physical distance between a firm and its top 10 institutional shareholders on Tobin's *q*. In regressions (2) through (7), we examine the effect of geographic concentration among top 10 institutional shareholders on Tobin's *q*. In regression (8), we add governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)) to regression (2) as additional controls. In regression (9), we use the introduction of new direct airline routes that reduce the travel time between two of the top 10 institutional shareholders' headquarters as an exogenous shock to geographic concentration. Firm fixed effects and year fixed effects are included in all regressions. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the starting quarter in which the annual Tobin's *q* is measured. The other independent variables are measured as of the fiscal year-end that immediately precedes the year in which the annual Tobin's *q* is measured. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Geographic concentration measure								Exogenous shock
	IF Distances	*Ew Distances*	*Vw Distances*	*Ew Std LatLon*	*Vw Std LatLon*	*Num States*	*1 - Herfindahl State IO*	*Ew Distances* and governance variables	Introduction of new direct airline route
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Physical distance between the firm and its top 10 institutional shareholders:									
IF Distances	0.021	0.036	0.033	0.041	0.039	0.037	0.043	0.001	0.021
	(0.54)	(0.85)	(0.80)	(0.92)	(0.96)	(0.91)	(1.05)	(0.08)	(0.89)
Top 10 institutional shareholders' geographic concentration measures:									
EW Distances		-0.076***						-0.062**	
		(-3.11)						(-2.20)	
VW Distances			-0.064***						
			(-2.79)						
EW Std LatLon				-0.137***					
				(-3.35)					
VW Std LatLon					-0.012***				
					(-3.29)				
Num States						-0.115***			
						(-3.32)			
1 - Herfindahl State IO							-1.351***		
							(-5.48)		
Airline Shock									0.039*
									(1.67)
Firm characteristics:									

Tangibility	-0.867***	-0.898***	-0.915***	-0.897***	-0.887***	-0.880***	-0.895***	0.282	-0.073
	(-3.30)	(-3.69)	(-3.80)	(-3.69)	(-3.42)	(-3.32)	(-3.35)	(1.36)	(-0.34)
Log (market capitalization)	0.728***	0.739***	0.741***	0.742***	0.741***	0.762***	0.782***	0.166***	0.121***
	(9.62)	(10.44)	(10.53)	(10.64)	(10.56)	(13.13)	(13.97)	(6.87)	(5.61)
Book leverage	-0.962***	-0.962***	-0.947***	-0.964***	-0.959***	-0.991***	-1.002***	-0.524***	-0.939***
	(-2.77)	(-2.78)	(-2.70)	(-2.77)	(-2.64)	(-2.62)	(-2.66)	(-4.64)	(-6.34)
Payer (indicator)	-0.484***	-0.479***	-0.481***	-0.479***	-0.488***	-0.468***	-0.456***	-0.180***	-0.136***
	(-3.24)	(-3.29)	(-3.27)	(-3.28)	(-3.19)	(-3.27)	(-3.11)	(-4.57)	(-4.16)
Free cash flow	-0.372	-0.502*	-0.506*	-0.496*	-0.362	-0.402*	-0.372	-2.691***	-1.475***
	(-1.47)	(-1.94)	(-1.88)	(-1.91)	(-1.41)	(-1.65)	(-1.49)	(-6.38)	(-4.87)
ROA	-0.673	-0.533	-0.528	-0.538	-0.681	-0.616	-0.634	3.106***	1.169***
	(-1.51)	(-1.17)	(-1.13)	(-1.18)	(-1.51)	(-1.46)	(-1.48)	(6.45)	(3.42)
Governance characteristics:									
Institutional block ownership	-0.571*	-0.495*	-0.514*	-0.488*	-0.576*	-0.490*	-0.592**	0.256***	-0.194**
	(-1.77)	(-1.73)	(-1.75)	(-1.73)	(-1.82)	(-1.91)	(-2.06)	(2.61)	(-2.16)
Board size								-0.000	
								(-0.01)	
% of independent directors								0.097	
								(1.06)	
G-index								0.007	
								(0.48)	
Top 10 institutional shareholders' characteristics:									
Turnover	-0.682***	-0.437***	-0.463***	-0.412***	-0.602***	-0.505***	-0.272**	0.922***	1.364***
	(-3.41)	(-2.85)	(-2.95)	(-2.74)	(-3.58)	(-3.48)	(-1.99)	(5.60)	(6.55)
Return	0.671***	0.636***	0.643***	0.632***	0.657***	0.615***	0.560***	0.730***	0.512***
	(5.71)	(5.66)	(5.81)	(5.61)	(5.86)	(5.69)	(5.21)	(3.98)	(3.07)
Fund size	-0.147***	-0.143***	-0.156***	-0.141***	-0.149***	-0.143***	-0.118***	0.064***	-0.036
	(-8.37)	(-6.55)	(-7.01)	(-6.32)	(-7.04)	(-5.61)	(-4.19)	(3.02)	(-1.41)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	52,914	52,914	52,914	52,914	52,914	52,914	52,914	12,081	49,019
R-squared	0.160	0.163	0.164	0.163	0.162	0.168	0.171	0.118	0.019

Table 7
Firm Fixed Effects Regressions of Stock Liquidity on Explanatory Variables

The table presents estimates of OLS regressions in which the dependent variable is the square root variant of the Amivest liquidity measure, which is defined as the annual mean of the square root of the daily ratio of volume to absolute return. The sample consists of 54,626 firm-year observations covered in the Compustat, CRSP, and Thomson Reuters Institutional (13F) Holdings databases from 1993 to 2009. Firms that belong to the financial services or utilities industries are excluded. In regression (1), we examine the effect of the equally-weighted physical distance between a firm and its top 10 institutional shareholders on the square root variant of Amivest liquidity. In regressions (2) through (7), we examine the effect of geographic concentration among the top 10 institutional shareholders on the square root variant of Amivest liquidity. In regression (8), we add governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)) to regression (2) as additional controls. In regression (9), we use the introduction of new direct airline routes that reduce the travel time between two of the top 10 institutional shareholders' headquarters as an exogenous shock to geographic concentration. Firm fixed effects and year fixed effects are included in all regressions. All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the starting quarter in which stock liquidity is measured. The other independent variables are measured as of the fiscal year-end that immediately precedes the year stock liquidity is measured. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Physical distance between the firm and its top 10 institutional shareholders:									
IF Distances	-0.376	-0.135	-0.143	-0.114	-0.075	-0.252	-0.185	0.029	0.243
	(-1.04)	(-0.39)	(-0.42)	(-0.33)	(-0.22)	(-0.71)	(-0.53)	(0.13)	(0.86)
Top 10 institutional shareholders' geographic concentration measures:									
EW Distances		-1.645***						-0.855***	
		(-6.72)						(-3.48)	
VW Distances			-1.331***						
			(-5.16)						
EW Std LatLon				-3.031***					
				(-7.50)					
VW Std LatLon					-2.563***				
					(-6.05)				
Num States						-0.937***			
						(-10.41)			
1 - Herfindahl State IO							-9.480***		
							(-9.93)		
Airline Shock									2.605***
									(4.87)
Top 10 Institutional Ownership	-9.394***	-8.910***	-9.124***	-8.990***	-10.114***	-8.085***	-9.281***	-3.570**	-5.577**
	(-6.10)	(-5.94)	(-6.02)	(-6.25)	(-7.92)	(-5.57)	(-6.21)	(-2.27)	(-2.02)
Firm characteristics:									
Log (Price)	11.504***	11.440***	11.469***	11.433***	11.453***	11.242***	11.399***	3.451***	5.187*

	(8.96)	(8.91)	(8.94)	(8.90)	(8.93)	(8.79)	(8.93)	(2.89)	(1.69)
Return Volatility	63.380***	63.035***	63.357***	63.025***	63.407***	60.927***	60.534***	21.040*	68.691***
	(12.23)	(12.29)	(12.29)	(12.18)	(12.32)	(12.12)	(11.91)	(1.84)	(8.97)
S&P_500 (indicator)	37.374***	37.284***	37.327***	37.281***	37.322***	36.848***	36.904***	3.793***	5.430**
	(13.82)	(13.82)	(13.83)	(13.81)	(13.83)	(13.68)	(13.70)	(2.81)	(2.30)
Tangibility	-7.925***	-7.814***	-7.835***	-7.720***	-7.996***	-7.441***	-7.521***	-2.136	-5.667***
	(-3.62)	(-3.58)	(-3.59)	(-3.46)	(-3.54)	(-3.43)	(-3.46)	(-0.66)	(-3.34)
Log (market capitalization)	8.440***	8.490***	8.460***	8.867***	8.883***	8.630***	8.774***	11.760***	9.302***
	(23.71)	(23.95)	(23.91)	(24.38)	(24.12)	(24.42)	(24.38)	(29.42)	(4.64)
Tobin’s *q*	0.205	0.225	0.222	0.145	0.164	0.160	0.152	0.738***	-0.527
	(1.33)	(1.46)	(1.44)	(0.93)	(1.02)	(1.04)	(0.99)	(3.69)	(-1.54)
Book leverage	-1.426	-1.404	-1.416	-0.904	-0.899	-1.491	-1.524	2.942	0.991
	(-0.78)	(-0.77)	(-0.78)	(-0.50)	(-0.49)	(-0.82)	(-0.84)	(1.54)	(0.53)
Payer (indicator)	1.442	1.400	1.417	1.515	1.500	1.513	1.570	0.408	1.200
	(0.90)	(0.88)	(0.89)	(0.94)	(0.93)	(0.95)	(0.98)	(0.48)	(0.64)
Free cash flow	-0.198	-0.205	-0.202	0.006	0.069	-0.211	-0.246	-0.047	0.098
	(-0.46)	(-0.48)	(-0.47)	(0.01)	(0.16)	(-0.51)	(-0.58)	(-0.02)	(0.16)
ROA	0.243	0.277	0.284	-0.637	-0.670	0.227	0.311	1.276	0.331
	(0.49)	(0.56)	(0.58)	(-1.41)	(-1.45)	(0.47)	(0.64)	(0.60)	(0.53)
Governance characteristics:									
Board size								-0.023	
								(-0.17)	
% of independent directors								2.471*	
								(1.71)	
G-index								0.424**	
								(2.15)	
Top 10 institutional shareholders’ characteristics:									
Turnover	-14.216***	-14.302***	-14.302***	-18.707***	-18.613***	-13.946***	-12.653***	11.119***	-21.418***
	(-8.27)	(-8.41)	(-8.42)	(-10.15)	(-10.04)	(-8.16)	(-7.65)	(4.93)	(-5.66)
Return	14.472***	15.394***	15.068***	16.593***	15.810***	14.004***	14.071***	6.970**	21.118***
	(6.48)	(6.98)	(6.82)	(7.30)	(6.81)	(6.27)	(6.36)	(1.97)	(5.55)
Fund size	1.646***	1.633***	1.648***	2.107***	2.193***	1.615***	1.758***	1.128***	2.368***
	(9.91)	(10.00)	(10.07)	(11.99)	(12.32)	(10.09)	(11.00)	(4.41)	(10.11)
Observations	54,400	54,400	54,400	54,400	54,400	54,400	54,400	11,441	49,430
R-squared	0.304	0.305	0.304	0.278	0.278	0.306	0.306	0.628	0.252

Table 8

Subsample Analyses: Effect of Geographical Concentration among Firms’ Top 10 Institutional Shareholders on Corporate Governance and Firm Value

This table presents estimates of linear probability and OLS regressions in which the dependent variables are an indicator that takes the value of one if a forced turnover event occurs in a given year, and zero otherwise (column (1)), CAR (-1, 1) around a forced CEO turnover announcement date (column (2)), CAR (-20, 20) around a Schedule 13D filing (column (3)), the annual Tobin’s *q* (column (4)), and the square root variant of the Amivest liquidity measure, which is defined as the annual mean of the square root of the daily ratio of volume to absolute return (column (5)). The sample period is from 1993 to 2009. The sample size differs across regressions depending on the variables available in the various data sources. Firms that belong to the financial services or utilities industries are excluded. In Panel A, we use the subsample of nontransient **(**dedicated and quasi-index) institutions that belong to a firm’s top 10 institutional shareholders in the analysis. In Panel B, we use the subsample of transient institutions that belong to a firm’s top 10 institutional shareholders in the analysis. The geographic concentration measures in Panels A and B are calculated using only nontransient and transient institutions, respectively. To preserve the sample size, controls do not include governance characteristics (board size, percentage of outside directors on the board, and G-index (Gompers, Ishii, and Metrick (2003)). All geographic concentration measures and institution characteristics are measured as of the quarter-end that immediately precedes the event quarter or the starting quarter in which Tobin’s *q* or liquidity is measured. The other independent variables are measured as of the fiscal year-end that immediately precedes the event year or the year in which performance or liquidity is measured. The Appendix provides detailed variable descriptions. *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White (1980)) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Nontransient (Dedicated and Quasi-index) Institutional Shareholders

	CEO turnover-performance sensitivity	CAR (-1, 1) around forced CEO turnover	CAR (-20, 20) around Schedule 13D	Tobin’s *q*	Square root variant of Amivest liquidity
	(1)	(2)	(3)	(4)	(5)
Ew Distances	0.001***	-0.048***	-0.041**	-0.074***	-1.379***
	(2.66)	(-3.10)	(-2.09)	(-3.77)	(-6.02)
Vw Distances	0.001***	-0.042***	-0.056***	-0.063***	-1.264***
	(2.71)	(-3.07)	(-2.79)	(-3.35)	(-5.23)
Ew Std LatLon	0.002**	-0.028**	-0.036*	-0.111***	-2.160***
	(2.53)	(-2.02)	(-1.67)	(-4.86)	(-6.52)
Vw Std LatLon	0.003**	-0.026**	-0.045**	-0.013***	-1.954***
	(2.44)	(-2.06)	(-2.03)	(-3.35)	(-5.41)
Num States	0.000	-0.005	-0.015*	-0.122***	-0.647***
	(0.13)	(-0.72)	(-1.86)	(-3.52)	(-4.84)
1 - Herfindahl State IO	0.072***	-0.109**	-0.174*	-1.337***	-8.399***
	(2.93)	(-2.16)	(-1.80)	(-5.19)	(-7.14)
Airline Shock	-0.026***	0.022*	0.062*	0.087***	1.411 *
	(-3.06)	(1.67)	(1.87)	(3.21)	(1.56)
Control variables	Same as Table 2	Same as Table 4	Same as Table 5	Same as Table 6	Same as Table 7
Observations	14,685	405	898	47,351	53,959

Panel B: Transient Institutional Shareholders

	(1)	(2)	(3)	(4)	(5)
Ew Distances	0.001	-0.015	0.012	0.008	-0.437***
	(0.76)	(-0.91)	(1.25)	(1.12)	(-3.51)
Vw Distances	0.001	-0.017	0.011	0.007	-0.445***
	(0.82)	(-0.96)	(1.08)	(1.00)	(-3.66)
Ew Std LatLon	0.001	-0.010	0.009	0.008	-0.868***
	(0.22)	(-1.47)	(0.61)	(0.72)	(-3.54)
Vw Std LatLon	-0.001	-0.011	0.013	0.006	-0.958***
	(-0.16)	(-1.57)	(1.02)	(1.55)	(-4.10)
Num States	0.000	-0.007	0.016	0.009	-1.008***
	(0.90)	(-0.76)	(1.01)	(0.84)	(-6.63)
1 - Herfindahl State IO	0.009	-0.040	0.027	0.028	-7.682***
	(0.48)	(-0.86)	(0.41)	(1.24)	(-6.84)
Airline Shock	-0.002	0.126	-0.010	0.012	1.582***
	(-0.25)	(1.63)	(-0.32)	(0.54)	(3.73)
Control variables	Same as Table 2	Same as Table 4	Same as Table 5	Same as Table 6	Same as Table 7
Observations	9,496	244	261	30,885	41,626

Local Clientele, Gender Difference and Firm Risk

Xiaoran Huang, Jun-Koo Kang and Lei Zhang[*]

ABSTRACT

We analyse the importance of investor risk preferences in shaping corporate risk taking. We exploit the male-female ratio among local residents to capture the variations in the risk preferences of firms' investor base. We find strong evidence that firms headquartered in counties with higher male-female ratio adopt higher leverage, more capital expenditure and less cash holding. They have higher idiosyncratic return volatility, initiate more M&A bids, and are less likely to engage in corporate hedging. As a result of higher risk taking, such firms face higher loan spreads and more stringent loan covenants. These effects are much stronger among smaller firms and firms with less institutional ownership. We further establish causality by using the minimum drinking age in the 1970s across different states as an instrument for the local male-female ratio and find consistent results in the instrumental variables estimation. Overall, our results support the argument that firms cater to investor preferences by taking higher risks in the regions with higher male-female ratio.

JEL Classification: G14, G23, G34

Keywords: Corporate risk taking, Corporate financial/investment policies, Interest rate hedging, Bank holding company, gender difference, demographic characteristics

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This paper exploits the heterogeneity in local retail investors' gender difference to identify the relation between investor risk preference and corporate risk-taking. Gender difference has been explored by growing literature in the setting for firm managers and directors, such as insider trading of executives (Narayanan, and Seyhun (2009)), trading behaviour of retail investors (Barber and Odean(2001)) and mutual fund managers (Atkinson, Baird and Frye (2003)), corporate governance (Adams and Ferreira (2009)) by board directors and in more recent studies, corporate risk taking investment or policies of CEO (Graham, Harvey, and Puri (2013), Huang and Kisgen (2013), Mara, Marchica and Mura (2015) and Levi, Li and Zhang (2015)). However, limit link are set to relate investor gender difference with corporate risk taking and firm policies. In this study we attempt to fill this gap by investigating role of gender difference of investors in shaping firm risk taking and corporate policies.

In this paper, we exploit local demographic variation in a firm's local male-female ratio to measure investor demand for stock risk for two reasons. First, previous literature suggests that female tend to invest in less risky assets (Sundén and Surette (1998), Bernasek and Shwiff (2001) and Agnew, Balduzzi, and Sundén (2003)). Surveys and experimental studies have documented that females are more risk adverse than males (Barsky, et al (1997), Prince (1993)). In stock trading behavior, Barber and Odean (2001) show that male investors hold more volatile stocks than female investors. Dorn and Huberman (2010) further document that individual investors' portfolio is undiversified and concentrated with stocks with certain risk level which commensurate with their risk attitude. Due to difference in gender psychologically traits and preferred risk habitat, stocks selected in male investors' portfolios are more likely to be concentrated in risky stocks than their female counterparty. Grounded on strong empirical evidence that male individual investors are more likely to hold risky stocks, we employ demographic variation in male-female ratio across counties of United States as our proxy for shareholder preference for corporate risk.

The second reason for using local male-female ratio as investor demand measure derives from the well documented local bias effect in individual stock portfolio, both shown by market of United States (Huberman (2001) and Ivković and Weisbenner (2005)) and other countries (Grinblatt and Keloharju (2001) and Massa and Simonov (2006)), thus companies which locate in areas with higher male-female areas would imprint higher shareholder appetite of firm risk.

Reverse causality and omitted variable concern may induce spurious correlation between local gender ratio and firm policy. To address this issue, The instrumental variable we exploit is the state variation in regulation of minimum drinking age, which is an indicator which takes the value of one if the firm's headquarter is located in a state where the minimum limit drinking age (MLDA) is above 18 in 1976 (18 is the median age). To the extent that the higher minimum drinking age leads to more motor vehicle accidents, alcohol overdoses, alcohol-related deaths and suicide, especially to white male population at an early age (Carpenter, Dobkin, 2007), the local morality ratio of male will be positively correlated with MLDA. On the other aspect, the adoption of MLDA is unlikely intend to influence the local companies risk policies.

The identification is structured as follows. Starting by directly showing the effect of local male-female ratio on firm risk, measured by realized stock return volatility and option implied volatility, we first establish the relationship between local male-female ratio and expost corporate financing / investment policies, including market leverage ratio, book leverage ratio and capital expenditure, cash holding policies. Typically, we explore the influence of local male-female ratio on hedging policies for industrial and bank holding companies, respectively and firm’s M&A activities. Second, we examine the value implication of local gender difference by ex-ante loan contract terms (borrowing cost, collateral requirement and capital expenditure restrictions), as well as M&A announcement return. We then employ several tiers of robustness checks. First, we conduct interaction analysis to ascertain the effect of local male-female ratio is decrease with firm size and institutional ownership, due to the fact that firms of larger size and institutional ownership are less likely subject to local individual investors’ risk preference. Moreover, using a difference-in-differences empirical framework, within the subsample of firms which reallocate the headquarters, we examine the subsequent change in firm’s risk taking with regard to change in local male-female ratio, which facilitate addressing endogeneity concern that our finding on shareholder gender effect on corporate risk taking is driven by time invariant omitted firm characteristics. Thirdly, we exploit the local minimum limit drinking age (MLDA) as instrumental variable in 2SLS regressions for all dependent variables to address the causality concern. Finally, we add additional controls to ascertain that our findings are not explained by omitted variables, which basically reflect management layer’s gender difference and corporate governance. For the former aspect, we consider female board fraction, dummy for more than one female director on the board and dummy for female CEO. Also, we controls for various corporate governance variables, including G-index, outside director fraction and local institutional ownership. We discuss the instrument in section V.

We find strong empirical support for clientele effect in shaping corporate risk taking and financial/investment policies. One standard-deviation increase in local male-female ratio would increase firms realized stock volatility by approximately 5% considering the sample mean of stock return volatility. We show that firms which headquarters locate in counties of higher faction of male relative to female are associated with higher market leverage/ book leverage, higher capital expenditure, lower cash holding. One standard-deviation increase of local male-female ratio will enhance the firm’s market leverage ratio, book leverage ratio and cash expenditure by approximately 6.0%, 5.5% and 7.6% with regards to the sample average of market leverage, book leverage and cash expenditure, respectively and will decrease firms’ cash holding by about 7.1 % according to the sample mean of cash holding. Firms locates in areas with one standard deviation higher local male-female ratio would boost the number of bids by 0.026, indicating almost 11% change with regard to average bid number of M&A initiations. We also find that CAR (-1, 1) announcement return around M&A for firms with higher local male-female ratio. One standard-deviation of local male-female ratio would lower the announcement return by 0.52%, representing 43.2% change to sample average of CAR (-1, 1). For firms’ interest rate hedging policies, we find consistent evidence that higher local male-female ratio would depress the likelihood that firm employ interest rate hedging derivatives. For industrial firms, one standard-deviation of local male-female ratio will decrease the interest rate hedging activities by 12.2% of the sample mean. For bank holding companies which report the exact level of interest rate hedging, we find that one standard-deviation of local male-female ratio will decrease the bank interest rate hedging sample mean by 12.2%. These results suggest economically significant impact of local male-female ratio on firms’ ex-post risk taking.

Consistent with the notion that gender difference will shape firm ex-post risk taking, we also find evidence from ex-ante loan contract terms. We examine the impact of local male-female ratio on loan spread, likelihood of collateral requirement and capital expenditure restriction and find supporting evidences that firms’ with higher local male-female ratio have higher borrowing cost, are more likely to be required for collateral and imposed of capital expenditure restrictions. One standard-deviation increase in local male-female ratio would boost loan spread by about 5.24 basis point, an increase in the likelihood of the loan being secured by 6.9 percentage points, evaluated at the respective means, the one standard-deviation increase accounts for 3.5% of increase in the loan spread and 7.0% increase in the incidence of collateral requirement. The effect of local male-female ratio on the likelihood of being imposed of having a capital expenditure restriction is also statistically significant and economically meaningful. One standard-deviation increase in local male-female ratio will translates to a 16% increase in the likelihood, evaluated at the mean. We also show ex-post benefit of having lower local male-female ratio is that it would reduce the likelihood that firms conduct covenant violation. One standard-deviation decrease in local male female ratio would lower the likelihood of covenant violation by 2 percentage points, which accounts for approximately 13% of the sample mean of likelihood of covenant violation.

As the first tier of robustness check, we do interaction term analysis to exploit the multipliers that are associated with the extent of market segmentation, which subsequently influence the effect of local male-female ratio on corporate risk taking, basically the firm size and institutional ownership, respectively. As the market friction is expected to be dampened for firms of larger size and institutional ownership, we expect our findings of local male-female ratio effect to be weakened as the increase of firm size and institution ownership. Consistent with our hypothesis, we find supportive evidences that for all the dependent variables shown above, firms with larger firm size and institutional ownership are of lower sensitivity to the local male-female ratio.

As the second tier of robustness check, we do 2SLS regressions in which the instrument is an indicator which takes the value of one if the firm’s headquarter is located in a state where the minimum limit drinking age (MLDA) is above 18 in 1976 (18 is the median age). The instrument approach ascertains our finding above, for most of the dependent variables indicated above (except the likelihood of collateral requirement).

Thirdly, we examine how firm would adapts risk taking to the change in the local demographic scenario due to the company's moving of headquarters. For most regression with panel data (except cash holding), we find consistent evidences that the increase in local male-female ratio would boost firms' risk.

Finally, our results are robust with additional controls of management layer gender variables, including percentage of female board, indicator of exactly one female director on the board and indicator of female CEO. We also controls for governance variables (G-index, outside director percentage and local institutional ownership). Although sample sizes shrink, our findings remain unchanged for most of the regressions (except book leverage, collateral requirement and capital restriction). Our results are also robust after controlling for range of local demographic and economic characteristics, including high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction.

Overall, our results suggest that gender difference in local clientele have influence on firm risk. Our results are robust to a bunch of robustness checks.

Our study contributes to the literature in the several ways. Our study contributes to the literature on determinants of corporate risk-taking. One branch of literature investigates the economic environment, such as corporate taxes (Djankov et al. (2010)) and litigation (John, Litov, and Yeung (2008)) impact on corporate risk-taking. Conditioning on managerial risk aversion, a branch of literature has focused on impact of managerial reputational concerns (Holmstrom and Costa (1986), Hirshleifer and Thakor (1992)) or to their employment risk (Amihud and Lev (1981), Agrawal and Mandelker (1987), Kempf, Ruenzi, and Thiele (2009)) on corporate risk taking investment. Those papers explore managers' incentives to curb risk and conflict of interests between managers and shareholders. Also, grounded on shareholder risk adversion, Faccio, Marchica and Mura (2015) explore large shareholders' portfolio diversification on corporate risk taking. However, whether shareholder risk preference can influence the consequence of corporate financial decisions has little academic attention and our paper fill this gap by showing that shareholder risk preference is an important predictor of corporate risk taking.

Secondly, our paper adds to the literature of gender difference in corporate decision making and value implication. To our best knowledge, this paper is the first to examine investor gender difference in corporate setting. A relative new and growing literature has gradually examine gender difference influence on corporate governance (Adams and Ferreira (2009)) by board directors and in more recent studies, corporate risk taking investment or policies of CEO (Graham, Harvey, and Puri (2013), Huang and Kisgen (2013), Mara, Marchica and Mura (2015) and Levi, Li and Zhang (2015)). However, these literatures mainly deal with gender difference of management or director, but seldom focus on the corporate policies and firm value implication of shareholder gender difference. Our results indicate that female shareholders' stronger risk aversion relative to their male counterparties are associated with more conservative corporate financial and investment polies, as well as higher M&A accouchement return.

Thirdly, this paper extends the literature which examines shareholder preference implication on corporate policies, including dividend pay-out policies (Becker, Ivković and Weisbenner (2011), Desai and Jin (2011), Bodnaruk and Östberg (2012)), bid premium accepted by target firms (Gaspar, Massa and Matos (2005)). However, this paper provides empirical evidences which relate shareholder preference to financial/investment/management policies with regards to corporate risk taking.

Finally, our paper adds to the existing literature about segmented financial markets (Jayaratne and Strahan (1996), Guiso, Sapienza, and Zingales (2004), Becker (2007), and

Hong, Kubik, and Stein (2008)), by showing that there is geographical variation of gender difference in risk habitat which would be an important predictor of corporate policies.

The rest of the paper is organized as follows. Section I discusses the data, the construction of our key variables, and the sample characteristics. In Section II we test how local male-female ratio affects corporate risk, financial/investment policies, as well as hedging policies. In section III we test the value implication of local male-female ratio, by examine M&As announcement return, bank loan cost/capital expenditure requirement/collateral requirement. In Section IV, we conduct several robustness checks. In Section V, we conclude.

I. Data and Summary Statistics

A. Data

Our data comes from multiple sources. The sample varies according to each dependent variable due to data availability. We first collect geographically demographic information from the US Census Bureau county population estimates datasets from 1991 to 2008. The county year level control variables include local male-female ratio, our main variable in interest, also a bunch of other county level characteristics such as local high education fraction, local population, local household income, local unemployment rate, local senior fraction. Detail definitions of variables are provided in appendix.

To obtain our initial sample for corporate policies and firm risk, we compile the data set of US Census Bureau local demographic characteristics with Compustat and daily stock return information with University of Chicago's Center for Research in Security Prices (CRSP). We then delete observations with missing financial information in Compustat or CRSP. Our final sample consists of 63,610 firm-year observations.

To access our corporate interest rate hedging information, we extensively search each firm Form 10-K annual reports in SEC's Electronic Data Gathering and Retrieval (Edgar) database from 1996-2009, for the keywords related to interest rate derivative using. A firm is considered to be an interest rate hedger in a specific year if the employing of interest rate derivative is indicated in the 10-K filing. We then merge the dataset of interest rate hedging with US Census Bureau local demographic characteristics to obtain 49,747 firm year observations.

For bank holding companies interest rate hedging, we construct measures from quarterly Federal ReserveY-9C filings from 1995-2009 based on Bank Regulatory Database, which contains information for bank holding companies with total assets of $150 million or more. We focus on interest rate derivatives rather than other contracts as 90% of bank holding company hedging is concentrated in interest rate derivative transactions and interest rate exposure is data availability of interest rate exposure (Bonaimé, Hankins and Harford(2014)). Moreover, the reported non-trading (hedging) purposes enable us to identify interest rate derivatives holdings for risk management purposes. Combining US Census Bureau local demographic characteristics with Bank Regulatory renders 11,749 bank-quarter observations.

We retrieve M&A bids initiation information from the Thomson Financial's SDC database from 1992-2009. Following Masulis, Wang and Xie (2007), we require the M&As to be included in the sample meeting the following five criteria: (1) the transaction is completed (2) the deal value disclosed in SDC is larger than $1million, (3) the acquirer holds less than 50% of the target's shares before the announcement and owns 100% of the target's shares after the transaction, (4) the acquirer is publicly traded and has stock return available from CRSP and Returns file and financial data from Compustat, (5) the acquirer has its local county characteristics available from US Census Bureau. These restrictions result in a final sample of 16,530 successful transactions made by 5,248 firms. We set the residual firm-year observations which are covered in Compustat and CRSP as of zero M&As initiations. The sample yields 61,252 sample observations.

We merge our initial sample with LPC's DealScan Database to attain information of loan spread and collateral requirement, as well as loan specific information including facilitate amount, loan maturity, loan type and loan purposes. This results in 10,844 loan level observations from 1992-2007. We then combine LPC with the dataset used in Nini, Smith and Sufi (2009) for information on capital expenditure restriction, leading to 2,772 sample observations from 1996-2005.

For robustness check analysis, we add in controls of female board fraction, corporate governance variables (G-index (Gompers, Ishii, and Metrick (2003)) and the proportion of outside directors on the boards) from Investor Responsibility Research Center (IRRC). CEO gender information is accessed from ExecuComp.

B. Summary statistics

Panel A of Table 1 presents the summary characteristics for the county demographical characteristics, firm characteristics, bank characteristics, loan characteristics and M&A deal characteristics. We find that the mean local male-female ratio is 93.14 for our sample of corporate hedging. On average, local population is 1.319 Million, about 31.22 percent of which have at least college degrees, 11.74 percent are above 65 years old and have mean household income as 49.09 thousands U.S. dollars.

In sample firms for corporate hedging, the mean book value of equity and market leverage ratio (total debt / market assets) is 2.14 billion U.S. dollars and 12.7%, respectively. Free cash flow, cash holding and capital expenditure, on average, accounts for -16.3%, 16.9% and 5.5% of total assets, respectively. The dividend yield is about 0.8% and the mean sale growth is 17.4%. With respect to firm performance, the sample has a mean Tobin's q of 1.655 and probability of 4.3%.

For test of bank holding companies' interest rate hedging, on average, bank holding companies' mean market capitalization and book assets is 1.68 billion U.S. dollars and 2.42 billion U.S. dollars, respectively, with average bank market to book ratio as 0.618. Bank interest rate hedging takes up about 16.4% of market capitalization, with a mean average bank interest rate exposure of 0.551. Bank commercial loan, bank income and bank securities accounts for 93.9%, 48.2% and 170.8% of market capitalization, respectively. Mean bank federal funds and bank tier 1 capital is 14.6% and 73.9% of market capitalization.

In terms of loan spread, the sample has a mean cost of capital of 156.7 basis points and average loan maturity of 42.726 months.

In the sample for firm's M&A, the average number of acquisition bids initiated in a firm year is 0.239. In the sample for bid premium, on average, the mean of the bid premium is 46.6%. In 42 percent of the acquisitions in our sample, the bidder pays the target with cash only. On average, about 30.1% deals are between two high technological firms, 65.7% M&A deals are diversifying, 29.4% of the takeovers are denoted by SDC as tender offer and 0.02% deals are hostile. Overall, most characteristics of the M&A deal sample are in line with those documented by recent studies (Chen, Harford, and Li (2007), and Matvos and Ostrovsky (2008)).

II. Local male-female ratio and Firm Risk

This section explore the impact of local male-female ratio on corporate risk management, in terms of interest rate hedging for all publicly traded firms and bank holding companies only, merger and acquisition activities, corporate policies (market leverage, capital expenditure and cash holding), likelihood of covenant violation and stock volatility. We explore likelihood of corporate interest rate hedging because hedging using derivatives is a direct way to smooth cash flow and interest rate derivatives are most common using derivatives (Guay (1999), Graham and Rogers (2002) and Allayannis and Weston (2001)). We also examine bank holding companies' value of interest rate hedging derivatives due to the fact that 90% of bank holding company hedging is concentrated in interest rate derivatives' transactions and the data availability of the measurement of exposure to risk of interest rate volatility (Bonaimé, Kristine and Harford (2014)). Also, unlike other publicly traded firms, bank holding companies provide level of derivatives for hedging rather than trading. We also examine policies that corporate utilize to curb risk, including investment conservatism (capital expenditure) and financial conservatism (market leverage and cash holding). To directly and accurately measure corporate risk, we use stock return volatility (Low (2009)), and option implied return volatility which capture the net effect of corporate risk taking activities, including some that are hard to be measured.

A. Impact of Local male-female ratio on Firm Risk

After examine local male-female ratio on corporate risk taking policies, we then investigate the outcome Table II reports the results from our investigation of the relation between firm risk and local male-female ratio. We employ two variables as our measures for corporate risk, realized stock volatility and option implied stock volatility. The results are based on the OLS specification. The standard errors are cluster by firm (White (1980)).

Our measure for return volatility is defined as the standard-deviation of daily CRSP stock returns for a given calendar year adjusted by industry median in the same year. In Table II regression (1), we control for firm characteristics, other local demographic and economic variables as illustrated in previous analysis. Our tests indicate that indicates that local male-female ratio is positively and significantly correlated with firm's realized stock return volatility. The coefficient of local male-female ratio is 0.033 and is significantly positive at the 1% level. Considering the unconditional mean of realized return volatility is 3.6%, this coefficient indicates that one standard-deviation increase in local male-female ratio would increase firms' stock volatility by approximately 5% (=0.033*5.24/3.6). In regression (2), we add in state fixed effect and find that the impact of local male-female ratio on firm realized return volatility does not change.

In regression (3) and (4), we use OLS regression whereas the dependent variable is 182 days option implied volatility. We employ the same control variables as used for realized stock return volatility. Similarly, the coefficient of local male-female ratio is positively and significantly related to firm option implied stock volatility. One standard-deviation increase in local male-female ratio will boost option implied stock volatility by 1.782(=0.34*5.24). Provided unconditional mean of implied option volatility is 46.5%, the impact of local male-female ratio represents 4% increase according to sample mean of option implied return volatility.

Overall, the results in this section suggest that local male-female ratio has significant positive impact on firms' risk measured by stock return volatility and option implied stock volatility.

B. Impact of Local male-female ratio on Corporate Policies

To provide further evidence on the importance of local male-female ration in affecting firms' investment and financial conservatism, this subsection estimates using OLS regressions in which the dependent variable is firms' market leverage, capital expenditure and cash holding respectively. The interested variable is the local male-female ratio.

Table III Regression (1) to (4) shows the OLS regression results in which the dependent variable is market leverage and book leverage, cash expenditure and cash holding, respectively. We include county demographical characteristics, firm characteristics, as well

as state fixed effects throughout regression (1) to (4). The coefficient estimate of local male-female ratio is positively significant at 1% level in regression (1) to (3), one standard-deviation increase of local male-female ratio will enhance the firm's market leverage ratio, book leverage ratio and cash expenditure by approximately 6.0 % (=0.147*5.24/ 12.9), 5.5 % (=0.177*5.24/ 17) and 7.6% (=0.078*5.24 / 5.4) with regards to the sample average of market leverage, book leverage and cash expenditure, respectively, indicating both statistical and economic significance.

For cash holding in regression (4), we find consistent evidence that local male-female ratio is negatively and significantly associated with firms' cash holding. In terms of economic significance, one standard-deviation increase of local male-female ratio equals the decrease firms' cash holding by about 7.1 % (=0.22*5.4/16.8) with regard to the sample mean.

The results in this subsection are consistent with the view that the increase in the local male-female ratio would engage firms to adopt more risky financial and investment policies.

C. Impact of Male-female ratio on M&A Bid Initiation

Another aspect of firm risk management we examine is the firm's bidding activity in merger and acquisition. We posit that in areas with more risk adverse female investors, firm are more inclined to risky M&A bidding.

We employ negative binomial model to identify the impact of our key interested variable on the dependent variable, the number of bids that the firm initiates in a specific year. As discuss in the introduction, the acquisition bid is counted in form of a merger, acquisition of assets or acquisition of majority interest. Also, the bidder gain 100% toehold after the transaction. We include year and industry fixed effects (two digits siccd industry dummies) and present results with standard errors clustered by firm.

Our sample consists of US mergers from 1992 and 2009. The initial sample of M&As comes from Thomson Financial's Securities Data Company (SDC) Platinum database. Our final sample includes all M&As that meet the following five selection criteria: (1) the transaction is completed, (2) the deal value disclosed in SDC is larger than $1million, (3) the acquirer holds less than 50% of the target's shares before the announcement and owns 100% of the target’s shares after the transaction, (4) the acquirer is publicly traded and has stock return available from the University of Chicago’s Center for Research in Security Prices (CRSP) Daily Stock Price and Returns file and financial data from Compustat, (5) the acquirer has its local county characteristics available from US Census Bureau. These restrictions result in a final sample of 16,530 successful transactions made by 5,248 firms.

We present the result in table IV. In Regression (1), we control for firm characteristics. Our main interested variable is significant related to numbers of bid initiations with expected positive sign. The marginal effect of local male-female ratio is 0.005, suggesting that one standard-deviation increase in local male-female ratio would boost the number of bids by 0.026. Considering the unconditional mean of firm’s bid initiations each year is 0.24, a 0.026 increase in local male-female ratio represents an increase in the average bid number initiated of almost 11%. For other firm level controls, we control for market-to-book ratio, tangibility, natural logarithm of firm book size, dividend yield, profitability and sales growth. Consistent with findings in previous research, the coefficient estimates on log of book value and asset tangibility are positive.

In Regression (2), we add industry fixed effect and county characteristics. Regression (3) controls for state fixed effects. Across all specifications, the coefficient of local male-female ratio is consistently positive significant, indicating a firm which locates in areas with higher male-female ratio is associated with larger propensity to pursue M&As.

If male investors' risk preference leads to M&A transactions that are of negative net present value to be undertaken, we would expect firms located in more local male-female ratio areas to have worse market reactions during around M&A announcement. We explore the announcement returns associated with these M&A transactions in regression (4) to (6) in Table IV.

Regression (4) to (6) presents OLS regression in which the dependent variable is the cumulative announcement return (-1, 1) around M&A announcements. The coefficient estimate of local male-female ratio is economically significant. According to regression (4), one standard-deviation of local male-female ratio would lower the announcement return by 0.52%. Considering that the sample average of CAR (-1, 1) is 1.21%, thus the effect local male-female ratio represent 43.2% of the sample mean. The results indicate that the market react more favorable to acquisitions made by firms with more female investors base than firms with less female investors.

D. Impact of Local male-female ratio on Interest Rate Hedging Probability

Earlier empirical studies lay strong foundation in support of risk-reducing effects of derivatives on various measures of a firm's risk. Guay (1999) documents the reduction in earnings volatility and stock price volatility for firms' initiation of derivatives contracts. Hentschel and Kothari (2001) show no evidence that derivatives are used for speculative purposes. Allayannis and Weston (2001) and Graham and Rogers (2002) show derivative instruments exert significant impact on firm value and the firm's debt capacity. These researches indicate the importance of the importance of derivatives for the firm's risk-management intention. Moreover, interest rate derivatives are most common instrument for hedging purse. Therefore, we exploit the utilization of interest rate derivatives to proxy for the tendency the firm need to curb risk for hedging purposes. We include only industrial firms since the motivation of whether to hold interest rate derivatives for risk hedging or trade for bank holding companies cannot be clarified through the SEC filings.

Panel A of Table V shows the results of the regressions that examine the relation between local male-female ratio and the likelihood that the firm employs interest rate derivatives. The dependent variable is an indicator that equals to one if a firm reports the use of interest rate derivatives in annual report and zero otherwise. Regressions in Panel A of Table V are estimated with probit model. Year fixed effects and industry fixed effects at two-digit SIC level are included in each regression.

We use local male-female ratio as our key interested variable to proxy for local preference for corporate risk. For other firm level controls, we control for market to book ratio, natural logarithm of firm book size, dividend yield, profitability, free cash flow and sales growth as common control.

Regression (1) of Panel A illustrates the impact of local male-female ratio which firm characteristics as controls. The marginal effect of local male-female ratio is -0.006, indicating that a one-standard-deviation increase in local male-female ratio (5.235) boosts the likelihood of corporate interest rate hedging by 3.1%, a 12% increase relative to the sample average of interest rate hedging (26.5%). Thus our results are both statistically and economically significant. The coefficient and significance of other control variables are in line with traditional expectations. Larger, more mature and profitable firm are associated with higher probability of interest rate hedging.

It is possible that some omitted county level characteristics, correlated with local male-female ratios, and might be real reason for the firm that employs interest rate hedging policy to curb risk, such as other local demographic and economic conditions. Therefore, in Regression (2) we include other local demographical characteristics such as local population fraction, local high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction. In regression (3), we add industry fixed effects. The significantly negative coefficient estimate of local male-female ratio in regression (3) is consistent with that of regression (1) and regression (2).

Regression (4) controls for state fixed effects. The inclusion of state fixed effects makes sure that the results are not driven by time invariant state level characteristics that both impact the local male-female ratio and the likelihood of firm employing interest rate hedging. Therefore, in such specification, we pursue variation of local male-female ratio across counties in each state rather than differences across different states. The regression coefficients are similar in each specification, in terms of both magnitude and significance. For regression (4), a one standard-deviation increase in local male-female ratio will reduce about 10% of the sample mean of the likelihood that a firm utilizes interest rate derivatives.

E. Impact of Local male-female ratio on Bank Interest Rate Hedging

After examining the effect of local male-female ratio on common public traded firm, we then focus on bank holding company sample. The reason is bank holding companies' Y-9C filings enable us to exploit exact amount rather than indicator of interest rate derivatives reported by bank holding companies. Moreover, banking holding companies are required to report derivative using separately on trading and hedging positions. Further, bank holding companies' reports allow us to control for risk exposures using interest rate exposure.

Panel B of Table V presents the OLS regression exploring the relation between local male-female ratio and bank interest rate hedging. Following Bonaimé, Hankins and Harford (2014), our main dependent variable is bank interest rate hedging measured as the gross notional amount of non-trading interest rate derivatives use scaled by market capitalization. We construct bank level characteristics measures as control variables in regression (1), including logarithm of total book asset, capital structure (market to book ratio), securities, federal funds, commercial loans, cash, fixed assets (premises), all are nominalized by market capitalization. In regression (2), includes other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. In regression (3), we add in underlying interest rate exposure and tier 1 capital ratio as additional controls. One standard-deviation of local male-female ratio will decrease the bank interest rate hedging by 16.9% (=0.522*0.523/0.164) with regard to the sample mean. In regression (4), we add in state fixed effects. Again, the regression coefficients are similar across each specification, in terms of both magnitude and significance.

III. Benefit of Satisfying Local Gender Risk Preference

In the preceding section we have document consistent evidences that firms located in a high male female fraction areas will be more likely to adopt risky corporate policies and have higher firm risk, we proceed in this section to investigate the why managers might wish to respond to local seniors' demand for dividends, whether there are benefits to such demand-induced payouts, as well as the mechanisms through which individual investor demand may affect corporate policy. We consider two possible channels and offer suggestive evidence. At the outset, we remark that the channels we discuss in this section are not mutually exclusive. Moreover, none of these channels require that managers be explicitly informed about local retail investors' age, or that they should feel goodwill toward local investors in general or local seniors in particular.

A. Impact of Local male-female ratio on Loan Spread

We then relate firms' cost of capital by adapting corporate policies to the local risk preference, proxy by local male female fraction. By adopting lower firm risk, firms that located in an area that female population prevails should have lower cost of capital.

We estimate an OLS regression in which the dependent variable is the loan spread charged by the bank over LIBOR, estimated in percentage points. The main independent variable in interest is local male female fraction. Following Graham, Li and Qiu (2008), Lin et al. (2011) and Lin et al. (2013), we control for a set of firm characteristics that are associated with firms' cost of capital, including book size, market leverage ratio, tangibility, market to book ratio, free cash flow and credit rating fixed effects. Loan specific characteristics (loan facility amount, loan maturity, loan type fixed effects and loan purpose fixed effects) are also controlled in each regressions.

Regression (1) to (4) of table VI presents the results. In regression (1), we regress loan spread on firms' local county's male-female ratio, as well as firm- and loan- specific characteristics. The estimated coefficient for local male-female ratio is statistically significant at the 1% level with positive sign, suggesting that the net effect of local male-female ratio on firms cost of bank loan is positive and significant.

We include other local demographical characteristic (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction as well as board female fraction) as additional controls in regression (2). We controls for industry fixed effects at two-digit SIC level in regression (2). We add state fixed effects in regression (4). A one standard-deviation increase in local male-female ratio is related with an increase in the loan spread by 12.2 (=2.299*0.053) basis points, which is about 7.8% of the sample average of the loan spread which is 156.7 basis points. Throughout regression (1) to regression (4), we find consistent evidence that the increase in local male-female ratio will enhance the loan spread the banks charge on the firm.

B. Impact of Local male-female ratio on Collateral Requirement

Previous literature has related collateral requirement with riskier borrowers (Berger and Udell (1990), John, Lynch and Puri (2003)). Another potential benefit that firms can gain by adapting to local higher risk aversion, proxy by lower male-female ratio, by curb firms' risk is to have lower probability of collateral requirement in loan contracts. In this subsection, we investigate with Probit regression in which the dependent variable is an indicator that takes the value of one if the bank loan is secured and zero otherwise. The control variables are the same as of Table VIII.

Regression (5) to (8) of table VI presents the results. In regression (5), we controls for local male female fraction with firm- and loan- specific characteristics. The coefficient estimate of local male-female ratio is positive significant consistent with the hypothesis that firms that located in lower male-female ratio areas will have lower likelihood to be required for collateral in the loan contracts. The marginal effect of local male-female ratio is 0.659, indicating that one standard-deviation increase decrease in the local male-female ratio will lower the likelihood that bank include collateral requirement in the loan contracts by about 3.49%, which accounts for approximately 9.2% of the sample average (=0.659*0.053/0.381).

In regression (6) includes other local demographical characteristic (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction as well as board female fraction) as additional controls. In regression (7) we add industry fixed effects. Regression (8) adds state fixed effects. Our main findings do not change in neither qualitative nor quantitative sense.

C. Impact of Local male-female ratio on Capital Expenditure Restriction

As Nini, Smith and Sufi (2009) argue that capital expenditure restriction has an essential association with firms' credit risk, in the section we examine the possible benefit firms which are located in female prevail areas curbing firms risks. Due to the reduced firm risk, we would expect firm would have lower likelihood of capital expenditure restrictions in the bank loan contracts.

We perform probit regressions in which the dependent variable is an indicator that takes the value of one if the bank loan contains capital expenditure restriction and zero otherwise. Control variables are the same with regard to loan spread and collateral requirement.

The regression results are presented in regression (9) to (12) of Panel A in Table VI. In regression (9), we control for local male-female ratio, as well as firm- and loan- specific characteristics. In regression (10), we controls for other local demographical characteristic (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction as well as board female fraction) as additional controls. In regression (11), industry fixed effects are added in. In regression (12), the industry fixed effects are controlled for. Throughout regression (9) to regression (12), we find consistently positive sign of local male-female ratio, significant at 5% significance level. As in regression (12), the marginal effect of local male-female ratio is 0.815, thus one standard-deviation of local male-female ratio will contribute to the probability of capital expenditure restriction by 4.32% (=0.815*0.053). Given that the sample average of capital expenditure restriction is 29.4%, the effect of local male-female ratio takes up 15% according to the sample mean.

D. Impact of Local male-female ratio on Covenant Violation

To provide further evidence on the role of local male-female ratio in affecting corporate risk taking, we examine firms' likelihood of covenant violation. To the extent equity holders of a firm take excessive risk and perform risk shifting, it is more likely that the firm would violate covenant of creditors (Jensen and Meckling (1976)).

Regression (1) to (4) of table Panel B in Table VI presents the estimates by probit regressions in which the dependent variable is an indicator that equals one if the firm violate covenant in a specific year. The key independent variable is local male-female ratio as preceding sections.

In regression (1), we control for local male-female ratio and firm characteristics. Consistent with the hypothesis, the coefficient estimate of local male-female ratio is negatively significant. The marginal effect of local male-female ratio is 0.450, suggesting that one standard-deviation decrease in the male-female ratio will lower the likelihood of covenant violation by 0.024, which accounts for approximately 18.4% of the sample mean of likelihood of covenant violation (0.13).

In regression (2), we include other county level demographical characteristics as controls. The results are not quantitatively and qualitatively changed. In regression (3), we add in industry fixed effects. In regression (4), we control for state fixed effects. The coefficient estimate of local male-female ratio is still significant both statistically and economically. One standard-deviation decrease in the local male-female ratio reduces the likelihood of firm's covenant violation by about 8% of sample mean of violation likelihood.

Overall, in this section, throughout all specifications, we show that local male and female ratio is positively and significantly associated with the likelihood that firms violate covenants.

IV. Interaction Analysis

As hypotheses discussed in the introduction, the correlation between corporate risk management and the risk preference of the local population should be stronger in firms which are smaller in size and have lower institutional ownership. To examine this hypothesis, tests in this section condition the gender-risk relation on the extent of firms' size and institutional ownership. All else equal, a larger size of firm is expected to decrease the likelihood that the firm subjects the risk management policies to the risk preference of the local population. Similarly, a firm with larger institutional ownership is less likely to follow local population's risk preference.

Table VII shows the regression result using the interaction term between local male-female ration and firms' book size in Panel A, as well as the interaction term between local male-female ratio and firms' institutional ownership in Panel B. We present regression analysis in which the dependent variable is realized stock return volatility (regression (1)), option implied stock return volatility (regression (2)), book leverage (regression (3)), capital expenditure (regression (4)), cash holding (regression (5)), numbers of bid initiations (regression (6)), CAR (-1,1) around M&A announcements (regression (7)), indicator for interest rate hedging for industrial firm (regression (8)), level of interest rate hedging by bank holding companies (regression (9)), loan spread (regression (10)), indicator for collateral requirement (regression (11)), indicator for cash expenditure restriction (regression (12)), and indicator for covenant violation (regression (13)), respectively. The control variables are corresponding to preceding tables. We use OLS regressions for continuous dependent variables and probit model otherwise. In each regression, we control for state fixed effects and other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Industry fixed effects at two-digit SIC level, year fixed effects as well as state fixed effects are also included in each regression.

The results presented in panel line up with the hypothesis in that the effect of local male-female ratio is concentrated among small companies in that the coefficient estimate of the interaction term between local male-female ratio and firms' book size are in the opposite sign of the local male female ratio, and significant at least at 10% significance level (except for number of bids in column (6)), indicating firms of larger book size are exposed to sensitivity of lower local male-female ratio. Similarly, for all dependent variables, we find significant coefficient estimates of the interaction term between local male-female ratio and firms' institutional ownership. Also the interaction term are of the opposite sign of local male-female ratio, demonstrating firms with higher institutional ownership are of weaker link between local male-female ratio and firm risk.

V. Robustness Check

In previous sections, we document a strong correlation between local male-female ratio and firm risk. However, the association is subject to endogeneity concern, in the form of omitted variable bias and reverse causality running from firm risk to local male-female ratio, resulting biased and inconsistent coefficient estimates. To address omitted variable concern, we use the instrumental variable approach to alleviate residual endogeneity concerns. The results of the instrumental variable approach are tabulated in Table VIII. We also use subsample of firms that move headquarters to mitigate the concern that the established correlation is driven by some time invariant firm characteristics of the firm in Table IX. We also add potential omitted variables and present the result in table X.

A. Endogeneity Concerns

In this section, we employ instrumental variable method to address the endogeneity concern that local male-female ratio is an endogenous variable that is related with omitted variables that would affect firm risk taking. We need an instrument variable that is correlated with local male-female ratio but of no other link with firm risk except through the channel of local male-female ratio. Specifically, we exploit state variation in regulation of minimum drinking age. The instrument is an indicator which takes the value of one if the firm's headquarter is located in a state where the minimum limit drinking age (MLDA) is above 18 in 1976 (18 is the median age). The higher minimum drinking age leads to more motor vehicle accidents, alcohol overdoses, alcohol-related deaths and suicide, especially to white male population at an early age (Carpenter, Dobkin, 2007), thus cause higher local morality ratio of male. If the state adopts MLDA at a higher age, then the ratio of local male-female ratio is expected to be higher (we provide test below). We refer to the year 1976 because before 1970s, most states set their drinking ages at 21, during 1969-1976, over 30 states set the drinking age lower than 21, and most of these limits remained constant after 1976. The state/county mean male-female ratio is referred to 2000 US Census Bureau. However, the MLDA that the state adopts is believed to have no relationship with firms risk taking financial/investment policies, thus MLDA is satisfied the relevance requirement and is uncorrelated with the right hand side variables.

Table VIII present the 2SLS IV regression results. Panel A shows the univariate result establish the correlation between local male-female ratio and MLDA that the state adopts. We find that in 1976, there are 28 states set the MLDA to be 18, whereas 7 states set the control limit to be 19 and 14 states above 20. The *t* test shows 1% significance level for the difference between states mean male-female ratio of states that adopt below 18 MLDA versus states that are of above 18 MLDA. Wilcoxon *z* test shows similar significance. These results suggest that the states which control drinking age to be above 18 would have higher male female ratio.

We present multivariate evidence in Panel B regression (1). From the first-stage regression, it is evident that MLDA is positively with local male-female ratio. This effect is significant at lower than the 1% significance level and the *F*-statistic for weak identification test is 37.4, indicating MLDA survives relevant test. Most of tests are robust to the second stage regression. Regression (2) to (14) presents the result for second stage regression. Except in test for collateral requirement, capital expenditure restriction and cash holding, local male-female ratio is of 1% significance in the remaining tests.

The conclusion we draw from Table VIII is that the positive correlation between firm risk and local demographic male-female ratio shown in prior literature is robust to instrumental variable approach.

B. Corporate Moving Headquarters

As a further source of identification, we examine a subsample of firms whose variation of local male-female ratio comes from two different counties that the firms' headquarter located in. Specifically, we examine the extent that the firm adjust its tendency to risk management according to the change in the local demographical condition, substantially to the change of local male ratio between the original county and the new county that the firms' headquarter moves to.

Historical information of firm locations comes from Compact Disclosure. A firm is denoted as moving headquarter if the location of headquarter in year t is in different counties from its location in year *t*-1. We perform OLS regression for continuous dependent variables through regression (1) to regression (6). In table IX, we examine the effect of change in local male-female ratio on change in firms' risk management related corporate policies and corporate risk for firms that reallocate headquarter. Both the changes of dependent as well as the changes of independent variables are measured as the difference of between year *t*-1 before moving headquarters and year *t*+1 after moving. The main independent variable in interest is the change in the local male-female ratio. We control for the change in other county characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction), as well as change in firm characteristics.

In regression (1) and regression (2), the dependent variable is change in firm's realized return volatility and option implied volatility, respectively. We find consistent evidence that a firm moving to a county in which local male-female ratio is higher than it was at its original county has significantly higher firm risk. There is a positive relation between the change in local male-female ratio and the change in firm realized stock performance which is significant at 1% level. A firm that moves to a new county for one year in which local male-female ratio is one standard-deviation higher than it was at original county will increase the firm realized return volatility by 0.023(=0.053*0.044), accounting for approximately 6.5% change with regards to the sample average of stock volatility. Similar evidence is found for firm's change in option implied volatility.

With regard to corporate policies, two key results stand out in change in market leverage and capital expenditure. In regression (3) and (4), the dependent variable is the change in the book leverage ratio and capital expenditure. Consistent with the hypothesis, the coefficient estimate of the change in local male-female ratio is positively significant at 1% level for change in book leverage and at 1% for change in capital expenditure. One standard-deviation increase in the local male-female ratio will add to the firms' book leverage by 0.006 (=0.053*0.116), which is about 4% of the sample mean. For firms' investment policies in M&As behaviour, we find that one standard increase in local male-female ratio would increase the number of bid initiations by 0.036, which is statistically significant at 10% level and takes up approximately 16.2% with regards to the mean of number of bid initiation (=0.053*0.729/0.239).

We adopt probit model for indicator dependent variable in regression (7) and (8), which is an indicator which an indicator that equals to zero if a firm's likelihood of employing interest rate derivatives decrease after headquarter moving and one otherwise and an indicator that equals to zero if a firm's likelihood of covenant violation decrease after headquarter moving and one otherwise, respectively. Due to both corporate interest rate hedging policy is relatively stable, we set the indicator equal to one if the mean likelihood of adopting interest rate derivatives from *t*-4 to *t*-1 before headquarter moving is smaller than the mean likelihood from *t*+1 to *t*+4 after moving, and zero otherwise. The main interested independent variable is the change in local male-female ratio between *t*-1 before headquarter moving and *t*+1 after moving. As presented in regression (7), we find negative coefficient estimation of local male-female ratio that is significant at 1% level. The marginal effect of change in local male-female ratio is -0.382, suggesting a one standard increase in local male-female ratio the county a firm located after headquarter move relative to the original county, would lower the likelihood of adopting interest rate hedging by 2.02%, which is about 7.6% of the sample mean of the likelihood of interest rate hedging.

C. Additional Controls

In this section, we perform a number of additional tests to ensure that our main findings are robust to adding in additional controls. For brevity, we only tabulate the coefficients of key variables in Table X.

In this section, we perform a number of additional tests to ensure that our main findings are robust to adding in additional controls. For brevity, we only tabulate the coefficients of key variables in Table X. First of all, female directors are shown to be less over-confident in financial and investment decisions (Huang and Kisgen (2013), corporate governance (Adams and Ferreira (2009)) and M&A initiations (Levi, Li and Zhang (2015)). Following these literature, we construct two measures on female director. We control for female board fraction, estimated as the number of female directors divided by the board size, as well as an indicator variable that takes the value of one if there are exactly one female director on the board, and zero otherwise. Also, female CEO is associated with firms' risk taking (Faccio, Marchica and Mura (2015)). Therefore we include an indicator for female CEO. Secondly, previous literature has shown that corporate governance has significant impact on firm cash holding and the value of cash holding (Dittmar and Mahrt-Smith (2007)), thus we control for G-index (Gompers, Ishii, and Metrick (2003)) and the proportion of outside directors on the boards in the regressions. In case that our findings for local demographic characteristics of individual investors are affected by local institutional ownership, following Gasspa and Massa (2007), we also add firms' local institutional ownership as additional control, which is calculated as ownership hold by institutions that are located within in a 100km radius of the firm's headquarters.

We present the result for inclusion of management layer gender variables in Panel A, which includes female board fraction, an indicator that takes the value of one if the board has exactly one female director and an indicator which takes the value of one if the firm's CEO is female. In Panel B, we control for local institutional ownership, as well as G-index (Gompers, Ishii, and Metrick (2003)) and the proportion of outside directors on the boards in the regressions. In each regression, we control for all the county characteristics in this paper and firms specific characteristics. Industry fixed effects are included in each regression.

We find that the results hold in most of main regressions, except for book leverage, likelihood of collateral requirement and covenant violation. With different bunch of controls variables in Panel A and B, we find similar coefficient estimate of local male-female ratio, indicating that it is reduction of sample size (due to availability of additional controls) rather than the control variables themselves has a stronger impact on the effect of local male-female ratio.

VI. Conclusion

This paper explores effect of gender difference in investors risk preference in shaping corporate risk taking and policies. The strong empirical evidences of female stronger risk aversion in stock trading joined with individual investors local bias lay foundation for higher investor risk aversion for companies located in areas with more female. Thus we employ geographic demographic variation in male-female ratio to proxy for risk aversion of corporate investor base.

Consistent with these hypotheses, we find that corporate's local male-female ratio is positive related to firms risk taking. Firms which are located in counties where local male-female ratio is higher, have higher stock realized return volatility, higher option implied volatility, employ higher market/book leverage ratio, higher capital expenditure, lower cash holding policies, are more likely to make acquisitions. Investors react less favourably to acquisition by firms of higher local male-female ratio. Also, we find that bank enhance the borrowing charged on firms of higher local male-female ration, in forms of higher loan spread, higher likelihood of collateral requirement and capital expenditure restriction as well.

Our results are robust to interaction analysis (effects are more prominent for firms with smaller size and institutional ownership) and subsample of corporate headquarter moving, also survive adding executive/CEO level gender characteristics as well as various corporate governance controls. Overall, these results suggest that investors' gender difference is an important predictor of corporate risk taking.

Reference

Adams, Renée B., and Daniel Ferreira, 2009, Women in the boardroom and their impact on governance and performance, *Journal of Financial Economics* 94, 291-309.

Agnew, Julie, Pierluigi Balduzzi, and Annika Sundén, 2003, Portfolio choice and trading in a large 401(k) plan, *American Economic Review* 93, 193-215.

Agrawal, Anup, and N. Mandelker Gershon, 1987, Managerial incentives and corporate investment and financing decisions, *The Journal of Finance* 42, 823-837.

Allayannis, G., and J. P. Weston, 2001, The use of foreign currency derivatives and firm market value, *Review of Financial Studies* 14, 243-276.

Amihud, Yakov, and Baruch Lev, 1981, Risk reduction as a managerial motive for conglomerate mergers, *The Bell Journal of Economics* 12, 605-617.

Atkinson, Stanley M., Samantha Boyce Baird, and Melissa B. Frye, 2003, Do female mutual fund managers manage differently?, *Journal of Financial Research* 26, 1-18.

Barber, Brad M., and Terrance Odean, 2001, Boys will be boys: Gender, overconfidence, and common stock investment, *The Quarterly Journal of Economics* 116, 261-292.

Barsky, Robert B., F. Thomas Juster, Miles S. Kimball, and Matthew D. Shapiro, 1997, Preference parameters and behavioral heterogeneity: An experimental approach in the health and retirement study, *The Quarterly Journal of Economics* 112, 537-579.

Becker, Bo, 2007, Geographical segmentation of us capital markets, *Journal of Financial Economics* 85, 151-178.

Becker, B. O., Zoran Ivković, and Scott Weisbenner, 2011, Local dividend clienteles, *The Journal of Finance* 66, 655-683.

Berger, Allen N., and Gregory F. Udell, 1990, Collateral, loan quality and bank risk, *Journal of Monetary Economics* 25, 21-42.

Bernasek, Alexandra, and Stephanie Shwiff, 2001, Gender, risk, and retirement, *Journal of Economic Issues* 35, 345-356.

Bharath, Sreedhar T. and Narayanan, M. P. and Seyhun, H. Nejat, 2009, Are Women Executives Disadvantaged? Working paper. Ross School of Business.

Bodnaruk, Andriy and Östberg, Per, 2012, The Shareholder Base and Payout Policy, Working Paper, Swiss Finance Institute.

Bonaimé, Alice Adams, Kristine Watson Hankins, and Jarrad Harford, 2014, Financial flexibility, risk management, and payout choice, *Review of Financial Studies* 27, 1074-1101.

Carpenter, Jennifer N., Richard Stanton, and Nancy Wallace, 2010, Optimal exercise of executive stock options and implications for firm cost, *Journal of Financial Economics* 98, 315-337.

Costa, Bengt Holmstrom; Joan Ricart I, 1986, Managerial incentives and capital management, *Quarterly Journal of Economics* 101, 835-860.

Desai, Mihir A., and Li Jin, 2011, Institutional tax clienteles and payout policy, *Journal of Financial Economics* 100, 68-84.

Dittmar, Amy, and Jan Mahrt-Smith, 2007, Corporate governance and the value of cash holdings, *Journal of Financial Economics* 83, 599-634.

Djankov, Simeon, Tim Ganser, Caralee McLiesh, Rita Ramalho, and Andrei Shleifer, 2010, The effect of corporate taxes on investment and entrepreneurship, *American Economic Journal: Macroeconomics* 2, 31-64.

Dorn, Daniel, and Gur Huberman, 2010, Preferred risk habitat of individual investors, *Journal of Financial Economics* 97, 155-173.

Gaspar, José-Miguel, Massimo Massa, and Pedro Matos, 2005, Shareholder investment horizons and the market for corporate control, *Journal of Financial Economics* 76, 135-165.

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *The Quarterly Journal of Economics* 118, 107-156.

Graham, John R., Campbell R. Harvey, and Manju Puri, 2013, Managerial attitudes and corporate actions, *Journal of Financial Economics* 109, 103-121.

Graham, John R., and Daniel A. Rogers, 2002, Do firms hedge in response to tax incentives?, *The Journal of Finance* 57, 815-839.

Graham, John R., Si Li, and Jiaping Qiu, 2008, Corporate misreporting and bank loan contracting, *Journal of Financial Economics* 89, 44-61.

Grinblatt, Mark, and Matti Keloharju, 2001, What makes investors trade?, *The Journal of Finance* 56, 589-616.

Guay, Wayne R., 1999, The impact of derivatives on firm risk: An empirical examination of new derivative users1, *Journal of Accounting and Economics* 26, 319-351.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2004, Does local financial development matter?, *The Quarterly Journal of Economics* 119, 929-969.

Hentschel, Ludger, and S. P. Kothari, 2001, Are corporations reducing or taking risks with derivatives?, *Journal of Financial and Quantitative Analysis* 36, 93-118.

Hirshleifer, David, and Anjan V. Thakor, 1992, Managerial conservatism, project choice, and debt, *The Review of Financial Studies* 5, 437-470.

Hong, Harrison, Jeffrey D. Kubik, and Jeremy C. Stein, 2008, The only game in town: Stock-price consequences of local bias, *Journal of Financial Economics* 90, 20-37.

Huang, Jiekun, and Darren J. Kisgen, 2013, Gender and corporate finance: Are male executives overconfident relative to female executives?, *Journal of Financial Economics* 108, 822-839.

Huberman, Gur, 2001, Familiarity breeds investment, *Review of Financial Studies* 14, 659-680.

Lin, Chen, Micah S. Officer, Rui Wang, and Hong Zou, 2013, Directors' and officers' liability insurance and loan spreads, *Journal of Financial Economics* 110, 37-60.

Lin, Chen, Yue Ma, Paul Malatesta, and Yuhai Xuan, 2011, Ownership structure and the cost of corporate borrowing, *Journal of Financial Economics* 100, 1-23.

John, Kose, Anthony W. Lynch, and Manju Puri, 2003, Credit ratings, collateral, and loan characteristics: Implications for yield, *The Journal of Business*, 76, 371-409.

Low, Angie, 2009, Managerial risk-taking behavior and equity-based compensation, *Journal of Financial Economics* 92, 470-490.

Ivković, Zoran, and Scott Weisbenner, 2005, Local does as local is: Information content of the geography of individual investors' common stock investments, *The Journal of Finance* 60, 267-306.

Jayaratne, Jith, and Philip E. Strahan, 1996, The finance-growth nexus: Evidence from bank branch deregulation, *The Quarterly Journal of Economics* 111, 639-670.

Jensen, Michael C., and William H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305-360.

John, Kose, Lubomir Litov, and Bernard Yeung, 2008, Corporate governance and risk-taking, *The Journal of Finance* 63, 1679-1728.

Kempf, Alexander, Stefan Ruenzi, and Tanja Thiele, 2009, Employment risk, compensation incentives, and managerial risk taking: Evidence from the mutual fund industry, *Journal of Financial Economics* 92, 92-108.

Kempf, Alexander;Ruenzi, Stefan;Thiele, Tanja;, 2009, Employment risk, compensation incentives, and managerial risk taking: Evidence from the mutual fund industry, *Journal of Financial Economics* 92, 92-108.

Levi, Maurice, Kai Li, and Feng Zhang, 2014, Director gender and mergers and acquisitions, *Journal of Corporate Finance* 28, 185-200.

Low, Angie, 2009, Managerial risk-taking behavior and equity-based compensation, *Journal of Financial Economics* 92, 470-490.

Faccio, Mara and Marchica, Maria-Teresa and Mura, Roberto, 2015, CEO Gender, Corporate Risk-Taking, and the Efficiency of Capital Allocation. Working paper. Purdue University.

Massa, Massimo, and Andrei Simonov, 2006, Hedging, familiarity and portfolio choice, *Review of Financial Studies* 19, 633-685.

Nini, Greg, David C. Smith, and Amir Sufi, 2009, Creditor control rights and firm investment policy, *Journal of Financial Economics* 92, 400-420.

White Halbert, 1980, A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica* 48, 817- 855.

Prince, Melvin, 1993, Women, men and money styles, *Journal of Economic Psychology* 14, 175-182.

Sundén, Annika E., and Brian J. Surette, 1998, Gender differences in the allocation of assets in retirement savings plans, *The American Economic Review* 88, 207-211.

Appendix

This appendix provides detailed descriptions of all the variables used in the tables.

Variable	Definition
County characteristics:	
Local high education fraction	Percentage of population that has college degree in each county. The data comes from the county population estimates datasets from 1991 to 2008
Ln (local household income)	Logarithm of the median household income in each county. The data come from the US Census Bureau SAIPE (Small Area Income and Poverty Estimates) datasets from 1991 to 2008
Ln (local population)	Logarithm of the size of county population. The data comes from the o county population estimates datasets from 1991 to 2008
Local male-female ratio	Ratio of male population divided by female population in each county. The data comes from the US Census Bureau county population estimates datasets from 1991 to 2008
Local senior fraction	Percentage of population more than 65 years old in each county. The data comes from the US Census Bureau county population estimates datasets from 1991 to 2008
Local unemployment rate	Annual rate of unemployment in each county. The data comes from the Bureau of Labor Statistics
Firm characteristics:	
Book value of assets	Logarithm of book assets (data6)
Book leverage	Long term debt (data9) / book assets (data6)
Capital expenditure	Capital expenditure (data128) / book assets (data6)
Cash holding	Cash and short term investments (data1) / book assets (data6)
Interest rate hedging	Indicator that equals to one if a firm reports the use of interest rate derivatives in annual report and zero other wise
Dividend yield	Cash dividends per share (data26) / stock price (data199)
Free cash flow	(Operating income before depreciations (data13) – interest and related expense (data15) – total income taxes (data16) – total dividends common / ordinary (data21)) / book assets (data6)
Market leverage	Long term debt (data9) / (total debt (data6 - data60) + market value of equity(data199 * data 25))
Market to book	(Book asset + market value of equity – book value of equity) / book asset (data6), where the book value of equity is calculated as (total stockholders' equity (data216) + deferred taxes (data74) + investment tax credit (data208) – preferred stock (coalescing data216, data 10, and data 130)) and the market value of equity is calculated as price per share (data 24) * common shares outstanding (data25)
Profitability	Operating income before depreciation (data13) / book assets (data6)
Sales growth	Annual percentage change in sales (data12)
Stock return volatility	Volatility of daily stock return over the year
Tangibility	Net PPE (data8) / book assets (data6)
Board and governance characteristics:	
Female director fraction	Number of female board members divided by board size
One female director	An indicator that takes the value of one for firm with exactly one female director on the board and zero otherwise
Female CEO	An indicator that takes the value of one for firm with female CEO and zero otherwise
% of outside directors	Percentage of outside directors on the board

Local institutional ownership	Sum of ownership held by institutions that are located within in a 100km radius of the firm's headquarters
G-index	Governance index constructed according to Gompers, Ishii, and Metrick (2003)
Bank Characteristics	
Bank commercial loan	Commercial loan divided by market capitalization
Bank fed funds	Federal funds divided by market capitalization
Bank income	Cash flow minus cash flow from derivatives divided by market capitalization
Bank interest rate exposure	Interest rate exposure (one-year maturity gap following Flannery and James 1984) divided by market capitalization
Bank interest rate hedge	Dollar value spent on interest rate hedging divided by market capitalization
Bank market to book	Bank holding company's market capitalization divided by book assets
Bank securities	Securities dividend by market capitalization
Bank tier 1 capital	Tier 1 capital divided by market capitalization
Ln (bank book value)	Logarithm of bank book assets
Loan Characteristics	
Ln (loan amount)	Logarithm of loan deal (facility) amount
Ln (loan maturity)	Logarithm of loan maturity
Loan spread	All-in-drawn spread over LIBOR charged by the bank for the loan facility
Collateral Requirement	An indicator that takes the value of one if the loan is secured by collateral and zero otherwise (for missing information in LPC, we set the indicator equals to zero)
Capital Expenditure Restriction	An indicator that takes the value of one if the bank loan contains capital expenditure restriction in the and zero otherwise
M&A Characteristics	
Bid numbers	The number of bids initiated by a firm within a fiscal year. The bid shall take the form of a merger (SDC deal form M), acquisition of majority interest (AM), or acquisition of assets (AA)
Relative size	Deal value (reported in SDC) over bidder market value of equity defined above
High Tech	An indicator that takes the value of one bidder and target are both from high tech industries defined by Loughran and Ritter (2004) and zero otherwise
Tender offer	An indicator that takes the value of one for tender offer bids deals (reported in SDC) and zero otherwise
All cash	An indicator that takes the value of one for purely cash-financed deals and zero otherwise
Hostile	An indicator that takes the value of one for hostile bids and zero otherwise
Diversified	An indicator that takes the value of one if the target and the bidder do not share a SIC two digit industry and zero otherwise

Table I
Panel A: Summary Statistics

Sample size varies across regressions used in the analyses. Panel A presents summary statistics and data sources for the main regression variables. Panel B presents presents the summary statistics of local male female ratio by states. We report the state abbreviations, the mean, the median, the min, the max and the standard deviation, in the descending order of the number of firm-year observations in each state.

	N	Mean	Minimum	Maximum	Std.Dev	Source
County Characteristics						
Local high education fraction	63,610	0.303	0.118	0.536	0.910	US Census Bureau
local household income (In thousand U.S. dollars)	63,610	46.021	23.357	82.648	12.640	US Census Bureau
Local male-female ratio	63,610	0.929	0.760	1.619	0.052	US Census Bureau
Local population (Million)	63,610	1.173	0.027	9.519	1.513	US Census Bureau
Local senior fraction	63,610	0.117	0.050	0.255	0.370	US Census Bureau
Local unemployment rate	63,610	0.051	0.021	0.100	0.017	US Census Bureau
Firm Characteristics						
Book value (In billion U.S. dollars)	63,610	1.841	0.004	40.197	5.658	Compustat
Book leverage	63,610	0.170	0.000	0.701	0.177	Compustat
Capital expenditure	63,610	0.054	0.000	0.340	0.061	Compustat
Cash holding	63,610	0.168	0.000	0.890	0.209	Compustat
Dividend yield	63,610	0.009	0.000	0.114	0.020	Compustat
Free cash flow	63,610	-0.130	-1.448	0.146	0.241	Compustat
Interest rate hedging (Industrial)	45,830	0.262	0.000	1.000	0.442	Edgar
Stock return volatility	63,233	0.036	0.010	0.089	0.021	CRSP
Market leverage	63,610	0.129	0.000	0.656	0.155	Compustat
Option implied volatility	19,479	0.036	0.031	0.096	0.011	Compustat
Profitability	63,610	0.062	-0.917	0.410	0.203	Compustat
Sales growth	63,610	0.200	-0.796	4.255	0.606	Compustat
Tangibility	63,610	0.265	0.000	0.898	0.236	Compustat
Market to book	63,610	1.704	0.211	10.515	1.682	Compustat
Bank Characteristics						
Bank book value (In billion U.S. dollars)	11,749	2.425	0.048	69.338	8.843	Bank Regulatory
Bank commercial loan	11,749	0.939	0.000	9.108	1.099	Bank Regulatory
Bank fed funds	11,749	0.146	0.000	3.045	0.311	Bank Regulatory
Bank income	11,749	0.482	0.073	3.181	0.458	Bank Regulatory
Bank interest rate exposure	11,749	0.551	-5.013	11.694	1.756	Bank Regulatory
Bank interest rate hedge	11,749	0.164	0.000	1.296	0.328	Bank Regulatory
Bank market capitalization (In billion U.S. dollars)	11,749	1.682	0.014	39.221	5.716	Bank Regulatory
Bank market to book	11,749	0.618	0.061	1.614	0.279	Bank Regulatory
Bank securities	11,749	1.708	0.127	12.749	1.565	Bank Regulatory
Bank tier 1 capital	11,749	0.121	0.114	0.297	0.060	Bank Regulatory
Loan Characteristics						
Loan spread	10,844	1.567	0.175	6.050	1.169	LPC's DealScan
Ln (loan facility amount)	10,844	4.859	0.693	8.007	1.590	LPC's DealScan
Collateral Requirement	10,844	0.381	0.000	1.000	0.000	LPC's DealScan
Loan Maturity	10,844	42.726	3.000	101.200	23.060	LPC's DealScan
Capital Expenditure Restriction	2,772	0.294	0.000	1.000	0.000	LPC's DealScan
M&A Characteristics						
Number of Bids	61,252	0.239	0.000	34.000	0.682	SDC
Relative Size	16,530	0.208	0.003	1.166	0.310	SDC, CRSP
High Tech	16,530	0.239	0.000	1.000	0.427	SDC
Tender Offer	16,530	0.038	0.000	1.000	0.191	SDC
All Cash	16,530	0.285	0.000	1.000	0.451	SDC
Hostile	16,530	0.003	0.000	1.000	0.054	SDC
Diversified	16,530	0.656	0.000	1.000	0.475	SDC

State	Num	Mean	Median	Min	Max	Std. Dev
DC	18	0.856	0.860	0.842	0.861	0.007
MS	1476	0.893	0.881	0.749	1.410	0.086
AL	1206	0.897	0.896	0.759	1.134	0.066
MA	252	0.899	0.892	0.839	1.050	0.042
RI	90	0.901	0.896	0.869	0.971	0.022
DE	54	0.911	0.908	0.896	0.928	0.011
SC	828	0.914	0.899	0.772	1.210	0.079
NJ	378	0.916	0.909	0.855	1.035	0.035
AR	1350	0.922	0.915	0.760	1.604	0.089
ME	288	0.923	0.924	0.883	0.996	0.018
WV	990	0.926	0.927	0.738	1.036	0.048
NC	1800	0.928	0.923	0.785	1.639	0.077
PA	1188	0.928	0.918	0.818	1.285	0.061
CT	144	0.928	0.923	0.887	1.014	0.038
IA	1782	0.929	0.924	0.850	1.116	0.037
VA	2394	0.933	0.927	0.734	1.433	0.102
NH	180	0.934	0.935	0.899	0.965	0.015
GA	2826	0.935	0.916	0.656	2.552	0.141
MD	432	0.935	0.929	0.829	1.191	0.071
MO	2070	0.936	0.919	0.787	1.681	0.094
KY	2160	0.937	0.926	0.784	1.381	0.067
OH	1584	0.938	0.926	0.818	1.405	0.072
IN	1602	0.942	0.937	0.849	1.163	0.043
TN	1710	0.942	0.922	0.820	1.634	0.090
VT	252	0.943	0.945	0.879	0.990	0.028
NE	1674	0.944	0.939	0.848	1.074	0.042
KS	1890	0.945	0.930	0.824	1.277	0.062
IL	1818	0.946	0.929	0.828	1.602	0.088
LA	1152	0.947	0.909	0.804	2.554	0.191
NY	1116	0.949	0.938	0.799	1.266	0.075
OK	1386	0.951	0.929	0.842	1.420	0.086
TX	4428	0.959	0.933	0.744	1.734	0.106
NM	576	0.966	0.945	0.893	1.263	0.060
MN	1566	0.967	0.962	0.875	1.246	0.046
SD	1188	0.969	0.963	0.873	1.264	0.051
OR	648	0.971	0.967	0.886	1.212	0.049
WI	1296	0.972	0.968	0.860	1.237	0.047
MI	1494	0.973	0.954	0.859	1.328	0.078
WA	702	0.976	0.967	0.863	1.093	0.043
ND	954	0.987	0.982	0.881	1.170	0.056
UT	522	0.989	0.978	0.908	1.326	0.066
WY	414	0.990	0.970	0.819	1.181	0.069
MT	1008	0.992	0.971	0.899	1.514	0.083
HI	54	0.992	0.991	0.975	1.026	0.015
AZ	270	0.993	0.972	0.853	1.170	0.076
ID	792	1.010	0.994	0.816	1.306	0.073
CA	1044	1.018	0.975	0.860	1.922	0.146
FL	1188	1.034	0.948	0.847	2.152	0.204
CO	1116	1.045	0.999	0.880	1.449	0.120
NV	288	1.083	1.055	0.982	1.385	0.097

Table II

Local Male Female Fraction and Realized Stock Volatility / Option Implied Volatility

This table reports OLS regression in which the dependent variable is firms' realized stock volatility and implied option volatility, the independent variable of interest is local male-female ratio. The dependent variables are multiplied by 100. In regression (1) and regression (2), the main dependent variable is firms' stock return volatility, calculated as firm's one year average of daily stock return volatility. The sample consists of 63,233 firm year observations of realized volatility covered in RiskMetrics, CRSP and Compustat from 1992-2009. In regression (3) and regression (4), the main dependent variable is firm's industry adjusted implied option volatility, estimated as 182 days forward looking option implied volatility. The sample consists of 19,479 observations firm year observations of implied option volatility which are covered in RiskMetrics, CRSP and Compustat during the period from 1992-2009. Regression (2) and Regression (4) controls for state fixed effects. All regressions include other local population characteristic (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior) as additional controls. Industry fixed effects at two-digit SIC level and year fixed effects are included in each regression. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Volatility		Implied Option Volatility	
	(1)	(2)	(3)	(4)
Local male-female ratio	0.050***	0.023***	0.036***	0.023***
	(13.89)	(4.39)	(9.82)	(4.10)
County Characteristics				
Local high education fraction	0.009***	0.009***	0.004*	0.002
	(4.49)	(3.84)	(1.93)	(0.83)
Ln (local population)	0.001***	0.000	0.000***	0.000**
	(4.85)	(1.39)	(2.98)	(2.04)
Ln (local household income)	0.001	0.002*	0.002*	0.003***
	(1.29)	(1.78)	(1.70)	(2.62)
Unemployment rate	0.016	0.006	0.006	0.005
	(1.58)	(0.49)	(0.55)	(0.38)
Local senior fraction	0.008	0.000	0.010**	0.012**
	(1.63)	(0.05)	(2.44)	(2.05)
Firm Characteristics				
Tangibility	-0.004***	-0.004***	-0.005***	-0.005***
	(-5.25)	(-5.25)	(-6.14)	(-5.75)
Ln (Book size)	-0.006***	-0.006***	-0.004***	-0.004***
	(-53.01)	(-52.56)	(-40.09)	(-39.63)
Market leverage	0.006***	0.006***	0.014***	0.015***
	(9.23)	(9.62)	(17.82)	(17.98)
Free cash flow	-0.001	-0.001	-0.003***	-0.003***
	(-0.63)	(-0.65)	(-3.82)	(-3.96)
Dividend yield	-0.001**	-0.001**	-0.022***	-0.021***
	(-2.30)	(-2.34)	(-2.92)	(-2.84)
Market to book	0.001***	0.001***	0.000***	0.000***
	(9.96)	(9.79)	(6.69)	(6.73)
Profitability	-0.012***	-0.012***	-0.019***	-0.019***
	(-5.88)	(-5.79)	(-10.63)	(-10.38)
Sales growth	0.000	-0.000	0.000	0.000
	(0.18)	(-0.05)	(1.42)	(1.56)
Industry effects	Yes	Yes	Yes	Yes
State fixed effects	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm
Observations	63,233	63,233	19,479	19,479
Adjusted R^2	0.513	0.516	0.629	0.635

Table III

Local Male Female Fraction and Corporate Policies

This table reports OLS regression in which the dependent variable is firms' corporate financial/investment policies. In regression (1), (2), (3) and (4) the dependent variable is firm's market leverage, book leverage capital expenditure and cash holding respectively. The main independent variable of interest is local male-female ratio. The sample consists of 63,259, 63,610, 62,483 and 61,430 firm year observations in regression (1), regression (2) and regression (3), respectively, covered in Compustat from 1992-2009. All regressions include other local population characteristic (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Industry fixed effects at two-digit SIC level and year fixed effects are included in each regression. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding
	(1)	(2)	(3)	(4)
Local male-female ratio	0.159***	0.201***	0.121***	-0.318***
	(5.02)	(4.59)	(4.32)	(-5.82)
County Characteristics				
Local high education fraction	-0.010	-0.007	0.005	0.192***
	(-0.72)	(-0.41)	(0.69)	(5.93)
Ln (local population)	0.001	0.001	-0.000	-0.007***
	(0.88)	(0.96)	(-0.65)	(-4.24)
Ln (local household income)	0.001	-0.006	-0.010***	0.068***
	(0.23)	(-0.64)	(-3.37)	(4.91)
Unemployment rate	-0.129**	-0.243***	-0.123**	0.269*
	(-1.99)	(-2.82)	(-2.51)	(1.91)
Local senior fraction	0.097**	0.062	0.096***	0.071
	(2.19)	(1.03)	(3.67)	(1.20)
Firm Characteristics				
Tangibility	0.008***	0.016***	0.000*	-0.012***
	(17.80)	(27.03)	(1.76)	(-12.21)
Ln (Book size)	0.007***	0.016***	0.000	-0.013***
	(16.31)	(25.02)	(0.67)	(-14.19)
Market leverage	0.454***	0.445***	-0.030***	-0.226***
	(80.63)	(69.76)	(-6.56)	(-19.40)
Free cash flow	0.009***	-0.023***	-0.036***	-0.004
	(3.25)	(-4.44)	(-13.55)	(-0.34)
Dividend yield	0.002***	0.002***	-0.270***	-0.000
	(11.43)	(4.65)	(-13.74)	(-0.61)
Market to book	0.000**	0.002***	0.001***	0.012***
	(2.55)	(5.67)	(4.66)	(6.26)
Profitability	-0.000	0.006	0.082***	-0.114***
	(-0.11)	(1.07)	(10.69)	(-7.69)
Sales growth	0.000	0.000	0.000	-0.000
	(0.75)	(0.90)	(0.47)	(-0.08)
Year fixed effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
Observations	63,259	63,610	62,483	61,430
Adjusted R^2	0.582	0.482	0.197	0.386

Table IV

Local Male Female Fraction and Mergers and Acquisitions (M&As) Bid Initiation

This table presents negative binomial regression in which the dependent variable is the number of bids that the firm initiates in a specific year (regression (1) to (4)) and the cumulative abnormal return (-1, 1) around the bidders' announcement of M&As (regression (5) to (8)). The sample consists of 61,252 firm year observations from 1992-2009 covered in Thomson Reuters SDC database and Compustat (regression (1) to (3)). The sample consists of 16,530 firm-year observations covered in the Compustat, CRSP and SDC from 1992 to 2009 (regression (4) to (6)). The main independent variable of interest is local male-female ratio. Regression (2) and (5) controls for industry fixed effects at two-digit SIC level and other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Regression (3) and (6) adds state fixed effects. All independent variables are measured as of the fiscal year-end that immediately precedes the dependent variable. Year fixed effects are included in each regression. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Number of Bids			CAR (-1, 1) M&A Announcement		
	(1)	(2)	(3)	(4)	(5)	(6)
Local male-female ratio	2.639***	1.543**	1.299**	-0.056***	-0.051**	-0.071**
	(4.98)	(2.29)	(2.09)	(-2.82)	(-2.28)	(-2.08)
County Characteristics						
Local high education fraction		0.559**	0.399		-0.019	-0.032**
		(2.33)	(1.36)		(-1.60)	(-2.22)
Ln (local population)		-0.018	-0.031		0.001	0.001
		(-1.03)	(-1.17)		(0.87)	(0.43)
Ln (local household income)		-0.102	0.116		0.003	-0.001
		(-0.87)	(0.84)		(0.62)	(-0.07)
Unemployment rate		-0.999	0.403		-0.011	-0.041
		(-0.84)	(0.29)		(-0.17)	(-0.53)
Local senior fraction		-0.947*	-0.656		-0.031	-0.067
		(-1.85)	(-1.02)		(-0.86)	(-1.39)
Bidder Characteristics						
Tangibility	-0.675***	-0.890***	-0.890***	0.004	0.003	0.004
	(-8.26)	(-8.70)	(-8.80)	(0.93)	(0.48)	(0.54)
Ln (Book size)	0.213***	0.239***	0.241***	-0.004***	-0.005***	-0.005***
	(16.77)	(20.71)	(20.79)	(-9.17)	(-8.44)	(-8.51)
Market leverage	0.089	0.059	0.030	-0.004	-0.001	-0.002
	(1.23)	(0.82)	(0.42)	(-0.70)	(-0.16)	(-0.33)
Free cash flow	-0.034	-0.006	-0.006	-0.002	-0.001	-0.002
	(-1.29)	(-0.16)	(-0.16)	(-0.10)	(-0.06)	(-0.10)
Dividend yield	-3.058	-3.727*	-3.403*	0.061	0.065	0.065
	(-1.53)	(-1.77)	(-1.69)	(1.07)	(0.81)	(0.80)
Market to book	0.081***	0.066***	0.066***	-0.001***	-0.001**	-0.001**
	(8.39)	(7.06)	(7.05)	(-2.63)	(-2.39)	(-2.30)
Profitability	1.083***	1.038***	1.033***	-0.027	-0.031	-0.031
	(10.11)	(9.20)	(9.33)	(-1.42)	(-1.59)	(-1.58)
Sales growth	-0.000	-0.000	-0.000	0.000	0.000	0.000
	(-1.13)	(-1.48)	(-1.40)	(0.11)	(0.36)	(0.26)
Bid Characteristics						
Relative size				0.025***	0.026***	0.025***
				(5.55)	(5.60)	(5.57)
High Tech				-0.005**	-0.002	-0.002
				(-2.26)	(-0.59)	(-0.68)
Tender offer				0.008**	0.009***	0.009***
				(2.50)	(2.70)	(2.58)
All cash				0.005***	0.005***	0.005***
				(3.76)	(3.37)	(3.37)
Hostile				-0.027***	-0.027***	-0.027***
				(-3.13)	(-3.00)	(-2.97)
Diversified				-0.001	-0.001	-0.001
				(-0.42)	(-0.59)	(-0.71)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	No	Yes	Yes	No	Yes	Yes
State fixed effects	No	No	Yes	No	No	Yes
Observations	61,252	61,252	61,252	16,530	16,530	16,530
Adjusted R^2	-	-	-	0.037	0.045	0.048

Table V

Local Male Female Fraction and Firm Interest Rate Hedging

Panel A of Table V presents estimates of Probit regressions in which the dependent variable is an indicator that equals to one if a firm reports the use of interest rate derivatives in annual report and zero otherwise. In Panle A, we obtain the indicator for firms' interest rate hedging by extensively searching each firm Form 10-K annual reports in SEC's Electronic Data Gathering and Retrieval (Edgar) database. In regression (1) to (4), the sample consists of 46,334 firm-year observations covered in the Compustat and CRSP databases from 1996 to 2009 and we include only industrial firms (exclude SIC codes between 6000 and 6999). The main independent variable of interest is local male-female ratio. Regression (2) includes other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Panel B. Regression (3) adds controls for industry fixed effects at two-digit SIC level. Regression (4) adds state fixed effects. All independent variables are measured as of the fiscal year-end that immediately precedes the dependent variable. Year fixed effects are included in each regression. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroscedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Industrial Firms

	(1)	(2)	(3)	(4)
Local male-female ratio	-2.997***	-3.600***	-3.455***	-2.106***
	(-8.73)	(-8.26)	(-7.88)	(-3.40)
County Characteristics				
Local high education fraction		-1.196***	-1.091***	-1.300***
		(-5.20)	(-4.65)	(-4.76)
Ln (local population)		-0.016	-0.017	0.033
		(-1.07)	(-1.09)	(1.53)
Ln (local household income)		0.621***	0.594***	0.959***
		(5.96)	(5.58)	(7.00)
Unemployment rate		-1.192	-1.584	0.813
		(-0.96)	(-1.27)	(0.58)
Local senior fraction		-0.056	-0.026	3.301***
		(-0.08)	(-0.04)	(3.60)
Firm Characteristics				
Tangibility	0.047	0.084	0.112	0.123
	(0.69)	(1.19)	(1.28)	(1.41)
Ln (Market size)	0.308***	0.312***	0.322***	0.324***
	(33.34)	(33.45)	(33.30)	(33.34)
Market leverage	1.080***	1.077***	1.118***	1.085***
	(17.83)	(17.58)	(17.90)	(17.26)
Free cash flow	0.022	0.005	0.009	0.010
	(0.39)	(0.10)	(0.16)	(0.19)
Dividend yield	0.353	0.198	0.514	0.314
	(0.46)	(0.26)	(0.65)	(0.39)
Market to book	-0.057***	-0.056***	-0.060***	-0.053***
	(-4.74)	(-4.63)	(-4.82)	(-4.38)
Profitability	1.451***	1.453***	1.425***	1.326***
	(10.82)	(10.75)	(10.30)	(9.75)
Sales growth	0.000***	0.000***	0.000***	0.000***
	(4.82)	(5.14)	(4.85)	(4.87)
Year fixed effects	Yes	Yes	Yes	Yes
Industry effects	No	No	Yes	Yes
State fixed effects	No	No	No	Yes
Observations	46,334	46,334	46,334	46,334
Pseudo R^2	0.270	0.272	0.282	0.292

Table V

Local Male Female Fraction and Firm Interest Rate Hedging

In Panel B of Table V, the dependent variable is bank interest rate hedging calculated as dollar value of bank interest rate hedging scaled by bank holding company's market value. The sample consists of 11,749 bank year quarter observations from 1995-2009 are covered in Bank Regulatory and Compustat. The main independent variable of interest is local male-female ratio. Regression (2) includes other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Regression (3) adds controls for interest rate exposure and tier 1 capital ratio. Regression (4) adds state fixed effects. All independent variables are measured as of the fiscal year-end that immediately precedes the dependent variable. Year fixed effects are included in each regression. The Appendix provides detailed descriptions of the variables. The t-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel B: Bank Holding Companies

	(1)	(2)	(3)	(4)
Local male female ratio	-0.458***	-0.493***	-0.522***	-0.386***
	(-3.90)	(-3.98)	(-4.26)	(-2.83)
County Characteristics				
Local high education fraction		0.131	0.123	0.086
		(1.56)	(1.47)	(1.01)
Ln(local population)		-0.005	-0.007	0.003
		(-1.05)	(-1.53)	(0.56)
Ln(local household income)		-0.028	-0.017	0.028
		(-0.91)	(-0.54)	(0.86)
Unemployment rate		-0.148	-0.172	0.519
		(-0.40)	(-0.47)	(1.28)
Local senior fraction		-0.132	-0.110	0.100
		(-0.98)	(-0.83)	(0.57)
Bank Characteristics				
Ln(Market size)	0.055***	0.055***	0.059***	0.058***
	(10.73)	(10.41)	(10.57)	(10.61)
Market to book	-0.031***	-0.031***	-0.030***	-0.029***
	(-4.19)	(-4.14)	(-4.48)	(-4.60)
Commercial Loans	0.038***	0.039***	0.033***	0.031***
	(4.83)	(4.86)	(4.21)	(4.04)
Securities	0.003	0.003	0.000	0.005
	(0.71)	(0.64)	(0.02)	(1.04)
Cash	0.019	0.020	0.010	0.005
	(1.48)	(1.53)	(0.94)	(0.57)
Fed funds	-0.032*	-0.034*	-0.053***	-0.044**
	(-1.92)	(-1.96)	(-2.98)	(-2.36)
Exposure			0.008***	0.008***
			(2.74)	(2.67)
Tier 1 capital ratio			-0.004***	-0.005***
			(-3.16)	(-3.66)
State fixed effects	No	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	11,749	11,749	11,749	11,749
Adjusted R^2	0.203	0.207	0.216	0.263

Table VI

Local Male Female Fraction and Loan Spread/Collateral Requirement/Capital Expenditure Restriction/Covenant Violation

Panel A of table VI reports OLS regression in which the dependent variable is the loan spread charged by the bank over LIBOR (regression (1) to (4)), an indicator that takes the value of one if the bank loan is secured and zero otherwise (regression (5) to (8)) and an indicator that takes the value of one if the bank loan contains capital expenditure restriction and zero otherwise (regression (9) to (12)). The sample consists of 10,844 firm-year observations covered in the Compustat and LPC's DearlScan databases from 1992 to 2008 (regression (1) to (8)). We then combine the data with the dataset used in Nini, Smith and Sufi (2009) from 1996 to 2005 to obtain 2,772 observations of the sample for capital expenditure restriction. Regression (2), (6) and (10) controls for industry fixed effects at two-digit SIC level. Regression (3), (7) and (11) includes other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior) as additional controls. Regression (4), (8) and (12) adds state fixed effects. Loan type, loan purpose and credit rating fixed effects are included in each regression throughout regression (1) to (12). Year fixed effects are controlled for in each of the regression. All independent variables are measured as of the fiscal year-end that immediately precedes the loan active date (regression (1) to (12) or event of covenant violation. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Local Male Female Fraction and Ex-ante Contract Terms

	Loan Spread				Collateral Requirement				Capital Expenditure Restriction			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Local male-female ratio	2.086***	2.259***	2.484***	2.299***	2.553***	2.980***	3.101***	3.577***	2.170**	2.098*	2.635**	2.903*
	(9.22)	(7.81)	(8.91)	(6.57)	(6.27)	(5.70)	(6.29)	(5.19)	(2.53)	(1.92)	(2.27)	(1.75)
County Characteristics										-0.361	-0.313	0.002
Local high education		0.439**	0.427**	0.359*		0.564	0.559*	0.229		-0.374	-0.216	0.129
fraction		(2.40)	(2.56)	(1.83)		(1.64)	(1.68)	(0.59)		(-0.66)	(-0.37)	(0.19)
Ln (local population)		-0.013	-0.019	-0.017		0.013	0.003	0.031		0.077**	0.088**	0.073
		(-1.03)	(-1.48)	(-1.02)		(0.70)	(0.15)	(1.34)		(2.28)	(2.53)	(1.52)
Ln (local household		-0.139	-0.179**	-0.143		-0.215	-0.148	0.133		0.261	0.154	0.157
income)		(-1.53)	(-2.12)	(-1.50)		(-1.62)	(-1.11)	(0.77)		(0.98)	(0.55)	(0.43)
Unemployment rate		1.041	0.876	0.520		-0.475	-0.196	1.659		0.564	1.903	-0.466
		(1.19)	(1.00)	(0.51)		(-0.30)	(-0.12)	(0.74)		(0.16)	(0.55)	(-0.11)
Local senior fraction		-0.099	-0.010	0.178		0.577	0.731	1.163		1.600	-0.430	0.138
		(-0.32)	(-0.03)	(0.39)		(0.81)	(1.10)	(1.13)		(1.08)	(-0.27)	(0.06)
Firm Characteristics												
Tangibility	-0.235***	-0.259***	-0.395***	-0.401***	-0.147*	-0.128	-0.469***	-0.469***	-0.453***	-0.417**	-0.278	-0.353
	(-4.11)	(-4.25)	(-5.05)	(-4.98)	(-1.70)	(-1.40)	(-3.78)	(-3.82)	(-2.84)	(-2.52)	(-1.22)	(-1.53)
Ln (Book size)	-0.151***	-0.180***	-0.142***	-0.142***	-0.233***	-0.233***	-0.230***	-0.234***	-0.223***	-0.236***	-0.294***	-0.293***
	(-8.46)	(-10.80)	(-7.51)	(-7.54)	(-5.69)	(-5.61)	(-5.18)	(-5.50)	(-4.21)	(-4.38)	(-5.11)	(-5.19)
Market Leverage	0.908***	0.921***	1.174***	1.182***	0.914***	0.938***	1.093***	1.033***	0.561**	0.561**	0.715***	0.759***
	(15.72)	(15.83)	(15.54)	(15.27)	(9.05)	(9.35)	(9.57)	(8.94)	(2.49)	(2.49)	(3.04)	(3.17)
Free cash flow	-2.813***	-2.868***	-2.738***	-2.736***	-2.448***	-2.357***	-2.101***	-2.252***	-0.125	-0.174	-0.679	-0.592

	(-8.86)	(-8.68)	(-8.54)	(-8.71)	(-5.90)	(-5.59)	(-5.06)	(-5.34)	(-0.23)	(-0.32)	(-1.15)	(-1.01)
Dividend yield	-0.679	-0.769	-0.719	-0.686	-0.964*	-0.948*	-0.576	-0.491	-0.481	-0.320	-0.006	0.255
	(-1.43)	(-1.54)	(-1.60)	(-1.58)	(-1.85)	(-1.79)	(-1.31)	(-1.15)	(-0.21)	(-0.14)	(-0.00)	(0.11)
Market to book	0.001	0.002	0.001	0.000	-0.014	-0.013	-0.014	-0.013	-0.084	-0.088	-0.088	-0.075
	(0.12)	(0.34)	(0.13)	(0.01)	(-0.96)	(-0.92)	(-0.93)	(-0.94)	(-1.35)	(-1.41)	(-1.41)	(-1.18)
Profit	-1.214***	-1.189***	-1.139***	-1.127***	-0.896***	-0.901***	-0.882***	-0.895***	-1.400***	-1.368***	-1.518**	-1.585***
	(-8.36)	(-8.09)	(-7.87)	(-8.06)	(-3.62)	(-3.62)	(-3.63)	(-3.80)	(-2.68)	(-2.62)	(-2.51)	(-2.65)
Sales growth	0.001	0.001	-0.003	-0.004	0.053*	0.051*	0.044	0.037	-0.012	-0.012	-0.017	-0.017
	(0.13)	(0.15)	(-0.68)	(-0.81)	(1.79)	(1.78)	(1.60)	(1.47)	(-1.22)	(-1.24)	(-1.32)	(-1.26)
Ln (facility amount)	-0.123***	-0.125***	-0.171***	-0.172***	-0.034	-0.037	-0.053	-0.058	0.040	0.057	0.109**	0.106**
	(-8.47)	(-8.48)	(-12.07)	(-12.03)	(-0.91)	(-1.00)	(-1.36)	(-1.55)	(0.88)	(1.24)	(2.20)	(2.09)
Ln (maturity)	-0.173***	-0.172***	-0.028	-0.027	-0.012	-0.009	-0.004	-0.008	0.006	-0.003	-0.007	-0.011
	(-7.95)	(-7.96)	(-1.12)	(-1.04)	(-0.33)	(-0.25)	(-0.11)	(-0.21)	(0.06)	(-0.03)	(-0.08)	(-0.11)
Loan type fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan purpose fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credit rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
State fixed effects	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	10,844	10,844	10,844	10,844	10,844	10,844	10,844	10,844	2772	2772	2772	2772
Adjusted/Pseudo R^2	0.610	0.607	0.588	0.592	0.354	0.354	0.371	0.378	0.246	0.247	0.309	0.329

Panel B: Local Male Female Fraction and Ex-post Covenant Violation

Panel A of table VI reports OLS regression in which the dependent variable is an indicator that equals one if the firm violate covenant in a specific year (regression (13) to (16)). We obtain 48,345 observations of covenant violations from Nini and Sufi's (2009) and Compustat from 1996 to 2008. Regression (2) controls for industry fixed effects at two-digit SIC level. Regression (3) includes other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior) as additional controls. Regression (4) adds state fixed effects. Year fixed effects are controlled for in each of the regression. All independent variables are measured as of the fiscal year-end that immediately precedes the loan active date (regression (1) to (12) or event of covenant violation. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Local male-female ratio	2.442***	2.341***	2.232***	1.555***
	(9.15)	(7.37)	(6.97)	(3.47)
County Characteristics				
Local high education fraction		0.316*	0.285*	0.199
		(1.91)	(1.70)	(1.06)
Ln (local population)		0.021	0.024	-0.007
		(1.46)	(1.64)	(-0.36)
Ln (local household income)		0.170**	0.134	0.134
		(2.03)	(1.58)	(1.28)
Unemployment rate		-0.547	-0.758	-1.282
		(-0.60)	(-0.83)	(-1.13)
Local senior fraction		0.240	0.230	-0.166
		(0.70)	(0.67)	(-0.38)
Firm Characteristics				
Tangibility	-0.551***	-0.497***	-0.379***	-0.377***
	(-11.08)	(-9.81)	(-5.98)	(-5.42)
Ln (Book size)	-0.145***	-0.147***	-0.138***	-0.139***
	(-23.26)	(-23.57)	(-21.58)	(-22.21)
Market Leverage	1.191***	1.201***	1.258***	1.282***
	(25.59)	(25.67)	(26.53)	(27.97)
Free cash flow	-0.492***	-0.472***	-0.456***	-0.388***
	(-8.83)	(-8.45)	(-7.49)	(-5.92)
Dividend yield	-1.608**	-1.529**	-1.158**	-1.066**
	(-2.31)	(-2.29)	(-2.09)	(-2.01)
Market to book	-0.054***	-0.054***	-0.052***	-0.052***
	(-6.25)	(-6.27)	(-5.91)	(-4.83)
Profit	0.236***	0.240***	0.103*	0.194***
	(6.65)	(6.70)	(1.94)	(5.98)
Sales growth	0.000**	0.000**	0.000**	0.000**
	(2.17)	(2.18)	(2.28)	(2.32)
Loan type fixed effects	Yes	Yes	Yes	Yes
Loan purpose fixed effects	Yes	Yes	Yes	Yes
Credit rating fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes
State fixed effects	No	No	No	Yes
Observations	48,345	48,345	48,345	48,345
Adjusted/Pseudo R^2	0.128	0.129	0.137	0.141

Table VII

Local Male Female Fraction, Interactions with Firm Size and Institutional Ownership

This table presents estimates of interaction analysis, where the dependent variables and independent variables are corresponding to preceding tables. In panel A, the independent variable in interest is the interaction term of local male-female ratio and firms' book size. In panel B, the independent variable in interest is the interaction term of local male-female ratio and firms' institutional ownership.In regression (1) to (13), the dependent variable is firms' realized stock volatility (regression (1)), firms' implied option volatility (regression (2)), firms' book leverage ratio (regression (3)), capital expenditure (regression (4)), cash holding (regression (5)), the number of bids that the firm initiates in a specific year (regression (6)), the cumulative abnormal return (-1, 1) around the bidders' announcement of mergers (regression (7)), an indicator that equals to one if a firm reports the use of interest rate derivatives in annual report and zero otherwise (regression (8)), bank interest rate hedging calculated as dollar value of bank interest rate hedging scaled by bank holding company's market value (regression (9)) the loan spread charged by the bank over LIBOR (regression (10)), an indicator that takes the value of one if the bank loan is secured and zero otherwise (regression (11)), an indicator that takes the value of one if the bank loan contains capital expenditure restriction and zero otherwise (regression (12)) and an indicator that equals one if the firm violate covenant in a specific year (regression (13)), respectively. The maximum sample period is from 1992 to 2009. The sample period and the sample size vary depending on the availability of data sources for the dependent variables. In each regression, we control for state fixed effects and other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Industry fixed effects at two-digit SIC level and year fixed effects are also included in each regression. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Local Male Female Fraction, Interactions with Firm Size

	Realized Return Volatility	Option Implied Volatility	Book Leverage	Capital Expenditure	Cash Holding	Number of Bids	CAR (-1,1) around M&A Announcement	Interest Rate Hedging (Industrial firms)	Interest Rate Hedging (Bank Holding Companies)	Loan Spread	Collateral Requirement	Capital Expenditure Requirement	Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Local male-female ratio	0.028***	0.059***	0.381***	0.143***	-0.417***	2.702***	-0.144***	-2.861***	-1.814***	2.990***	6.633***	7.131***	2.301***
	(4.93)	(5.18)	(7.99)	(6.34)	(-6.23)	(2.68)	(-2.75)	(-4.09)	(-5.34)	(6.01)	(4.86)	(3.76)	(4.23)
Local male-female ratio * Ln (Book size)	-0.002**	-0.005***	-0.038***	-0.004***	0.020***	-0.314*	0.011*	0.125**	0.122***	-0.168***	-0.527***	-0.587***	-0.156***
	(-1.98)	(-3.63)	(-9.14)	(-3.18)	(3.81)	(-1.68)	(1.81)	(2.17)	(4.51)	(-3.21)	(-2.80)	(-3.60)	(-2.76)
Ln (Book size)	-0.004***	0.001	0.053***	0.004***	-0.032***	0.537**	-0.014***	0.221***	-0.065**	-0.001	0.213	0.260*	-0.000
	(-4.22)	(0.67)	(12.96)	(3.69)	(-6.29)	(2.03)	(-2.59)	(3.80)	(-2.35)	(-0.01)	(1.15)	(1.82)	(-0.00)
County characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bid Characteristics	-	-	-	-	-	-	Yes	-	-	-	-	-	-
Loan type fixed effects	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Loan purpose fixed effects	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-

Credit rating fixed effects	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,233	19,479	63,610	62,483	61,430	61,252	11,749	46,334	11,749	10,844	10,844	2,772	45,830
Adjusted /Pseudo R^2	0.513	0.636	0.486	0.197	0.387	-	0.074	0.296	0.259	0.627	0.373	0.330	0.142

Panel B: Local Male Female Fraction, Interactions with Institutional Ownership

	Realized Return Volatility	Option Implied Volatility	Book Leverage	Capital Expenditure	Cash Holding	Number of Bids	CAR (-1,1) around M&A Announcement	Interest rate Hedging (Industrial firms)	Interest rate Hedging (Bank Holding Companies)	Loan Spread	Collateral Requirement	Capital Expenditure Requirement	Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Local male-female ratio	0.014***	0.037***	0.202***	0.110***	-0.356***	1.970***	-0.082**	-1.864***	-0.363***	1.092***	4.252***	4.501***	0.967**
	(2.63)	(4.38)	(4.69)	(4.65)	(-4.47)	(3.10)	(-2.14)	(-3.48)	(-3.26)	(3.64)	(4.64)	(2.96)	(2.40)
Local male-female ratio * Institutional ownership	-0.014***	-0.036***	-0.051**	-0.011*	0.392***	-2.123***	0.015	0.558**	0.180**	-0.743**	-4.527***	-3.234**	-0.559***
	(-3.44)	(-3.51)	(-2.21)	(-1.74)	(3.95)	(-3.00)	(0.58)	(1.99)	(2.24)	(-2.44)	(-3.59)	(-2.56)	(-2.58)
Institutional ownership	0.009**	0.026***	0.072***	0.020***	-0.301***	2.532***	-0.025	-0.262	-0.260***	0.295	4.186***	2.835**	0.069
	(2.24)	(2.73)	(3.55)	(2.86)	(-3.26)	(3.76)	(-1.01)	(-1.10)	(-2.80)	(1.14)	(3.57)	(2.53)	(0.37)
County characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bid Characteristics	-	-	-	-	-	-	Yes	-	-	-	-	-	-
Loan type fixed effects	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Loan purpose fixed effects	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Credit rating fixed effects	-	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,233	19,479	63,610	62,483	61,430	61,252	11,749	46,334	11,749	10,844	10,844	2,772	45,830
Adjusted /Pseudo R^2	0.561	0.636	0.518	0.231	0.448	-	0.074	0.296	0.259	0.594	0.382	0.330	0.123

Table VIII

Endogeneity Test

Panel A of Table VIII presents the summary statistics for the instrument variables. We adopt an indicator which takes the value of one if the firm's headquarter is located in a state where the minimum drinking age is above 18 in 1976 as our instrument variable. We refer to the year 1976 because before 1970s, most states set their drinking ages at 21, during 1969-1976, over 30 states set the drinking age lower than 21, and most of these limits remained constant after 1976. The state/county mean male-female ratio is referred to 2000 US Census Bureau.

Panel B of Table VIII presents the 2SLS regression results. Regression (1) shows the first stage regression in which the dependent variable is local male-female ratio. Regression (2) to (11) is the second stage regression result in which the dependent variable is realized stock return volatility (regression (2)), option implied volatility (regression (3)), book leverage (regression (4)), capital expenditure (regression (5)), cash holding (regression (6)), the number of bids that the firm initiates in a specific year (regression (7)), the cumulative abnormal return (-1, 1) around the bidders' announcement of mergers (regression (8)), an indicator that equals to one if a firm reports the use of interest rate derivatives in annual report and zero otherwise (regression (9)), bank interest rate hedging calculated as dollar value of bank interest rate hedging scaled by bank holding company's market value (regression (10)), the loan spread charged by the bank over LIBOR (regression (11)), an indicator that takes the value of one if the bank loan is secured and zero otherwise (regression (12)), an indicator that takes the value of one if the bank loan contains capital expenditure restriction and zero otherwise (regression (13)) and an indicator that equals one if the firm violate covenant in a specific year (regression (14)), respectively. We use the same set of control variables as in receding table analysis. We control for other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. For common firms, we also controls for firm specific characteristics including tangibility, book size, market leverage, free cash flow, dividend yield, market to book ratio, profitability, firm age, cash holding, and sales growth. All the independent variables are as of the preceding year before the dependent variables. We report the *F*-statistic of the weak-identification test to test the presence of weak instrument. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Summary Statistics for Instrument Variables

		State		T-test of	Wilcoxon z
	State Minimum Drinking Age	Mean (1)	Median (2)	(A-B) for sates	test (A-B) for states
A(<=18):	18	0.930	0.930		
		(28)			
	19	0.946	0.942	-3.01***	-2.57***
B(>18):		(7)		(0.00)	(0.01)
	21	0.964	0.967		
		(14)			

Panel B: 2SLS Regressions of Main Dependent Variables in Previous Tables on Explanatory Variables

	Local male female ratio (1)	Local male female ratio (2)	Realized Stock Return Volatility (2)	Option Implied Volatility (3)	Book Leverage (4)	Capital Expenditure (5)	Cash Holding (6)	Number of Bids (7)	CAR (-1,1) around M&A Announcement (8)	Interest rate Hedging (Industrial firms) (9)	Interest rate Hedging (Bank Holding Companies) (10)	Loan Spread (11)	Collateral Requirement (12)	Capital Expenditure Restriction (13)	Covenant Violation (14)
Instrument: Indicator of MLDA>18	0.005*** (6.62)	-0.000 (-0.02)													
Local male-female ratio			0.091*** (6.51)	0.067*** (4.84)	0.576* (1.91)	0.470*** (2.58)	0.07 (0.40)	3.826*** (3.02)	-0.121** (-2.21)	-10.949*** (-5.49)	-0.528*** (-3.85)	4.052** (2.50)	0.528 (0.25)	8.280 (1.25)	4.434*** (3.95)
Local male-female ratio (1970)	0.397*** (20.61)		-0.013* (-1.73)	-0.007 (-1.16)	-0.199 (-1.36)	-0.175** (-2.09)	-0.562** (-2.53)	-0.621 (-1.03)	0.060** (1.99)	3.787*** (2.86)	-0.013 (-0.16)	-0.167 (-0.26)	1.194* (1.82)	0.755 (0.34)	-0.637 (-1.23)
Local male-female ratio (1990)		0.008*** (75.37)													
Relative Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All relevant controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weak identification test: *F*-statistic	37.4														
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes
Observations	63,610	63,610	63,233	19,479	63,610	62,483	61,430	61,252	16,530	46,334	11,749	10,844	10,844	2,772	48,345
Adjusted R^2	0.567	0.860	0.480	0.626	0.466	0.164	0.361	-	0.03	-	0.219	0.589	0.326	-	-

Table IX

Local Male Female Fraction and Corporate Risk Management: Firms Moving Headquarters

This table reports the correlation of change of corporate financial/investment/hedging policies with regards to the change of local male-female ratio for firms that re-allocate headquarters. Historical information of firm locations is obtained from Compact Disclosure. A firm is denoted as moving headquarter in year *t* if the location of headquarter in year *t* is in different counties from its location in year *t*-1.

We use OLS regression in which the dependent variable is change in stock realized return volatility (regression (1)) and change in option implied volatility (regression (2)),change in book leverage (regression (3)), change in capital expenditure (regression (4)), change in cash holding (regression (5)), change in bid initiations (regression (6)) between year t+1 and year t-1, respectively. Regression (7) presents the results of probit model in which the dependent variable is an indicator that equals to zero if a firm's likelihood of employing interest rate derivatives decrease after headquarter moving and one otherwise. Regression (8) presents the results of probit model in which the dependent variable is an indicator that equals to zero if a firm's likelihood of covenant violation decrease after headquarter moving and one otherwise. The change of dependent variables is measured as the difference of each dependent variable between year *t*-1 before moving headquarters and year *t*+1 after moving. The independent variable in interest is the change in local male-female ratio, measured as the difference of local male-female ratio between year t-1 before moving headquarters and year *t*+1 after moving. Change in other local demographical characteristics (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction), changes in the firm characteristics are also included in each regression, as well as year fixed effects are included in each regression. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Change in Stock Return Volatility	Change in Option Implied Volatility	Change in Book Leverage	Change in Capital Expenditure	Change in Cash Holding	Change in Number of Bids	Change in Interest Rate Hedging (Industrial firms)	Change in Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Change in local male-female ratio	0.044***	0.022*	0.116***	0.022***	-0.052*	0.729*	-2.362**	2.511**
	(2.88)	(1.67)	(2.61)	(2.82)	(-1.68)	(1.75)	(-2.19)	(2.13)
County Characteristics								
Change in local high education fraction	-0.002	0.014	0.046	-0.020	0.032	0.081	-0.367	0.424
	(-0.27)	(1.63)	(1.61)	(-1.50)	(0.57)	(0.30)	(-0.63)	(0.87)
Change in Ln (local population)	-0.001	-0.001	-0.002	0.003*	-0.001	-0.023	0.003	0.018
	(-1.44)	(-0.88)	(-1.19)	(1.90)	(-0.15)	(-1.44)	(0.06)	(0.49)
Change in Ln (local household income)	-0.009**	-0.008	-0.015	-0.009	-0.032	0.037	0.093	0.137
	(-2.40)	(-1.04)	(-1.07)	(-1.17)	(-1.26)	(0.33)	(0.35)	(0.57)
Change in unemployment rate	-0.081	0.005	-0.124	-0.290**	0.085	2.053	1.909	2.336
	(-1.21)	(0.07)	(-1.23)	(-2.15)	(0.27)	(1.43)	(0.59)	(0.69)
Change in local senior fraction	-0.011	-0.021	0.099	-0.006	-0.080	-0.002	-2.312	0.107
	(-0.53)	(-1.24)	(0.99)	(-0.13)	(-0.68)	(-0.35)	(-1.38)	(0.09)
Firm Characteristics								
Change in Tangibility	0.003	0.010	0.070*	0.228***	-0.369***	-0.275	0.366	0.271
	(0.39)	(0.46)	(1.77)	(7.15)	(-5.68)	(-1.36)	(1.02)	(0.70)
Change in Ln (Book	-0.016***	0.000	0.011*	0.008*	0.000	0.019	0.350***	0.081

size)								
	(-9.79)	(0.05)	(1.77)	(1.86)	(0.05)	(1.00)	(4.77)	(1.51)
Change in Market leverage	0.039***	0.010	1.203***	0.013	-0.095**	-0.259**	0.273	0.816***
	(5.49)	(0.97)	(33.35)	(0.62)	(-2.57)	(-2.36)	(1.09)	(3.42)
Change in free cash flow	-0.006	-0.008*	0.008	0.014*	0.012	-0.025	0.012	-0.123
	(-1.47)	(-1.82)	(0.97)	(1.67)	(0.43)	(-0.45)	(0.05)	(-0.54)
Change in dividend yield	-0.014	-0.156	0.029	0.009	-0.004	1.458***	0.167	-0.151
	(-1.47)	(-1.41)	(0.89)	(0.79)	(-0.30)	(3.52)	(0.41)	(-0.20)
Change in market to book	-0.001***	0.000	0.003***	0.001*	0.005***	0.014	0.006	0.003
	(-3.52)	(0.39)	(2.62)	(1.76)	(2.67)	(1.51)	(0.56)	(0.29)
Change in profitability	0.007	-0.012	-0.009	-0.026**	-0.006	0.156*	0.023	0.002
	(1.20)	(-0.95)	(-0.86)	(-2.45)	(-0.15)	(1.77)	(0.19)	(0.02)
Change in sales growth	-0.000	0.000	-0.000	0.000	-0.001***	0.001***	-0.033	-0.095
	(-1.34)	(0.01)	(-0.32)	(0.48)	(-7.81)	(2.76)	(-1.63)	(-1.30)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1067	276	1067	1067	1067	1067	892	911
Adjusted R^2	0.311	0.599	0.745	0.245	0.194	0.140	0.127	0.150

Table X

Robustness Check: Local Male Female Fraction with Additional Controls

This table reports robustness tests with additional controls, including director/CEO gender controls (Panel A) and other corporate governance variables (Panel B). OLS/Probit regression in which the dependent variable is firms' realized stock volatility (regression (1)) and implied option volatility (regression (2)), capital expenditure (regression (3)), cash holding (regression (4)), an indicator that equals to one if a firm reports the use of interest rate derivatives in annual report and zero otherwise (regression (5)), the number of bids that the firm initiates in a specific year (regression (6)), loan spread charged by the bank over LIBOR (regression (7)) and an indicator that takes the value of one if the bank loan contains capital expenditure restriction and zero otherwise (regression (8)) and CAR (-1, 1) around M&A announcement, respectively. The dependent variables and independent variables are corresponding to preceding analysis. For continuous dependent variable, we use OLS regression for analysis whereas we use probit model for analysis when dependent variable is an indicator. The independent variable of interest is local male-female ratio. In Panel A, we control for the female board fraction, an indicator that takes the value of one if the board has exactly one female director and an indicator which takes the value of one if the firm's CEO is female. In Panel B, we control for local institutional ownership which is calculated as the firm's ownership hold by the institutions that are located within 100km radius around the firm's headquarter, as well as G-index (Gompers, Ishii, and Metrick (2003)) and the proportion of outside directors on the boards in the regressions. All regressions include other local population characteristic (high education fraction, Ln (local population), Ln (house hold income), unemployment rate and local senior fraction) as additional controls. Industry fixed effects at two-digit SIC level, year fixed effects and state fixed effects are included in each regression. The Appendix provides detailed descriptions of the variables. The *t*-statistics in parentheses are based on standard errors adjusted for heteroskedasticity (White 1980) and allow for clustering within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Return Volatility	Option Implied Volatility	Book Leverage	Capital Expenditure	Cash Holding	Number of Bids	CAR(-1,1) around M&A Announcement	Interest Rate Hedging (Industrial firms)	Loan Spread	Collateral Requirement	Capital Expenditure Restriction	Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(`11)	(12)
Local male-female ratio	0.029***	0.028***	0.025	0.109***	-0.163*	2.380**	-0.090**	-0.036***	1.217**	0.524	5.480	3.425**
	(3.80)	(5.77)	(0.31)	(3.09)	(-1.69)	(1.99)	(-2.06)	(-2.71)	(2.28)	(0.35)	(1.29)	(2.56)
Other Controls												
Female director fraction	-0.004**	-0.010***	0.937	-0.433	-2.504	0.094	-0.009	0.676*	0.284*	-0.391	-0.362	-0.000
	(-2.08)	(-4.95)	(0.41)	(-0.58)	(-0.82)	(0.29)	(-0.55)	(1.95)	(1.74)	(-0.81)	(-0.35)	(-0.64)
One female director	-0.001***	-0.001***	-0.434	0.089	-0.429	0.047	0.004	-0.009	-0.046**	-0.196***	0.138	-0.093*
	(-3.13)	(-3.26)	(-1.35)	(0.76)	(-1.05)	(0.94)	(1.12)	(-0.19)	(-2.05)	(-2.73)	(0.87)	(-1.83)
Female CEO	-0.000	0.002*	-2.654**	-0.366	0.536	-0.088	-0.003	-0.076	0.200	0.228	-1.388**	-0.097
	(-0.03)	(1.94)	(-2.52)	(-0.73)	(0.20)	(-0.52)	(-0.25)	(-0.40)	(1.34)	(0.88)	(-2.21)	(-0.55)
County characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bid Characteristics	-	-	-	-	-	-	Yes	-	-	-	-	Yes
Loan type fixed effects	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Loan purpose fixed effects	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Credit rating fixed effects	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Observations	10,008	8,612	11,857	10,185	11,757	9,793	4,170	9,202	3,598	3,598	1,117	10,004
Adjusted/Pseudo R^2	0.530	0.622	0.561	0.465	0.475	-	0.058	0.233	0.632	0.427	0.482	0.170

	Realized Return Volatility	Option Implied Volatility	Book Leverage	Capital Expenditure	Cash Holding	M&A Initiations	CAR(-1,1) around M&A Announcement	Interest Rate Hedging (Industrial firms)	Loan Spread	Collateral Requirement	Capital Expenditure Restriction	Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)	(11)	(8)	(9)
Local male-female ratio	0.016***	0.022***	0.028	0.106***	-0.199**	2.355**	-0.086**	-0.029***	1.311**	1.221	6.904*	2.847**
	(2.64)	(3.14)	(0.33)	(3.15)	(-2.08)	(1.97)	(-1.98)	(-2.68)	(2.56)	(0.82)	(1.74)	(2.05)
Other Controls												
Local institutional ownership	-0.002	-0.000	1.533	0.048	-0.163	0.382	-0.000	0.015	-0.014	-0.162	-0.770	-0.384
	(-1.16)	(-0.16)	(1.02)	(0.13)	(-0.07)	(1.58)	(-0.36)	(0.04)	(-0.21)	(-0.50)	(-0.69)	(-1.47)
G-index	-0.000***	-0.000***	0.055	-0.031	-0.256***	0.004	-0.002	0.039***	-0.014***	-0.037***	-0.017	-0.028***
	(-5.87)	(-7.47)	(0.78)	(-1.11)	(-2.81)	(0.37)	(-0.34)	(3.18)	(-2.99)	(-2.62)	(-0.55)	(-2.73)
% of independent directors	-0.001*	-0.001*	0.228	0.588	1.354	0.026	-0.031	0.101	0.065	-0.163	1.068**	0.200
	(-1.73)	(-1.76)	(0.22)	(1.43)	(0.98)	(0.17)	(-0.47)	(0.62)	(0.85)	(-0.78)	(2.21)	(1.42)
County characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bid Characteristics	-	-	-	-	-	-	Yes	-	-	-	-	Yes
Loan type fixed effects	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Loan purpose fixed effects	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Credit rating fixed effects	-	-	-	-	-	-	-	-	Yes	Yes	Yes	-
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,008	8,612	11,857	10,185	11,757	9,793	4,170	9,202	3,598	3,598	1,117	10,004
Adjusted/Pseudo R^2	0.509	0.617	0.561	0.455	0.460	-	0.058	0.232	0.630	0.422	0.483	0.165

Does Distance Matter for Debtholder-Shareholder Conflicts?

Abstract

We examine how the geographical distance between large debtholders and large shareholders affects firms' risk and risk-shifting incentives by amplifying asset substitution problems. We find that greater distance is associated with a higher likelihood of covenant violation and larger dividend payouts. Moreover, stock (bond) market reactions around such risk-shifting events are positively (negatively) related to debtholder-shareholder distance. These results are more pronounced among more financially constrained firms, lower-rated firms, firms with less diversified institutions, and more active institutions. Our results are robust to using instrumental variables and the introduction of a new airline route as an exogenous shock to distance.

JEL Classification**:** G12, G3, G32

Keywords: Debtholder-shareholder distance, Moral hazard, Agency problem, Risk shifting, Asset substitution, Information asymmetry, Loan contracts

1. Introduction

Conflicts of interest between debtholders and shareholders have important implications for firms' investment policies and firm value (e.g., Jensen and Meckling, 1976; Harris and Raviv, 1991; Leland, 1994). With risky debt outstanding, shareholders as residual claimholders have strong incentives to transfer resources from debtholders to themselves by overinvesting in risky projects (so-called "asset substitution" or "risk-shifting"). Similarly, large shareholders can influence management to pay out excessive dividends, resulting in wealth transfer from debtholders to shareholders (Galai and Masulis, 1976).[27]

In an extreme case, when firms are on the verge of financial distress, large shareholders may choose to cash out by influencing firms to engage in a leveraged buyout (LBO), leaving debtholders to bear large losses. Consider, for example, the case of Tribune Co., which went private through a LBO in 2007 before getting mired in bankruptcy proceedings afterwards. The bondholders of Tribune Co. sued its former large shareholders, including hedge fund Stark Investment and former Tribune patriarch Robert McCormick's massive charitable foundation, arguing that these shareholders that clawed back more than $8 billion from the LBO should have known that the LBO deal would destroy firm value.[28]

Classical agency theory (e.g., Harris and Raviv, 1979; Holmstrom, 1979) suggests that these moral hazard problems are more pronounced when principals (here, debtholders) have greater information asymmetry vis-à-vis agents (large shareholders), because in this case agents' actions cannot be fully observed and in turn contracted upon. In this paper we examine the implication that conflicts between debtholders and shareholders are positively related to the extent of information asymmetry between them using the geographic distance between large debtholders and large shareholders as a proxy for the extent of information asymmetry. We hypothesize that greater distance between debtholders and shareholders reduces the ability of debtholders to observe shareholder risk attitudes and preferences and thus increases debtholders' information asymmetry vis-à-vis shareholders, which exacerbates moral hazard problems and in turn increases firms' risk and risk-shifting incentives.

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[27] As large shareholders are the main direct beneficiaries of asset substitution, they have strong incentives to influence managers to take risky investments or pay out excessive dividends. For example, large shareholders who want to extract benefits from firms may exert undue influence over management decisions by direct intervention, by exercising powerful voting rights, by maintaining shareholder-friendly boards, or even by teaming up with hedge fund activists.

[28] "Bondholders Can Sue Over Tribune," *Wall Street Journal*, April 27, 2011.

It is important to note that the extent of information asymmetry between debtholders and shareholders is unlikely to be captured by the geographic distance between debtholders and firms. Although close geographic proximity to firm headquarters makes it easier for debtholders to obtain value-relevant information about firm quality, it does not allow debtholders to directly observe shareholder-specific characteristics such as their risk preference, investment intention, and degree of activism, which are important to understanding firms' incentives to engage in risk-shifting activities, particularly when facing financial distress.

McCahery, Sautner, and Starks (2015), based on a survey of institutional investors in the U.S., find that large institutional investors frequently exert influence on management through behind-the-scenes intervention.[29] Doidge et al. (2015) also show that institutional investors in Canada engage in private discussions with management through shareholder coordination. Since shareholders' incentives to engage in behind-the-scenes intervention and coordination tend to be stronger when firms are in the verge of financial distress, information asymmetry regarding shareholder risk attitudes and preference should be especially relevant to debtholders in this case.

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[29] McCahery, Sautner, and Starks (2015) find that almost 63% and 45% of their sample respondents, respectively, acknowledge engaging in direct discussions (rather than casual conversations) with management and having private discussions with a firm's board of directors during the past five years.

For example, as in the case of Tribune Co., to the extent that it is not easy for debtholders to prove that shareholders pursue “fraudulent wealth transfers” using their private information, debtholders are not likely to have recourse against large shareholders that engage in risk-shifting. Close geographic proximity between debtholders and shareholders, in contrast, may help debtholders reduce the extent of their information asymmetry vis-à-vis shareholders, improving observability of large shareholder behaviors/characteristics, thus reducing future risk-shifting activities.

To investigate how the geographic distance between debtholders and shareholders affects a firm’s risk and risk-shifting incentives, we use as our proximity measure the distance between the “centers of gravity” among its top five largest bank lenders and top five largest institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). We focus on the top five bank lenders and the top five institutional investors since the incentives of the former to monitor the firms and the incentives of the latter to influence corporate managers are expected to be particularly strong.[30]

We begin by examining the effect of debtholder-shareholder distance on firm risk as measured by a firm's idiosyncratic stock return volatility, expected default frequency estimated from the Moody’s/KMV distance-to-default model (Merton, 1974), and bond yield spreads. If greater distance exacerbates information asymmetry vis-à-vis shareholders, and if high information asymmetry increases shareholders’ risk-taking incentives, then the distance between debtholders and shareholders should be positively related to these three risk measures. The results support this prediction. A one-standard-deviation increase in debtholder-shareholder distance is associated with a 0.015 (0.004) increase in a firm's idiosyncratic volatility (expected default frequency), which accounts for almost 3.4% (8%) of the unconditional sample mean. Similarly, we find a positive and significant relation between debtholder-shareholder proximity and bond yield spreads, with a one-standard-deviation increase in debtholder-shareholder distance associated with a 0.161 percentage point increase in bond yield spreads, which accounts for 6% of the unconditional mean.

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[30] According to Capital IQ and LPC’s Dealscan databases, the average ratio of bank debt to total debt and the average ratio of borrowing from the top five banks to total bank borrowing are about 54% and 86%, respectively, for U.S. firms. Equity ownership held by the top five institutional investors accounts for 24% of a firm’s total shares outstanding. This number is 17% more than the “benchmark” level that would obtain if we assumed that every investor is fully diversified and holds the same market portfolio. Thus, the top five institutional investors own a substantial portion of a firm’s outstanding shares and their risk attitudes and preferences should significantly affect firm risk and risk-shifting behavior.

To shed additional light on the effect of debtholder-shareholder distance on firm risk, we examine the comovement between stock returns and changes in bond yield spreads. Higher comovement between these measures indicates potentially large wealth transfers from debtholders to shareholders, suggesting greater conflicts of interest between them. Consistent with this argument, we find that debtholder-shareholder distance is significantly positively related to the correlation between stock returns and changes in bond yield spreads.

We next examine how the geographic distance between debtholders and shareholders affects a firm's risk-shifting activities. Specifically, we examine the impact of debtholder-shareholder distance on the likelihood of a loan covenant violation and dividend payouts. If greater distance increases shareholders' risk-shifting incentives, then firms whose debtholders are located further away from the firm's shareholders are more likely to violate loan covenants. Similarly, to the extent that remote debtholders have less access to shareholders' private information, we expect firms with remote debtholders to have stronger incentives to pay high dividends than those with geographically proximate debtholders. Consistent with these arguments, we find that firms with remote debtholders are more likely to violate covenants and to pay higher dividends than firms with geographically proximate debtholders: a one-standard-deviation increase in debtholder-shareholder distance is associated with a 0.72 (0.029) percentage point increase in the probability of covenant violation (dividend yield), which accounts for almost 11% (14%) of the unconditional sample mean.

In a third set of analyses, we study stock and bond market reactions around announcements of covenant violations and announcements of unexpected increases in cash payouts to shareholders (i.e., stock repurchases and dividend increases). If a firm's risk-shifting incentives are affected by debtholder-shareholder distance, stock (bond) market reactions to these announcements should be positively (negatively) related to debtholder-shareholder distance. The results are consistent with these predictions: abnormal stock returns around announcements of covenant violations and increased cash payouts to shareholders are higher when debtholders are located far away from shareholders. In contrast, debtholders lose more, as evidenced by increases in bond yield spreads around announcements of such events.

The natural question that follows is whether debtholders anticipate the increase in conflicts of interest that arises when they are located far away from shareholders, and if so, how they specify ex ante contractual provisions to compensate for such conflicts. If debtholders foresee that greater debtholder-shareholder distance exacerbates conflicts of interest, they should demand a higher return on loans and impose stricter covenants in loan contracts. To test this conjecture, we examine the impact of debtholder-shareholder distance on loan spreads and other loan contract terms such as capital expenditure restrictions and collateral requirements. We find that remote debtholders do indeed require significantly higher loan spreads and are more likely to impose capital expenditure restrictions and collateral requirements in loan contracts than geographically proximate debtholders.[31]

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[31] The results are also economically significant. A one-standard-deviation increase in debtholder-shareholder distance is associated with a 7.6 percentage point increase in loan spreads, a 3.84 percentage point increase in the

Overall, the results suggest that remote debtholders are aware of potential asset substitution problems arising from information asymmetry vis-à-vis shareholders and in turn demand higher ex ante pricing terms and impose stricter ex ante nonpricing terms in loan contracts. Ex-post, however, greater debtholder-shareholder distance reduces debtholders' ability to observe shareholders' risk attitudes and investment preferences and hence increases information asymmetry and decreases debtholders' ability to assess large shareholders' risk-shifting incentives. As a result, ex post, we observe a positive relation between debtholder-shareholder distance and both firm risk and risk-shifting.

An important concern with above analysis is potential endogeneity. For example, debtholder-shareholder distance may be endogenously determined by unobservable firm characteristics that also affect firm risk and risk-shifting. Alternatively, firms with higher risk may self-select into locations in which shareholders are located further away from debtholders. We address these potential endogeneity concerns in four ways.

First, we perform subsample analyses. If greater distance increases the information asymmetry between debtholders and shareholders, then its effects on firm risk, risk- shifting, and loan contract terms should be stronger among firms with higher information frictions. Consistent with this view, we find that the above results are more pronounced among financially constrained firms and firms with lower credit ratings. We also expect the results to be stronger among firms with higher ownership by the top five institutional shareholders, since shareholders' risk-shifting incentives and their influence on firm policies are stronger in these firms. Similarly, the results are expected to be stronger among firms with a higher ratio of loans from the top five

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likelihood of employing capital expenditure restrictions, and a 2.64 percentage point increase in the likelihood of imposing collateral requirements, which accounts for 5%, 13%, and 7% of the unconditional sample mean of loan spreads, the likelihood of employing capital expenditure restrictions, and the likelihood of imposing collateral requirements, respectively.

bank lenders to total debt, since risk-shifting activities arising from information asymmetry vis-à-vis shareholders are particularly relevant for debtholders with significant financial claims. Consistent with our expectations, we find that the results are more pronounced in these firms. We further expect the results to be stronger among firms with large shareholders whose portfolios are less diversified, as a lack of diversification may reflect stronger investor preference for firms' idiosyncratic risks.[32] The results again support our prediction.

Second, we examine whether the results differ depend on institution type. To the extent that independent institutions have stronger incentives to actively influence management than grey institutions (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005),[33] we expect debtholders' ability to observe shareholder risk preferences to be particularly important when independent institutions are located further away from debtholders than when grey institutions are. To test this prediction, we divide the top 5 large institutions into independent and grey institutions and calculate debtholder-shareholder distance separately for these two types of institutions. Consistent with our expectation, we find that the results are mainly driven by the distance between debtholders and independent institutions.

Third, we employ an instrumental variables regression to help alleviate the omitted variable bias and establish a causal relation. We use the relative debt and equity supply in a local area (i.e., local debt-equity supply imbalance) as an instrument for the geographic proximity between debtholders and shareholders. The intuition is that in areas where there are many local banks (institutional equity investors) but few local institutional equity investors (banks), firms have to resort to distant institutional equity investors (banks) for their equity (debt) financing. Therefore, a higher imbalance in the local debt-equity supply suggests greater distance between major debtholders and shareholders, satisfying the relevance requirement of an instrumental variable. It is unlikely, however, that the local debt-equity supply imbalance directly affects firm risk or its risk-shifting incentives, since this variable is based on firm location and firms rarely move headquarters during our sample period, and thus it also satisfies the exclusion condition of an instrumental variable. As expected, in the first-stage regression, we find that the local debt-equity supply imbalance is significantly positively related to debtholder-shareholder distance. In the second-stage regression, the instrumented debtholder-shareholder distance is consistently positively related to firms' risk and risk-shifting incentives (i.e., idiosyncratic volatility, expected default frequency, bond yield spreads, the likelihood of covenant violation, dividend yields, and loan spreads).

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[32] We measure the extent of institutional investors' portfolio diversification using the R^2 of portfolio returns relative to the Fama-French 4-factor benchmark returns.

[33] Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005) find that compared with grey institutions (bank trusts, insurance companies, corporate pension funds, and other institutions) that derive benefits from their business relationships with the firms, independent institutions (investment companies, independent investment advisors, and public pension funds) with no such relationships are more likely to actively influence management.

Fourth, we perform difference-in-differences analysis. Specifically, we compute the travel time between debtholders and shareholders and identify whether the introduction of new airline routes (especially direct flights) significantly reduces the travel time. We then use this measure as an exogenous source of variation in proximity and perform a difference-in-differences test. We find significant reductions in firms' risk and risk-shifting incentives when the travel time between debtholders and shareholders is exogenously reduced. These results suggest that omitted variable or reverse causality bias is unlikely to be behind our main findings.

Our paper contributes to several strands of the literature. First, to the best of our knowledge, this is the first paper to examine how the geographical distance between debtholders and shareholders affects debtholder-shareholder conflicts. Consistent with Holmstrom (1979), we find that agents' moral hazard problems (i.e., shareholders' risk-shifting incentives) are more severe when principals (i.e., debtholders) face higher information asymmetry vis-à-vis agents (i.e., shareholders) due to their location disadvantage.

Second, we contribute to the literature on the agency cost of debt, in particular, the asset substitution problem (Jensen and Meckling, 1976; Smith and Warner, 1979; Barnea, Hausgen, and Senbet, 1985; Harris and Raviv, 1991; Leland, 1994; Parrino and Weisbach, 1999; Eisdorfer, 2008; Huang, Sialm, and Zhang, 2011; Becker and Strömberg, 2012; Hernández, Povel, and Sertsios, 2014). We find that debtholder-shareholder distance is a significant determinant of firm risk and risk-shifting activities.

Third, by examining how information asymmetry captured by debtholder-shareholder distance affects creditors' perception on firms' risk-shifting incentives and thus their loan contract terms, our paper adds to the literature on the governance role of banks and the determinants of debt covenants (Smith, 1993; Dichev and Skinner, 2002; Beatty, Webber and Yu, 2008; Gigler et al. 2009; Nini, Smith, and Sufi, 2009). We find that information asymmetry measured by the relative location of creditor and shareholders affects the conflicts of interest between them and creditors take such conflicts into account when they set debt contract terms.

Finally, we contribute to the growing literature that examines the economic importance of geographic proximity for information acquisition. While prior literature mainly focuses on the physical distance between firms and shareholders (Coval and Moskowitz, 1999, 2001; Baik, Kang, and Kim, 2010; Ayers, Ramalingegowda, and Yeung, 2011; Chhaochharia, Kumar, and Niessen-Ruenzi, 2012) and between borrowers and banks (Butler, 2008; Agarwal and Hauswald, 2010),[34] our study focuses on debtholders' physical distance from institutional shareholders. We find that this dimension of distance has important implications for evaluating corporate risk-taking activities and designing debt contracts.

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[34] Coval and Moskowitz (1999, 2001) and Baik, Kang, and Kim (2010) show that U.S. institutional investors earn significant abnormal returns on geographically proximate investments, Agarwal and Hauswald (2010) show that firm-bank proximity facilitates the collection of soft information, and Butler (2008) finds that local investment banks are better able to assess soft information in placing municipal bond issues.

The rest of the paper is organized as follows. Section 2 describes the data and the construction of our main variables, and presents results from univariate tests. Section 3 examines the effect of debtholder-shareholder distance on firm risk. In Section 4 we examine how debtholder-shareholder distance is related to firms' risk-shifting activities. In Section 5 we study the impact of debtholder-shareholder distance on loan contract terms. Section 6 presents results of endogeneity tests. We present concluding remarks in Section 7.

2. Data, Variables, and Univariate Tests

Our data come from multiple sources. Data on quarterly stock holdings of institutional investors come from Thomson Reuters CDA/Spectrum (13F) for the period 1992 to 2009. Historical locations (zip code) of firms and institutional investors come from Compact Disclosure and SEC filings, respectively, while latitude and longitude data are from the Gazetteer Files of the 2000 Census. Institutional investors with location data are name-matched with institutional investors covered in Thomson Reuters CDA/Spectrum (13F) database. Our sample comprises 41,357 institution-quarter observations for 2,660 unique institutional investors, whose holdings represent over 95% of total institutional holdings reported in Thomson Reuters CDA/Spectrum (13F).

We obtain information on firms' covenant violations and capital expenditure restrictions from Nini, Smith, and Sufi (2011) and Nini, Smith, and Sufi (2009), respectively.[35] Daily and monthly stock returns and trading volume data come from CRSP, and annual financial data come from Compustat. Data on bank loans and bond yield spreads are obtained from LPC's Dealscan database and the Bank of America-Merrill Lynch Corporate and High Yield Master Index Compositions database, respectively. We exclude firms in the financial services industry (primary SIC codes 6000-6999) from the sample.

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[35] We thank Amir Sufi for making these data available on his website (http://faculty.chicagobooth.edu/amir.sufi/data.html).

To capture the geographic distance between a firm's debtholders and shareholders (*Debtholder-shareholder distance*), we use the logarithm of the physical distance between the firm's top five bank lenders and top five institutional investors. In each quarter, we rank a firm's banks (institutional investors) according to banks' lending to the firm (institutional investors' equity ownership in the firm) to obtain the top five banks (top five institutional investors). Using the latitude and longitude of each bank, we then calculate the loan amount-weighted latitude (lat_d) and longitude ($long_d$) in radians across a firm's top five banks. Similarly, we calculate the ownership-weighted latitude (lat_s) and longitude ($long_s$) in radians across the top five institutional investors. Finally, we calculate *Debtholder-shareholder distance* (in miles) as:

$$\textit{Debtholder-shareholder distance} = 3{,}963 \times acos(sin(lat_d) \times sin(lat_s) + cos(lat_d) \times cos(lat_s) \times cos(long_d - long_s)). \tag{1}$$

The geographic distance between the firm and its top five lenders (*Firm-debtholder distance*) and the geographic distance between the firm and its top five institutional investors (*Firm-shareholder distance*) are calculated as:

$$\textit{Firm-debtholder distance} = 3{,}963 \times acos(sin(lat_f) \times sin(lat_d) + cos(lat_f) \times cos(lat_d) \times cos(long_f - long_d)), \tag{2}$$

$$\textit{Firm-shareholder distance} = 3{,}963 \times acos(sin(lat_f) \times sin(lat_s) + cos(lat_f) \times cos(lat_s) \times cos(long_f - long_s)), \tag{3}$$

where lat_f and $long_f$ are the latitude and longitude of the firm's headquarters in radians, respectively.

To examine whether *Debtholder-shareholder distance* is related to firm risk, we use three risk measures relevant to debtholders: idiosyncratic stock volatility, expected default frequency (Bharath and Shumway, 2008), and bond yield spreads (Campbell and Taksler, 2003).[36] To investigate how *Debtholder-shareholder distance* affects firms' risk-shifting incentives, we consider two events: covenant violation and dividend payout. We also examine stock market and bond market reactions around announcements of covenant violations and around increases in cash payouts to shareholders (i.e., stock repurchases and dividend increases). To examine how remote debtholders specify ex ante contractual provisions to compensate for conflicts of interest between shareholders and themselves, we consider several loan contract terms, including both quantitative measures such as loan rates and qualitative measures such as indicators for the existence of collateral requirements and capital expenditure restrictions.

In the regression analyses, we control for firm characteristics such as institutional ownership, firm size, tangibility, free cash flow, market-to-book, leverage, and profitability. The regressions also control for industry fixed effects at the two-digit SIC level (or firm fixed effects) and credit rating fixed effects corresponding to the S&P long-term rating category (AAA to C and non-rated). We provide detailed definitions of all these variables in the Appendix.

Table I, Panel A reports summary statistics for the main variables used in the regression analyses. We find large variation in *Debtholder-shareholder distance* across firms. Mean *Debtholder-shareholder distance* is 6.06 with a standard deviation of 0.92. This large variation allows us to explore the effects of *Debtholder-shareholder distance* on firm risk, risk-shifting activities, and loan contract terms in a meaningful way even for regressions with firm fixed effects. In comparison, mean *Firm-debtholder distance* and mean *Firm-shareholder distance* are 5.73 and 6.46, respectively, with standard deviations of 0.92 and 0.41.

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[36] For each firm-quarter, using daily returns, we calculate idiosyncratic volatility as the standard deviation of the stock return residuals estimated from the Fama-French 3-factor model. Campbell and Taksler (2003) show that idiosyncratic volatility is a key determinant of corporate yield spreads and that it explains as much cross-sectional variation in yield spreads as credit ratings. Following Bharath and Shumway (2008), expected default frequency is measured by the Moody's/KMV distance-to-default model (Merton, 1974). The bond yield spread is the option-adjusted spread equal to the number of percentage points that the short interest rate tree must be shifted to match the discounted cash flows to the bond's market price. For securities with embedded options such as callability, a log normal short interest rate model is used to evaluate the present value of the securities' potential cash flows.

Table I, Panel B presents results from univariate tests of the relation between *Debtholder-shareholder distance* and the key dependent variables of interest. We separate the sample according to the sample median *Debtholder-shareholder distance* and compare the values of the key dependent variables between the two groups. In line with our hypothesis, we find that firms with above-median *Debtholder-shareholder distance* have significantly higher idiosyncratic volatility, expected default frequency, and bond yield spreads than those with below-median *Debtholder-shareholder distance*. They are also more likely to violate covenants, pay higher dividends to their shareholders, and pay a higher cost of debt, and are more likely to have capital expenditure restrictions and collateral requirements in their credit agreements.

3. Debtholder-Shareholder Distance and Firm Risk

In this section we examine the impact of *Debtholder-shareholder distance* on firm risk using ordinary least squares (OLS) regressions. If greater geographic distance between debtholders and shareholders reduces debtholders' ability to observe shareholders' risk preferences and in turn increases their information asymmetry vis-à-vis shareholders, shareholders' incentives to exploit debtholders by taking greater risk are likely to increase. We test this prediction using a firm's idiosyncratic stock volatility, expected default frequency, and bond yield spreads as proxies for firm risk.

3.1 Idiosyncratic Stock Volatility

We first use idiosyncratic stock volatility to capture firm risk. The results are reported in Table II, Panel A. The sample consists of 75,656 firm-quarter observations from 1992 to 2009. The dependent variable is idiosyncratic stock volatility and our key independent variable of interest is *Debtholder-shareholder distance*. Standard errors are clustered by firm. Column (1) is our baseline specification. Column (2) adds *Firm-debtholder distance* and *Firm-shareholder distance*. Column (3) adds credit rating fixed effects, and column (4) further controls for state fixed effects. In columns (5) and (6) we include firm fixed effects. In all specifications we control for year-quarter fixed effects and in columns (1) to (4) we control for industry fixed effects at the two-digit SIC level.

The results strongly support our predictions. Across all specifications, we find that *Debtholder-shareholder distance* is highly positively related to a firm's idiosyncratic stock volatility. The results are also economically significant. For example, in column (1) a one-standard-deviation increase in *Debtholder-shareholder distance* is associated with a 0.015 increase in a firm's idiosyncratic volatility, which accounts for almost 3.4% of the unconditional sample mean. The results are robust to including industry fixed effects, state fixed effects, credit rating fixed effects, and firm fixed effects.

Turning to the control variables, we find that firms with higher institutional ownership, firms with higher cash flow, larger firms, and firms with higher profitability have lower idiosyncratic volatility, while firms with higher leverage have higher idiosyncratic volatility.

3.2 Expected Default Frequency

Next, we use expected default frequency to capture a firm's default risk (Garlappi, Shu, and Yan, 2009). The benefit of using expected default frequency is that it allows us to quantify default risk for both firms with public bonds outstanding and firms without public bonds outstanding for which we cannot observe the market-based measure of default risk (i.e., bond yield spreads). The sample consists of 75,194 firm-quarter observations from 1992 to 2009.

The results are presented in Table II, Panel B. Consistent with our hypothesis, we find that expected default frequency is significantly positively related to *Debtholder-shareholder distance* in all regressions. We also find that a one-standard-deviation increase in *Debtholder-shareholder distance* is associated with a 0.36 increase in a firm's expected default frequency (column (1)), which accounts for 7% of the unconditional sample mean.

Turning to the control variables, not surprisingly, we find that firms with higher market-to-book and firms with higher profitability have lower expected default frequency, while smaller firms and firms with higher leverage have higher expected default frequency.

3.3 Bond Yield Spreads

As our third measure of firm risk, we use the market-based bond yield spread, a direct measure of the firm risk that bondholders are exposed to. When a firm has issued multiple bonds, we use the average yield spread across all bonds issued by the firm. The sample consists of 14,663 firm-quarter observations from 1997 to 2009.

Regression results are reported in Table II, Panel C. We use the same control variables as in the previous regressions but add the logarithm of bond issues outstanding and bond maturity as additional controls. We find that greater *Debtholder-shareholder distance* is associated with higher bond yield spreads. In terms of economic significance, we find that a one-standard-deviation increase in *Debtholder-shareholder distance* increases the bond yield spread by 6% relative to the unconditional sample mean (column (2)).

Overall, the results for a positive relation between *Debtholder-shareholder distance* and ex-post firm risk are consistent with the view that greater debtholder-shareholder distance reduces observability of shareholder risk preferences and thus exacerbates debtholders' information asymmetry vis-à-vis shareholders, increasing shareholders' incentives to engage in high risk activities.

It is important to note, however, that the above results do not directly establish that greater distance benefits shareholders at the expense of debtholders. In the next subsection we address this issue by examining how *Debtholder-shareholder distance* is related to comovement between stock returns and bond yield spreads.

3.4 Effects of Debtholder-Shareholder Distance on Comovement between Stock Returns and Bond Yield Spreads

If firms engage in risk-shifting activities, the value of stocks should be negatively related to the value of bonds, that is, we should observe a positive correlation between stock returns and changes in bond yield spreads, because of wealth transfers from debtholders to shareholders. The higher the correlation between stock returns and changes in bond yield spreads, the greater the conflicts of interest between debtholders and shareholders, because high comovement implies larger wealth transfers from debtholders to shareholders. Thus, we expect *Debtholder-shareholder distanc*e to be positively related to the correlation between stock returns and changes in bond yield spreads. To test this prediction, for each firm-year we calculate the correlation between weekly equity returns and weekly changes in average bond yield spreads. We require that the firm have stock and bond prices available for at least 120 days in a year.[37] We then regress the correlation between stock returns and changes in bond yield spreads on

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[37] In untabulated tests, we find that the mean correlation between stock returns and changes in bond yield spreads is -7%, suggesting that both equity and debt prices generally move together in the same direction in response to firm fundamentals.

*Debtholder-shareholder distanc*e and the other control variables used in Table II. The sample consists of 3,514 firm-year observations from 1997 to 2009.

Table III presents the results. Consistent with our expectation, we find a positive and significant relation between *Debtholder-shareholder distanc*e and the correlation between stock returns and changes in bond yield spreads. A one-standard-deviation increase in *Debtholder-shareholder distance* increases the correlation between stock returns and changes in bond yield spreads by almost 1%. Given that the mean correlation is -7% for the full sample, this result is quite large and economically significant. Our results therefore suggest that *Debtholder-shareholder distance* does indeed exacerbate conflicts of interest between shareholders and debtholders.

Turning to the control variables, we find that firm size is consistently negatively related to the correlation between stock returns and changes in the yield spread, suggesting that conflicts of interest between debtholders and shareholders are less pronounced in large firms than in small firms. We also find that firms paying higher dividends have a higher positive correlation between stock returns and changes in yield spreads. This result is consistent with the view that firms may use dividend payouts as a potential asset substitution or risk-shifting tool (Acharya, Le, and Shin, 2013), which increases debtholder-shareholder conflicts.

4. Debtholder-Shareholder Distance and Risk-Shifting

In this section we test how *Debtholder-shareholder distance* affects shareholders' asset substitution incentives by examining whether firms with more remote debtholders engage in more risk-shifting than those with more proximate debtholders. We consider two forms of risk-shifting, namely, loan covenant violations and excessive dividend payouts. We also examine stock and bond market reactions around the announcements of covenant violations, stock repurchases, and increases in cash dividends.

4.1 Covenant Violation

We first examine the impact of *Debtholder-shareholder distan*ce on the likelihood of loan covenant violations. Unlike financial covenants in bond indentures, which tend to be *incurrence-based*, those in private loan agreements are typically *maintenance-based*,[38] meaning that the borrower must be in compliance with the covenant on a regular basis, typically every fiscal quarter. This characteristic of maintenance-based covenants makes financial covenants in private loan contracts more restrictive than those in bond indentures. If *Debtholder-shareholder distance* affects shareholders' risk-shifting incentives, we expect that greater *Debtholder-shareholder distance* increases the likelihood of loan covenant violations.

The results are reported in Table IV, Panel A. The sample consists of the 58,825 firm-quarter observations from 1996 to 2008 used in Nini, Smith, and Sufi (2009). The dependent variable is an indicator that takes the value of one if the firm incurs a new covenant violation in the given quarter and zero otherwise. A firm is considered as having a new covenant violation if it violates a covenant in the current quarter but did not violate any loan covenants in the previous three quarters. Columns (1) to (4) are estimated using a probit model and columns (5) and (6) are estimated using a conditional logit model with firm fixed effects.

We find that the coefficients on *Debtholder-shareholder distance* are positive and significant at the 1% level in all specifications. The marginal effect of *Debtholder-shareholder distance* is 0.78% in column (1), suggesting that a one-standard-deviation increase in

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[38] *Incurrence-based* covenants mean that the borrower needs to be in compliance with the covenants only at the time of a specific event, such as when issuing new debt.

Debtholder-shareholder distance increases the probability of covenant violation by 11% relative to the unconditional probability of 6.8% in our sample. Since creditors impose loan covenants to reduce a firm's risk-shifting incentives and thus safeguard their interests, our finding that debtholder-shareholder distance increases the chance of a breach in covenants strongly supports the view that the relative location of debtholders and shareholders affects the conflicts of interest between them.

4.2 Dividend Yield

We next capture a firm's risk-shifting through cash dividend payouts. Excessive cash dividends reduce the assets available to debtholders, increasing debtholders' exposure to potential wealth transfers. In line with this view, Acharya, Le, and Shin (2013) argue that a firm's risk-shifting incentives motivate the payment of excessive dividends that transfer resources from its creditors to its shareholders. To prevent such wealth transfers, creditors often impose restrictions on excessive dividend payouts to shareholders in their loan contracts.

To examine whether the relative location of debtholders and shareholders affects a firm's dividend payouts, we regress the dividend yield (regular cash dividend / ex-dividend stock price) on *Debtholder-shareholder distance* and the control variables used in the previous regressions.[39] Table IV, Panel B presents the results. The sample consists of 81,405 firm-quarter observations from 1992 to 2009. Consistent with our prediction, we find that greater *Debtholder-shareholder distance* is associated with larger cash dividend payouts. This effect is both statistically and economically significant. A one-standard-deviation increase in *Debtholder-shareholder distance* is associated with a 0.029 increase in the firm's dividend yield (column (1)), which accounts for almost 14% of the unconditional sample mean. Thus, *Debtholder-shareholder distance* provides shareholders strong incentives to transfer wealth from creditors to themselves.

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[39] In untabulated tests, we also use the industry-adjusted (at the two-digit SIC level) dividend yield as an alternative measure of a firm's excessive dividend payout and find that the results do not change.

4.3 Market Reactions around Announcements of Covenant Violations and Payouts to Shareholders

We next examine stock and bond market reactions around announcements of covenant violations and cash payouts to shareholders. If firms with greater *Debtholder-shareholder distance* are more likely to engage in risk-shifting activities such as covenant violations and excessive dividend payouts, we expect stock and bond market reactions around these events to be, respectively, positively and negatively related to *Debtholder-shareholder dista*nce.

Table V reports results for stock and bond market reactions around covenant violations. The sample consists of 1,790 and 335 new covenant violations from 1996 to 2008 for the analyses of stock returns and changes in bond yield spreads, respectively. Following Roberts and Sufi (2009), we use only new covenant violations in the sample. Cumulative abnormal stock returns (CARs) in the month in which a firm reports a new covenant violation and thereafter are estimated using the market model and the Fama-French 3-factor model,[40] respectively, and changes in bond yield spreads over the same period are estimated as the difference in yield spreads around the covenant violation period ("raw change in yield spreads") and the size and book-to-market adjusted change in yield spreads, respectively.[41] Panels A1 and A2 report results for CARs estimated using the market model and the Fama-French 3-factor model, respectively, and Panels A3 and A4 report results for the raw change in yield spreads and the size and market-to-book adjusted change in bond yield spreads, respectively. In Panel A2, we find that *CAR [+0] month* (i.e., the announcement-month CAR), *CAR [+1, +3] months*, and *CAR [+1, +6] months* are higher for firms with above-median *Debtholder-shareholder distance* than for those with below-median *Debtholder-shareholder distance*. In contrast, in Panel A4, the bond market reactions as measured by *Change in yield spread [+0] month*, *Change in yield spread [+1, +3] months*, and *Change in yield spread [+1, +6] months* are more negative for firms with above-median *Debtholder-shareholder distance* than those with below-median *Debtholder-shareholder distance*. Results using the market model (Panel A1) and raw change in yield spreads (Panel A3) are similar.

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[40] We use 180 days prior to the announcement of a covenant violation as the estimation period to obtain the factor loadings.

[41] We group sample firms into 3×3 size and book-to-market buckets and calculate the size and book-to-market adjusted change in yield spreads as the difference between the raw change in yield spreads and the average change in yield spreads across other firms in the same bucket.

In Table V, Panel B, we report results from OLS regressions. In columns (1) to (6), we use as the dependent variables *CAR [+0] month*, *CAR [+1, +3] months*, and *CAR [+1, +6] months*, where month [+0] is the announcement month. Columns (1), (3), and (5) report results using CARs estimated by the market model, while columns (2), (4), and (6) report results using CARs estimated by the Fama-French 3-factor model. Similarly, in columns (7) to (12), the dependent variable is the change in bond yield spreads measured over three event windows, where in columns (7), (9), and (11) we use the raw change in bond yield spreads as the dependent variable while in columns (8), (10), and (12) we use the size and book-to-market adjusted change in yield spreads as the dependent variable. In all specifications, we control for industry fixed effects at the two-digit SIC level, year fixed effects, and S&P credit rating fixed effects.

The results from these multivariate tests support those from the univariate tests. In all specifications, *Debtholder-shareholder distance* is significantly positively related to both CARs and changes in bond yield spreads around covenant violation announcements, suggesting that wealth gains (losses) for shareholders (debtholders) whose firms incur a new covenant violation increase as *Debtholder-shareholder distance* increases.

Next, we examine market reactions around announcements of unexpected cash payouts to shareholders. We focus on two corporate events that increase payouts to shareholders unexpectedly: stock repurchases and increases in cash dividends. The sample consists of 3,475 (10,488) repurchase and 9,294 (2,387) dividend increase events for the analyses of stock returns (changes in bond yield spreads) from 1992 to 2008. We obtain data on stock repurchases and the distribution of cash dividends from SDC and CRSP monthly databases, respectively.

Table VI, Panel A reports results from univariate tests. We measure the effect of stock repurchase (cash dividend increase) announcements on shareholder wealth using the CAR from day -1 to day +1 (*CAR (-1, 1)*), where day 0 is the announcement day. Dividend announcements are classified as dividend increase announcements if there is a dividend increase compared to the last dividend payment. To measure the effect of stock repurchase and cash dividend increase announcements on debtholder wealth, we use C*hange in yield spread [+0] month*. Consistent with results in Table V, Panel A, we find that stock market reactions around both stock repurchase announcements and cash dividend increase announcements are higher for firms with above-median *Debtholder-shareholder distance* than for those with below-median *Debtholder-shareholder distance*. In contrast, the bond market reacts more negatively to these events for firms with above-median *Debtholder-shareholder distance* than those with below-median *Debtholder-shareholder distance*.

In Table VI, Panel B, we present results from OLS regressions in which the dependent variables are *CAR (-1, 1)* and *Changes in yield spreads [+0] month*. The main independent variable of interest is *Debtholder-shareholder distance*. Columns (1) to (4) report results for market reactions around share repurchase announcements, and columns (5) to (8) report results for market reactions around cash dividend increase announcements. We find that in all specifications, *Debtholder-shareholder distance* is significantly positively related to both CARs and changes in bond yield spreads. These findings further suggest that *Debtholder-shareholder distance* increases conflicts of interest between shareholders and debtholders.

Overall, the results thus far suggest that greater debtholder-shareholder distance is associated with higher firm risk, more risk-shifting activities, and larger wealth transfers from debtholders to shareholders, suggesting that they exacerbate debtholder-shareholder conflicts.

5. Debtholder-Shareholder Distance and Ex Ante Loan Contract Terms

In this section we examine whether creditors located far away from a firm's shareholders anticipate the firm's potential risk-shifting activities arising from the creditors' location disadvantage and set their loan contract terms accordingly. If remote debtholders foresee that their location provides shareholders strong incentives to engage in risk-shifting activities, they are likely to demand higher loan rates and impose stricter covenants on loans. We examine these conjectures by regressing loan spreads, an indicator for capital expenditure restrictions, and an indicator for collateral requirements on *Debtholder-shareholder distance* and the control variables used previously.

5.1 Loan Spread

Table VII, Panel A present results from OLS regressions in which the dependent variable is a firm's loan spread, measured as the all-in-drawn spread the borrower pays over LIBOR for the drawn portion of the loan facility. The sample comprises 9,447 bank loan deals covered by the LPC's Dealscan database from 1992 to 2008. The regressions control for loan size, loan maturity, loan type fixed effects, and loan purpose fixed effects (Lin et al., 2011, 2012) in addition to the controls used in previous regressions.

We find that *Debtholder-shareholder distance* is significantly positively related to loan spreads across all specifications at the 1% level. The results are also economically relevant: a one-standard-deviation increase in *Debtholder-shareholder distance* is associated with a 7.6 percentage point increase in loan spreads (column (6)), which accounts for approximately 5% of the unconditional mean. Consistent with the previous literature (e.g., Lin et al., 2011, 2012), we also find that firm size, market-to-book, profitability, and tangibility are negatively related to loan spreads, while firm leverage is positively related to loan spreads.

5.2 Capital Expenditure Restrictions and Collateral Requirements

Next, we use non-quantitative measures of loan contract terms to further examine whether remote creditors anticipate a firm's potential risk-shifting activities. We focus on two contract terms, namely, the existence of capital expenditure restrictions and collateral requirements. Nini, Smith, and Sufi (2009) show that of different terms in loan contract, capital expenditure restrictions are the most sensitive to borrower creditworthiness, and Jiménez, Lopez, and Saurina (2006) find that loan collateral requirements are highly correlated with borrower risk. Our samples for the analyses of capital expenditure restrictions and collateral requirements come from Nini, Smith, and Sufi (2009) (1,826 bank loan observations from 1996 to 2005) and the DealScan database (9,447 bank loan observations from 1992 to 2008), respectively.

The results are reported in Table VII, Panel B. In columns (1) to (3), the dependent variable is an indicator that takes the value of one if the loan contract contains covenants on capital expenditure restrictions and zero otherwise. In columns (4) to (6), the dependent variable is an indicator that that takes the value of one if the bank loan is secured by collateral and zero otherwise. We employ probit regressions in all specifications.

We find that greater *Debtholder-shareholder distance* increases the likelihood of including capital expenditure restrictions in bank loan contracts. In column (1), a one-standard-deviation increase in *Debtholder-shareholder distance* increases the likelihood of employing capital expenditure restrictions by 3.84 percentage points. Given that the unconditional probability of employing capital expenditure restrictions is 29% for the full sample, this result is economically large and significant. We find similar results for collateral requirements.

Overall, the results above suggest that debtholders are aware of the increased conflicts of interest they may face when located far away from a firm's major shareholders, and as a result they ask for higher loan spreads and impose stricter covenant terms to protect their investment in the firm. However, greater distance reduces the ability of debtholders to contract upon and effectively monitor the risk-shifting incentives of shareholders, resulting in increases in firm risk and risk-shifting activities.

6. Endogeneity Concerns

One potential concern with our analyses above is that debtholder-shareholder distance may be endogenously determined by unobserved characteristics. Moreover, firms with higher risk may potentially self-select into an ownership structure that invites large remote shareholders.

To mitigate these concerns, we employ four approaches. First, we perform subsample analyses. We split the sample by the extent of influence of major shareholders and claims held by major bank lenders, by the extent of a firm's information frictions, and by major shareholders' preference for idiosyncratic risk in their portfolio holdings. Second, we examine whether the results differ depending on institution type (i.e., independent and grey institutions). Third, we conduct instrumental variables analysis in which we use the debt-equity supply imbalance as an instrument for debtholder-shareholder distance. Finally, we use a sudden reduction in travel time between debtholders and shareholders due to the introduction of new airline routes (especially direct flights) as an exogenous shock to debtholder-shareholder distance. We discuss each of these sets of tests in turn below.

6.1 Subsample Analyses

If greater distance between debtholders and shareholders increases the information asymmetry between them and provides shareholders stronger incentives to engage in risk-shifting activities, we expect the positive effects of *Debtholder-shareholder distance* on firm risk, risk-shifting activities, and loan contract terms to be more pronounced among 1) firms with more concentrated equity ownership by the top five institutional investors, since the influence of the top five institutional shareholders on firm policies should be stronger in these firms, 2) firms with more concentrated borrowing from the top five bank lenders, since risk-shifting activities arising from information asymmetry vis-à-vis shareholders are particularly relevant to these debtholders that have significant financial claims, 3) firms with higher information frictions, since debtholders have less ability to observe shareholder characteristics and behaviors for these firms, and 4) firms with large shareholders that prefer higher idiosyncratic risk in their portfolio holdings, since these shareholders are more likely to influence corporate managers to engage in risk-shifting activities.

Table VIII presents the results. We split the sample according to the sample median ownership of the top five institutional investors (columns (1) and (2)), the sample median ratio of borrowing from the top five bank lenders to total debt (columns (3) and (4)), whether S&P credit ratings are below or above BBB (columns (5) and (6)), the sample median financial constraint (where, following Hadlock and Pierce (2013), a firm's financial constraint is measured as (−0.737 x book size) + (0.043 x book size x book size) − (0.040 x age); columns (7) and (8)), and the sample median average size-adjusted portfolio R^2 of the top five institutional shareholders (columns (9) and (10)).[42] We then reestimate the previous regressions separately for each of these subsamples. For brevity, we only report the coefficients on *Debtholder-shareholder distance* and their corresponding *t*-statistics.

As expected, we find that the positive effects of *Debtholder-shareholder distance* on firm risk, risk-shifting activities, and loan contract terms are more pronounced among firms with concentrated ownership by the top five institutional investors, firms with concentrated borrowing from the top five bank lenders, firms with a lower credit rating, more financially constrained firms, and firms with large shareholders that hold less diversified portfolios. Thus, the risk-shifting incentives of remote shareholders are stronger when they have concentrated ownership, when their firms borrow more from the top five banks, when their firms face greater information asymmetry, or when they have a stronger preference for idiosyncratic risk.

6.2 Independent Institutions versus Grey Institutions

As a second test, we examine whether the results are more pronounced for institutions with strong incentives to actively influence management than for institutions without such incentives. Since debtholders' ability to observe shareholder risk preferences is particularly important when large institutional shareholders frequently exert influence on management through behind-thescene intervention and coordination, we expect the results to be stronger when the former institutions are located further away from debtholders than when the latter institutions are. To test this prediction, following Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005), we divide the top 5 large institutions into independent (investment companies, independent investment advisors, and public pension funds) and grey (bank trusts, insurance companies, corporate pension funds, and other institutions) institutions. We then reconstruct our debtholder-shareholder distance measures separately for these two types of institutions and reestimate the previous regressions using these new distance measures.

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[42] In each quarter, we calculate the buy-and-hold daily returns of institutional investors using their previous quarter-end portfolio holdings. The portfolio R^2 is then measured as the goodness-of-fit of investor returns relative to the Fama-French 4-factor benchmark returns. Since the portfolio R^2 is correlated with investor size, we regress the portfolio R^2 on investor size (log (total holdings)), take the residual as the size-adjusted portfolio R^2, and use it as a measure of institutional investors' preference for idiosyncratic risk. Our results do not change if we use the raw portfolio R^2 instead of the size-adjusted portfolio R^2.

The results are reported in Table IX. To compare the economic significance between the two distance measures, we standardize both of them to have a mean of 0 and a standard deviation of 1 (by subtracting the mean distance from a raw distance and then dividing the difference by the standard deviation). The results strongly support our predictions: the positive and significant effects of the distance between debtholders and shareholders on firm risk, risk-shifting activities, and loan contract terms are evident only when the distance between debtholders and independent large shareholders is used in the regressions. *Chi-square* tests for the difference in coefficient estimates between the two distance measures are all significant. These findings suggest that debtholders' information asymmetry vis-à-vis shareholders matters more to debtholders when shareholders are more influential and have stronger incentives to influence management.

6.3 Instrumental Variables Regression

Next, we use 2SLS regressions in which we employ the relative debt and equity supply in a local area as an instrument for debtholder-shareholder distance. For a given firm, we identify its local region by a 300-mile radius circle centered at the firm's headquarters. We calculate local debt supply as the total amount of commercial loans held by local banks (obtained from the Bank

Regulatory database) and local equity supply as the total amount of institutional holdings held by local institutional investors. The local debt-equity supply imbalance is defined as the absolute value of the difference between local debt supply and local equity supply divided by the sum of local debt supply and local equity supply.

Table X presents estimates of the 2SLS regressions. In columns (1) and (2), we report results of the first-stage regressions in which we regress *Debtholder-shareholder distance* on local debt-equity supply imbalance and the other control variables. In columns (3) to (8), we report results from the second-stage regressions in which the dependent variables are idiosyncratic volatility, expected default frequency, bond yield spreads, an indicator for a covenant violation, dividend yields, and bank loan spreads. In all specifications, we control for year-quarter fixed effects, state fixed effects, S&P credit rating fixed effects, and industry fixed effects at the two-digit SIC level. We find that local debt-equity supply imbalance is significantly positively related to *Debtholder-shareholder distance* in the first-stage regressions. The *t*-statistic for the test of the instrument's relevance (i.e., joint test of excluded instruments) is above 4, thus rejecting the null hypothesis of weak instruments. In the second-stage regressions, the coefficient on the instrumented *Debtholder-shareholder distance* is positive and significant in all specifications. These results suggest that our main findings are robust to controlling for omitted variables or reverse causality bias.

6.4 Debtholder-Shareholder Travel Time and Difference-in-Differences Estimation

To further address endogeneity concerns, we use the introduction of new airline routes that reduce the travel time between debtholders and shareholders as an exogenous shock to geographic distance. As a first test, we replace *Debtholder-shareholder distance* used in the previous regressions with the logarithm of the shortest average travel time (in minutes) between the firm’s top five bank lenders and top five institutional shareholders and reestimate all the regressions. Following Giroud (2013), we include the driving time from the location of shareholders/debtholders to the closest airport and the flight time from the departing airport to the arriving airport in calculating travel time. More specifically, the flight time includes: 1) the driving time to the departing airport, 2) the flight duration plus any layover time in the case of indirect flights, and 3) the driving time from the arriving airport. We consider all possible combinations of departing airports and arriving airports and identify the one with the shortest flight time between pairs of institutional shareholders and bank lenders. We then calculate the weighted average driving time between debtholders and shareholders using institutional shareholders’ ownership as the weight (*Debtholder-shareholder travel time*). If the shortest flight time is more than the driving time, we use the driving time as the travel time. Otherwise, we use the shortest flight time as the travel time.

Table XI, Panel A presents results of OLS and probit regressions in which the dependent variables are the same as those used in Table IX and the key independent variable of interest is the travel time between debtholders and shareholders. For brevity, we omit results for the intercept and the control variables and only report results for *Debtholder-shareholder travel time*. We find that the results are qualitatively similar as those reported previously: debtholder-shareholder travel time is positively related to all dependent variables considered, significant at the 5% level or better.

Next, we perform difference-in-differences estimation using the introduction of direct flights or additional flights that reduce the travel time between debtholders and shareholders as an exogenous shock to proximity. For each firm-quarter, we consider a shock as having occurred if the flight time between debtholders and shareholders is reduced by more than 20% compared to the previous quarter.[43]

Table XI, Panel B presents the results. We find that the coefficient on the shock indicator is significantly negative in all regressions, suggesting that compared with firms that do not experience an exogenous shock that reduces the travel time between major debtholders and shareholders, those experiencing such a shock experience a significant drop in risk and risk-shifting incentives. These results further suggest that our results in the previous sections are unlikely to be driven by endogeneity problems.

6.5 Additional Robustness Checks: Alternative Measures of Debtholder-Shareholder Distance

To further check the robustness of our key results, we rerun our analyses using several alternative measures of *Debtholder-shareholder distance*. First, we use only the largest bank lender (top three bank lenders) and the largest institutional shareholder (top three institutional shareholders) in calculating debtholder-shareholder distance. Second, to mitigate the concern that our results may be driven by cross-holdings in debt and equity of different subsidiaries of the same bank holding companies (Jiang, Li, and Shao, 2010), we exclude bank-managed investors from the top five institutional shareholders in computing *Debtholder-shareholder distance*. We obtain information on investor type "Bank" from Brain Bushee's website. Third, to address the concern that the effects of debtholder-shareholder distance on outcome variables may be nonlinear, or relevant more for debtholders and shareholders within driving distance, we replace *Debtholder-shareholder distance* with an indicator that takes the value of one if debtholder-shareholder distance is less than 200 miles and zero otherwise.

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[43] We assume that the effects of the introduction of new airline routes on firms' risk and risk shifting incentives persist at least two quarters after their introduction. In untabulated tests, we also consider that such effects continue until at least one of institutions (banks) affected by the shock sells its stock (stops its lending). The results do not change.

Table XII reports results from the OLS and 2SLS regressions. For brevity, we only report coefficients on the alternatives measures of debtholder-shareholder distance and their corresponding *t*-statistics. We find that these alternative measures of debtholder-shareholder distance are significantly related to firms' risk and risk-sifting variables with expected signs, suggesting that our previous results are robust to using alternative measures of geographic proximity.

7. Summary and Conclusion

In this paper we study how the geographical distance between large debtholders and large shareholders affects a firm's risk and risk-shifting behavior. We hypothesize that greater distance reduces debtholders' ability to observe shareholder risk preferences, increasing their information asymmetry vis-à-vis shareholders and thus exacerbating asset substitution problems.

Consistent with this hypothesis, we find that debtholder-shareholder distance increases firm risk as proxied by idiosyncratic stock volatility, expected default frequency, and bond yield spreads. We also find that firms with more remote debtholders are more likely to violate covenants and pay higher dividends than firms with geographically proximate debtholders. Moreover, stock (bond) market reactions around such risk-shifting events are positively (negatively) related to debtholder-shareholder distance. We further find that remote debtholders require significantly higher loan spreads and impose stricter capital expenditure restrictions and collateral requirements in their loan contracts than geographically proximate debtholders. These results suggest that remote debtholders anticipate increased asset substitution problems arising from their location disadvantage and as a result include ex ante provisions in loan contracts that compensate for the increase in conflicts of interest.

Further subsample analysis shows that the above results are more pronounced among firms with higher top five institutional ownership, firms with a higher ratio of loans from the top five bank lenders to total debt, firms with a lower credit rating, more financially constrained firms, and firms with large shareholders that have a stronger preference for idiosyncratic risk. The results are also stronger when the independent institutions that have strong incentives to actively influence management are located further away from debtholders than when the grey institutions are. We further find that these results are robust to using instrumental variables, to using the introduction of a new airline route as an exogenous shock to geographic distance, as well as to using alternative measures of geographic distance between debtholders and shareholders.

Overall, our results are consistent with the implication of classical agency theory (e.g., Holmstrom, 1979) that moral hazard problems (i.e., debtholder-shareholder conflicts) are particularly severe when principals (i.e., debtholders) have greater information asymmetry vis-à-vis agents' actions (i.e., shareholders' risk-shifting incentives), because in this case agents' actions cannot be fully observed and contracted upon.

Reference

Acharya, Viral V., Hanh Le, and Hyun Song Shin, 2013, Bank capital and dividend externalities, Working Paper, New York University.

Agarwal, Sumit, and Robert Hauswald, 2010, Distance and private information in lending, *Review of Financial Studies* 23, 2757-2788.

Almazan, A., Hartzell, J., Starks, L., 2005. Active institutional shareholders and cost of monitoring: evidence from executive compensation. Financial Management 34, 5–34.

Andrade, Gregor, and Steven N. Kaplan, 1998, How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed, *Journal of Finance* 53, 1443-1493.

Andreoni, James, and B. Douglas Bernheim, 2009, Social image and the 50–50 norm: A theoretical and experimental analysis of audience effects, *Econometrica* 77, 1607-1636.

Ayers, Benjamin C., Santhosh, Ramalingegowda, and P. Eric Yeung, 2011, Hometown advantage: The effects of monitoring institution location on financial reporting discretion, *Journal of Accounting and Economics* 52, 41-61.

Baik, Bok, Jun-Koo Kang, and Jin-Mo Kim, 2010, Local institutional investors, information asymmetries, and equity returns, *Journal of Financial Economics* 97, 81-106.

Barnea, Amir, Robert A. Haugen, and Lemma W. Senbet, 1985, Agency problems and financial contracting (Englewood Cliffs, N.J., Prentice-Hall).

Beatty, Anne, Joseph Webber, and Jeff Yu, 2008, Conservatism and debt, *Journal of Accounting and Economics* 45, 157-174.

Becker, Bo, and Per Strömberg, 2012, Fiduciary duties and equity-debtholder conflicts, *Review of Financial Studies* 25, 1931-1969.

Bénabou, Roland, and Jean Tirole, 2006, Incentives and prosocial behavior, *American Economic Review* 96, 1652-1678.

Bharath, Sreedhar T., and Tyler Shumway, 2008, Forecasting default with the Merton distance to default model, *Review of Financial Studies* 21, 1339-1369.

Black, Fischer, and Myron Scholes, 1973, The pricing of options and corporate liabilities, *Journal of Political Economy* 81, 637–654.

Brickley, J. A., Lease, R. C., Smith, C. W., 1988, Ownership Structure and Voting on Antitakeover Amendments, Journal of Financial Economics 20, 267-291.

Butler, Alexander W., 2008, Distance still matters: Evidence from municipal bond underwriting, *Review of Financial Studies* 21, 763-784.

Campbell, John Y., and Glen B. Taksler, 2003, Equity volatility and corporate bond yields, *Journal of Finance* 58, 2321-2350.

Chhaochharia, Vidhi, Alok Kumar, and Alexandra Niessen-Ruenzi, 2012, Local investors and corporate governance, *Journal of Accounting and Economics* 54, 42-67.

Coval, Joshua D., and Tobias J. Moskowitz, 1999, Home bias at home: Local equity preference in domestic portfolios, *Journal of Finance* 54, 2045-2073.

Coval, Joshua D., and Tobias J. Moskowitz, 2001, The geography of investment: Informed trading and asset prices, *Journal of Political Economy* 109, 811-841.

Diamond, Douglas W., 1989, Reputation acquisition in debt markets, *Journal of Political Economy* 97, 828–862.

Diamond, Douglas W., 1991, Monitoring and reputation: The choice between bank loans and directly placed debt, *Journal of Political Economy* 99, 689–721.

Dichev, Ilia D., and Douglas J. Skinner, 2002, Large-sample evidence on the debt covenant hypothesis, *Journal of Accounting Research* 40, 1091-1123.

Doidge Craig, Alexander Dyck, Hamed Mahmudi, and Aazam Virani, 2015, Can institutional investors improve corporate governance through collective action? Working paper, Rotman School of Management.

Eisdorfer, Assaf, 2008, Empirical evidence of risk shifting in financially distressed firms, *Journal of Finance* 63, 609–637.

Galai, Dan, and Ronald W. Masulis, 1976, The option pricing model and the risk factor of stock, *Journal of Financial Economics* 3, 53-81.

Garlappi, Lorenzo, Tao Shu, and Hong Yan, 2008, Default risk, shareholder advantage, and stock returns, *Review of Financial Studies* 21, 2743-2778.

Gigler, Frank, Chandra Kanodia, Haresh Sapra, and Raghu Venugopalan, 2009, Accounting conservatism and the efficiency of debt contracts, *Journal of Accounting Research* 47, 767-797.

Gilje, Erik, 2014, Do firms engage in risk shifting activity? Empirical evidence, Working paper, University of Pennsylvania.

Giroud, Xavier, 2013, Proximity and investment: Evidence from plant-level data, *Quarterly Journal of Economics* 128, 861-915.

Harris, Milton, and Artur Raviv, 1979, Optimal incentive contracts with imperfect information, *Journal of Economic Theory* 20, 231-259.

Harris, Milton, and Artur Raviv, 1991, The theory of capital structure, *Journal of Finance* 44, 297-355.

Hernandez, Pablo, Povel, Paul, and Sertsios, Giorgo, 2014, Does risk shifting really happen? Results from an experiment, Working paper, New York University.

Holmstrom, Bengt, 1979, Moral hazard and observability, *Bell Journal of Economics* 10, 74-91.

Holmstrom, Bengt, 1999, Managerial incentive problems: A dynamic perspective, *Review of Economic Studies* 66, 169-182.

Huang, Jennifer, Clemens Sialm, and Hanjiang Zhang, 2011, Risk shifting and mutual fund performance, *Review of Financial Studies* 24, 2575-2616.

Hubbard, R. Glenn, Kenneth N. Kuttner, and Darius N. Palia, 2002, Are there bank effects in borrowers' costs of funds? Evidence from a matched sample of borrowers and banks, The University of Chicago Press.

Jensen, Michael C., and Meckling, William H., 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305-360.

Jiang, Wei, Kai Li, and Pei Shao, 2010, When shareholders are creditors: Effects of the simultaneous holding of equity and debt by non-commercial banking institutions, *Review of Financial Studies* 23, 3595-3637.

Jiménez, Gabriel, Vicente Salas, and Jesús Saurina, 2006, Determinants of collateral, *Journal of Financial Economics* 81, 255-281.

Leland, Hayne E., 1994, Corporate debt value, bond covenants, and optimal capital structure, *Journal of Finance* 49, 1213-1252.

Lin, Chen, Yue Ma, Paul Malatesta, and Yuhai Xuan, 2011, Ownership structure and the cost of corporate borrowing, *Journal of Financial Economics* 100, 1-23.

Lin, Chen, Yue Ma, Paul Malatesta, and Yuhai Xuan, 2012, Corporate ownership structure and bank loan syndicate structure, *Journal of Financial Economics* 104, 1-22.

McCahery, J. A., Z. Sautner, and L. T. Starks, 2015, Behind the Scenes: The Corporate Governance Preferences of Institutional Investors, *Journal of Finance*, forthcoming.

Merton, Robert C., 1973. Theory of rational option pricing, *Bell Journal of Economics and Management Science* 4, 141–183.

Merton, Robert C., 1974, On the pricing of corporate debt: The risk structure of interest rates, *Journal of Finance* 29, 449-469.

Myers, Stewart C., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.

Nini, Greg, David C. Smith, and Amir Sufi, 2009, Creditor control rights and firm investment policy, *Journal of Financial Economics* 92, 400-420.

Parrino, Robert, and Michael S. Weisbach, 1999, Measuring investment distortions arising from stockholder–bondholder conflicts, *Journal of Financial Economics* 53, 3-42.

Rajan, Uday, Amit Seru, and Vikrant Vig, 2015, The failure of models that predict failure: Distance, incentives, and defaults, *Journal of Financial Economics* 115, 237-260.

Rauh, Joshua D., 2009, Risk shifting versus risk management: Investment policy in corporate pension plans, *Review of Financial Studies* 22, 2687-2733.

Roberts, Michael R., and Amir Sufi, 2009, Control rights and capital structure: An empirical investigation, *Journal of Finance* 64, 1657-1695.

Smith, Clifford W., 1993, A perspective on accounting-based debt covenant violations, *The Accounting Review* 68, 289-303.

Smith Jr, Clifford W., and Warner, Jerold B., 1979, On financial contracting: An analysis of bond covenants, *Journal of Financial Economics* 7, 117-161.

Appendix: Variable Definitions

The Appendix provides detailed descriptions of all the variables used in the tables.

Variable	Definition
Main Dependent Variables	
Risk measures:	
Idiosyncratic volatility	Annualized standard deviation of quarterly idiosyncratic stock returns, calculated using the return residuals from the Fama-French 3-factor model.
Expected default frequency	Measure of default risk based on the Moody's/KMV distance-to-default model. First, we subtract the face value of a firm's debt from its market value and divide the difference by its volatility. The resulting z-score, which is referred to as the distance to default, is then substituted into a cumulative density function to calculate the probability that the value of the firm will be less than the face value of debt. See Bharath and Shumway (2008) for further details.
Bond yield spread (option-adjusted)	Number of percentage points that the fair value of the Treasury spot curve is shifted to match the present value of the discounted cash flows to the bond's price. For securities with embedded options, such as callability, a log normal short interest rate model is used to evaluate the present value of the securities' potential cash flows. In this case, the option-adjusted spread is equal to the number of percentage points that the short interest rate tree must be shifted to match the discounted cash flows to the bond's price.
Corr (stock return, Δyield spread)	Correlation between weekly equity returns and weekly changes in average bond yield spreads in each firm-year. We require the firm to have stock and bond prices available for at least 120 days in a year.
Risk-shifting activity measures:	
Covenant violation	Indicator equal to one if a firm reports a loan covenant violation in an SEC 10-K or 10-Q filing during a quarter and zero otherwise (Nini, Smith, and Sufi, 2009). We obtain covenant violation data from Amir Sufi's website, http://faculty.chicagobooth.edu/amir.sufi/data.html.
Dividend yield	Regular cash dividend scaled by ex-dividend stock price.
Ex-ante loan contract terms:	
Loan spread	All-in-drawn spread defined as the spread the borrower pays over LIBOR for the drawn portion of the loan facility.
Capital expenditure restrictions	Indicator equal to one if the bank loan contract imposes capital expenditure constraints in the credit agreement and zero otherwise.
Collateral requirements	Indicator equal to one if the bank loan is secured by collateral and zero otherwise. If information on the secured loan is missing, we set the indicator equal to zero.
Main Independent Variables	
Debtholder-shareholder distance	Logarithm of the geographical distance between the firm's top five bank lenders and top five institutional investors. We first calculate the loan amount-weighted latitude (lat_d) and longitude ($long_d$) in radians across a firm's five banks and the ownership-weighted latitude (lat_s) and longitude ($long_s$) in radians across its top five institutional investors. We then calculate debtholder-shareholder distance (in miles) as: $3{,}963 \times \text{acos}(\sin(lat_d) \times \sin(lat_s) + \cos(lat_d) \times \cos(lat_s) \times \cos(long_d - long_s))$.
Debtholder-shareholder travel time	Logarithm of the shortest average travel time (in minutes) between the firm's top five bank lenders and top five institutional investors. First, we calculate the shortest flight time between pairs of institutional investors and bank lenders. Flight time includes: (1) the driving time to the departing airport, (2) the flight duration plus any layover time for indirect flights, and (3) the driving time from the arriving airport. We consider all possible combinations of departing airports and arriving airports and identify the one with the shortest flight time between pairs of institutional shareholders and bank lenders. Second, we calculate the weighted average driving time between debtholders and shareholders using institutional shareholders' ownership as the weight. If the shortest flight time is more than the driving time, we use the driving time as the travel time. Otherwise, we use the shortest flight time as the travel time.

Control Variables	
Bond issues outstanding	Logarithm of the amount of bond issues outstanding.
Bond maturity	Logarithm of the time to maturity of a bond.
Firm-debtholder distance	Logarithm of the geographical distance between the firm's headquarters and its top five bank lenders. We first calculate the loan amount-weighted latitude (lat_d) and longitude ($long_d$) in radians across a firm's top five banks and the latitude (lat_f) and longitude ($long_f$) in radians of the firm's headquarters. We then calculate firm-debtholder distance (in miles) as: $3{,}963 \times \operatorname{acos}(\sin(lat_f) \times \sin(lat_d) + \cos(lat_f) \times \cos(lat_d) \times \cos(long_f - long_d))$.
Firm-shareholder distance	Logarithm of the geographical distance between the firm's headquarters and its top five institutional investors. We first calculate the ownership-weighted latitude (lat_s) and longitude ($long_s$) in radians across its top five institutional investors and the latitude (lat_f) and longitude ($long_f$) in radians of the firm's headquarters. We then calculate firm-shareholder distance as: $3{,}963 \times \operatorname{acos}(\sin(lat_f) \times \sin(lat_s) + \cos(lat_f) \times \cos(lat_s) \times \cos(long_f - long_s))$.
Firm size	Logarithm of total sales.
Free cash flow	(Earnings before interest and expenses − taxes + depreciation − changes in net operating working capital and capital expenditures) scaled by book assets.
Industry fixed effects	Indicators for two-digit SIC codes.
Institutional ownership	Number of shares held by institutional investors divided by total number of shares outstanding.
Leverage	Total debt (long-term debt plus short-term debt) divided by book assets.
Loan maturity	Logarithm of the maturity of a bank loan.
Loan maturity	Logarithm of the maturity of a bank loan.
Loan purpose fixed effects	Indicators for bank loan purpose (working capital, debt repayment, acquisitions, and others).
Loan type fixed effects	Indicators for bank loan type (term loan, revolving line of credit, 364-day facility, and others).
Market to book	(Book assets − book value of equity + market value of equity) scaled by book assets.
Profitability	Operating income before depreciation divided by book assets.
Shock to flight time	Indicator for the reduction in flight time. For each firm-quarter, we consider a shock as having occurred if the flight time between debtholders and shareholders is reduced by more than 20% compared to the previous quarter. We require that the new airline route persist for at least two quarters after its introduction.
Size and age index	Following Hadlock and Pierce (2013), size and age index is calculated as: $(-0.737 \text{ x book size}) + (0.043 \text{ x book size x book size}) - (0.040 \text{ x age})$.
S&P credit rating fixed effects	Indicators for nine credit rating categories corresponding to long-term S&P credit ratings from AAA to C plus non-rated.
Tangibility	Net property, plant, and equipment divided by total assets.

Table I
Summary Statistics and Univariate Tests

This table presents summary statistics for the main variables used in regression analyses (Panel A) and results from univariate tests on the relation between debtholder-shareholder distance and the key dependent variables of interest including idiosyncratic volatility, expected default frequency, bond yield spreads, an indicator for covenant violation, dividend yields, loan spreads, an indicator for loan collateral requirements, and an indicator for capital expenditure restrictions (Panel B). Data on the quarterly stock holdings of institutional investors come from Thomson Reuters CDA/Spectrum (13F) for 1992 to 2009. Historical locations (zip code) of firms and institutional investors come from Compact Disclosure and SEC filings, respectively, and their latitude and longitude data come from the Gazetteer Files of the 2000 Census. Institutional investors with location data are name-matched with institutional investors covered in the Thomson Reuters CDA/Spectrum (13F) database. We obtain information on firms' covenant violations and capital expenditure restrictions from Nini, Smith, and Sufi (2011) and Nini, Smith, and Sufi (2009), respectively. Daily and monthly stock returns and trading volume data come from CRSP, while annual financial data come from Compustat. Data on bank loans and bond yield spreads are obtained from LPC's Dealscan database and the Bank of America-Merrill Lynch Corporate and High Yield Master Index Compositions database, respectively. We exclude firms in the financial services industry (primary SIC codes 6000-6999) from the sample. Detailed descriptions of the variables are provided in the Appendix. In Panel B we separate the sample according to the sample median debtholder-shareholder distance and perform both *t*-tests and Wilcoxon-*z* tests to compare differences in subsample means and medians, respectively. Numbers in parentheses are median values. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Summary Statistics

Variables	Frequency	Source	N	Mean	Median	Std. Dev.
Main dependent variables:						
Idiosyncratic volatility	Quarter	CRSP	75,656	0.444	0.374	0.258
Expected default frequency	Quarter	CRSP	75,194	0.051	0.000	0.159
Bond yield spread (%)	Year	BofA-Merrill Lynch	14,663	2.725	1.746	2.910
Corr (stock return, ∆yield spread)	Year	BofA-Merrill Lynch	3,514	-0.074	-0.068	0.164
Covenant violation	Quarter	Nini et al. (2009)	58,825	0.068	0.000	0.252
Dividend yield (%)	Quarter	CRSP	81,405	0.208	0.000	0.369
Loan spread (%)	Deal	LPC Dealscan	9,447	1.509	1.250	1.060
Capital expenditure restrictions	Deal	Nini et al. (2009)	1,826	0.290	0.000	0.454
Collateral requirements	Deal	LPC Dealscan	9,447	0.380	0.000	0.494
Main independent variables:						
Debtholder-shareholder distance	Quarter	13F, Dealscan	81,405	6.062	6.140	0.915
Debtholder-shareholder travel time	Quarter	T-100 Domestic Segment	81,405	5.567	5.642	0.410
Control variables:						
Bond issues outstanding	Quarter	BofA-Merrill Lynch	10,488	1.910	1.903	0.092
Bond maturity	Quarter	BofA-Merrill Lynch	10,488	2.305	2.201	0.767
Firm-debtholder distance	Quarter	LPC Dealscan	81,405	5.733	5.941	1.438
Firm-shareholder distance	Quarter	CDA/Spectrum 13F	81,405	6.462	6.487	0.856
Free cash flow	Year	Compustat	81,405	-0.082	-0.058	0.172
Firm size	Year	Compustat	81,405	6.467	6.483	1.791
Institutional ownership	Quarter	CDA/Spectrum 13F	81,405	0.531	0.557	0.271
Leverage	Year	Compustat	81,405	0.290	0.277	0.194
Loan size	Quarter	LPC Dealscan	9,447	4.841	5.017	1.562
Loan maturity	Quarter	LPC Dealscan	9,447	3.603	3.807	0.681
Market to book	Year	Compustat	81,405	1.415	1.080	1.261
Profitability	Year	Compustat	81,405	0.131	0.129	0.108
Size and age index	Year	Compustat	81,405	-3.821	-3.679	0.489
Tangibility	Year	Compustat	81,405	0.336	0.278	0.237

Panel B: Univariate Tests

	Sample Split by Debtholder-Shareholder Distance					
	Below-Median Sample (A)	Above-Median Sample (B)	Difference in Mean (B-A)	Difference in Median (B-A)	*t*-test	Wilcoxon-*z* test
Idiosyncratic volatility	0.425 (0.354)	0.480 (0.400)	0.054	0.046	26.73***	24.47***
Expected default frequency	0.051 (0.000)	0.064 (0.000)	0.013	0.000	11.71***	20.08***
Bond yield spread (%)	2.656 (1.720)	2.824 (1.755)	0.168	0.039	3.36***	1.44
Covenant violation	0.056 (0.000)	0.080 (0.000)	0.024	0.000	11.66***	11.64***
Dividend yield (%)	0.191 (0.000)	0.232 (0.000)	0.044	0.000	15.69***	13.81***
Loan spread (%)	1.381 (1.150)	1.635 (1.500)	0.254	0.350	11.87***	10.54***
Collateral requirements	0.370 (0.000)	0.408 (0.000)	0.038	0.000	4.12***	4.11***
Capital restrictions	0.261 (0.000)	0.316 (0.000)	0.055	0.000	2.87***	2.86***

Table II
Debtholder-Shareholder Distance and Firm Risk

This table presents estimates of OLS regressions in which the dependent variable is (ex-post) firm risk and the key independent variable of interest is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). We consider three measures of firm risk that are relevant to debtholders: idiosyncratic volatility (Panel A), expected default frequency (Panel B), and bond yield spreads (Panel C). The samples consist of 75,656 firm-quarter observations from 1992 to 2009 (Panel A), 75,194 firm-quarter observations from 1992 to 2009 (Panel B), and 14,663 firm-quarter observations from 1997 to 2009 (Panel C). Column (1) is our baseline specification. Column (2) controls for the physical distance between firms and debtholders and the physical distance between firms and shareholders. Columns (3) to (6) add S&P credit rating fixed effects. Column (4) further controls for state fixed effects. In columns (1) to (4) we control for industry fixed effects at the two-digit SIC level, and in columns (5) and (6) we include firm fixed effects. In all specifications, we control for year-quarter fixed effects. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effects of Debtholder-Shareholder Distance on Idiosyncratic Volatility

	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.016***	0.012***	0.012***	0.012***	0.007***	0.006***
	(7.45)	(5.25)	(5.65)	(5.73)	(4.25)	(3.46)
Controls:						
Firm-debtholder distance		0.001	0.000	-0.001		-0.002
		(0.54)	(0.16)	(-0.62)		(-1.02)
Firm-shareholder distance		0.009***	0.009***	0.005**		0.002
		(3.75)	(3.70)	(2.08)		(1.26)
Institutional ownership	-0.145***	-0.146***	-0.150***	-0.150***	-0.044***	-0.044***
	(-13.50)	(-13.61)	(-13.81)	(-13.64)	(-3.87)	(-3.87)
Tangibility	-0.089***	-0.089***	-0.079***	-0.079***	0.012	0.013
	(-5.97)	(-5.99)	(-5.39)	(-5.37)	(0.51)	(0.55)
Market to book	-0.002	-0.003	-0.001	-0.001	0.002	0.002
	(-1.32)	(-1.47)	(-0.57)	(-0.84)	(1.11)	(1.12)
Dividend yield	-0.518***	-0.508***	-0.468***	-0.451***	0.004	0.003
	(-4.47)	(-4.44)	(-4.56)	(-4.55)	(0.10)	(0.09)
Leverage	0.082***	0.083***	0.050***	0.055***	0.088***	0.088***
	(6.17)	(6.23)	(3.57)	(3.93)	(6.35)	(6.34)
Free cash flow	-0.210***	-0.209***	-0.198***	-0.195***	-0.084***	-0.084***
	(-9.33)	(-9.38)	(-9.12)	(-9.02)	(-5.18)	(-5.18)
Firm size	-0.050***	-0.051***	-0.043***	-0.043***	-0.008**	-0.008**
	(-31.19)	(-31.12)	(-20.91)	(-20.44)	(-2.11)	(-2.07)
Profitability	-0.306***	-0.304***	-0.307***	-0.303***	-0.247***	-0.247***
	(-10.98)	(-10.96)	(-11.35)	(-11.19)	(-9.14)	(-9.16)
Industry fixed effects	Yes	Yes	Yes	Yes	No	No
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Firm fixed effects	No	No	No	No	Yes	Yes
Observations	75,656	75,656	75,656	75,656	75,656	75,656
Adjusted R^2	0.421	0.422	0.429	0.432	0.638	0.658

Panel B: Effects of Debtholder-Shareholder Distance on Expected Default Frequency

	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.392***	0.379***	0.380***	0.375***	0.255**	0.273**
	(3.62)	(3.33)	(3.36)	(3.33)	(2.35)	(2.41)
Controls:						
Firm-debtholder distance		0.084	0.067	0.105		-0.139
		(1.10)	(0.88)	(1.28)		(-1.26)
Firm-shareholder distance		0.025	0.029	0.117		-0.074
		(0.21)	(0.25)	(0.88)		(-0.58)
Institutional ownership	-9.488***	-11.273***	-9.536***	-9.335***	0.930	0.918
	(-6.36)	(-7.51)	(-6.40)	(-6.23)	(0.50)	(0.49)
Tangibility	-3.668***	-4.023***	-3.673***	-3.585***	1.985	2.012
	(-5.31)	(-5.76)	(-5.32)	(-5.17)	(1.29)	(1.30)
Market to book	-1.161***	-1.212***	-1.163***	-1.155***	-0.616***	-0.617***
	(-8.39)	(-8.65)	(-8.43)	(-8.47)	(-5.91)	(-5.92)
Dividend yield	0.420	-0.679	0.531	1.121	7.780	7.764
	(0.08)	(-0.12)	(0.10)	(0.21)	(1.49)	(1.48)
Leverage	15.324***	16.006***	15.314***	15.268***	11.358***	11.377***
	(18.58)	(21.13)	(18.57)	(18.72)	(10.96)	(10.98)
Free cash flow	-11.230***	-11.727***	-11.225***	-11.266***	-9.747***	-9.752***
	(-8.22)	(-8.47)	(-8.22)	(-8.25)	(-7.08)	(-7.08)
Firm size	-0.526***	-0.811***	-0.539***	-0.571***	1.600***	1.612***
	(-5.54)	(-10.78)	(-5.63)	(-5.87)	(6.82)	(6.86)
Profitability	-12.900***	-12.664***	-12.887***	-12.942***	-19.891***	-19.920***
	(-8.58)	(-8.32)	(-8.57)	(-8.62)	(-10.13)	(-10.15)
Industry fixed effects	Yes	Yes	Yes	Yes	No	No
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Firm fixed effects	No	No	No	No	Yes	Yes
Observations	75,194	75,194	75,194	75,194	75,194	75,194
Adjusted R^2	0.202	0.196	0.202	0.206	0.418	0.420

Panel C: Effects of Debtholder-Shareholder Distance on Bond Yield Spreads

	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.163***	0.175***	0.162***	0.163***	0.156***	0.163***
	(2.76)	(2.86)	(3.03)	(3.10)	(3.66)	(3.89)
Controls:						
Firm-debtholder distance		0.092*	0.100**	0.144**		0.006
		(1.68)	(2.14)	(2.55)		(0.10)
Firm-shareholder distance		-0.038	-0.051	-0.048		-0.026
		(-0.68)	(-1.09)	(-1.06)		(-0.56)
Institutional ownership	0.132	0.113	0.345	0.410	0.050	0.055
	(0.40)	(0.34)	(1.24)	(1.61)	(0.10)	(0.11)
Tangibility	0.111	0.071	0.066	0.036	1.756*	1.751*
	(0.24)	(0.16)	(0.18)	(0.10)	(1.77)	(1.77)
Market to book	-0.179**	-0.185**	-0.091	-0.091	-0.111*	-0.111*
	(-2.05)	(-2.14)	(-1.55)	(-1.54)	(-1.91)	(-1.90)
Dividend yield	-21.157***	-20.707***	8.529*	8.163*	23.379***	23.388***
	(-3.98)	(-3.96)	(1.92)	(1.81)	(4.26)	(4.26)
Leverage	3.306***	3.308***	1.341***	1.514***	1.239*	1.241*
	(5.97)	(5.96)	(2.92)	(3.33)	(1.86)	(1.86)
Free cash flow	-8.301***	-8.319***	-5.796***	-5.692***	-4.754***	-4.755***
	(-5.79)	(-5.82)	(-5.00)	(-5.01)	(-4.98)	(-4.98)
Firm size	-0.304***	-0.311***	-0.079	-0.078	0.462*	0.460*
	(-4.78)	(-4.89)	(-1.41)	(-1.39)	(1.91)	(1.90)
Profitability	-9.416***	-9.350***	-5.674***	-5.682***	-6.465***	-6.471***
	(-7.55)	(-7.50)	(-5.95)	(-5.88)	(-4.98)	(-4.98)
Bond issues outstanding	-0.353***	-0.349***	-0.255***	-0.256***	-0.442***	-0.442***
	(-3.32)	(-3.29)	(-2.93)	(-2.96)	(-2.91)	(-2.92)
Bond maturity	-0.014*	-0.014*	0.002	0.003	0.017***	0.017***
	(-1.72)	(-1.69)	(0.40)	(0.66)	(3.00)	(3.05)
Industry fixed effects	Yes	Yes	Yes	Yes	No	No
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Firm fixed effects	No	No	No	No	Yes	Yes
Observations	14,663	14,663	14,663	14,663	14,663	14,663
Adjusted R^2	0.400	0.401	0.480	0.491	0.670	0.670

Table III
Debtholder-Shareholder Distance and Comovement between Stock Prices and Bond Prices

This table presents estimates of OLS regressions in which the dependent variable is the correlation between weekly stock returns and weekly changes in bond yield spreads and the key independent variable of interest is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). The sample consists of 3,514 firm-year observations from 1997 to 2009. We require that the firm have stock and bond prices available for at least 120 days in a year. Column (1) is our baseline specification. Column (2) controls for the physical distance between firms and debtholders and the physical distance between firms and shareholders. Columns (3) to (6) add S&P credit rating fixed effects. Column (4) further controls for state fixed effects. In columns (1) to (4) we control for industry fixed effects at the two-digit SIC level, and in columns (5) and (6) we include firm fixed effects. In all specifications, we control for year fixed effects. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.009***	0.011***	0.009***	0.009**	0.007*	0.008*
	(2.73)	(3.17)	(2.61)	(2.57)	(1.74)	(1.77)
Controls:						
Firm-debtholder distance		0.008**	0.007**	0.007*		0.011
		(2.18)	(1.99)	(1.68)		(1.60)
Firm-shareholder distance		-0.009**	-0.008*	-0.009*		-0.002
		(-2.06)	(-1.79)	(-1.83)		(-0.26)
Institutional ownership	0.002	0.001	0.002	0.009	-0.047	-0.046
	(0.13)	(0.08)	(0.10)	(0.50)	(-1.33)	(-1.33)
Tangibility	-0.039*	-0.043**	-0.039**	-0.033*	-0.083	-0.083
	(-1.94)	(-2.12)	(-1.97)	(-1.68)	(-1.34)	(-1.35)
Market to book	0.010**	0.010**	0.007	0.007	-0.001	-0.001
	(2.01)	(1.99)	(1.44)	(1.47)	(-0.17)	(-0.16)
Dividend yield	1.002***	1.033***	0.165	0.130	0.896**	0.872*
	(3.46)	(3.61)	(0.57)	(0.44)	(1.99)	(1.94)
Leverage	-0.084***	-0.083***	-0.012	-0.016	-0.046	-0.048
	(-3.30)	(-3.28)	(-0.49)	(-0.67)	(-0.93)	(-0.97)
Free cash flow	0.040	0.037	-0.008	-0.011	-0.021	-0.022
	(1.30)	(1.24)	(-0.30)	(-0.41)	(-0.42)	(-0.43)
Firm size	-0.008**	-0.008**	-0.018***	-0.018***	-0.023**	-0.023**
	(-2.28)	(-2.36)	(-5.28)	(-5.29)	(-2.30)	(-2.32)
Profitability	0.152***	0.152***	0.107**	0.110**	0.064	0.062
	(3.06)	(3.06)	(2.36)	(2.42)	(0.90)	(0.88)
Industry fixed effects	Yes	Yes	Yes	Yes	No	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Firm fixed effects	No	No	No	No	Yes	Yes
Observations	3,514	3,514	3,514	3,514	3,514	3,514
Adjusted R^2	0.135	0.137	0.204	0.216	0.099	0.100

Table IV
Debtholder-Shareholder Distance and Firms' Risk Shifting Behavior

This table presents estimates of probit, conditional logit, and OLS regressions in which the dependent variables are an indicator that takes the value of one if the firm incurs a new covenant violation in the given quarter and zero otherwise (Panel A) and the dividend yield (Panel B). The key independent variable of interest is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). The samples consist of 58,825 firm-quarter observations from 1996 to 2008 (Panel A) and 81,405 firm-quarter observations from 1992-2009 (Panel B). Column (1) is our baseline specification. Column (2) controls for the physical distance between firms and debtholders and the physical distance between firms and shareholders. Columns (3) to (6) add S&P credit rating fixed effects. Column (4) further controls for state fixed effects. In columns (1) to (4) we control for industry fixed effects at the two-digit SIC level, and in columns (5) and (6) we include firm fixed effects. In all specifications, we control for year-quarter fixed effects. Columns (1) to (4) and columns (5) to (6) in Panel A are estimated with probit and conditional logit models, respectively, and all columns in Panel B are estimated with an OLS model. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effects of Debtholder-Shareholder Distance on the Likelihood of Covenant Violation

	Probit				Conditional Logit	
	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.082***	0.055***	0.055***	0.055***	0.156***	0.119***
	(5.03)	(3.23)	(3.23)	(3.24)	(4.66)	(3.15)
Controls:						
Firm-debtholder distance		0.003	0.003	-0.004		-0.033
		(0.36)	(0.36)	(-0.43)		(-1.01)
Firm-shareholder distance		0.058***	0.058***	0.043**		0.078**
		(3.15)	(3.15)	(2.20)		(1.98)
Institutional ownership	-0.325***	-0.297***	-0.297***	-0.302***	0.521***	0.513***
	(-4.32)	(-4.03)	(-4.03)	(-4.05)	(2.63)	(2.59)
Tangibility	-0.232**	-0.203*	-0.203*	-0.218**	0.518	0.522
	(-2.14)	(-1.89)	(-1.89)	(-2.02)	(1.31)	(1.32)
Market to book	-0.199***	-0.186***	-0.186***	-0.191***	-0.300***	-0.299***
	(-8.30)	(-7.90)	(-7.90)	(-8.01)	(-7.33)	(-7.30)
Dividend yield	-2.644*	-1.739	-1.739	-1.563	0.864	0.902
	(-1.82)	(-1.48)	(-1.48)	(-1.38)	(1.28)	(1.33)
Leverage	0.861***	0.910***	0.910***	0.963***	1.518***	1.510***
	(11.26)	(11.52)	(11.52)	(11.88)	(7.00)	(6.96)
Free cash flow	-0.126	-0.117	-0.117	-0.106	0.318**	0.321**
	(-0.90)	(-0.84)	(-0.84)	(-0.79)	(2.09)	(2.11)
Firm size	-0.138***	-0.083***	-0.083***	-0.082***	0.487***	0.487***
	(-10.14)	(-5.39)	(-5.39)	(-5.34)	(7.14)	(7.12)
Profitability	-0.409**	-0.434**	-0.434**	-0.424**	-2.127***	-2.143***
	(-2.12)	(-2.09)	(-2.09)	(-2.09)	(-6.84)	(-6.89)
Industry fixed effects	Yes	Yes	Yes	Yes	No	No
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Firm fixed effects	No	No	No	No	Yes	Yes
Observations	58,825	58,825	58,825	58,825	26,062	26,062
Adjusted R^2	0.128	0.128	0.135	0.141	-	-

Panel B: Effects of Debtholder-Shareholder Distance on Dividend Yields

	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.031***	0.038***	0.032***	0.030***	0.005**	0.004**
	(6.81)	(8.22)	(7.09)	(6.46)	(2.31)	(1.97)
Controls:						
Firm-debtholder distance		-0.010**	-0.009**	-0.001		0.001
		(-2.57)	(-2.15)	(-0.20)		(0.52)
Firm-shareholder distance		-0.017***	-0.015**	0.001		0.001
		(-2.80)	(-2.51)	(0.21)		(0.44)
Institutional ownership	-0.150***	-0.148***	-0.115***	-0.118***	0.032**	0.032**
	(-4.56)	(-4.55)	(-3.44)	(-3.50)	(2.14)	(2.14)
Tangibility	0.176***	0.179***	0.147***	0.139***	0.113***	0.113***
	(4.17)	(4.24)	(3.53)	(3.32)	(3.07)	(3.06)
Market to book	-0.016***	-0.016***	-0.021***	-0.019***	-0.012***	-0.012***
	(-5.50)	(-5.35)	(-6.25)	(-5.83)	(-4.80)	(-4.80)
Leverage	-0.035	-0.032	0.085**	0.067*	-0.012	-0.012
	(-0.91)	(-0.84)	(2.17)	(1.67)	(-0.74)	(-0.75)
Free cash flow	-0.047**	-0.041*	-0.052**	-0.053**	-0.013	-0.013
	(-2.16)	(-1.93)	(-2.48)	(-2.52)	(-1.22)	(-1.21)
Firm size	0.065***	0.067***	0.041***	0.036***	0.020***	0.020***
	(15.92)	(15.64)	(7.71)	(6.90)	(3.23)	(3.23)
Profitability	0.133***	0.124***	0.130***	0.124***	0.019	0.019
	(3.24)	(3.05)	(3.28)	(3.17)	(0.68)	(0.70)
Industry fixed effects	Yes	Yes	Yes	Yes	No	No
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Firm fixed effects	No	No	No	No	Yes	Yes
Observations	81,405	81,405	81,405	81,405	81,405	81,405
Adjusted R^2	0.118	0.114	0.125	0.130	0.762	0.762

Table V
Effects of Debtholder-Shareholder Distance on Abnormal Stock Returns and Changes in Bond Yield Spreads around Covenant Violation

This table presents univariate test results for cumulative abnormal stock returns (CARs) and changes in bond yield spreads around a covenant violation (Panel A) and estimates of OLS regressions in which the dependent variables are CARs and changes in bond yield spreads around a covenant violation (Panel B). The key independent variable of interest, *Debtholder-shareholder distance*, is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). The samples consist of 1,790 and 335 new covenant violations from 1996 to 2008 for the analyses of stock returns and changes in bond yield spreads, respectively. A firm is considered as having had a new covenant violation if it violates the covenant in the current quarter but did not violate any loan covenants in the previous three quarters. CARs are estimated using the market model and the Fama-French 3-factor model. We use 180 days prior to the announcement of a covenant violation as the estimation period to obtain factor loadings. Changes in bond yield spreads are estimated as the difference in yield spreads around the covenant violation ("raw change in yield spreads") and the size and book-to-market adjusted change in yield spreads. We group sample firms into 3×3 size and book-to-market buckets and calculate the size and book-to-market adjusted change in yield spreads as the difference between the raw change in yield spreads and the average change in yield spreads across other firms in the same bucket. Month +0 is the month in which the firm reports a new covenant violation. In Panel A, the sample is divided into two subgroups according to the sample median *Debtholder-shareholder distance*. In Panel B, the regressions control for industry fixed effects at the two-digit SIC level, year fixed effects, and S&P credit rating fixed effects across all specifications. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Univariate Tests

Panel A1: CARs around Covenant Violation: Using the Market Model

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance* (B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR [+0] month	-0.014***	-0.015***	-0.023***	-0.021***	-0.007	-0.010	0.017**	0.015*
CAR [+1, +3] months	0.001	0.002	-0.019	-0.012	0.022	0.019*	0.040**	0.031*
CAR [+1, +6] months	0.060***	0.052***	0.033	0.025***	0.087	0.078***	0.053*	0.043*

Panel A2: CARs around Covenant Violation: Using the Fama-French 3-Factor Model

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance* (B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR [+0] month	-0.018***	-0.018***	-0.026***	-0.023 ***	-0.010	-0.013**	0.016*	0.010
CAR [+1, +3] months	-0.011	-0.005	-0.032**	-0.012	0.009	0.000	0.023**	0.012
CAR [+1, +6] months	0.018	0.031**	-0.011	0.002	0.048*	0.068***	0.059*	0.066**

Panel A3: Raw Changes in Bond Yield Spreads around Covenant Violation

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance* (B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ΔYield spreads [+0] month	0.303***	0.040***	0.246***	0.030	0.333***	0.050*	0.086	0.020
ΔYield spreads [+1, +3] months	0.853***	0.250***	0.383**	0.240	1.244***	0.260*	0.861***	0.020*
ΔYield spreads [+1, +6] months	1.148***	0.160**	0.660*	-0.040	1.695***	0.449***	1.034***	0.489***

Panel A4: Size and Book-to-Market Adjusted Changes in Bond Yield Spreads around Covenant Violation

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance* (B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ΔYield spreads [+0] month	1.933***	1.470***	1.632***	2.088***	2.088***	1.933***	0.456*	0.200
ΔYield spreads [+1, +3] months	0.593**	0.105	0.120	-0.015	1.154**	0.220*	1.034***	0.235***
ΔYield spreads [+1, +6] months	0.988**	0.170**	0.658	0.119	1.360**	0.389***	0.702*	0.270**

Panel B: OLS Regressions

	CARs						Changes in Bond Yield Spreads					
	[+0] Month		[+1, +3] Months		[+1, +6] Months		[+0] Month		[+1, +3] Months		[+1, +6] Months	
	Market Model	Fama-French 3-Factor Model	Market Model	Fama-French 3-Factor Model	Market Model	Fama-French 3-Factor Model	Raw	Size and Book-to-Market Adjusted	Raw	Size and Book-to-Market Adjusted	Raw	Size and Book-to-Market Adjusted
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Debtholder-shareholder distance	0.013***	0.012*	0.038***	0.037***	0.043**	0.046**	0.349	0.503*	0.627**	0.572*	1.027***	0.835**
	(2.67)	(1.89)	(3.16)	(3.44)	(2.26)	(2.23)	(1.19)	(1.67)	(2.35)	(1.93)	(3.90)	(2.14)
Controls:												
Firm-debtholder distance	0.000	-0.001	0.009*	0.007	-0.001	-0.001	0.340*	0.380*	-0.229	-0.257	-0.522	-0.717
	(0.10)	(-0.41)	(1.68)	(1.13)	(-0.06)	(-0.04)	(1.67)	(1.73)	(-1.24)	(-1.23)	(-1.01)	(-1.61)
Firm-shareholder distance	-0.013***	-0.009	-0.030***	-0.027**	-0.041**	-0.036**	-0.231	-0.165	0.290	0.383	0.510	0.625
	(-2.66)	(-1.54)	(-2.82)	(-2.55)	(-2.52)	(-2.18)	(-0.72)	(-0.47)	(1.11)	(1.37)	(0.78)	(0.99)
Institutional ownership	-0.021	-0.019	0.029	0.030	0.066	0.071	0.750	1.113	-0.574	0.191	1.969	1.501
	(-0.92)	(-0.90)	(0.66)	(0.63)	(1.06)	(0.95)	(1.16)	(1.43)	(-0.46)	(0.20)	(1.00)	(0.81)
Tangibility	-0.063*	-0.072**	0.043	0.057	-0.082	-0.082	0.104	0.859	0.022	1.928*	-2.806	-1.940
	(-1.93)	(-2.44)	(0.62)	(0.74)	(-0.61)	(-0.55)	(0.09)	(0.65)	(0.02)	(1.67)	(-1.06)	(-0.71)
Market to book	-0.002	0.001	-0.020	-0.023	0.023	0.014	-0.350	0.019	0.026	-0.260	-0.032	-0.127
	(-0.45)	(0.19)	(-1.02)	(-1.11)	(1.09)	(0.66)	(-1.46)	(0.08)	(0.09)	(-0.92)	(-0.08)	(-0.36)
Dividend yield	-0.066	-0.111	-0.946	-1.043**	-1.709***	-1.699***	-11.190	-10.114	-26.063***	-26.109***	-65.062***	-67.921***
	(-0.36)	(-0.66)	(-1.61)	(-1.97)	(-3.14)	(-2.94)	(-1.60)	(-1.33)	(-2.90)	(-3.43)	(-3.25)	(-3.84)
Leverage	0.015	0.009	-0.061	-0.092*	-0.288***	-0.313***	-0.381	-1.279	1.118	0.225	6.369	4.416
	(0.47)	(0.30)	(-0.94)	(-1.65)	(-3.47)	(-3.17)	(-0.35)	(-1.02)	(0.67)	(0.17)	(1.54)	(1.25)
Free cash flow	-0.005	-0.028	-0.014	-0.039	-0.169	-0.245	3.329*	2.010	0.707	3.190	4.236	-0.714
	(-0.15)	(-0.85)	(-0.28)	(-0.67)	(-1.08)	(-1.41)	(1.69)	(0.87)	(0.21)	(1.12)	(0.79)	(-0.17)
Firm size	-0.003	-0.002	0.001	0.004	0.006	0.009	-0.294*	-0.106	0.417*	0.239*	0.683*	0.747**
	(-0.71)	(-0.53)	(0.12)	(0.57)	(0.45)	(0.64)	(-1.93)	(-0.59)	(1.93)	(1.75)	(1.71)	(2.28)
Profitability	-0.080**	-0.091**	-0.257*	-0.202*	-0.065	0.003	0.023	6.081**	1.608	-11.773***	-2.313	-2.441
	(-2.49)	(-2.33)	(-1.94)	(-1.65)	(-0.24)	(0.01)	(0.01)	(2.03)	(0.33)	(-4.85)	(-0.66)	(-0.47)
Bond issues outstanding							0.323*	0.457**	-0.508*	-0.319	-0.532	-0.010
							(1.80)	(2.17)	(-1.83)	(-1.29)	(-1.26)	(-0.03)
Bond maturity							-0.004	-0.002	-0.005	-0.005	-0.004	-0.001
							(-1.21)	(-0.56)	(-0.76)	(-0.80)	(-0.61)	(-0.10)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,790	1,790	1,790	1,790	1,790	1,790	335	335	317	317	300	300
Adjusted R^2	0.050	0.055	0.043	0.044	0.049	0.059	0.645	0.812	0.364	0.609	0.540	0.589

Table VI
Debtholder-Shareholder Distance and Market Reactions around Stock Repurchases and Dividend Increases

This table presents univariate results for cumulative abnormal stock returns (CARs) and changes in bond yield spreads around announcements of stock repurchases and dividend increases (Panel A) and estimates of OLS regressions in which the dependent variables are CARs and changes in bond yield spreads around the announcements of stock repurchases and dividend increases, respectively (Panel B). The key independent variable of interest, *Debtholder-shareholder distance*, is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). The samples consist of 3,475 (2,387) repurchase events for the analyses of stock returns (changes in bond yield spreads) from 1992 to 2008 and 9,133 (10,488) dividend increase events for the analyses of stock returns (changes in bond yield spreads) from 1992 to 2009. We obtain data on stock repurchases and the distribution of cash dividends from the SDC and CRSP monthly databases, respectively. CARs are estimated using the market model and the Fama-French 3-factor model. We use 180 days prior to the events as the estimation period to obtain factor loadings. For stock repurchases (cash dividend increases), CAR (-1, 1) is the CAR from one day before to one day after the repurchase (cash dividend increase) announcement date. Dividend announcements are classified as dividend increase announcements if there is a dividend increase compared to the last dividend payment. The changes in bond yield spreads are estimated as the difference in yield spreads around the repurchase/dividend increase period ("raw change in yield spreads") and the size and book-to-market adjusted change in yield spreads, respectively. We group sample firms into 3×3 size and book-to-market buckets and calculate the size and book-to-market adjusted change in yield spreads as the difference between the raw change in yield spreads and the average change in yield spreads across other firms in the same bucket. In Panel A, the sample is divided into subgroups according to the sample median *Debtholder-shareholder distance*. In Panel B, the regressions control for industry fixed effects at the two-digit SIC level, year fixed effects, and S&P credit rating fixed effects across all specifications. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Univariate Tests
Panel A1: CARs around Announcements of Stock Repurchases and Dividend Increases: Using the Market Model

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance*(B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR (-1, +1): Repurchase	1.875***	1.409***	1.547***	1.315***	2.204***	1.503***	0.657***	0.188*
CAR (-1, +1): Dividend increase	0.193***	0.017	0.115*	-0.067	0.271***	0.042	0.156*	0.109**

Panel A2: CARs around Announcements of Stock Repurchases and Dividend Increases: Using the Fama-French 3-Factor Model

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance*(B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR (-1, +1): Repurchase	1.859***	1.390***	1.548***	1.318***	2.176***	1.495***	0.629***	0.177*
CAR (-1, +1): Dividend increase	0.189***	0.003	0.113*	-0.033	0.268***	0.041	0.154*	0.074*

Panel A3: Raw Changes in Bond Yield Spreads around Announcements of Stock Repurchases and Dividend Increases

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance* (B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ΔYield spread [+0] month: Repurchase	0.071***	0.015**	0.051***	0.010 **	0.093***	0.010 **	0.039**	0.000
ΔYield spread [+0] month: Dividend increase	0.117***	0.020***	0.099***	0.015***	0.138***	0.025***	0.038***	0.010***

Panel A4: Size and Book-to-Market Adjusted Changes in Bond Yield Spreads around Announcements of Stock Repurchases and Dividend Increases

	Full sample		Subsample with low *Debtholder-shareholder distance* (A)		Subsample with high *Debtholder-shareholder distance* (B)		Test of difference (B-A)	
Event window	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ΔYield spread [+0] month: Repurchase	0.008	0.000	-0.018	-0.010***	0.029***	0.000	0.047***	0.010***
ΔYield spread [+0] month: Dividend increase	0.062***	0.020***	0.048***	0.010***	0.075***	0.020 ***	0.027***	0.010***

Panel B: OLS Regressions

	Repurchase				Dividend Increase			
	CAR (-1, +1)		Changes in Yield Spreads [+0] month		CAR (-1, 1)		Changes in Yield Spreads [+0] month	
	Market Model	Fama-French 3-Factor Model	Raw	Size and Book-to-Market Adjusted	Market Model	Fama-French 3-Factor Model	Raw	Size and Book-to-Market Adjusted
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debtholder-shareholder distance	0.487***	0.484***	0.047**	0.052***	0.104*	0.103*	0.035***	0.039***
	(2.71)	(2.71)	(2.24)	(3.16)	(1.67)	(1.73)	(3.13)	(4.55)
Controls:								
Firm-debtholder distance	-0.067	-0.061	-0.038	-0.000	0.104*	0.103*	-0.012	-0.002
	(-0.54)	(-0.50)	(-1.29)	(-0.00)	(1.67)	(1.73)	(-1.46)	(-0.23)
Firm-shareholder distance	-0.068	-0.102	0.028	0.005	0.044	0.027	-0.001	-0.013
	(-0.42)	(-0.62)	(1.30)	(0.30)	(1.13)	(0.70)	(-0.13)	(-1.64)
Institutional ownership	-0.703	-0.442	0.063	0.019	0.004	0.012	0.193***	0.081*
	(-0.44)	(-0.28)	(0.63)	(0.26)	(0.06)	(0.19)	(3.24)	(1.71)
Tangibility	-1.591**	-1.574*	-0.017	0.060	-0.336	-0.408	-0.191***	-0.068
	(-1.97)	(-1.94)	(-0.20)	(0.68)	(-1.28)	(-1.61)	(-3.50)	(-1.30)
Market to book	-0.523***	-0.644***	0.031	0.045**	-0.223	-0.292	-0.028**	0.012
	(-3.31)	(-4.51)	(1.46)	(2.28)	(-0.69)	(-0.94)	(-2.17)	(1.51)
Dividend yield	-5.144	-5.867	-0.579	-0.413	-0.055	0.012	0.905	-0.419
	(-1.23)	(-1.43)	(-0.51)	(-0.46)	(-0.61)	(0.13)	(1.09)	(-1.24)
Leverage	-0.096	-0.339	-0.031	0.068	-0.930	0.578	0.126*	0.153**
	(-0.11)	(-0.39)	(-0.20)	(0.59)	(-0.25)	(0.16)	(1.73)	(2.28)
Free cash flow	-2.273	-2.710	-0.298	-0.201	-0.048	0.232	0.593**	0.214
	(-1.22)	(-1.43)	(-0.75)	(-0.62)	(-0.12)	(0.58)	(2.37)	(0.96)
Firm size	-0.600***	-0.603***	-0.019	0.009	-0.826	-0.467	-0.013	0.075***
	(-4.50)	(-4.56)	(-1.22)	(0.66)	(-0.57)	(-0.34)	(-1.12)	(8.13)
Profitability	2.314	3.660	-0.843**	-1.071***	0.009	0.031	-0.241	0.464***
	(0.92)	(1.53)	(-2.07)	(-3.10)	(0.21)	(0.74)	(-1.12)	(3.37)
Bond issues outstanding			0.012	-0.009			0.000	-0.000
			(0.64)	(-0.51)			(0.05)	(-0.79)
Bond maturity			0.001**	0.000			0.010	0.007
			(1.98)	(0.91)			(0.63)	(0.67)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,475	3,475	2,387	2,387	9,133	9,133	10,488	10,488
Adjusted R^2	0.044	0.047	0.298	0.204	0.076	0.026	0.115	0.062

Table VII
Debtholder-Shareholder Distance and Ex Ante Loan Contract Terms

This table presents estimates of OLS and probit regressions in which the dependent variables are a firm's loan spread, measured as the all-in-drawn spread the borrower pays over LIBOR for the drawn portion of the loan facility (Panel A), an indicator that takes the value of one if the loan contract contains covenants on capital expenditure restrictions and zero otherwise (Panel B, columns (1)-(3)), and an indicator that that takes the value of one if the bank loan is secured by collateral and zero otherwise (Panel B, columns (4)-(6)). The key independent variable of interest, *Debtholder-shareholder distance*, is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). The samples consist of 9,447 bank loan deals covered by the LPC's Dealscan database from 1992 to 2008 (Panel A), 1,826 bank loan observations covered in Nini, smith, and Sufi (2009) from 1996 to 2005 (Panel B, columns (1)-(3)), and 9,447 bank loan observations covered in the DealScan database from 1992 from 2008 (Panel B, columns (4)-(6)). Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effects of Debtholder-Shareholder Distance on Loan Spreads

	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.077***	0.062***	0.060***	0.073***	0.068***	0.083***
	(5.66)	(4.25)	(4.15)	(5.56)	(5.83)	(7.04)
Controls:						
Firm-debtholder distance		0.006	0.001	-0.005	-0.010	-0.004
		(0.69)	(0.17)	(-0.67)	(-1.35)	(-0.50)
Firm-shareholder distance		0.034**	0.031**	0.018	0.022**	0.010
		(2.45)	(2.24)	(1.45)	(1.96)	(0.77)
Institutional ownership	-0.697***	-0.705***	-0.870***	-1.027***	-1.001***	-0.730***
	(-3.68)	(-3.72)	(-4.76)	(-6.23)	(-6.86)	(-5.11)
Tangibility	-0.457***	-0.464***	-0.504***	-0.389***	-0.258***	-0.294***
	(-8.27)	(-8.44)	(-6.49)	(-5.67)	(-4.11)	(-4.60)
Market to book	-0.071***	-0.072***	-0.070***	-0.057***	-0.043***	-0.050***
	(-6.79)	(-6.82)	(-6.62)	(-6.46)	(-5.28)	(-5.99)
Dividend yield	-1.561*	-1.513*	-1.056	-0.451	-0.172	-0.141
	(-1.79)	(-1.73)	(-1.46)	(-0.90)	(-0.35)	(-0.31)
Leverage	1.336***	1.339***	1.377***	0.981***	0.699***	0.760***
	(19.30)	(19.40)	(18.96)	(14.17)	(10.88)	(11.56)
Free cash flow	-0.625***	-0.628***	-0.497***	-0.453***	-0.421***	-0.486***
	(-4.54)	(-4.59)	(-3.92)	(-3.80)	(-3.77)	(-4.27)
Firm size	-0.178***	-0.177***	-0.175***	-0.115***	-0.097***	-0.084***
	(-14.41)	(-14.39)	(-13.02)	(-8.27)	(-7.56)	(-6.74)
Profitability	-0.899***	-0.891***	-1.039***	-1.035***	-1.122***	-1.108***
	(-4.33)	(-4.29)	(-5.04)	(-5.45)	(-6.21)	(-5.98)
Loan amount	-0.206***	-0.208***	-0.205***	-0.180***	-0.156***	-0.154***
	(-15.72)	(-16.05)	(-14.79)	(-13.89)	(-12.33)	(-12.28)
Loan maturity	0.098***	0.098***	0.075***	0.010	-0.180***	-0.219***
	(5.53)	(5.56)	(4.42)	(0.61)	(-8.36)	(-10.17)
Loan type fixed effects	No	No	No	Yes	Yes	Yes
Loan purpose fixed effects	No	No	No	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes	Yes	Yes
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	No	No	No	No	Yes	Yes
State fixed effects	No	No	No	No	No	Yes
Observations	9,447	9,447	9,447	9,447	9,447	9,447
Adjusted R^2	0.470	0.471	0.494	0.543	0.620	0.603

Panel B: Effects of Debtholder-Shareholder Distance on the Likelihood of Including Capital Expenditure Restrictions and Collateral Requirements in Bank Loan Contracts

	Capital Expenditure Restriction			Collateral Requirement		
	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder distance	0.171***	0.161***	0.166***	0.054**	0.059**	0.060**
	(3.12)	(2.76)	(2.78)	(2.03)	(2.19)	(2.22)
Controls:						
Firm-debtholder distance	0.034	0.046	0.022	0.011	0.004	0.001
	(0.92)	(1.20)	(0.51)	(0.77)	(0.33)	(0.10)
Firm-shareholder distance	-0.063	-0.009	-0.086	0.042	0.034	0.005
	(-1.08)	(-0.15)	(-1.26)	(1.26)	(1.03)	(0.12)
Institutional ownership	-0.294	-0.228	-0.225	-0.194*	-0.310***	-0.279***
	(-1.35)	(-1.00)	(-0.96)	(-1.94)	(-3.07)	(-2.76)
Tangibility	-0.582**	-0.225	-0.315	-0.685***	-0.610***	-0.646***
	(-1.99)	(-0.76)	(-0.98)	(-5.35)	(-4.85)	(-5.12)
Market to book	-0.250***	-0.255***	-0.275***	-0.067***	-0.055***	-0.053***
	(-3.54)	(-3.27)	(-3.51)	(-2.92)	(-2.70)	(-2.62)
Dividend yield	-9.121***	-8.496***	-7.506***	-1.064	-0.574	-0.540
	(-3.00)	(-2.71)	(-2.58)	(-1.42)	(-1.03)	(-1.03)
Leverage	0.245	0.045	-0.001	0.956***	0.588***	0.566***
	(0.82)	(0.14)	(-0.00)	(7.44)	(4.43)	(4.25)
Free cash flow	-1.695***	-1.569***	-1.542***	-0.623**	-0.517**	-0.585**
	(-3.04)	(-2.76)	(-2.68)	(-2.47)	(-2.21)	(-2.51)
Firm size	-0.102*	-0.100*	-0.099	-0.236***	-0.183***	-0.185***
	(-1.77)	(-1.66)	(-1.60)	(-8.53)	(-6.07)	(-6.25)
Profitability	-0.903	-1.143	-1.366*	-0.750*	-0.765**	-0.774**
	(-1.15)	(-1.40)	(-1.65)	(-1.94)	(-2.16)	(-2.25)
Loan amount	-0.143***	-0.075	-0.075	-0.123***	-0.100***	-0.105***
	(-2.90)	(-1.31)	(-1.30)	(-4.16)	(-3.27)	(-3.45)
Loan maturity	0.382***	0.044	0.059	0.013	-0.016	-0.018
	(4.98)	(0.42)	(0.54)	(0.31)	(-0.39)	(-0.43)
Loan type fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Loan purpose fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P rating fixed effects	No	Yes	Yes	No	Yes	Yes
State fixed effects	No	No	Yes	No	No	Yes
Observations	1,826	1,826	1,826	9,447	9,447	9,447
Adjusted R^2	0.301	0.348	0.377	0.338	0.361	0.369

Table VIII: Subsample Tests

This table presents estimates of regressions in which the dependent variables are those used in previous tables, including idiosyncratic volatility, expected default frequency, bond yield spreads, an indicator for covenant violation, dividend yields, loan spreads, cumulative abnormal stock returns (CARs) around a covenant violation, changes in bond yield spreads around a covenant violation, CARs around stock repurchase announcements, changes in bond yield spreads around stock repurchase announcements, CARs around the dividend increase announcements, and changes in bond yield spreads around dividend increase announcements. The key independent variable of interest, *Debtholder-shareholder distance*, is the distance between the centers of gravity among the top five bank lenders and the top five institutional investors, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). The sample size differs across regressions depending on the variables available in the various data sources. Firms are divided into subgroups according to the sample median ownership of the top five institutional investors (columns (1) and (2)), the sample median ratio of borrowing from the top five bank lenders to total debt (columns (3) and (4)), whether S&P credit ratings are below or above BBB (columns (5) and (6)), the sample median financial constraint (columns (7) and (8)), and the sample median average size-adjusted portfolio R^2 of the top five institutional shareholders (columns (9) and (10)). For brevity, we only report coefficients on *Debtholder-shareholder distance* and their corresponding *t*-statistics. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Top Five Institutional Ownership		Borrowing from Top Five Bank Lenders		S&P Credit Rating		Financial Constraint		Average Size-adjusted Portfolio R^2 of Top Five Institutional Investors	
	Low	High	Low	High	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Idiosyncratic Volatility										
Specification:	0.004	0.007***	0.011***	0.013***	0.010***	0.005**	0.007***	0.010***	0.014***	0.011***
Table II Panel A, Column (3)	(1.42)	(3.31)	(3.86)	(4.07)	(4.09)	(2.38)	(3.31)	(2.60)	(5.25)	(4.29)
Expected Default Frequency										
Specification:	0.226	0.351**	0.149	0.411***	0.317**	0.156	0.203	0.380**	0.358*	0.323*
Table II Panel B, Column (3)	(1.38)	(2.45)	(0.94)	(2.87)	(2.28)	(1.47)	(1.62)	(1.97)	(1.95)	(1.73)
Bond Yield Spread										
Specification:	0.143**	0.201***	0.136	0.198***	0.311***	0.051	0.080	0.215***	0.203***	0.117
Table II Panel C, Column (3)	(2.03)	(3.39)	(1.58)	(3.26)	(3.07)	(1.40)	(1.15)	(2.79)	(2.82)	(1.58)
Covenant Violation										
Specification:	0.026	0.073***	0.039	0.074***	0.047**	0.103	0.008	0.065***	0.079***	0.036
Table IV Panel A, Column (3)	(0.97)	(2.89)	(1.57)	(2.81)	(2.54)	(1.52)	(0.25)	(2.66)	(3.14)	(1.30)
Dividend Yield										
Specification:	0.028***	0.036***	0.024***	0.035***	0.032***	0.020***	0.028***	0.035***	0.037***	0.028***
Table IV Panel B, Column (3)	(4.40)	(5.98)	(4.91)	(5.52)	(6.12)	(3.50)	(3.80)	(6.07)	(5.50)	(5.23)
Loan Spread										
Specification:	0.050***	0.070***	0.024	0.071***	0.068***	-0.007	0.028	0.058***	0.080***	0.057***
Table VII Panel A, Column (5)	(2.93)	(4.07)	(1.31)	(4.12)	(4.95)	(-0.58)	(1.58)	(3.37)	(4.60)	(3.53)
CAR around Covenant Violation										
Specification:	-0.001	0.086***	0.038	0.067**	0.045*	0.094	0.063*	0.047*	0.070***	0.019
Table V Panel B, Column (5)	(-0.04)	(2.62)	(1.26)	(2.41)	(1.78)	(0.54)	(1.76)	(1.68)	(2.69)	(0.57)
Change in Yield Spread around Covenant Violation										
Specification:	0.736	1.482**	1.578*	2.745***	2.048***	-0.950	-0.190	1.287***	1.344*	0.774
Table V Panel B. Column (11)	(1.01)	(2.24)	(1.92)	(5.04)	(4.14)	(-0.43)	(-0.28)	(2.77)	(1.95)	(1.17)
CAR around Stock Repurchase Announcement										
Specification:	0.002	0.690***	0.153	0.770***	0.455**	0.073	0.121	0.694**	0.794***	0.209
Table VI Panel B, Column (1)	(0.71)	(2.68)	(0.68)	(2.62)	(2.05)	(0.26)	(0.52)	(2.54)	(2.86)	(0.91)
Change in Yield Spread around Stock Repurchase Announcement										
Specification:	-0.003	0.081**	0.007	0.115***	0.121**	0.011	0.048	0.085**	0.135***	-0.003
Table VI Panel B, Column (3)	(-0.11)	(2.00)	(0.19)	(3.22)	(2.21)	(0.66)	(0.87)	(2.47)	(2.72)	(-0.09)
CAR around Dividend Increase Announcement										
Specification:	0.059	0.141*	0.123	0.164*	0.132*	0.079	-0.026	0.199**	0.151*	0.080
Table VI Panel B, Column (5)	(0.59)	(1.76)	(1.51)	(1.73)	(1.81)	(0.70)	(-0.28)	(2.26)	(1.75)	(1.02)
Change in Yield Spread around Dividend Increase Announcement										
Specification:	0.736	1.482**	1.578*	2.745***	2.048***	-0.950	-0.190	1.287***	0.088***	-0.000
Table VI Panel B, Column (7)	(1.01)	(2.24)	(1.92)	(5.04)	(4.14)	(-0.43)	(-0.28)	(2.77)	(5.54)	(-0.03)

Table IX: Debtholder-Shareholder Distance and Institution Type

This table presents estimates of regressions in which the dependent variables are those used in previous tables, including idiosyncratic volatility, expected default frequency, bond yield spreads, an indicator for covenant violation, dividend yields, and loan spreads. We divide the top 5 large institutions into independent (investment companies, independent investment advisors, and public pension funds) and grey institutions (bank trusts, insurance companies, pension funds, and other institutions) and construct the distances between the centers of gravity among the top five bank lenders and these independent and grey institutions separately, where the distance among debtholders (shareholders) is weighted by the amount of bank loans (institutional holdings). We standardize these distance measures to have a mean of 0 and a standard deviation of 1 (by subtracting the mean distance from a raw distance and then dividing the difference by the standard deviation). The sample size differs across regressions depending on the variables available in the various data sources. In columns (1), (3), (5), (7), (9) and (11), the key independent variable of interest is the standardized distance between debtholders and independent institutions and in columns (2), (4), (6), (8), (10) and (12), the key independent variable of interest is the standardized distance between debtholders and grey institutions. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. *P*-values in *Chi-square* tests show the statistical difference in coefficients between the two distance measures. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Idiosyncratic Volatility		Expected Default Frequency		Bond Yield Spread		Covenant Violation		Dividend Yield		Loan Spread	
	(1) Independent	(2) Grey	(3) Independent	(4) Grey	(5) Independent	(6) Grey	(7) Independent	(8) Grey	(9) Independent	(10) Grey	(11) Independent	(12) Grey
Standardized debtholder-shareholder distance	0.004***	0.001	0.369***	-0.090	0.080**	-0.037	0.047***	-0.017	0.013***	0.003	0.369***	-0.090
	(3.37)	(0.95)	(3.44)	(-0.74)	(2.03)	(-0.76)	(3.34)	(-1.10)	(3.01)	(0.51)	(3.44)	(-0.74)
Controls:												
Firm-debtholder distance	0.002*	0.002	0.042	-0.016	0.075	0.078	0.007	0.009	-0.011***	-0.015***	-0.017*	-0.010
	(1.71)	(1.55)	(0.54)	(-0.18)	(1.36)	(1.33)	(0.67)	(0.78)	(-2.82)	(-4.16)	(-1.91)	(-0.95)
Firm-shareholder distance	0.005***	0.003***	0.065	0.125	0.009	0.051	0.030*	0.021	-0.014**	-0.010**	0.036***	-0.002
	(3.30)	(2.58)	(0.57)	(1.26)	(0.18)	(1.57)	(1.71)	(1.61)	(-2.43)	(-2.24)	(2.72)	(-0.16)
Institutional ownership	-0.046***	-0.058***	-13.040***	-15.195***	0.094	-0.018	-0.488***	-0.460***	-0.123***	-0.141***	0.061*	0.076*
	(-6.65)	(-7.26)	(-8.38)	(-8.40)	(0.29)	(-0.05)	(-4.74)	(-5.37)	(-3.53)	(-3.57)	(1.76)	(1.93)
Tangibility	-0.034***	-0.034***	-3.759***	-3.641***	0.111	0.117	-0.093	-0.104	0.155***	0.204***	-0.271***	-0.299***
	(-3.69)	(-3.29)	(-5.29)	(-4.44)	(0.25)	(0.24)	(-0.91)	(-0.92)	(3.82)	(4.66)	(-3.49)	(-3.36)
Market to book	0.017***	0.015***	-1.280***	-1.192***	-0.185**	-0.124	-0.168***	-0.137***	-0.021***	-0.023***	-0.052***	-0.055***
	(11.16)	(9.16)	(-9.09)	(-6.76)	(-2.15)	(-1.42)	(-7.27)	(-5.34)	(-6.23)	(-5.66)	(-3.60)	(-2.73)
Dividend yield	-0.277***	-0.371***	1.836	-1.281	-20.063***	-22.307***	-1.459	-1.571	0.078**	0.055	-1.596	-1.151
	(-4.73)	(-4.24)	(0.35)	(-0.15)	(-3.83)	(-3.80)	(-1.21)	(-1.20)	(1.99)	(1.26)	(-1.61)	(-1.09)
Leverage	0.014	0.017	16.334***	17.103***	3.353***	3.446***	0.906***	0.882***	-0.057***	-0.064**	0.877***	0.773***
	(1.57)	(1.64)	(19.37)	(16.62)	(6.05)	(5.89)	(10.87)	(9.72)	(-2.67)	(-2.56)	(11.20)	(8.78)
Free cash flow	-0.104***	-0.108***	-11.389***	-12.612***	-8.266***	-8.799***	0.113	0.173	0.041***	0.042***	-0.534***	-0.512***
	(-7.52)	(-6.35)	(-8.40)	(-7.59)	(-5.81)	(-6.25)	(0.89)	(1.42)	(7.67)	(6.97)	(-3.30)	(-2.99)
Firm size	-0.044***	-0.043***	-0.727***	-0.676***	-0.294***	-0.263***	-0.069***	-0.065***	0.123***	0.165***	-0.099***	-0.094***
	(-30.02)	(-26.79)	(-7.83)	(-6.46)	(-4.61)	(-4.00)	(-4.68)	(-3.82)	(3.07)	(3.62)	(-6.59)	(-5.25)
Profitability	-0.214***	-0.220***	-12.944***	-13.814***	-9.358***	-9.398***	-1.194***	-1.263***	(-7.07)	(-8.48)	-1.300***	-1.268***
	(-12.04)	(-10.99)	(-8.16)	(-7.87)	(-7.53)	(-7.26)	(-6.91)	(-6.73)			(-4.92)	(-3.84)
Debt amount					-2.199***	-2.010***					-0.151***	-0.147***
					(-2.99)	(-2.70)					(-10.68)	(-8.91)
Debt maturity					-0.314***	-0.237**					-0.215***	-0.255***
					(-3.05)	(-2.29)					(-8.47)	(-8.63)
Year-quarter, Industry and S&P rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.442	0.465	0.205	0.213	0.402	0.405	0.133	0.132	0.124	0.234	0.628	0.627
Observations	74,839	51,264	75,143	53,479	14,647	11,882	58,726	42,119	81,231	55,798	7,896	5,628
Chi-square test (*p*-value)	0.019**		0.000***		0.060*		0.000***		0.067*		0.040**	

Table X
Instrumental Variables Regressions

The table presents estimates of 2SLS regressions. The sample size differs across regressions depending on the variables available in the various data sources. Columns (1) and (2) report estimates from the first-stage regressions in which the dependent variable is *Debtholder-shareholder distance* and the instrumental variable is the local debt-equity supply imbalance. For a given firm, we identify the local region by the 300-mile radius circle centered at the firm's headquarters. We calculate local debt supply as the total amount of commercial loans held by local banks (obtained from the bank regulatory database) and local equity supply as the total amount of institutional holdings held by local institutional investors. The local debt-equity supply imbalance is defined as the absolute value of the difference between local debt supply and local equity supply divided by the sum of local debt supply and local equity supply. In columns (3) to (8), we present estimates from the second-stage regressions in which the dependent variables are idiosyncratic volatility, expected default frequency, bond yield spreads, an indicator for covenant violation, dividend yields, and bank loan spreads, respectively. In all specifications, we control for year-quarter fixed effects, industry fixed effects at the two-digit SIC level, state fixed effects, and S&P credit rating fixed effects. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	First-Stage Regressions		Second-Stage Regressions					
			Idiosyncratic Volatility	Expected Default Frequency	Bond Yield Spread	Covenant Violation	Dividend Yield	Loan Spread
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrument: Local debt-equity supply imbalance	2.508***	4.012***						
	(4.08)	(3.91)						
Instrumented debtholder-shareholder distance			0.196***	13.899***	5.428**	0.733***	0.408**	0.510**
			(2.61)	(2.80)	(2.00)	(2.63)	(1.98)	(1.98)
Controls:								
Firm-debtholder distance	-0.052***	-0.034***	0.008	0.802***	0.306*	0.031**	0.017	0.002
	(-8.42)	(-4.28)	(1.58)	(2.65)	(1.77)	(2.03)	(1.18)	(0.15)
Firm-shareholder distance	0.480***	0.447***	-0.084**	-6.552***	-1.460**	-0.306**	-0.192**	-0.194*
	(34.16)	(23.03)	(-2.32)	(-2.65)	(-1.99)	(-2.27)	(-2.01)	(-1.68)
Institutional ownership	-0.312***	-0.364***	-0.117***	-0.476	1.392*	-0.038	0.043	-0.187*
	(-9.02)	(-7.62)	(-4.32)	(-0.27)	(1.88)	(-0.39)	(0.49)	(-1.76)
Tangibility	-0.044	0.001	-0.099***	-4.687***	-0.491	-0.033	0.140***	-0.324***
	(-0.97)	(0.01)	(-4.93)	(-4.00)	(-0.84)	(-0.55)	(3.13)	(-4.54)
Market to book	-0.001	0.009	-0.005**	-1.561***	0.107	-0.135***	-0.021***	-0.053***
	(-0.16)	(1.31)	(-1.98)	(-8.90)	(0.79)	(-11.46)	(-5.73)	(-5.92)
Dividend yield	0.237*	0.429*	-0.528***	2.307	-22.197	-1.536***		-0.592
	(1.69)	(1.82)	(-4.80)	(0.36)	(-1.33)	(-3.03)		(-1.09)
Leverage	-0.022	-0.042	0.110***	21.746***	0.851	0.960***	0.111**	0.978***
	(-0.50)	(-0.72)	(5.39)	(16.54)	(1.48)	(16.08)	(2.37)	(13.80)
Free cash flow	-0.148***	-0.299***	-0.218***	-14.566***	-2.760***	-0.065	-0.009	-0.293**
	(-2.86)	(-3.88)	(-6.67)	(-7.07)	(-3.24)	(-0.86)	(-0.22)	(-2.09)
Firm size	-0.029***	0.023**	-0.046***	-0.177	-0.435**	-0.053***	0.043***	-0.128***
	(-4.03)	(2.16)	(-13.06)	(-0.88)	(-2.36)	(-5.08)	(7.33)	(-8.41)
Profitability	-0.239***	-0.210**	-0.320***	-11.459***	-5.855***	-2.026***	0.216***	-1.006***
	(-3.11)	(-2.04)	(-7.95)	(-4.47)	(-3.43)	(-12.73)	(3.14)	(-5.26)
Log (local equity supply)	0.065***	0.077***	-0.008*	-1.140***	-0.126**	-0.042*	-0.007	-0.048**
	(5.49)	(4.67)	(-1.64)	(-2.99)	(-2.13)	(-1.95)	(-1.13)	(-2.17)
Loan amount		-0.056***						-0.143***
		(-4.99)						(-6.71)
Loan maturity		-0.070***						-0.127***
		(-3.59)						(-4.28)
Loan type fixed effects	No	Yes	No	No	No	No	No	Yes
Loan purpose fixed effects	No	Yes	No	No	No	No	No	Yes
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, state, and S&P credit rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	75,656	9,447	75,656	75,194	14,663	58,825	81,405	9,447
Adjusted R^2	0.266	0.260	0.220	-0.073	0.235	-	0.250	0.511

Table XI
Debtholder-Shareholder Travel Time and Difference-in-Differences Estimation

Panel A presents estimates of regressions in which the dependent variables are firm risk (idiosyncratic volatility, expected default frequency, and bond yield spreads), risk-shifting activities (an indicator for covenant violation and dividend yields), and loan rates. The key independent variable of interest is the logarithm of the shortest average travel time (in minutes) between the firm's top five bank lenders and top five institutional shareholders. Following Giroud (2013), we include both driving time from the location of shareholders/debtholders to the closest airport and flight time from the departing airport to the arriving airport in calculating travel time. In all specifications, we control for firm characteristics used in the previous regressions, year-quarter fixed effects, industry fixed effects at the two-digit SIC level, and S&P credit rating fixed effects, but we omit coefficient estimates on these variables for brevity. Panel B presents results from a difference-in-differences estimation using the introduction of direct flights or additional flights that reduce the travel time between debtholders and shareholders as an exogenous shock (*Shock to flight time*). For each firm-quarter, we consider a shock as having occurred if the flight time between debtholders and shareholders is reduced more than 20% compared to the previous quarter. In all specifications, we control for the firm characteristics used in the previous regressions, year-quarter fixed effects, S&P credit rating fixed effects, and firm fixed effects, but we omit coefficient estimates on these variables for brevity. Detailed descriptions of the variables are provided in the Appendix. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Debtholder-Shareholder Travel Time on Firm Risk, Risk-Shifting Behavior, and Loan Spread

	Idiosyncratic Volatility	Expected Default Frequency	Bond Yield Spread	Covenant Violation	Dividend Yield	Loan Spread
	(1)	(2)	(3)	(4)	(5)	(6)
Debtholder-shareholder travel time	0.029***	0.885**	0.212***	0.222***	0.031***	0.059**
	(4.74)	(2.38)	(2.78)	(4.30)	(2.83)	(2.08)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	75,656	75,194	14,663	58,825	81,405	9,447
Adjusted R^2	0.431	0.200	0.472	-	0.127	0.615

Panel B: Difference-in-Differences Estimation

	Idiosyncratic Volatility	Expected Default Frequency	Bond Yield Spread	Covenant Violation	Dividend Yield	Loan Spread
	(1)	(2)	(3)	(4)	(5)	(6)
Shock to flight time	-0.010.04***	-0.389***	-0.139***	-0.240***	-0.011***	-0.134**
	(-4.39)	(-3.32)	(-4.53)	(-4.28)	(-3.10)	(-2.33)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Year-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
S&P credit rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	75,656	75,194	14,663	26,062	81,405	9,447
Adjusted R^2	0.638	0.415	0.666	-	0.747	0.677

Table XII: Additional Robustness Checks

The table presents estimates of OLS and 2SLS regressions in which the distance between debtholders and shareholders is measured in several different ways. In columns (1) and (2), we use only the largest bank lender and the largest institutional shareholder in calculating debtholder-shareholder distance. In columns (3) and (4), we use the top three bank lenders and the top three institutional shareholders in calculating debtholder-shareholder distance. In columns (5) and (6), to mitigate the concern that our results may be driven by cross-holdings in debt and equity of different subsidiaries of the same bank holding companies, we exclude bank-managed investors from the top five institutional shareholders in computing *Debtholder-shareholder distance*. We obtain information on investor type "Bank" from Brain Bushee's website. In columns (7) and (8), the distance between debtholders and shareholders is measured as an indicator that takes the value of one if their distance is less than 200 miles and zero otherwise. The dependent variables are idiosyncratic volatility, expected default frequency, bond yield spreads, an indicator for covenant violation, dividend yields, and loan spreads. For brevity, we only report the coefficients on *Debtholder-shareholder distance* and their corresponding *t*-statistics. *T*-statistics in parentheses are based on robust standard errors that allow for clustering at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Distance between Largest Debtholder and Largest Shareholder		Distance between Top Three Debtholders and Top Three Shareholders		Distance (Excluding Bank-Managed Shareholders)		Indictor for Debtholder-Shareholder Distance < 200 Miles	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Idiosyncratic Volatility	0.001**	0.138**	0.011***	0.152**	0.011***	0.336***	-0.017***	-0.421*
	(1.99)	(1.97)	(5.24)	(1.98)	(4.99)	(2.60)	(-5.35)	(-1.71)
Specification	Table II Panel A column (3)	Table IX column (3)	Table II Panel A column (3)	Table IX column (3)	Table II Panel A column (3)	Table IX column (3)	Table II Panel A column (3)	Table IX column (3)
Expected Default Frequency	0.124**	18.780*	0.337***	10.728***	0.364***	19.492***	-0.484***	-11.992**
	(2.24)	(1.74)	(2.67)	(2.78)	(2.77)	(2.66)	(-2.90)	(-2.28)
Specification	Table II Panel B column (3)	Table IX column (4)	Table II Panel B column (3)	Table IX column (4)	Table II Panel B column (3)	Table IX column (4)	Table II Panel B column (3)	Table IX column (4)
Bond Yield Spread	0.071**	6.222*	0.124***	5.917*	0.169***	8.516	-0.052**	-18.607**
	(2.02)	(1.71)	(2.79)	(1.89)	(3.02)	(1.15)	(-2.22)	(-2.57)
Specification	Table II Panel C column (3)	Table IX column (5)	Table II Panel C column (3)	Table IX column (5)	Table II Panel C column (3)	Table IX column (5)	Table II Panel C column (3)	Table IX column (5)
Covenant Violation	0.015*	0.864*	0.051***	0.417**	0.059***	1.232***	-0.060**	-4.383**
	(1.79)	(1.77)	(2.82)	(2.11)	(3.38)	(2.62)	(-1.98)	(-2.42)
Specification	Table IV Panel A column (3)	Table IX column (6)	Table IV Panel A column (3)	Table IX column (6)	Table IV Panel A column (3)	Table IX column (6)	Table IV Panel A column (3)	Table IX column (6)
Dividend Yield	0.027***	0.583**	0.025***	0.588*	0.034***	0.969*	-0.050***	-0.857**
	(7.28)	(2.02)	(6.40)	(1.74)	(7.26)	(1.65)	(-5.85)	(-2.19)
Specification	Table IV Panel B column (3)	Table IX column (7)	Table IV Panel B column (3)	Table IX column (7)	Table IV Panel B column (3)	Table IX column (7)	Table IV Panel B column (3)	Table IX column (7)
Loan Spread	0.013*	0.864*	0.051***	0.417**	0.049***	0.637**	-0.052**	-2.521*
	(1.74)	(1.77)	(3.30)	(2.11)	(3.67)	(2.41)	(-2.22)	(-1.66)
Specification	Table VII Panel A column (5)	Table IX column (8)	Table VII Panel A column (5)	Table IX column (8)	Table VII Panel A column (5)	Table IX column (8)	Table VII Panel A column (5)	Table IX column (8)