Local Gender Imbalance and Corporate Risk-Taking ♣

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JEL Classification: D22, D90, G21, G32, G40, J16

Keywords: gender imbalance, male-female ratio, risk attitude, corporate risk-taking

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ABSTRACT

We study the impacts of local gender imbalance on corporate risk-taking. We find that firms in areas with higher local male-female ratios have higher stock volatilities and leverage, less corporate hedging, and more capital expenditures. Consequently, such firms face higher loan spreads and more covenant restrictions. We address endogeneity concerns with two sets of instrumental variables: local male-female ratio at birth in 1960, and local mortality rates of prostate cancer and breast cancer. We show that both employee and local investor channels transit local residents' risk preferences embedded in gender imbalance.

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Gender imbalance has profound socioeconomic consequences, e.g., elections, crimes, marriages, societal stability, and economic growth etc. (see, e.g., Hesketh and Zhu (2006) and Dyson (2012) for reviews).[1] This paper examines its impacts on corporate activities, specifically, risk-taking policies. Corporate risk-taking activities are critical to firm performance and economic growth. Prior studies have examined the impacts of various stakeholders on corporate risk-taking, such as corporate executives and directors, creditors, and large shareholders. This paper aims to trace corporate risk-taking rooted in the risk preferences and beliefs of local residents. We use the local gender imbalance (i.e., male-female ratio) to capture variations in the risk attitudes of local residents and investigate how it affects corporate risk-taking.

A growing body of literature has explored the impacts of gender differences among corporate executives and directors on corporate governance, investments, innovation, and financial policies.[2] However, limited attention has been devoted to the relationship between gender imbalance of local residents and corporate policies. We attempt to fill this gap by studying how local gender imbalance affects corporate activities via the lens of risk attitudes.

We explore the local male-female ratio to identify risk attitudes of local residents, for two reasons. First, local population characteristics, such as age (Becker, 2007; Becker, Ivković, and Weisbenner, 2011) and religiosity (Hilary and Hui, 2009; Jiang et al., 2018) have been widely documented to affect corporate policies. Second, men are typically less risk averse than women (e.g., Croson and Gneezy, 2009; Vieider et al., 2015; Falk et al., 2018; Agarwal et al., 2018). This might be driven by biological factors (Kuhnen and Knutson, 2005; Sapienza, Zingales,

[1] For example, Wyoming legislature first passed a bill granting female residents 21 years and older the right to vote in 1869 (while nation-wide Women's suffrage was ratified by the Nineteenth Amendment in 1920), hoping to attract more single women to Wyoming to rectify the gender imbalance as it had a male-female ratio of 6-to-1.
[2] See, e.g., Adams and Ferreira (2009), Ahern and Dittmar (2012), Graham, Harvey, and Puri (2013), Huang and Kisgen (2013), Levi, Li, and Zhang (2014), Faccio, Marchica, and Mura (2016), Cronqvist and Yu (2017), Schwartz-Ziv (2017), Inci, Narayanan, and Seyhun (2017), McLean, Pirinsky, and Zhao (2018), Bernile, Bhagwat, and Yonker (2018), and Griffin, Li, and Xu (2019).

and Maestripieri, 2009; Cesarini et al., 2010; Cronqvist and Siegel, 2014; Cronqvist et al., 2016; Häusler et al., 2018), or cultural and identity-related factors (Benabou and Tirole, 2011; Benjamin, Choi, and Strickland, 2010; D'Acunto, 2018; Falk et al., 2018). Men might be also more overconfident than women. For example, D'Acunto (2018) proposes the identity theory of choices under risks and shows that male identity increases men's risk taking via motivated beliefs, e.g., overconfidence, as role identities describe the norms of behavior in society. Therefore, male identity is often associated with risky and aggressive behavior. Consistent with these arguments, the General Social Survey results show that higher local male-female ratios are associated with lower levels of risk aversion and higher levels of overconfidence. That is, the gender difference captures both the risk preferences and beliefs of local populations.

Figure I shows county-level gender ratios for the prime work age population (aged 20 to 64) in the US in 2005. This graph illustrates large variations in local male-female ratios across counties. Interestingly, even for counties within the same state such as Texas or Florida, there are considerable variations in the gender ratio. These variations in the local gender imbalance make it feasible to examine the effects of local residents' risk attitudes on corporate risk-taking.

We find that firms operating in counties with higher local male-female ratios present higher risk profiles in terms of corporate financial and investment policies. We show that the effects of gender differences are expressed mainly through the risk attitude channel rather than through a culture of gender egalitarianism.

We structure our empirical investigation as follows. We start by showing that a higher local male-female ratio leads to higher levels of firm risk, measured as realized stock return volatility and option-implied volatility. For example, a one standard-deviation increase in the local male-female ratio increases a firm's realized stock volatility by approximately 3.4% relative to its sample mean. Second, we examine the impact of the local male-female ratio on corporate financial and investment policies. We show that firms headquartered in counties with

higher male-female ratios have higher levels of market and book leverage, higher capital expenditures, and lower cash holdings; engage in fewer hedging activities; and to incur more covenant violations. Third, we examine the value implications of local male-female ratios based on ex ante loan contract terms. We find that firms headquartered in counties with higher local male-female ratios face higher borrowing costs and are more likely to have collateral requirements and capital expenditure restrictions in loan contracts.

We address potential endogeneity concerns in three steps. First, we deal with the omitted variable concern, by adding other local characteristics, e.g., local median age, industry and country fixed effects, local culture of egalitarianism, local religious culture and local proportion of retirees. Next, we address the reverse causality concerns. To address the concern that local industry drives the movement of labor and leads to local gender imbalance, we examine subsamples of firms whose revenues are mainly from out of states, and subsamples of counties which have low correlations between industry gender ratio and local gender ratio. Last, we use two different sets of instrumental variables and run two-stage least squares (2SLS) regressions. The first instrumental variable is the county-level male-female ratio at birth (i.e., newborns) in 1960. The local male-female ratio at birth in 1960 is highly correlated with the local male-female ratio of 1992–2017 (our main sample period) but is unlikely to directly affect these firms' risk-taking activities over 1992–2017 as their business activities are mainly from other states. The second set of instrumental variables is the mortality rates of local prostate cancer and breast cancer incidences. Prostate cancer and breast cancer affect local gender ratio, but firms are unlikely to tailor their risk-taking policy to these cancer risks. Our results suggest that the observed gender effect on corporate risk-taking is unlikely to be driven by omitted firm or other local characteristics.

One might wonder whether cross-county variations of male-female ratio are large enough to generate significant impacts on corporate policies. To quantify this, we reexamine the results

by closely examining gender ratio distributions across various county subsamples. We find that the results are still reasonably significant after excluding counties in the top and bottom 15% of gender ratios. More importantly, as the variations in local gender ratio increase, our results become both statistically and economically more significant, confirming a causal effect.

Next, we dig deeply to understand the mechanisms through which local gender ratio influences corporate decisions. Local residents can influence corporate policies by expressing their risk attitudes in two ways. First, local residents are often the shareholders of local firms. Retail investors' portfolios are often under-diversified and exhibit a significant local bias (Coval and Moskowitz, 2001; Huberman, 2001; Grinblatt and Keloharju, 2001; Ivković and Weisbenner, 2005; Massa and Simonov, 2006; Dorn and Huberman, 2010; Bernile, Kumar, and Sulaeman, 2015).[3] Large local investors or a collection of local retail investors can influence corporate policies via direct engagement in decision-makings (Cronqvist and Fahlenbrach, 2011; Kandel, Massa and Simonov, 2011; Derrien, Kecskés, and Thesmar, 2013; Lyandres et al., 2019). In addition, firms often cater to local investors' risk attitudes, including retail investors (Becker, Ivković, and Weisbenner, 2011). Overall, this suggests a local investor channel. We investigate the impact of local gender ratio on corporate dividend policy and stock price reactions surrounding the dividend payment to examine the investor channel, since retail investors care about dividend policy. We find that a higher local male-female ratio leads to lower cash dividends and smaller price reactions to the dividend payment.[4]

Second, local residents might affect firm operations through the employee channel, e.g., local residents acting as corporate employees.[5] Local employees are under-diversified due to firm-specific human capital or equity-based compensations. They also share a similar cultural

[3] This may be due to market segmentation (e.g., Jayaratne and Strahan, 1996; Guiso, Sapienza, and Zingales, 2004; Becker, 2007; Hong, Kubik, and Stein, 2008) or familiarity (Keloharju, Knüpfer, and Linnainmaa, 2012).
[4] Similarly, Becker, Ivković, and Weisbenner (2011) show that elderly investors prefer cash dividends.
[5] Prior studies find that the presence of female executives or a larger proportion of female directors can reduce firm risks (Huang and Kisgen, 2013; Levi, Li, and Zhang, 2014; Faccio, Marchica, and Mura, 2016; Bernile, Bhagwat, and Yonker, 2018).

legacy (Guiso, Sapienza, and Zingales, 2006). Therefore, they might collectively express their risk attitudes through their work, or firms may cater to their employees' risk preferences even if they are not executives (Spalt, 2013), both of which impact firm risk-taking. We also find that firms based in areas with higher male-female ratios have fewer female employees, employ fewer female CEOs and board directors, and include more overconfident CEOs. This suggests the presence of an employee channel that reflects the risk attitudes of local residents on corporate decision making. Moreover, the investor channel and employee channel might co-exist, because investors tend to choose entrepreneurs with the same gender. Thus the effects of investor channel and employee channel can be mutually strengthened.

One potential concern is that the local male-female ratio might reflect local gender equality attitudes, which in turn affect female corporate board representation and corporate risk-taking (e.g., McLean, Pirinsky, and Zhao, 2018). We test this alternative interpretation by adding the local female-male income ratio as a control variable into the regressions. When local culture prioritizes gender equality, we would expect to find higher local female-male income ratios. We show that our results are robust after controlling for local gender egalitarianism.

Another concern is that the local gender imbalance might be similar to other local characteristics. For example, Hillary and Hui (2009) argue that local religiosity captures risk aversion of local residents and show that local religiosity influences corporate activities. Jiang et al. (2018) further show that firms located in more religious counties have higher credit ratings and lower costs of debt. We find that the effects of local gender imbalance remain robust after controlling for local religiosity. Further, our main findings are similar after excluding the counties in which the local gender ratios are likely to be driven by industry characteristics.

Our study contributes to the recent literature on gender differences in corporate decision making and their value implications. Previous works have examined the impacts of gender difference among top executives or board directors on corporate governance and other

corporate policies (see, e.g., Adams and Ferreira, 2009; Graham, Harvey, and Puri, 2013; Huang and Kisgen, 2013; Levi, Li, and Zhang, 2014; Faccio, Marchica, and Mura, 2016; Cronqvist and Yu, 2017; Schwartz-Ziv, 2017; Inci, Narayanan, and Seyhun, 2017; McLean, Pirinsky, and Zhao, 2018; Bernile, Bhagwat, and Yonker, 2018; Griffin, Li, and Xu, 2019). Our paper further explores the impacts of gender differences from a broad population, i.e., local residents, on corporate risk-taking.

This paper belongs to the large literature on corporate risk-taking. Corporate risk-taking activities can be affected by personal traits of managers (Malmendier, Tate, and Yan, 2011; Cronqvist, Makhija, and Yonker, 2012; Hirshleifer, Low, and Teoh, 2012; Dittmar and Duchin, 2015; Benmelech and Frydman, 2015; Bernile, Bhagwat, and Rau, 2017; Pan, Siegel, and Wang, 2017; Sunder, Sunder, and Zhang, 2017), managerial career concerns (Hirshleifer and Thakor, 1992), managerial compensation schemes (Coles, Daniel, and Naveen, 2006; Liu and Mauer, 2011; Shue and Townsend, 2017), creditor governance (Acharya, Amihud, and Litov, 2011; Nini, Smith, and Sufi, 2012), large shareholder diversification (Faccio, Marchica, and Mura, 2011), culture background (Bedendo, Garcia-Appendini, and Siming, 2019), and litigation environments (John, Litov, and Yeung, 2008). Our paper adds to this literature by showing that the composition of local residents are an important driver of corporate risk-taking.

This paper broadly relates to the literature that examines the influence of locality on corporate policies. For example, Gao, Ng, and Wang (2011) show that corporate headquarter locations affect capital structures. Hilary and Hui (2009) and Jiang et al. (2018) demonstrate local religiosity affect corporate policies. Shu, Sulaeman, and Yeung (2012) study the impacts of local religious beliefs on mutual funds' risk-taking. Becker, Ivković, and Weisbenner (2011) and Bodnaruk and Östberg (2013) study the clientele effects of dividend payout policies. Chhaochharia, Kumar, and Niessen-Ruenzi (2012) find that local investors improve corporate governance. Cohen, Gurun, and Malloy (2017) show that local resident networks affect firms'

global operations, such as their import and export behaviors and international M&A activities. Parsons et al. (2018) show that local social norms affect financial misconduct by firms. Our paper relates local gender imbalance to corporate financial and investment policies from a risk-taking perspective.

The rest of the paper is organized as follows. Section I discusses the data used, our construction of key variables, and sample statistics. In Section II, we test the effects of local male-female ratios on corporate risk, financial/investment policies, and hedging policies. In Section III, we examine the impact of local male-female ratios on loan contract terms. In Section IV, we address endogeneity and causality concerns. In Section V, we investigate the economic mechanism. Section VI concludes.

I. Data and Summary Statistics

A. Data

Our data are drawn from multiple sources. We provide detailed definitions of our variables in Appendix Table A1. As limited by data availability, the sample period varies according to specific variables.

We first collect geographical and demographic information from the US Census Bureau's county population datasets for 1992 to 2017. County-year level variables include local male-female ratio, our main variable of interest, as well as other county characteristics such as higher education rate, population, household income, unemployment rate, and average age. We restrict our gender ratio to the population aged 20 to 64, i.e., prime work age. Individuals between the ages of 20 and 64 are the most active participants in the stock and labor markets, therefore they are more likely to affect corporate decisions.[6]

[6] Our results are both qualitatively and quantitatively similar if we include more elderly local residents aged more than 64.

Our initial sample focuses on corporate policies and firm risks. We combine our dataset of local demographic characteristics with Compustat data and daily stock return information from CRSP. Our main sample includes 14,342 county-year observations and 83,059 firm-year observations.

To collect corporate interest rate hedging information, we review firms' Form 10-K annual reports listed in the Securities and Exchange Commission's Electronic Data Gathering and Retrieval (EDGAR) database for 1996 to 2009, using keywords related to the use of interest rate derivatives. A firm is an interest rate hedger in a given year when its 10-K files indicate that it uses an interest rate derivative. We then merge the dataset of interest rate hedging with local demographic characteristics and focus our analysis on industrial firms, yielding 45,830 firm-year observations.

For bank holding companies' interest rate hedging, we construct measures from quarterly Federal Reserve Y-9C files for 1995 to 2017 based on the Bank Regulatory database, which includes information on bank holding companies with total assets of $150 million or more. We focus on interest rate derivatives rather than on other contracts, as 90% of bank holding company hedging is concentrated in interest rate derivative transactions (Bonaimé, Hankins, and Harford, 2014). Moreover, the reported non-trading (hedging) purposes enable us to identify interest rate derivatives for risk management purposes. Combining local demographic characteristics with information from the Bank Regulatory Database renders 12,949 bank-quarter observations.

We merge our initial sample with the DealScan database run by the Loan Pricing Corporation (LPC) to obtain information on loan spreads and collateral requirements as well as loan-specific information such as amounts facilitated, loan maturity levels, loan types, and loan purposes, generating 10,844 loan-level observations for 1992 to 2007. We then combine the LPC data with the dataset used by Nini, Smith, and Sufi (2009) for information on capital

expenditure restrictions, which gives us 2,585 observations over 1996-2005. We also obtain the data for covenant violations over 1996-2008 from Nini, Smith, and Sufi (2009).

For the endogeneity tests, we obtain the male-female ratio at birth (i.e., newborns) in 1960 from the Census Bureau, and the breast cancer and prostate cancer mortality data from the Global Health Data Exchange.[7] Local religious culture (Local religiosity) is measured as the proportion of county population that adheres to any religion, using the ‘‘Churches and Church Membership’’ files from the American Religion Data Archive (ARDA).

We obtain local financial risk attitudes, local living risk attitudes, and local overconfidence from General Social Survey (GSS) data. After merging the county-year observations with the county characteristics, CRSP, and COMPUSTAT, we have 2,371, 2,956 and 2,742 observations, respectively. We then construct CEO overconfidence using Execucomp over 1992-2017.

Data on the proportion of female directors (CEOs and directors) are from Execucomp. After merging this data with the main sample and board characteristics, we have 9,680 observations. We obtain the local income data from the US Census Bureau over 1992 to 2017.[8]

B. Summary statistics

Table I summarizes the county demographic, firm, bank, and loan characteristics. Across the counties with firm headquarters, we find that the average local male-female ratio is 0.946 (overall, there are more females than males) with a standard deviation of 0.057. The lowest male-female ratio is 0.760, while the highest ratio is 1.846. On average, the local population is

[7] We use the table “Trends and patterns of disparities in cancer mortality among US counties, 1980–2014.” We replace the missing observations after 2014 with the observations from 2014.

[8] When computing the male-female ratio of local employees, we obtain the county level employment information from Geographic Profile of Employment and Unemployment, Bureau of Labor Statistics. We then combine the local employment data with the main sample to obtain 57,126 firm-year observations. The data on non-executive employee stock options come from Execucomp over 1992 to 2006. After combining this data with the main sample, we have 14,752 observations.

663,000 and 24.0% have at least a college degree. The local average age is 35.803 years, and the mean income is $44,082.

For the sample of firms, mean book assets are valued at $2.398 billion, and the market leverage ratio (total debt/market assets) is 0.126. Average free cash flows, cash holdings, and capital expenditures represent -13.5%, 12.7%, and 5.1% of book assets, respectively. The sample has a mean market-to-book of 1.875 and a profitability of 4.7%. On average, bank holding companies have a market capitalization of $1.682 billion, book assets of $2.425 billion, and a market-to-book ratio of 0.618. Bank interest rate hedging accounts for roughly 16.9% of market capitalization with a mean average bank interest rate exposure level of 0.551. In terms of loan contracts, the sample has a mean loan spread of 1.567% and an average loan maturity of 42.726 months.

II. Local Male-Female Ratio and Firm Risks

This section explores the impact of local male-female ratio on corporate risks related to stock volatility, risk management (interest rate hedging), and corporate policies (leverage, capital expenditures, and cash holding). We explore the likelihood of corporate interest rate hedging because it directly smooths cash flows, and interest rate derivatives are the most commonly used derivatives (Guay, 1999; Graham and Rogers, 2002; Campello, Lin, Ma, and Zhou, 2011). We also examine bank holding companies' use of interest rate hedging derivatives because 90% of bank holding company hedging is concentrated in interest rate derivatives, and data on exposure to interest rate risk are readily available (Bonaimé, Hankins, and Harford, 2014). Additionally, unlike other publicly traded firms, bank holding companies provide information on whether their derivatives are used for hedging rather than trading purposes. We also examine other corporate policies used to curb risk, including investment conservatism (capital expenditures) and financial conservatism (leverage and cash holding).

A. Impacts of local male-female ratio on firm risks

We first investigate the effects of the local male-female ratio on corporate risk levels. We measure corporate risk in two ways: realized stock return volatility and option-implied volatility. Table II reports the results of the panel regressions of corporate risk levels on local male-female ratios controlling for other county and firm characteristics. Standard errors are adjusted for heteroskedasticity and are clustered by firm.

Realized stock return volatility is defined as the standard deviation of daily stock returns for a given calendar year. In Table II, regressions (1) and (2) show that the local male-female ratio is positively correlated with a firm's realized stock return volatility. For example, in regression (1), the coefficient of the local male-female ratio is 0.025. As the unconditional mean of realized return volatility is 3.7%, this indicates that a one standard-deviation increase in the local male-female ratio increases a firm's stock volatility by approximately 3.4% (=0.025*0.051/0.037). In regressions (3) and (4), we use the 182-day option-implied volatility as the independent variable. Again, the local male-female ratio is positively related to firm risk. A one standard-deviation increase in the local male-female ratio boosts option-implied stock volatility by 3.9% (=0.028*0.051/0.037) relative to the sample mean.

Overall, Table II suggests that local male-female ratios are positively related to firm risk, measured as stock return volatility or option-implied stock volatility.

B. Impacts of local male-female ratios on corporate policies

Next, we investigate the impact of the local male-female ratio on a firm's investment and financial conservatism, measured as a firm's market and book leverage, capital expenditures, and cash holdings. We run panel regressions of these variables on the local male-female ratio and report the results in Table III. We control for other county-level demographic characteristics, firm characteristics, and state fixed effects in regressions (1) to (4). A one standard-deviation increase in the local male-female ratio increases a firm's market leverage

ratio, book leverage ratio, cash expenditures by approximately 3.4% (=0.085*0.051/0.126), 3.1% (=0.101*0.051/0.167) and 5.3% (=0.053*0.051/0.051), and decreases cash holding by 3.4% (=0.084*0.051/0.127), respectively, relative to the sample averages. These results are both statistically and economically significant.

These results are consistent with the view that an increase in the local male-female ratio encourages firms to adopt riskier financial and investment policies.

C. Impacts of local male-female ratios on interest rate hedging for industrial firms

Earlier studies find that firms use derivatives to manage risk. For example, Guay (1999) documents that initiating derivative contracts reduces a firm's earnings volatility and stock price volatility. Campello et al. (2011) show that derivatives hedging have a significant impact on a firm's value and debt capacity. Interest rate derivatives are the instruments most commonly used for corporate hedging purposes. Therefore, we use interest rate derivatives as a proxy for a firm's hedging activities.

We first examine industrial firms in Panel A of Table IV. We use a Probit model to estimate the likelihood of a firm's adoption of interest rate hedging. The dependent variable is an indicator taking a value of one when a firm reports the use of interest rate derivatives in its annual reports and zero otherwise. The key variable of interest is the local male-female ratio, together with some other control variables, i.e., county characteristics, firm characteristics, and fixed effects. Regressions (1)–(4) present results using various control variables. For example, in regression (2) we include some local characteristics, because county-level characteristics such as other demographic or economic conditions may be correlated with local male-female ratios and might be the reason that firms use interest rate hedging policies to manage risk. In regression (3), we include industry fixed effects, while regression (4) controls for state fixed effects. The inclusion of state fixed effects ensures that the results are not driven by time-invariant state-level characteristics that affect both the local male-female ratio and the

likelihood of adopting interest rate hedging. Therefore, in this specification, we examine variations in local male-female ratios observed across counties within each state rather than across states.

For all specifications, the regression coefficients are similar in both magnitude and significance. For example, regression (4) presented in Panel A indicates that the local male-female ratio has a marginal effect of -0.259, indicating that a one standard-deviation increase in the local male-female ratio decreases the likelihood of corporate interest rate hedging by 5.04% (=0.259*0.051/0.262) relative to the sample average. The coefficients of the other control variables are in line with previous findings. For example, larger and more mature firms are associated with a higher probability of interest rate hedging.

D. Impacts of local male-female ratios on bank interest rate hedging

After examining the effect of the local male-female ratio on the hedging activities of publicly traded industrial firms, we turn to the bank holding companies. This sample presents some advantages. First, Y-9C reports enable us to use the exact notional values of interest rate derivatives rather than an indicator. Second, bank holding companies are required to report their use of derivatives for trading and hedging purposes separately. Finally, bank holding company reports allow us to control for interest rate risk exposures.

Panel B of Table IV illustrates the OLS regressions of bank interest rate hedging against the local male-female ratio. Following Bonaimé, Hankins, and Harford (2014), we measure bank interest rate hedging as the gross notional value of interest rate derivatives for non-trading purposes scaled by market capitalization. We include other bank-level characteristics as control variables in regression (1), including the logarithm of total book assets, capital structure (market-to-book ratio), securities, federal funds, commercial loans, cash, and fixed assets (premises). All items are normalized by a company's market capitalization. Regression (2) includes other local demographic characteristics as additional controls. In regression (3), we

use the underlying interest rate exposure level and tier 1 capital ratio as additional controls. In regression (4), we add state fixed effects. Regression (4) shows that a one standard-deviation increase in the local male-female ratio decreases bank interest rate hedging by 9.10% (=0.303*0.051/0.169) relative to the sample mean. Again, the regression coefficients are similar in magnitudes and significant across all specifications.

III. Impacts of Catering to Local Risk Attitudes: Loan Contract Terms

In the previous section, we document consistent evidence that firms based in areas of higher male-female ratios are more likely to adopt riskier corporate policies and to experience higher firm risks. In this section, we further investigate the value implications of corporate risk-taking as a result of local gender differences. Specifically, we examine the effects of local gender differences on loan contract terms.

A. Impacts of local male-female ratios on loan spreads

We first examine how firms' adjusting corporate policies based on local risk preferences, proxied by the local male-female ratio, affects the cost of debt. If they adopt higher levels of firm risk, firms based in areas with local populations that are predominantly male should have higher borrowing costs.

We run panel regressions in which the dependent variable is the loan spread charged by a bank over the London Inter-bank Offered Rate (LIBOR) in Panel A of Table V. Following Graham, Li, and Qiu (2008), Lin et al. (2011), and Lin et al. (2013), we control for a set of firm characteristics associated with a firm's cost of debt, including book assets, market leverage ratios, tangibility, market-to-book ratios, free cash flows, and credit rating fixed effects. All regressions also control for loan-specific characteristics (loan facility values, loan maturity levels, loan type fixed effects, and loan purpose fixed effects).

Regressions (1)–(4) in Panel A of Table V present the results. The estimated coefficient for the local male-female ratio is statistically significant at the 1% level with a positive sign, suggesting that a higher local male-female ratio is positively associated with the cost of bank loans.

B. Impacts of the local male-female ratios on collateral requirements

Existing literature demonstrates that collateral requirements are associated with riskier borrowers (Berger and Udell, 1990; John, Lynch, and Puri, 2003). When firms increase their risks in response to lower levels of local risk aversion as proxied by a higher male-female ratio, they may suffer from a higher probability of their loan contracts requiring collateral. In this subsection, we investigate this implication with a Probit regression in which the dependent variable is an indicator taking a value of one when a bank loan is secured and zero otherwise.

Regressions (5)–(8) in Panel A of Table V present the results, using various control variables. The coefficient estimate of the local male-female ratio is positive and significant, consistent with the above prediction. In regression (8), the marginal effect of the local male-female ratio is 0.0246 (=0.482*0.051), indicating that a one standard-deviation increase in the local male-female ratio increases the likelihood of a secured loan by roughly 6.5% (the sample average for collateral requirements is approximately 38.1%).

C. Impacts of local male-female ratios on capital expenditure restrictions

Nini, Smith, and Sufi (2009) argue that capital expenditure restrictions present an important association with a firm's credit risk. Therefore, we expect firms based in areas with high male-female ratios to be more likely to have capital expenditure restrictions in bank loan contracts due to higher firm risk.

We perform Probit regressions in which the dependent variable is an indicator taking a value of one when a bank loan imposes capital expenditure restrictions and zero otherwise. The

results are presented in regressions (9)–(12) in Panel A of Table V. Throughout regressions (9)–(12), the local male-female ratio has a positive sign that is significant at the 5% level. As shown in regression (12), the marginal effect of the local male-female ratio is 0.678. This implies that a one standard-deviation increase in the local male-female ratio increases the probability of capital expenditure restrictions by 3.46% (=0.678*0.051). As the sample average of capital expenditure restrictions is 29.4%, the effect of the local male-female ratio accounts for 11.8% of the sample mean.

D. Impact of the local male-female ratio on covenant violations

To provide further evidence of the effect of the local male-female ratio on corporate risk-taking, we examine firms' likelihood of committing covenant violations. To the extent that a firm takes excessive risks, it is more likely to violate loan covenants (Jensen and Meckling, 1976).

Regressions (1)–(4) in Panel B of Table V are Probit regressions in which the dependent variable is an indicator of one when a firm violates a bank loan covenant in a specific year. In regression (1), we control for the local male-female ratio and firm characteristics. As expected, the coefficient of the local male-female ratio is significantly positive. The marginal effect of the local male-female ratio is 0.299, suggesting that a one standard-deviation increase in the male-female ratio increases the likelihood of a covenant violation by 0.015, which is 11.7% of the sample mean of the likelihood of covenant violations (0.13).

In regression (2), we control for other county-level demographic characteristics. In regression (3), we include industry fixed effects. In regression (4), we control for state fixed effects. We find that the local male-female ratio is positively associated with the likelihood of covenant violations for all specifications.

IV. Endogeneity Tests

So far we have documented a strong correlation between the local male-female ratio and firm risk-taking. We further consider endogeneity issues in this section. We first consider potential omitted variable issues. Second, we address the concerns of reverse causality. Last, we use the instrumental variable approach and run two-stage least squares (2SLS) regressions to answer the causality questions. We consider two different sets of instrumental variables.

A. Potential omitted variables and reverse causality

Industry time variation may contribute to the correlation between local male-female ratio and corporate risk-taking, because different industries have systematically different shares of male and female employees and the industry time trend may explain the baseline results. For example, the mining industry is likely to have a higher proportion of male employees than the retail industry, and the changing conditions in an industry can reflect the labor movement across the counties, which might drive the local communities' male-female ratios. To the extent that the industry time trend affects local firms' risk-taking, the relation between local male-female ratios may just capture this industry time variation. Although we have controlled for industry fixed effects in the main specification in the previous tables, to further address this concern, we add the interaction of industry and year fixed effects to absorb the time trend at the industry level. We find robust results, as shown in Panel A of Appendix Table A2.

Next, we further consider county fixed effects. That is, we identify the effects of local male-female ratios on corporate risk-taking from time variations of male-female ratios in counties where companies locate (as before, controlling for all other firm-specific factors that may vary over time). This helps to address the concern that our findings are spuriously driven by county-level time invariant omitted variables (geographic, cultural, etc.). In Panel B of Appendix Table A2, we find that most of the regression results still hold after we include the county-level fixed effect.

We also control for the local proportion of retirees. Areas in the Southwest and Florida might attract more retired people. Since on average women live longer, there would be more women in these areas. Retirees could affect local firms through many other channels – for example, local demand, savings, etc. Therefore, we control for the county-level proportion of population that is above the retirement age (>60 years old) in Panel C of Appendix Table A2, and we find that our results are not driven by population that are above the retirement age.

Third, it is possible that corporate headquarters cause migration of the labor force across counties, which may affect the male-female ratio of local counties. For example, one might wonder if local firm headquarters are related to the local gender ratio. Figure II plots the geographical distribution of firm headquarters in 2005. We find that the correlation between the local male-female ratio and the fraction of firm headquarters is merely -0.011, which rules out the above concern.

Fourth, one might wonder if some counties specialize in certain industries that are lack of gender diversity. For example, Silicon Valley has attracted disproportionally more men than women over the past several decades because men are overrepresented in the occupations required by those firms. To the extent that firms headquartered in Silicon Valley attract more male labor, the correlation between more corporate risk-taking and higher male-female ratio can be simultaneously determined. To exclude this concern, we control for industry fixed effects and exclude the counties where male-female ratio is highly correlated with the industry's size-weighted local industry male-female ratio. Because we exclude these counties from the sample, the male-female ratio of the remaining counties is unlikely to be affected by local industry clustering that affects labor force mobility. We construct the relation between local male-female ratio and size-weighted local industry male-female ratio as follows. We first collect industry male-female ratio data from the US Bureau of Labor Statistics, where the industries include agriculture, mining, construction, manufacturing, transportation, public

utilities, wholesale trade, retail trade, finance, insurance, real estate, services, and public administration. We then calculate the weighted industry male-female ratio for each county-year, where the weight is the industry size. Finally, we calculate the correlation between the local population male-female ratio and the weighted local industry male-female ratio to identify the counties whose correlation is in the top 20%, the top 30%, and the top 50%. These counties have the local gender ratios that are most likely to be affected by industry characteristics. We find that our main findings are robust after excluding these counties, as shown in Appendix Table A3.

Last, it is possible that local demographic changes might predict local business activities, which creates spurious correlations between the local gender ratio and corporate policies. To rule out this concern, we consider a subsample of firms that have revenues mainly from other states, i.e., their top five customers are out of state. Then we perform analyses similar to those in Tables II-V. Again, we find robust evidence that local male-female ratios affect these firms' risk-taking, as shown in Table VI.

B. Endogeneity tests: 2SLS

B.1 Using male-female ratio at birth in 1960 as an instrumental variable

In this subsection, we use instrumental variables and run a 2SLS regression to address the endogeneity concerns. Roberts and Whited (2013) suggest that biological or physical events are more likely than traditional corporate financial ratio to be good instruments in empirical corporate finance. We exploit human birth as the instrumental variable. Specifically, we use the county-level local male-female ratio at birth (i.e., among newborns) in 1960. Naturally, the local male-female ratio at birth in 1960 is positively related to the local male-female ratio 30–50 years later, i.e., 1992–2017, the main sample period of this study. In the US, the natural sex ratio at birth is quite stable and shows little sign of impacts by labor force movement, local industry clustering, local economic conditions, local population, etc. Therefore, the county-

level sex ratio at birth is largely exogenous. Also, the local male-female ratio at birth in 1960 is unlikely to directly affect firms' risk-taking policies over 1992–2017, except through the channel of local male-female ratio. Again, to rule out the concerns that local demographic conditions in 1960 might predict local business operations in the long run, we restrict our sample to firms that have revenue mainly from other states, i.e., their top five customers are out of state. Therefore, this instrument satisfies both relevance and exclusion requirements.

We present the first-stage regression results in regression (1) of Table VII, Panel A. We see that the local male-female ratio at birth in 1960 is positively related to the local male-female ratio for 1992–2017. The coefficient is significant at 1%, and the *F*-statistic for the weak identification test is 30.69, indicating that the local male-female ratio at birth in 1960 passes the relevance test. Regressions (2)–(13) in Table VII, Panel A present the second-stage regression results. Except for the case of capital expenditure and loan spread, the local male-female ratio is significant at the 10% level at least. Therefore, our previous results are robust to this instrumental variable approach.

B.2 Using prostatic cancer and breast cancer as instruments

In addition to birth-related events, we also exploit two mortality-related biological factors that may affect the sex ratio. The first instrument is based on the mortality rates of breast cancer in women. Breast cancer is the most frequently occurring cancer among women, and it also causes the greatest number of cancer-related deaths among women. Because both male and female can get breast cancer, we normalize the mortality rates of breast cancer in women by the mortality rate of breast cancer in men in a county in order to control for that and make sure breast cancer has unidirectional effects on gender ratio. We expect that in a region where the local community has a higher ratio of mortality rate of breast cancer in women over the mortality rate of breast cancer in men, there is likely to be more male population over female

population. This ratio is unlikely to affect local firms' corporate policy except through local male-female ratio.

The second instrument we use is the county-level mortality rate of prostatic cancer. Prostate cancer is the most common type of cancer found in men in the United States.[10] Therefore, it is likely that the mortality rate of prostatic cancer can reduce the local male-female ratio, and our instrument of the mortality ratio of prostatic cancer satisfies the relation criterion. According to the CDC, gene-related factors affect the occurrence of prostate cancer.[11] This instrument also satisfies the exclusion condition, since it is unlikely that gene-related prostatic cancer affects local companies' policies through any channel other than the male-female ratio in the local community.

Our data on the mortality rates of breast cancer and prostatic cancer come from the Global Health Data Exchange. We present the 2SLS regression with the local mortality rates of breast cancer and prostatic cancer as the instrumental variables in Table VII, Panel B. In the first-stage regression, we find that the local mortality rate of prostatic cancer is significantly and negatively related with the local male-female ratio, while the ratio of local mortality rate of breast cancer in females over males is strongly positively related with the local male-female ratio. In the second stage, we find that generally, the instrumented local male-female ratio predicts higher corporate risk-taking, except for the regression of capital expenditure. The Hansen *J* statistic (*p*-value) significantly rejects the null of over-identification. Overall, our main results hold in the 2SLS regressions.

[10] The American Cancer Society estimated that in 2018, 164,690 men would be newly diagnosed with prostate cancer, 29,430 would die from the disease, and 1 in every 9 men would be diagnosed with prostate cancer during their lifetimes (see https://www.uclahealth.org/urology/prostate-cancer/what-is-prostate-cancer).

[11] For example, men who have a father, son, or brother who had prostate cancer are at increased risk of getting prostate cancer. Men with three or more first-degree relatives (father, son, or brother), or two close relatives on the same side of the family who have had prostate cancer may have a type of prostate cancer caused by genetic changes that are inherited (see https://www.cdc.gov/cancer/prostate/basic_info/risk_factors.htm).

V. Examining the Mechanism

The above evidence suggests that the local male-female ratio affects corporate risk-taking. Nevertheless, we still need to identify the transmitting mechanisms through which the risk attitudes of the local population are expressed in corporate decisions. We approach this in four steps. First, we address the magnitude concern of cross-county gender ratio dispersion. Second, we show that the local male-female ratio captures levels of risk aversion and overconfidence in local residents. Third, in addition to the well-cited local investor channel, we formally identify another direct channel through which firms express the risk preferences of local populations: the employee channel. Fourth, we rule out alternative explanations for gender differences by showing that our results are not driven by a local culture of gender egalitarianism. Last, we address the concern whether local gender imbalance captures similar information of risk preferences as local religiosity.

A. Examining different gender ratio variations

Imbalanced sex ratio has profound socioeconomic consequences, e.g., elections, crimes, societal stability and security, marriages, and growth etc. (see, e.g., Hesketh and Zhu (2006), Dyson (2012), and Edlund et al. (2013)). Still, some might wonder whether the cross-county variations of gender ratios are substantial enough to influence corporate policies. We address this concern by reexamining the significance of male-female ratio over some subsamples in Table VIII. That is, in each year, we intentionally exclude counties in the left and right tails of the cross-county gender ratio distribution. For example, the subsample of 45-55 percentile means we only include counties in the 45%-55% of the cross-county gender ratios. Starting with the subsample of 45-55 percentile, i.e., a subsample with small variations of gender ratios (a cross-county standard deviation of 0.011), we see from Table VIII that gender ratio indeed is insignificant. Once we extend the subsample to 15-85 percentile (a cross-county standard deviation of 0.028), e.g., excluding counties in the top and bottom 15% of gender ratios, we

see gender ratio becomes significant in most regressions. Overall, the local gender ratio is reasonably significant even within the middle 70% of counties. Also importantly, the local gender ratio becomes more significant in regressions when the sample includes more left and right distributions. For example, it is strongly significant if we only use the top and bottom 20% of counties, i.e., the subsample with large variations in local gender ratios. This suggests that as the variations in local gender ratio increase, our results become both statistically and economically more significant, further confirming a causal effect.

B. Understanding the risk attitudes embedded in gender differences

Gender differences may reflect different risk preferences or beliefs. Prior studies suggest that men are less risk averse and more overconfident than women (see, e.g., Croson and Gneezy, 2009; Vieider et al., 2015; Falk et al., 2018; D'Acunto, 2018). Therefore, a high local male-female ratio implies the presence of a less risk averse and more overconfident population. We test the content of local male-female ratios by examining relevant items taken from the General Social Survey (GSS) conducted by the National Opinion Research Center at the University of Chicago. We find that local male-female ratios capture variations in both risk aversion and overconfidence in a population.

In 1993, the GSS included an item related to attitudes toward financial risk: "Some people say that this is very important to them. Others say that it is not as important. Please tell me how important being financially secure is." Scores of 1 to 5 respectively denote the following: "It is a top priority," "It is very important," "It is somewhat important," "It is not as important," and "It is not important at all." Therefore, the higher the score given, the less risk averse the respondent is. In 2008, the GSS included an item related to attitudes toward living security: "Have you or has anyone you know purchased items that provide a sense of safety (gas masks, duct tape, items that enhance home security, etc.)?" Scores of 0 to 3 respectively denote "No," "Yes, the respondent has purchased such items," "Yes, someone the respondent knows has

purchased such items," and "Yes, both the respondent and someone the respondent knows have purchased such items." We define a score for this item as 6 minus the GSS score to render it consistent with the financial risk measure. Therefore, the higher the score for financial risk or living risk, the less risk averse the respondent is. We compute a county's average score as the local risk aversion measure. Panels A and B of Table IX report the panel regression of local risk aversion against the local male-female ratio while controlling for other local characteristics like population size, household income, the unemployment rate, age, and state fixed effects. Panel A examines aversion to financial risk, and Panel B examines aversion to living risk. Overall, we find that a higher local male-female ratio leads to lower levels of average risk aversion in the population.

The GSS included four items related to confidence in 2016 covering 216 US counties. The four items are as follows: "In uncertain times, I usually expect the best," "I'm always optimistic about my future," "If something can go wrong for me, it will," and "I rarely count on good things happening to me." For each item, the GSS assigns a response a score of 1 to 5 respectively denoting "Strongly disagree," "Disagree," "Neutral," "Agree," and "Strongly agree." Therefore, the former two items represent confidence levels whereas the latter two denote the opposite. To be consistent, we define the confidence score as 6 minus the GSS score given for each of the latter two items. Therefore, the higher the score, the more confident the respondent is. We then take an average for each of the items and aggregate it at the county level as the local overconfidence measure. Panel C of Table IX reports a panel regression of local overconfidence against the local male-female ratio controlling for other local characteristics like population size, household income, unemployment rates, age, and state fixed effects. We find that a higher local male-female ratio is associated with more confidence in a population.

C. Identifying the preference transmission mechanism: The investor channel

Local residents might affect corporate decision-making via the investor channel, for two reasons. First, some large local investors can directly influence corporate decision-making (Cronqvist and Fahlenbrach, 2011; Derrien, Kecskés, and Thesmar, 2013; Lyandres et al., 2019). Second, local retail investors can collectively express their opinion through voting by feet and influence the stock price (Kandel, Massa, and Simonov, 2011). Third, firms often shape their policies for catering to retail investors' preferences due to managers' valuation concerns or even risk management concerns (Becker, Ivković, and Weisbenner, 2011).[12] For example, Manconi and Massa (2013) demonstrate how firms cater to their investors' payout preferences. As we don't have comprehensive data on individual shareholders' gender and stock holdings, we examine how dividend policy responds to the local gender ratio and stock price reactions surrounding the dividend payment to provide some indirect evidence. In this section, we first show that firms tailor their dividend policies according to local gender clienteles, i.e., females prefer more dividends. Next, we shed light on why management would like to cater to local dividend clientele arising from gender preference. We show the valuation effect: firms located in areas with more dividend clientele (represented by higher local female percentage) are valued higher during dividend accumulation.

Female investors often prefer dividend paying stocks. First, dividend-paying stocks provide steady income for investors and appear to be less risky. Investors tend to have different perceptions of the relative riskiness of dividends and the growth value of retained earnings. Specifically， they may perceive capital gains from earning retention to be riskier than dividend expectations (Baker, Farrelly, and Edelman, 1985). Empirically, firms that increase

[12] Catering literature demonstrates that managers may cater to shareholder demands. For instant, firm may adjust their payout policy (e.g., Baker and Wurgler (2004), Becker, Ivkovic, and Weisbenner (2011)), investment policies (Polk and Sapienza, 2009), stock-split decisions (e.g., Baker, Greenwood, and Wurgler (2009)) and capital structure (e.g., Baker and Wurgler (2002)) according to shareholders' needs.

(decrease) dividends experience a significant decline (increase) in their systematic risk, and the positive market reaction to a dividend increase is significantly related to the subsequent decline in systematic risk (Grullon, Michaely, and Swaminathan, 2002). Therefore, the more risk averse female investor prefers dividend-paying stocks. Second, females are more loss averse and become more risk averse than males after prior losses (Schmidt and Traub, 2002; Brooks and Zank, 2005; Hibbert, Lawrence, and Prakash, 2018). Therefore, female investors might prefer stable dividend gains rather than the possible prospect of a disappointed growth in retained earnings in the distant future, as suggested in prospect theory (e.g., Shefrin and Statman, 1984).

Both theoretical and empirical evidence shows that managers respond to shareholders' dividend preferences (Baker, Farrelly, and Edelman, 1985; Baker and Wurgler, 2004; Becker, Ivkovic, and Weisbenner, 2011). Therefore, we would expect that a higher local female ratio leads to more dividend payouts.

We run panel regressions of these variables against the local male-female ratio and report the results in Table X. We follow John, Knyazeva and Knyazeva (2011) to construct two dividend payout ratios (*dividend payout 1* in Columns (1) and (2) and *dividend payout 2* in Columns (3) and (4)). *Dividend payout 1* is the ratio of cash dividends to market value of common equity. *Dividend payout 2* is ratio of cash dividends to net income for firm years with positive net income. We control for other county-level demographic characteristics, firm characteristics, and state fixed effects in the regressions. The coefficient of the local male-female ratio is significantly negative at the 1% level. A one-standard-deviation increase in the local male-female ratio decreases a firm's *dividend payout 1* ratio by 9.3% (=0.011*0.051/0.006) in Column (2), and it decreases a firm's *dividend payout 2* by 13.7% (=0.226*0.051/0.084) in Column (4), relative to the sample averages. These results are both

statistically and economically significant, suggesting that firms tailor their dividend policies to cater to local investors.

Next, we examine the stock price movements around the ex-dividend day in Table XI. In a rational market, the price at the ex-dividend day reflects the relative value of dividends and capital gains to the marginal stockholders. Therefore, a large ex-dividend day price drop, as a fraction of the dividend amount, should be associated with a high demand for dividends. Following Becker, Ivković and Weisbenner (2011), the dependent variable is the negative of the price change from the close of the last cum-dividend day to the open of the ex-dividend day divided by the closing price on the last cum-dividend day. The independent variables are the dividend amount scaled by the closing price (Div/P), local male-female ratio, and their interaction. Our regressions cover all stocks with returns surrounding ex-dividend days from 1992 to 2017. In Column (3), we also add the interaction term between Div/P and the local average age, as well as local average age. In Column (4), we add state fixed effects. Columns (3)–(4) show that the coefficient of *Div/P* × *local male-female* is negative and significant, which supports the proposed investor channel whereby the ex-dividend day price drop is less in areas with a larger local male-female ratio.

Overall, the dividend results partially provide evidence of the investor channel of local gender effect, in which companies may shape their corporate policies according to the risk preferences of local investors.

D. Identifying the preference transmission mechanism: The employee channel

Intuitively, we expect that most corporate decisions are made by corporate employees and especially by members of the management and monitoring team, such as executives and board directors. We examine whether local gender differences affect corporate employment with two tests.

First, we explore whether gender differences in the local population amplify gender imbalance among local employees. Individuals, including top managers of the firm, prefer to conform to their peers in terms of preferences and practices (Kohlberg (1984)). This might be because employees share their preferences or peer pressure which induces conformity. Therefore, more gender skewed employee base can strengthen the risk preference in corporate norm. Also, local male employees might express their risk attitudes through their equity based compensations, for example, less risk averse employees are likely to prefer equity based compensations (Spalt, 2013), therefore male employees might express preference of risk-taking more by choosing equity based compensations which in turn would affect corporate activities. Moreover, firms also cater to their employees' preferences, even when the employees are non-executives (Spalt, 2013). On top of that, to the extent that the increased male population enhance the male employees' representativeness in a firm, we would expect more risk-taking preference revealed in the corporate policies.

Appendix Table A4 shows the panel regression results for employee gender ratio against the local male-female ratio. Consistent with our prediction, it shows that a higher local male-female ratio drives a higher male-female ratio among local employees. Additionally, we show in Appendix Table A4 that higher male-female ratio leads to higher non-executive employee stock options and employee involvement (via employee stock ownership plans (ESOPs) or employee stock purchase plans (ESPPs)). These results suggest that local employees express their risk attitudes in corporate decisions.

Second, we examine whether local gender imbalances influence the gender differences among key decision makers, e.g., corporate executives and board directors. Prior studies often find that larger proportions of male executives or directors can lead to higher risk profiles among firms.[13] For example, Pan, Siegel, and Wang (2017) show that risk attitudes of firms'

[13] Differently, Ahern and Dittmar (2012) find that boards become less capable after imposing female board repre

leaders affect corporate policies. Huang and Kisgen (2013) find that male executives undertake more acquisitions and issue debt more often than female executives. Faccio, Marchica, and Mura (2016) document that firms with male CEOs have more leverage and more volatile earnings. Levi, Li, and Zhang (2014) find firms with male directors pay more bid premium and make fewer acquisitions. Bernile, Bhagwat, and Yonker (2018) show that firms with less diversified boards have higher volatility and lower performance.[14] Moreover, although corporate executives and directors may not be local residents, their behavior interacts with local traits. Ewens and Townsend (2020) show that female investors express more interests in female entrepreneurs compared to observably similar male entrepreneurs and vice versa. To the extent that female investors tend to pick female entrepreneurs, the investor channel can amplify the effect of the employee channel and increase the expression of the risk aversion of female leadership. Therefore, we hypothesize that a firm based in an area with a lower male-female ratio should have more female executives and board directors, which reduces firm risk.

In Table XII, we provide direct evidence showing that a higher local male-female ratio is associated with a lower proportion of female CEOs and directors. In regressions (1)–(4), we regress the proportion of females on corporate boards on the local male-female ratio while controlling for other county and firm characteristics. Following Huang and Kisgen (2013), we apply board characteristics (board size and percentage of independent boards) in regression (3) and Fama-French 12-industry fixed effects in regression (4). From regressions (1)–(4) we find consistent evidence showing that a higher local male-female ratio leads to lower fractions of females on corporate boards. In regressions (5)–(8), we use the proportions of female CEOs

sentation quota among Norwegian firms.

[14] Inci, Narayanan, and Seyhun (2017) show that female CEOs have disadvantage of accessing inside information. Adams and Ferreira (2009) show that board gender diversity improves monitoring but has a negative impact on firm performance. Schwartz-Ziv (2017) shows that female directors are more active when there is a critical mass. Griffin, Li, and Xu (2019) show that boards are more gender diverse in countries with narrower gender gaps, which leads to higher innovative efficiency.

and female directors.[15] Again, a higher local male-female ratio decreases the proportion of female CEOs and directors of a company, revealing a plausible mechanism for the transmission of local residents' risk attitudes to corporate decisions.

To examine the effects of gender differences among corporate executives and directors, we further test whether CEO overconfidence is related to local overconfidence. Overconfident CEOs often engage in much riskier corporate activities (see, e.g., Malmendier and Tate, 2005; Malmendier and Tate, 2008; Gervais, Heaton, and Odean, 2011; Malmendier, Tate, and Yan, 2011; Hirshleifer, Low, and Teoh, 2012). Following Malmendier and Tate (2005, 2008), we define a CEO as overconfident when she postpones the exercising of vested stock options that are at least 67% in the money.[16] Following Hirshleifer, Low, and Teoh (2012), we define a CEO as overconfident from the first point at which she exhibits such behavior. We do not require that a CEO hold a 67% in the money option at least twice, as this requirement would introduce a look-ahead bias. We collect CEO option holdings from the S&P Execucomp database of 2017. Table XIII reports panel regressions of CEO overconfidence against local overconfidence. It shows that higher levels of local overconfidence are associated with higher degrees of CEO overconfidence. Together with the evidence given in Table XII, this implies that higher local male-female ratios relate to higher levels of CEO overconfidence, which leads to more corporate risk-taking activity.

E. Alternative interpretation: Gender egalitarianism

In this paper, we use the local male-female ratio as a proxy for the risk attitudes of local populations. An alternative interpretation is that the local male-female ratio reflects local attitudes toward gender equality, as a gender-equal culture could affect the local male-female

[15] As female CEOs are very rare in our sample, we do not consider female CEOs separately.
[16] The existing literature has proposed other measures of CEO overconfidence based on CEO portrayals in the business press (Malmendier and Tate, 2008), survey data (Ben-David, Graham, and Harvey, 2013), and managerial earnings forecasts (Otto, 2014; Hribar and Yang, 2016).

ratio, which would affect female corporate board representation and ultimately corporate risk-taking (e.g., McLean, Pirinsky, and Zhao, 2018). A culture of gender equality should affect labor market outcomes, e.g., the gender pay gap. When a local culture has greater gender equality, we should expect to find a higher local female-male income ratio. We test this interpretation by applying the local female-male income ratio as a control variable in the regressions. The local female-male income ratio is calculated as the local median female income divided by the local median male income based on data taken from the US Census Bureau's American Community Survey. Regressions (2) and (6) presented in Table XIV show that a high local male-female ratio leads to a lower proportion of female CEOs and directors after we control for the local female-male income ratio, suggesting that our findings are not driven by gender egalitarianism in the local culture.

Next, we include the local female-male income ratio as an additional control variable and repeat our previous analyses, examining the impact of the local male-female ratio on corporate risk levels, financial policies, and investment policies, in Table XIV. Again, we find that our results remain robust after we control for gender egalitarianism.

F. Alternative characteristic: Local religiosity

Another concern is that the local gender imbalance might be similar to other local characteristics. For example, Hillary and Hui (2009) argue that more religious population are more risk averse and hence choose lower risk profiles. That is, local religiosity affects corporate activities. Jiang et al. (2018) further show that firms located in more religious counties have better credit ratings and lower borrowing costs. We further check if local gender imbalance and religiosity capture similar information of local risk attitudes in Table XV. We see that the coefficients of local gender imbalance and religiosity have opposite signs, implying they capture similar aspects of risk preferences. More importantly, we see that the local gender imbalance remains significant in all 12 regressions, after controlling for local religiosity. But

local religiosity is insignificant in 5 out of 12 regressions, suggesting that the local gender ratio better captures local risk attitudes.

VI. Conclusions

This paper explores the effects of local gender imbalance on corporate activities from the risk preference perspective, because males appear to be less risk averse and more overconfident than females. We find that the local male-female ratio is positively related to firms' risk-taking. Firms based in counties with higher local male-female ratios present higher levels of realized stock return volatility, higher levels of option-implied volatility, higher market/book leverage ratios, higher capital expenditures, and lower cash holdings. We also find that firms associated with higher local male-female ratios face higher loan spreads, stricter loan conditions, and incur more covenant violations. These results are robust to state, industry, and time fixed effects, as well as industry-driven gender differences.

We address endogeneity concerns by applying the instrumental variable approach, using the male-female ratio at birth in 1960, and local mortality rates of breast cancer and prostate cancer. Moreover, we show that corporate dividend policies cater to local male-female ratios, which provides support for the investor channel. We also find that a higher local male-female ratio leads to fewer local female employees, to less female representation among CEOs and board directors, to higher levels of CEO overconfidence, and to higher employee stock options and involvement. This suggests that an employee channel, which conveys the risk attitudes of the local population into corporate decisions, may complement the local investor channel. Last, we show that our results are not driven by local gender egalitarianism and local religiosity. Overall, these results suggest that local gender imbalance is an important driver of corporate risk-taking.

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Figure I: The Local Gender Ratio in the US

This figure plots the gender ratios across different counties in the US. We use the 2005 census data and we focus on the prime work age population (between 20 and 64).

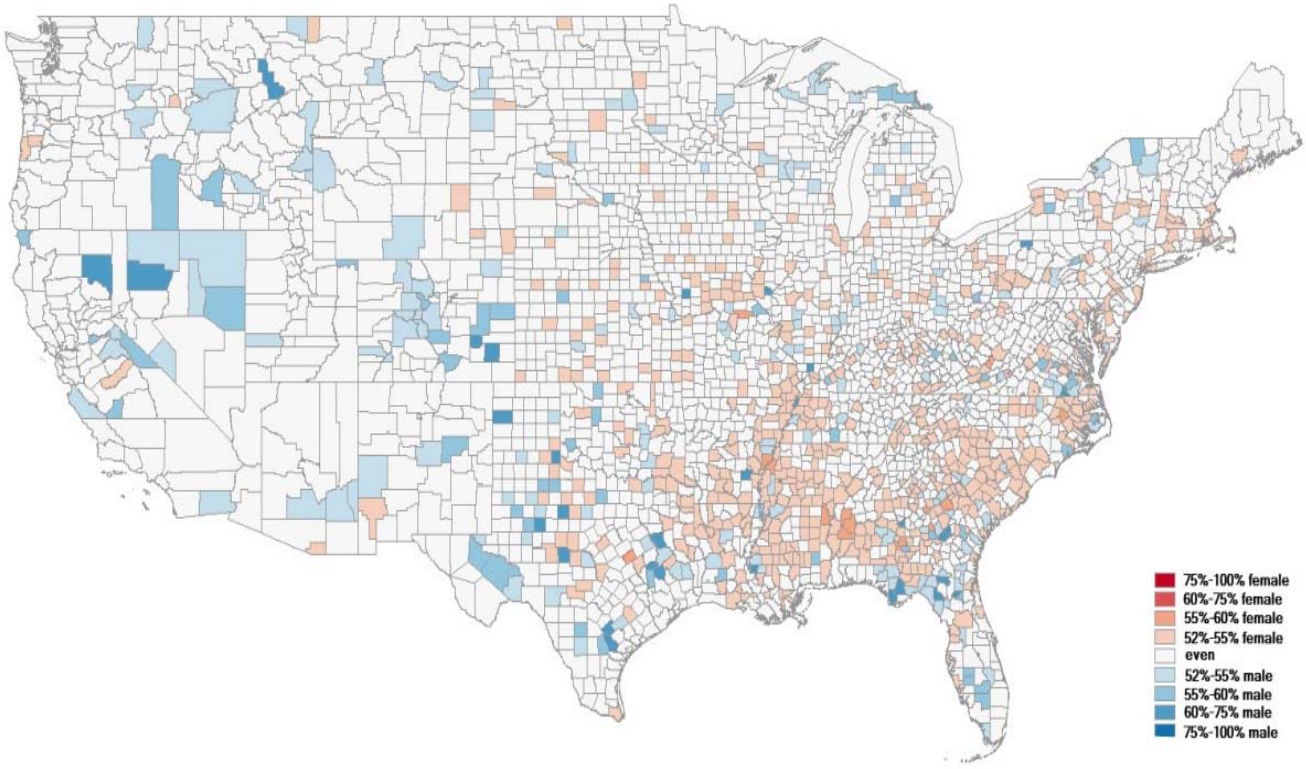

Figure II: The Geographical Distribution of Firm Headquarters

This figure plots the geographical distribution of the number of firm headquarters across counties of United States in 2005.

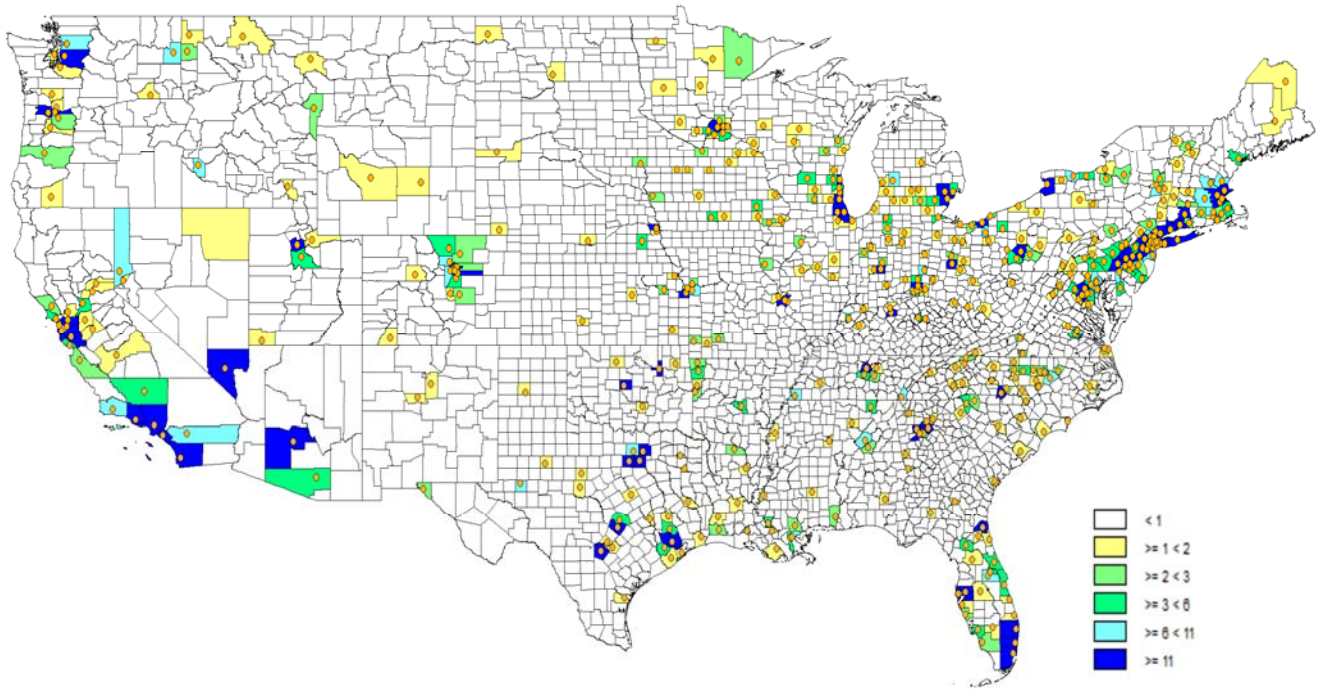

Table I
Panel A: Summary Statistics

This table presents summary statistics and data sources for the main variables. We report the mean, median, minimum, maximum, and standard deviation for each variable. See the appendix for variable definitions and Section I for the data sources.

Variable	N	Mean	Minimum	Maximum	Std. Dev.	Source
Local male-female ratio	14,342	0.946	0.760	1.846	0.057	US Census Bureau
County characteristics						
Local higher education proportion	14,342	0.240	0.055	0.716	0.095	US Census Bureau
Local household income (dollars in thousands)	14,342	44.082	19.475	76.260	10.596	US Census Bureau
Local population (in millions)	14,342	0.663	0.035	19.701	1.366	US Census Bureau
Local average age	14,342	35.803	26.500	44.100	2.331	US Census Bureau
Local unemployment rate	14,342	0.058	0.009	0.199	0.024	US Census Bureau
Local male-female ratio of employment	3,806	1.151	0.842	1.473	0.084	Geographic Profile of Employment and Unemployment
Local female-male income ratio	14,342	0.653	0.494	0.914	0.105	American Community Survey
Local overconfidence	2,742	3.512	2.000	4.500	0.431	General Social Survey
Local financial risk preference	2,371	1.921	1.000	4.000	0.334	General Social Survey
Local preference of living risk	2,956	0.515	0.000	1.000	0.212	General Social Survey
Local male-female ratio at birth in 1960	14,342	1.039	0.758	3.277	0.081	US Census Bureau
Local prostatic cancer mortality rate (per 100,000)	14,342	30.628	10.167	71.506	6.557	Global Health Data Exchange
Local breast cancer mortality rate (per 100,000)	14,342	77.360	39.344	173.995	11.696	Global Health Data Exchange
Local religiosity	14,342	0.503	0.226	0.864	0.132	American Religion Data Archive
Firm characteristics						
Book value (dollars in billions)	83,059	2.398	0.002	53.423	7.436	Compustat
Book leverage	83,059	0.167	0.000	0.721	0.185	Compustat
Capital expenditure	83,059	0.051	0.000	0.358	0.062	Compustat
Cash holding	83,059	0.127	0.000	0.844	0.166	Compustat
Free cash flow	83,059	-0.135	-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	83,059	0.037	0.009	0.126	0.022	CRSP
Market leverage	83,059	0.126	0.000	0.651	0.156	Compustat
Option-implied volatility	19,479	0.037	0.012	0.086	0.016	Compustat
Profitability	83,059	0.047	-1.086	0.432	0.203	Compustat
Sales growth	83,059	0.211	-0.563	2.423	0.499	Compustat
Tangibility	83,059	0.252	0.000	0.903	0.246	Compustat
Market-to-book	83,059	1.875	0.198	13.164	2.022	Compustat
Covenant violation	48,345	0.130	0.000	1.000	0.337	Nini, Smith and Sufi (2009)
Fraction of female directors	27,142	0.053	0.000	1.000	0.118	Execucomp
Fraction of female CEOs and directors	27,142	0.051	0.000	1.000	0.105	Execucomp

CEO overconfidence	527	0.610	0.000	1.000	0.487	Execucomp
Non-executive employee stock option (per 10000 employees)	14,752	0.878	0.000	22.510	2.879	Execucomp
Employee involvement	19,263	0.103	0.000	1.000	0.304	KLD Social Rating
Dividend payout 1	83,059	0.006	0.000	0.087	0.015	Compustat
Dividend payout 2	83,059	0.085	0.000	1.639	0.274	Compustat
Bank characteristics						
Book value (billion dollars)	12,949	2.425	0.048	69.338	8.843	Bank Regulatory
Bank commercial loan	12,949	0.939	0.000	9.108	1.099	Bank Regulatory
Bank federal funds	12,949	0.146	0.000	3.045	0.311	Bank Regulatory
Bank income	12,949	0.482	0.073	3.181	0.458	Bank Regulatory
Bank interest rate exposure	12,949	0.551	-5.013	11.694	1.756	Bank Regulatory
Bank interest rate hedge	12,949	0.169	0.000	1.296	0.328	Bank Regulatory
Market capitalization (billion dollars)	12,949	1.682	0.014	39.221	5.716	Bank Regulatory
Market-to-book	12,949	0.618	0.061	1.614	0.279	Bank Regulatory
Bank securities	12,949	1.708	0.127	12.749	1.565	Bank Regulatory
Bank tier 1 capital	12,949	0.739	0.197	3.993	0.557	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	1	0	LPC's DealScan
Loan maturity (months)	10,844	42.726	3.000	101.200	23.060	LPC's DealScan
Capital expenditure restriction	2,585	0.294	0	1	0	LPC's DealScan

Table II
Local Male-Female Ratio and Stock Volatility

This table reports panel regressions of firms' realized stock volatility or option-implied volatility against the local male-female ratio. In regressions (1) and (2), the dependent variable is the realized stock return volatility, calculated as daily stock return volatility within a year. In regressions (3) and (4), the dependent variable is option-implied volatility, estimated as 182-day forward-looking volatility from options. Regressions (2) and (4) control for state fixed effects. All regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Volatility		Option-Implied Volatility	
	(1)	(2)	(3)	(4)
Local male-female ratio	0.025***	0.011***	0.028***	0.013***
	(7.18)	(2.78)	(7.60)	(2.69)
County characteristics				
Local higher education proportion	0.008***	0.008***	0.007***	0.008***
	(5.21)	(4.57)	(4.46)	(4.22)
Ln (1+local population)	0.001***	0.000	0.000***	0.000
	(4.47)	(1.54)	(2.79)	(0.72)
Ln (local household income)	-0.002	-0.010***	-0.002**	-0.012***
	(-1.57)	(-5.15)	(-1.99)	(-5.18)
Unemployment rate	-0.007	-0.023**	-0.016	-0.028**
	(-0.81)	(-2.43)	(-1.48)	(-2.38)
Local average age	-0.006**	-0.007	-0.002	-0.002
	(-2.01)	(-0.68)	(-0.61)	(-0.16)
Firm characteristics				
Tangibility	-0.004***	-0.004***	-0.006***	-0.005***
	(-4.76)	(-4.69)	(-6.37)	(-5.88)
Ln (book assets)	-0.006***	-0.006***	-0.004***	-0.004***
	(-59.53)	(-59.11)	(-44.38)	(-43.93)
Market leverage	0.022***	0.022***	0.011***	0.011***
	(10.83)	(10.74)	(12.64)	(13.02)
Free cash flow	-0.008***	-0.008***	-0.003**	-0.003***
	(-8.76)	(-8.83)	(-2.57)	(-2.67)
Market-to-book	0.000	0.000	0.000***	0.000***
	(0.90)	(0.71)	(6.39)	(6.18)
Profitability	-0.014***	-0.014***	-0.019***	-0.018***
	(-10.56)	(-10.54)	(-11.37)	(-11.17)
Sales growth	0.000	0.000	0.000*	0.000
	(0.56)	(0.46)	(1.65)	(1.61)
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	83,059	83,059	17,936	17,936
Adjusted R^2	0.494	0.497	0.647	0.655

Table III
Local Male-Female Ratio and Corporate Policies

This table reports panel regressions of firms' financial/investment policies against the local male-female ratio. Corporate financial/investment policies are a firm's market leverage, book leverage, capital expenditure, and cash holding in regressions (1)–(4), respectively. All of the regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered 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	0.085***	0.101***	0.053*	-0.084***
	(3.80)	(3.16)	(1.70)	(-3.06)
County characteristics				
Local higher education proportion	0.006	0.006	0.009*	0.109***
	(0.63)	(0.41)	(1.83)	(7.69)
Ln (1+local population)	0.000	0.001	0.001**	-0.003***
	(0.38)	(0.94)	(2.09)	(-3.02)
Ln (local household income)	0.018*	-0.006	-0.008	0.027**
	(1.82)	(-0.44)	(-1.41)	(2.01)
Unemployment rate	-0.112**	-0.193***	-0.059**	-0.063
	(-2.25)	(-2.87)	(-2.25)	(-0.96)
Local average age	0.008	0.088	0.036	-0.012
	(0.17)	(1.34)	(1.11)	(-0.19)
Firm characteristics				
Tangibility	0.085***	0.120***	0.172***	-0.147***
	(17.72)	(18.14)	(45.20)	(-25.95)
Ln (book assets)	0.005***	0.014***	-0.000*	-0.012***
	(13.71)	(23.82)	(-1.67)	(-19.10)
Market leverage	0.450***	0.438***	-0.045***	-0.129***
	(88.18)	(73.58)	(-21.88)	(-26.23)
Free cash flow	0.022***	-0.007	-0.006	-0.065***
	(7.26)	(-1.49)	(-1.29)	(-6.46)
Market-to-book	0.001***	0.003***	0.001***	0.008***
	(4.38)	(7.45)	(4.51)	(6.16)
Profitability	-0.005**	-0.003	0.012***	-0.039***
	(-2.04)	(-0.66)	(3.08)	(-2.69)
Sales growth	0.000	0.000	0.000*	0.000
	(1.02)	(1.18)	(1.70)	(0.45)
Year fixed effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
Observations	83,059	83,059	83,059	83,059
Adjusted R^2	0.610	0.516	0.366	0.348

Table IV
Local Male-Female Ratio and Firm Interest Rate Hedging

Panel A presents Probit regressions of firm interest rate hedging against the local male-female ratio using industrial firms. The dependent variable is an indicator that equals one if a firm reports the use of interest rate derivatives in its annual report and zero otherwise. Panel B presents panel regression results using bank holding companies. The dependent variable is the dollar value of bank interest rate hedging scaled by the bank holding company's market value. Due to the nonlinear model in this table, for column (4), we report the marginal effect of male-female ratio, which measures the effect that a change in male-female ratio has on the predicted probability of the firm's interest rate hedging, when the other covariates are kept fixed. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered 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	-2.658***	-1.866***	-1.861***	-1.136**
	(-7.62)	(-4.38)	(-4.26)	(-1.97)
County characteristics				
Local higher education proportion		-0.501***	-0.400**	-0.602***
		(-2.70)	(-2.06)	(-2.60)
Ln (1+local population)		-0.002	-0.002	0.021
		(-0.15)	(-0.15)	(1.11)
Ln (local household income)		-0.161	-0.219	-0.263
		(-1.20)	(-1.59)	(-0.99)
Unemployment rate		-3.093***	-3.638***	-3.278***
		(-2.81)	(-3.23)	(-2.67)
Local average age		1.214***	1.179***	2.585**
		(3.39)	(3.24)	(2.35)
Firm characteristics				
Tangibility	0.115*	0.096	0.131	0.135
	(1.74)	(1.41)	(1.39)	(1.43)
Ln (market size)	0.305***	0.311***	0.319***	0.320***
	(32.17)	(32.48)	(32.19)	(32.17)
Market leverage	1.303***	1.278***	1.353***	1.323***
	(20.48)	(20.16)	(20.18)	(19.75)
Free cash flow	0.240***	0.241***	0.197**	0.194**
	(3.00)	(3.06)	(2.27)	(2.26)
Market-to-book	-0.039***	-0.036***	-0.035***	-0.031***
	(-3.08)	(-2.96)	(-2.76)	(-2.59)
Profitability	1.108***	0.965***	0.989***	0.936***
	(7.64)	(6.95)	(6.62)	(6.47)
Sales growth	0.000	0.000*	0.000*	0.000*
	(1.59)	(1.69)	(1.67)	(1.83)
Marginal effect of Local male-female ratio				-0.259
Year fixed effects	Yes	Yes	Yes	Yes
Industry effects	No	No	Yes	Yes
State fixed effects	No	No	No	Yes
Observations	45,830	45,830	45,830	45,830
Pseudo R^2	0.274	0.276	0.286	0.293

Table IV Continued

Panel B: Bank Holding Companies

	(1)	(2)	(3)	(4)
Local male-female ratio	-0.380***	-0.331**	-0.341***	-0.303**
	(-3.09)	(-2.50)	(-2.60)	(-2.27)
County characteristics				
Local higher education proportion		0.001	0.001	0.001
		(1.22)	(1.46)	(1.06)
Ln (1+local population)		-0.002	-0.002	0.010
		(-0.31)	(-0.47)	(1.64)
Ln (local household income)		-0.081*	-0.076*	-0.113
		(-1.73)	(-1.67)	(-1.61)
Unemployment rate		-0.001	0.001	0.002
		(-0.45)	(0.24)	(0.98)
Local average age		0.009	0.054	0.288
		(0.07)	(0.40)	(0.80)
Bank characteristics				
Ln (market size)	0.064***	0.063***	0.059***	0.060***
	(11.18)	(11.17)	(10.80)	(11.21)
Market-to-book	-0.039**	-0.039**	-0.025*	-0.019*
	(-2.20)	(-2.21)	(-1.83)	(-1.86)
Commercial loans	0.016***	0.016***	0.010***	0.009***
	(4.72)	(4.69)	(3.00)	(3.17)
Securities	0.003	0.003	0.003	0.003
	(1.38)	(1.25)	(1.59)	(1.34)
Cash	0.031	0.031	0.040	0.026
	(0.80)	(0.78)	(0.98)	(0.73)
Exposure			0.005**	0.005***
			(2.54)	(2.72)
Tier 1 capital ratio			-0.007***	-0.006***
			(-5.00)	(-4.26)
State fixed effects	No	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	12,949	12,949	12,949	12,949
Adjusted R^2	0.171	0.174	0.188	0.245

Table V
Local Male-Female Ratio and Debt Financing Conditions

This table presents regressions of debt financing conditions on the local male-female ratio. Panel A considers loan spread, collateral requirement, and capital expenditure restrictions. Regressions (1)–(4) show panel regression results of loan spread. Loan spread is charged by the bank over LIBOR. Regressions (5)–(8) show the Probit regressions of collateral requirement, which is an indicator that equals one if the bank loan is secured and zero otherwise. Regressions (9)–(12) show the Probit regressions of capital expenditure restriction, which is an indicator that equals one if the bank loan contains a capital expenditure restriction and zero otherwise. Panel B reports Probit regressions of covenant violations, in which the dependent variable is an indicator that equals one if a firm violates a covenant in a specific year. Due to the nonlinear model in the collateral requirement, capital expenditure restriction, and covenant violation, we report the marginal effect of male-female ratio, which measures of the effect that a change in male-female ratio has on the predicted probability of the firm's collateral requirement (Panel A, column (8)), capital expenditure restriction (Panel A, column (12)), and covenant violation (Panel B, column (3)), when the other covariates are kept fixed. All independent variables are measured as of the fiscal year-end that immediately precedes the loan active date or the event of covenant violation. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered 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	1.139***	0.907***	0.819**	0.366	2.764***	2.334***	2.227***	1.882***	2.728***	3.443***	4.034***	3.091**
	(4.71)	(2.96)	(2.57)	(1.05)	(7.55)	(5.24)	(4.85)	(3.41)	(3.02)	(3.02)	(3.48)	(2.03)
County characteristics										-0.320	-0.283	0.386
Local higher education		0.364***	0.320**	0.242		0.463**	0.577**	0.497*		(-0.62)	(-0.53)	(0.60)
proportion		(2.68)	(2.23)	(1.42)		(2.09)	(2.55)	(1.79)		0.078**	0.067*	0.003
Ln (1+local population)		0.010	-0.001	-0.003		0.026	0.011	0.007		(2.23)	(1.76)	(0.06)
		(1.05)	(-0.05)	(-0.27)		(1.53)	(0.62)	(0.33)		-0.475	-0.752*	-2.404**
Ln (local household		-0.084	-0.008	-0.311		-0.521***	-0.386**	0.482		(-1.33)	(-1.91)	(-2.16)
income)		(-0.93)	(-0.09)	(-1.27)		(-3.29)	(-2.39)	(1.22)		2.133	4.916	3.499
Unemployment rate		1.537*	1.573**	1.617*		-0.268	0.249	0.335		(0.62)	(1.36)	(0.82)
		(1.94)	(1.96)	(1.86)		(-0.20)	(0.18)	(0.21)		1.060	-0.065	-1.030
Local average age		-0.351	-0.416	0.179		-0.797*	-0.556	-1.498		(1.06)	(-0.06)	(-0.30)
		(-1.31)	(-1.50)	(0.17)		(-1.80)	(-1.20)	(-0.97)		-0.320	-0.283	0.386
Firm characteristics												
Tangibility	-0.190***	-0.171***	-0.481***	-0.496***	-0.020	-0.040	-0.379***	-0.406***	-0.457**	-0.490**	-0.158	-0.260
	(-4.12)	(-3.57)	(-6.92)	(-7.16)	(-0.25)	(-0.48)	(-3.22)	(-3.47)	(-2.47)	(-2.53)	(-0.53)	(-0.86)
Ln (book assets)	-0.151***	-0.155***	-0.146***	-0.146***	-0.244***	-0.246***	-0.257***	-0.259***	-0.202***	-0.212***	-0.272***	-0.265***
	(-9.50)	(-9.45)	(-8.74)	(-8.79)	(-8.41)	(-8.35)	(-7.89)	(-8.16)	(-3.57)	(-3.70)	(-4.51)	(-4.42)
Market leverage	1.024***	1.035***	1.237***	1.228***	1.002***	1.023***	1.050***	1.018***	0.493**	0.461**	0.440*	0.557**
	(18.59)	(18.77)	(20.59)	(20.49)	(11.53)	(11.71)	(11.01)	(10.63)	(2.14)	(2.00)	(1.73)	(2.14)
Free cash flow	-2.545***	-2.490***	-2.202***	-2.216***	-1.199***	-1.174***	-1.018***	-1.051***	-0.912	-1.002	-1.343*	-1.095

	(-13.71)	(-13.24)	(-11.34)	(-11.49)	(-5.07)	(-4.91)	(-3.85)	(-3.96)	(-1.35)	(-1.47)	(-1.75)	(-1.40)
Market-to-book	0.015**	0.014**	0.018**	0.017**	0.006	0.005	0.005	0.005	-0.070	-0.072	-0.087	-0.065
	(2.14)	(2.01)	(2.53)	(2.49)	(0.49)	(0.39)	(0.34)	(0.41)	(-0.99)	(-1.01)	(-1.17)	(-0.85)
Profit	-0.844***	-0.837***	-0.864***	-0.850***	-0.868***	-0.869***	-1.098***	-1.129***	-0.806	-0.778	-1.023	-1.297*
	(-6.63)	(-6.57)	(-6.86)	(-6.84)	(-4.14)	(-4.09)	(-5.34)	(-5.49)	(-1.24)	(-1.20)	(-1.45)	(-1.79)
Sales growth	-0.001*	-0.001	-0.001	-0.001	0.019	0.018	0.054	0.044	-0.016	-0.016	-0.007	-0.012
	(-1.66)	(-0.97)	(-1.19)	(-1.28)	(1.08)	(1.02)	(1.59)	(1.37)	(-0.83)	(-0.89)	(-0.82)	(-0.54)
Ln (facility amount)	-0.160***	-0.161***	-0.202***	-0.200***	-0.054*	-0.059*	-0.074**	-0.073**	0.014	0.023	0.061	0.068
	(-9.96)	(-9.76)	(-12.59)	(-12.48)	(-1.79)	(-1.92)	(-2.20)	(-2.21)	(0.28)	(0.44)	(1.10)	(1.23)
Ln (maturity)	-0.137***	-0.133***	0.001	-0.001	-0.014	-0.004	0.001	-0.001	0.054	0.055	0.068	0.049
	(-6.89)	(-6.65)	(0.08)	(-0.05)	(-0.44)	(-0.12)	(0.02)	(-0.04)	(0.61)	(0.62)	(0.72)	(0.50)
Marginal effects of local male-female ratio								0.482				0.678
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	2585	2585	2585	2585
Adjusted/Pseudo R^2	0.551	0.552	0.557	0.563	0.353	0.355	0.372	0.377	0.250	0.253	0.315	0.350

Table V Continued

Panel B: Local Male-Female Ratio and Ex Post Covenant Violations

	(1)	(2)	(3)	(4)
Local male-female ratio	1.526***	1.414***	1.224***	0.747*
	(5.94)	(4.47)	(3.75)	(1.79)
County characteristics				
Local higher education proportion		0.195	0.181	0.031
		(1.47)	(1.31)	(0.20)
Ln (1+local population)		0.014	0.017	0.002
		(1.35)	(1.60)	(0.13)
Ln (local household income)		-0.095	-0.079	-0.250
		(-0.94)	(-0.77)	(-0.97)
Unemployment rate		-1.349	-1.570*	-2.481**
		(-1.53)	(-1.78)	(-2.57)
Local average age		-0.090	-0.166	0.399
		(-0.33)	(-0.60)	(0.38)
Firm characteristics				
Tangibility	-0.353***	-0.328***	-0.113	-0.103
	(-6.94)	(-6.32)	(-1.63)	(-1.48)
Ln (book assets)	-0.141***	-0.142***	-0.138***	-0.136***
	(-22.44)	(-22.62)	(-20.74)	(-20.08)
Market leverage	1.483***	1.487***	1.553***	1.577***
	(32.01)	(31.99)	(30.67)	(30.96)
Free cash flow	-0.417***	-0.404***	-0.323***	-0.307***
	(-7.01)	(-6.79)	(-5.02)	(-4.85)
Market-to-book	-0.083***	-0.084***	-0.078***	-0.080***
	(-9.70)	(-9.81)	(-8.86)	(-9.10)
Profit	0.398***	0.399***	0.291***	0.299***
	(9.02)	(9.03)	(4.82)	(6.38)
Sales growth	0.000**	0.000**	0.000**	0.000**
	(2.24)	(2.24)	(2.08)	(2.13)
Marginal effects of local male-female ratio			0.299	
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	0.106	0.106	0.113	0.116

Table VI

Local Male-Female Ratio and Firm Risk: A Subsample of Firms Whose Top Five Customers Are out of State

To avoid the direct impacts of local demographic conditions on local business activities, we restrict the sample to firms whose top five customers are out of state. In Regressions (1)–(12), the dependent variables are firms' realized stock volatility, implied option volatility, book leverage ratio, market leverage ratio, capital expenditure, cash holding, an indicator that equals one if a firm reports the use of interest rate derivatives in its annual report and zero otherwise, the loan spread charged by the bank over LIBOR, an indicator that equals one if the bank loan is secured and zero otherwise, an indicator that equals one if the bank loan contains a capital expenditure restriction and zero otherwise, and an indicator that equals one if the firm violates a covenant in a specific year, respectively. We do not consider interest rate hedging of bank holding companies, because there are not enough observations after we impose the restriction that the top five customers are out of state. The other control variables are the same as those in Tables II-V. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Stock Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	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)
Local male-female ratio	0.025***	0.028***	0.121***	0.112**	0.054**	-0.156**	-2.956*	1.524*	3.866***	9.528*	1.267**
	(4.21)	(3.38)	(2.81)	(1.74)	(2.20)	(-2.28)	(-2.84)	(1.84)	(2.85)	(1.89)	(2.01)
Relative controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	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
Year fixed effects	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
Observations	11,448	2,455	11,947	11,947	11,947	11,947	6,164	1,466	1,466	187	6,434
Adjusted R^2	0.540	0.704	0.616	0.516	0.504	0.360	0.303	0.597	-	-	-

Table VII

2SLS Endogeneity Tests

This table presents the two-stage least squares (2SLS) regression results. In Panel A, the instrumental variable is the county-level male-female ratio at birth in 1960. To avoid the direct impacts of local demographic conditions on local business activities, we restrict the sample to firms whose top five customers are out of state. Panel B uses two instruments. The first instrumental variable is the county-level mortality rate of prostatic cancer. The second instrument is the mortality rate of breast cancer in females divided by the mortality rate of breast cancer in males (to control for the male breast cancer). Regression (1) shows the first-stage regression, in which the dependent variable is the local male-female ratio. Regressions (2)–(13) show the second-stage regression results, in which the dependent variables are firms' realized stock volatility, implied option volatility, book leverage ratio, market leverage ratio, capital expenditure, cash holding, an indicator that equals one if a firm reports the use of interest rate derivatives in its annual report and zero otherwise, bank interest rate hedging calculated as dollar value of bank interest rate hedging scaled by bank holding company's market value, the loan spread charged by the bank over LIBOR, an indicator that equals one if the bank loan is secured and zero otherwise, an indicator that equals one if the bank loan contains a capital expenditure restriction and zero otherwise, and an indicator that equals one if the firm violates a covenant in a specific year, respectively. The other control variables are the same as those in Tables II-VI. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Using Local Male-Female Ratio at Birth in 1960 as Instrument

	Local Male-Female Ratio	Realized Stock Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank Holding Companies)	Loan Spread	Collateral Requirement	Capital Expenditure Restriction	Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Instrument: Local male-female birth	0.106*** (5.54)												
Local male-female ratio		0.106**	0.067*	0.472**	0.892**	0.072	-1.443*	-11.889*		3.311	3.571*	18.044**	11.406**
		(1.96)	(1.66)	(2.07)	(2.30)	(0.49)	(-1.68)	(-1.67)		(0.65)	(1.78)	(2.04)	(2.39)
Relative controls	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
All relevant controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Weak identification test: *F*-statistic	30.69												
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
Observations	11,947	11,448	2,455	11,947	11,947	11,947	11,947	6,164		1,466	1,466	187	6,434
Adjusted R^2	0.386	0.528	0.686	0.606	0.488	0.505	0.324	-		0.661	-	-	-

Table VII Continued

Panel B: Using Local Mortality Rate of Prostatic Cancer and Breast Cancer as Instrument

	Local Male-Female Ratio	Realized Stock Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank Holding Companies)	Loan Spread	Collateral Requirement	Capital Expenditure Restriction	Covenant Violation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Prostatic cancer	-0.002***												
	(-19.80)												
Breast cancer	0.001***												
	(27.47)												
Local male-female ratio		0.059***	0.042***	0.136*	0.214*	-0.004	-0.278***	-2.476***	-0.698***	1.461***	0.676***	4.625***	1.533***
		(8.40)	(8.29)	(1.72)	(1.92)	(-0.08)	(-2.62)	(-5.84)	(-3.63)	(4.09)	(4.05)	(3.55)	(3.83)
Relative controls	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
All relevant controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weak identification test: *F*-statistic	311.70												
Hansen *J* (*p*-value)		0.887	0.121	0.200	0.257	0.115	0.123	0.384	0.108	0.118	0.154	0.429	0.221
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
Observations	83,059	83,059	17,936	83,059	83,059	83,059	83,059	45,830	12,949	10,844	10,844	2,585	48,345
Adjusted R^2	0.511	0.484	0.635	0.610	0.516	0.374	0.347	-	0.183	0.587	-	-	-

Table VIII

Reexamining the Significance of Male Female Ratio: Subsample Regressions

This table re-examines the significance of male-female ratio over some subsamples. That is, in each year, we exclude counties in the left and right tails of cross-county gender ratio distribution. For example, the subsample of 45-55 percentile means we only include counties in the 45%-55% of the cross-county gender ratios. For simplicity, we do not report the coefficients of control variables. We report the range, mean, and standard deviation of male-female ratio for each subsample. All of the regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Range of male-female ratio	Mean	Std. Dev.	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial)	Interest Rate Hedging (Bank)	Loan Spread	Collateral Requirement	Capital Expenditure Restriction	Covenant Violation
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
45 -55 percentile	0.939	0.011	0.078	0.004	0.394	-0.059	-0.066	0.042	1.169	-0.133	-0.162	15.879	-0.593	0.452
(0.934-0.946)			(1.31)	(0.04)	(0.59)	(-0.38)	(-0.50)	(0.36)	(0.81)	(-0.49)	(-0.02)	(0.96)	(-0.01)	(0.11)
40 -60 percentile	0.938	0.013	0.051	0.003	0.381	-0.014	-0.017	0.035	0.847	-0.101	0.227	5.716	1.114	0.309
(0.928-0.953)			(1.37)	(0.68)	(1.34)	(-0.12)	(-0.46)	(0.75)	(0.72)	(-0.20)	(0.61)	(0.93)	(0.07)	(0.16)
35 -65 percentile	0.938	0.016	0.023	0.000	0.048	0.093	0.082	-0.050	0.609	-0.018	0.459	3.730	1.339	1.092
(0.923-0.960)			(1.14)	(0.00)	(0.50)	(0.11)	(0.96)	(-0.30)	(0.69)	(-0.02)	(0.23)	(1.18)	(0.30)	(1.15)
30 -70 percentile	0.940	0.018	0.026*	0.021	0.045	0.205	0.116	-0.132	-0.073	-0.204	0.366	0.878	1.543	0.259
(0.916-0.970)			(1.94)	(1.50)	(0.54)	(0.56)	(1.49)	(-1.10)	(-0.69)	(-0.39)	(0.31)	(0.44)	(0.33)	(0.20)
25-75 percentile	0.940	0.020	0.023**	0.016*	0.059	0.099	0.064	-0.116	-1.389	-0.207	0.385	1.389	1.206	1.057
(0.912-0.978)			(2.54)	(1.76)	(1.09)	(1.33)	(1.51)	(-1.37)	(-1.29)	(-0.53)	(0.51)	(1.12)	(0.36)	(1.36)
20-80 percentile	0.940	0.023	0.018**	0.015*	0.067	0.091	0.046*	-0.163**	-1.783*	-0.285	0.063	1.743*	2.212	1.259**
(0.908-0.991)			(2.32)	(1.81)	(1.57)	(1.59)	(1.61)	(-2.29)	(-1.92)	(-0.70)	(0.10)	(1.67)	(1.05)	(2.33)
15-85 percentile	0.939	0.028	0.020***	0.016***	0.069*	0.068*	0.038	-0.154***	-1.493**	-0.303*	0.681*	1.368*	4.108***	1.423***
(0.892-1.004)			(3.52)	(2.71)	(1.80)	(1.70)	(1.31)	(-3.03)	(-2.21)	(-1.69)	(1.66)	(1.81)	(2.62)	(3.19)
10-90 percentile	0.941	0.033	0.035***	0.031***	0.069**	0.110**	0.028*	-0.101**	-1.737***	-0.368**	0.761**	2.470***	3.003**	1.237***
(0.879-1.041)			(8.16)	(7.43)	(2.33)	(2.11)	(1.87)	(-2.43)	(-3.53)	(-2.12)	(2.20)	(4.18)	(2.23)	(3.62)
5-95 percentile	0.941	0.035	0.032***	0.029***	0.104***	0.102***	0.052**	-0.091**	-1.992***	-0.376***	0.778**	2.258***	3.187**	1.164***
(0.859-1.124)			(8.46)	(7.69)	(3.91)	(2.82)	(1.98)	(-2.54)	(-4.33)	(-2.94)	(2.36)	(4.34)	(2.57)	(3.52)
<20% & >80%	0.958	0.089	0.032***	0.038***	0.081***	0.084**	0.064*	-0.120***	-2.125***	-0.383***	1.390***	2.757***	5.114***	1.037***
			(7.56)	(7.36)	(2.79)	(2.05)	(1.85)	(-3.23)	(-4.00)	(-3.14)	(3.22)	(4.71)	(3.11)	(2.58)

County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bid	-	-		-	-	-	-		-	-	-	Yes
Loan type fixed	-	-		-	-	-	-		Yes	Yes	Yes	-
Loan purpose	-	-		-	-	-	-		Yes	Yes	Yes	-
Credit rating	-	-		-	-	-	-		Yes	Yes	Yes	-
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table IX

Local Male-Female Ratio, Local Risk Aversion, and Local Overconfidence

This table reports panel regressions of local risk aversion or overconfidence against the local male-female ratio. We measure local risk aversion in two ways. Panel A uses the local financial risk preference. The local financial risk preference is calculated as the county average response to the item related to financial risk in General Social Survey (GSS) data, available in 1993. The item is "Some people say these things are very important to them. Other people say they are not so important. Please tell me how important being financially secure is." GSS gives the response a score of 1 to 5. Panel B uses the local preference of living risk, which is calculated as the county average response of the item related to living security in GSS, available in 2008. The item is "Have you, or anyone you know purchased things to make them safer (gas masks, duct tape, things to make their house safer, etc.)?" GSS give the response a score of 0 to 3. We convert the responses to these two items so that the higher score means lower risk aversion. We compute the county-level average of risk aversion scores. Panel C uses local overconfidence. Local overconfidence is calculated as the average of the overconfidence scores for the four items related to confidence in General Social Survey (GSS) data, available in 2016. The four items are "In uncertain times I usually expect the best," "I'm always optimistic about my future," "If something can go wrong for me it will," and "I rarely count on good things happening to me." GSS gives the response a score of 1 to 5. We convert and aggregate the responses to these four items and take the county-level average. The higher score means more overconfidence. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within counties. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Panel A Financial risk			Panel B Living risk			Panel C Local overconfidence		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Local male-female ratio	1.817**	1.788**	2.023**	1.458***	0.990**	1.373*	2.120***	1.819**	1.971*
	(2.46)	(2.54)	(2.58)	(3.13)	(2.04)	(1.91)	(2.89)	(2.17)	(1.82)
Local higher education proportion		-0.203	-0.839		-0.244	-0.237		-0.192	-0.121
		(-0.32)	(-0.93)		(-0.96)	(-0.66)		(-0.46)	(-0.23)
Ln (1+local population)		-0.015	-0.040		-0.012	-0.012		0.008	0.002
		(-0.27)	(-0.47)		(-0.61)	(-0.40)		(0.29)	(0.07)
Ln (local household		0.522	-0.723**		0.031	-0.587**		0.313	0.777
		(1.10)	(-2.68)		(0.22)	(-2.03)		(1.40)	(0.96)
Unemployment rate		-1.412	-5.307		-0.194	-3.624		-2.694	-3.028
		(-0.46)	(-1.55)		(-0.08)	(-0.99)		(-1.25)	(-0.78)
Local average age		0.866	-1.688		-0.670*	-0.023		0.235	1.472
		(0.79)	(-1.48)		(-1.73)	(-0.02)		(0.39)	(1.05)
State fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Observations	81	81	81	123	123	123	158	158	158
R-squared	0.054	0.088	0.439	0.086	0.104	0.345	0.037	0.049	0.348

Table X
Local Male-Female Ratio and Dividend Payout Ratio

This table reports the results of dividend payout. Following John, Knyazeva and Knyazeva (2011), we define dividend payout as the ratio of cash dividends to market value of common equity (*dividend payout 1)*, or the ratio of cash dividends to net income for firm years with positive net income (*dividend payout 2)*. All regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Dividend payout 1	Dividend payout1 1	Dividend payout2	Dividend payout2
	(1)	(2)	(3)	(4)
Local male-female ratio	-0.021***	-0.011***	-0.380***	-0.226***
	(-7.11)	(-2.81)	(-7.35)	(-3.39)
County characteristics				
Local higher education proportion	-0.006***	-0.006***	-0.092***	-0.074***
	(-4.06)	(-3.80)	(-3.73)	(-2.69)
Ln (1+local population)	-0.000***	-0.000	-0.007***	-0.004
	(-3.66)	(-0.80)	(-3.61)	(-1.50)
Ln (local household income)	0.002**	0.003**	0.028*	0.049*
	(1.98)	(1.98)	(1.68)	(1.85)
Unemployment rate	-0.005	0.002	-0.005	0.115
	(-0.60)	(0.21)	(-0.04)	(0.79)
Local average age	0.006**	0.027***	0.108**	0.279**
	(2.18)	(3.29)	(2.49)	(2.01)
Firm characteristics				
Tangibility	0.005***	0.005***	0.105***	0.106***
	(6.44)	(6.54)	(8.55)	(8.67)
Ln (book assets)	0.001***	0.001***	0.029***	0.028***
	(22.53)	(21.77)	(25.73)	(24.85)
Market leverage	-0.002***	-0.002***	-0.094***	-0.095***
	(-2.91)	(-3.00)	(-11.17)	(-11.32)
Free cash flow	-0.000	-0.000	0.008	0.007
	(-0.03)	(-0.12)	(1.14)	(1.06)
Market-to-book	-0.000***	-0.000***	-0.002**	-0.001**
	(-3.46)	(-3.22)	(-2.50)	(-2.26)
Profitability	0.001*	0.001*	0.011	0.010
	(1.83)	(1.65)	(1.50)	(1.35)
Sales growth	0.000	0.000	0.000	0.000
	(0.35)	(0.32)	(0.33)	(0.28)
Year fixed effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
State fixed effects	No	Yes	No	Yes
Observations	83,059	83,059	83,059	83,059
Adjusted R^2	0.217	0.222	0.225	0.230

Table XI
Local Male-Female Ratio and Ex-dividend Day Returns

This table relates the price drop on the ex-dividend date to local male-female ratio and other covariates. The dependent variable is the stock returns surrounding ex-dividend days, which is measured as the negative of the price change from the close of the last cum-dividend day to the open of the ex-dividend day divided by the closing price of the last cum-dividend day. The first column relates the price drop to the amount of the dividend scaled by the closing price of the last cum-dividend day (Div/P). We use the cumulative factor to adjust price. In Columns (2)-(4), all regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Div/P	0.788***	3.694***	3.947**	3.813**
	(4.05)	(5.55)	(2.45)	(2.37)
Div/P * Local male-female ratio		-6.804***	-7.630***	-7.406***
		(-7.30)	(-4.99)	(-4.87)
Local male-female ratio		0.120*	0.170**	0.207**
		(1.69)	(2.09)	(2.15)
Div/P * Local average age			0.381***	0.385***
			(2.65)	(2.67)
Local average age			0.060	0.591*
			(0.83)	(1.88)
Other relevant controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes
Observation	82,487	82,487	82,487	82,487
Adjusted R^2	0.008	0.009	0.010	0.011

Table XII

Inspecting the Mechanism: Impact of Local Male-Female Ratio on Corporate Female Director/CEO Representation

This table reports the influence of the local male-female ratio on female representation of corporate directors and executives. Regressions (1)–(4) report panel regressions of the corporate female board fraction, defined as the number of female directors divided by the total number of directors, against the local male-female ratio. In regressions (5)–(8), the dependent variable is the proportion of female CEOs plus female directors, which is calculated as the sum of an indicator of female CEO and the total number of female directors divided by (1+ the total number of directors). The control variables include the local female-male income ratio, local population characteristics (higher education proportion, Ln (1+local population), Ln (1+household income), unemployment rate, and average age), board characteristics (board size and percentage of independent board), the local female-male income ratio, which is defined as the local median female income divided by the local median male income, and Fama-French 12-industry fixed effects. Local income data are from the American Community Survey, US Census Bureau. The board female fraction and indicator of female CEO fraction are based on Execucomp data from 1992 to 2009. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Proportion of Female Directors				Proportion of Female CEOs and Directors			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Local male-female ratio	-0.076**	-0.113***	-0.135**	-0.118*	-0.075**	-0.114***	-0.133**	-0.116*
	(-2.21)	(-2.75)	(-2.32)	(-1.93)	(-2.06)	(-2.62)	(-2.20)	(-1.79)
Local female-male income ratio		0.191**	0.141	0.131		0.210**	0.137	0.142
		(2.28)	(1.36)	(1.27)		(2.42)	(1.26)	(1.33)
Board size			0.001	0.001			0.001	0.001
			(0.80)	(0.70)			(0.71)	(0.55)
Percentage of independent board			0.014	0.016			0.015	0.015
			(1.07)	(1.24)			(1.11)	(1.10)
County characteristics								
Local higher education proportion		0.079***	0.109***	0.124***		0.082***	0.116***	0.128***
		(3.31)	(3.44)	(3.71)		(3.19)	(3.48)	(3.71)
Ln (1+local population)		0.006***	0.005**	0.004*		0.006***	0.004*	0.003
		(3.52)	(2.12)	(1.67)		(3.41)	(1.83)	(1.41)
Ln (local household income)		0.029*	0.029	0.026		0.028*	0.030	0.026
		(1.83)	(1.35)	(1.16)		(1.67)	(1.35)	(1.13)
Unemployment rate		0.043	0.103	0.174		0.025	0.118	0.189
		(0.37)	(0.57)	(0.91)		(0.21)	(0.63)	(0.97)
Local average age		0.010	-0.031	-0.056		0.010	-0.031	-0.056
		(0.20)	(-0.50)	(-0.87)		(0.20)	(-0.49)	(-0.83)
Firm characteristics								
Tangibility		0.006	-0.001	-0.013		0.003	-0.003	-0.016
		(0.80)	(-0.05)	(-0.92)		(0.33)	(-0.28)	(-1.14)
Ln (book assets)		-0.005***	-0.004**	-0.005***		-0.005***	-0.004**	-0.005***
		(-4.61)	(-2.30)	(-3.03)		(-4.49)	(-2.42)	(-2.86)
Market leverage		0.007	0.014	-0.002		0.006	0.009	-0.005
		(0.82)	(1.15)	(-0.13)		(0.69)	(0.75)	(-0.39)
Free cash flow		0.012*	0.029***	0.024**		0.005	0.023**	0.023**
		(1.72)	(2.59)	(2.20)		(0.66)	(2.43)	(2.05)
Market-to-book		0.001	0.001	0.000		0.000	0.000	-0.000
		(1.23)	(0.58)	(0.13)		(0.67)	(0.10)	(-0.33)
Profit		0.003	0.008	0.016		0.012	0.004	0.013
		(0.21)	(0.27)	(0.59)		(0.78)	(0.16)	(0.45)
Sales growth		-0.003	-0.007*	-0.009**		-0.002	-0.008	-0.009**
		(-1.08)	(-1.66)	(-1.97)		(-1.18)	(-1.65)	(-1.98)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fama-French 12-industry	No	No	No	Yes	No	No	No	Yes
Observations	27,142	25,101	9,608	9,608	27,142	25,101	9,608	9,608
R-squared	0.036	0.050	0.035	0.098	0.039	0.051	0.034	0.106

Table XIII

Local Overconfidence and CEO Overconfidence

This table reports panel regressions of CEO overconfidence against local overconfidence. We classify a CEO as overconfident if she postpones the exercise of vested stock options that are at least 67% in the money, following Malmendier and Tate (2005, 2008). The dependent variable equals one if the CEO is overconfident and zero otherwise. Local overconfidence is calculated as the average of the overconfidence scores for the four items related to confidence in the General Social Survey (GSS) data available in 2016. The four confidence-related items are "In uncertain times I usually expect best," "I'm always optimistic about my future," "If something can go wrong for me it will," and "I rarely count on good things happening to me." GSS gives the response a score of 1 to 5. We convert and aggregate the responses to these four items and take the county-level average. A higher score means more overconfidence. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Local overconfidence	0.327**	0.392**	0.413**	0.516**
	(2.49)	(2.26)	(2.34)	(2.17)
County characteristics				
Local higher education proportion			-0.239	-0.927
			(-0.27)	(-0.56)
Ln (1+local population)			-0.285***	-0.249
			(-2.64)	(-1.51)
Ln (local household income)			-0.514	5.681
			(-0.70)	(1.28)
Unemployment rate			6.238	5.271
			(0.65)	(0.28)
Local average age			0.301	6.465
			(0.22)	(0.56)
Tangibility		-0.119	-0.060	0.034
		(-0.23)	(-0.11)	(0.06)
Ln (book size)		0.051	0.036	0.052
		(1.14)	(0.77)	(1.05)
Market leverage		-0.876**	-1.073**	-1.120**
		(-2.03)	(-2.44)	(-2.39)
Free cash flow		21.356**	20.878**	22.451**
		(2.34)	(2.23)	(2.22)
Market-to-book		0.382***	0.374***	0.396***
		(4.27)	(4.17)	(4.30)
Profitability		1.159**	0.986*	0.881
		(2.02)	(1.67)	(1.50)
Sales growth		0.136	0.172	0.146
		(0.57)	(0.68)	(0.58)
Industry fixed effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
Observations	527	527	527	527
Pseudo R-squared	0.071	0.163	0.179	0.202

Table XIV

Alternative Explanation: Local Risk Preferences or Local Gender-Egalitarian Culture?

This table examines whether a local gender-egalitarian culture is the driving force behind local male-female ratio. Local gender egalitarianism is measured as the local female-male income ratio, which is defined as the local median female income divided by the local median male income. Local income data are from the American Community Survey, US Census Bureau. We use panel/Probit regressions in which the dependent variables are firms' realized stock volatility, implied option volatility, market leverage, book leverage, capital expenditure, cash holding, an indicator that equals one if a firm reports the use of interest rate derivatives in its annual report and zero otherwise, loan spread charged by the bank over LIBOR, an indicator that equals one if the bank loan is secured and zero otherwise, an indicator that equals one if the bank loan contains a capital expenditure restriction and zero otherwise, and an indicator that equals one if a firm violated a covenant in a specific year in regressions (1)–(11), respectively. All of the regressions include other local population characteristics (higher education proportion, Ln (1+local population), Ln (1+household income), unemployment rate, and average age) as additional controls. The other control variables are the same as those in Tables II-VI. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	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)
Local male-female ratio	0.025***	0.014***	0.092***	0.098***	0.073*	-0.099***	-1.738***	1.021***	2.023***	3.853***	0.949***
	(7.01)	(2.79)	(4.03)	(3.06)	(1.89)	(-3.61)	(-3.86)	(4.08)	(4.40)	(3.36)	(2.83)
Local female-male income ratio	0.004	-0.016**	-0.005	-0.016	-0.027	0.075*	-0.645	0.206	1.472*	-2.191	1.512***
	(1.09)	(-2.26)	(-0.20)	(-0.42)	(-1.47)	(1.84)	(-1.14)	(0.49)	(1.96)	(-1.37)	(3.23)
County characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	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
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	83,059	17,936	83,059	83,059	83,059	83,059	45,830	10,844	10,844	2585	48,345
Adjusted/Pseudo R^2	0.494	0.655	0.602	0.506	0.242	0.327	-	0.572	-	-	-

Table XV

Robustness Check: Controlling for Local Religion Culture

This table presents robustness checks, controlling for the local religious culture. Local religious culture (Local religiosity) is measured as the proportion of county population that adheres to any religion, using the ‘‘Churches and Church Membership’’ files from the American Religion Data Archive (ARDA). We use panel/Probit regressions in which the dependent variables are firms’ realized stock volatility, implied option volatility, market leverage, book leverage, capital expenditure, cash holding, an indicator that equals one if a firm reports the use of interest rate derivatives in its annual report and zero otherwise, loan spread charged by the bank over LIBOR, an indicator that equals one if the bank loan is secured and zero otherwise, an indicator that equals one if the bank loan contains a capital expenditure restriction and zero otherwise, and an indicator that equals one if a firm violated a covenant in a specific year in regressions (1)–(12), respectively. All regressions include other local population characteristics (higher education proportion, Ln (1+local population), Ln (1+household income), unemployment rate, and average age) as additional controls. The other control variables are the same as those in Tables II-VI. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The t-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank Holding Companies)	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	0.026***	0.031***	0.086 ***	0.094**	0.054*	-0.082***	-2.065***	-0.354***	1.129***	2.023***	4.771***	1.314***
	(7.25)	(8.39)	(3.83)	(2.11)	(1.73)	(-2.82)	(-4.70)	(-2.70)	(4.50)	(4.40)	(4.06)	(3.98)
Local religiosity	-0.003***	-0.003***	-0.001	-0.002	0.002	0.001	0.031	0.054*	-0.253*	-0.087*	-0.680**	-0.155*
	(-3.69)	(2.77)	(-0.54)	(-0.22)	(0.50)	(0.24)	(0.24)	(1.77)	(-1.92)	(-1.82)	(2.37)	(1.82)
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
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
Observations	83,059	17,936	83,059	83,059	83,059	83,059	45,830	12,949	10,844	10,844	2585	48,345
Adjusted/Pseudo R^2	0.494	0.655	0.610	0.506	0.350	0.322	0.286	0.190	0.573	0.388	0.313	0.113

Online Appendix

I. Variable definitions

Table A1 defines all variables used in this paper and provides data sources.

II. Robustness checks for omitted variables

Table A2 performs robustness checks, accounting for omitted variables. Panel A controls for industry-time fixed effects while Panel B controls for county fixed effects. We find robust results after adding these fixed effects.

III. Robustness checks for county-industry effects

Table A3 performs robustness checks, accounting for county-industry effects. That is, some counties might specialize in certain industries that capture the gender difference. To exclude this concern, we control for industry fixed effects and exclude the counties where the male-female ratio is highly correlated with the industry size-weighted local industry male-female ratio. We construct the relation between local male-female ratio and size-weighted local industry male-female ratio as follows. We first collect industry male-female ratio data from the US Bureau of Labor Statistics, where the industries include agriculture, mining, construction, manufacturing, transportation, public utilities, wholesale trade, retail trade, finance, insurance, real estate, services, and public administration. We then calculate the weighted industry male-female ratio for each county-year, where the weight is the industry size. Finally, we calculate the correlation between the local population male-female ratio and the weighted local industry male-female ratio to identify the counties whose correlation is in the top 20%, the top 30%, and the top 50%. Our main findings are qualitatively similar after we exclude those counties, as shown in Table A3.

IV. Local gender ratio and local employee gender ratio

First, we explore whether gender differences in the local population lead to gender differences among local employees. Since local employees are undiversified due to firm-specific human capital and equity-based compensation, local employees might express their risk attitudes through their work in firms, which in turn would affect corporate activities. Limited by data availability, we use the county-level employee gender ratio.[17] Table A4 shows the panel regression results for employee gender ratio against the local male-female ratio. Consistent with our prediction, it shows that a higher local male-female ratio drives a higher male-female ratio among local employees. In column (3), the coefficient of local male-female ratio suggests that a one standard deviation increase in local male-female ratio increases the male-female ratio of local employees by 4.4% (=1.022*0.051/1.180).

V. Local gender ratio, non-executive employee option grants, and employee involvement

Non-executive employee stock options positively relate employee wealth to stock return volatility, incentivizing employees to take more risk (Chang, Fu, Low, and Zhang, 2015). This is because stock options are characterized by the convexity of the wealth-performance relation, which promotes risk-taking incentives (Murphy, 1999; Guay, 1999; Coles, Daniel, and Naveen, 2006). Local employees with strong risk-taking preferences—in our context, those in regions with a higher local male-female ratio—may find firms that offer option-based compensation plans attractive since ESOPs encourage more risk-taking.

If firms are aware that option-based compensation is more attractive to employees with stronger risk-taking preferences, they might cater to those preferences by adopting more broad-

[17] The Geographic Profile of Employment and Unemployment doesn't report the gender ratio of employees for all counties, and the ratio is reported at the MSA level. Therefore, the number of county-year observation drops to 3,806 after we merge this data with other datasets.

based employee stock option plans. Therefore, we expect employee stock option plans to be more popular among firms that are located in regions with a higher local male-female ratio.

We test for this hypothesis in Panel A of Table A5. We follow Bergman and Jenter (2007) to construct the per-employee option value of the non-executive employee stock option. Stock option grants are measured as the Black-Scholes (BS) value of per-employee option grants to non-executive employees (per 10,000 employees). Consistent with the argument, we find that the coefficient estimate of local male-female ratio is significantly negative throughout all regressions. A one standard deviation increase in local male-female ratio is associated with a 0.156 (=3.058*0.051) increase in the BS option value. Relative to the mean value of 0.878, this represents an 11.95% increase in the BS option value.

If the local male-female ratio affects corporate risk-taking through employee stock option grants, our empirical results should be more significant in the firms that strongly encourage worker involvement or ownership via stock option plans that it makes available to a majority of its employees. We test this prediction in Panel B of Table A5.

Our source for data on employee involvement is the KLD Research & Analytics, Inc. (KLD) Social Rating database. This database provides an indicator identifying companies that encourage worker involvement via generous employee stock ownership plans (ESOPs) or employee stock purchase plans (ESPPs). We use this indicator to construct our Employee Involvement indicator. We expect the positive relationship between local male-female ratio and corporate risk-taking to be stronger in firms with an Employee Involvement indicator equal to one. We tabulate the results in Table A5, Panel B. The empirical evidence supports our argument.

Table A1

Variable Definitions

This appendix provides detailed descriptions of the variables used in this study.

Variable	Definition
County characteristics:	
Local higher education fraction	Percentage of the county population with a college degree.
Ln (local household income)	Logarithm of the median household income in each county.
Ln (1+local population)	Logarithm of the size of a county population.
Local male-female ratio	Ratio of the male population to the female population in each county.
Local average age	Average age of the population in each county.
Local unemployment rate	Annual rate of unemployment in each county as determined by the Bureau of Labor Statistics.
Local financial risk preferences	The local financial risk preference is calculated as the county average of the financial risk-related item of the General Social Survey (GSS): "Some people say that this is very important to them. Others say that it is not so important. Please tell me how important being financially secure is." Scores of 1 to 5 respectively denote the following: "It is a top priority," "It is very important," "It is somewhat important," "It is not as important," and "It is not important at all," respectively. The higher this score, the less risk averse the respondent is.
Local living risk preferences	Local living insecurity preferences are calculated as the county average of the living insecurity item measured by the General Social Survey (GSS) with the following question: "Have you or has anyone you know purchased items that provide a sense of safety (gas masks, duct tape, items that enhance home security, etc.)?" The GSS assigns scores of 0 to 3, respectively, for the following answers: "No," "Yes, the respondent has purchased such items," "Yes, someone the respondent knows has purchased such items," "Yes, both the respondent and someone the respondent knows have purchased such items." We define a score for this item as 6 minus the GSS score to render it consistent with the financial risk measure. Therefore, the higher the score for financial risk or living risk, the less risk averse the respondent is.
Local male-female ratio of employment	The local male population that is employed divided by the local female population that is employed. The Geographic Profile of Employment and Unemployment (GPEU) provides MSA-level information on male/female employment percentages. We then use the GPEU MSA-county match to obtain county-level gender employment information.
Local male-female ratio at birth in 1960	County-level male-female ratio at birth (newborns) in 1960
Local prostate cancer mortality rate (per 100,000)	County-level mortality rate of prostate cancer
Female-male ratio of local breast cancer mortality rate	Mortality rate of breast cancer in females divided by the mortality rate of breast cancer in males
Local overconfidence	Local overconfidence is calculated as the average of overconfidence scores for the four confidence-related items measured by the

	General Social Survey (GSS). The four confidence-related items are as follows: "In uncertain times, I usually expect the best," "I'm always optimistic about my future," "If something can go wrong, for me it will," and "I rarely count on good things happening to me." For each item, the GSS respectively assigns scores of 1 to 5 for the following answers: "Strongly disagree," "Disagree," "Neutral," "Agree," and "Strongly agree." Therefore, the former two items represent confidence levels, whereas the latter two denote the opposite. To be consistent, we define the confidence score as 6 minus the GSS score for each of the latter two items. Therefore, the higher the score, the more confident the respondent is. We then take the county-level average for each of the items.
Local female-male income ratio	Local women's earnings as a percentage of local men's earnings.
Local religiosity	the number of religious adherents to total population in a county, using the "Churches and Church Membership" files from the American Religion Data Archive (ARDA).
Firm characteristics:	
Book value of assets	Logarithm of book assets (AT).
Book leverage	Long-term debt (DLTT) / book assets (AT).
Capital expenditures	Capital expenditures (CAPX) / book assets (AT).
Cash holdings	Cash and short-term investments (CHE) / book assets (AT).
Interest rate hedging	Indicator that equals one when a firm reports using interest rate derivatives in its annual report and zero otherwise.
Free cash flows	Operating income before depreciation (OIBDP) – interest and related expenses (XINT) – total income taxes (TXT) – total dividends common / ordinary (DVC) / book assets (AT).
Market leverage	Long-term debt (DLTT) / (total debt (AT – CEQ) + market value of equity (PRCC_F * CSHO)).
Market-to-book	(Book assets + market value of equity – book value of equity) / book assets (AT) where the book value of equity is calculated as total stockholders' equity (XEQ) + deferred taxes (TXDB) + investment tax credit (ITCB) – preferred stock (combining SEQ, PSTKL, and PSTK), and the market value of equity is calculated as the price per share (PRCC_C) * common shares outstanding (CSHO).
Covenant violation	An indicator that equals one if a firm violates a covenant in a specific year.
Option-implied volatility	A firm's one-year average of forward-looking (182 days) stock return volatility.
Profitability	Operating income before depreciation (OIBDP) / book assets (AT).
Sales growth	Annual percentage change in sales (SALE).
Stock return volatility	Volatility of daily stock returns within a year.
Tangibility	Net PPE (PPENT) / book assets (AT).
CEO overconfidence	We estimate CEO overconfidence following Hirshleifer, Low, and Teoh (2012). First, we divide the value of exercisable unexercised options (Execucomp items: opt_unex_exer_est_val) by the number of exercisable unexercised options (Execucomp items: opt_unex_exer_num) and subtract this value from the stock price at the fiscal year end (Compustat item: PRCC_F) to obtain the average strike price per option. Next, we divide the value of exercisable unexercised options per option by the average strike price per option to calculate the average moneyness of the options. We define a CEO as overconfident when he or she postpones the exercise of vested stock options that are at least 67% in the money following Malmendier and Tate (2005, 2008). Following Hirshleifer, Low, and Teoh (2012), we do not require the CEO to hold a 67% in the money option at least twice, and

	we define the CEO as overconfident on the first occasion that he or she exhibits such behavior. Once a CEO is identified as overconfident, he or she remains overconfident for the rest of the sample period.
Dividend payout 1	The ratio of cash dividends on common stock (dv) to market value of common equity (CSHO*PRCC_F)
Dividend payout 2	The ratio of cash dividends on common stock (dv) to net income (NI) for firm-years with positive net income
Black-Scholes value of non-executive employees' stock options per 10,000 employees	We follow Bergman and Jenter (2007). Specifically, we first use "pcttotop" in Execucomp to estimate the total number of stock options granted to all employees. Second, we extrapolate the total number of options granted to non-executive employees by subtracting the number of options granted to the top five executives. Third, we calculate the Black-Scholes (1973) formula value of each option value granted to each employee. The risk-free rate is set to 6 percent, and option maturity is ten years. Finally, we calculate the per-employee option grants as total numbers of the non-executive employee stock options times the Black-Scholes value of per-employee stock option, divided by the number of employees.
Employee Involvement through stock option plans	An indicator that equals one if the company strongly encourages worker involvement or ownership through stock option plans that it makes available to a majority of its employees.
Board and governance characteristics:	
Female director fraction	Number of female board members divided by board size.
Proportion of female CEOs and directors	The sum of an indicator of the proportion of female CEOs and the total number of female directors divided by (1+ the total number of directors).
% of independent boards	Percentage of outside directors on a board.
Bank characteristics:	
Bank commercial loans	Commercial loans divided by market capitalization.
Bank federal funds	Federal funds divided by market capitalization.
Bank income	Cash flows minus cash flows 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 divided 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 the loan deal (facility) value.
Ln (loan maturity)	Logarithm of loan maturity.
Loan spread	All-in-drawn spread over the LIBOR charged by the bank for a loan facility.
Collateral requirement	An indicator taking a value of one when a loan is secured by collateral and taking a value of zero otherwise (for missing LPC data, we set the indicator as zero).
Capital expenditure restriction	An indicator that takes a value of one when a bank loan applies a capital expenditure restriction and zero otherwise.

Table A2

Robustness Checks for Omitted Variables

This table reports panel regressions of firms' risk against the local male-female ratio, including county fixed effects in Panel A, industry times year fixed effects in Panel B, and local proportion of retirees in Panel C. Limited by the number of observations, we do not test it over bank hedging in Panel A. For simplicity, we do not report the coefficients of control variables. All regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A Industry*Year Fixed Effects

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.024***	0.026***	0.090***	0.106***	0.058*	-0.080***	-2.666	-	0.732**	2.582***	4.289***	1.182
	(7.03)	(6.91)	(4.03)	(3.32)	(1.70)	(-2.93)	(-7.35)		(2.20)	(6.48)	(3.17)	(3.43)
Controls the same as in	Table II	Table II	Table III	Table III	Table III	Table III	Table IV Panel A	-	Table V	Table V	Table V Panel A	Table V Panel B
	Col (1)	Col (1)	Col (1)	Col (2)	Col (3)	Col (4)	Col (3)	-	Col(3)	Col(7)	Col(11)	Col(3)
Observations	83,059	17,936	83,059	83,059	83,059	83,059	45,830	-	10,844	10,844	2,585	48,345
Adjusted R^2	0.524	0.693	0.627	0.530	0.392	0.362	0.295	-	0.596	0.355	0.315	0.131

Panel B County Fixed Effects

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.021***	0.014	0.133***	0.163***	0.087***	-0.085***	-0.224	-0.401**	0.374	3.530**	7.053**	0.307**
	(3.15)	(1.10)	(3.13)	(2.77)	(3.54)	(-3.03)	(-1.18)	(-2.20)	(0.42)	(2.37)	(2.06)	(2.36)
Controls the same as in	Table II	Table II	Table III	Table III	Table III	Table III	Table IV Panel A	Table IV Panel B	Table V	Table V	Table V Panel A	Table V Panel B
	Col (1)	Col (1)	Col (1)	Col (2)	Col (3)	Col (4)	Col (3)	Col (3)	Col(3)	Col(7)	Col(11)	Col(3)
Observations	83,059	17,936	83,059	83,059	83,059	83,059	45,830	12,949	10,844	10,844	2,585	48,345
Adjusted R^2	0.517	0.677	0.626	0.537	0.385	0.368	0.361	0.451	0.597	0.391	0.414	0.325

Panel C Retiree Effects

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.030***	0.036***	0.100***	0.113***	0.072**	-0.087***	-2.103***	-0.373***	1.099***	2.344***	4.143***	1.335***
	(8.33)	(10.14)	(4.16)	(3.32)	(2.10)	(-2.84)	(-4.67)	(-2.77)	(4.25)	(5.04)	(3.57)	(4.47)
Elder than 60	0.005	0.015	0.050*	0.037	0.070***	0.013	(0.627)	0.064	-0.538	0.517	0.139	0.220
	(1.13)	(3.47)	(1.66)	(0.89)	(3.46)	(0.36)	(1.08)	(0.43)	(-0.93)	(0.75)	(0.11)	(0.56)
Controls the same as in	Table II	Table II	Table III	Table III	Table III	Table III	Table IV Panel A	Table IV Panel B	Table V	Table V	Table V Panel A	Table V Panel B
	Col (1)	Col (1)	Col (1)	Col (2)	Col (3)	Col (4)	Col (3)	Col (3)	Col(3)	Col(7)	Col(11)	Col(3)
Observations	83,059	17,936	83,059	83,059	83,059	83,059	45,830	12,949	10,844	10,844	2,585	48,345
Adjusted R^2	0.494	0.693	0.610	0.296	0.353	0.322	0.295	0.187	0.558	0.373	0.315	0.113

Table A3

Local Male-Female Ratio and Firm Risk: Excluding Industry-Driven Male-Female Ratio

This table reports panel regressions of firms' risk against the local male-female ratio, where we exclude the county-year observations that have the highest correlation with the industry mean male-female ratio. We identify the correlation as follows. First, we obtain the industry average male-female ratio from the US Bureau of Labor Statistics, where the industries include agriculture, mining, construction, manufacturing, transportation, public utilities, wholesale trade, retail trade, finance, insurance, real estate, services, and public administration. We then calculate the weighted industry male-female ratio for each county-year, where the weight is the industry size. Finally, we calculate the correlation between local population male-female ratio and the weighted local industry male-female ratio in each county. We present the results after excluding the counties whose correlation is in the top 20%, the top 30%, and the top 50% in Panel A, Panel B, and Panel C, respectively. For simplicity, we do not report the coefficients of control variables. All of the regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Excluding counties whose correlation with the weighted industry male-female ratio is in the top 20%

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.013***	0.030***	0.085***	0.097***	0.067**	-0.080***	-2.635***	-0.304**	1.426***	2.303***	3.086**	1.268***
	(3.11)	(7.62)	(3.80)	(2.95)	(1.99)	(-2.79)	(-7.06)	(-2.22)	(5.13)	(4.68)	(2.47)	(3.64)
Controls the same as in	Table II	Table II	Table III	Table III	Table III	Table III	Table IV Panel A	Table IV Panel B	Table V	Table V	Table V Panel A	Table V Panel B
	Col (1)	Col (3)	Col (1)	Col (2)	Col (3)	Col (4)	Col (3)	Col (3)	Col(3)	Col(7)	Col(11)	Col(3)
Observations	78,744	16,155	76,901	77,372	77,753	76,563	40,843	11,645	11,647	11,647	2,277	45,607
Adjusted R^2	0.497	0.650	0.612	0.516	0.367	0.351	0.285	0.191	0.802	0.373	0.329	0.112

Panel B: Excluding counties whose correlation with the weighted industry male-female ratio is in the top 30%

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.013***	0.022***	0.062**	0.082**	0.082**	-0.053*	-2.979***	-0.259*	1.636***	2.058***	3.191**	1.479***
	(2.77)	(5.09)	(2.45)	(2.25)	(2.08)	(-1.78)	(-7.12)	(-1.88)	(5.09)	(3.62)	(2.13)	(3.57)
Controls the same as	Table II	Table II	Table III	Table III	Table III	Table III	Table IV Panel A	Table IV Panel B	Table V	Table V	Table V Panel A	Table V Panel B
	Col (1)	Col (3)	Col (1)	Col (2)	Col (3)	Col (4)	Col (3)	Col (3)	Col(3)	Col(7)	Col(11)	Col(3)
Observations	61,047	11,235	60,123	60,490	60,792	59,835	29,518	10,561	8,618	8,618	1,696	31,961
Adjusted R^2	0.489	0.628	0.616	0.520	0.372	0.358	0.265	0.190	0.805	0.383	0.363	0.114

Panel C: Excluding counties whose correlation with the weighted industry male-female ratio is in the top 50%

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.010*	0.014**	0.086***	0.136***	0.047**	-0.007	-2.286***	-0.253*	1.082**	2.673***	7.370***	1.317*
	(1.78)	(2.05)	(2.70)	(2.85)	(2.15)	(-0.19)	(-4.02)	(-1.70)	(2.01)	(2.93)	(2.76)	(1.71)
Controls the same as	Table II	Table II	Table III	Table III	Table III	Table III	Table IV Panel A	Table IV Panel B	Table V	Table V	Table V Panel A	Table V Panel B
	Col (1)	Col (3)	Col (1)	Col (2)	Col (3)	Col (4)	Col (3)	Col (3)	Col(3)	Col(7)	Col(11)	Col(3)
Observations	35,350	4,193	35,556	35,789	35,865	35,366	13,310	8,143	3,907	3,907	764	12,846
Adjusted R^2	0.484	0.601	0.621	0.524	0.482	0.380	0.247	0.164	0.538	0.394	0.499	0.122

Table A4

Impacts of Local Male-Female Ratio on Male-Female Ratio of Local Employees

This table reports the effects of local male-female ratio on the male-female ratio of local employees. The dependent variable is the local male-female ratio of employees, which is calculated as the number of local male employees divided by the number of local female employees. We obtain county-level employment information from the Geographic Profile of Employment and Unemployment, Bureau of Labor Statistics. Control variables include local population characteristics (high education fraction, Ln (1+local population), Ln (1+household income), unemployment rate, and average age), firm characteristics, and Fama-French 12-industry fixed effects. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Local male-female ratio	1.216***	1.223***	1.022***	1.120***
	(77.22)	(71.03)	(60.25)	(45.45)
County Characteristics				
Local high education fraction			-0.038***	-0.092***
			(-5.65)	(-9.92)
Ln (1+local population)			0.030***	0.032***
			(34.49)	(30.69)
Ln (local household income)			-0.081***	0.084***
			(-13.29)	(9.34)
Unemployment rate			0.618***	-0.153***
			(13.56)	(-3.71)
Local average age			-0.189***	-0.761***
			(-15.27)	(-8.52)
Firm Characteristics				
Tangibility		-0.012***	-0.009**	-0.003
		(-2.72)	(-2.47)	(-1.21)
Ln (book size)		0.000	-0.000	0.000
		(1.10)	(-0.47)	(0.16)
Market leverage		0.011***	0.008***	0.001
		(3.27)	(3.04)	(0.73)
Free cash flow		-0.001	0.002	-0.001
		(-0.43)	(0.72)	(-0.65)
Market to book		-0.000	-0.000	-0.000***
		(-0.94)	(-1.59)	(-2.65)
Profit		0.006***	0.004***	0.003***
		(3.46)	(2.83)	(2.95)
Sales growth		0.000	0.000	0.000**
		(1.52)	(1.21)	(2.26)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes
Observations	57,126	57,316	57,126	57,126
R-squared	0.408	0.400	0.555	0.670

Table A5

Panel A: Local Male-Female Ratio and Non-Executive Employee Stock Options

This table reports the regression results of non-executive employee stock options on local male-female ratio and other covariates. Stock option grants are measured as the Black-Scholes value of per-employee option grants to non-executive employees (per 10,000 employees). In column (4), we use the Tobit model. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Local male-female ratio	9.058***	5.328***	2.058***	3.081***
	(7.09)	(5.22)	(2.76)	(2.76)
County characteristics				
Local higher education proportion			1.305***	1.314***
			(2.58)	(2.68)
Ln (1+local population)			0.054	0.053
			(1.36)	(1.34)
Ln (local household income)			-0.183	-0.172
			(-0.62)	(-0.58)
Unemployment rate			-3.650*	-3.844*
			(-1.73)	(-1.80)
Local average age			-2.941***	-2.957***
			(-2.95)	(-2.98)
Firm characteristics				
Tangibility		-1.143***	-1.032***	-1.041***
		(-4.08)	(-3.72)	(-4.01)
Ln (book assets)		-0.083**	-0.095**	-0.089**
		(-2.27)	(-2.57)	(-2.54)
Market leverage		-0.488**	-0.475**	-0.546***
		(-2.43)	(-2.38)	(-3.09)
Free cash flow		0.438	0.452	0.449
		(1.33)	(1.38)	(1.36)
Market-to-book		0.429***	0.426***	0.426***
		(7.79)	(7.76)	(22.46)
Profitability		-4.287***	-4.210***	-4.209***
		(-5.43)	(-5.35)	(-6.14)
Sales growth		0.010	0.009	0.009
		(0.61)	(0.57)	(0.57)
Year fixed effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
Observations	14,752	14,752	14,752	14,752
Adjusted R^2	0.120	0.296	0.299	0.070

Panel B: Interaction Analysis of Employee Involvement through Stock Option Plans

This table reports the results of interaction analysis. We interact the local male-female ratio with the employee involvement index, which equals one if the company strongly encourages worker involvement or ownership through stock option plans that it makes available to a majority of its employees. For simplicity, we do not report the coefficients of control variables. All of the regressions include other local population characteristics and firm characteristics as additional controls. Industry fixed effects at the two-digit SIC level and year fixed effects are included. See the appendix for variable definitions and Section I for the data sources. The *t*-statistics in parentheses are adjusted for heteroskedasticity and clustered within firms. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Realized Return Volatility	Option-Implied Volatility	Market Leverage	Book Leverage	Capital Expenditure	Cash Holding	Interest Rate Hedging (Industrial Firms)	Interest Rate Hedging (Bank)	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	0.019***	0.019***	0.009	-0.046	0.022	0.030	-1.300*	-	0.913*	2.626**	2.713	0.839
	(5.64)	(7.48)	(0.30)	(-0.90)	(0.98)	(0.67)	(-1.66)	-	(1.70)	(2.10)	(1.04)	(1.23)
Interaction term	0.014**	0.009*	0.144***	0.159*	-0.010	-0.181**	-2.868*	-	0.808	8.567*	4.989	0.863
	(2.03)	(1.70)	(2.74)	(1.73)	(-0.45)	(-2.26)	(-1.72)	-	(0.86)	(1.83)	(0.54)	(0.49)
Employee Involvement	-0.013**	-0.008	-0.142***	-0.157*	0.009	0.172**	2.559	-	0.787	-8.315*	-5.519	-0.793
	(-1.99)	(-1.62)	(-2.81)	(-1.78)	(0.42)	(2.28)	(1.60)	-	(0.89)	(-1.85)	(-0.61)	(-0.47)
Controls the same as in	Table II Col (1)	Table II Col (1)	Table III Col (1)	Table III Col (2)	Table III Col (3)	Table III Col (4)	Table IV Col (3)		Table V Col(3)	Table V Col(7)	Table V Col(11)	Table V Col(3)
Observations	18,667	8,619	19,263	19,263	19,263	19,263	12,464		3,638	3,638	769	9,943
Adjusted R^2	0.563	0.580	0.709	0.574	0.598	0.401	0.223		0.591	0.465	0.475	0.103