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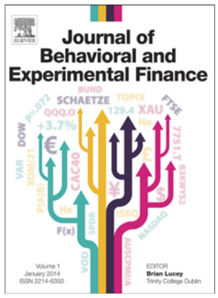

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Does Social Capital Influence Corporate Risk-Taking?

Humnath Panta*

Abstract

This paper explores the influence of social capital on corporate risk-taking using a large sample of publicly traded US firms. We predict that firms with high social capital display a higher level of risk-taking behavior. Consistent with our prediction, we find a negative relationship between corporate risk-taking and social capital. This paper shows that the social environment transmits valuable capital to individuals and thereby influences their corporate decision-making process. We also find that the combined effects of excessive risk-taking and social capital result in value destruction to the firm. Our test results are robust to alternatives measures of risk-taking, addressing endogeneity issues, and alternative model specifications. The paper contributes to the finance literature by demonstrating social capital as an important determinant in the corporate decision-making process, particularly in corporate risk-taking decisions.

JEL Classification: D71, D81, G30, G32, G41, Z13

Keywords: risk-taking, social capital, trust, idiosyncratic risk, systematic risk

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*Humnath Panta is at the School of Business at Humboldt State University, Arcata, California. Email: humnath.panta@humboldt.edu. I have read the Journal of Behavioral and Experimental Finance's disclosure policy and have no conflicts of interest to disclose.

1. Introduction

Finance literature widely explores the importance of non-financial factors on the corporate decision-making process. For instance, Hilary and Hui (2009) document a link between individuals' religiosity and organizational behavior. Kumar et al. (2011) find a connection between gambling attitudes and investors' portfolio choices, corporate returns, and stock returns. John et al. (2011) find that firms located in remote places pay higher dividends. Fahlenbrach et al. (2012) document bank-specific stickiness in risk-taking culture as the main reason for persistent vulnerability to the crisis in some banks. Baxamusa and Jalal (2014) find a link between religion and capital structure decisions. Jiang et al. (2015) find religiosity as an important determinant of risk-taking in family firms. Similarly, prior research finds social capital an important determinant of audit fees (Jha and Chen, 2015), corporate social responsibility (Jha and Cox, 2015), corporate and individual decisions (Jha et al., 2018), and discretionary accruals and misrepresenting financial information (Jha, 2019). Therefore, the prior studies provide substantial evidence on the role of non-financial factors on corporate decisions.

Standard agency models acknowledge the role of managerial discretion in corporate decisions. Numerous prior empirical studies document a significant role of human elements such as traits and managerial power, and investors' preference in the firm policy (Bertrand and Schoar, 2003; Malmendier et al., 2011). Malmendier et al. (2011) find a significant explanatory power of CEOs in corporate financing decisions. They find CEOs who grew up during the Great Depression are averse to debt and lean excessively on internal finance, whereas CEOs with military experience pursue more aggressive policies, including heightened leverage. Dejong and Ling (2013) document that individual executives play a significant role in determining firms' accruals through their operating decisions. These studies indicate a substantial role of managerial traits in risk-taking decisions by firms.

In this paper, we propose a unique explanation for managerial risk-taking decisions. Notably, this study focuses on the role of human behavior, namely risk aversion induced by local social capital in explaining the variation in corporate risk-taking decisions. We suggest that the level of social capital where a firm is headquartered plays a crucial role in the way managers behave and make decisions in their workplace. Indeed, firms do not take decisions, but people do (Hilary and Hui, 2009). Therefore, we argue that the local environment around the headquarter of a firm is likely to affect the way executives make decisions in their workplace and thereby influences a firm's risk-taking decision.

A rich literature across several disciplines documents benefits of social capital on the growth of large companies in highly technical fields (Fukuyama, 1995), economic performance (Knack and Keefer, 1997), communities (Putnam, 2001), crime rates (Buonanno et al., 2009; Putnam, 2001), and economic growth (Forte et al., 2015). Thus, there is a substantial development of social capital research in sociology, economics, management, and political science. However, research into the impact of social capital on corporate policy in publicly traded firms is still in its preliminary stage.

Following the previous literature (Hasan et al., 2017; Jha and Chen, 2015), we define social capital as mutual trust in society. Mutual trust is a function of connections among individuals and social networks, along with the norms of reciprocity and honesty. Social capital influences an individual's attitude, behavior, and disposition and thereby affects his or her decisions. We propose that social capital in the county where a firm is headquartered will influence managerial choices, as reflected in the firm's risk-taking decision. We believe that on a relative basis, the interests of managers and shareholders would be more aligned for firms headquartered in high social capital areas than for firms headquartered in low social capital areas.

The social environment influences managerial decisions (Buonanno et al., 2009; Guiso et al., 2008; Hilary and Hui, 2009; Knack and Keefer, 1997; McGuire et al., 2012). Therefore, we hypothesize that executives in the firms headquartered in the high social capital counties engage in fewer risk-taking activities than the executives in the firms that are headquartered in the low social capital counties. Therefore, we predict a negative relationship between social capital and corporate risk-taking decisions. Using the level of social capital data across the US counties from the Northeast Regional Center for Rural Development (NRCRD) at Pennsylvania State University, Compustat financial, CRSP security prices, county characteristics from Bureau of Economic Analysis, we construct a comprehensive sample of the US publicly traded firms.

Using a comprehensive sample of approximately 27,929 firm-year observations from 1992 to 2014, we conduct univariate tests and a series of multivariate analyses to test our research hypothesis. The test results indicate that firms headquartered in the high social capital counties take a significantly lower level of risk than firms headquartered in the low social capital counties. We find a negative and statistically significant relationship between risk-taking and county-level social capital. Our research finding is consistent with the view that local social capital induces a risk-averse corporate culture. Following prior research on social capital (Jha and Chen, 2015; Jha and Cox, 2015) and corporate risk-taking (Acharya et al., 2011; John et al., 2008), we include firm and county-level control variables, including CEO's incentives and characteristics variables, year, and industry effects in our model. The results are robust across various estimation methods. Our empirical results are not only statistically significant but also economically meaningful. For instance, one standard deviation increase in social capital results in a decrease of 2.06 percent and a 1.48 percent decrease in total risk and unsystematic risk, respectively, on average. This research paper contributes to the finance literature by exploring the effects of a non-financial factor such as social capital on corporate risk-taking decisions and firm value.

This paper proceeds as follows. In the next section, we briefly examine the theoretical determinants of corporate risk-taking, the existing evidence, and develop our research hypotheses. We describe our data, sample construction, and variables, and discuss our empirical methodology in Section 3. In Section 4, we present and discuss research findings. Finally, Section 5 concludes the paper.

2. Literature Review and Hypothesis development

This section provides a brief introduction to social capital, reviews related literature on corporate risk-taking and social capital, and develops a research hypothesis.

2.1. What is social capital?

Following prior literature on social capital (Fukuyama, 1995; Granovetter, 1983; Guiso et al., 2004; Jha and Chen, 2015; Jha and Cox, 2015; Putnam, 2001, 2000; Woolcock, 2010, 1998), we define social capital as the norms and networks that allow collective actions and foster cooperation and collective action. The presence of a particular set of informal values or norms shared among the members of a group allows collaboration between them (Fukuyama, 1995). The principal proposition of social capital is that social networks have value.

The seminal work of Granovetter (1983) recognizes the power of social networks on individuals, and Coleman (1988) lays out the theoretical foundation of social capital by drawing parallels with other types of capital, namely financial, physical, and human. However, Putnam (2000) popularizes the concept of social capital. He considers trust and mutual connections among individuals as well as county-level spillovers, but without explicitly measuring the underlying networks. Rupasingha et al. (2006) operationalize a measure of social capital at the county-level.

Following Coleman (1988), social capital research gained momentum in the social science area. A large body of literature in economics (Guiso et al., 2004) management (Payne et al., 2011), political science (Putnam, 2000), and (Woolcock, 2010), and accounting (Jha and Chen, 2015) examine the impact of social capital. The use of the social capital phrase has increased in scholarly journals from less than 100 times a year in the 1980s to 16,000 times a year by 2008 (Woolcock, 2010). These trends show the importance of social capital research in the social sciences.

2.2. Social Capital and Corporate Finance

Although numerous researchers examine the effects of social interaction on choices in other domains, there is no empirical evidence on whether social capital influences firms' risk-taking decisions. For example, Grinblatt et al. (2008) find that close neighbors have a strong influence on automobile purchasing decisions. Bayer et al. (2008) record the importance of social interaction in labor markets. Sacerdote (2001) documents a strong relationship between peer effects and educational outcomes among randomly assigned college roommates.

Prior research on social capital documents the role of social capital on financial contracting (Guiso et al., 2004), CEO's compensation (Belliveau et al., 1996), managerial decision (Moran, 2005), employees' organizational commitment (Watson and Papamarcos, 2002), value creation (Nahapiet and Ghoshal, 1997), product innovation (Tsai and Ghoshal, 1998), sustainable behavior of the firm (Danchev, 2006), competitiveness through information sharing (Wu, 2008), capital structure (Gao et al., 2011), competitiveness and innovation (Stone et al., 2012), and stock returns (García and Norli, 2012; Pirinsky and Wang, 2006), audit fees (Jha and Chen, 2015), corporate social responsibility (Jha and Cox, 2015), corporate and individual decisions (Jha et al., 2018), and financial reports (Jha, 2019). As documented in prior studies, one can conclude that social capital influences firms in many ways. These studies demonstrate the importance of social capital in enterprises. Therefore, this paper attempts to tie both risk-taking and social capital research and explore the role of social capital in corporate risk-taking decisions.

2.3. Risk-taking

Taking an appropriate level of risk is necessary for a firm. However, excessive risk-taking is counterproductive for firms as well as the economy. In the most recent financial crisis (2008-2009), several firms collapsed due to extreme risk-taking behavior.

There are several studies on risk-taking. These studies find several essential factors that influence firms' risk-taking policy. For instance, Wiseman and Gomez-Mejia (1998) propose a behavioral agency-based explanation of managerial risk-taking. Conducting intra-country analysis, Acharya et al. (2011) find a negative relation between risk-taking and stronger creditor rights. In a recent study, Li et al. (2013) investigate the effect of national culture on corporate risk-taking using firm-level data from 35 countries and document that culture influences firms' risk-taking by its impact on managerial decision-making and its influence on a nation's formal institutions. Bargeron et al. (2010) empirically investigate the effects of the Sarbanes-Oxley Act of 2002 (SOX) on risk-taking in publicly traded US firms. They found several provisions of the SOX, namely an expanded role of independent directors, the increased liability of director and officer, and rules related to internal controls to have significant adverse effects on corporate risk-taking. These empirical findings are consistent with Cohen et al. (2007), who find a substantial decline in risk-taking due to the changes in managerial compensation contracts after SOX.

Prior studies also document the role of interaction between political associations, the firm's political rank, and the executive's age rather than by strategic choices to maximize a firm's value (Ding et al., 2015), investor protection (John et al., 2008) and managerial shareholdings (Anderson and Fraser, 2000) on corporate risk-taking. Executive board composition (Berger et al., 2014), executive's past performance (Van Wesep and Wang, 2014), tournament incentives (Kini and Williams, 2012), managerial incentives (Coles et al., 2006; Hagendorff and Vallascas, 2011), and CEO ownership and external governance (Kim and Lu, 2011), CEO powers (Pathan, 2009) are other important determinants of risk-taking. Similarly, firm-level characteristics such as Size and leverage (Bhagat et al., 2015), non-financial factors such as religiosity (Hilary and Hui, 2009; Jiang et al., 2015; Noussair et al., 2013), and comparative power structure of shareholders within the corporate governance framework of each firm (Laeven and Levine, 2009) also play an important in corporate risk-taking. Thus, prior research provides strong support for the notion that both financial and non-financial factors influence corporate risk-taking.

2.4. Hypothesis Development

Prior research on social capital documents that social norms affect individuals' decisions (Cialdini et al., 1991; Dannals and Miller, 2017; Milgram et al., 1969). This stream of the literature shows that individuals behave based on whatever they experience around them. When a person deviates from societal norms and ideals, there is a sense of guilt, which is a cost to the individual (Jha and Chen, 2015). Moreover, social norms are self-enforcing (Hilary and Huang, 2012) because there is a desire to conform to a group's expectation, partly because the deviations from the norms are costly (Coleman, 1988; Portes, 1998), and partly because of the nature of the norms (Akerlof, 2007; Hilary and Huang, 2012). Therefore, the social norms of high social capital counties induce managers to behave more honestly (Jha and Chen, 2015), and managers may take this cost of deviation from social norms into account when making decisions (Akerlof, 2007). Prior research on social capital also documents a negative relation between social capital and opportunistic behavior such as corruption (La Porta et al., 1997), transaction costs associated with financial exchanges, such as buying stocks and getting loans (Guiso et al., 2004), crime (Buonanno et al., 2009), and audit fees (Jha and Chen, 2015). Thus, prior studies and their findings provide strong support for the role of social capital in individuals' decision-making processes.

Based on prior research findings on social capital, we offer several explanations for a relationship between social and risk-taking. First, social capital facilitates productive activities, just as physical capital does. A group within which there is excellent trustworthiness can accomplish much more than a comparable group without that trust and dependability (Coleman, 1994, 1988), which indicates that social capital can play a significant role in the managerial decision-making process. Trust-based relations between economic agents can be seen as a part of the competitive advantage for a firm (Humphrey and Schmitz, 1998). It also helps firms protect themselves against risk, such as a competitor strategically altering prices in a cost-efficient manner (Lorenz, 1999). Therefore, social capital may influence firms by reducing transaction costs and providing a competitive edge. The effects of social capital on firms can be viewed as within a firm, among firms, across sectors, and within society. Indeed, all economic activities carried out by organizations that require a high degree of social cooperation (Fukuyama, 1995), which function efficiently, including building sustaining organizations, such as firms, demand trust and a sense of shared purpose. These discussions provide strong support for our prediction about the relationship between social capital and firms' risk-taking decision.

Second, individuals in a high social capital region have a greater propensity to honor an obligation and greater mutual trust within a much denser network that promotes collective action (Jha and Chen, 2015). Therefore, social capital reduces the adverse effects of incomplete contracts (Grossman and Hart, 1986). Thus, if a social capital helps to enhance honesty and mutual trust in a society, then we expect a negative relationship between social capital and corporate risk-taking decisions because of the reduction of risk due to incomplete contracts or break of deals. Thus, we conjecture that individuals who reside in a high social capital area have a greater propensity to honor an obligation, and they are honest and responsible, which results in lower risk-taking in the presence of higher social capital.

Third, social capital and the local environment influence a firm's attitude towards risk and management style. Indeed, firms do not make decisions, but people do (Hilary and Hui, 2009). Therefore, social capital influences a firm's investment policy through its influence on management style and management attitudes towards risk. Moreover, a dense network, trust, and cooperative norms are fundamental elements of social capital. These elements influence firms' investment policies, which are not only aligned to maximizing shareholders' wealth but also with the interests of other stakeholders such as creditors, suppliers, employees, customers, and society.

Finally, higher social capital in terms of honesty and trust influences managerial action that is less risky for a firm. The key employees' attributes in a company may predict organizational strategic choices and performances (Hambrick and Mason, 1984). Personal traits and beliefs of key people in a corporation influence its policies, including firms' investment and financing decisions (see Bertrand and Schoar, 2003; Cronqvist et al., 2012; Hirshleifer et al., 2012; Malmendier et al., 2011; Malmendier and Tate, 2005). Firms with CEOs who have the higher social capital issue an initial loan with lower spreads and fewer financial covenants (Fogel et al., 2018) and withhold unpleasant news in a less severe manner (Li et al., 2017). Firms in higher social capital regions also exhibit accounting transparency and accounting conservatism (Jin et al., 2017), less asymmetry in cost behavior (Hartlieb et al., 2019), higher corporate social responsibility (Jha and Cox, 2015), lower probability of committing fraud by misrepresenting financial information (Jha, 2019). Thus, high social capital promotes a less risky environment in a firm.

The above discussion suggests that there are several ways social capital influences corporate risk-taking decisions. Managers in high social capital areas adopt moderate and balanced policies to address the concerns of various stakeholders. Managerial honesty in high social capital areas leads to lower volatility in stock returns (Hutton et al., 2009; Jin and Myers, 2006). The tendency towards transparency of firms in high social capital areas prevents extreme surprises in firms' policies, which leads to lower risk. Managers are less likely to hold unpleasant value-destroying corporate news until it is too late. Thus, the above discussions lead to the following testable hypothesis:

Hypothesis 1: Firms headquartered in counties with a higher level of social capital take a lower risk than firms headquartered in counties with a lower level of social capital, *ceteris paribus (H1).*

The traditional assets pricing theory suggests a positive relationship between risk and expected returns (Lintner, 1965; Sharpe, 1964). Therefore, risk-taking does not necessarily destroy a firm's value. We expect that social capital is negatively related to risk-taking and positively related to firm value. Therefore, when a firm headquartered in a low social capital county engages in excessive risk-taking behavior, the combined effects of social capital should result in lower firm value. This discussion leads to the following research hypothesis:

Hypothesis 2: The effect of social capital on risk-taking becomes stronger in the presence of weaker monitoring mechanisms, *ceteris paribus (H2).*

3. Data, Variable measurement, and methodology

3.1. Data

To investigate the influence of social capital on corporate risk-taking behavior, we construct a sample of S&P 1500 firms by merging firms' financial data from Compustat financial, security price data from CRSP, CEO's incentives and characteristics data from ExecuComp database, county-level social capital data from the Northeast Regional Centre for Rural Development (NRCRD) and county characteristics' data from the US Census Bureau and US Bureau of Economic Analysis (BEA). We also retrieve state-level social capital data developed by Putnam (2000) and dynamic social capital data developed by Hawes et al. (2013).[1] Following previous literature, we exclude financial firms (SIC 4000-4999) and utilities (SIC 6000-6999) from the sample. The final sample consists of 3,106 firms and approximately 27,929 firm-year observations during

[1] Special thanks to Hawes et al. (2013) for making this data set publicly available. The dataset is available at < http://perg-tamu.com/data-reports >.

the fiscal years 1992 to 2014. The appendix provides definitions and a detailed description of the construction of all the variables used in this study.

Table 1 presents descriptive statistics of our dependent and right-hand side variables used in our estimations, as well as additional control variables used in our robustness tests. Our primary dependent variables in this analysis, total risk (*TOTAL_RISK)*, systematic risk (*SYST_RISK),* and unsystematic risk *(UNSYST_RISK),* have a mean of 40.2%, 15.60%, and 35.90% respectively.

<Insert Table 1 here>

As presented in Table 1, the primary variable of interest, *SOCIAL_CAPITAL*, has a mean of -0.505, and a median of -0.455 with a standard deviation of 81.60%. The standard deviation of social capital indicates a significant variation of social capital in different counties. The summary statistic of our treatment variable is similar to the social capital index of Rupasingha et al. (2006). Regarding financial data in our sample, the average firm size measured as total assets is about \$11.53 billion, market to book ratio is about 3.11, leverage is 20.20%, the proportion of capital expenditures to total assets is 0.05, and research and development expense to total assets is 0.028. Turning to CEO's characteristics variables, CEOs Delta and Vega have a mean of \$1240.45 thousand and \$130.92 thousand, respectively, with very high standard deviations. The summary statistics for our financial control variables, as well as CEOs' incentive variables are consistent with those reported in Guay (1999) and Coles et al. (2006). The standard deviation of the control variables presented in Table 1 indicates considerable variations in some of the control variables. Therefore, we use the natural logarithm value of the variables with a high standard deviation in regression analysis.

3.2. Measuring risk-taking

Risk-taking is the primary dependent variable of interest in this study. Following prior research on corporate risk-taking, including Coles et al. (2006); Dunham (2012); Faccio et al. (2011); Guay (1999); Jiang et al. (2015); Low (2009) among others, we construct three different measures of risk based on stock returns, namely total risk, systematic risk, and unsystematic risk. Managers can affect both the level and the composition of risk (Low, 2009). Therefore, we decompose total risk into systematic and unsystematic risk.

There are several ways to measure total, systematic, and unsystematic risk. We estimate unsystematic risk as to the standard deviation of residuals, $(s_e^2)^{1/2}$ from the Fama-French three-factor model regression using twenty-four to sixty monthly stock returns immediately before the current fiscal year ending the month as follows:

$$R_{it} - r_t = a_{it} + b_i(R_{it} - r_t) + s_i SMB_t + h_i HML_t + \varepsilon_{it}, \quad where\ \varepsilon_{it} \sim N(0, \sigma_{it}^2), \tag{1}$$

Using estimated beta for security i, b_i from Eq. 1 and variance of returns on the market, s_m^2, we estimate the systematic risk $(b_i^2 s_m^2)^{1/2}$. Thus, total risk can be expressed as follows:

$$\sigma_i = [\, b_i^2 \sigma_m^2 \ + \sigma_\varepsilon^2,]^{1/2}\ , \tag{2}$$

We use the standard deviation of monthly stock returns, ROA, and ROE as alternative measures of risk-taking in our robustness analysis. We calculate the standard deviation of stock returns using the prior 12 months' stock returns before the current fiscal year ending month. The standard deviations of ROA and ROE are calculated using returns on assets and returns on equity of each firm for the prior ten years.

3.3. Measuring social capital

Rupasingha et al. (2006) operationalize a measure of social capital at the county-level. They conduct the principal component analysis to construct an index for each county for the years 1990, 1997, 2005, 2009, and 2014 using two measures of norms and two measures of networks. Their approach to measuring social capital seems to be the most comprehensive measure of social capital at the county level. Several researchers use either their index directly or follow their approach to constructing a social capital index in different disciplines. For instance, Putnam (2000) uses their measure of social capital as an alternative measure of individual trust. Other researchers, including Deller and Deller (2010), Hopkins (2011), and Jha and Chen (2015), use the data set developed by Rupasingha et al. (2006) in constructing a social capital index. Thus, there are variations in measuring a social capital index.

Some researchers also use voter turnout and census response rate either independently or as a component of a social capital index. Specifically, Alesina and La Ferrara (2000) use participation in a presidential election as a component to construct the social capital index, whereas Knack (2002) creates a measure of social capital using the census response rate. Guiso et al. (2004) develop a measure of social capital using participation in referenda in Italy, and Jha and Chen (2015) use voter turnout in presidential elections and the census rate to create a social capital index.

Following Jha and Chen (2015), we conduct principal component analysis to create a social capital index for each county for the years 1990, 1997, 2005, 2009, and 2014 using two measures of norms and two measures of networks. Specifically, we use voter turnout in presidential elections, the census response rate, total associations per 10,000 people, and the number of not-for-profit organizations per 10,000 people[2] to construct our social capital index. The measures of the norms and networks are highly correlated[3]. We extract only the first component as a measure of social capital[4] and then linearly interpolate the data to fill the years 1991 to 1996, 1998 to 2004, 2006 to 2009 and 2010 to 2013 following Hilary and Hui (2009), Jha and Chen (2015) and many other researchers[5]. We label social capital as *SOCIAL_CAPITAL* in this study.

We also construct a dichotomous variable labeled as *HSC_DUM* to indicate high and low social capital firms based on the median social capital in the sample. In robustness analysis, we use the social capital index of Rupasingha et al. (2006) labeled as *SCRG_INDEX,* state-level measures of social capital developed by Putnam (2001) marked as *SC_PUTNAM* and *SC_HONESTY,* and state-level dynamic social capital index of Hawes et al. (2013) labeled as *SC_HRM*.

Figures 1 and 2 present the maps of the social capital index in the US counties for the years 1990 and 2014. The figures do not show many variations on the social index of 1990 and 2014. The un-tabulated correlation test results show that the correlation between the social capital index of 2005 and 2009 is .93, which indicates that social capital does not change drastically over time. This evidence is consistent with the idea that unlike physical capital, social capital is static. Therefore, we linearly interpolate to fill missing data for social capital.

3.4. Control variables

Following prior literature on risk-taking (e.g., Dunham, 2012; Guay, 1999; Low, 2009) and social

[2] Some researchers use these two measures independently as measures of social capital. See Knack (2002) and Hopkins (2011) for details.

[3] The correlation between the voter turnout in the presidential election and number of organizations in the county are .30, .36, .30, .26, and .30 for the year 1990, 1997, 2005, 2009 and 2014 respectively.

[4] The eigenvalues of the first component for 1990, 1997, 2005, 2009, and 2014 are 1.98, 1.48, 1.48, 1.31, and 1.45 respectively. The eigenvalues of the other components are less than 1 except in 2009, when the second component has an eigenvalue of 1.03. To maintain consistency between the years, we use only the first component for each year and consider it the social-capital index.

[5] Using the linear interpolation to fill in the missing values of the in-between years when the data is not available is a common practice in the prior literature. See Kumar et al. (2011) and Alesina and La Ferrara (2000) for details.

capital (e.g., Jha and Chen, 2015), we include several variables in our model to control the impact of firm characteristics and policies, CEO's incentives and characteristics, and county-level characteristics in our analysis.

Prior research finds a negative relationship between firm size and risk-taking (Coles et al., 2006; Guay, 1999; Low, 2009; Pastor and Veronesi, 2017). We include firm age to control for the systematic variation in a firm's risk related to the life cycle (Pastor and Veronesi, 2017). Firms with higher growth opportunities take a higher risk (Coles et al., 2006). Therefore, we include the market to book ratio as a proxy for a growth opportunity in our model.

Following prior research, we also include capital expenditure and R&D expense scaled by total assets, leverage, and the Herfindahl index to control the impact of firm policy measures in risk-taking. We also use a governance index *(GINDEX)* of Gompers et al. (2003) in our robustness tests to check whether our original findings hold when we include governance in the analysis. The estimation results are not significantly different when we use an entrenchment index *(EINDEX)* of Bebchuk et al. (2009).

Prior research finds that executive incentives and characteristics are important determinants of risk-taking. For instance, higher delta exposes the manager to more risk, which induces the manager to choose less risky projects (Guay, 1999). Therefore, we include the CEO's Delta and Vega to control for CEO compensation wealth effects in firm risk (Cain and McKeon, 2016). CEO tenure and age are included to control CEO risk aversion (Cain and McKeon, 2016; Chakraborty et al., 2007; Hirshleifer et al., 2012). Gibbons and Murphy (1992) use managerial age as a proxy for career concerns. The market perceives female CEOs to be less risk-averse (Martin et al., 2009). CEOs with longer tenures and higher cash compensation are more likely to avoid risk (Berger et al., 1997). Faccio et al. (2016) document CEO gender differences in risk-taking and capital allocation efficiency. According to agency theory, duality encourages CEO entrenchment by reducing board monitoring effectiveness (Finkelstein and D'aveni, 1994), which may encourage risk-taking. Therefore, we include CEO Delta, Vega, gender, age, duality, and tenure to control the effect of the CEO's incentives and characteristics in our analysis. The literature on social capital also controls for county-level characteristics such as county population, income, and literacy rate (Jha, 2019; Jha and Chen, 2015). Therefore, we include county characteristics, namely county population, income per capita, literacy rate as additional control variables in our model. We also include the year and industry effects in our model to control for time-specific variations and industry-specific impact in the corporate risk-taking decisions. We follow the Fama and French (1997) twelve industry classifications to construct an *INDUSTRY* indicator variable.

3.5. Methodology

The main goal of this paper is to examine the empirical relation between risk-taking and social capital. The key variable is the social capital of the county where a company is headquartered. In estimating the impact of social capital on managerial risk-taking policy in a firm *i* at the year *t*, we employ a multivariate regression as follows:

$$RISK_{i,t} = \alpha_0 + \alpha_1 SOCIAL\ CAPITAL_t + \sum_{k=2}^{K} \alpha_k\ CONTROL\ VARIABLES_{k,i,t} + \varepsilon_{i,t} \qquad (3)$$

where, $RISK_{i,t}$ is one of our measures of risk-taking for a firm *i* at the fiscal year *t*, $SOCIAL\ CAPITAL_t$ is social capital at time *t*, $CONTROL\ VARIABLES_{k,i,t}$ is a vector of control variables, and $\varepsilon_{i,t}$ is the error term.

When all the control variables included in the regression model in Eq. [3], one can rewrite Eq. (3) as follows:

$$\begin{aligned} RISK_{i,t} = \alpha_0 + \alpha_1 SOCIAL\_CAPITAL_t + \alpha_2 L[FIRM\_SIZE]_{i,t} + \alpha_3 FCF_{i,t} + \alpha_4 ROA_{i,t} + \alpha_5 L[MTB]_{i,t} \\ + \alpha_6 L[FRIM\_AGE]_{i,t} + \alpha_7 RATE\_DUM_{i,t} + \alpha_9 HERF_{i,t} + \alpha_{10} CAPX_{i,t} + \alpha_{11} R\&D_{i,t} \\ + \alpha_{12} LEVERAGE + \alpha_{13} L[CEO\_DELTA]_{i,t} + \alpha_{14} L[CEO\_VEGA\ ]_{i,t} + \alpha_{15} FEMALE_{i,t} \\ + \alpha_{16} DUALITY_{i,t} + \alpha_{17} L[CEO\_AGE]\ _{i,t} + \alpha_{18} L[CEO\_TENURE]_{i,t} \\ + \sum_{k=19}^{K} \alpha_k\ COUNTY\ VARS_{k,i,t} + \sum_{k=20}^{K} \alpha_k\ INDUSTRY_{k,i,t} + \sum_{k=21}^{K} \alpha_k\ YEAR_{k,t} + \varepsilon_{i,t} \qquad (4) \end{aligned}$$

We conduct a series of multivariate tests using Eq. [4] to find the effect of social capital on risk-taking. We are interested in the sign of the parameter estimate and the level of significance on *SOCIAL_CAPITAL*. A positive (negative) parameter indicates a positive (negative) effect of social capital on risk-taking. We expect to have a negative relationship between social capital and corporate risk-taking decisions.

4. Results

In this section, we empirically investigate the relationship between corporate risk-taking and social capital. We use total risk, systematic risk, and unsystematic risk as to the proxy for corporate risk-taking. We expect *SOCIAL_CAPITAL* to have a negative and statistically significant coefficient in both univariate and multivariate analyses.

4.1. Univariate test results

To find the relation between risk and social capital, we conduct pair-wise correlation tests. The correlation analysis results in Table 2 show a negative and statistically significant correlation between measures of social capital on risk-taking variables. For instance, the correlation coefficients of *SOCIAL_CAPITAL* are -0.14, -0.07, and -0.15 for *TOTAL_RISK, SYST_RISK,* and *UNSYST_RISK* respectively, and all of the coefficients are statistically significant at the 1% level. These results are consistent with our prediction that there is a negative relationship between social capital and firm risk. The un-tabulated correlation results show that all the correlations between the independent variables are less than 0.4, except for *CEO_TENURE* and *CEO_AGE*. Therefore, the correlations test results indicate that the independent variables do not suffer from a multicollinearity problem.[6]

<Insert Table 2 here>

In Table 3, we present univariate comparisons of dependent and key independent variables for the firms headquartered in low and high social capital counties. We are interested in whether the firms headquartered in the high social capital counties have a lower level of risk than the firms headquartered in the low social capital counties. Hence, we test the hypothesis that the firms headquartered in high social capital take the lower level risk than the firms headquartered in the low social capital counties.

<Insert Table 3 here>

As shown in Table 3, both mean and the median value of all the measures of risk in the firms headquartered in the high social capital counties are smaller than in the companies that are headquartered in

[6] We also calculate the variance inflation factors (VIF) to see whether our explanatory variables suffer from the multi-collinearity problem. The un-tabulated test results show that the VIF of the explanatory variables in the main tests are less than 2.50, well below the commonly accepted threshold of ten, suggesting that multi-collinearity is not driving the test results in this analysis.

the low social capital counties. For instance, on average, *TOTAL_RISK, SYST_RISK*, and *UNSYST_RISK* are lower for the firms that are headquartered in high social capital counties by 3.7%, 1.00%, and 3.7% respectively than for the firms that are headquartered in the low social capital counties. Similarly, the median values of all measures of risk in the firms that are headquartered in the high social capital are also lower than the firms that are headquartered in the low social capital counties. We conduct t-tests and Mann-Whitney-Wilcoxon tests to find whether the mean and median differences between the two social capital groups are statistically different. The test results show that the differences in both mean and median of all measures of risk are statistically significant at the 1% level. Consistent with our hypothesis, univariate test results indicate that the firms headquartered in the high social capital counties take a lower level of risk than the firms that are headquartered in the low social capital counties.

4.2. Main Results

This section presents results from the regression-based analysis and discusses how social capital influences corporate risk-taking behavior. Following prior research on risk-taking behavior, we control for several factors affecting firms' risk-taking decisions. We expect a negative relationship between social capital and firm risk-taking behavior. Therefore, we are interested in the sign of the estimated coefficient on *SOCIAL_CAPITAL* and its level of significance. A negative parameter estimate on *SOCIAL_CAPITAL* indicates that firms headquartered in the high social capital counties follow less risky policy compared to the firms headquartered in the low social capital counties.

Table 4 reports the empirical results from the pooled regression using Eq. (4). The dependent variables are *L[TOTAL_RISK], L[SYST_RISK],* and *L[UNSYST_RISK]*. For each measure of risk, we present three models. Columns (1), (4), and (7) show the regression results for our baseline model, where we include only firm characteristics in estimation. In columns (2), (5), and (8), we add additional control variables (firm policy measures) following prior research, including Coles, Daniel, and Naveen (2006), among others. Delta and Vega differ substantially across firms (Guay, 1999), and both affect risk-taking (Coles et al., 2006; Guay, 1999). Prior studies use CEO tenure and age as a proxy for CEO risk-aversion (Cain and McKeon, 2016; Chakraborty et al., 2007; Coles et al., 2006; Hirshleifer et al., 2012). CEO's age can be used as a proxy for career concerns (Gibbons and Murphy, 1992). Prior research also documents managerial traits such as the CEO's gender as an important determinant of risk-taking (Faccio et al., 2016). According to agency theory, duality promotes CEO's entrenchment by reducing board monitoring effectiveness (Finkelstein and D'aveni, 1994).

We are also concerned that some county-level characteristics may influence firm risk-taking policy. Jha and Chen (2015) and Jha (2019) control for the county-level characteristics while investigating the effects of social capital on audit fees and financial reports. Industry-specific variations and policy changes may influence corporate risk-taking. Therefore, in columns (3), (6), and (9), we control for firm characteristics, firm policy measures, CEO incentives and characteristics, county-level characteristics, and industry and year fixed effects while estimating the effects of social capital in risk-taking.

<Insert Table 4 here>

Estimated coefficients for *SOCIAL_CAPITAL* presented in Table 4 are negative and statistically significant across all specifications. For instance, the estimated coefficient of *SOCIAL_CAPITAL* in the baseline model (Column 1) is -0.018 and statistically significant at the 1% level. The estimated coefficient of -0.018 on *SOCIAL_CAPITAL* suggests that when social capital increases from the 25th percentile to the 75th percentile, the total risk would reduce by approximately 3.88% (-.018 x 2.155), ceteris paribus. In column (2), we include additional control variables, firm policy measures, in our estimation, and still, the estimated coefficient for *SOCIAL_CAPITAL* is negative (-0.015) and statistically significant at 1% level. In column (3), we re-estimate the impact of social capital on firm total risk controlling for CEO incentives, CEO characteristics variables, industry, and year fixed effects. The estimated coefficient for *SOCIAL_CAPITAL* still remains negative and statistically significant. The reported coefficient for *SOCIAL_CAPITAL* in column (3) suggests that a firm headquartered in a county at the 75th percentile of social capital has approximately 3.76% (-0.009*0.078)/ (-0.009*-2.077) lower total risk compared to a firm headquartered in a county at the 25th percentile of social capital. Therefore, these results corroborate our first hypothesis (H1), which predicts that social capital is negatively related to risk-taking.

In columns (4), (5), and (6), we estimate the impact of social capital on systematic risk. The estimated coefficients for *SOCIAL_CAPITAL* in all models are negative and statistically significant. These results indicate that social capital also influences firms' exposures to systematic risk. However, the magnitude of the estimated coefficient of social capital for systematic risk in each specification is relatively smaller. In columns

(7), (8), and (9), we present the estimated coefficients for *SOCIAL_CAPITAL.* When we regress unsystematic risk on social capital, the estimates for social capital across all models are negative and statistically significant. In particular, the estimated coefficients for *SOCIAL_CAPITAL* in columns (7), (8) and (9) are -0.016 (*p<0.01),* -0.013 (*p<0.01)* and -0.009 (*p<0.01).* Therefore, these results indicate that social capital is negatively related to a firm's unsystematic risk, which is consistent with our first hypothesis (H1). Collectively, the results in Table 4 are consistent with our prediction and suggest that there is a negative association between social capital and corporate risk-taking. The test results are robust to controlling for country-specific characteristics, firm policy measures, CEO incentives and characteristics, county-level characteristics, and industry and year effects. The regression results in Table 4 also show that the coefficients for most of our control variables have the predicted sign and statistical significance.

<Insert Table 5 here>

In Table 5, we re-estimate regressions presented in Table 4 using a dichotomous variable for social capital, *HSC_DUM* equals one when a firm is headquartered in a high social county, and zero otherwise. Estimated coefficients of *HSC_DUM* are negative and statistically significant across all regression specifications for each measure of risk. For instance, the estimated the coefficient of *SOCIAL_CAPITAL* for total risk in column (1) is -0.016 (*p<0.01),* which indicates that a firm headquartered in a high social capital county is approximately 1.59% [$e^{-0.016}$-1] less risky than a firm headquartered in a low social capital county. Similarly, the estimated coefficient of -0.015 on *SOCIAL_CAPITAL* in column (7) for unsystematic risk indicates that a company headquartered in a high social capital county is approximately 1.49% [$e^{-0.015}$-1] less risky than a firm headquartered in a low social capital county. Thus, when we estimate the impact of social capital using a dichotomous variable for social capital, *HSC_DUM,* our results are consistent with our findings in Table 4.

<Insert Table 6 here>

Following Guay (1999), and Coles et al. (2006), we use the standard deviation of stock returns as an alternative measure of firm risk. We also use the standard deviation of ROA and ROE as alternative measures of risk. Table 6 presents the estimation results using the same regression specifications we used in Table 4. Across all regression specifications, the estimated coefficients for *SOCIAL_CAPITAL* are negative and statistically significant at the 1% level. These results indicate that the way we construct a measure of risk does not drive our empirical findings. To conclude, the empirical test results using alternative measures of risk still validate our main findings in Table 4 that there is a negative relationship between corporate risk-taking and social capital.

4.2.1. Robustness tests

In this subsection, we perform additional analyses to investigate the robustness of our empirical results. In all of our estimates, we include variables included in Table 4 and the county-level control variables. In general, these test results support our main findings that there is a negative relationship between social capital and corporate risk-taking.

4.2.1.1. Social Capital and Risk-taking: Endogeneity Issue

We include various control variables, including county-level attributes, in our analysis. However, we are concerned that there is a possibility of omission of some key variables in our model that affects social capital and thereby risk-taking. Under this scenario, the estimated coefficient for *SOCIAL_CAPITAL* may be biased. According to Putnam (2001), the best single predictor of the level of social capital in American states is the distance to the Canadian border. Therefore, we posit that the distance from major cities in Canada to the US counties is likely to influence social capital. Jha et al. (2018) use distance from the nearest Canadian border as an instrument to address the endogeneity issue while exploring the role of social capital on political leanings. Therefore, following Jha et al. (2018), we use the distance from Ottawa, the capital city of Canada, as an instrument in our analysis.

<Insert Table 7 here>

We do not report the estimation results for the first stage. The un-tabulated results show that the distance from Canadian capital, *L[DIST_OTTAWA],* is significant (*p<0.01)* and negatively (- 0.28) correlated with social capital. The F-statistics for the first-stage regression is 499.73. The minimum eigenvalue statistic (2546.7) is higher than the critical value. Therefore, our instrumental variable is not weak, and it is a valid instrument.

Table 7 contains the empirical results when we include the distance from Canadian capital as an instrumental variable in our regression models. Across all specifications, the estimated coefficients for predicted *SOCIAL_CAPITAL* are negative and statistically significant at the 1% level. Indeed, when we address the endogeneity concerns, the impact of social capital on each measure of risk is much stronger compared to the results presented in Table 4, even after including firm characteristics, firm policy measures, CEO's incentives and characteristics, county-specific characteristics, and industry and year fixed effects in our estimations. For instance, the estimated coefficient for predicted *SOCIAL_CAPITAL* in column (9), Table 7, is -0.029 ($p<0.01$) compared to -0.009 ($p<0.01$) in column (9) in Table 4. To conclude, our estimation results still consistent with our main findings in Table 4 but more robust when we address the endogeneity issue in our estimation models. The un-tabulated test results yield similar coefficients for predicted *SOCIAL_CAPITAL* when we use distance from other major Canadian cities as instruments.

4.2.1.2.Social Capital, Governance and Risk-taking

We do not include governance index *(GINDEX)* variables in my primary analysis due to a significant loss of data. However, we are concerned that the estimation results may suffer from omitted variable bias if the governance variable is excluded from the estimation models. To mitigate this concern, we re-estimate the effects of *SOCIAL_CAPITAL* on different measures of risk using the governance index (*GINDEX*) constructed by Gompers et al. (2003).

<Insert Table 8 here>

In Table 8, we present the estimated coefficients of *SOCIAL_CAPITAL* for each measure of risk. Although the sample size drops significantly, the estimated coefficients of *SOCIAL_CAPITAL* remain virtually unchanged across all regression specifications. When we use the entrenchment index *(EINDEX)* of Bebchuk et al. (2009) as an alternative measure of governance, un-tabulated test results show the virtually unchanged coefficient of *SOCIAL_CAPITAL* for each measure of risk. These findings indicate that our estimation results are robust even after controlling governance in our estimation model.

4.2.1.3.Social Capital and Risk-taking Pre and Post-SOX

Prior research finds evidence consistent with the proposition that the adoption of the Sarbanes-Oxley Act of 2002 (SOX) discourages risk-taking by firms (Bargeron et al., 2010). Cohen et al. (2007) find a significant decline in risk-taking due to the changes in managerial compensation contracts after the enactment of the SOX. Therefore, we test the hypothesis of whether social capital constrains risk-taking in the pre-Sox period.

<Insert Table 9 here>

In Table 9, we present the estimated coefficients of *SOCIAL_CAPITAL* for each measure of risk. The test results in columns (1) through (4) show that the estimated coefficient for *SOCIAL_CAPITAL* in each regression specification, except for systematic risk, is much stronger than your preliminary results in Table 4. Although the impact of social capital on our primary measures of risk, total risk, and the unsystematic risk drops significantly on the post-SOX sample as shown in columns (5) through (8), social capital still remains a significant determinant of risk-taking. However, the explanatory power of *SOCIAL_CAPITAL* does not remain significant for systematic risk. When we replace *SOCIAL_CAPITAL* with a dummy variable that equals one for the pre-SOX period and reproduce the results in Table 4. The un-tabulated test results show that the estimated coefficient for *SOCIAL_CAPITAL* remains negative and statistically significant in all regression specifications. Therefore, these findings indicate that the explanatory power of social capital for total and unsystematic risk-taking in the post-SOX period gets weaker, but our estimation results still consistent with original findings in Table 4 even after controlling for the impact of SOX on risk-taking.

4.2.1.4.Social Capital and Risk-taking: Using Social Capital Index of Rupasingha et al. (2006)

We construct the measure of social capital using the data compiled by Rupasingha et al. (2006). To ensure that the way we construct the measure of social capital or the linear interpolation used to fill the missing data for the missing years does not drive the estimation results, we repeat the tests we conducted in Table 4 using the social capital index created by Rupasingha et al. (2006).

<Insert Table 10 here>

Table 10 presents the estimation results using the social capital index (*SCRG_INDEX*) of Rupasingha et al. (2006). The estimated coefficient of *SCRG_INDEX* is negative and statistically significant at the 1% level for each measure of risk across all specifications, indicating that there is a negative relationship between social capital and corporate risk-taking. These results are similar to the estimation results presented in Table 4. Therefore, the way we constructed social capital does not change our main findings.

4.2.1.5.Social Capital and Risk-taking: Using State-Level Social Capital Index of Hawes et al. (2013)

We also estimated the effects of social capital on firm risk-taking using state-level measures of social capital. Specifically, we use honesty *(SC_HONESTY)* and state-level measure of social capital *(SC_PUTNAM)* developed by Putnam (2000), and dynamic state-level social capital index *(SC_HRM)* developed by Hawes et al. (2013). Table 11 presents the estimates of Eq. (3) for total risk, systematic risk, and unsystematic risk using all three measures of state-level measures of social capital. As shown in columns (1) through (3), *SC_HONESTY, SC_PUTNAM,* and *SC_HRM* have negative and statistically significant coefficients when we regress *L[TOTAL_RISK]* with them. Similarly, when we regress *L[UNSYST_RISK]* on each state-level measure of social capital variable, each measure of social capital has a negative and statistically significant coefficient. Again, these results support our primary hypothesis (H1) that there is a negative relationship between corporate risk-taking and social capital.

<Insert Table 11 here>

We perform several robustness tests to estimate the impact of social capital on corporate risk-taking. These test results indicate that model selection or variable selection does not drive our test results. When we re-estimate the effects of social capital using the level of each measure of risk, the un-tabulated estimation results show that the main finding on the relation between firm risk-taking and social capital remains unchanged.

4.3. Social Capital and Risk-taking when Monitoring is Weak

In this section, we examine the effects of social capital on risk-taking when external monitoring is weak. Trust is an essential element of social capital (Fukuyama, 1995). There are more civic, social, and political organizations in high social capital areas, and the external monitors have a greater chance of interacting and sharing information, which leads to more effective monitoring in the high social capital regions (Wu, 2008). Managers are also encouraged to fulfill their obligations due to their perception of harsher punishment for deviant behavior (Coleman, 1994; Hilary and Huang, 2012; Spagnolo, 1999). Thus, social capital serves as a societal monitoring mechanism (Gupta et al., 2018). Therefore, social capital may play an important role as an internal and external monitoring mechanism for a firm. Thus, when we expect social capital to have a stronger effect on risk-taking when a firm has a weaker external monitoring mechanism measured by credit rating scores.

<Insert Table 12 here>

To test the impact of social capital on risk-taking, we divide our sample into quartile portfolios. Table 12, Panel A presents average risk-taking, social capital, and credit rating for each portfolio created based on credit rating scores. As shown in columns (1) through (4), the portfolio with the lowest credit rating has the lower average social capital and higher average risk, while the portfolio with the higher credit rating has higher social capital and lower average risk. In Panel B through E, we present the estimation results for each measure of risk. As shown in column (1) in each Panel, the estimated coefficient for *SOCIAL_CAPITAL* is negative and statistically significant at the 1% level. However, the coefficient for *SOCIAL_CAPITAL* for each measure of risk in column (4) for the portfolio with the highest credit rating is not statistically significant. Indeed, when we regress each measure of risk on *SOCIAL_CAPITAL,* the estimated coefficient for *SOCIAL_CAPITAL* loses statistical significance. Therefore, our test results support our hypothesis *(H2)* that the effect of social capital becomes stronger when a firm has a weaker external monitoring mechanism.

To test the robustness of our findings, we divide our sample into firms with credit ratings and without credit ratings. Panel F in Table 12 presents the test results for firms with stronger external monitoring (with credit ratings) and weaker monitoring (no credit ratings). Except for systematic risk in column (6), the estimated coefficient of *SOCIAL_CAPITAL* for each measure of risk is much stronger in column (5) through the column (8) for the firms with no credit ratings. These results reinforce our primary findings in Panel A through E in Table 12 that the impact of social capital becomes stronger for the firms with weaker monitoring.

4.4. Social Capital, Excessive Risk-taking and Firm Value

In this section, we examine the relationship between social capital and excessive risk-taking on the firm value measured by industry adjusted Tobin's Q. Following prior research (Bebchuk et al., 2009; Gompers et al., 2003), we define Tobin's Q as the ratio of market value of assets to the book value of assets, whereas the market value of assets is the book value of assets plus the market value of common stock less the sum of book value of common stocks and deferred taxes. Industry-adjusted Tobin's Q is a firm's Q minus the average Q in the firm's industry in the observation year. We define a firm's industry using the Fama and French (1997) twelve industry groups. If social capital is negatively related to excessive risk-taking and social capital is positively associated with firm value, then the combined effect of social capital and excessive risk-taking should result in lower firm value. Therefore, we expect the combined impact of excessive risk-taking and social capital to be negative on firm value. Following prior research (Bebchuk et al., 2009), we use the following model to examine the joint effect of excessive risk-taking and social capital:

$$INDADJTQ_{i,t} = \alpha_0 + \alpha_1 SOCIAL\_CAPITAL_t + \sum_{k=2}^{K} \alpha_k\, SC\ x\ EXCESSIVE\ RISK\ TAKING_{k,i,t} + \alpha_3 L[FRIM\_SIZE]_{i,t} + \alpha_4 L[FIRM\_AGE]_{i,t} + \alpha_5 ROA_{i,t} + \alpha_6 CAPX_{i,t} + \alpha_7 LEVEAGE_{i,t} + \alpha_8 R\&D\_SALE_{i,t} + \alpha_9 EINDEX_{i,t} + \sum_{k=10}^{K} \alpha_k\, INDUSTRY_{k,i,t} + \sum_{k=11}^{K} \alpha_k\, YEAR_{k,t} + \varepsilon_{i,t} \quad (5)$$

Where INDADJTQ is industry adjusted Tobin's Q of a firm i at time t, excessive risk-taking is a dichotomous variable equal to 1 when a firm's industry adjusted risk is in the 4^{th} quartile, and zero otherwise. Therefore, the interactive variables *(SC x ETRS, SC x ESRS,* SC *x EUSRS* and *SC x ESTDRS)* measure the joint effect of excessive risk-taking and social capital for each measure of risk, namely, total risk, systematic risk, unsystematic risk and standard deviation of stock returns and social capital. *R&D_SALE* is the research and development expense to sales. Appendix A provides detailed definitions of the rest of the variables in Eq. (5).

<Insert Table 14 here>

First, we examine the effects of social capital and excessive risk-taking. Table 14 presents the estimates of Eq. (4) for each measure of risk-taking defined as a dichotomous variable that takes a value of 1 when a firm is in the highest risk group portfolio. The OLS regression results presented in columns (1) to (4) show that the estimated coefficient for *SOCIAL_CAPITAL* for each measure of excessive risk is negative and statistically significant. Columns (5) to (8) present the estimation results for logistic regressions. Again, the estimated coefficient of *SOCIAL_CAPITAL* for each measure of risk is negative. Alternatively, we replicate the test results presented in Table 5 using excessive risk-taking as the dependent variable. The un-tabulated test results show that the estimated coefficient for *HSC_DUM* is negative and statistically significant for each measure of excessive risk-taking. The test results are robust controlling for various firm-level, CEO incentives and characteristics, and county-level control variables.

<Insert Table 15 here>

Table 15 presents the estimates of Eq. (5). The positive and statistically significant coefficient of *SOCIAL_CAPITAL* in columns (1) through (4) indicates a positive association between social capital and firm value measured as industry adjusted Tobin's Q. Our previous empirical test results show a negative relationship between social capital and risk-taking, and all measures of risk are higher for the firms that are headquartered in the low social capital counties. Therefore, we expect that the firm value would be lower if a firm is located in the low social capital areas with excessive risk-taking. As expected, the estimated coefficient for each interactive variable (social capital x measure of excessive risk-taking) in column (1) through (4) is highly significant and negative. For instance, the estimated coefficient of -.144 for *SCxEUSRS* in column (3) indicates that firm value measured as industry adjusted Tobin's Q decreases approximately by 13.41% [$e^{-0.144}$-1] when a firm takes the excessive unsystematic risk in a low capital county. These results support the prediction that when a firm located in the low social capital areas engages in excessive risk-taking behavior, it destroys the firm value. The un-tabulated test results are robust when we calculate excessive risk-taking following the methodology developed by Bowen et al. (2008) and Jiraporn and Liu (2008).

4.5. Social Capital and Risk-taking: Channel Analysis

In this section, we discuss the mechanism through which social capital influences risk-taking. To disentangle the direct and indirect effect of social capital on risk-taking, we develop a Structural Equation Model (SEM) where we regress credit rating on social capital and risk-taking measures on social capital simultaneously. The direct effect captures the effect of social capital on risk-taking without passing its effect on risk-taking. The indirect effect captures the impact of social capital on risk-taking through the indirect effect of social capital on firms' credit ratings.

<Insert Table 15 here>

If social capital influences credit ratings, we expect to have a positive and significant coefficient on social capital when we regress credit rating on social capital. In Table 15, we present estimation results for our channel analysis. As expected, the estimated coefficient on *SOCIAL_CAPITAL* in column (5), Panel A is positive (0.1151) and statistically significant at a 1% level. This result indicates that social capital is positively related to credit ratings. In columns (1) through (4), we estimate the effect of social capital on risk-taking variables while including the credit rating variable in our estimation. The estimated coefficients for both *SOCIAL_CAPITAL* and *RATING* are negative and statistically significant, which suggests that social capital directly and through credit ratings reduces corporate risk-taking.

In Panel B, Table 15, we separate the direct and indirect effects of social capital. As shown in column (1), the ratio of indirect to total effect of social capital on *L[TOTAL_RISK]* is .113, which indicates that 11.3% of the impact of *SOCIAL_CAPITAL* on total risk is mediated by mediating variable, *RATING*. We also conduct the significance of the indirect effect of social capital on total risk. Sobel test *($p< 0.01$)* indicates the significance of the median effect of social capital on all measures of risk-taking through credit ratings (Sobel, 1987). The un-tabulated test results using Baron and Kenny's (1986) and Zhao et al. (2010) approach to testing mediation also indicate the significance of the median effect of social capital on all measures of risk-taking. Therefore, our median variable, *RATING,* is valid.

5. Conclusion

Prior studies on the determinants of corporate risk-taking document several financial factors that influence firms' risk-taking policy. We conjecture that a non-financial factor, such as social capital, also may influence firm risk-taking behavior. The idea that mainly motivates our research question is that the social environment where a firm is headquartered pervades the culture of the firm and influences its managers' behavior. We argue that social capital reinforces collective behavior and establishes a sense of accountability for others (Orlowski and Wicker, 2015). Therefore, social capital enhances the alignment of manager and shareholder interests. Thus, we hypothesize that firms headquartered in the high social capital counties are less risky than firms headquartered in the low social capital counties.

We follow existing social capital literature in constructing a social capital index and conduct a series of empirical tests to test our research hypotheses. The empirical results are consistent with our prediction that firms headquartered in the high social capital counties take less risk than firms headquartered in the low social capital counties. Therefore, we find a negative relationship between social capital and corporate risk-taking. Specifically, our test results find that social capital influences both total and unsystematic risk. The test results are robust, controlling for a broad range of control variables identified by prior research and are economically significant. Based on our research findings, we conclude that social capital is an important determinant of firm risk-taking policy. We also find that when a firm located in a low social capital area engages in excessive risk-taking, it destroys firm value.

This paper broadly contributes to the finance literature on corporate risk-taking by demonstrating how a non-financial factor, such as social capital, is prominent in organizational decisions. More specifically, it contributes to the recently growing literature on the role of non-financial factors on corporate decisions by presenting evidence that the effect of social capital is highly important to corporate risk-taking decisions. Our study offers an important insight that firm location shapes corporate decisions through the impact of social capital on risk-taking. Other non-financial factors may have a significant impact on firm risk-taking decisions. However, they are beyond the scope of this study. Therefore, we leave it for future research.

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Appendix A

Variable Definitions and Data Sources

Variables	**Data Definition and Source**

Dependent variable

Total risk *(TOTAL_RISK)* is the sum of systematic risk and unsystematic risk. *L[TOTAL_RISK]* is the natural logarithm of *TOTAL_RISK*. *Source: CRSP*

Systematic risk *(SYST_RISK)* is the square root of $b_i^2 s_m^2$. Beta is estimated using the Fama-French three-factor model with 60 months returns, and variance of returns on the market is calculated using the last 12 monthly returns on the market before the fiscal year ending month. *L[SYST_RISK]* is the natural logarithm of *SYST_RISK*. *Source: CRSP*

Unsystematic risk *(UNSYST_RISK)* is the standard deviation of residuals from the Fama-French three-factor regression using monthly stock returns up thirty-six months immediately before the current fiscal year ending month. *L[UNSYST_RISK]* is the natural logarithm of *UNSYST_RISK*. *Source: CRSP*

Alternative measures or risk

The standard deviation of returns *(STD_RTN)* is calculated using the prior sixty months of stock returns. *L[STD_RTN]* is the natural logarithm of *STD_RTN*. *Source: CRSP*

The standard deviation of return on assets *(STD_ROA)* and it is calculated using the current year and the last 4 years of ROA. *Source: Compustat*

The standard deviation of return on equity *(STD_ROE)* and it is calculated using the current year and the last 4 years of ROE. *Source: Compustat*

Main variable

Social capital *(SOCIAL_ CAPITAL)* is our county-level measure of social capital. We construct it by conducting principal component analysis using the approach similar to Rupasingha et al. (2006) and Jha and Chen (2015). The county-level data is available only for the years 1990, 1997, 2005, 2009, and 2014. Therefore, using the data for the given years, we conduct principle component analysis using assn, nccs, pvote, and respn variables. Assn is the aggregation of ten to twelve different local clubs and organizations. For example, in 1990, Assn is comprised of bowling centers, civic and social associations, physical fitness facilities, public golf courses, religious organizations, sports clubs, managers and promoters, membership sports and recreation clubs, political organizations, professional organizations, business associations, labor organizations, and membership organizations not elsewhere classified for the given year. Therefore, we divide assn by 12 and scale the result by the county population, and then

Variables	**Data Definition and Source**

multiply it by 10,000. Nccs is the total number of nongovernment organizations, excluding the ones with an international focus. We divide it by the county population and multiply by 10,000. Pvote is the most-recent number of votes cast in the presidential election divided by the county population over the age of 18-years times 100. Respn is the most current response rate in the most recent census. We conduct the principal component analysis and use the first component as a social capital index for each county. Following prior research on social capital, we linearly interpolate to fill the missing social capital data between the years 1990 and 2009. However, we use the social capital index for 2009 to fill the missing data between 2009 and 2013. *Source: Northeast Regional Center for Rural Development (NRCRD),* (Rupasingha et al., 2006).

SC_DUM is a dichotomous variable that equals one if *SOCIAL_CAPITAL* is higher than average social capital in our sample and 0 otherwise. *Source: Northeast Regional Center for Rural Development (NRCRD),* (Rupasingha et al., 2006).

SCRG_INDEX is the social capital index constructed by Rupasingha et al. (2006). *Source: Northeast Regional Center for Rural Development (NRCRD),* (Rupasingha et al., 2006).

SC_PUTNAM is a state-level measure of the social capital index constructed by Putnam (2000).

SC_HONESTY is a state-level measure of honesty constructed by Putnam (2000).

SC_HRM is a state-level measure of the social capital index developed by Hawes et al. (2013). They construct this index using the MRI's survey of the American consumer. This data set is attainable for the year 1986 to 2004. Since the data is not available after 2004, We replace all the missing data with 2004 values. For details about the construction of this dynamic social capital variable, see Hawes et al. (2013). *Source:* (Hawes et al., 2013) *available at < http://perg-tamu.com/data-reports >*

Firm-level control variables

Firm Size *(L[FIRM_SIZE)* is the natural logarithm of the total assets in millions of dollars. *Source: Compustat*

Free Cash Flow *(FCF)* is the ratio of operating income before depreciation to total assets. *Source: Compustat*

Return on assets *(ROA)* is the ratio of operating income before depreciation to total assets. *Source: Compustat*

Market to book *(MTB)* is measured as (book value of total assets – book value of the equity + market value of equity)/book value of net assets. *L[MTB]* is the natural logarithm of *MTB*. *Source: Compustat*

Firm age *(FIRM_AGE)* is the difference between a fiscal year, and the first-year firm appears in Compustat. *L[FIRM_AGE]* is the natural logarithm of *FIRM_AGE*. *Source: Compustat*

Herfindahl index *(HERF)* is the sum of the square of segment sales divided by the square of firm sales. *Source: Compustat*

Rating dummy *(RATE_DUM)* is an indicator variable that equals 1 if a firm has Standard and Poor's credit rating. *Source: Compustat*

Variables	**Data Definition and Source**

Policy Measures

Capital expenditure *(CAPX)* is the ratio of capital expenditure to total assets. *Source: Compustat*

Research and Development expense *(R&D)* is the ratio of research and development expense to total assets (zero if missing). *Source: Compustat*

Leverage *(LEVERAGE)* is calculated as the difference between the book value of assets and book value of equity divided by the market value of equity. *Source: Compustat*

CEO Incentives and characteristics

CEO's portfolio price sensitivity *(CEO_DELTA)* in thousands of dollars*)* is the dollar value change in CEO equity-based compensation for a 1% change in the stock price. *L[CEO_DELTA]* is the natural logarithm of *CEO_DELTA.* We calculate delta following Guay (1999), Core and Guay (2002), and Coles et al. (2006). They use the Black and Scholes (1973) option model as modified by Merton (1973) to account for dividends. *Source: ExecuComp*

CEO's portfolio price sensitivity *(CEO_DELTA* in thousands of dollars*)* is the dollar value change in CEO equity-based compensation for a 1% change in the stock price. *L[CEO_DELTA]* is the natural logarithm of *CEO_DELTA.* We calculate Vega following Guay (1999), Core and Guay (2002), and Coles et al. (2006). *Source: ExecuComp*

DUALITY is an indicator variable that equals one if a CEO is also the chairperson of a board and zeroes otherwise. *Source: ExecuComp*

FEMALE is an indicator variable equal to one if an executive's gender is female, and zero otherwise. *Source: ExecuComp*

CEO_AGE is the present age of the CEO. *L[CEO_AGE]* is the natural logarithm of *CEO_AGE. Source: ExecuComp*

CEO_TENURE is calculated as the difference between a current fiscal year, and the date the CEO became CEO. *L[CEO_TENURE]* is the natural logarithm of *CEO_TENURE. Source: ExecuComp*

Governance and other variables

GINDEX is a governance index constructed by Gompers et al. (2003). When *EINDEX* is missing, following previous literature, we replace it with the prior year's value. *Source: Investor Responsibility Research Center (IRRC)*

EINDEX is an entrenchment index constructed by Bebchuk et al. (2009). We use it as an alternative measure of corporate governance. When *EINDEX* is missing, following previous literature, we replace it with the prior year's value. *Source: Professor Bebchuk's Website.*

RATING is a numerical value of Standard and Poor's rating. The value for ratings is assigned 1 when a firm's credit rating is "D" and 21 when a firm's credit rating is "AAA." So, the value of *RATING* ranges from 1 to 21. *Source: Compustat*

County-level characteristic variables

L[POPPPULATION] is the natural logarithm of the county's population. *Source: U.S. Department of*

Variables	**Data Definition and Source**
Commerce / Bureau of Economic Analysis (BEA)	
L[PC_INCOME] is the natural logarithm of the county's income per capita. *Source: BEA*	
L[LITERACY] is the natural logarithm of the percent of adults with four years of college or higher. *Source: United States Department of Agriculture Economic Research Service*	
Other control variables	
YEAR is an indicator variable that equals one for the given fiscal year and zeroes otherwise. *Source: Compustat*	
INDUSTRY is a set of binary variables constructed based on the Fama-French 12-industry classifications. *Source: Compustat*	

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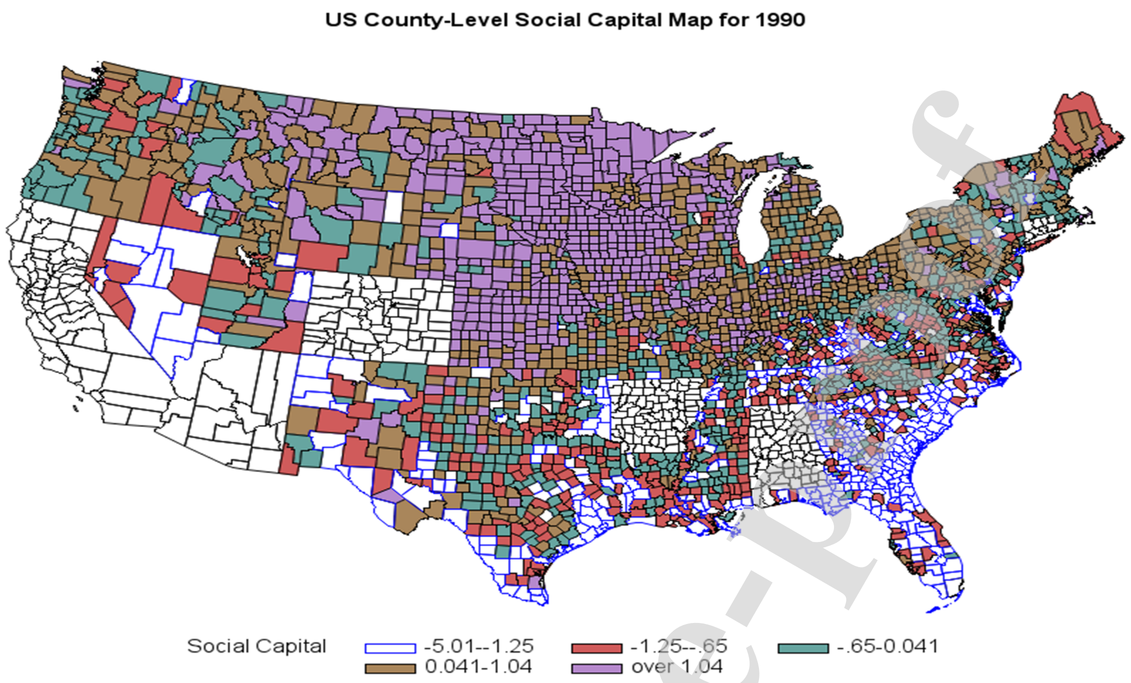

Figure 1: County-Level Social Capital for 1990 *(Source: Author generated map)*
The figure shows the geographic dispersion of social capital in the US counties. As shown in the figure, the majority of the high social capital counties are concentrated in the North and North East of the United States in 1990.

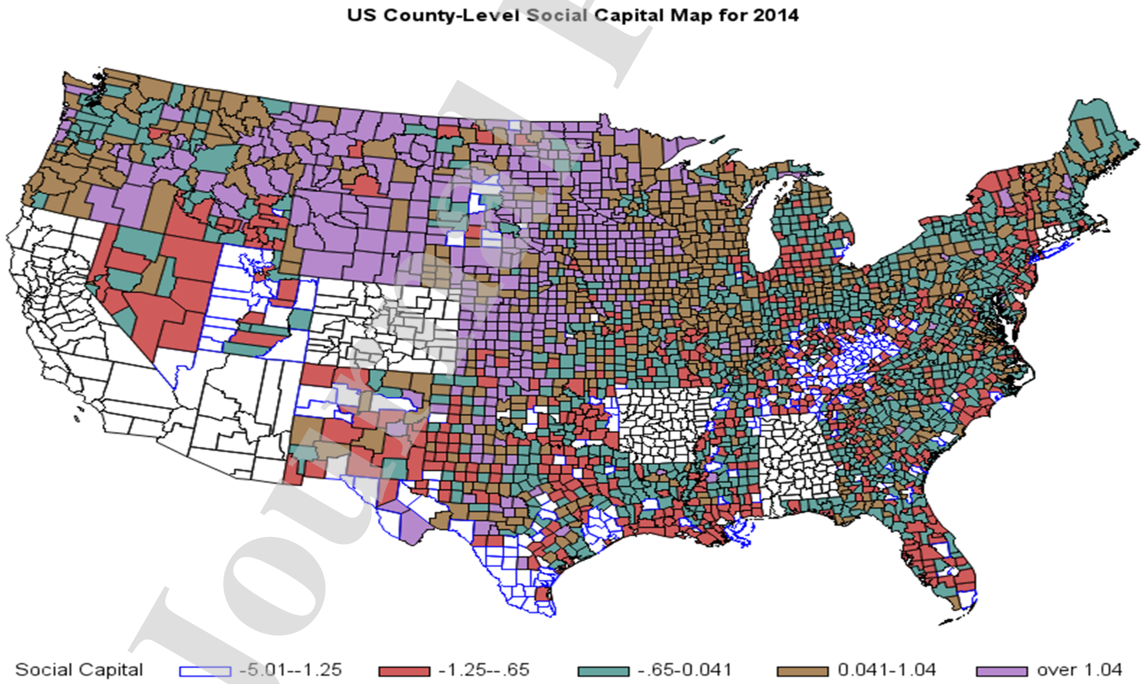

Figure 2: County-Level Social Capital for 2014 *(Source: Author generated map)*
The figure shows the geographic dispersion of social capital in the US counties. As shown in the figure, the majority of the high social capital counties are concentrated in the North and North East of the United States in 2014.

Table 1

Descriptive Statistics

This table reports the summary statistics. Our sample consists of 3,106 (27,929 firm-year observations) publicly traded US firms for the sample period 1992 through 2014. The detailed definitions of the variables used in this table and their sources are given in Appendix A.

VARIABLES	N	Mean	Std. Dev.	Q1	Median	Q3
TOTAL_RISK	27929	0.402	0.186	0.145	0.362	0.488
SYST_RISK	27929	0.156	0.114	0.005	0.127	0.210
UNSYST_RISK	27929	0.359	0.171	0.128	0.320	0.437
STD_RTN	27906	0.394	0.230	0.110	0.338	0.481
SOCIAL_CAPITAL	27929	-0.509	0.814	-2.077	-0.455	0.078
HSC_DUM	27929	0.529	0.499	0.000	1.000	1.000
SC_PUTNAM	27923	-0.190	0.511	-1.173	-0.186	-0.015
SC_HONESTY	27923	3.802	0.095	3.555	3.792	3.843
SC_HRM	27923	-0.129	0.813	-2.192	-0.115	0.349
Firm characteristics						
FIRM SIZE	27929	11530.873	48205.472	60.810	1496.093	5196.288
FCF	27929	0.079	0.072	-0.158	0.079	0.117
ROA	27929	0.136	0.106	-0.188	0.132	0.193
MTB	27929	3.106	3.653	0.415	2.147	3.476
FIRM_AGE	27929	26.907	18.602	4.000	22.000	37.000
HERF	27929	0.195	0.169	0.016	0.146	0.256
RATE_DUM	27929	0.909	0.287	0.000	1.000	1.000
Policy measures						
CAPX	27929	0.050	0.055	0.000	0.034	0.065
R&D	27929	0.030	0.058	0.000	0.000	0.035
LEVERAGE	27929	0.202	0.169	0.000	0.183	0.311
CEO characteristics						
CEO_DELTA	27929	1240.453	12340.503	3.763	204.563	568.818
CEO_VEGA	27929	130.915	301.462	0.000	43.303	128.186
FEMALE	27929	0.022	0.146	0.000	0.000	0.000
DUALITY	27929	0.901	0.298	0.000	1.000	1.000
CEO_AGE	27929	55.241	7.360	39.000	55.000	60.000
CEO_TENURE	27929	7.828	6.831	1.000	6.000	10.000

Table 2

Correlation Matrix

For brevity, this table reports the correlation matrix for only the main variables of interest. Statistical significances at 1%, 5%, and 10% are indicated by ***, **, and * respectively. The detailed definitions of the variables used in this table and their sources are given in Appendix A.

VARIABLES	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
(1) L[TOTAL_RISK]	1.00							
(2) L[SYST_RISK]	0.63***	1.00						
(3) L[UNSYST_RISK]	0.96***	0.42***	1.00					
(4) SOCIAL_CAPITAL	-0.14***	-0.07***	-0.15***	1.00				
(5) HSC_DUM	-0.11***	-0.04***	-0.11***	0.82***	1.00			
(6) SC_PUTNAM	-0.02***	0.00	-0.02***	0.42***	0.32***	1.00		
(7) SC_HONESTY	-0.03***	0.00	-0.04***	0.38***	0.34***	0.85***	1.00	
(8) SC_HRM	-0.04***	0.02***	-0.05***	0.38***	0.33***	0.65***	0.67***	1.00

Table 3

Comparison of Risk-taking of Firms in High and Low Social Capital Counties

This table presents the univariate test results. The columns (1) to (3) and columns (4) to (6) present the average, median, and standard deviation of the given variables for the firms that are in low and high social capital regions, respectively. Columns (7) and (8) show the mean and Wilcoxon-Mann-Whitney median test results and their statistical significance. Statistical significances at 1%, 5%, and 10% are indicated by ***, **, and * respectively. Appendix A provides detailed definitions and sources of all the variables used in this table.

VARIABLES	*Low Social Capital (N=13,144)*			*High Social Capital (N=14,785)*			*Diff. Between the Groups*	
	Mean (1)	*Median (2)*	*Std (3)*	*Mean (4)*	*Median (5)*	*Std (6)*	*Mean (7)*	*Median (8)*
TOTAL_RISK	0.423	0.383	0.192	0.384	0.343	0.179	0.038***	0.040***
SYST_RISK	0.161	0.132	0.117	0.151	0.123	0.111	0.010**	0.009***
UNSYST_RISK	0.379	0.340	0.177	0.342	0.302	0.164	0.037***	0.038***
STD_RTN	0.413	0.356	0.238	0.376	0.322	0.222	0.037***	0.034***
SOCIAL_CAPITAL	-1.214	-1.174	0.447	0.117	0.045	0.491	-1.331***	-1.219***
SC_PUTNAM	-0.362	-0.216	0.364	-0.037	-0.177	0.571	-0.325***	-0.040***
SC_HONESTY	3.769	3.780	0.075	3.832	3.832	0.100	-0.064**	-0.052***
SC_HRM	-0.417	-0.491	0.681	0.127	0.107	0.835	-0.543***	-0.599***
FIRM_SIZE	9149	1349	36518	13648	1637	56522	-4499**	-288***
FCF	0.080	0.081	0.076	0.078	0.077	0.068	0.002*	0.003***
ROA	0.136	0.133	0.110	0.136	0.132	0.102	0.000	0.001
MTB	3.099	2.149	3.636	3.112	2.142	3.669	-0.013	0.007
FIRM_AGE	25.007	19.000	18.109	28.596	24.000	18.870	-3.588***	-5.000***
HERF	0.188	0.142	0.158	0.201	0.150	0.177	-0.013**	-0.008***
RATE_DUM	0.903	1.000	0.297	0.915	1.000	0.279	-0.013**	0.000***
CAPX	0.054	0.035	0.061	0.045	0.033	0.049	0.009**	0.003***
R&D	0.035	0.000	0.064	0.025	0.000	0.051	0.009**	0.000***
LEVERAGE	0.201	0.179	0.175	0.203	0.187	0.164	-0.003	-0.008***
CEO_DELTA	1130	204	11571	1339	205	12986	-209.27	-0.970
CEO_VEGA	129.78	42.40	323.93	131.93	43.98	279.99	-2.151	-1.579
FEMALE	0.022	0.000	0.147	0.021	0.000	0.145	0.001	0.000
DUALITY	0.906	1.000	0.293	0.898	1.000	0.303	0.008*	0.000**
CEO_AGE	55.030	55.000	7.509	55.429	55.000	7.220	-0.398***	0.000***
CEO_TENURE	7.780	6.000	6.645	7.871	6.000	6.992	-0.091	0.000

Table 4

The Effects of Social Capital on Risk-taking

This table reports the coefficient estimates from OLS regressions. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. Social capital is the main variable of interest in all regression specifications. The baseline models in columns (1), (4), and (7) include only firm characteristics namely log of firm size, free cash flow to total assets, ROA, the log of market-to-book, the log of firm age, rating dummy and Herfindahl Index as control variables. Columns (2), (5) and (8) include additional control variables, namely capital expenditure to total assets, R&D expenditure to total assets, and leverage as additional control variables. Columns (3), (6), and (9) report the estimates of Eq. (4). Each regression specification control for county-level variables (in logs), namely county population, income per capita, and literacy rate. The table does not report intercept in each regression specification brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SOCIAL_CAPITAL	-0.018***	-0.015***	-0.009***	-0.009***	-0.008***	-0.002**	-0.016***	-0.013***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_SIZE]	-0.026***	-0.024***	-0.021***	-0.001**	0.000	0.002***	-0.029***	-0.027***	-0.024***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FCF	0.327***	0.312***	0.208***	0.174***	0.175***	0.088***	0.295***	0.275***	0.195***
	(0.019)	(0.020)	(0.017)	(0.017)	(0.017)	(0.014)	(0.018)	(0.018)	(0.016)
ROA	-0.429***	-0.377***	-0.320***	-0.205***	-0.171***	-0.134***	-0.395***	-0.349***	-0.302***
	(0.014)	(0.014)	(0.013)	(0.012)	(0.012)	(0.010)	(0.013)	(0.013)	(0.012)
L[MTB]	0.009***	-0.002	-0.001	0.000	-0.006***	-0.003***	0.009***	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_AGE]	-0.035***	-0.036***	-0.030***	-0.011***	-0.011***	-0.011***	-0.034***	-0.035***	-0.029***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	0.002	0.006**	-0.009***	0.006***	0.007***	-0.003**	0.001	0.004*	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
HERF	0.010**	0.017***	0.020***	0.008**	0.012***	0.000	0.008**	0.014***	0.023***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
CAPX		0.083***	0.088***		-0.014	0.011		0.106***	0.097***
		(0.013)	(0.013)		(0.011)	(0.010)		(0.011)	(0.012)
R&D		0.299***	0.246***		0.163***	0.119***		0.273***	0.231***
		(0.013)	(0.013)		(0.011)	(0.011)		(0.012)	(0.013)
L[LEVERAGE]		0.063***	0.075***		0.035***	0.034***		0.055***	0.068***
		(0.005)	(0.005)		(0.004)	(0.004)		(0.005)	(0.004)
L[CEO_DELTA]			0.003***			0.002***			0.002***
			(0.001)			(0.000)			(0.001)
L[CEO_VEGA]			-0.005***			-0.001***			-0.006***

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			(0.000)			(0.000)			(0.000)
FEMALE			-0.001			-0.009***			0.003
			(0.004)			(0.003)			(0.004)
DUALITY			-0.007***			-0.004**			-0.007***
			(0.002)			(0.002)			(0.002)
L[CEO_AGE]			-0.047***			-0.013***			-0.047***
			(0.005)			(0.004)			(0.004)
L[CEO_TENURE]			-0.003***			-0.002***			-0.002**
			(0.001)			(0.001)			(0.001)
L[POPULATION]	-0.000	0.000	0.002***	0.000	0.000	0.003***	-0.000	0.000	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[INCOME]	0.014***	0.019***	0.012***	0.016***	0.018***	0.015***	0.008***	0.012***	0.006*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
L[LITERACY]	0.027***	0.015***	0.009**	0.012***	0.006*	-0.003	0.026***	0.015***	0.012***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Observations	27603	27603	27476	27603	27603	27476	27603	27603	27476
R-squared	0.275	0.292	0.474	0.041	0.049	0.389	0.331	0.348	0.466
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes

Table 5

The Effects of Social Capital on Risk-taking using Alternative Measure of Social Capital

This table reports the coefficient estimates from OLS regressions. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. *HSC_DUM*, an indicator variable than equals to one when social capital is higher than the yearly average and else zero, is the main variable of interest in all regression specifications. The baseline models in columns (1), (4), and (7) include only firm characteristics namely log of firm size, free cash flow to total assets, ROA, the log of market-to-book, the log of firm age, rating dummy and Herfindahl Index as control variables. Columns (2), (5) and (8) include additional control variables, namely capital expenditure to total assets, R&D expenditure to total assets, and leverage as additional control variables. Columns (3), (6), and (9) report the estimates of Eq. (4) but do not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
HSC_DUM	-0.016***	-0.012***	-0.008***	-0.007***	-0.005***	-0.002*	-0.015***	-0.011***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_SIZE]	-0.026***	-0.024***	-0.021***	-0.001**	0.000	0.002***	-0.029***	-0.027***	-0.024***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FCF	0.338***	0.320***	0.209***	0.181***	0.179***	0.088***	0.304***	0.282***	0.197***
	(0.020)	(0.020)	(0.017)	(0.017)	(0.017)	(0.014)	(0.018)	(0.018)	(0.016)
ROA	-0.435***	-0.382***	-0.321***	-0.208***	-0.174***	-0.134***	-0.400***	-0.353***	-0.303***
	(0.014)	(0.014)	(0.013)	(0.012)	(0.012)	(0.010)	(0.013)	(0.013)	(0.012)
L[MTB]	0.008***	-0.003**	-0.001	-0.000	-0.007***	-0.003***	0.008***	-0.002	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_AGE]	-0.036***	-0.037***	-0.031***	-0.011***	-0.012***	-0.011***	-0.035***	-0.035***	-0.030***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	0.003	0.006***	-0.009***	0.006***	0.008***	-0.003**	0.001	0.005**	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
HERF	0.008**	0.016***	0.020***	0.007**	0.012***	0.000	0.006*	0.013***	0.022***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Observations	27603	27603	27476	27603	27603	27476	27603	27603	27476
R-squared	0.270	0.288	0.473	0.038	0.047	0.389	0.327	0.344	0.465
Control Vars	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes

Table 6

The Impact of Social Capital on Risk-taking - Alternative Measure of Risk

This table reports the coefficient estimates from OLS regressions. The dependent variables include the standard deviation of stock returns, ROA, and ROE, and all three measures of risk are in logs. *SOCIAL_CAPITAL* is the main variable of interest in all regression specifications. The baseline models in columns (1), (4), and (7) include only firm characteristics namely log of firm size, free cash flow to total assets, ROA, the log of market-to-book, the log of firm age, rating dummy and Herfindahl Index as control variables. Columns (2), (5) and (8) include additional control variables, namely capital expenditure to total assets, R&D expenditure to total assets, and leverage as additional control variables. Columns (3), (6), and (9) report the estimates of Eq. (4) but do not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[STD_RTN]*			*L[STD_ROA]*			*L[STD_ROE]*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
SOCIAL_CAPITAL	-0.018***	-0.015***	-0.007***	-0.006***	-0.004***	-0.002***	-0.010***	-0.007***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
L[FIRM_SIZE]	-0.026***	-0.024***	-0.020***	-0.010***	-0.008***	-0.008***	-0.013***	-0.013***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FCF	0.295***	0.273***	0.169***	0.015**	-0.024***	-0.043***	0.149***	0.169***	0.130***
	(0.024)	(0.024)	(0.021)	(0.007)	(0.006)	(0.006)	(0.016)	(0.016)	(0.016)
ROA	-0.427***	-0.366***	-0.307***	-0.037***	0.005	0.009**	-0.314***	-0.261***	-0.228***
	(0.017)	(0.018)	(0.016)	(0.005)	(0.005)	(0.005)	(0.012)	(0.012)	(0.012)
L[MTB]	0.009***	-0.003*	-0.002	0.012***	0.005***	0.006***	0.044***	0.032***	0.043***
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_AGE]	-0.032***	-0.033***	-0.027***	-0.003***	-0.004***	-0.004***	-0.002**	-0.003***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
RATE_DUM	0.001	0.004	-0.011***	0.002***	0.003***	0.001	-0.005***	-0.000	-0.005***
	(0.003)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
HERF	0.008*	0.017***	0.019***	-0.001	0.007***	0.006***	0.015***	0.020***	0.011***
	(0.005)	(0.005)	(0.005)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)
Observations	27582	27582	27457	27603	27603	27476	27585	27585	27458
R-squared	0.196	0.208	0.421	0.260	0.322	0.364	0.155	0.197	0.234
Control Vars	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes

Table 7

Endogeneity Concerns, Social Capital and Risk-taking

This table reports the results of our 2-stage least square analysis (2SLS), where the endogenous social capital variables are estimated from the first stage regressions, which are not reported for brevity. The instrument for each social capital variable is the distance from Canadian Capital Ottawa to the county where the firms in our sample located. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. The instrumented social capital *(PSCAPITAL)* is our main variable of interest in all regression specifications. The baseline models in columns (1), (4), and (7) include only firm characteristics namely log of firm size, free cash flow to total assets, ROA, the log of market-to-book, the log of firm age, rating dummy and Herfindahl Index as control variables. Columns (2), (5) and (8) include additional control variables, namely capital expenditure to total assets, R&D expenditure to total assets, and leverage as additional control variables. Columns (3), (6), and (9) report the estimates of Eq. (4) but does not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
PSCAPITAL	-0.048***	-0.040***	-0.032***	-0.026***	-0.023***	-0.017***	-0.043***	-0.035***	-0.029***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
L[FIRM_SIZE]	-0.025***	-0.024***	-0.021***	-0.000	0.000	0.002***	-0.028***	-0.027***	-0.024***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
FCF	0.299***	0.293***	0.203***	0.158***	0.163***	0.085***	0.269***	0.259***	0.192***
	(0.020)	(0.020)	(0.017)	(0.017)	(0.017)	(0.014)	(0.018)	(0.018)	(0.017)
ROA	-0.414***	-0.370***	-0.320***	-0.196***	-0.167***	-0.134***	-0.381***	-0.343***	-0.302***
	(0.014)	(0.014)	(0.013)	(0.012)	(0.012)	(0.010)	(0.013)	(0.013)	(0.012)
L[MTB]	0.010***	-0.000	0.001	0.001	-0.005***	-0.002*	0.009***	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_AGE]	-0.031***	-0.033***	-0.028***	-0.009***	-0.010***	-0.009***	-0.031***	-0.032***	-0.027***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	0.000	0.004	-0.010***	0.005**	0.006***	-0.004**	-0.001	0.002	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
HERF	0.014***	0.019***	0.021***	0.011***	0.014***	0.001	0.012***	0.016***	0.024***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Observations	27603	27603	27476	27603	27603	27476	27603	27603	27476
R-squared	0.251	0.276	0.460	0.027	0.038	0.379	0.309	0.334	0.455
Control Vars	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes

Table 8

Social Capital, Governance and Risk-taking

This table reports the coefficient estimates from OLS regressions controlling for the impact of governance on the estimation models. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. *SOCIAL_CAPITAL* is the main variable of interest in all regression specifications. The baseline models in columns (1), (4), and (7) include only firm characteristics namely log of firm size, free cash flow to total assets, ROA, the log of market-to-book, the log of firm age, rating dummy and Herfindahl Index as control variables. Columns (2), (5) and (8) include additional control variables, namely capital expenditure to total assets, R&D expenditure to total assets, and leverage as additional control variables. Columns (3), (6), and (9) report the estimates of Eq. (4) but do not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
SOCIAL_CAPITAL	-0.018***	-0.015***	-0.007***	-0.009***	-0.008***	-0.001*	-0.016***	-0.013***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GINDEX	-0.002***	-0.001***	-0.002***	-0.000	-0.000	-0.000**	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
L[FIRM_SIZE]	-0.026***	-0.024***	-0.018***	-0.002***	-0.001***	0.001**	-0.028***	-0.026***	-0.021***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
FCF	0.366***	0.338***	0.211***	0.175***	0.182***	0.077***	0.342***	0.306***	0.209***
	(0.024)	(0.024)	(0.021)	(0.021)	(0.021)	(0.017)	(0.022)	(0.022)	(0.020)
ROA	-0.471***	-0.427***	-0.355***	-0.215***	-0.185***	-0.136***	-0.441***	-0.403***	-0.345***
	(0.017)	(0.017)	(0.015)	(0.015)	(0.015)	(0.012)	(0.015)	(0.016)	(0.014)
L[MTB]	0.012***	0.002	0.003**	0.002	-0.005***	-0.003**	0.013***	0.003**	0.004***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
L[FIRM_AGE]	-0.037***	-0.038***	-0.030***	-0.011***	-0.011***	-0.010***	-0.036***	-0.036***	-0.029***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	-0.006**	-0.002	-0.016***	0.001	0.002	-0.009***	-0.006**	-0.003	-0.014***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
HERF	0.023***	0.030***	0.030***	0.013***	0.016***	0.003	0.021***	0.026***	0.032***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Observations	19532	19532	19466	19532	19532	19466	19532	19532	19466
R-squared	0.303	0.318	0.515	0.048	0.056	0.402	0.362	0.376	0.509
Control Vars	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes

Table 9

Social Capital and Risk-taking: Pre and Post-SOX Analysis

This table reports the coefficient estimates from OLS regressions for our pre and post-SOX samples. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. *SOCIAL_CAPITAL* is the main variable of interest in all regression specifications. Each regression specification reports the estimates of Eq. (4) but does not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

	PRE-SOX			*POST-SOX*		
VARIABLES	*L[TOTAL_RISK]* (1)	*L[SYST_RISK]* (2)	*L[UNSYST_RISK]* (3)	*L[TOTAL_RISK]* (4)	*L[SYST_RISK]* (5)	*L[UNSYST_RISK]* (6)
SOCIAL_CAPITAL	-0.012***	-0.003***	-0.013***	-0.005***	-0.000	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_SIZE]	-0.021***	0.001**	-0.024***	-0.021***	0.001*	-0.024***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FCF	0.062**	-0.016	0.071***	0.277***	0.130***	0.260***
	(0.027)	(0.024)	(0.026)	(0.022)	(0.017)	(0.021)
ROA	-0.247***	-0.047***	-0.253***	-0.347***	-0.175***	-0.320***
	(0.018)	(0.016)	(0.017)	(0.017)	(0.013)	(0.016)
L[MTB]	-0.003*	-0.010***	0.001	-0.003	-0.000	-0.005***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
L[FIRM_AGE]	-0.035***	-0.013***	-0.034***	-0.025***	-0.009***	-0.024***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	-0.006***	-0.001	-0.005**	-0.010***	-0.006**	-0.009***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
HERF	0.014**	0.008	0.011**	0.017***	-0.002	0.020***
	(0.006)	(0.005)	(0.006)	(0.005)	(0.004)	(0.004)
Observations	11451	11451	11451	16025	16025	16025
R-squared	0.589	0.416	0.586	0.414	0.390	0.406
Control Vars	Yes	Yes	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 10

Social Capital and Risk-taking: Using Social Capital Index of Rupasingha et al. (2006)

This table reports the coefficient estimates from OLS regressions. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. *SCRG_INDEX,* social capital index of Rupasingha et al. (2006), is the main variable of interest in all regression specifications. The baseline models in columns (1), (4), and (7) include only firm characteristics namely log of firm size, free cash flow to total assets, ROA, the log of market-to-book, the log of firm age, rating dummy and Herfindahl Index as control variables. Columns (2), (5), and (8) include additional control variables (untabulated), namely capital expenditure to total assets, R&D expenditure to total assets, and leverage. Columns (3), (6), and (9) report the estimates of Eq. (4) but does not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
SCRG_INDEX	-0.017***	-0.014***	-0.008***	-0.009***	-0.007***	-0.001	-0.016***	-0.013***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_SIZE]	-0.026***	-0.024***	-0.021***	-0.001**	0.000	0.002***	-0.029***	-0.027***	-0.024***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FCF	0.333***	0.316***	0.209***	0.177***	0.177***	0.088***	0.300***	0.279***	0.197***
	(0.019)	(0.020)	(0.017)	(0.017)	(0.017)	(0.014)	(0.018)	(0.018)	(0.016)
ROA	-0.434***	-0.380***	-0.321***	-0.207***	-0.173***	-0.134***	-0.399***	-0.351***	-0.303***
	(0.014)	(0.014)	(0.013)	(0.012)	(0.012)	(0.010)	(0.013)	(0.013)	(0.012)
L[MTB]	0.009***	-0.002	-0.001	0.000	-0.006***	-0.003***	0.009***	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_AGE]	-0.035***	-0.036***	-0.031***	-0.011***	-0.012***	-0.011***	-0.034***	-0.035***	-0.029***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	0.002	0.006**	-0.009***	0.006***	0.007***	-0.003**	0.001	0.004**	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
HERF	0.009**	0.017***	0.020***	0.008**	0.012***	0.000	0.008**	0.014***	0.023***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Observations	27603	27603	27476	27603	27603	27476	27603	27603	27476
R-squared	0.272	0.290	0.473	0.040	0.048	0.389	0.329	0.346	0.465
Control Vars	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes

Table 11

Social Capital and Risk-taking: Using State-Level Social Capital Index of Hawes et al. (2013)

This table reports the coefficient estimates from OLS regressions. The dependent variables include the total risk, systematic risk, and unsystematic risk, and all three measures of risk are in logs. State-level measures of social capital *(SC_PUTNAM* and *SC_HONESTY)* developed by Putnam (2000) and dynamic social capital Index *(SC_HRM)* developed by Hawes, Rocha, and Meier (2013) are the main variables of interest. Each regression specification reports the estimates of Eq. (4) but does not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*L[TOTAL_RISK]*			*L[SYST_RISK]*			*L[UNSYST_RISK]*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
SC_PUTNAM	-0.007***			0.000			-0.008***		
	(0.001)			(0.001)			(0.001)		
SC_HONESTY		-0.034***			0.002			-0.039***	
		(0.006)			(0.005)			(0.006)	
SC_HRM			-0.006***			-0.002***			-0.006***
			(0.001)			(0.001)			(0.001)
L[FIRM_SIZE]	-0.021***	-0.021***	-0.021***	0.002***	0.002***	0.002***	-0.024***	-0.024***	-0.024***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FCF	0.207***	0.207***	0.207***	0.088***	0.088***	0.088***	0.195***	0.195***	0.195***
	(0.017)	(0.017)	(0.017)	(0.014)	(0.014)	(0.014)	(0.016)	(0.016)	(0.016)
ROA	-0.319***	-0.319***	-0.319***	-0.134***	-0.134***	-0.134***	-0.300***	-0.301***	-0.301***
	(0.013)	(0.013)	(0.013)	(0.010)	(0.010)	(0.010)	(0.012)	(0.012)	(0.012)
L[MTB]	-0.001	-0.001	-0.001	-0.003***	-0.003***	-0.003***	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L[FIRM_AGE]	-0.031***	-0.031***	-0.031***	-0.011***	-0.011***	-0.011***	-0.030***	-0.030***	-0.030***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
RATE_DUM	-0.009***	-0.009***	-0.009***	-0.003**	-0.003**	-0.003**	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
HERF	0.020***	0.020***	0.020***	0.000	0.000	0.000	0.022***	0.022***	0.022***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	27470	27470	27470	27470	27470	27470	27470	27470	27470
R-squared	0.473	0.473	0.474	0.389	0.389	0.389	0.465	0.465	0.466
Control Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 12

Social Capital and Risk-taking when External Monitoring is Weak

This table reports the average for each measure of risk in Panel A. Panel B through E report coefficient estimates for each measure of risk using Eq. (4) for the quartile portfolios formed based on credit rating. Panel F reports coefficient estimates for each measure of risk using Eq. (4) for firms with credit rating and without credit ratings. The table does not report intercept, estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables in each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

Panel A: Average Risk-taking on Quartile Portfolios Formed Based on Credit Rating

VARIABLES	Low to high Credit-rating Portfolios			
	(1)	(2)	(3)	(4)
TOTAL_RISK	.398	.341	.289	.239
SYST_RISK	.154	.142	.139	.12
UNSYST_RISK	.371	.312	.254	.206
STD_RTN	.386	.336	.276	.231
SOCIAL_CAPITAL	-.593	-.558	-.475	-.336
RATING	5.646	9.25	12.651	16.228

Panel B: Social capital, total risk, and external monitoring

VARIABLES	Low to high external monitoring			
	(1)	(2)	(3)	(4)
SOCIAL_CAPITAL	-0.011***	-0.010***	-0.007***	0.000
	(0.002)	(0.002)	(0.002)	(0.001)
Observations	8154	5252	5969	5219
R-squared	0.406	0.349	0.389	0.471
Control Vars	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Panel C: Social capital, systematic risk, and external monitoring

VARIABLES	Low to high external monitoring			
	(1)	(2)	(3)	(4)
SOCIAL_CAPITAL	-0.003**	-0.001	-0.000	0.000
	(0.002)	(0.002)	(0.001)	(0.001)
Observations	8154	5252	5969	5219
R-squared	0.369	0.394	0.450	0.498
Control Vars	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Year FE	Yes	Yes	Yes	Yes

Panel D: Social capital, unsystematic risk, and external monitoring

VARIABLES	Low to high external monitoring			
	(1)	(2)	(3)	(4)
SOCIAL_CAPITAL	-0.010***	-0.010***	-0.008***	0.000
	(0.002)	(0.002)	(0.001)	(0.001)
Observations	8154	5252	5969	5219
R-squared	0.373	0.291	0.305	0.389
Control Vars	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Panel E: Social capital, the standard deviation of stock returns and external monitoring

VARIABLES	Low to high external monitoring			
	(1)	(2)	(3)	(4)
SOCIAL_CAPITAL	-0.010***	-0.008***	-0.005**	-0.001
	(0.003)	(0.003)	(0.002)	(0.002)
Observations	8152	5247	5962	5219
R-squared	0.359	0.330	0.379	0.441
Control Vars	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Panel F: Social capital and risk-taking when external monitoring weak- robustness test

	Firms with credit ratings				Firms with no credit ratings	
VARIABLES	*L[TOTAL_RISK]*	*L[SYST_RISK]*	*L[UNSYST_RISK]*	*L[TOTAL_RISK]*	*L[SYST_RISK]*	*L[UNSYST_RISK]*
	(1)	(2)	(3)	(4)	(5)	(6)
SOCIAL_CAPITAL	-0.008***	-0.001*	-0.009***	-0.011***	-0.003	-0.013***
	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)
Observations	25009	25009	25009	2467	2467	2467
R-squared	0.474	0.391	0.465	0.466	0.418	0.444
Control Vars	Yes	Yes	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 13

Excessive Risk-taking and Social Capital: OLS and Logit Regressions

This table reports the coefficient estimates from OLS and Logistic regressions. The dependent variables include the dummy variable that equals 1 for excessive total, systematic, and unsystematic risk-taking. *SOCIAL_CAPITAL* is the main variable of interest in all regression specifications. Each regression specification reports estimates of Eq. (4) but does not report estimates for firm policy, CEO incentives and characteristics, and county-characteristics variables for brevity. The table does not report intercept in each regression specification brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

		OLS Regression			*Logistic Regression*	
VARIABLES	*ETRS*	*ESRS*	*EUSRS*	*ETRS*	*ESRS*	*EUSRS*
	(1)	(2)	(3)	(4)	(5)	(6)
SOCIAL_CAPITAL	-0.032***	-0.011**	-0.034***	-0.206***	-0.058**	-0.223***
	(0.004)	(0.004)	(0.004)	(0.027)	(0.024)	(0.027)
L[FIRM_SIZE]	-0.070***	-0.006**	-0.079***	-0.534***	-0.032**	-0.636***
	(0.002)	(0.002)	(0.002)	(0.017)	(0.014)	(0.017)
FCF	0.493***	0.402***	0.540***	4.068***	2.635***	4.512***
	(0.074)	(0.081)	(0.073)	(0.485)	(0.457)	(0.492)
ROA	-0.943***	-0.543***	-0.961***	-6.122***	-3.205***	-6.402***
	(0.054)	(0.059)	(0.053)	(0.372)	(0.340)	(0.377)
L[MTB]	0.015**	-0.024***	0.015***	0.018	-0.147***	0.006
	(0.006)	(0.006)	(0.006)	(0.039)	(0.036)	(0.040)
L[FIRM_AGE]	-0.089***	-0.068***	-0.089***	-0.605***	-0.370***	-0.632***
	(0.004)	(0.005)	(0.004)	(0.028)	(0.025)	(0.028)
RATE_DUM	-0.054***	-0.013	-0.045***	-0.255***	-0.059	-0.208***
	(0.009)	(0.009)	(0.009)	(0.051)	(0.050)	(0.051)
HERF	0.105***	0.029*	0.103***	0.551***	0.147	0.511***
	(0.016)	(0.017)	(0.015)	(0.100)	(0.093)	(0.102)
Observations	27476	27476	27476	27476	27476	27476
R^2/Pseudo-R^2	.1922	0.0401	0.2131	0.1879	0.0356	0.2143
Control Vars	Yes	Yes	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 14

Social Capital, Excessive Risk-taking and Firm Value

This table reports the coefficient estimates from OLS regressions. The dependent variable is industry adjusted Tobin's q in all regression specifications. Interaction variables are created using each measure of excessive risk-taking and social capital, which are the main variables of interest in all regression specifications. Each regression specification reports the estimates of Eq. (5). The table does not report the intercept for each regression specification for brevity. The industry fixed effects are based on the Fama and French 12 industry classification. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

VARIABLES	*INDADJTQ*			
	(1)	*(2)*	*(3)*	*(4)*
SOCIAL_CAPITAL	0.068***	0.050***	0.071***	0.063***
	(0.011)	(0.011)	(0.011)	(0.011)
SC x ETRS	-0.134***			
	(0.019)			
SC x ESRS		-0.054***		
		(0.019)		
SC x EUSRS			-0.144***	
			(0.019)	
SC x ESTDRS				-0.112***
				(0.019)
L[FIRM_SIZE]	0.002	-0.003	0.003	0.001
	(0.006)	(0.006)	(0.006)	(0.006)
L[FIRM_AGE]	-0.117***	-0.125***	-0.117***	-0.121***
	(0.014)	(0.014)	(0.014)	(0.014)
ROA	6.881***	6.834***	6.885***	6.871***
	(0.091)	(0.090)	(0.090)	(0.091)
CAPX	-0.900***	-0.884***	-0.908***	-0.925***
	(0.185)	(0.185)	(0.185)	(0.185)
LEVERAGE	-0.994***	-0.985***	-0.995***	-0.991***
	(0.053)	(0.053)	(0.053)	(0.053)
R&D_SALE	2.536***	2.547***	2.535***	2.541***
	(0.059)	(0.059)	(0.059)	(0.059)
EINDEX	-0.050***	-0.051***	-0.050***	-0.050***
	(0.006)	(0.006)	(0.006)	(0.006)
Observations	19659	19659	19659	19659
R-squared	0.297	0.296	0.297	0.297
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes

Table 15

Social Capital and Risk-taking: Channel Analysis

This table in Panel A reports the coefficient estimates from structural equation modeling (SEM). This model estimates the median effects of social capital on risk-taking through credit ratings. Columns (1), (2), (3), and (4) report the estimates of Eq. (4). Column (5) reports the test results for the channel variable, credit ratings. Panel B reports the rest results for the direct and indirect effect of social capital on risk-taking. The industry fixed effects are based on the Fama and French 12 industry classifications. Heteroskedasticity-consistent standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Appendix A provides detailed definitions and sources of all the variables used in the estimations.

Panel A: Structural Equation Modeling (SEM) Estimation Results

	Risk Measures				*Channel*
VARIABLES	*L[TOTAL_RISK]* (1)	*L[SYST_RISK]* (2)	*L[UNSYST_RISK]* (3)	*L[STD_RTN]* (4)	*RATING* (5)
SOCIAL_CAPITAL	-0.0081***	-0.0012***	--0.0085***	-0.0061***	0.1151***
	(0.000)	(0.000)	(0.000	(0.001)	(0.030)
RATING	-0.0080***	-0.0025***	-0.0079***	-0.0078***	
	(0.000)	(0.000)	(0.000)	(0.000)	
L[FIRM_SIZE]	-0.0092***	0.0042***	-0.0119***	-0.0086***	1.4312***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.017)
FCF/AT	0.1796***	0.0966***	0.1615***	0.1456***	-7.7955***
	(0.017)	(0.014)	(0.016)	(0.021)	(0.601)
ROA	-0.2588***	-0.1300***	-0.2359***	-0.2434***	11.8758***
	(0.012)	(0.010)	(0.012)	(0.016)	(0.439)
L[MTB]	0.0049***	-0.0005	0.0044***	0.0035**	1.0689***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.048)
L[FIRM_AGE]	-0.0243***	-0.0092***	-0.0231***	-0.0208***	0.8819***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.034)
Observations	26954	26954	26954	26938	26954
R-squared	0.476	0.475	0.476	0.389	0.389
Control Vars	Yes	Yes	Yes	Yes	Yes
County Vars	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Direct and Indirect Effect of Social Capital

VARIABLES	*L[TOTAL_RISK]* (1)	*L[SYST_RISK]* (2)	*L[UNSYST_RISK]* (3)	*L[STD_RTN]* (4)
Total Effect				
SOCIAL_CAPITAL	-0.0081***	0.0012*	-0.0085***	-0.0070***
	(0.000)	(0.000)	(0.000)	(0.001)
Direct Effect				

SOCIAL_CAPITAL	-0.0072***	-0.0009	-0.0076***	-0.0061***
	(0.001)	(0.001)	(0.001)	(0.001)
Indirect Effect through Ratings				
RATING	-0.0009***	-.0003***	-0.0009***	-0.0009***
	(0.000)	(0.000)	(0.000)	(0.000)
Indirect to Direct	0.128	0.309	0.120	0.149
Indirect to Total	0.113	0.236	0.107	0.129
Sobel P-value	0.000	0.000	0.000	0.000

Disclosure Statement

I, Humnath Panta, have read the Journal of Behavioral and Experimental Finance's disclosure policy, and I have nothing to disclose. I also have no conflicts of interest to disclose. Thank you.

Sincerely,

Humnath Panta, Ph.D.
School of Business
Humboldt State University
1 Harpst St, Arcata, CA 95521
Phone: 707-826-5665

Date: February 21, 2020

Disclosure Statement

I, Salil K. Sarkar, have read the Journal of Finance's disclosure policy, and I have nothing to disclose. I also have no conflicts of interest to disclose. Thank you.

Sincerely,

Salil K. Sarkar

Department of Finance and Real Estate, the University of Texas at Arlington

701 S. West Street, Arlington, TX 76019

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