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Kiat Bee Jimmy LEE
Singapore Management University, jimmylee@smu.edu.sg

Jimmy LEE

Sang Hyun PARK

Citation

Does Social Capital Mitigate Managerial Self-Dealing? Evidence from Insider Trading

Sung Gon Chung[*]
sgchung@wayne.edu
School of Business Administration
Wayne State University

Jimmy Lee
jimmylee@smu.edu.sg
School of Accountancy
Singapore Management University

Sang Hyun Park
sapark@augusta.edu
Knox School of Accountancy
James M. Hull College of Business
Augusta University

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[*] Corresponding author.
  Address: Wayne State University, 2771 Woodward Avenue, Detroit, MI 48201.

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Abstract

In this study, we examine whether the social capital surrounding the firm's corporate headquarters mitigates managerial self-dealing in the form of opportunistic insider trading. We find strong evidence that the level of social capital in the region surrounding the firm's headquarters is negatively and significantly associated with insider trading profitability. We also find that the negative association between social capital and insider trading profitability is more pronounced when governance is weaker and corporate opacity is higher, instances where insiders have greater opportunities to trade on their private information. Further analyses on the potential mechanisms suggest that the negative association is stronger when the firm's social networks are denser and when the civic norms in the region are stronger. Overall, our paper contributes to the growing social capital literature in accounting and finance by providing direct empirical evidence that social capital mitigates managerial self-serving behavior in the form of opportunistic insider trading.

1. Introduction

Does social capital lead to desirable social and economic outcomes? Based on prior findings in sociology and economics conducted by academics and nongovernmental organizations (OECD 2001; World Bank 2002) in both cross-country and within-country settings, the answer appears to be yes. Social capital, which captures the mutual trust, the civic norms, and the social networks within a society, plays an important role in supporting cooperation, mitigating opportunistic behavior, and encouraging reciprocity and therefore leads to desirable social and economic outcomes. Prior work finds empirical evidence that higher social capital is associated with positive outcomes at both the macro and corporate level (Knack and Keefer 1997; Zak and Knack 2001; Guiso et al. 2004; Jha and Chen 2015; Cheng et al. 2017; Hasan et al. 2017a, b). However, relatively little is known about whether social capital mitigates opportunism at the *individual* level and hence influences *individual* managers' self-serving behavior. This study fills this gap by exploring whether social capital mitigates managerial self-dealing in the form of opportunistic insider trading.

In this study, we focus on the setting of opportunistic insider trading to examine the effect of social capital for several important reasons. First, while prior work generally finds that social capital reduces opportunism and agency problems, it is unclear whether social capital mitigates opportunistic insider trading. Prior work in social psychology suggests that individuals may not conform to social norms unless it is made salient in the situation (Cialdini et al. 1990; Cialdini et al. 1991). Hence it is unclear whether prior findings extend to the setting of opportunistic insider trading because opportunistic insider trading is often hidden and difficult to detect and enforce (Adams et al. 2018). Second, prior research on the ethics of insider trading reaches ambiguous conclusions relating to whether opportunistic insider trading is moral and ethical (e.g., Adams et

a. 2018; Klaw and Meyer 2021). As a result, it is challenging for individuals to follow an ethical norm if there is ambiguity as to what is right or wrong with a behavior. Therefore, social capital and norms may not play a role in reducing opportunistic insider trading. Third, prior work finds that opportunistic insider trading is associated with various other types of managerial and firm misconduct, such as earnings management, restatements, SEC enforcement actions, shareholder litigation, and options backdating (Ali and Hirshleifer 2017). Therefore, this setting is important as it helps us understand and make inferences on whether social capital also mitigates these other manifestations of egregious managerial self-dealing. Finally, regulators recognize that insider trading and the use of material nonpublic information not only hurt individual investors but also erode investor confidence and thereby undermine the fairness and integrity of capital markets. Prior research also suggests that insider trading reduces liquidity, increases bid-ask spread, and increases the firm's cost of equity (Bhattacharya and Daouk 2002; Easley et al. 2002; Cheng et al. 2006; Ellul and Panayides 2018). Hence, insider trading has potentially more far-reaching adverse consequences as compared to other forms of managerial opportunism such as excess compensation and under/overinvestment and therefore an important setting to examine the effect of social capital.

In environments with high social capital, managers are more likely to uphold the civic norms of fairness and fulfill their fiduciary duty of not trading opportunistically against the shareholders. Furthermore, in areas with high social capital, the accompanying dense social networks facilitate more frequent communication and interaction, and hence enhance information sharing and mutual monitoring. Also, dense social networks create greater peer pressure to conform to civic norms and increase the cost of deviating from these norms. Therefore, for firms located in regions with high social capital, we predict that managers are less likely to engage in opportunistic insider trading.

Following prior studies on social capital (e.g., Rupasingha et al. 2006; Jha and Chen 2015; Cheng et al. 2017; Hasan et al. 2017a, b; Hoi et al. 2019), we utilize a U.S. county-level measure of social capital obtained from the Northeast Regional Center for Rural Development (NERCRD) at Pennsylvania State University. This measure captures the strength of civic norms and the density of social networks, both of which are important elements of social capital. We follow prior studies (e.g., Jagolinzer et al. 2011; Cohen et al. 2012; Gao et al. 2014) and measure the extent of opportunistic insider trading based on the profitability of these trades made by officers in the C-suite (e.g., CEOs, CFOs, and COOs) because if insider trades are not based on private information, insider trading profitability should be zero on average. We infer insider trading profitability from the twelve-month-ahead (unrealized) gains from purchase transactions and loss avoided from sale transactions. In particular, we estimate the four-factor alpha (α) over the twelve-month period after the trade transaction and use it as a proxy for insider trading profitability (Carhart 1997).

Using a large sample of firms and insider trades spanning fiscal years 2003−2016 and including an extensive range of firm-level control variables associated with insider trading, county-level control variables, and firm and year fixed effects that could be correlated with both social capital and insider trading profitability, we find strong evidence that social capital in the region surrounding the firm's headquarters is negatively and significantly associated with insider trade profitability. The effect of social capital in mitigating insider trade profitability is also economically significant. The insider trading profit over the twelve-month period after the transaction in the top quintile group based on social capital is 0.06% (per day) lower than that in the bottom quintile group, which is economically significant.

Our results are robust to using an alternative measure of social capital, and including religious adherence and corporate social responsibility (CSR) ratings as additional control

variables to rule out alternative explanations that religious norms or firms' investment in CSR drives our findings. To provide more evidence that social capital reduces opportunistic insider trading, we examine the setting of corporate headquarters relocation and determine whether insider trading profitability changes when a firm relocates to a geographical area with a higher or lower social capital. Corroborating our main results, we find that insider trading profitability significantly decreases after firms moved to a region with a higher social capital as compared to firms that moved to a region with a lower social capital.

In cross-sectional analyses, we examine how governance and corporate opacity influence the relation between social capital and insider trading profitability. Using G-index as a proxy for firm governance, we find that the negative association between social capital and insider trading profitability is less pronounced when corporate governance is stronger, which suggests that social capital and governance systems are substitutes in reducing opportunistic insider trading. In addition, using a comprehensive index of corporate opacity based on Anderson et al. (2009), we find that the negative association between social capital and insider trading profitability is more pronounced when opacity is higher, which suggests that social capital plays a more important role in constraining managerial self-serving behavior when the information environment is more opaque and insiders thus have greater opportunities to make more profitable trades.

Next, we exploit cross-sectional variation in the density of social networks and the strength of civic norms to provide corroborating evidence and to explore the mechanisms through which social capital mitigates opportunistic trading. Using CEO's aggregate connections as a proxy for the firm's social network density, and using state-level organ donations as a proxy for civic norms, we find results consistent with our main prediction that the effect of social capital is more pronounced when social networks are denser and when civic norms are stronger.

Finally, we exploit an insider trading window where scrutiny and enforcement are likely to be weaker to provide additional evidence that the effect of social capital is more pronounced when governance is weaker. Prior work suggests that scrutiny and litigation risks are higher in the trading window before quarterly earnings announcements (Huddart et al. 2007), and many firms have insider trade policies that restrict insiders from trading in this window (e.g., Bettis et al. 2000; Roulstone 2003; Jagolinzer et al. 2011). This suggests that monitoring over insider trading is stronger during this restricted trading window, and weaker outside this restricted window. When we separately examine the association between social capital and insider trading profitability in these two nonoverlapping trading windows, we find significant results only in the nonrestricted trading window. The results indicate that social capital is more important in reducing managerial opportunism when governance is weak and where insiders have the greater incentive and ability to profit from their privileged information.

Our study contributes to the literature in several ways. First, we contribute to the growing social capital literature in accounting and finance by providing direct empirical evidence that social capital mitigates managerial self-serving behavior in the form of opportunistic insider trading. Prior studies largely focus on how social capital mitigates agency problems and improves coordination and interaction between the firm and its external stakeholders such as auditors, tax authority, debtholders, and investors (Jha and Chen 2015; Cheng et al. 2017; Hasan et al. 2017a, b; Gao et al. 2021). Relatively little is known about how social capital directly influences individual managers' decision to act opportunistically. A notable exception is Hoi et al. (2019), who find that social capital is associated with less excessive CEO compensation. However, CEO compensation is not solely controlled by the CEO himself but also determined and approved by the board of directors. On the other hand, corporate managers' trading on their privileged

information is their own independent decision to enrich themselves privately at the expense of other public shareholders. In this sense, our paper provides more direct evidence on whether social capital mitigates managerial self-dealing. In addition, our finding that social capital is particularly salient when governance is poor and opacity is high is novel and not studied in prior work on social capital (e.g., Jha and Chen 2015; Cheng et al. 2017; Hasan et al. 2017a,b; Hoi et al. 2019).

Second, our study contributes to the literature examining the disciplinary mechanisms that limit insiders' ability to trade opportunistically based on their private information. Prior work has largely focused on the information environment (Frankel and Li 2004), corporate governance (Jagolinzer et al. 2011; Skaife et al. 2013), securities regulation (Brochet 2010; White 2020), enforcement (Thevenot 2012), media attention (Dai et al. 2015), and litigation (Huddart et al. 2007). The SEC and the Department of Justice also believe enforcement is an important deterrent to insider trading, and the latter continues to be a focus of their securities enforcement actions (Henning 2019). While academics and regulators have largely focused on the "hard" mechanisms that limit opportunistic insider trading, little attention is paid on the "soft" mechanisms such as civic norms and social networks that might also deter insider trading. We contribute to this literature by providing evidence that the social capital of the insiders' community affects their decisions to trade opportunistically. Our results also suggest that enforcement actions to deter insider trading is likely more important in counties with a lower social capital.

Finally, our paper contributes to the extant literature examining whether the social environment affects managerial decision making. Prior studies find that religiosity surrounding the firm's headquarters affects managerial decisions such as risk aversion, financial reporting irregularities, and propensity to hoard bad news (Hilary and Hui 2009; McGuire et al. 2012; Callen

and Fang 2015). We contribute to this literature and find that another dimension of the firm's social environment, namely, civic norms and social networks, also affects managerial decision making.

2. Related Literature and Hypothesis Development

2.1. Prior Research on Social Capital

The notion of social capital has been extensively researched by sociologists and economists who are interested in the positive impact of social capital on economies, communities, firms, and individuals. Following the influential work of Putnam (1993), which led to a dramatic increase in research on social capital across various disciplines, we define social capital as "features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions" (Putnam 1993, 167). Based on this definition, social capital encapsulates three distinct and complementary features that support collective actions and cooperation within a society: the mutual trust, the civic norms, and the social networks. Trust implies that individuals will take actions for the collective benefit of the group even if it may not be in their own best interests (Arino et al. 2001). Civic norms create a common set of beliefs and expectations of how individuals should behave within a group (Sunstein 1996) and how deviation and nonconformance to the norm are being penalized (Hechter and Opp 2001; Horne 2009).
[1] Social networks and the consequent frequent interactions between individuals facilitate information sharing, foster cooperation, and help enforce and honor the prescribed civic norms (Keefer and Knack 2008).

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[1] Penalties for violating social norms include open criticism, ostracism, and withdrawal of social support (Hechter and Opp 2001; Horne 2009).

These three features are mutually reinforcing and lead to higher levels of social capital over time: repeated interactions in dense social networks foster the emergence of desirable norms and trust (Coleman 1990), and also help communicate and reinforce these values within the networks; civic norms define the set of socially acceptable behaviors and hence encourage cooperation and conformance to the code of conduct (Fukuyama 1995), mitigate self-serving behavior (Knack and Keefer 1997), and sustain a stronger social network due to shared values; trust facilitates more repeated interactions and stronger social networks because individuals are more willing to trust others to obey social norms and not to behave opportunistically. Hence, following prior work (e.g., Jha and Chen 2015; Cheng et al. 2017; Hasan et al. 2017a, b; Hoi et al. 2019), we do not attempt to disentangle the separate effects of trust, norms, and networks; instead, we view social capital as a collective construct that captures the common aspects of these three features.[2]

Consistent with the notion that social capital plays an important role in supporting cooperation, mitigating opportunistic behavior, and encouraging reciprocity, prior work finds that higher social capital is associated with desirable social and economic outcomes such as stronger economic performance (Knack and Keefer 1997), higher economic growth (Zak and Knack 2001), lower crime rates (Buonanno et al. 2009), and a higher degree of financial development (Guiso et al. 2004).

Beyond examining the effect of social capital on social and economic outcomes, recent research in accounting and finance has started examining whether the level of social capital in the local geographical area surrounding the corporate headquarters affects corporate decision making. These studies find that firms residing in areas with high social capital are associated with fewer

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[2] Consistent with the similarities between these various aspects of social capital, Keefer and Knack (2008) opined in their review of the social capital literature that the distinction between norms and networks corresponds roughly to the distinction between "cognitive" and "structural" manifestations of social capital.

agency problems, better cooperation, and more efficient contracting. In particular, prior work finds that social capital is associated with higher trust between auditors and managers and hence lower audit fees (Jha and Chen 2015), better compliance with tax authority and hence lower tax avoidance (Hasan et al. 2017a), more cooperative relations with debtholders and hence better debt contracting terms (Cheng et al. 2017; Hasan et al. 2017b), lower cost of equity (Ferris et al. 2017; Gupta et al. 2018), and better use of corporate resources in terms of cash holdings, capital expenditures, corporate acquisitions, and investments (Gao et al. 2021).

So far, prior studies in accounting and finance have examined the effect of social capital on firm behavior and whether social capital influences the cooperation and interaction between the firm and its external stakeholders such as auditors, tax authority, debtholders, and investors. Relatively little is known about how social capital directly influences individual managers' decision making and whether social capital mitigates individual managers' opportunistic behavior. A notable exception is Hoi et al. (2019), who find that social capital is associated with less excessive CEO compensation. Arguably, Hoi et al. (2019) show an *indirect* evidence of managerial opportunism because CEO compensation is not solely controlled by the CEO himself but also determined and approved by the board of directors. We contribute to this nascent literature by providing further and more *direct* evidence on whether social capital mitigates managerial self-dealing in the form of opportunistic insider trading because the latter involves the intentional and conscientious effort by managers to trade on their privileged information to enrich themselves privately at the expense of other public shareholders. Moreover, because opportunistic insider trading is also associated with other egregious misconduct such as earnings management, restatements, SEC enforcement actions, shareholder litigation, and options backdating (Ali and Hirshleifer 2017), it represents an important setting to examine the effect of social capital.

2.2. Social Capital and Insider Trading

Insider trading laws in the United States prohibit insiders from trading on their privileged information. The Congress, the SEC, and academics also generally view insider trading as being unethical and undesirable (e.g., Seyhun 1986; Asubel 1990; Moore 1990; Fried 1996). They argue that it is unfair for managers to benefit from their access to material nonpublic information at the expense of other shareholders. Prior work also views informed insider trading as a manifestation of managerial self-dealing (e.g., Chung et al. 2019; Jagolinzer et al. 2020). For instance, Jagolinzer et al. (2020) document that politically connected insiders exploit their information advantage about government bailout to trade opportunistically during the financial crisis.

In this study, we posit social capital can mitigate managerial self-dealing in the form of opportunistic insider trading. In environments with high social capital, managers are expected to conform to civic norms and less likely to deviate from these norms. Opportunistic insider trading clearly defies the norms of social fairness because informed insider trading involves the use of privileged information for self-interest and private gains at the expense of other shareholders. Moreover, opportunistic insider trading is often seen as a violation of managers' fiduciary duty to the public shareholders of the firm, as it involves the transfer of wealth from shareholders to managers (Fried 1996). Managers of firms in geographical areas with high social capital are hence more likely to uphold the civic norms of fairness and fulfill their fiduciary duty of not trading opportunistically against the shareholders.

Furthermore, in areas with high social capital, the accompanying dense social networks facilitate more frequent communication and interaction, and hence enhance mutual monitoring. Also, dense social networks create greater peer pressure to conform to civic norms and increase

the cost of deviating from these norms.[3] Thirdly, in areas with high social capital, the mutual trust within the community encourages more information sharing, increases the speed and weight of reaction to new information (Bhagwat and Liu 2019), and thereby improving the information environment and reducing information asymmetry between insiders and outsiders. Collectively, these will reduce opportunities for informed insider trading and also increase the reputation costs of the managers when their opportunistic trades are being discovered. Therefore, in locations with high social capital, managers are less likely to engage in opportunistic insider trading. Finally, in environments with high social capital, managers are more trusting and trust shareholders and the board of directors to compensate them fairly for their work. Therefore, they are more likely to refrain from privately profiting from informed insider trades to earn implicit compensation.

In sum, in regions with high social capital, which is composed of individuals who uphold altruistic norms, promote cooperation, are more trusting and interact frequently through dense social networks, we expect managers to engage in less informed and opportunistic insider trading and hence lower insider trading profitability. Our first hypothesis is presented as follows:

HYPOTHESIS 1. *The level of social capital in the region surrounding the corporate headquarters is negatively associated with insider trading profitability.*

Notwithstanding the above arguments, prior work in social psychology finds that individuals may not respond or conform to a social norm unless it is made salient in the situation (Cialdini et al. 1990; Cialdini et al. 1991). Informed insider trading is difficult to detect because it is challenging to determine whether insiders actually trade on material nonpublic information. Hence, even in regions with high social capital, managers may not feel pressured to conform to

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[3] Consistent with this view, Keefer and Knack (2008) highlight that frequent and more intense interaction between people may increase the cost of social ostracism as a punishment for deviating from social norms.

civic norms and refrain from opportunistic insider trading because of the difficulty of detection. Therefore, whether we can find evidence consistent with Hypothesis 1 is an empirical question.

2.3. Cross-sectional Analyses

2.3.1. Exploring the Effect of Governance

Prior work suggests that social capital and formal governance systems are substitutes in influencing economic outcomes (Guiso et al. 2004; Carlin et al. 2009; Aghion et al. 2010; Kanagaretnam et al. 2018). For instance, Guiso et al. (2004) find that social capital plays a more important role in financial development when legal enforcement is weak. Kanagaretnam et al. (2018) document that societal trust is more significant in mitigating corporate tax avoidance when country-level legal institutions are weak. Finally, Larcker and Tayan (2013) also argue that organizational trust can serve as a substitute for more formal corporate governance systems. Accordingly, we predict that social capital will play a more (less) important role in mitigating opportunistic insider trading when governance is poor (strong). Our first cross-sectional hypothesis is presented as follows:

HYPOTHESIS 2a. *The negative association between the level of social capital in the region surrounding the corporate headquarters and insider trading profitability is more (less) pronounced when corporate governance is weaker (stronger).*

2.3.2. Exploring the Effect of Corporate Opacity

The ability of insiders to trade profitably against outsiders comes from their possession of private information and the information asymmetry between insiders and outsiders (e.g., Aboody and Lev 2000; Frankel and Li 2004; Huddart and Ke 2007). An opaque information environment also hinders monitoring and allows insiders and managers to appropriate higher private benefits of control from outsiders (e.g., Bushman and Smith 2001; Armstrong et al. 2010). Prior work suggests

that social capital plays a more important role when the information environment is more opaque. For instance, Pevzner et al. (2015) find that investors rely more on trust in deciphering the news in earnings announcements when the country-level disclosure requirement is lower and when the firm-level information asymmetry is higher. Guiso et al. (2004) also find that individuals rely more on trust in their investment decisions when they are less informed. Accordingly, we predict that social capital is likely to play a more (less) important role in constraining opportunistic insider trading when the information environment is more (less) opaque. Our second cross-sectional hypothesis is presented as follows:

HYPOTHESIS 2b. *The negative association between the level of social capital in the region surrounding the corporate headquarters and insider trading profitability is more (less) pronounced when corporate opacity is higher (lower).*

3. Research Design

3.1. Measure of Insider Trading Profitability

We measure the extent of informed insider trading based on the profitability of these trades because if insider trades are not based on private information, insider trading profitability should be zero on average. Since insiders can trade both directions (i.e., purchase or sell), the trading profitability is defined as the (unrealized) profits earned after purchase transactions and losses avoided from sale transactions. We construct the individual-level trading profit following prior literature on insider trading (Jagolinzer et al. 2011; Cohen et al. 2012; Gao et al. 2014). Specifically, we first regress the daily returns on Carhart (1997) four factors over a twelve-month following the date of insider trading as follows

$$R_i - R_f = \alpha + \beta_1(R_{mkt} - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 UMD + \varepsilon \tag{1}$$

where R_i is the daily stock return of firm i, R_f is the daily risk-free interest rate (T-bill rate), and R_{mkt} is the CRSP value-weighted market return. SMB, HML, and UMD are the size, book-to-market, and momentum factors, respectively (Fama and French 1993; Carhart 1997). In the above regression, α represents the daily average abnormal return over the regression window (i.e., a twelve-month window following the insider transaction in our setting). Therefore, we use α $(-\alpha)$ as a proxy for insider trading profit (hereafter, INS_PROFIT), as it represents the potential gain (losses avoided) following insider purchase (sale).

Our hypotheses rely on capturing insiders' opportunistic behavior. Therefore, it is essential to identify 'opportunistic' trades to better observe the effect of social capital on insider trading profitability. Following Cohen et al. (2012), we separate the 'routine' vs. 'opportunistic' insider trades using the steps described in Appendix A.

3.2. Measure of Social Capital

Our theoretical definition of social capital encompasses the strength of civic norms and the density of social networks. Hence, we follow the extant literature on social capital and utilize an empirical measure to capture these characteristics at the U.S. county level (e.g., Rupasingha et al. 2006; Jha and Chen 2015; Cheng et al. 2017; Hasan et al. 2017a, b; Hoi et al. 2019). To capture the strength of civic norms, we use the voter turnout in the presidential elections and the response rate of the decennial census of the Census Bureau in the county. Participation in the elections and census are purely voluntary and have no economic payoff, and there are no legal obligations to participate. Moreover, participation entails personal costs to the voter or census respondent (at least in terms of time). Hence, these two measures are likely to capture the communal spirit, cooperative attitude, and internalized norms within the community.

To capture the density of social networks, we use the number of social and civic associations and the number of nonprofit organizations within the county. Social and civic associations include religious organizations, civic organizations, business organizations, political organizations, professional organizations, labor organizations, bowling centers, fitness and recreational sports centers, golf courses and country clubs, and sports teams and clubs. The wide array of different types of establishments that cater to a broad audience indicates the opportunities for individuals to socialize, to have repeated interactions, and to share information with one another and thus captures the density of social networks within the community.

To construct the overall measure of social capital, we follow the methodology of Rupasingha et al. (2006) and utilize the first principal component of these four factors as the index of social capital. We obtain data on county-level social capital from the Northeast Regional Center for Rural Development (NERCRD) at Pennsylvania State University.[4] Data is available for 1990, 1997, 2005, 2009, and 2014. As stated on the website, the 1990 data are not compatible with data from later years, so we utilize data from 1997 onward. Following prior studies (e.g., Hoi et al. 2019), we backfill data for the in-between years using the measure in the preceding year where data are available as our main measure of social capital (*SOCIAL_CAP*). As an alternative measure (*SOCIAL_CAP_ALT*), we use linear interpolation to fill in the values for the in-between years in additional robustness tests (Section 4.4). We then match the county-level social capital measure to the address of the firm's headquarters to obtain the firm-level measure of social capital. The detailed description of our measure of social capital is explained in Appendix B.

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[4] Data can be obtained from https://aese.psu.edu/nercrd/community/social-capital-resources. We thank the authors for sharing the data on social capital with us.

Figure 1 shows the social capital at the county level in 2014. As observed from this figure, the counties with the highest social capital are concentrated in the north and northeast regions, while the counties with the lowest social capital are concentrated in the southern regions. The spatial distribution of social capital is similar to that reported in prior studies (e.g., Hasan et al. 2017a, b).

3.3. Empirical Models

3.3.1. Main Analyses

To test Hypothesis 1, we estimate the following pooled cross-sectional regression model within the sample that are classified as 'opportunistic' trades:

$$INS\_PROFIT_t = \alpha + \beta SOCIAL\_CAP_{t-1} + \psi FIRM\_CONTROLS_{t-1} + \mu COUNTY\_CONTROLS_{t-1}$$

$$+ FIRM\_FE + YEAR\_FE + \varepsilon_t \qquad (2)$$

where *INS_PROFIT* refers to insider trading profitability from Carhart (1997) four factor model as discussed in section 3.1, *SOCIAL_CAP* refers to the measure of social capital, *FIRM_CONTROLS* refers to a vector of firm-level controls, and *COUNTY_CONTROLS* refers to a vector of county-level controls. To mitigate concerns about reverse causality and to provide stronger inferences, we lagged the independent variables (*SOCIAL_CAP, FIRM_CONTROLS,* and *COUNTY_CONTROLS*). We also include firm fixed effects (*FIRM_FE*) to control for time-invariant unobservable factors that vary across firms, as well as year fixed effects (*YEAR_FE*). Hypothesis 1 predicts a negative coefficient on *SOCIAL_CAP*. Because we utilize a pooled sample to test our hypothesis, we use standard errors clustered at the firm and year level to control for time series and cross-sectional dependence in the data (Petersen 2009; Gow et al. 2010). The detailed definitions of all variables are outlined in Appendix C.

We include an extensive range of *FIRM_CONTROLS* that are associated with insider trading as documented in prior studies. We control for firm size (*LNMV*) because Seyhun (1986) finds that insiders of small firms purchase more, while insiders of large firms sell more, and Lakonishok and Lee (2001) find that insiders of small firms trade more profitably. Prior work indicates that insiders have the tendency to trade as contrarians (Rozeff and Zaman 1998; Piotroski and Roulstone 2005); hence we control for the book-to-market ratio (*BTM*) and prior stock returns (*PRIOR_RET*). We also control for common proxies for information asymmetry such as R&D expenditure (*RND*), the median absolute abnormal return over past earnings announcements (*MAG_AR*), number of analysts following (*ANALYST*), institutional ownership (*IOHOLD*), financial statement informativeness (*FS_INFORM*), and returns volatility (*RET_VOL*), because insiders trade more profitably when information asymmetry is higher (Aboody and Lev 2000; Frankel and Li 2004; Huddart and Ke 2007).

Finally, we include a set of *COUNTY_CONTROLS* to mitigate concerns that some unobserved county-level factors could be correlated with both social capital and insider trading profitability. We control for personal income per capita in the county (*LNINCOME*), total population in the county (*LNPOP*), education level of the population in the county (*EDUC*), and the median age of the population in the county (*LNMEDAGE*). The detailed definitions and the data sources for these county-level variables are explained in Appendix C.

3.3.2. Cross-sectional Analyses

To test Hypothesis 2, we modify equation (2) to include the moderating variable (*Moderating_VAR*) and the interaction between *SOCIAL_CAP* and *Moderating_VAR*:

$$INS\_PROFIT_t = \alpha + \beta SOCIAL\_CAP_{t-1} + \psi FIRM\_CONTROLS_{t-1} + \mu COUNTY\_CONTROLS_{t-1}$$
$$+ \gamma Moderating\_VAR_{t-1} + \eta SOCIAL\_CAP_{t-1} \times Moderating\_VAR_{t-1}$$

$$+ FIRM\_FE + YEAR\_FE + \varepsilon_t \tag{3}$$

In Hypothesis 2a, we examine the moderating effect of corporate governance on the relation between social capital and insider trading profitability. We use G-Index (Gompers et al. 2003) to proxy for the balance of power between shareholders and managers. The G-Index is the number of shareholder rights-decreasing provisions in a firm and calculated using data collected by the Investor Responsibility Research Center (IRRC). The index ranges from 0 to 24, with a high (low) score indicating weak (strong) shareholder rights. Prior work suggests that stronger governance (proxied by a lower G-Index Score) mitigates insiders' ability to trade on their private information (Jagolinzer et al. 2011), which further reduces insiders' ability to trade opportunistically. Hence, we expect social capital to play a more important role in reducing insider trading profitability when a firm has weak governance. We measure the extent of governance using an indicator (*GINDEX*) that equals one if the G-Index of the firm is greater than the sample median (weak governance) and zero otherwise.

In Hypothesis 2b, we examine the moderating effect of corporate opacity on the relation between social capital and insider trading profitability. We measure corporate opacity using a comprehensive index developed by Anderson et al. (2009) and used in prior literature (e.g., Chen et al. 2015; Chung et al. 2019). This index comprises four individual proxies that are documented to be associated with information opacity in prior literature: (1) trading volume (average daily number of shares traded scaled by the number of common shares outstanding at the beginning of fiscal year), (2) bid-ask spread (average daily bid-ask spread scaled by the stock price), (3) analyst following (the number of analysts issuing annual EPS forecasts during the fiscal year), and (4) analyst forecast errors (the absolute value of the difference between the median analyst forecast before the earnings announcement date and actual EPS, scaled by the stock price at the beginning

of fiscal year).[5] In the hypothesis test, we use an indicator that equals one if the opacity index of the firm is greater than the sample median, and zero otherwise. We expect social capital to play a more important role in reducing insider trading profitability when corporate opacity is higher.

4. Sample and Results

4.1. Sample

Our sample of insider trading transaction data is obtained from the Thomson Reuters Insider Filing database, which collates data from the Form 4 filings with the SEC. The sample period for this study spans from 2003 to 2016. We start the sample period in 2003 because the Sarbanes-Oxley Act of 2002 has changed the reporting requirement for insider trading. Previously, insiders were required to report all trades to the SEC by the 10th day of the month following the month of the trade. Since October 2002, insiders must report all trades by the second day following the trade. This new regulation could affect overall insider's trading behavior and the information content of the transaction (Brochet 2010). Hence our sample period begins after the passage of this new regulation. We then merge with COMPUSTAT to obtain firm-level financial data, CRSP to obtain stock returns data, I/B/E/S to obtain analyst-related data, and Thomson Reuters to obtain institutional ownership data. Finally, we obtain county-level data from the Bureau of Economic Analysis and the American Community Survey.

Following prior insider trading studies (e.g., Lakonishok and Lee 2001; Frankel and Li 2004), we only examine the open market transactions and exclude grant and award transactions.

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[5] To construct this index, we first rank each of these proxies by deciles and allocate a score from zero (least opaque) to nine (most opaque). The overall opacity index for each firm is then derived by summing the scores of these four proxies and scaling the total score by the maximum possible score of thirty-six, such that the opacity index ranges from 0 to 1.

We focus on the insider trading transactions of officers in the C-suite (e.g., CEOs, CFOs, and COOs) because these managers have access to the most privileged information and thus are best able to make profitable insider trades based on their private information. Moreover, directors are less likely to reside in the neighboring vicinity of the corporate headquarters and hence less influenced by the social norms surrounding the corporate headquarters. Therefore, including directors' trade in our analyses will reduce the power of our test.[6]

Applying the above data criteria within the insider trades of C-suite results in total 60,678 insider trades. After aggregating the same day insider trades within firms, we obtain 53,507 insider trades. Finally, using the process documented in Cohen et al. (2012) (as specified in Appendix A) to separate the 'routine' vs. 'opportunistic' insider trades, we identify a total of 36,778 'opportunistic' insider trades over our sample period from 2003 till 2016.[7]

4.2. Descriptive Statistics

Table 1 Panel A presents the descriptive statistics of the variables used in the main analyses with the opportunistic insider trade sample. Consistent with prior studies (e.g., Lakonishok and Lee 2001; Skaife et al. 2013), insider sales transactions (32,170) are more frequent than insider

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[6] C-suite executives could also be geographically dispersed across multiple locations around the country and hence the social capital in the county of the corporate headquarters may not be the environment that these C-suite executives are being exposed to. We address this concern in the following ways. First, given that the corporate headquarters are close to corporate core business activities (Pirinsky and Wang 2006), we expect C-suite officers to reside relatively near to the corporate headquarters for the ease of commute. While it is possible that the C-suite executives are residing in the neighboring county, prior work suggests that social capital is spatially sticky (Rutten et al. 2010) and hence the social capital in neighboring counties are also similar. Visually, Figure 1 shows the spatial distribution of social capital in the U.S. also suggests that the levels of social capital are similar in neighboring counties. Second, CEO and CFO are more likely to be located at the corporate headquarters. Thus, we rerun our regressions on the sample of CEO's and CFO's transactions and our results are robust using these trades in our empirical tests (untabulated). Finally, in an additional robustness test, we restrict our sample to firms operating in only one geographical segment and rerun our main tests. The idea behind this test is that firms operating in a single geographical segment are more likely to be geographically centralized within a smaller geographical region where social capital is likely to be relatively homogeneous within the region as compared to firms operating in many geographical segments. Our results are robust using this restricted sample (untabulated).
[7] We winsorize each continuous variable at the 1% and 99% levels to mitigate the influence of outliers.

purchases (4,608). The average insider trading profit (*INS_PROFIT*) is 0.048 percent per day for purchase while it is -0.013 percent per day for sales. Insiders receive a large number of shares from compensation plans and therefore need to sell more frequently and in larger amounts for liquidity reason and to diversify the significant proportion of their personal wealth held in their company's stocks (Ofek and Yermack 2000). Panel B shows the sample distribution by year.

Table 1 Panel C shows the difference in trading profitability between samples with a high and low level of social capital based on the sample median. Consistent with Hypothesis 1, we find a significantly lower trading profitability in the high social capital group. Specifically, the mean (median) value of *INS_PROFIT* is -0.009 (-0.010) in the high social capital group, and -0.003 (-0.004) in the low social capital group. Both mean and median differences between two groups are statistically significant at 1% level.

Table 2 reports the Pearson and Spearman correlation table of the main variables. As observed from this table, social capital (*SOCIAL_CAP*) is negatively and significantly correlated with insider trading profitability (*INS_PROFIT*) in both Pearson and Spearman correlations. This is also consistent with our prediction in our main hypothesis, Hypothesis 1. Because these are pairwise univariate correlations, we defer the main analyses to multivariate tests in Section 4.3.

4.3. Main Analysis: Test of Hypothesis 1

In this section, we report the results for the main hypothesis, Hypothesis 1, which predicts a negative association between social capital and insider trading profitability. In Table 3 column (1), we find that social capital is negatively and significantly associated with insider trading profitability of all opportunistic trades (-0.027; *t*-stat = -2.50). Then, we separate the overall opportunistic trades into purchase and sale transactions, and Column (2) and (3) show that the level of social capital is negatively and significantly associated with both purchase (-0.091; *t*-stat

= -3.26) and sale transactions (-0.023; t-stat = -1.93). Although the coefficient on purchase is much larger than that on sales, we do not find a significant difference between these two coefficients in an untabulated analysis.[8] Hence, we focus on the overall trades for the remaining analyses in this paper.[9]

The effect of social capital in mitigating opportunistic insider trades is also economically significant. We rank the measure of social capital by quintile and then rescale the measure such that the variable ranges from zero to one (*RANKED_SOCIAL_CAP*). Then, we regress the insider trading profits (*INS_PROFIT*) on *RANKED_SOCIAL_CAP* and all the control variables used in the main analysis (Eq. 2). Column (4) shows that the coefficient on the *RANKED_SOCIAL_CAP* is -0.060 (t-stat = -2.42). This indicates that the difference in the trading profit (α) between the top and bottom quintiles of social capital is 0.06 percent per day, which is economically significant.[10]

4.4. Additional Robustness Tests

To provide confidence in our main results, we perform additional robustness checks. Our main measure of social capital (*SOCIAL_CAP*) is obtained by backfilling data for the in-between years using the measure in the preceding year where data are available. As a first robustness test, we follow prior literature (e.g., Hasan et al. 2017b; Hoi et al. 2019) and utilize an alternative measure of social capital (*SOCIAL_CAP_ALT*), where we use linear interpolation to fill in the

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[8] In particular, we create an indicator variable that equals one if a transaction is a purchase, and zero otherwise (*PURCHASE_DUMMY*), and interact *PURCHASE_DUMMY* with *SOCIAL_CAP*. The coefficient on the interaction term is negative, but insignificant.

[9] We also examine the relation between social capital and insider trading profitability using the routine trade sample instead of the opportunistic trade sample. We still find a negative coefficient on the social capital variable with the routine trade sample, but the coefficient is insignificant (untabulated).

[10] In an additional robustness test, we exclude observations from the first three years of our sample period (i.e., 2003-2005) because our classification of opportunistic trades requires examining insider trading patterns in the prior three years, and classification of opportunistic trades from 2003-2005 might be measured with error because the Sarbanes-Oxley Act of 2002 has changed the reporting requirement for insider trading (see Section 4.1). Our results are robust to excluding sample observations from 2003-2005 (untabulated).

values for the in-between years using linear approximation. The results using this alternative measure are presented in the column (1) of Table 4. As observed from this table, social capital continues to be negatively and significantly associated with insider trade profitability (-0.023; *t*-stat = -2.28).

Next, our main measure of social capital is intended to capture the strength of civic norms and the density of social networks that uphold altruistic norms, promote cooperation, and mitigate opportunistic behavior through repeated interactions in social networks. Religion is often viewed as a social norm that influences individual behavior such as risk aversion and propensity to hoard bad news (e.g., Hilary and Hui 2009; Callen and Fang 2015). To mitigate concerns that our measure of social capital is capturing religiosity, we include county-level religious adherence, which is defined as the proportion of the total population in the county that claims adherence to a religious organization (*RELIG_ADHERE*), as a control variable and rerun our analyses. As observed from the column (2) of Table 4, our main results continue to be robust with the inclusion of this control variable (-0.026; *t*-stat = -2.45).

In addition, Jha and Cox (2015) find that firms headquartered in regions with high social capital are more altruistic and thus invest in more corporate social responsibility (CSR) activities. In a related study, Gao et al. (2014) also find that firms that invest in CSR activities are committed to building a positive image of caring for social good and are therefore less likely to engage in informed insider trading, which is widely perceived to be self-serving. Hence, there may be a concern that our documented association between social capital and insider trading profitability is driven by firms' CSR orientation (that is, CSR orientation is the omitted correlated variable). To alleviate this concern, we include CSR orientation (*CSR*) from MSCI (previously KLD) as an additional control. In conducting analysis, we use a modified zero-order regression (Greene, 2012)

to handle observations with missing *CSR* as the data is only available from 2003-2012.[11] The result, after controlling for CSR orientation, is presented in column (3) of Table 4. We continue to find that social capital is negatively and significantly associated with insider trade profitability even after CSR orientation (*CSR*) is included in the model (-0.026; *t*-stat = -2.52).[12]

Finally, insiders' personal attributes and abilities might affect the profitability of their trades (Hillier et al. 2015), and to the extent that these inherent individual traits are correlated with the measure of social capital, our findings might be spurious. In an additional sensitivity test, we include insider fixed effect in our regression model and the result is presented in Column (4) of Table 4. Our main results continue to be robust with the inclusion of insider fixed effect (-0.033; *t*-stat = -2.85).

4.5. Corroborating Evidence from Corporate Headquarters Relocation

So far, we have documented a robust negative association between social capital and insider trading profitability. To provide additional evidence that social capital reduces opportunistic insider trading, we examine the setting of corporate headquarters relocation and determine whether insider trading profitability changes when a firm relocates to a geographical area with a higher or lower social capital.[13] We examine insider trading profitability in the three-year period surrounding the headquarter relocation.[14] Because our sample period spans from 2003

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[11] Modified zero-order regression replaces missing values of the variable of interest with zero, and add a variable that takes the value of one for missing observations and zero for non-missing ones.

[12] In an additional analysis, we use the total Environmental, Social and Governance (ESG) score as reported in the Sustainalytics database as an alternative proxy for CSR orientation. Results are similar to those reported above (untabulated).

[13] We acknowledge that headquarter relocation is also an endogenous corporate decision, however, to the extent that the relocation decision is unlikely made to increase/decrease insiders' private information or their trading profitability, this setting is appropriate for our purpose.

[14] Using a shorter event window mitigates concerns that we might be incorrectly attributing the effects of other concurrent events to the relocation. Our results are robust to examining either a four-year or five-year period surrounding the headquarter relocation.

to 2016, and we require data for a three-year window surrounding the relocation, hence, the sample period to identify headquarter relocations spans from 2006 to 2013. To this end, we identify 78 unique firms that have moved headquarters during the sample period.[15] In this analysis, we compare the change in insider trading profitability for firms that moved to a region with a higher social capital (496 insider trades) with firms that moved to a region with a lower social capital (493 insider trades). *SC_INC_RELOCATE* is an indicator that equals one for firms that have moved corporate headquarters to a county with a higher level of social capital, and zero otherwise. *POST* is an indicator that equals one for insider trades after the change of corporate headquarters, and zero otherwise. The coefficient of interest is *SC_INC_RELOCATE* × *POST*, which indicates the change in insider trading profitability after headquarter relocation for firms that moved to a region with a higher social capital as compared to firms that moved to a region with a lower social capital.

The result for the change in insider trading profitability after the headquarters relocation is presented in Table 5 column (1). The coefficient on *SC_INC_RELOCATE* × *POST* is -0.065 (*t*-stat = -1.82), which suggests that managerial opportunism decreases after firms moved to a region with a higher social capital as compared to firms that moved to a region with a lower social capital.

Firms that relocate to a region with a higher social capital could be fundamentally different from firms that relocate to a region with a lower social capital. To the extent that these characteristics lead to differences in insider trading profitability (and not due to the relocation to a region with a higher or lower social capital), our findings will be spurious.[16] To address this

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[15] To avoid confounding time windows, we exclude firms with multiple headquarter relocations during the sample period.

[16] In other words, the characteristics of the treatment sample (firms that moved to a region with a higher social capital) are different from those of the control sample (firms that moved to a region with a lower social capital). In an untabulated analysis, we find that the mean characteristics (based on the control variables) of the firms that moved to a region with a higher social capital are significantly different from firms that moved to a region with a lower social capital across various dimensions.

concern, we examine the robustness of our results using the entropy balancing technique. Entropy balancing is a quasi-matching approach that reweights each control observation such that the postweighting distributional properties of matched variables between the treatment and control observations are virtually identical, thereby ensuring covariate balance (Hainmueller 2012; McMullin and Schonberger 2020). In contrast to standard matching procedures, entropy balancing preserves the sample size and hence conserves the power of the test. This is particularly important in our setting because of the small number of firms that experience headquarter relocations during our sample period. We achieve covariate balance by balancing on the mean of the covariate distributions and using the default tolerance of 0.015 across the firms that moved to a region with a higher and lower social capital.[17] In an untabulated analysis, we find that the mean characteristics of both types of firms are virtually identical after entropy balancing. The regression results using entropy balancing is presented in Table 5 Column (2). The coefficient on *SC_INC_RELOCATE* × *POST* is -0.133 (*t*-stat = -2.26), which suggests that our inferences are robust to entropy balancing.

4.6. Cross-sectional Analyses: Test of Hypothesis 2

In this section, we explore cross-sectional variation in the relation between social capital and insider trading profitability. In Hypothesis 2a, we examine the moderating role of governance, where we predict that social capital will play a more (less) important role in mitigating opportunistic insider trading when governance is poor (strong). Column (1) of Table 6 presents the result, where we use G-index as a proxy for governance. We find that the negative association between social capital and insider trade profitability is more pronounced when corporate governance is weaker (*t*-stat for *SOCIAL_CAP* × *GINDEX* = -4.64). The result is consistent with

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[17] We do not balance on higher distribution moments (i.e., variance and skewness) because our small sample of headquarter relocations does not provide sufficient distributional overlap between the treatment and control observations for entropy balancing to converge.

our prediction in Hypothesis 2a that social capital and governance are substitutes in reducing opportunistic insider trading.

In Hypothesis 2b, we examine the moderating role of corporate opacity, where we predict that social capital is likely to play a more (less) important role in constraining opportunistic insider trading when the information environment is more (less) opaque. In column (2) of Table 6, we find that the negative association between social capital and insider trade profitability is more pronounced when corporate opacity is higher (*t*-stat for *SOCIAL_CAP* × *OPACITY* = -2.14). The result is consistent with our prediction in Hypothesis 2b that when the information environment is more opaque and insiders have greater opportunities to make more profitable trades, social capital plays a more important role in constraining managerial self-serving behavior.

4.7 Exploring Potential Mechanisms

In this section, we corroborate our main findings and explore two potential mechanisms through which social capital reduces opportunistic insider trading: density of social networks and strength of civic norms. In our main hypothesis, we argue that in areas with high social capital, the accompanying dense social networks facilitate more frequent communication and interaction, and hence enhance information sharing and mutual monitoring and thereby reducing opportunistic trading. Accordingly, we exploit cross-sectional variation in the density of the firm's social networks to provide corroborating evidence to support our main hypothesis. We proxy for the density of the firm's social networks based on the aggregate connections of the CEO (*CEONETWORK*) where we obtain the data from BoardEx. We argue that when the CEO is more connected, the firm's social networks become denser, which facilitates more frequent information sharing with and stronger mutual monitoring by outsiders. Consequently, we expect the effect of social capital to be more pronounced when the CEO is more connected. The results of this analysis

are presented in Table 7 Column 1. Consistent with our prediction, we find that the negative association between social capital and insider trading profitability is more pronounced when the CEO is more connected (*t*-stat for *SOCIAL_CAP* × *CEONETWORK* = -2.12).

In our main analysis, we also argue that in areas with high social capital, managers are more likely to uphold the civic norms of fairness and fulfill their fiduciary duty of not trading opportunistically against the shareholders. Hence, we explore cross-sectional variation in the strength of civic norms to provide corroborating evidence to support our main hypothesis. We proxy for the strength of civic norms based on the annual number of organ donors in each state (*ORGAN*).[18] Guiso et al. (2004) argue that there are neither legal or economic incentives to donate blood and an individual's inclination to donate blood is likely driven by the strength of civic norms. Similarly, we expect the strength of civic norms to be higher when there are more organ donors. The results of this analysis are presented in Table 7 Column 2. Consistent with our prediction, we find that the negative association between social capital and insider trading profitability is more pronounced when there are more organ donors in the state (*t*-stat for *SOCIAL_CAP* × *ORGAN* = -1.93).

Overall, the results in this section provide corroborating evidence on the mechanisms through which social capital mitigates opportunistic insider trading.

4.8. Insider Trading during Inferred Restricted Trading Windows

Earlier, in Hypothesis 2a, we predict that social capital plays a more important role in curbing opportunistic behavior when the existing governance system is weak. In another supplementary test, we exploit an insider trading window where scrutiny and enforcement are

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[18] We obtain state-level organ donation data from the Organ Procurement and Transportation Network (OPTN). Ideally, we like to have this data at the county-level but OPTN only provides data at the state-level.

likely to be weaker and hence the effect of social capital is predicted to be more pronounced. Prior studies document that many firms restrict their insiders from trading during periods before quarterly earnings announcements to limit insiders' ability to trade on private information about the upcoming earnings news (e.g., Bettis et al. 2000, Roulstone 2003, Jagolinzer et al. 2011). Huddart et al. (2007) also find that insiders avoid profitable trades before quarterly earnings announcements because of the potential jeopardy and litigation risks associated with trading during this period. The authors also find that insiders exploit their foreknowledge of price-relevant information to trade opportunistically after the earnings announcement. Accordingly, we expect that governance and enforcement of insider trading to be stronger before earnings announcement, and weaker thereafter. Therefore, we separately examine the effect of social capital on insider trading in these two nonoverlapping trading windows.

Jagolinzer et al. (2011) find that the average firm in their hand-collected sample with an insider trade policy has a restricted trading window beginning 46 days prior to the earnings announcement and ending one day after the earnings announcement. Hence, based on Jagolinzer et al. (2011)'s finding, we consider this 48-day restricted trading window (i.e., beginning 46 days prior to the earnings announcement and ending one day after the earnings announcement) as a high-scrutiny period and the remaining trading window as a low-scrutiny period. The results are presented in the column (1) and (2) of Table 8 for the restricted trading window and nonrestricted trading window, respectively. As observed the column (1), we do not find that social capital is associated with insider trade profitability during the restricted trading window (*t*-stat = -0.54). In contrast, we find that social capital is significantly associated with lower trade profitability during the nonrestricted trading window (*t*-stat = -2.90). The results suggest that social capital is more important in reducing managerial opportunism when governance is weak and where insiders have

greater incentive and ability to profit from their privileged information, thus lending stronger support for our cross-sectional Hypothesis 2a.

5. Conclusion

In this study, we examine whether the social capital surrounding the firm's corporate headquarters mitigates managerial self-dealing in the form of opportunistic insider trading. Using a large sample of firms and insider trades spanning calendar years 2003−2016 and including an extensive range of firm-level control variables associated with insider trading, county-level control variables, and firm fixed effects, we find strong evidence that social capital in the region surrounding the firm's headquarters is negatively and significantly associated with insider trade profitability. We conduct a series of robustness tests to rule out alternative explanations. To provide additional evidence, we examine corporate headquarters relocations and find that insider trading profitability significantly decreases after firms moved to a region with a higher social capital as compared to firms that moved to a region with a lower social capital.

We conduct a series of additional analyses to corroborate our findings and to provide additional insights. First, we find that the negative association between social capital and insider trading profitability is more pronounced when firm governance is weaker and when corporate opacity is higher. Second, we exploit cross-sectional variation in the density of social networks and the strength of civic norms and find that the effect of social capital is more pronounced when the firm's social networks are denser and when civic norms in the region are stronger. Third, we find that social capital is associated with lower insider trading profitability within the nonrestricted trading window but fail to find a significant association within the restricted trading window. The

results suggest that social capital is more important in reducing managerial opportunism when monitoring is weak in the nonrestricted trading window.

Our study contributes to the literature in several ways. First, we contribute to the growing social capital literature in accounting and finance by providing direct empirical evidence that social capital mitigates managerial self-serving behavior in the form of opportunistic insider trading. Second, academics and regulators have largely focused on the "hard" mechanisms such as corporate governance, securities regulation, and enforcement and litigation that limit opportunistic insider trading, and little attention is paid on the "softer" mechanisms such as civic norms and social networks that might also deter insider trading. We contribute to this literature by providing evidence that the social capital of the insiders' community affects their decisions to trade opportunistically. An important limitation of our study is that despite numerous approaches to address endogeneity concerns (e.g., including firm fixed effects to control for time-invariant omitted variables and using a lead-lag analysis), we are not able to rule out that an omitted correlated variable might drive our findings. Readers should interpret our results with this caveat in mind.

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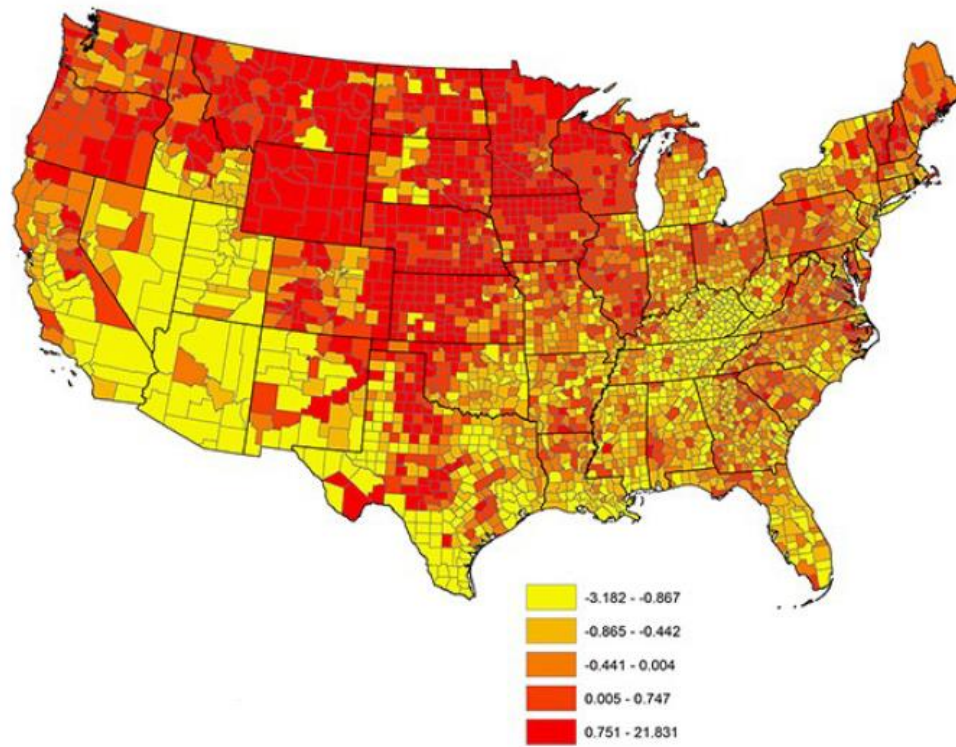
Figure 1 County-level Social Capital Levels in 2014. Source: The Northwest Regional Center for Rural Development.

Appendix A

Isolating Opportunistic Trades

Following Cohen et al. (2012), we separate the 'routine' vs. 'opportunistic' insider trades using the steps below.

1) First, as required in Cohen et al. (2012), we capture the 'initial' consecutive three-year window with at least one trade each year for each insider with unique insider ID (using *Personid*) in the Thomson Reuters Insider Filing database.[19]

2) Next, we define 'routine' trades based on the trading records. Specifically, if insider 'A' places his/her trades in the same calendar months during this three-year trading window, 'A' is defined as a 'routine' trader at the end of the three-year window. All subsequent trades made by 'A' after this initial classification period are considered 'routine' trades.[20]

3) If the trading records in the 'initial' three-year window reveal that an insider is not 'routine', the insider will be designated as an 'opportunistic' trader at the end of the three-year window.

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[19] Cohen et al. (2012) describes their requirements for the classification as follows: "*We require an insider to make at least one trade in each of the three preceding years to define her as either an opportunistic or a routine trader. Specifically, we define a routine trader as an insider who placed a trade in the same calendar month for at least three consecutive years. We define opportunistic traders as everyone else, that is, those insiders for whom we cannot detect an obvious discernible pattern in the past timing of their trades.*" (p.1017, Cohen et al. 2012)

[20] Cohen et al. (2012) also note that "*once a trader becomes routine, he is classified as routine for all of his subsequent trades, regardless of what trading behavior (or lack of trading behavior) takes place after his initial three-year classification period.*" (Internet Appendix Exhibit A1, Cohen et al. 2012)

Appendix B

Measure of Social Capital

We obtain data on county-level social capital from the Northeast Regional Center for Rural Development (NERCRD) at Pennsylvania State University. Data are available for 1990, 1997, 2005, 2009, and 2014. As stated on the website, the 1990 data are not compatible for later years, so we utilize data from 1997 onward. Following prior studies (e.g., Hoi et al. 2019), we backfill data for the in-between years using the measure in the preceding year where data are available. As an alternative measure, we use linear interpolation to fill in the values for the in-between years.

This social capital measure is constructed using the methodology of Rupasingha et al. (2006). According to the authors, the measure of social capital is based on the first principal component of the following four factors measured at the county level: (1) the number of associations per ten thousand population (ASSN), (2) voter turnout in the presidential elections (PVOTE), (3) response rate of the decennial census of the Census Bureau (RESPN), and (4) the number of tax-exempt nonprofit organizations per ten thousand population, without including those with an international approach (NCCS). The number of associations is the number of the following establishments at each county: (1) religious organizations, (2) civic organizations, (3) business organizations, (4) political organizations, (5) professional organizations, (6) labor organizations, (7) bowling centers, (8) fitness and recreational sports centers, (9) golf courses and country clubs, and (10) sports teams and clubs. These four factors are standardized to have a mean of zero and standard deviation of one, and the first principal component of these four factors is the index of social capital.

Appendix B Table shows the median value of social capital measure across the states based on the three data vintages used in this study.

Appendix B Table

Social Capital Across the States

State	Abbreviation	2005		2009		2014	
		Median	**Rank**	**Median**	**Rank**	**Median**	**Rank**
District of Columbia	DC	3.645	1	3.904	1	3.338	1
North Dakota	ND	2.275	2	2.414	2	1.818	3
South Dakota	SD	1.976	3	1.649	3	1.174	6
Montana	MT	1.127	8	1.471	4	1.374	4
Minnesota	MN	1.567	6	1.241	5	1.301	5
Kansas	KS	1.575	5	1.223	6	1.070	8
Nebraska	NE	1.661	4	1.192	7	1.086	7
Iowa	IA	1.524	7	1.160	8	0.912	9
Vermont	VT	0.752	11	0.800	9	0.620	10
Wyoming	WY	1.076	9	0.736	10	1.955	2
Maine	ME	0.516	13	0.487	11	-0.049	17
Colorado	CO	0.250	17	0.440	12	0.185	15
New Hampshire	NH	0.353	14	0.315	13	0.413	13
Wisconsin	WI	0.862	10	0.262	14	0.531	12
Illinois	IL	0.613	12	0.255	15	0.200	14
Michigan	MI	0.077	19	0.081	16	-0.411	30
Oregon	OR	0.346	15	0.057	17	0.575	11
Ohio	OH	0.317	16	0.018	18	-0.122	20
Missouri	MO	0.185	18	-0.016	19	-0.201	23
Pennsylvania	PA	0.061	20	-0.169	20	-0.049	18
Indiana	IN	-0.125	22	-0.210	21	-0.406	29
Washington	WA	-0.194	25	-0.249	22	0.184	16
Virginia	VA	-0.343	28	-0.269	23	-0.142	21
Massachusetts	MA	0.033	21	-0.270	24	-0.071	19
North Carolina	NC	-0.705	35	-0.310	25	-0.390	28
Delaware	DE	-0.907	43	-0.336	26	-0.317	26
Rhode Island	RI	-0.148	23	-0.337	27	-0.219	24
Connecticut	CT	-0.173	24	-0.391	28	-0.354	27
Mississippi	MS	-0.778	36	-0.393	29	-0.635	40
Maryland	MD	-0.284	27	-0.414	30	-0.158	22
Idaho	ID	-0.448	30	-0.422	31	-0.447	32
Oklahoma	OK	-0.460	31	-0.483	32	-0.452	33
New York	NY	-0.276	26	-0.494	33	-0.560	37
Louisiana	LA	-0.887	42	-0.519	34	-0.656	41
New Jersey	NJ	-0.419	29	-0.554	35	-0.670	42
Alabama	AL	-0.869	40	-0.567	36	-0.599	38
South Carolina	SC	-1.086	46	-0.573	37	-0.234	25
West Virginia	WV	-0.637	33	-0.574	38	-0.771	44
New Mexico	NM	-0.817	38	-0.654	39	-0.834	45

Texas	TX	-0.805	37	-0.712	40	-0.623	39
Florida	FL	-0.943	44	-0.728	41	-0.509	36
Arkansas	AR	-0.878	41	-0.811	42	-0.440	31
Kentucky	KY	-0.680	34	-0.952	43	-1.121	47
Georgia	GA	-1.393	48	-1.026	44	-0.486	34
Nevada	NV	-0.533	32	-1.031	45	-0.744	43
Tennessee	TN	-0.989	45	-1.088	46	-1.095	46
California	CA	-0.863	39	-1.142	47	-0.489	35
Utah	UT	-1.105	47	-1.459	48	-1.332	48
Arizona	AZ	-1.776	49	-1.787	49	-1.439	49

Note: This table shows the median value of social capital measure across the states based on the three data vintages used in this study. We rank the states based on the level of social capital in 2009.

Appendix C

Variable Definitions

INS_PROFIT	=	Daily average of insider trading profitability over twelve-month period following the transaction date, captured in alpha (α) in following Carhart (1997) four factor model; $$R_i - R_f = \alpha + \beta_1(R_{mkt} - R_f) + \beta_2 SMB + \beta_3 \\ + \beta_4 UMD + \varepsilon$$ where R_i is the daily stock return of firm i, R_f is the daily risk-free interest rate (T-bill rate), and R_{mkt} is the CRSP value-weighted market return. SMB, HML, and UMD are the size, book-to-market, and momentum factors, respectively. α ($-\alpha$) represents the potential gain (losses avoided) following insider purchase (sales).
SOCIAL_CAP	=	Measure of social capital at the county level, estimated using available data from 1997, 2005, 2009, and 2014. For years from 2003 to 2004, we use the values from 1997; for years from 2005 to 2008, we use the values from 2005; for years from 2009 to 2013, we use the values from 2009; and for years from 2014 to 2016, we use the values from 2014. Data obtained from the Northeast Regional Center for Rural Development (NERCRD), following the methodology of Rupasingha et al. (2006). See Appendix B for more details on how this measure is constructed.
RANKED_SOCIAL_CAP	=	Measure of social capital where we rank the measure of social capital by quintile and then rescale the measure such that the variable ranges from zero to one.
SOCIAL_CAP_ALT	=	An alternative measure of social capital, based on linear interpolation of the social capital data for the in-between years.
LNMV	=	Natural log of market capitalization (CSHO x PRCC_F) at the end of the prior fiscal year.
BTM	=	Book-to-market ratio at the end of the prior fiscal year, defined as book value of equity (CEQ) divided by market value of equity (CSHO x PRCC_F).
PRIOR_RET	=	Buy-and-hold size-adjusted returns over the one-year period ending one day before the first insider trading transaction during the fiscal year, set to zero for firm-years without any insider trading activity.
RND	=	An indicator variable that equals one if the firm reports nonzero research and development expenses (XRD) in the current fiscal year, and zero otherwise.
MAG_AR	=	The median of absolute market reaction to prior quarterly earnings announcements, where market reaction is measured as the cumulative size-adjusted return from two

		days before to the day of the earnings announcement (Huddart and Ke 2007); the median is measure over the 20-quarter period ending with the fourth quarter of the current fiscal year.
ANALYST	=	Number of analysts following a firm at fiscal year-end.
IOHOLD	=	Percentage of institutional ownership at fiscal year-end.
FSINFORM	=	Financial statement informativeness computed as the adjusted R^2 from a firm-specific time-series regression of price per share (PRCCQ) on book value per share (CEQQ/CSHOQ) and earnings per share (IBQ/CSHOQ) using quarterly data from Compustat for the 20-quarter period ending with the fourth quarter of the current fiscal year.
RET_VOL	=	Stock return volatility over the current fiscal year.
LNINCOME	=	Natural log of the personal income per capita in the county. Data obtained from the Bureau of Economic Analysis.
LNPOP	=	Natural log of the total population in the county. Data obtained from the Bureau of Economic Analysis.
EDUC	=	The mean proportion of the total population in the county over the age of 25 with a high school education, estimated using available data from 2014−2016. Data obtained from the American Community Survey.
LNMEDAGE	=	The median age of the population in the county, estimated using available annual data from 2005−2016. For years 2003−2004, we use the values from 2005. Data obtained from the American Community Survey.
RELIG_ADHERE	=	The proportion of the total population in the county who claims adherence to a religious organization, estimated using available data from 2000, and 2010. For years 2003−2009, we use the values from 2000; and for years 2011−2016, we use the values from 2010. Data obtained from the Association of Religion Data Archives (ARDA).
CSR	=	An indicator that equals one if the firm-year's CSR score is positive, and zero otherwise. The CSR score is computed as the total number of strengths minus the total number of concerns in all of MSCI's rating categories excluding human rights and corporate governance. Data available from 2003−2012.
CSR_MISSING_D	=	An indicator that equals one if the firm-year's CSR score is not available, and zero otherwise.
POST	=	An indicator that equals one for insider trades after the change of corporate headquarters, and zero otherwise.
SC_INC_RELOCATE	=	An indicator that equals one for firms that have moved corporate headquarters to a county with a higher level of social capital, and zero otherwise.

GINDEX	=	An indicator that equals one if G-Index Score of the firm is greater than the sample median, and zero otherwise. The G-Index is the number of shareholder rights-decreasing provisions in a firm from the data collected by the Investor Responsibility Research Center ("IRRC"). The index ranges from 0 to 24, with high (low) score indicating weak (strong) shareholder rights.
OPACITY	=	An indicator that equals one if the opacity index of the firm is greater than the sample median, and zero otherwise. The opacity index in the current fiscal year, following Anderson et al. (2009), encompasses four individual proxies for opacity: (1) trading volume (average daily number of shares traded scaled by the number of common shares outstanding at the beginning of fiscal year), (2) bid-ask spread (average daily bid-ask spread scaled by the stock price), (3) analyst following (the number of analysts issuing annual EPS forecasts during the fiscal year), and (4) analyst forecast errors (the absolute value of the difference between the median analyst forecast before the earnings announcement date and actual EPS, scaled by the stock price at the beginning of fiscal year). The opacity of a firm's information environment is presumed to be increasing in its bid-ask spread and analyst forecast errors, and decreasing in its trading volume and analyst following. This index is derived by ranking each of these proxies into deciles of opacity and allocating scores from zero (least opaque) to nine (most opaque). The opacity index for each firm is then obtained by summing the scores across these four proxies and then dividing by the maximum possible score of thirty-six such that the opacity index ranges from 0 to 1.
CEONETWORK	=	An indicator that equals one if CEO connectedness is greater than the sample median, and zero otherwise. Data on aggregate connections of the CEO are available from BoardEx from 2003 to 2016.
ORGAN	=	An indicator that equals one if the annual number of organ donors in the state is greater than the sample median, and zero otherwise. Data on state-level organ donation is available from the Organ Procurement and Transportation Network (OPTN) from 2003 to 2016.

TABLE 1

Descriptive Statistics

Panel A: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Lower Quartile	Median	Upper Quartile
INS_PROFIT: All trades	36,778	-0.006	0.128	-0.078	-0.007	0.062
INS_PROFIT: Purchases	4,608	0.048	0.184	-0.043	0.036	0.132
INS_PROFIT: Sales	32,170	-0.013	0.135	-0.081	-0.012	0.054
SOCIAL_CAP	36,778	-0.605	0.828	-1.182	-0.582	-0.067
LNMV	36,778	7.153	1.768	5.975	7.086	8.289
BTM	36,778	0.457	0.352	0.220	0.369	0.588
PRIOR_RET	36,778	0.155	0.428	-0.100	0.085	0.327
RND	36,778	0.483	0.500	0.000	0.000	1.000
MAG_AR	36,778	0.050	0.026	0.030	0.045	0.064
ANALYST	36,778	12.323	10.321	5.000	10.000	18.000
IOHOLD	36,778	0.609	0.338	0.374	0.712	0.890
FSINFORM	36,778	0.456	0.315	0.192	0.479	0.734
RET_VOL	36,778	0.025	0.011	0.017	0.022	0.031
LNINCOME	36,778	10.865	0.343	10.623	10.815	11.055
LNPOP	36,778	13.941	0.970	13.441	13.919	14.412
EDUC	36,778	0.879	0.043	0.865	0.879	0.911
LNMEDAGE	36,778	3.630	0.075	3.578	3.627	3.679

Panel B: Sample Distribution of the Number of Firms and Executives across Years

	Firms		Executives	
Year	N	Pct	N	Pct
2003	413	5.85%	911	6.74%
2004	480	6.80%	986	7.29%
2005	515	7.30%	1,035	7.65%
2006	533	7.55%	1,039	7.68%
2007	503	7.13%	884	6.54%
2008	455	6.45%	757	5.60%
2009	462	6.55%	808	5.98%
2010	503	7.13%	941	6.96%
2011	485	6.87%	954	7.06%
2012	540	7.65%	1,075	7.95%
2013	558	7.91%	994	7.35%
2014	539	7.64%	1,006	7.44%
2015	533	7.55%	1,039	7.68%
2016	538	7.62%	1,093	8.08%
Total	**7,057**	**100%**	**13,522**	**100%**
Number of Unique Firms/Executives	**1,722**		**6,530**	

Panel C: Univariate Analysis on Insider Trading Profit (*INS_PROFIT*)

	SOCIAL_CAP			
	HIGH (N=18,380)	**LOW (N=18,398)**	*Difference*	*P-value*
Mean	-0.009	-0.003	-0.006	<.0001
Median	-0.010	-0.004	-0.006	<.0001

Note: The sample period used for the study spans from 2003 to 2016. Panel A reports the descriptive statistics of the insider trades as well as variables used in the regression models of this study. Panel B presents the sample distribution by year. Panel C presents the mean and median tests of differences in insider trading profit (*INS_PROFIT*) between the high social capital group (above the sample median) and low social capital group (below the sample median). The definitions of the variables are provided in Appendix C. All the variables are winsorized at the 1 and 99 percentiles.

TABLE 2
Pearson and Spearman Correlation Table

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	INS_PROFIT		-0.02	-0.02	0.06	-0.05	-0.03	-0.05	-0.02	-0.03	0.02	0.05	-0.02	-0.01	-0.03	-0.02
2	SOCIAL_CAP	-0.02		0.00	0.03	0.01	-0.04	-0.09	-0.08	-0.05	0.04	-0.04	0.36	-0.52	0.63	0.40
3	LNMV	0.00	-0.01		-0.37	0.00	0.02	-0.12	0.76	0.31	0.16	-0.45	0.11	0.10	-0.05	-0.04
4	BTM	0.06	0.00	-0.33		-0.16	-0.31	-0.17	-0.28	-0.19	-0.11	0.10	-0.02	-0.09	-0.05	0.05
5	PRIOR_RET	-0.05	0.02	0.05	-0.17		0.05	0.16	0.00	0.00	0.01	0.14	-0.01	0.03	0.00	-0.02
6	RND	-0.04	-0.04	0.01	-0.35	0.05		0.35	0.12	0.10	-0.16	0.16	0.07	-0.01	0.19	0.09
7	MAG_AR	-0.05	-0.12	-0.11	-0.23	0.12	0.37		0.10	0.06	-0.17	0.42	0.06	0.07	0.05	0.00
8	ANALYST	-0.02	-0.07	0.77	-0.32	0.03	0.14	0.14		0.22	0.01	-0.17	0.11	0.09	-0.05	-0.06
9	IOHOLD	-0.02	-0.06	0.33	-0.18	0.02	0.10	0.07	0.32		0.03	-0.12	0.03	0.07	0.00	-0.04
10	FSINFORM	0.02	0.05	0.17	-0.10	0.03	-0.16	-0.17	0.01	0.04		-0.22	-0.04	0.02	-0.02	-0.02
11	RET_VOL	0.02	-0.08	-0.45	-0.03	0.06	0.22	0.51	-0.15	-0.08	-0.25		-0.04	0.01	0.01	-0.02
12	LNINCOME	-0.02	0.33	0.10	-0.12	0.02	0.12	0.09	0.15	0.09	-0.05	0.00		0.02	0.24	0.40
13	LNPOP	0.00	-0.54	0.10	-0.08	0.04	0.03	0.08	0.10	0.09	0.01	0.02	0.05		-0.59	-0.36
14	EDUC	-0.03	0.62	-0.06	-0.06	-0.01	0.16	0.06	-0.05	0.01	0.00	0.03	0.26	-0.55		0.54
15	LNMEDAGE	-0.03	0.46	-0.05	-0.01	-0.01	0.11	0.01	-0.04	-0.04	-0.03	0.01	0.45	-0.36	0.57	

Note: This table reports the Pearson (Spearman) correlation between the variables used in the regression analysis in the upper (lower) diagonal. The detailed definitions of the variables are provided in Appendix C. All correlations (with the exception of those shaded) are statistically significant at the 0.05 level or better (two-tailed).

TABLE 3
Level of Social Capital and Profitability of Insider Trades (H1)

	All	Purchases	Sales	All
	Dependent Variable = INS_PROFIT			
	(1)	**(2)**	**(3)**	**(4)**
SOCIAL_CAP	-0.027**	-0.091***	-0.023*	
	(-2.50)	(-3.26)	(-1.93)	
RANKED_SOCIAL_CAP				-0.060**
				(-2.42)
LNMV	0.066***	-0.084***	0.096***	0.066***
	(6.74)	(-3.35)	(9.27)	(6.69)
BTM	0.044**	0.009	0.021	0.044**
	(2.50)	(0.25)	(1.12)	(2.53)
PRIOR_RET	0.024***	-0.086***	0.045***	0.024***
	(2.59)	(-5.24)	(4.23)	(2.62)
RND	-0.011	0.077	-0.001	-0.011
	(-0.27)	(0.68)	(-0.02)	(-0.27)
MAG_AR	-0.150	-0.029	-0.020	-0.128
	(-0.66)	(-0.04)	(-0.09)	(-0.56)
ANALYST	0.002	-0.000	0.001	0.002
	(1.56)	(-0.04)	(0.96)	(1.56)
IOHOLD	0.006	-0.054	0.020	0.006
	(0.28)	(-1.06)	(0.87)	(0.27)
FSINFORM	0.009	-0.003	0.001	0.008
	(1.18)	(-0.09)	(0.12)	(1.09)
RET_VOL	0.980*	1.134	0.739	0.956*
	(1.95)	(0.77)	(1.28)	(1.91)
LNINCOME	-0.048	-0.100	-0.068	-0.047
	(-1.08)	(-0.81)	(-1.22)	(-1.01)
LNPOP	-0.010	-0.010	-0.007	-0.010
	(-1.02)	(-0.42)	(-0.74)	(-1.02)
EDUC	0.283	0.075	0.307	0.310
	(1.20)	(0.15)	(1.13)	(1.33)
LNMEDAGE	-0.072	-0.527	-0.044	-0.077
	(-0.50)	(-1.61)	(-0.27)	(-0.51)
CONSTANT	0.054	3.960***	-0.096	0.088
	(0.00)	(2.77)	(0.00)	(0.00)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	36,778	4,608	32,170	36,778
Adjusted R-squared	0.3718	0.5667	0.4368	0.3722

Note: This table reports the regression results of the association between the level of social capital in a county and insider trading profitability. Column (1) reports the regression results for all trades. Column (2) reports the regression results for only purchase transactions. Column (3) reports the regression results for only sale transactions. Column (4) reports the regression results using a ranked measure of social capital that ranges between zero and one (*RANKED_SOCIAL_*CAP). All variables are defined in Appendix C. Each model includes firm and year fixed effects to control for unobservable factors that vary across firms and time. The *t*-statistics reported in parentheses are based on standard errors clustered by firm and year to account for within-firm and within-year correlations in residuals

(Petersen 2009; Gow et al. 2010). ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level or better, respectively (two-tailed test).

TABLE 4
Additional Robustness Tests

	Dependent Variable = INS_PROFIT			
	(1)	**(2)**	**(3)**	**(4)**
SOCIAL_CAP_ALT	-0.023**			
	(-2.28)			
SOCIAL_CAP		-0.026**	-0.026**	-0.033**
		(-2.45)	(-2.52)	(-2.85)
RELIG_ADHERE		-0.054		
		(-0.93)		
CSR			0.005	
			(0.73)	
CSR_MISSING_D			-0.004	
			(-0.27)	
LNMV	0.066***	0.067***	0.066***	0.071***
	(6.73)	(6.70)	(6.58)	(6.27)
BTM	0.045**	0.045**	0.044**	0.037
	(2.55)	(2.55)	(2.53)	(1.73)
PRIOR_RET	0.024***	0.023**	0.024***	0.030**
	(2.59)	(2.55)	(2.64)	(3.01)
RND	-0.011	-0.012	-0.012	-0.002
	(-0.26)	(-0.29)	(-0.29)	(-0.04)
MAG_AR	-0.149	-0.158	-0.148	-0.126
	(-0.66)	(-0.71)	(-0.65)	(-0.55)
ANALYST	0.002	0.002	0.002	0.002
	(1.60)	(1.53)	(1.60)	(1.28)
IOHOLD	0.006	0.009	0.006	0.005
	(0.29)	(0.37)	(0.27)	(0.20)
FSINFORM	0.009	0.009	0.009	0.009
	(1.17)	(1.12)	(1.20)	(1.21)
RET_VOL	0.976*	0.995**	0.983*	1.241**
	(1.94)	(2.00)	(1.96)	(2.39)
LNINCOME	-0.050	-0.055	-0.048	-0.053
	(-1.07)	(-1.27)	(-1.08)	(-0.99)
LNPOP	-0.009	-0.007	-0.010	-0.020*
	(-0.90)	(-0.75)	(-0.99)	(-1.94)
EDUC	0.266	0.382	0.292	0.104
	(1.11)	(1.60)	(1.19)	(0.42)
LNMEDAGE	-0.072	-0.058	-0.075	-0.131
	(-0.50)	(-0.39)	(-0.52)	(-0.75)
CONSTANT	0.068	-0.028	0.053	0.636
	(0.11)	(-0.04)	(0.00)	(0.93)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Insider Fixed Effects	No	No	No	Yes
Observations	36,778	36,598	36,778	33,992
Adjusted R-squared	0.3713	0.3709	0.3720	0.4628

Note: These tables show the robustness of the association between the level of social capital and the trading profitability of executive-level officers in diverse settings. Column (1) reports the regression results when an alternative measure of social capital is employed. Column (2) and (3) present the association after controlling for the level of religious adherence in a county (*RELIG_ADHERE*) and the sample firms' level of corporate social responsibility (*CSR*) using the zero-order regression. Column (4) shows the regression results with additional insider fixed effect. All variables are defined in Appendix C. Each model includes firm and year fixed effects to control for unobservable factors that vary across firms and time. The *t*-statistics reported in parentheses are based on standard errors clustered by firm and year to account for within-firm and within-year correlations in residuals (Petersen 2009; Gow et al. 2010). ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level or better, respectively (two-tailed test).

TABLE 5
Change in Insider Trading Profitability after Headquarters Relocation

	Dependent Variable = INS_PROFIT	
	(1)	**(2)**
POST	0.082***	0.143***
	(4.94)	(3.12)
SC_INC_RELOCATE	-0.038	-0.306
	(-0.15)	(-1.33)
SC_INC_RELOCATE×POST	-0.065*	-0.133**
	(-1.82)	(-2.26)
LNMV	0.074**	0.016
	(2.37)	(0.81)
BTM	0.016	-0.043
	(0.29)	(-0.69)
PRIOR_RET	0.018	0.020
	(0.63)	(0.71)
RND	-0.069	0.038
	(-1.16)	(0.81)
MAG_AR	-0.189	0.639
	(-0.70)	(0.78)
ANALYST	-0.000	0.001
	(-0.08)	(0.39)
IOHOLD	-0.300*	-0.017
	(-1.72)	(-0.31)
FSINFORM	-0.073**	-0.059**
	(-2.03)	(-2.07)
RET_VOL	-0.819	-3.552**
	(-0.41)	(-1.99)
LNINCOME	-0.116	0.055
	(-1.05)	(1.48)
LNPOP	-0.068***	-0.034*
	(-3.48)	(-1.88)
EDUC	-1.035*	-0.495*
	(-1.89)	(-1.86)
LNMEDAGE	0.181	0.075
	(0.74)	(0.83)
CONSTANT	2.305*	0.399**
	(1.96)	(1.98)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	989	989
Adjusted R-squared	0.6077	0.5857

Note: These tables report the change in insider trading profitability after the relocation of company headquarters. Column (1) reports the main results and Column (2) reports the main results using entropy balancing on *SC_INC_RELOCATE* (Hainmueller 2012; McMullin and Schonberger 2020). All variables are defined in Appendix C. Each model includes firm and year fixed effects to control for unobservable factors that vary across firms and time. The *t*-statistics reported in parentheses are based on standard errors clustered by firm and year to account for within-firm and within-year correlations in residuals (Petersen 2009; Gow et al. 2010). ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level or better, respectively (two-tailed test).

TABLE 6
Cross-sectional Analyses (H2)

	Dependent Variable = INS_PROFIT	
	(1)	(2)
SOCIAL_CAP	0.034	-0.010
	(1.48)	(-0.94)
GINDEX	-0.020	
	(-0.95)	
SOCIAL_CAP× GINDEX	-0.064***	
	(-4.64)	
OPACITY		-0.017*
		(-1.93)
SOCIAL_CAP× OPACITY		-0.017**
		(-2.14)
LNMV	0.127***	0.065***
	(5.73)	(6.85)
BTM	0.073	0.029
	(1.38)	(1.64)
PRIOR_RET	0.053***	0.028***
	(2.76)	(2.88)
RND	0.032	-0.013
	(0.46)	(-0.28)
MAG_AR	1.725***	-0.059
	(3.20)	(-0.27)
ANALYST	-0.005***	0.002
	(-3.01)	(1.45)
IOHOLD	0.071	0.004
	(1.37)	(0.19)
FSINFORM	-0.007	0.012
	(-0.26)	(1.52)
RET_VOL	0.896	1.113**
	(1.27)	(2.02)
LNINCOME	0.053	-0.040
	(0.58)	(-0.91)
LNPOP	-0.149	-0.013
	(-1.53)	(-1.62)
EDUC	0.062	0.034
	(0.04)	(0.19)
LNMEDAGE	-1.027*	-0.088
	(-1.89)	(-0.57)
CONSTANT	4.172***	0.329
	(2.94)	(0.00)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	7,435	33,986
Adjusted R-squared	0.5497	0.3818

Note: These tables report cross-sectional analyses results. Column (1) shows how corporate governance (proxied by G-index) affects the association between the level of social capital and insider trading profitability. Column (2) shows how corporate information environment opacity affects the association between the level of social capital and insider trading profitability. All variables are defined in Appendix C. Each model includes firm and year fixed effects to control for unobservable factors that vary across firms and time. The *t*-statistics reported in parentheses are based on

standard errors clustered by firm and year to account for within-firm and within-year correlations in residuals (Petersen 2009; Gow et al. 2010). ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level or better, respectively (two-tailed test).

TABLE 7
Exploring Potential Mechanisms

| | Dependent Variable = INS_PROFIT | |
	(1)	(2)
SOCIAL_CAP	-0.013	-0.018
	(-1.15)	(-1.39)
CEONETWORK	-0.000	
	(-0.03)	
SOCIAL_CAP× CEONETWORK	-0.024**	
	(-2.12)	
ORGAN		-0.001
		(-0.12)
SOCIAL_CAP× ORGAN		-0.015*
		(-1.93)
LNMV	0.068***	0.066***
	(6.26)	(6.58)
BTM	0.041**	0.044**
	(2.48)	(2.50)
PRIOR_RET	0.022**	0.024***
	(2.40)	(2.62)
RND	-0.002	-0.013
	(-0.04)	(-0.35)
MAG_AR	-0.080	-0.156
	(-0.37)	(-0.71)
ANALYST	0.002	0.002
	(1.57)	(1.55)
IOHOLD	0.005	0.007
	(0.18)	(0.29)
FSINFORM	0.016**	0.009
	(2.05)	(1.20)
RET_VOL	0.760	0.997**
	(1.59)	(2.00)
LNINCOME	-0.046	-0.051
	(-0.95)	(-1.15)
LNPOP	-0.020	-0.009
	(-1.64)	(-0.91)
EDUC	0.124	0.257
	(0.39)	(1.09)
LNMEDAGE	-0.073	-0.070
	(-0.48)	(-0.49)
CONSTANT	0.331	0.223
	(0.00)	(0.32)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	34,006	36,709
Adjusted R-squared	0.3778	0.3727

Note: These tables report additional cross-sectional analyses exploring two potential mechanisms through which social capital reduces opportunistic insider trading. Column (1) shows how the density of the firm's social network based on CEO connectedness (*CEONETWORK*) affects the association between the level of social capital and insider trading profitability. Column (2) shows how the strength of civic norms in the region based on the annual number of organ donors in each state (*ORGAN*) affects the association between the level of social capital and insider trading

profitability. All the variables are defined in Appendix C. Each model includes firm and year fixed effects to control for unobservable factors that vary across firms and time. The *t*-statistics reported in parentheses are based on standard errors clustered by firm and year to account for within-firm and within-year correlations in residuals (Petersen 2009; Gow et al. 2010). ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level or better, respectively (two-tailed test).

TABLE 8
Profitability of Insider Trades over Restricted vs. Unrestricted Trading Window

| | *Dependent Variable = INS_PROFIT* | |
	(1)	**(2)**
SOCIAL_CAP	-0.011	-0.030***
	(-0.54)	(-2.90)
LNMV	0.074***	0.068***
	(6.25)	(6.75)
BTM	-0.016	0.058***
	(-0.54)	(3.50)
PRIOR_RET	0.029*	0.022**
	(1.87)	(2.54)
RND	0.153	-0.051***
	(1.18)	(-2.72)
MAG_AR	0.308	-0.242
	(0.84)	(-1.11)
ANALYST	0.001	0.002
	(1.01)	(1.56)
IOHOLD	0.030	-0.003
	(1.19)	(-0.12)
FSINFORM	0.019	0.009
	(1.35)	(1.01)
RET_VOL	1.983**	0.750
	(2.16)	(1.50)
LNINCOME	-0.109	-0.033
	(-1.29)	(-0.80)
LNPOP	0.001	-0.015
	(0.02)	(-1.39)
EDUC	0.394	0.181
	(0.74)	(0.76)
LNMEDAGE	-0.482*	0.017
	(-1.77)	(0.11)
CONSTANT	1.749*	-0.314
	(1.79)	(-0.44)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	10,441	26,337
Adjusted R-squared	0.4975	0.3767

Note: These tables report the regression results of the association between the level of social capital and profitability of insider trades that occurred in the trading window over which insider trades are generally restricted by corporate policy and unrestricted trading window. Column (1) shows the results of sample in the 'restricted' trading window, whereas column (2) shows the results of sample in the 'unrestricted' trading window (i.e., outside of 'restricted' trading window). Restricted trading window begins 46 days prior to the earnings announcement and ends one day after the earnings announcement. All variables are defined in Appendix C. Each model includes firm and year fixed effects to control for unobservable factors that vary across firms and time. The *t*-statistics reported in parentheses are based on standard errors clustered by firm and year to account for within-firm and within-year correlations in residuals (Petersen 2009; Gow et al. 2010). ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level or better, respectively (two-tailed test).