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Social capital and board gender diversity

Mansoor Afzali[1] | Hanna Silvola[1] | Siri Terjesen[2,3]

[1]Department of Accounting, Hanken School of Economics, Helsinki, Finland

[2]College of Business, Florida Atlantic University, Boca Raton, Florida, USA

[3]Strategy and Management, Norwegian School of Economics, Bergen, Norway

Correspondence
Mansoor Afzali, Department of Accounting, Hanken School of Economics, P.O. Box 479, FI-00101 Helsinki, Finland.
Email: mansoor.afzali@hanken.fi

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Abstract

Research question/issue: This study explores the relationship between the level of social capital in the location of a firm's headquarter and the presence of female board directors. We measure local social capital by civic norms (i.e., voter turnout and census participation) and density of social networks (i.e., community, professional, church, and sports). We hypothesize that greater levels of local social capital will increase the share of female directors on local firms' boards, including women attaining a critical mass presence as well as member and chair roles on the board's audit, compensation, and nomination committees.

Research findings/insights: Using 53,671 observations from U.S. public companies from 2000 to 2018, we find that firms headquartered in counties with higher levels of social capital have higher percentages of women directors. The results are robust to the inclusion of local female labor participation rate, religiosity, and other county-level demographics as well as instrumental variable and propensity score matching models. We also find that female directors in firms located in high social capital counties are more likely to achieve a critical mass; attain membership of audit, compensation, and/or nomination committees; and serve as chair of audit and nomination committees than female directors in firms located in low social capital counties. A robustness check with an international sample reveals similar results.

Theoretical/academic implications: We build on institutional theory to highlight that the informal institution of social capital, in the form of U.S. county-level civic norms and social networks, shapes gender composition of local firms' boards. We build institutional theory at two levels of the quest for "fit" to the environment: firms seeking "fit" by creating more leadership opportunities for women, and individuals pursuing "fit" by moving up in corporate careers. We outline theoretical mechanisms including underlying informal societal norms of greater trust, tolerance for gender equality, respect for civil liberties, cooperative and helpful behavior, transparency, external monitoring, and less discrimination and information asymmetry.

Practitioner/policy implications: Our findings offer insights to policymakers and practitioners interested in how local social capital shapes firm and individual actions. Our policy-related findings suggest that communities with greater civic norms are characterized by greater individual commitment to and trust in communities, equality, helpful behavior, and external monitoring, and less cynicism, and this context enables

women to reach corporations' highest echelons. To maximize career prospects, women can attain leadership and other skills through local societal associations and build and strengthen ties in counties with higher levels of social capital. Firms should actively support community associations and direct philanthropy towards building social fabric in local communities.

KEYWORDS
board gender diversity, civic norms, corporate governance, critical mass, institutional theory, social capital, social networks

1 | INTRODUCTION

Over the last few years, the debate concerning gender equality for boards has attracted considerable attention from researchers, policymakers, and practitioners (Nielsen & Huse, 2010). Despite women's remarkable progress in attaining higher education degrees and joining and moving up in labor markets, women face considerable barriers in advancing into upper management and boardrooms (Adams & Kirchmaier, 2015; Gabaldon et al., 2016). To address these barriers, policymakers introduced comply-or-explain protocols and gender quotas in most European countries, and most recently for the U.S. state of California and all NASDAQ-listed firms. A large literature explores potential individual, firm, industry, and country-level drivers of the presence of women directors on corporate boards (Terjesen et al., 2009).

Building on institutional theory, the country-level research highlights that greater levels of female board gender diversity are found in countries with more women in politics (Terjesen & Singh, 2008), lower tolerance for inequalities (Carrasco et al., 2015), and greater female labor participation (Adams & Kirchmaier, 2015).[1] An emerging literature investigates the potentially heterogeneous practices and activities within a country. In a seminal study, Thams et al. (2018) find that firms that have greater shares of women corporate directors are more likely to be headquartered in states with a history of more progressive policies that help protect women from workplace discrimination and offer greater latitude for individual reproductive freedom. This finding suggests the importance of local context, and the need to examine other local context-specific institutional structures that may shape firms' corporate governance structures.

The vast literature on institutional drivers of corporate governance has three core categories: informal constraints, formal rules, and enforcement, with most literature focusing on the latter two categories (Boytsun et al., 2011). A promising literature identifies the importance of informal constraints—that is, the informal institutions that shape behavior. An early cross-country study highlights that institutional settings lead to different corporate governance mechanisms (Lubatkin et al., 2005). One of the most notable informal mechanisms is social capital. Social capital refers to shared common beliefs (civic norms) and density of associational networks within a community (Woolcock, 2001). For example, comparing the stock market in Sweden to other countries, social norms complement formal investor protection mechanisms (Stafsudd, 2009). Boytsun et al. (2011)'s regional study within Ukraine shows that social norms and social cohesion lead to more open corporate governance in terms of greater transparency, external monitoring, and enhanced principal-agent bonding. The fast-growing literature documenting social capital influences on corporate decisions (Gao et al., 2021; Hasan et al., 2017; Hoi et al., 2018, 2019; Jha, 2019) has not yet explored the effect on board governance structures such as directors' gender composition.

Building on institutional theory, our study examines how within-country differences in the levels of social capital may shape the share of female directors on boards of corporations headquartered in these regions. Using a sample of 53,671 firm-year observations from 2000 to 2018, we show U.S. county-level social capital has a statistically significant positive influence on the proportion of female directors in corporate boardrooms. We find that firms with at least one female board director are approximately 1.5 times more likely to be headquartered in high social capital counties compared with low social capital counties. The findings are robust to the inclusion of several firm characteristics, county-level demographics, as well as state, industry, and year fixed effects. Our results also reveal that women on boards of firms headquartered in high social capital regions are more likely to achieve a critical mass of three or more female directors and to serve and chair important monitoring committees. We also find that higher social capital regions are characterized by less tokenism—that is the mainly symbolic appointment of women directors. We check the generalizability of these U.S. county-level studies with a second study of 23 OECD countries from 2000 to 2018. Proxying social capital as "trust in others," we find that firms located in countries with higher levels of social capital are more likely to have greater shares of female directors, and less likely to have a "token" presence of female directors.

Our study offers several contributions to the existing literature. First, we answer calls to explore how internal corporate governance structures such as board composition are affected by external corporate governance mechanisms (Aguilera et al., 2015) such as institutional context. Second, we respond to calls to investigate the role of informal institutions in shaping corporate governance (Boytsun et al., 2011; Lubatkin et al., 2005; Nicholson et al., 2011; Stafsudd, 2009) by focusing on social capital. In so doing, we extend institutional theorizing to a regional level (U.S. county). Third, we answer calls to extend the literature on enablers and barriers to women's entry into boards (Brammer et al., 2007; Terjesen &

Singh, 2008; e.g., Adams & Kirchmaier, 2015; Chizema et al., 2015; Carrasco et al., 2015) by identifying county-level social capital as an important determinant. Finally, our study looks into the role of women beyond board directorships, where representation can be symbolic. Our findings shed new light on how social norms and values influence women's roles on influential board committees.

2 | CONTEXT: COUNTY-LEVEL INSTITUTIONS

A growing literature documents the vast state-level differences in women's labor market participation, including leadership roles in large corporations. We extend this institutional context by examining the next most proximate level: county.[2] In the United States, the county is an administrative subdivision of a state with specific boundaries and some level of government authority. Each state's number and size of counties varies, typically based on geographic size; for example, Texas has 254 counties while Delaware has only three counties.

The county-level is a well-established context in health, sociology, political science, and economics research. For example, Putnam (2001) and Hasan et al. (2017) document considerable cross-sectional differences in the level of social capital across U.S. states and counties and provide evidence of variation over time. A related stream of political science inquiry confirms that within-country differences are vital in explaining the underrepresentation of women in politics across U.S. states. Building on recent accounting and finance studies of how county-level social capital affects corporate policies (Gao et al., 2021; Hasan et al., 2017; Hoi et al., 2018, 2019), we contend that the county-level is an important but neglected context to examine corporate governance. Firms draw from their local area populations for employees, including executives and directors. Knyazeva et al. (2013) report that about one-third of board directors come from the firm's local area.

3 | THEORETICAL BACKGROUND AND HYPOTHESES

3.1 | Institutional theory and local social capital

Institutional theory highlights how organizations' activities are driven by the need to "fit" their environment and how individuals' behaviors will be constrained by their environments (Meyer & Rowan, 1977; Scott, 2013). Institutions operate at multiple levels and include formal components such as laws and regulations, as well as informal components such as norms and values (Scott, 2013). As institutions are long-lasting and embedded and shape individual behaviors, institutional theory is especially salient for gender issues given the context's dependence on historical phenomenon (Grosvold et al., 2016).

We focus on the key informal institution of social capital which comprises two components: social networks and civic norms. Social networks capture the density of social ties within the population and provide a means of assessing societal cooperation (Guiso et al., 2011) and are measured by a given county's density and total number of non-profit organizations and all other associations. Civic norms are deeply rooted in a society, and shape individuals' behaviors. Generally, societies with higher levels of social capital tend to have higher levels of mutual trust and display greater contract enforceability through the power of the community (Portes, 1998).

As firms are more likely to hire from the cluster of individuals in a given locality, we expect that a firm's managerial style, corporate culture, and employee preferences should be harmonious with the local context (Hilary & Hui, 2009). Individuals hired by organizations presumably adhere to the same values and principles as their communities. Thus, managers, directors, and shareholders consider shared common norms inherited from their communities which they rely on when making decisions (Boytsun et al., 2011). The next section outlines the theoretical mechanisms whereby a local region's social capital shapes the presence of female directors in local firms through guiding firm and individual actions.

3.2 | Informal institutions of civic norms and social networks

Social capital captures a community's shared common beliefs and density of associational networks (Woolcock, 2001). According to Putnam (1993), social capital comprises "features of social organizations, such as networks, norms and trust that facilitate action and cooperation for mutual benefit," which is consistent with the OECD definition of "networks together with shared norms, values and understandings that facilitate co-operation within or among groups" (Scrivens & Smith, 2013).

We expect that a local region's social capital is a strong informal institutional presence that will shape the possibilities for women to advance to the highest echelon of local firms—the corporate board. Our line of institutional theorizing highlights two components of the informal institution of social capital: civic norms and social networks. Moreover, we develop two levels of theorizing: local firms' actions to fit the local environment (e.g., local firms appreciate the potential contributions of future female employees, and provide pathways for women employees to move up through management levels to the board), and local individuals' actions to fit the environment (e.g., local women pursuing corporate career prospects, and local corporate leaders being open to female directors).

A rich literature in political science and sociology highlights the importance of "civic norms" such as voting regularly in elections and completing census surveys. Civic norms are primarily secular and emphasize civic duty and cooperative behavior (Guiso et al., 2011; Knack, 1992). In the United States, both activities are voluntary but encouraged. Political scientists, economists, and sociologists have long highlighted that such activities require individual investments in time and resources that outweigh the individual benefits. As Coleman (1990, p. 289) notes, "a reflective voter must conclude, as he is going to the polling place, that whatever impels him there, it is not the

impact of his vote on the outcome." Similarly, an individual who returns a U.S. census survey provides data that may result in the community getting more resources due to a greater number of people reporting residence; however, this activity is unlikely to accrue any individual benefits. Olson (1965) attributes this collective action to individuals who perceive some private or selective incentives to contribute. Subsequent theorists describe these incentives are both "solidary" in terms of intangibles related to friendship, social pressure, or a sense of belonging and "purposive" in that they are grounded in overall philosophies about which actions are right or wrong, as well as moral or religious principles, political ideologies, and perceptions of fairness (Moe, 1980). Taken together, civic behaviors constitute an informal institution of a local community, and several theoretical mechanisms suggest that local areas with high levels of civic norms will be more likely to have greater shares of female directors in local firms.

First, individuals who fulfil their civic duties such as voting and filing Census forms want that their views to be counted and likely also respect other individuals who seek to be "counted." Communities with higher levels of civic duty will have greater turnout that includes both male and female voters. This virtuous cycle of community engagement suggests that male and female voters may also be more inclined to wish to have their say in other organizations, and potentially on corporate boards where they can truly direct strategy. Moreover, companies embedded in communities with higher civic norms are likely to seek the views of all potential stakeholder constituents, and a greater willingness to appoint leaders who represent various subpopulations, including both men and women.

Second, political science literature highlights that individuals who have greater trust and less cynicism about their societies are more likely to vote (Knack, 1992). Societies characterized by greater trust in others are more tolerant of gender and racial equality, and likely to support civil liberties for all (Putnam, 2001). Moreover, greater levels of equality and promotion of civil liberties are associated with higher shares of women in the highest government offices (i.e., parliament) according to a 65 society study (Inglehart et al., 2002). This suggests that talented women might also aspire to the highest levels of other organizations, including corporations. Indeed, a seminal cross-country study highlights how a nation's tolerance for equality is associated with greater shares of women corporate board directors (Carrasco et al., 2015). At the firm level, greater tolerance of gender equality may lead to greater consideration of women as directors. In regions with higher levels of civic norms, women may recognize greater support for equality and be more likely to pursue paths that lead to board directorships.

Third, higher levels of civic norms are associated with individuals who believe that people are trying to be helpful (Knack, 1992) and care about the directions that their communities are headed. This helping behavior may extend to individuals, including women, who seek to put their talents to the best use, including as directors, and also to firms that do not want to actively exclude any populations when seeking talent and will consider women as potential director candidates.

A fourth mechanism is that civic norms also increase oversight from external monitors (Wu, 2008) and are positively associated with quality of governance (Boytsun et al., 2011; Rost & Weibel, 2013). As women are more likely to serve as external directors (Terjesen et al., 2009), firms might be more likely to consider female directors. The same logic suggests that female managers might be more likely to believe that they have the skills and experience to offer boards, and actively seek these appointments.

A related literature spotlights the informal institution of local social networks, often proxied by the presence and density of nonprofit organizations and all other associations in a given county, including religious organizations, civic and social associations, business associations, political organizations, professional organizations, labor organizations, bowling centers, fitness and recreational sports centers, golf courses and country clubs, and sports teams and clubs.

First, the presence of associational networks provides women with opportunities to acquire the requisite human capital and social capital that can further their careers. These associations require considerable labor, usually volunteer, to develop and sustain their activities. As women directors are more likely than men to have a portfolio of career experience (Hillman et al., 2007) that might include nonprofit and other community experience, the presence of this informal institution is a particularly important training ground for future female directors. U.S. counties with greater levels of social capital have higher levels of female labor participation (Rupasingha et al., 2006). Moreover, firms embedded in high social capital environments may be more likely to consider female leaders. Male and women executives with greater levels of social capital are more likely to be appointed as directors, and firms value this board social capital as a critical resource (Kim & Cannella, 2008). As one illustration, churches offer a number of leadership positions for both men and women. Although prior research finds that traditional societies with strong religious norms have fewer women on boards (Chizema et al., 2015), we contend that churches, as well as civic and social, business, political, professional, and labor organizations, and also sports teams and clubs, provide the requisite opportunities for women to develop human capital and social capital that would help them serve more effectively as board directors. Moreover, these associations provide women with role models of other women who lead activities outside the home and thereby suggest the possibility of balancing family and other commitments.

Second, an emerging strand of institutional theorizing in corporate governance highlights how firms embedded in communities will practice more open firm-level corporate governance in terms of greater transparency, external monitoring, and closer bonding between management and shareholders (Boytsun et al., 2011). As women are more often appointed as external directors (Terjesen et al., 2009), greater social norms' facilitation of external monitoring may provide a role for more female directors. Moreover, this openness and transparency can reduce discrimination against women and increase the representation of women on boards.

Third, and consistent with theorizing above, regions with great levels of associational networks have higher levels of mutual trust and display greater contract enforceability through the power of the community (Portes, 1998). Sociologists argue that regions with dense associational networks more harshly punish deviation from norms,

which can then more effectively deter individuals' opportunistic behavior (Coleman, 1990; Spagnolo, 1999). In the long run, dense networks foster a norm-conducive environment that encourages cooperation among individuals and mitigates norm-deviant behavior (Fukuyama, 1995; Guiso et al., 2011; Portes, 1998; Putnam, 2001). Informal institutions characterized by shared norms originate and are sustained to mitigate negative externalities (Rost & Weibel, 2013). These contexts provide a more fertile environment for firms to recognize women's talents and for women to consider and pursue high-level corporate careers.

Fourth, dense social networks reduce information asymmetries to key external monitors and thus enable stronger oversight (Wu, 2008). Such cooperation and external oversight reduces transaction costs and contributes to financial and economic development (Fukuyama, 1995; Guiso et al., 2004; Knack & Keefer, 1997), government effectiveness (Putnam, 1993), innovation (Laursen et al., 2012), education attainment (Israel et al., 2009), better health (Helliwell, 2007; Kawachi et al., 1999), and reduced crime (Buonanno et al., 2009; Halpern, 2001). Firms located in high social capital counties are also less likely to commit fraud and avoid taxes (Hasan et al., 2017; Jha, 2019). Moreover, denser social networks provide increased access to resources and informational channels (Coleman, 1988), which help individuals with status attainment and recruitment (Burt, 2001; Lin, 1999; Marsden & Gorman, 2001). A recent region-level study finds that among firms that engage in misconduct, employees and directors from regions with high levels of social capital are more likely to engage in whistle-blowing, and there is also higher levels of forced chief executive turnover (Bereskin et al., 2020). We expect that this greater oversight will open paths for firms to consider female executives, and for women to see that their talents could be valued on boards. Based on these arguments, we expect the following:

> **H1.** Firms in high social capital regions have more gender-diverse boards than firms in low social capital regions.

> **H1a.** Firms in regions with greater civic norms have more gender-diverse boards than firms in regions with fewer civic norms.

> **H1b.** Firms in regions with denser social networks have more gender-diverse boards than firms in regions with limited social networks.

3.3 | Social capital and women directors: Tokenism and critical mass

Extending the above theorizing, we examine specific informal institutional mechanisms that may lead firms headquartered in high social capital counties to be less likely to display tokenism (e.g., a symbolic female director) and more likely to have a "critical mass" of three or more female directors. We begin by defining tokenism and critical mass in the literature.

Kanter's (1977) seminal study describes how organizations with comparatively few female leaders may perceive these women leaders as symbols or "tokens" instead of capable individuals. The European Institute for Gender Equality (2021) defines tokenism as "a policy or practice that is mainly symbolic, and involves attempting to fulfil one's obligations concerning established targets, such as voluntary or mandated gender quotas, with limited efforts or gestures, especially towards minority groups and women, in ways that will not change men-dominated power and/or organizational arrangements." Firms displaying tokenism are more likely to discriminate against women, leading to social isolation (Elstad & Ladegard, 2012) and reduced committee memberships (Bilimoria & Piderit, 1994). By contrast, "critical mass" refers to a non-token presence of women, typically at least three female directors (Torchia et al., 2011). In practice, a recent study in one of the world's highest social capital countries, Norway, reports that greater shares of female directors can be found in more innovative firms (Torchia et al., 2011), thus highlighting a business case for female directors. Women minorities often face disadvantages in male-dominated settings and may be perceived as an "out-group" that has limited influence (Eagly & Miller, 2016; Van Knippenberg & Schippers, 2007).

Institutional theory suggests several mechanisms for why regions with high social capital will be more likely to be populated with a critical mass of female directors and less likely to have boards with only a few token female directors. First, consistent with the above theorizing, especially with reference to Boytsun et al.'s (2011) findings on the link between social norms and open corporate governance, we expect that regions with higher levels of human capital will have more participation, openness, and equal opportunity in board governance. Firms with greater levels of board openness will be more likely to benefit from the talents of women directors (Kanadli et al., 2018) and perhaps more likely to appoint additional female directors. Moreover, female leaders will perceive greater opportunities to reach higher bord echelons and may then exercise individual agency to pursue career trajectories.

Second, a large body of research shows that female directors' individual power (Triana et al., 2014), network ties, board experience (Westphal & Milton, 2000), and interlinkages to other firms (Cook & Glass, 2015) lead to future appointments. In high social capital societies characterized by less gender discrimination, women's contributions may be recognized such that individuals and firms will see the potential for multiple female directors.

Third, given that high social capital regions are characterized by greater civic norms, there may be a greater appreciation for activism, including shareholder activism. An emerging literature describes how socially motivated shareholder activists have higher target benchmarks for the percentage of women on boards of targeted firms (Marquardt & Wiedman, 2016). Therefore, firms embedded in these societies may be more likely to respond positively to activism concerns, especially when they correspond to more equal opportunities for women directors. Aspiring women directors may also see that

there are opportunities for more women to serve, even if there are already women on the board. Taken together, we expect:

H2. Firms in high social capital regions are less likely to display tokenism than firms in low social capital regions.

H2a. Firms in high social capital regions are more likely to appoint a critical mass of female directors than firms in low social capital regions.

3.4 | Social capital and women directors: Tokenism and committee chairs

Extant board gender diversity research typically focuses on the presence of women directors, and often neglects women directors' actual roles, for example, as committee chairs and members. A corporate board's effectiveness is driven by board committee activities (Kesner, 1988) who manage the most important work around executive compensation, new director selection, and financial monitoring. A director's membership or leadership in key committees such as audit, compensation, and nomination signals directors' talents and high reputational effects (Klein, 1998). Compared with other directors, board committee members and chairs tend to provide greater counsel to the CEO (Klein, 1998) and lead key financial resource decisions (Arthaud-Day et al., 2006), including executive compensation (Conyon & Peck, 1998). Given the committees' strategic importance, women will not be elected to these committees just for firm image and must have the requisite skills (Kesner, 1988). Early studies focus on women's presence on these committees; more recent literature highlights that demographically dissimilar directors increasingly serve as board committee chairs (Zhu et al., 2014).

Consistent with the above arguments, we expect that regions characterized by high levels of social capital will have a greater presence of female committee members, including female committee chairs. That is, regions with more common beliefs, including the prioritization of civic norms and dense social networks, will be more open to higher-level contributions from women directors, and appoint women to board leadership roles as committee members and chairs. Moreover, women directors in these high social capital societies may be compelled to seek more strategic roles on boards.

H2b. Firms in high social capital regions have more gender diverse-board committees and more female committee chairs than firms in low social capital regions.

4 | DATA AND METHODS

4.1 | Sample selection

We test our two sets of hypotheses with panel data from publicly traded U.S. firms from Standard and Poor's Compustat and incorporate corporate governance data from BoardEx and stock return data from the Center for Research and Security Prices (CRSP). Our sample begins with the year 2000 when BoardEx initiated coverage. Since Compustat provides only the firm's current location, we manually collect firm location data for all U.S. firms in Compustat by obtaining firm records from the Securities and Exchange Commission's EDGAR database. We rely on several sources to capture U.S. county-level demographics including religiosity from the Association of Religion Data Archives (ARDA) and other county-level demographic data from the Bureau of Labor Economics and the U.S. Census Bureau. We winsorize all continuous variables at the 1st and 99th percentile. This process results in a final sample of 53,671 firm-year observations for the period 2000–2018.

4.2 | Dependent variables

Following previous research (e.g., Adams & Ferreira, 2009), our main dependent variable to test the first set of hypotheses is the percentage of female directors (number of female board directors divided by the total number of directors). Our robustness checks also use the number of female directors, following prior research (e.g., Carter et al., 2010). In untabulated results, we use an indicator variable, which equals 1 if the firm has at least one female director, and 0 otherwise. All three measures produce qualitatively similar results.

We test H2a with an indicator variable for "critical mass" which equals 1 if the firm has three or more female directors, and 0 otherwise. Finally, to test H2b, we obtain committee-level data from BoardEx and construct indicator variables for firms with female committee members and chairs. We follow prior research in looking at three of the most important board committees: audit, compensation, and nomination (Kesner, 1988; Klein, 1998). While other committees, such as the corporate governance committee or corporate social responsibility committee, might also play a significant role in monitoring and advising of managers, these committees are not formed by all firms, thereby leading to less reliable comparisons.

4.3 | Independent variable: County-level social capital

We follow Hasan et al. (2017) in measuring U.S. *county-level social capital* with Northeast Regional Center for Rural Development (NRCRD) data. The data include a construct of social capital using civic norms and density of social networks in U.S. counties. The measure includes membership in associations and participation in elections, non-profit activities, and surveys.[3] We obtain headquarter location information for firms from Compustat and merge the county-level social capital corresponding to the county of each firm's headquarters. We use the first principal component from a factor analysis based on voter turnouts in presidential elections, response rates in U.S. census surveys, total number of non-profit organizations, and total number of 10 types of social organizations for all U.S. counties. These 10 types of establishments are religious

organizations, civic and social associations, business associations, political organizations, professional organizations, labor organizations, bowling centers, fitness and recreational sports centers, golf courses and country clubs, and sports teams and clubs. We calculate the total number of these associations per 10,000 people at the county level, consistent with Rupasingha et al. (2006), Putnam (2001), and others. Since the data from NRCRD are provided for the years 1997, 2005, 2009, and 2014, we follow Hasan et al. (2017) by backfilling data for missing years using the estimate in the preceding year in which data is available. For instance, we fill missing data for social capital from 2006 to 2008 using the 2005 social capital estimate. As a robustness check, we employ linearly interpolated values of social capital for missing years. Section 5.6 describes how subsequent analyses separate county-level social capital into two components: civic norms and social networks.

4.4 | Firm- and board-level controls

To control for the effect of other determinants, we follow Hillman et al. (2007) and include various firm- and board-level predictors of gender diversity. At the firm level, we include *firm size*, *firm age*, *leverage ratio*, *diversification risk*, *R&D intensity*, *market-to-book ratio*, *sales growth*, *return on assets*, market-adjusted *abnormal return*, and standard deviation of market-adjusted return (*SD abnormal return*). Following common practice, we use the natural logarithmic transformation of firm size and firm age. At the board level, we control for *board size* and average number of directorships held by directors (*avg. directorships*).

4.5 | County-level controls

As county-level social capital may be correlated with other county-level factors, we control for seven county-level demographics: *religiosity*, *female labor participation rate*, *population growth*, *education*, median household income (denoted as *median income*), *income inequality*, and median household age (denoted as *median age*). All control variables are defined in Appendix A.

4.6 | Empirical models

Using the proportion of female directors on corporate boards and the county-level definition of social capital, we estimate the regression model as illustrated in Equation 1.

$$\begin{aligned}\text{Percentage female}_t = {} & \alpha + \beta_1\,\text{Social capital}_t + \beta_p\,\text{Firm controls}_t \\ & + \beta_q\,\text{Board controls}_t + \beta_r\,\text{County controls}_t \\ & + \text{Industry FE} + \text{Year FE} + \varepsilon_t \end{aligned} \quad (1)$$

where *Percentage female* is the proportion of female directors on the board as defined in Section 4.2. *Social capital* is the county-level social capital measure defined in Section 4.3. *Firm*, *board*, and *county controls* are a set of control variables illustrated in Sections 4.4 and 4.5. We control for industry and year fixed effects. Industries are defined as the Fama and French (1997) 48-industry groupings based on the four-digit standard industry classification (SIC) codes. We cluster the standard errors at the firm level.

The baseline model includes several known firm-specific determinants of boardroom gender diversity. However, endogeneity concerns due to time-variant omitted variables can potentially influence the model. For instance, random shocks to the local economy could influence both social capital and board diversity, such that Equation 1 results may simply reflect this endogenous matching. To address these concerns, we estimate Equation 1 using the two-stage least squares (2SLS) instrumental variable regression (IV) model.

We use two instruments as proxies for social capital. Putnam (2001) argues that distance from the Canadian border is a good predictor of social capital in the U.S. states, due to the assumption that slavery in the southern U.S. states systematically destroys social capital among Blacks and low-income Whites. Putnam (2001) also argues that ethnic homogeneity increases "social solidarity and social capital." More specifically, we use the logarithm of distance to the Canadian border (*distance to Canada*), and Herfindahl index of ethnicity calculated across five basic ethnic groups: Hispanic, non-Hispanic Black, non-Hispanic White, Asian, and Indian (denoted as *Ethnicity HHI*).

5 | RESULTS

5.1 | Descriptive statistics

Table 1 contains summary statistics providing means, standard deviations, 25th percentiles, medians, and 75th percentiles for all variables. There is considerable variation in social capital levels across U.S. counties. The mean female labor participation rate is 72.8%. The sample firms' mean size is $5.3 billion, with average firm age of 18.9 years. The mean (median) market-to-book ratio is 2.8 (1.9). On average, firms have 21.1% debt. The diversification risk indicates that our sample contains few multi-segmented firms. The mean return on assets is negatively skewed due to extreme negative outliers while the median is around 2.1%. The mean sales growth is 13.6%. The mean return is 5.2%.

The mean and median percentage of female directors on the board is around 10.0%. The median number of female directors is greater than 1, indicating that more than half of the sample firms have at least one female board director. The median board has eight directors. The mean (median) number of outside directorships held by directors is 1.7 (1.6). Approximately 38.3% of sample firms

TABLE 1 Summary statistics

	Observations	Mean	SD	P25	Median	P75
County characteristics						
Social capital	53,671	−0.518	0.804	−1.108	−0.501	−0.005
Female labor participation rate	53,671	0.728	0.044	0.699	0.731	0.759
Population growth	53,671	0.007	0.010	0.000	0.005	0.013
Median income ('000s of dollars)	53,671	61.459	16.633	48.460	57.501	72.471
Income inequality	53,671	9.904	11.931	3.272	6.083	11.128
Median household age	53,671	36.594	2.859	34.500	36.500	38.500
Religiosity	53,671	0.574	0.122	0.467	0.579	0.671
Education	53,671	0.359	0.106	0.276	0.347	0.436
Distance to Canada	53,671	506.356	352.724	228.889	314.913	777.340
Ethnicity HHI	53,671	0.472	0.156	0.329	0.437	0.571
Firm characteristics						
Firm size (billions of dollars)	53,671	5.334	24.078	0.141	0.588	2.350
Firm age (in years)	53,671	18.907	16.752	7.000	14.000	26.000
Market-to-book ratio	53,671	2.831	4.527	1.180	1.924	3.365
Leverage ratio	53,671	0.211	0.211	0.025	0.160	0.326
Diversification risk	53,671	0.169	0.313	0.000	0.000	0.217
R&D intensity	53,671	0.444	2.428	0.000	0.000	0.067
Performance variables						
Return on assets	53,671	−0.003	0.150	−0.018	0.022	0.071
Sales growth	53,671	0.136	0.437	−0.026	0.069	0.193
Abnormal returns	53,671	0.052	0.459	−0.184	0.032	0.260
SD abnormal return	53,671	0.116	0.076	0.063	0.095	0.143
Governance variables						
Percentage female	53,671	0.100	0.102	0.000	0.100	0.167
Number of female	53,671	0.938	1.011	0.000	1.000	2.000
Board size	53,671	8.599	2.572	7.000	8.000	10.000
Avg. directorships	53,671	1.686	0.616	1.200	1.571	2.000
Female committee memberships						
Audit member	53,671	0.383	0.486	0.000	0.000	1.000
Compensation member	53,671	0.350	0.477	0.000	0.000	1.000
Nomination member	53,671	0.305	0.460	0.000	0.000	1.000
Female committee chairs						
Audit chair	53,671	0.091	0.288	0.000	0.000	0.000
Compensation chair	53,671	0.089	0.284	0.000	0.000	0.000
Nomination chair	53,671	0.082	0.275	0.000	0.000	0.000
Critical mass						
Critical mass	53,671	0.077	0.266	0.000	0.000	0.000

Note: The sample covers the period between 2000 and 2018. All variables are defined in Appendix A. *Social capital* is the county-level measure of social capital based on Northeast Regional Center for Rural Development (NRCRD) data. Accounting, corporate governance, and security prices are obtained from Compustat, BoardEx, and the Center for Research in Security Prices (CRSP), respectively.

have at least one female director on the audit committee. By contrast, the proportion of firms with a female audit committee chair is as low as 9.1%. This indicates that while women are likely to serve on committees, only a fraction of those women chair the committees.

5.2 | Graphical analysis

We begin by graphically depicting the relationships between county-level social capital and female labor force participation, and female representation on corporate boards. Figure 1a indicates that

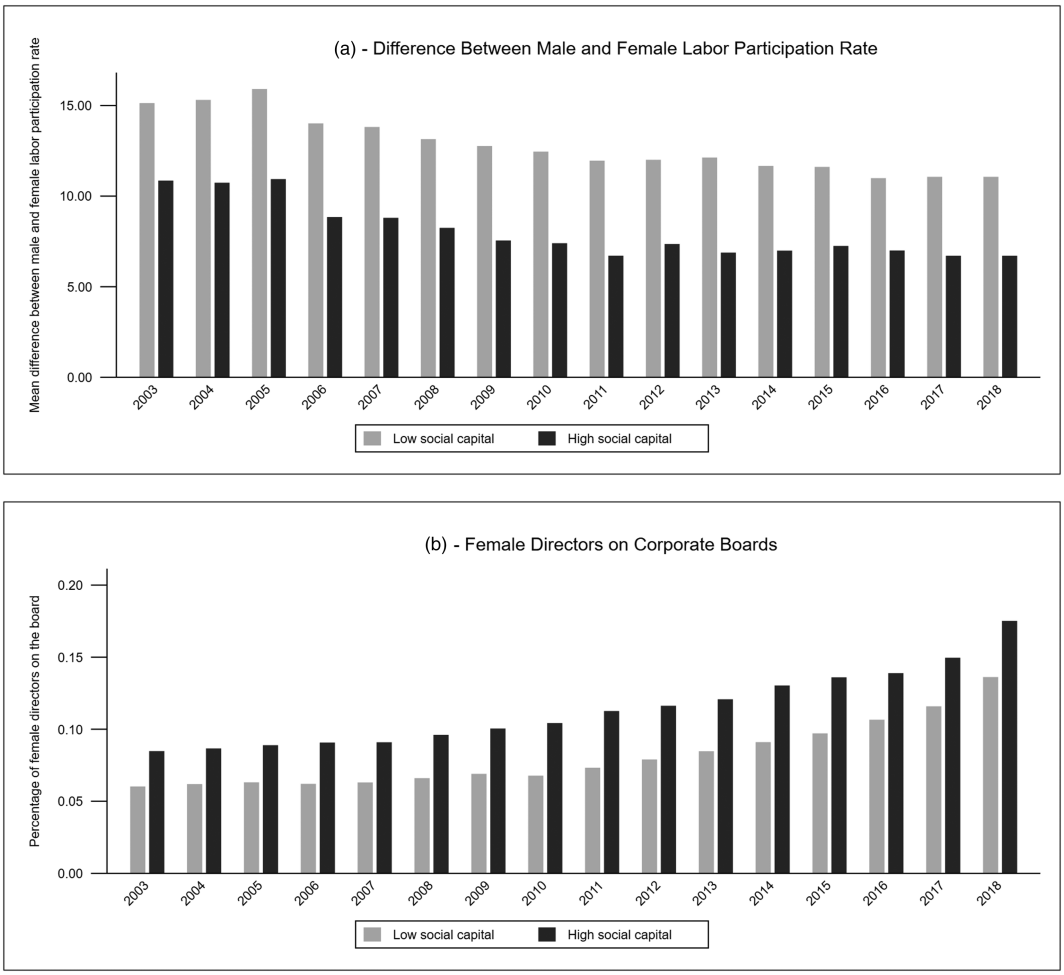

FIGURE 1 U.S. county-level gender differences in labor participation and director representation by low and high social capital. *Note*: Figure 1a provides the mean difference between male and female labor participation rates across counties belonging to low social capital (bottom quintile) and high social capital (top quintile) groups over 2003–2018. Figure 1b reports the fraction of firms in the baseline sample with at least one female board member. On average, the sample includes 3063 unique firms

throughout the sample period, regions with higher levels of civic norms and social networks also have more women in the workforce, consistent with Rupasingha et al. (2006). Moreover, the difference between male and female labor participation rates lowers over time; however, the gap between high and low social capital counties is almost constant. Figure 1b depicts high and low social capital counties and the presence of firms with at least one female director on the board. As shown, the percentage of firms with at least one female director is consistently higher in firms headquartered in high social capital counties. This graphical evidence is consistent with hypothesis one. The next sections explore the robustness of these results.

5.3 | Baseline results

In untabulated results, we divide our sample based on social capital levels into two groups: top and bottom quintile values in a given year. We then conduct univariate analysis that reveals consistent results with our hypotheses. For instance, we find that firms headquartered in high social capital regions have greater shares of female directors. To control for several factors that can potentially drive the univariate analysis, we estimate Equation 1 cross-sectionally with 53,671 firm-year observations for the period 2000–2018. These results are reported in Table 2. The main coefficient of interest in the baseline model, *social capital*, is positive and statistically significant in all specifications ($\beta = 0.007^{***}$, t statistic $= 3.33$). To access the economic significance of the effect, in untabulated results, we estimate a logit model with the dependent variable equal to 1 if the firm has at least one female director and zero otherwise. The odds ratio obtained from this specification shows that that, ceteris paribus, firms headquartered in high social capital counties are 1.5 times more likely to have a female board director than firms located in low social capital counties. Table 2 column 2 also reveals that estimating a model with state fixed effects does not alter our inferences. Overall, these findings are consistent with the first Hypothesis 1: firms located in high social capital regions have more gender-diverse boards.

Among other control variables, the percentage of females in the labor force is positive and statistically significant in all specifications.

TABLE 2 Social capital and proportion of female directors on the board: Main tests

Dependent variable:	Percentage female	Percentage female	Social capital	Percentage female	Percentage female
Model:	Pooled OLS (1)	Full sample with state FE (2)	IV first stage (3)	IV second stage (4)	Propensity score matching (5)
Social capital	0.007*** (3.33)	0.005** (2.25)		0.025*** (3.62)	0.017*** (2.77)
Distance to Canada			−0.066*** (−7.67)		
Ethnicity HHI			1.173*** (15.08)		
Firm size	0.009*** (12.60)	0.009*** (12.62)	0.007 (1.61)	0.009*** (12.51)	0.010*** (4.97)
Firm age	0.004*** (4.17)	0.004*** (4.20)	0.008 (1.52)	0.004*** (3.95)	0.004 (1.28)
Diversification risk	−0.000 (−0.04)	0.000 (0.08)	0.039* (1.68)	−0.001 (−0.29)	0.006 (0.66)
Leverage ratio	−0.003 (−0.68)	−0.001 (−0.18)	−0.020 (−0.60)	−0.003 (−0.56)	−0.031** (−2.18)
R&D intensity	−0.000 (−0.18)	−0.000 (−0.22)	0.000 (0.30)	−0.000 (−0.21)	−0.000 (−0.37)
Market-to-book ratio	0.000 (0.32)	0.000 (0.25)	0.001 (1.56)	0.000 (0.22)	−0.000 (−0.95)
Sales growth	−0.010*** (−8.87)	−0.010*** (−8.87)	0.008 (1.56)	−0.010*** (−8.89)	−0.011*** (−2.58)
Return on assets	0.004 (0.64)	0.006 (1.00)	−0.132*** (−4.26)	0.006 (0.94)	0.029 (1.43)
Abnormal return	−0.004*** (−3.91)	−0.004*** (−4.04)	0.001 (0.29)	−0.004*** (−3.98)	−0.003 (−0.67)
SD abnormal return	0.015 (1.35)	0.016 (1.47)	−0.113** (−2.11)	0.018* (1.66)	0.006 (0.18)
Board size	0.053*** (12.05)	0.054*** (12.05)	0.014 (0.54)	0.053*** (11.83)	0.029** (2.53)
Avg. directorships	0.012*** (6.07)	0.012*** (6.05)	−0.004 (−0.34)	0.013*** (6.23)	0.018*** (3.46)
Female labor participation rate	0.176*** (4.91)	0.123*** (3.02)	6.029*** (18.43)	0.039 (0.64)	0.104 (1.30)
Population growth	−0.140 (−1.40)	0.028 (0.29)	−11.216*** (−17.67)	0.045 (0.37)	−0.096 (−0.36)
Median income	0.012 (1.60)	−0.013 (−1.41)	−1.514*** (−41.41)	0.041*** (3.15)	−0.019 (−1.04)
Income inequality	0.000 (1.43)	−0.000 (−0.44)	−0.012*** (−24.57)	0.000*** (2.91)	−0.001 (−1.28)
County age	−0.000 (−0.39)	−0.000 (−0.01)	0.024*** (6.93)	−0.001* (−1.95)	−0.001 (−0.86)
Religiosity	−0.023*** (−2.67)	−0.017 (−1.34)	0.298*** (5.43)	−0.034*** (−3.61)	−0.030 (−1.26)
Education	−0.008 (−0.40)	0.025 (1.22)	4.770*** (41.06)	−0.084** (−2.44)	0.065 (1.22)
Industry and year fixed effects	Yes	Yes	Yes	Yes	Yes
State fixed effects	No	Yes	No	No	No
Adjusted R^2	0.242	0.249	0.647	0.235	0.295
Kleibergen-Paap *F* statistic			273.711		
Hansen *J* statistic				2.353	
p value				0.125	
Number of observations	53,671	53,671	53,671	53,671	3964

Note: This table contains results of regressions testing the effects of county-level social capital on the proportion of female board directors. *Social capital* is the county-level measure of social capital based on Northeast Regional Center for Rural Development (NRCRD) data. *Percentage female* is the fraction of female directors on the board, calculated as the number of female directors divided by total board size. In column (5), *social capital* equals one if the firm belongs to the top quintile of social capital in a given year and zero if bottom quintile. Appendix A defines all variables. Industry and year fixed effects are included, but the results are omitted. The *t* statistics based on firm cluster robust standard errors are in parentheses.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

This result is consistent with Adams and Kirchmaier's (2015) cross-country analyses. Firm size, age, board size, and average outside directorships all have a positive and statistically significant coefficient, consistent with Hillman et al. (2007) and Srinidhi et al. (2011). Performance indicators such as stock return and sales growth persistently remain negative and statistically significant. This finding may be due to reverse causality as Adams and Ferreira (2009) report a negative effect of the presence of female directors on firm performance. Our findings add to the mixed evidence on the effect of female directors on firm performance. Among county-level variables, religion is negatively correlated with board gender diversity, consistent with Chizema et al.'s (2015) cross-country evidence.

5.4 | Instrumental variable regression

Table 2 columns 3 and 4 report results for the instrumental variable regression discussed in Section 3.6. The first stage regression shows that the coefficient for *distance to Canada* is negative and the coefficient for *ethnic homogeneity* measure is positive. Both instruments are statistically significant. Moreover, the Kleibergen-Paap *F* statistic is significantly higher than the critical cutoff point stated in Stock and Yogo (2005), which indicates that the instruments are not weak. The second-stage results are consistent with our baseline findings. The coefficient for *social capital* is positive and statistically significant. We perform tests of overidentifying restrictions through Hansen's *J* statistic. The *p* value for the *J* statistic is above the conventional levels of significance. Overall, the instrumental variable regression shows that social capital surrounding the corporate headquarter positively influences corporate behavior towards the inclusion of women in the boardroom.

5.5 | Propensity-score matching

To mitigate potential endogeneity concerns, we use propensity-score matching technique (see Caliendo & Kopeinig, 2008). We begin by forming quintiles of *social capital* each year. We then classify firm-years in the top quintile as treatment and firm-years in the bottom quintile as control. This procedure yields 11,811 firm-years for control (low social capital) and 10,602 firm-years for treatment (high social capital) during 2000–2018. We generate propensity scores by estimating a probit regression model using the indicator variable taking the value one if the firm-year belongs to a high social capital and zero for a low social capital. The independent variables include all variables from the baseline regression except the industry, state, and year dummies. We then match, without replacing, each treatment firm-year with a unique control in that same year using the closest propensity score based on a 0.05 caliper.[4] This leads to 1982 matched pairs of treatment-control firms.

Untabulated univariate analysis shows that the matched pairs have no significant differences for all other variables except social capital. Using 3964 firm-year observations, we estimate the baseline regression with a matched sample of firms. Instead of using *social capital*, we use the indicator variable equal to 1 if the firm-year belongs to high social capital county and zero if the firm-year belongs to low social capital county. The result for this specification is presented in Table 2 column 5. Consistent with the baseline findings, the coefficient on *social capital* is positive and statistically significant at the one-percent level. This shows that while firms have no significant differences in terms of all other variables, firms located in high social capital counties have higher proportions of female directors than firms located in low social capital counties.

5.6 | Civic norms and social networks

Social capital has two main components: civic norms and social network density. We follow Hasan et al. (2017) and divide the main social capital variable into two separate components. Our first principal component is *civic norms* from a factor analysis based on voter turnout in presidential elections and response rate to the Census. Density of *social networks* is the factor analysis' first principal component and is measured with each county's total number of non-profit organizations and total number of all other associations.

Table 3 results indicate that individually, only *civic norms* help explain the higher proportion of female directors in firms located in high social capital regions. The coefficient for *social networks* is positive but statistically insignificant. However, when we add both components to the same model, the coefficient on *social networks* also turns statistically significant. This indicates that while *social networks* may not explain the variation in the proportion of female directors on its own, its confluence effect with *civic norms* can significantly contribute to having more gender-diverse boards. However, we acknowledge that the main effect may only be explained by civic norms and therefore conclude that we find support for *H1a* on civic norms, but not *H1b* on social network density.

5.7 | Social capital and tokenism

Hypothesis 2 builds on the expected positive relationships between firms headquartered in high social capital counties and boardroom openness and participation. To test this hypothesis, we estimate the likelihood a firm will have a critical mass (i.e., three or more) of female directors and the probability of women attaining board committee roles using indicator variables as described in Section 3.2.

Table 4 column 1 results show that firms headquartered in high social capital counties are more likely to have a critical mass of female directors compared with firms located in low social capital counties. This is direct evidence for the critical mass theory and supports the notion of openness and participation in boards (Boytsun et al., 2011). Columns 2, 3, and 4 reveal that there is a greater likelihood of female membership in audit, compensation, and nomination with increasing levels of social capital levels. The coefficient is positive and statistically significant for all three committees. Columns 5, 6, and 7 demonstrate that female directors in firms headquartered in high social capital regions are also more likely to chair audit and nomination committees. The coefficient for the compensation committee chair is insignificant, indicating no statistical difference in the likelihood of female directors serving as chairs of compensation committees in firms located in high and low social capital counties. Overall, the results strongly support Hypothesis 2b: social capital reduces tokenism, which leads to more opportunities for women on the board.

TABLE 3 Social capital and proportion of female directors on the board: Civic norms and social networks

	Dependent variable: *Percentage female*		
	(1)	(2)	(3)
Civic norms	0.004*** (2.96)		0.005*** (3.45)
Social networks		0.004 (1.57)	0.005** (2.16)
Firm size	0.009*** (12.63)	0.009*** (12.58)	0.009*** (12.60)
Firm age	0.004*** (4.26)	0.004*** (4.21)	0.004*** (4.21)
Diversification risk	0.000 (0.07)	−0.000 (−0.00)	−0.000 (−0.00)
Leverage ratio	−0.003 (−0.65)	−0.004 (−0.75)	−0.003 (−0.66)
R&D intensity	−0.000 (−0.18)	−0.000 (−0.17)	−0.000 (−0.19)
Market-to-book ratio	0.000 (0.29)	0.000 (0.35)	0.000 (0.25)
Sales growth	−0.010*** (−8.86)	−0.010*** (−8.85)	−0.010*** (−8.87)
Return on assets	0.003 (0.55)	0.004 (0.58)	0.004 (0.63)
Abnormal return	−0.004*** (−3.93)	−0.004*** (−3.87)	−0.004*** (−3.93)
SD abnormal return	0.013 (1.21)	0.014 (1.29)	0.014 (1.31)
Board size	0.053*** (12.09)	0.053*** (12.04)	0.053*** (12.04)
Avg. directorships	0.012*** (6.02)	0.012*** (6.01)	0.012*** (6.06)
Female labor participation rate	0.184*** (5.20)	0.220*** (6.43)	0.166*** (4.64)
Population growth	−0.213** (−2.17)	−0.165* (−1.65)	−0.151 (−1.50)
Median income	−0.004 (−0.61)	0.008 (1.03)	0.006 (0.74)
Income inequality	0.000 (0.79)	0.000 (0.81)	0.000 (1.34)
County age	−0.000 (−0.04)	0.000 (0.21)	−0.000 (−0.40)
Religiosity	−0.019** (−2.23)	−0.022** (−2.49)	−0.023*** (−2.61)
Education	0.031* (1.73)	0.000 (0.02)	0.004 (0.17)
Industry and year fixed effects	Yes	Yes	Yes
Adjusted R^2	0.242	0.241	0.242
Number of observations	53,671	53,671	53,671

Note: This table contains results of regressions testing the effects of county-level two components of social capital on the proportion of female directors on the board. *Civic norms* is the first principal component from a factor analysis based on electoral turnout and Census response rate to capture the county's civic norms. *Social networks* is the first principal component from a factor analysis based on the county's total number of non-profit organizations and the total number of all other associations. *Percentage female* is the fraction of female directors on the board, calculated as the number of female directors divided by total board size. Appendix A defines all variables. County-level demographics from Table 2 are included, but the results are omitted. The *t* statistics based on firm cluster robust standard errors are shown in parentheses.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

6 | ADDITIONAL CROSS-COUNTRY ANALYSES

Although our main focus is to explore how within-country differences in the level of social capital explain board gender diversity, we develop a cross-country robustness check with a sample of OECD countries. We replicate the research design in Equation 1 and calculate country-level control variables including social capital. We obtain corporate governance variables from BoardEx and accounting variables from Compustat North American and Compustat Global. All country-level, control variables are obtained from OECD's data portal. To define social capital at the country-level, we follow Putnam et al. (1994), Knack and Keefer (1997), and Kanagaretnam et al. (2018) in using a combination of European Values Survey (EVS) and World Values Survey (WVS) data. While the two surveys are conducted separately, their methodology is identical (Sarracino & Mikucka, 2017). One survey question captures respondents' level of "trust in others" as whether most people can be trusted. We aggregate the individual responses in each country and calculate the average value of trust in others. The final sample after merging firm-level data with country-specific data comprises 94,742 firm-year observations from 23 countries for the period 2000–2018.

TABLE 4 Social capital and the probability of critical mass and female committee roles

Dependent variable:	Critical mass (1)	Audit member (2)	Compens. member (3)	Nomination member (4)	Audit chair (5)	Compens. chair (6)	Nomination chair (7)
Social capital	0.085** (2.15)	0.131*** (4.78)	0.067** (2.56)	0.077*** (2.92)	0.069* (1.81)	0.023 (0.76)	0.163*** (5.23)
Firm size	0.073*** (4.11)	0.117*** (10.99)	0.084*** (7.49)	0.078*** (6.97)	0.055*** (3.85)	0.010 (0.75)	0.050*** (3.53)
Firm age	0.014 (0.59)	0.051*** (3.65)	0.048*** (3.27)	0.022 (1.48)	0.019 (0.96)	0.010 (0.52)	−0.031* (−1.68)
Diversification risk	0.003 (0.04)	0.029 (0.57)	−0.016 (−0.32)	0.064 (1.21)	0.033 (0.54)	0.041 (0.62)	0.041 (0.65)
Leverage ratio	−0.231* (−1.83)	0.005 (0.07)	−0.020 (−0.29)	0.037 (0.54)	0.004 (0.05)	0.027 (0.31)	−0.003 (−0.03)
R&D intensity	0.010 (0.95)	0.001 (0.13)	−0.000 (−0.03)	0.007 (1.40)	0.003 (0.55)	−0.006 (−0.89)	0.002 (0.25)
Market-to-book ratio	0.002 (0.45)	0.002 (0.94)	−0.002 (−1.00)	−0.004** (−1.97)	0.001 (0.50)	−0.001 (−0.28)	−0.002 (−0.82)
Sales growth	−0.131*** (−3.10)	−0.093*** (−5.21)	−0.109*** (−6.13)	−0.101*** (−5.80)	−0.016 (−0.71)	−0.073*** (−3.10)	−0.076*** (−3.20)
Return on assets	0.362* (1.94)	−0.135 (−1.44)	−0.002 (−0.02)	−0.132 (−1.36)	−0.158 (−1.23)	0.059 (0.47)	0.009 (0.07)
Abnormal return	−0.059** (−2.05)	−0.045*** (−3.11)	−0.035** (−2.34)	−0.009 (−0.62)	−0.011 (−0.55)	0.002 (0.11)	−0.043** (−2.01)
SD abnormal return	0.470 (1.43)	−0.000 (−0.00)	−0.102 (−0.62)	−0.202 (−1.20)	0.031 (0.14)	0.044 (0.21)	−0.104 (−0.46)
Board size	2.318*** (20.42)	0.753*** (12.01)	0.663*** (10.57)	0.650*** (10.29)	0.328*** (3.97)	0.375*** (4.89)	0.285*** (3.70)
Avg. directorships	0.192*** (4.61)	0.180*** (6.50)	0.130*** (4.77)	0.102*** (3.66)	0.046 (1.37)	0.111*** (3.13)	0.066** (1.98)
Population growth	−3.206 (−1.30)	−3.575** (−2.29)	−0.365 (−0.24)	0.400 (0.25)	−2.375 (−1.21)	2.272 (1.16)	1.309 (0.62)
Median income	0.166 (1.03)	0.104 (0.99)	0.152 (1.44)	0.200* (1.88)	0.039 (0.28)	0.104 (0.81)	0.300** (2.30)
Income inequality	0.004 (1.38)	0.000 (0.17)	−0.001 (−0.56)	0.000 (0.04)	−0.001 (−0.43)	−0.004** (−2.16)	0.006*** (2.92)
County age	−0.001 (−0.16)	−0.004 (−0.54)	0.008 (1.18)	0.001 (0.16)	−0.007 (−0.72)	−0.004 (−0.48)	0.002 (0.22)
Religiosity	−0.300 (−1.55)	−0.207 (−1.63)	−0.249* (−1.94)	−0.103 (−0.78)	−0.166 (−1.02)	−0.248 (−1.54)	−0.103 (−0.63)
Education	0.418 (1.03)	−0.084 (−0.31)	−0.134 (−0.49)	−0.384 (−1.44)	0.248 (0.72)	0.050 (0.16)	−0.743** (−2.28)
Industry and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.306	0.139	0.102	0.099	0.059	0.057	0.066
Number of observations	53,562	53,671	53,671	53,671	53,671	53,671	53,671

Note: This table contains results of probit regressions testing the effects of county-level social capital on the probability of achieving a critical mass and the likelihood of obtaining committee roles. *Social capital* is the county-level measure of social capital based on Northeast Regional Center for Rural Development (NRCRD) data. Appendix A defines all variables. The *t* statistics based on firm cluster robust standard errors are shown in parentheses.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

Table 5 results show that the level of social capital, proxied by trust in others is a strong determinant of board gender diversity. The coefficient in column (1) is positive and statistically significant. Since firms from the United States form a major part of the sample, we exclude them in column 2 and re-estimate the regression. The results continue to remain positive and statistically significant. Our findings are consistent with Grosvold and Brammer (2011) who show that several institutional factors affect board gender diversity. Column 3 estimates a model with country fixed effects to eliminate the effects of any time-invariant institutional factors, such as the country's legal origin. The coefficient on social capital declines; however, the results continue to be statistically significant. Taken together, regardless of a country's legal origin or other time-invariant institutional factor, increments in the level of social capital at the country-level are associated with more female directors on corporate boards. These findings are consistent with the previous county-level results from the U.S. sample and with Hypothesis 1.

TABLE 5 Social capital and proportion of female directors on the board: Additional cross-country evidence

Dependent variable	Percentage female Full sample (1)	Percentage female Excluding U.S. (2)	Percentage female Country-fixed effects (3)	Number of female Tobit (4)
Social capital	0.072*** (5.09)	0.115*** (5.76)	0.058*** (8.64)	0.660*** (6.62)
Firm size	0.008*** (13.88)	0.006*** (6.92)	0.009*** (15.12)	0.141*** (13.79)
Firm age	0.006*** (4.42)	0.003 (1.10)	0.006*** (4.11)	0.097*** (4.47)
Leverage ratio	−0.000 (−0.08)	0.004 (0.46)	−0.004 (−0.75)	−0.075 (−1.02)
R&D intensity	0.000 (0.91)	0.001 (1.42)	0.000 (0.51)	0.004 (0.55)
Market-to-book ratio	−0.000*** (−3.79)	−0.000*** (−3.40)	−0.000*** (−4.94)	−0.004*** (−5.10)
Sales growth	−0.006*** (−4.25)	−0.003** (−2.43)	−0.006*** (−3.96)	−0.113*** (−3.46)
Return on assets	0.009** (2.04)	0.016** (2.25)	0.008* (1.69)	0.089 (1.07)
Abnormal return	−0.003*** (−2.74)	−0.003* (−1.87)	−0.003*** (−2.92)	−0.053*** (−3.81)
SD abnormal return	−0.005 (−0.36)	−0.023 (−1.36)	−0.005 (−0.32)	0.009 (0.04)
Board size	0.033*** (9.07)	0.012* (1.94)	0.033*** (10.01)	1.931*** (41.08)
Avg. directorships	0.010*** (5.33)	0.003 (1.16)	0.008*** (4.53)	0.110*** (4.10)
Female labor participation rate	0.002** (2.45)	−0.002** (−2.38)	0.007*** (8.93)	0.140*** (9.42)
Population growth	−2.948*** (−8.27)	−1.849*** (−3.78)	−0.246 (−0.70)	−9.361 (−1.52)
GDP per capita	0.048*** (2.74)	0.020 (0.70)	0.110*** (3.09)	0.562 (1.18)
Income inequality	−0.707*** (−11.28)	−0.645*** (−8.98)	−0.913*** (−6.63)	−11.531*** (−4.66)
Proportion young	0.024*** (21.95)	0.017*** (12.48)	0.032*** (5.32)	0.365*** (3.63)
Religiosity	−0.031** (−2.32)	−0.258*** (−13.69)	0.171*** (4.97)	2.781*** (4.92)
Education	−0.003*** (−8.34)	−0.006*** (−15.75)	−0.005*** (−7.23)	−0.063*** (−5.22)
Country fixed effects	No	No	Yes	Yes
Industry and year fixed effects	Yes	Yes	Yes	Yes
Adjusted/Pseudo R^2	0.241	0.304	0.287	0.176
Number of observations	94,742	36,663	94,742	94,742

Note: This table contains results of regressions testing the effects of country-level social capital on the proportion of female directors on the board. *Social capital* is the average level of trust in others in a country based on European Values Survey (EVS) and World Values Survey (WVS) data. *Percentage female* is the fraction of female directors on the board, calculated as the number of female directors divided by total board size. All country-level variables, except *religiosity*, are obtained from OECD's data portal. Appendix A defines all variables. The *t* statistics based on firm cluster robust standard errors are shown in parentheses.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

7 | DISCUSSION AND CONCLUSION

In this paper, we show that greater social capital levels are associated with more gender diversity on corporate boards. More importantly, we find that female directors in high social capital regions are more likely to attain a critical mass and are given more prominent roles such as committee memberships and chairs, an indication of lower tokenism. Our findings offer implications for theory, policy, and practice.

First, we extend theory by elaborating on social capital as an important and often neglected, informal institution. We outline how both individuals and firms seek "fit" to their environments, such that embeddedness in high social capital contexts can facilitate a greater presence of women directors on boards. Moreover, our county-level institutional theorizing offers a finer-grained analysis as compared with the extant cross-state and cross-country studies. We also spotlight the considerable within-state heterogeneity of social capital, setting up a context for future theorizing.

From a policy perspective, our work suggests continued government investment in building social capital in communities, as this is the foundation for stronger, more trustworthy, and equal societies. From a civic norm perspective, efforts to educate Americans at any age, from pre-kindergarten to elderly, will foster an understanding and possibly pride in a democracy. This engagement can lead to a greater sense of belonging and a desire to contribute, and therefore lead to greater levels of voter participation and census participation. This implication is particularly salient as recent U.S. government policy lessening emphasis on civics education (Heim, 2021) may be detrimental in the future. There are also policy perspectives for associational social networks that often require considerable volunteer time and energy to sustain, and non-profit failure rates are similar to

traditional organizations. As associational networks foster trust, openness, and equality, our findings suggest that governments should reduce societal associations' regulatory barriers. That is, the focus of leaders and volunteers in non-profits and other community associations should be on building and maintaining community rather than navigating a labyrinth of new legislation. This policy implication could set up a virtuous cycle for smaller governments as prior research notes that the presence of social capital does not necessarily translate into growth, but its absence can result in more government intervention (Fukuyama, 1995), Furthermore, there is a negative correlation between trust and government regulation (Aghion et al., 2010). When social capital is valuable, trust among people can act as a substitute for government intervention (Carlin et al., 2009). We also offer a comment on the growing board gender quota legislation in the form of codes and quotas in countries and within-country regions to increase the share of women and other minority directors. Our findings indicate that in the absence of certain societal norms and institutions, such as social capital, women might continue to face discrimination, even once appointed. That is, newly hired female directors may still be seen as tokens, resulting in lower contributions to boards and limited presence in key committees. This view is consistent with Adams (2016) who suggests that targeting companies by introducing gender quotas may not be enough to fully support women's contributions to corporate boards.

Our study also offers practical implications. Consistent with the above policy recommendations, teachers should continue to prioritize civics education, and volunteers and leaders in community associations should focus on building social capital in their communities, and lobby for lower government regulations. For individuals aspiring to join corporate boards, societal networks can provide an important, and often early, platform for developing the requisite leadership experience, a virtuous cycle that fosters greater social capital. Individuals may consider building and strengthening social ties in communities with greater social capital. For firms, our findings suggest that corporate social responsibility efforts be directed at building social fabric in local communities, and these efforts could also include civics education. Furthermore, we consistently document a negative association between the presence of women on boards and firm performance indicators. Although such results may be explained by potential endogeneity, the evidence may also suggest that internal monitoring comes at a cost.

We acknowledge several limitations in our study and suggest future research directions to address these issues. First, although our models include industry, year, and state fixed effects, we are unable to apply firm fixed effects, which can control for time-invariant firm characteristics. One potential factor in this limitation is the lack of time-series variation in social capital for individual firms. Besides small variations in social capital over time, relocation of headquarters is the only other means of introducing meaningful variation in the level of social capital over time. Since such headquarters relocations rarely occur, we are unable to estimate a regression with a sample of firms having meaningful variation in the level of social capital over time.

Second, we understand that we cannot entirely eliminate endogeneity concerns. For instance, firms in high social capital counties could endogenously have greater access to larger pools of prospective directors. To mitigate some endogeneity concerns, we use instrumental variable and propensity score matching techniques. Third, our findings are limited to how the informal institutional structures of societal norms affect board gender diversity. Future research could further our understanding of how social capital influences other firm-level corporate governance structures and processes. Studies could also elaborate on how social capital moderates or mediates corporate decisions. Fourth, as our theorizing assumes that societal associations are positive, we could consider Rothstein and Stolle's (2008) arguments about the potential for good, bad, and ugly associational networks.

In addition to future research addressing these limitations, we outline several promising paths. First, empirical researchers could develop tests of "corporate governance deviance" (Aguilera et al., 2018) to explore the possibility of highly over-conforming or under-conforming firms, and underlying drivers. That is, what might account for within-county differentiators where one firm appoints a significantly higher share of female directors than other firms? This line of theorizing might also lead to explorations of differences across counties that have high levels of social capital, but where some firms are more likely to have women serving as board chairs.

A second promising direction for future research is examining how certain individuals in communities may serve as "institutional actors" with a sizable influence on community practices. For example, there may be prominent female directors who build strong social capital in their communities and serve as particularly inspirational role models for other women. This theorizing could consider directors' specific actions on the board, building on recent findings that directors vary in their assessment of social norms of fairness (Yin et al., 2021).

A third possible research direction is examining the dynamism over time in institutional environments and also considering policies. For example, given Putnam's (2001) documentation of the decline of social capital in American society, future research could examine how lower levels of civic norms and social networks may be associated with some firm and board practices. Answering calls to explore corporate governance issues in a pandemic (Stathopoulos & Talaulicar, 2021), this inquiry could explore how some country, state, and county-level Covid pandemic shutdowns led to considerable losses of social networks and a sense of community, and also lowered education about and participation in civic norms, resulting in new paradigms for corporate governance. Dynamism on the corporate governance policy front is also a critical area of inquiry as within the last 2 years, the U.S. state of California and the NASDAQ establishes guidelines that all publicly-traded entities must have at least one female director. Future research could examine the effectiveness of those policies in bringing women and other minorities onto boards and also into chair and committee roles, as well as the possibility that firms might de-list to avoid perceived government interference with firm-level decisions.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from Compustat, BoardEx, and CRSP. Headquarter information is available through SEC's EDGAR. Restrictions apply to the availability of these data, which were used under license for this study.

ORCID

Mansoor Afzali https://orcid.org/0000-0001-6877-3139
Siri Terjesen https://orcid.org/0000-0002-2070-1942

NOTES

[1] In a related stream of literature, Terjesen et al. (2015) investigate institutional factors that drive gender quotas for board of directors. They argue that female labor market and gendered welfare state provisions, left-leaning governments, and policies aimed at achieving gender equality help drive legislation around gender quotas in boards.

[2] We follow the U.S. Census Bureau to view "county equivalent" for the few regions that are similar to counties but utilize different names: Louisiana's parishes, Alaska's organized boroughs, independent cities, and the District of Columbia.

[3] See Rupasingha et al. (2006) and Appendix B in Hasan et al. (2017) for a more detailed description of the measure.

[4] Caliper refers to the difference in the predicted propensity score between treatment and match.

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AUTHOR BIOGRAPHIES

Mansoor Afzali is an assistant professor of accounting at Hanken School of Economics. His research focuses on the role of social capital, social networks, and corporate culture in accounting and finance. His research has been published in the *Financial Review* and *Journal of Financial Stability*. He received his Master's in Finance from Iowa State University and PhD from Hanken School of Economics.

Hanna Silvola is an associate professor of accounting at Hanken School of Economics. Her main research interests include sustainable investing and measuring, reporting, and assuring corporate sustainability information in strategic decision-making. Her co-authored book *Sustainable Investing: Beating the Market with ESG* was published by Palgrave Macmillan in 2021. Her research has been published in leading journals such as *Accounting, Organization, and Society*, *Accounting, Auditing, & Accountability Journal*, and *Management Accounting Research*. She received her PhD from University of Oulu and has been a visiting scholar at London School of Economics, Stanford University, Monash University, and University of New South Wales.

Dr. Siri Terjesen is Associate Dean, Research and External Relations, and Phil Smith Professor of Entrepreneurship at Florida Atlantic University and Professor .2 at the Norwegian School of Economics in Bergen, Norway. Her research has been published

in leading journals such as *Academy of Management Review*, *Journal of Management*, *Journal of Operations Management*, *Business Ethics Quarterly*, *Journal of Business Ethics*, *Leadership Quarterly*, and *Strategic Management Journal*. She is the current Associate Editor of *Academy of Management Learning & Education*, *Academy of Management Perspectives*, *Small Business Economics*, *Journal of Risk & Financial Management*, *Industry & Innovation*, and *Beta*.

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APPENDIX A: VARIABLE DEFINITIONS AND SOURCES

Variable	Description	Source
County-level variables		
Social capital	County-level measure of social capital comprised of civic norms and social networks.	Northeast Regional Center for Rural Development
Female labor participation rate	County-level female labor force participation rate	U.S. Department of Labor
Population growth	Percentage change in county-level population	U.S. Census Bureau
Median income	Median household income in the county	U.S. Census Bureau
Income inequality	Mean household income in the county divided by the median income	U.S. Census Bureau
Median household age	Median household age in the county	U.S. Census Bureau
Religiosity	Fraction of county's population that claims to adhere to an organized religion	Association of Religion Data Archives (ARDA)
Education	Fraction of county's population with at least 1 year of college	U.S. Census Bureau
Distance to Canada	County-level distance from the closest Canadian border	Authors' calculations
Ethnicity HHI	Herfindahl index calculated across five basic Census tract ethnic categories including Hispanic, non-Hispanic black, non-Hispanic white, Native American, and Asian in a county in a given year	National Bureau of Economic Research (NBER)
Firm-level variables		
Firm size	Natural logarithm of market value of equity	Compustat
Firm age	Natural logarithm of number of years the firm is listed on CRSP	Center for Research in Security Prices (CRSP)
Leverage ratio	Sum of short and long-term debt divided by total assets	Compustat
Diversification risk	Total diversification defined in Palepu (1985) as $\Sigma P_i \ln(1 - P_i)$, where P_i is the share of the ith industry segment (based on four-digit SIC code) in the total sales of the firm	Compustat

(Continues)

Variable	Description	Source
Market-to-book ratio	Market value of equity divided by book value of equity	Compustat
R&D intensity	Research and development expenses divided by lagged value of sales	Compustat
Sales growth	Percentage change in total sales	Compustat
Return on assets	Income before extraordinary items divided by lagged total assets.	Compustat
Abnormal return	Market-adjusted returns over the past 12 months ending 3 months after the fiscal year end. Market returns are the CRSP value-weighted index returns.	CRSP/Compustat Global
SD abnormal return	Standard deviation of monthly market-adjusted returns over the past 12 months ending 3 months after the fiscal year end	CRSP/Compustat Global
Board-level variables		
Percentage female	Fraction of female directors on the board, calculated as the number of female directors divided by total board size	BoardEx
Number of female	Number of female directors on the board	BoardEx
Board size	Natural logarithm of total number of directors on the board	BoardEx
Avg. directorships	Mean number of outside directorships held by directors	BoardEx
Audit member	Equals one if the firm appoints a female director as a member of the audit committee, and zero otherwise	BoardEx
Compensation member	Equals one if the firm appoints a female director as a member of the compensation committee, and zero otherwise	BoardEx
Nomination member	Equals one if the firm appoints a female director as a member of the nomination committee, and zero otherwise	BoardEx
Audit chair	Equals one if the firm appoints a female director as chair of the audit committee, and zero otherwise	BoardEx
Compensation chair	Equals one if the firm appoints a female director as chair of the compensation committee, and zero otherwise	BoardEx
Nomination chair	Equals one if the firm appoints a female director as chair of the nomination committee, and zero otherwise	BoardEx
Critical mass	Equals one if the firm has three or more female directors on the board, and zero otherwise	BoardEx
Country-level variables		
Social capital	Average level of trust in others in a country. One survey question captures respondents' level of "trust in others" as whether most people can be trusted. We follow Knack and Keefer (1997) and aggregate the individual responses in each country and calculate the average value of trust in others.	European Values Survey (EVS) and World Values Survey (WVS)

Variable	Description	Source
Female labor participation rate	Country-level female labor force participation rate.	OECD's Data Portal
Population growth	Percentage change in country-level population.	OECD's Data Portal
GDP per capita	Country's gross domestic product (GDP) per capita.	OECD's Data Portal
Income inequality	Country's Gini coefficient.	OECD's Data Portal
Proportion young	Country's proportion of population aged less than 15 years.	OECD's Data Portal
Religiosity	Percentage of the country's residents who replied, "yes" when asked, "Is religion important in your daily life?" in a Gallop Poll in 2009.	Gallop Poll
Education	Fraction of country's population with tertiary education.	OECD's Data Portal