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Playing the Boys Game: Golf Buddies and Board Diversity†

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Women's share of board seats in developed economies averaged 16.7 percent in 2014, varying from 3 percent in Japan to 19 percent in the United States and 30 percent in France (Catalyst 2015). Although a stream of studies demonstrates performance benefits from boards comprised of both men and women (Adams and Ferreira 2009), alleviating gender disparity proves difficult to achieve. Female director nominations often arise from government regulation or from shareholder resolutions introduced by institutional investors (Anderson et al. 2011; Bertrand et al. 2014). Despite these external calls for greater female representation on the board, we have limited information on the impediments to their participation or the mechanisms women use to overcome these frictions in the executive labor market.

Research indicates that social capital influences placement and earnings in the labor market (Simon and Warner 1992). Unsurprisingly, gender norms and social identity influence the assembly and duration of social networks (Lewis, Gonzalez, and Kaufman 2012; McPherson, Smith-Lovin, and Cook 2001). For instance, in sports—a common social activity—gender stereotypes influence the involvement of women by type and participation rates within the sport (Eccles and Harold 1991). Reinforcing the gender disparity issues, women comprise less than 9.7 percent of sports editors in the Associated Press and less than 2 percent of sports radio hosts (Women's Media Center, 2015). Yet, sport groups constitute one of the most prevalent types of social networks among adults (Putnam 1995).

We explore the role of informal networks and gender ceiling in the executive labor market using data on golf games. Specifically, we study whether women who play golf—a largely male-dominated sport—are also more likely to serve on the board of directors of publicly-listed companies.

Anecdotally, golf is an important social network tool in corporate America. One perspective is that golf outings reinforce male social networks and bonding, limiting their usefulness for female golf players. Mayer and Puller (2008) report that social networks often operate along gender lines and serve to emphasize gender identity. Heilman et al. (2004) find that women involved in male-dominated activities are often penalized in their career outcomes. Because golf is a social activity with substantial male participation, involvement in this predominately male activity could limit a woman's opportunities in the executive labor market.

Alternatively, female participation in golf may allow women to enter prominent social networks and increase their involvement in the labor market. Female executives reap career benefits from sports participation in general (Ernst and Young 2014), suggesting that golf may provide a similar social capital for both men and women. Moreover, women engaging in a predominately male activity might gain additional social capital relative to their male counterparts. This perspective suggests that women participating in the boys informal network could increase their acceptance by predominantly male corporate boards. Overall, cogent arguments exist that women's participation in golf could either hinder or increase the likelihood of them serving on a board of directors.

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I. Data and Statistics

We use the setting of Singapore to investigate the role of male-oriented informal networks on women's entrance or success in the board of director market. Singapore provides an especially interesting venue to evaluate which frictions limit women's access to top positions due to its high GDP per capita, low fertility rates, high female workforce participation, and widespread educational opportunities (Agarwal and Qian 2014).[1] To examine the relationship between women's participation in golf and their likelihood of serving on a board of directors, we use information from Datastream for listed firms on the Singapore Exchange (SGX) from 2000 to 2014. We restrict our sample to listed firms that derive earnings from operation in Singapore. For these 431 Singapore-based firms, we manually collect information on boards of directors (name and gender) from annual reports. Table 1 provides descriptive statistics.

A typical firm has, on average, a market capitalization of S$775.42 million, an asset size of S$2,157.41 million, and a market-to-book ratio of 1.56. Among the firms, on average, there are seven members on the board of directors, of which 8.07 percent are women and 11.21 percent are from minority ethnic groups (i.e., non-Chinese). We also obtain data from two other sources, which contain information on golf players, and demographic details of all Singapore residents. Singapore golf courses require all players to possess and present a current handicap card to play golf; consequently the data captures the entire golf playing population. In the golf database, we observe the player's name, gender, and registration date. In the golf data over 88 percent of golfers are male. The demographic data contains information on birthdate, gender, home address, and ethnicity of Singaporean residents.

We match the databases on the board of directors and the golf participants, along with the demographic details for the directors/golf players. We further restrict the analysis to individuals with ages between 30 and 75 in order to capture valid counterfactuals. We obtain a comprehensive sample of 1,472,462 Singaporean residents that contains 10,584 golfers and 1,646 directors. We compute the unconditional odds ratio to study the association between playing golf and serving on corporate boards. We find the odds ratio of 65.3, indicating that playing golf is strongly associated with serving on corporate boards.

Table 1—Summary Statistics

	Mean	Median	SD
Market cap (in mils)	775.4	765.9	147.0
Market to book	1.56	1.52	0.31
Assets	2,157	2,164	413
Number of directors	7.06	6.95	0.26
Female (%)	8.07	7.85	0.87
Non-Chinese (%)	11.21	11.32	0.60
Observations		431	

Note: Based on the time series average of the year-end firm characteristics from 2000–2014.

For the matched board of directors, 155 (9.4 percent) are female and 1,491 (90.6 percent) are male. Using these numbers, we compute the odds ratio by gender and board membership at 0.094, suggesting that, on average, females are 90 percent less likely to serve on the boards of directors in our sample. We observe a strong association between playing golf and corporate board membership for men (odds ratio $= 38.9$), but the magnitude is smaller than found for women. When comparing the odds ratios by gender, the results suggest that playing golf is associated with a stronger propensity to serving on corporate boards for women than for men. Thus, the odds ratio indicates that female golfers exhibit a 54 percent greater chance than their male counterparts of serving on a board of directors.

II. Multivariate Analysis and Results

To control for observable differences in demographics, we run multivariate logistic regressions with a binary dependent variable that is equal to one, if an individual serves on a corporate board of listed firms in Singapore, and zero otherwise. The key explanatory variables include a female dummy, a golf-player dummy,

[1] More broadly, our work relates to the literature on gender differences across various economic outcomes and possible determinants, including communism, culture, discrimination, economic power, socioeconomic status, and testosterone (Bertrand, Kamenica, and Pan 2015; Gneezy, Leonard, and List 2009; Guiso et al. 2008; Reeb, Solji, and Tham 2016).

Table 2—Golf and Female Directors

Variables	All firms (1)	Large firms (2)	Small firms (3)
Female	0.110***	0.0983***	0.111***
	(−24.49)	(−18.24)	(−18.01)
Golf	7.210***	7.787**	6.657**
	(32.95)	(26.83)	(22.98)
Female × Golf	1.735*	2.246**	1.327
	(1.840)	(2.212)	(0.602)
Controls	Yes	Yes	Yes
Postal code housing sector FE	Yes	Yes	Yes
Ps R^2	0.13	0.14	0.11
Observations	1,423,142	1,293,599	1,370,369

Notes: The dependent variable is a dummy variable equal to one if the person serves on the board of directors. We report the odds ratio estimates and include *t*-statistics (based on robust standard errors) below in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

and an interaction of the two dummy variables. We include the year of birth and a non-Chinese binary variable to control for heterogeneity in age and ethnicity. Location and type (public versus private) of houses are strongly correlated with wealth (Deng, McMillen, and Sing 2012). We control for variations in house price by including the postal code fixed effects in the model (Agarwal and Qian forthcoming).[2]

Table 2 reports the odds ratio estimates for the logistic regressions. Column 1 shows the results for the full sample. Consistent with the univariate analysis, we observe that females, on average, are 89 percent less likely to serve on corporate boards of listed firms in Singapore, and the effect is statistically significant at the 1 percent level. We also find that playing golf is statistically and economically significant in predicting the likelihood of serving on corporate boards for both genders. More interestingly, the interaction between "female" and "golfer" is also large and statistically significant. To interpret the results, this suggests that relative to the effect of male golfers, women who play golf are 74 percent more likely to serve on corporate boards. The effect is statistically significant at the 10 percent level.

To further explore whether the women-golfer effect stems from either general wealth or social capital effects, we split the sample into small and large firms. If wealth effects explain the women in golf results, then the impact should be greater in small firms relative to large firms. In contrast, if social capital explains these findings, then the effect should be more pronounced in large, hierarchical firms.

The results, as reported in column 2 of Table 2, show that the women-golfer effect is concentrated in large firms. Female golfers are 125 percent more likely to serve on a board relative to male golfers in large firms with presumably a more hierarchical structure. This effect is economically large and statistically significant at the 5 percent level. For small firms (column 3 of Table 2), women's participation in golf has no differential effect, both statistically and economically, on board membership relative to their male counterparts.

An alternative explanation for the effects in Table 2 is the consumption of leisure by successful women. To investigate this explanation, we split the analysis by the concentration of female employment shares in different industries in Singapore. A leisure or quiet life explanation suggests that the women's golf participation

[2] Another potential concern is that athletic skills drive the results on female golf participation. In an earlier version of the paper, we find no significant difference between female directors and non-directors in terms of their initial or current golf skills (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2702742).

Table 3—Low Female Industries

Variables	High female representation industries (1)	Low female representation industries (2)
Female	0.102***	0.101***
	(−18.53)	(−19.02)
Golf	7.144***	7.381***
	(25.42)	(26.48)
Female × Golf	1.708	2.173**
	(1.319)	(2.138)
Controls	Yes	Yes
Postal code housing sector FE	Yes	Yes
Ps R^2	0.13	0.13
Observations	1,304,690	1,344,332

Notes: The dependent variable is a dummy variable equal to one if the person serves on the board of directors. We report the odds ratio estimates and include *t*-statistics (based on robust standard errors) below in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

effects should dominate in high female concentrated industries. However, arguments regarding the use of golf to overcome the corporate glass ceiling suggest that the effect should occur in industries with limited female participation in the workforce.

In Table 3, we find that women golfers are more likely to serve on the board of directors in low female representation industries (by 117 percent) relative to their male counterparts. The effect is statistically significant at the 5 percent level. In contrast, the results indicate that in industries with high female representation, a woman's participation in golf has no differential effect on the likelihood of her holding a board seat relative to her male counterparts. These results suggest a strong influence of social capital in helping to overcome the gender ceiling in the executive labor market.

III. Conclusion

Our analyses suggest that the participation of women in golf—a predominately male social activity—significantly increases their likelihood of serving on a board of directors. Using a dataset of over one million golf games played in Singapore over a 15-year period, we find that female golfers exhibit a 54 percent higher likelihood of serving on a board relative to male golfers. A woman's probability of serving on the board in large firms increases by 116 percent if she plays golf, while golf has no such effect in small firms. Perhaps even more surprising is the finding that the gender-golf effect increases to 158 percent for women in a predominantly male industry. The results suggest that becoming part of the boys network increases a woman's chance of serving on the board of directors in large firms in male dominated industries.

One clear issue that emerges in this analysis is that golf is an important social network. In a country with low birth rates, high wages, and inexpensive access to live-in helpers, we provide strong correlation evidence suggestive of an informal network that women use to overcome or deal with gender disparity.

The data support both the notion that golf facilitates women's appointment to the board or alternatively, that board membership leads women to play golf. Either perspective indicates that "playing the boys game" is an important component of women's directorships in publicly-traded firms. While this effect occurs in both men and women, women's involvement in a male-dominated social activity appears more pronounced when they serve on board in large, hierarchal firms or those in male dominated industries. We interpret this evidence to suggest that engaging in social activities that run

counter to the social norms or behaviors provide an important mechanism for women to partially mitigate the glass ceiling in corporate boards.

REFERENCES

Adams, Renée B., and Daniel Ferreira. 2009. "Women in the Boardroom and Their Impact on Governance and Performance." *Journal of Financial Economics* 94 (2): 291–309.

Agarwal, Sumit, and Wenlan Qian. 2014. "Consumption and Debt Response to Unanticipated Income Shocks: Evidence from a Natural Experiment in Singapore." *American Economic Review* 104 (12): 4205–30.

Agarwal, Sumit, and Wenlan Qian. Forthcoming. "Access to Home Equity and Consumption: Evidence from a Policy Experiment." *Review of Economics and Statistics.*

Anderson, Ronald C., David M. Reeb, Arun Upadhyay, and Wanli Zhao. 2011. "The Economics of Director Heterogeneity." *Financial Management* 40 (1): 5–38.

Bertrand, Marianne, Sandra E. Black, Sissel Jensen, and Adriana Lleras-Muney. 2014. "Breaking the Glass Ceiling: The Effect of Board Quotas on Female Labor Market Outcomes in Norway." National Bureau of Economic Research Working Paper 20245.

Bertrand, Marianne, Emir Kamenica, and Jessica Pan. 2015. "Gender Identity and Relative Income within Households." *Quarterly Journal of Economics* 130 (2): 571–614.

Catalyst. 2015. *2014 Catalyst Census: Women Board Directors.* New York: Catalyst.

Deng, Yongheng, Daniel P. McMillen, and Tien Foo Sing. 2012. "Private Residential Price Indices in Singapore: A Matching Approach." *Regional Science and Urban Economics* 42 (3): 485–94.

Eccles, Jacquelynne S., and Rena D. Harold. 1991. "Gender Differences in Sport Involvement: Applying the Eccles' Expectancy-Value Model." *Journal of Applied Sport Psychology* 3 (1): 7–35.

Ernst and Young. 2014. *Making the Connection: Women, Sport and Leadership*. EY Women Athletes Business Network and espnW Report. New York: EY.

Gneezy, Uri, Kenneth L. Leonard, and John A. List. 2009. "Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society." *Econometrica* 77 (5): 1637–64.

Guiso, Luigi, Ferdinando Monte, Paola Sapienza, and Luigi Zingales. 2008. "Culture, Gender, and Math." *Science* 320 (5880): 1164–65.

Heilman, Madeline E., Aaron S. Wallen, Daniella Fuchs, and Melinda M. Tamkins. 2004. "Penalties for Success: Reactions to Women Who Succeed at Male Gender-Typed Tasks." *Journal of Applied Psychology* 89 (3): 416–27.

Lewis, Kevin, Marco Gonzalez, and Jason Kaufman. 2012. "Social Selection and Peer Influence in an Online Social Network." *Proceedings of the National Academy of Sciences* 109 (1): 68–72.

Mayer, Adalbert, and Steven L. Puller. 2008. "The Old Boy (and Girl) Network: Social Network Formation on University Campuses." *Journal of Public Economics* 92 (1–2): 329–47.

McPherson, Miller, Lynn Smith-Lovin, and James M. Cook. 2001. "Birds of a Feather: Homophily in Social Networks." *Annual Review of Sociology* 27: 415–44.

Putnam, Robert D. 1995. "Bowling Alone: America's Declining Social Capital." *Journal of Democracy* 6 (1): 65–78.

Reeb, David, Elvira Solji, and Wing Wah Tham. 2016. "Locating the Innovative Women." Unpublished.

Simon, Curtis J., and John T. Warner. 1992. "Matchmaker, Matchmaker: The Effect of Old Boy Networks on Job Match Quality, Earnings, and Tenure." *Journal of Labor Economics* 10 (3): 306–30.

Women's Media Center. 2015. *The Status of Women in the US Media 2014.* New York: Women's Media Center.