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# Corporate Leadership and Inherited Beliefs About Gender Roles

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## Abstract

Some U.S. firms have women directors and executives, while many do not. We seek to explain this heterogeneity. Using U.S. Census data from 1900, we find that U.S. counties with populations originating from countries with stronger gender-egalitarian beliefs have more women in the labor market and in STEM occupations, and lower gender-pay gaps. Firms headquartered in such counties have more women executives and directors. When firms move to more gender-egalitarian counties, the representation of women on board increases. Our findings are consistent with the idea that inherited beliefs about gender roles impact the labor market and corporate leadership.

## I. Introduction

This article studies how and why the prevalence of women in corporate leadership varies across U.S. firms.[1,] In our sample that spans 2000–2019, 40%

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[1]We define corporate leadership as serving on boards, chairing board committees, and serving as top executives. The topic of women in corporate leadership has recently gained a lot of attention. As examples, since 2019, the state of California has required all firms to have at least 1 female board member, and for firms with 6 or more board members to have at least 3 female board members by 2021. This follows similar policies in at least 10 countries, beginning with Israel in 1999 and Norway in 2003. More recently, NASDAQ requires firms listed on its exchange have at least 1 female board member or explain why they cannot.

of firm-years do not have a woman director, only 3% of firm-years have a female CEO, and about 50% do not have any female executives. Thus, a significant number of publicly traded firms have no female executives or board members. We ask whether differences in inherited beliefs about gender roles across U.S. regions can help explain these differences in female corporate leadership across firms.

Beliefs about gender roles have preindustrial roots, vary across countries, survive immigration, and persist in the United States (Alesina, Giuliano, and Nunn (2013)). More generally, Bisin and Verdier (2000) find that in the United States, a wide range of cultural beliefs and traditions survive immigration and persist through subsequent generations. Immigrants may also choose to immigrate to regions that earlier generations from their country (or culturally similar countries) immigrated to and currently live in. We therefore hypothesize that U.S. regions that were originally populated by immigrants from countries with cultural beliefs that are more gender-egalitarian will have more women in corporate leadership. Women growing up in such regions may be more likely to pursue careers that lead to executive and board positions, and shareholders and employees in these regions may be more accepting of female leaders.

We conduct our study using data from the 1900 U.S. Census. The U.S. Census asks respondents which country they immigrated from. We link their responses to an index reflecting each country's beliefs about gender-egalitarianism, which is based on the first principal component of gender-egalitarianism measures from the World Values and Hofstede surveys.[2]

Before focusing on U.S. firms, we explore whether our gender-egalitarianism index is associated with female corporate leadership across countries. We find that this is the case, as countries with more gender-egalitarian beliefs have more women on corporate boards at their public companies. The results are quite striking. As an example, in the three most gender-egalitarian countries at the average firm 18% of board members are female, whereas in the three least gender-egalitarian countries at the average firm only 5.6% of board members are female.

We then construct a U.S. county-level gender-egalitarianism index by assigning each 1900 U.S. Census respondent their origin-country's gender-egalitarianism index value, and averaging these values across respondents within each U.S. county. Our gender-egalitarianism index is persistent. Although we use the 1900 Census to create our index, we obtain the same main results using the 2000 Census or the 2010 Census. Our index created with 1900 Census data is a strong predictor of indices created with 2000 or 2010 Census data.[3] This persistence suggests that many of the later census respondents continue to live where their ancestors lived, and that immigrants since 1900 have tended to immigrate to the same regions that previous generations from their country or culturally similar countries immigrated to.

We begin our U.S. analyses by asking whether the U.S. county-level gender-egalitarianism index predicts general labor market outcomes. We reason that if

[2]We also perform our analyses using only the World Values Survey or the Hofstede Survey separately. The results are in the Supplementary Material and consistent with those reported in the article.

[3]The correlations between our index in 1900 and the indices for 2000 and 2010 are higher than 70%, so the cultural values of a region may be highly persistent.

gender-egalitarianism is associated with outcomes such as more women in the labor force, smaller gender-pay gaps, and more women in STEM, then this could spill over to more women in executive and director roles. We find that more gender-egalitarian counties do have more women in the labor force, smaller gender pay-gaps, and more women in STEM occupations.

Turning to corporate leadership, we find that our gender-egalitarianism index is strongly related to the presence of women in corporate leadership roles. Firms headquartered in more gender-egalitarian counties are significantly more likely to have women directors and executives. The female directors are not just window dressing, as women directors at firms in more gender-egalitarian counties are also more likely to chair important board committees. Firms that move to more gender-egalitarian counties experience an increase in the number of female directors following the move.

We also find that women directors in more gender-egalitarian counties work closer by and have more directorships relative to women directors at firms in less gender-egalitarian counties. This reinforces the idea that general labor market outcomes, such as more women in the workforce and smaller gender pay gaps, reflect general conditions that lead to more women in corporate leadership roles.

Our study builds on several branches of research. A growing literature studies how the presence of women on corporate boards or in executive positions impacts various firm outcomes. Articles in this genre include Adams and Ferreira (2009), Adams and Funk (2011), Ahern and Dittmar (2012), Huang and Kisgen (2013), Matsa and Miller (2011), Levi, Li, and Zhang (2014), Tate and Liu (2015), Kim and Starks (2016), and Griffin, Li, and Xu (2021). In contrast, we try to explain why some firms have female leaders and others do not. In this spirit, we build on Adams and Kirchmaier (2015), (2016), who find that female labor-force participation (which we control for) is related to female board membership.[4]

We build on earlier articles showing that cultural attitudes toward gender roles can impact women in the labor market. Alesina et al. (2013) find that countries where the plough was used less (preindustrial ploughs were very heavy and created a division of labor between men and women) have more women in the labor market and more female entrepreneurs today. Charles, Guryan, and Pan (2019) use the General Social Survey and find that greater sexism at the U.S. state level is associated with both lower wages and lower labor force participation for women. Our article contributes to this literature by focusing on corporate leadership, and shows that a region's inherited beliefs about gender roles impacts the extent to which women serve in executive and director positions.[5]

[4]Our article is also related to a literature that studies differences between men and women in career outcomes and corporate leadership. Several studies show that work-force interruptions and altered career paths due to raising children help explain such differences, including Keluoharju, Knüpfer, and Tåg (2022), Bertrand, Goldin, and Katz (2010), Angelov, Johansson, and Lindahl (2016), Azmat and Ferrer (2017), and Kleven, Landais, and Søgaard (2019). Other articles provide evidence consistent with discrimination, such as Barber, Scherbina, and Schlusche (2018) and Duchin, Simutin, and Sosyura (2020).

[5]Our article is also related to a literature concerned with how differences in regional culture can impact business and career outcomes. Ahern, Daminelli, and Fracassi (2015) show that corporate mergers are less likely between U.S. regions that are culturally different. A number of articles study

Our results have implications for public policy. There is currently a good deal of interest in policies that mandate more female directors at U.S. public corporations. Such policies have been introduced by the state of California and are currently being proposed by NASDAQ. Our findings suggest that implementing homogenous gender-diversity policies for boards could be challenging.[6] We find that regional differences in beliefs about gender roles cause different equilibrium outcomes regarding women in leadership roles. Therefore, as an example, applying a California-type policy that requires 50% female board membership for some large firms could be more challenging in Madison County, Alabama, which is a less gender-egalitarian county, than in Hennepin County, Minnesota, which is a highly gender-egalitarian county.

The policy implications of our findings dovetail nicely with the findings in Bertrand, Black, Jensen, and Lleras-Muney (2019). Bertrand et al. (2019) find that Norway's 2003 law, which required 40% representation of each gender on corporate boards, did not lead to more women in top executive positions or reductions in gender pay gaps. This suggests that women in corporate leadership may evolve more from "bottom-up" cultural norms than from "top-down" policies. Although our article does not study the impact of top-down policies, it does suggest that female representation in corporate leadership is at least partly rooted in culture.

## II. Sample and Measurement

This section describes our sample, data sources, and primary variables. Section II.A describes the gender-attitudes survey variables and how we construct our gender-egalitarianism index. Section II.B tests whether gender-egalitarianism across countries is associated with more women in corporate leadership. Section II.C describes how we link the country-level gender-egalitarianism index to U.S. Census data and then generate our U.S. county-level gender-egalitarian index. Section II.D describes our firm-level variables.

### A. Measuring Beliefs About Gender Egalitarianism

We use two surveys, the World Values Survey and the Hofstede (1980), (2001) Survey, to measure beliefs about gender roles in different countries around the world. We briefly describe the surveys here, and provide more details in the Appendix. The World Values Survey is a cross-country project coordinated by the Institute for Social Research at the University of Michigan. It carries out representative national surveys of the basic values and beliefs of individuals in a

how differences in cultures across *countries* impact cross-border investment (e.g., Guiso, Sapienza, and Zingales (2009), Hwang (2011), and Bottazzi, Da Rin, and Hellmann (2016)) and cross-border mergers (Ahern, Daminelli, and Fracassi (2015)).

[6]Recent working articles by von Meyerinck, Niessen-Ruenzi, Schmid, and Solomon (2021) and Hwang, Shivdasani, and Simintzi (2010) document negative announcement returns and declines in valuation in response to the adoption of mandatory board gender quota for Californian firms. Ahern and Dittmar (2012) document similar effects in Norway. Eckbo, Nygaard, and Thoburn (2022) challenge the results in Ahern and Dittmar (2012), and argue that the valuation effect of Norway's quota law was insignificant.

large cross section of countries.[7] Following Guiso, Monte, Sapienza, and Zingales (2008), we focus on the seven questions concerning individual perceptions about women's role in society.

The World Values Survey records responses for men and women. In untabulated results, we find that the correlation between the male and female responses is 0.95. This shows that beliefs about gender roles are shared between the men and women in a country. In fact, the differences in responses between genders within a country are much smaller than the differences in responses within a gender across countries. As an example, for Sweden, the scores for men and women are 0.751 and 0.790, respectively, while in Mexico the scores are 0.544 and 0.588 for men and women, respectively. This pattern is observed throughout various countries in our sample, as shown in Figure 1. Within each country, women tend to have slightly more gender-egalitarian views then men, but these differences are small relative to the cross-country differences.

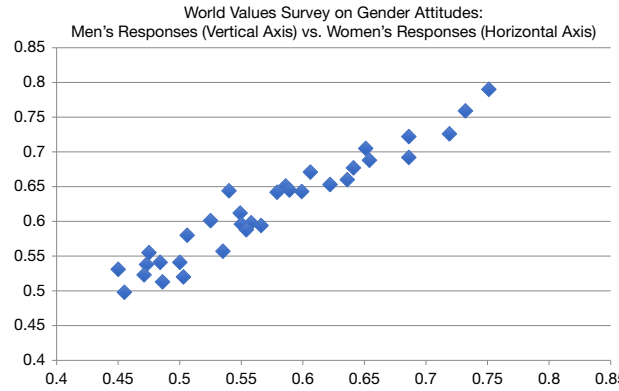
The Hofstede Survey was conducted among IBM employees at different foreign subsidiaries. It classifies national cultures along four dimensions, one of which is labeled as "masculinity." Masculinity refers to what extent a country's citizens value traditional male and female roles. We reorder this variable so that higher values reflect greater gender-egalitarianism, and use it as our second index.

To fully utilize the information contained in both survey values, we create an index that is based on the first principal component of the World Values Survey and Hofstede Survey. We report country-level summary statistics of the gender-egalitarianism index in Panel A of Table 1, which shows that gender-

FIGURE 1

Men's Gender Beliefs Versus Women's Gender Beliefs Across Countries

Figure 1 plots country-level averages of the World Values Survey responses for questions regarding beliefs about gender roles of men against country-level averages of responses of women. Higher values reflect more egalitarian beliefs about gender roles. The sample includes 43 countries (reported in Table 1).




[7]We use the average of the first five World Values Survey waves, which were conducted during the period 1981–2009. These data are described more in Inglehart et al. (2014). More information on the World Values Survey and the downloadable data can also be found here at https://www.worldvaluessurvey.org/WVSDocumentationWVL.jsp.

TABLE 1

## Cultural Belief About Gender Roles at the Country Level

Table 1 presents summary statistics of the culture and board variables for our global sample. Panel A provides mean values for the culture and board variables by country, while Panel B reports pooled summary statistics across the entire global sample. The variable GEN_EGAL is the first principal component of the two standardized variables measuring cultural attitudes toward gender. The two variables are derived from the World Values Survey using questions about individual perceptions about women's role and society, and from the Hofstede (1980), (2001) survey for how much a society values traditional male and female roles. % of female directors is the total number of female directors scaled by board size. Board data are from the BoardEx database. Accounting and stock return data are from Thomson Reuters WorldScope. Other country-level control variables are from World Bank. Detailed descriptions of the variables are provided in the Appendix.

*Panel A: Mean Values for the Culture and Board Variables by Country*

| Country | WORLD_ VALUES_SURVEY | HOFSTEDE_ SURVEY | GEN_ EGAL | %_OF_FEMALE_ DIRECTORS | BOARD_ SIZE |
|---|---|---|---|---|---|
| ARGENTINA | 0.619 | 59 | 0.122 | 0.043 | 9.73 |
| AUSTRALIA | 0.612 | 54 | −0.118 | 0.081 | 6.10 |
| AUSTRIA | | 36 | | 0.081 | 14.78 |
| BELGIUM | | 61 | | 0.093 | 9.83 |
| BRAZIL | 0.621 | 66 | 0.409 | 0.062 | 8.74 |
| CHILE | 0.583 | 87 | 0.942 | 0.053 | 8.44 |
| CHINA | 0.545 | 49 | −0.809 | 0.09 | 8.32 |
| CYPRUS | 0.593 | | | 0.137 | 7.53 |
| DENMARK | | 99 | | 0.125 | 10.96 |
| FINLAND | 0.672 | 89 | 1.683 | 0.231 | 7.56 |
| FRANCE | 0.722 | 72 | 1.398 | 0.144 | 10.74 |
| GERMANY | 0.68 | 49 | 0.193 | 0.079 | 14.12 |
| GREECE | | 58 | | 0.072 | 9.73 |
| HONG KONG | 0.581 | 58 | −0.198 | 0.091 | 10.09 |
| INDIA | 0.509 | 59 | −0.693 | 0.068 | 9.87 |
| INDONESIA | 0.489 | 69 | −0.449 | 0.088 | 12.73 |
| IRELAND | | 47 | | 0.086 | 9.12 |
| ISRAEL | | 68 | | 0.169 | 7.74 |
| ITALY | 0.638 | 45 | −0.274 | 0.093 | 12.39 |
| JAPAN | 0.522 | 20 | −2.111 | 0.025 | 11.12 |
| LUXEMBOURG | | 65 | | 0.057 | 8.69 |
| MALAYSIA | 0.402 | 65 | −1.256 | 0.102 | 7.69 |
| MEXICO | 0.57 | 46 | −0.740 | 0.061 | 12.12 |
| NETHERLANDS | 0.704 | 101 | 2.389 | 0.077 | 8.67 |
| NEW ZEALAND | 0.639 | 57 | 0.197 | 0.156 | 6.77 |
| NIGERIA | 0.541 | 69 | −0.063 | 0.142 | 11.91 |
| NORWAY | 0.746 | 107 | 2.931 | 0.279 | 7.54 |
| PHILIPPINES | 0.499 | 51 | −1.073 | 0.071 | 10.74 |
| POLAND | 0.498 | 51 | −1.081 | 0.105 | 13.46 |
| PORTUGAL | | 84 | | 0.07 | 12.26 |
| REPUBLIC OF KOREA | 0.477 | 76 | −0.271 | 0.015 | 7.81 |
| RUSSIAN FEDERATION | 0.52 | 79 | 0.168 | 0.072 | 12.00 |
| SINGAPORE | 0.574 | 67 | 0.102 | 0.075 | 7.66 |
| SOUTH AFRICA | 0.563 | 52 | −0.560 | 0.161 | 10.38 |
| SPAIN | 0.649 | 73 | 0.890 | 0.087 | 12.38 |
| SWEDEN | 0.77 | 110 | 3.229 | 0.192 | 8.73 |
| SWITZERLAND | 0.66 | 45 | −0.110 | 0.071 | 8.37 |
| TAIWAN | 0.512 | 70 | −0.244 | 0.05 | 9.80 |
| THAILAND | 0.578 | 81 | 0.675 | 0.091 | 13.30 |
| TURKEY | 0.505 | 70 | −0.294 | 0.108 | 9.54 |
| UNITED ARAB EMIRATES | | 63 | | 0.005 | 7.78 |
| UNITED KINGDOM | 0.689 | 49 | 0.258 | 0.066 | 6.52 |
| UNITED STATES | 0.622 | 53 | −0.083 | 0.102 | 8.61 |
| All | 0.652 | 78.235 | 0.156 | 0.119 | 9.65 |

*Panel B: Pooled Summary Statistics Across the Entire Global Sample*

| | Mean | Median | Std. Dev. | P10 | P90 | No. of Obs. |
|---|---|---|---|---|---|---|
| WORLD_VALUES_SURVEY | 0.632 | 0.622 | 0.049 | 0.689 | 0.581 | 158,897 |
| HOFSTEDE_SURVEY | 55.516 | 53.000 | 12.212 | 67.000 | 49.000 | 165,320 |
| GEN_EGAL | 0.077 | −0.083 | 0.685 | 0.258 | −0.118 | 158,751 |
| %_OF_FEMALE_DIRECTORS | 0.097 | 0.061 | 0.121 | 0.250 | 0.000 | 167,245 |
| ≥1_FEMALE_DIRECTOR | 0.507 | 1.000 | 0.500 | 1.000 | 0.000 | 167,245 |
| ≥2_FEMALE_DIRECTORS | 0.232 | 0.000 | 0.422 | 1.000 | 0.000 | 167,245 |

egalitarianism is highest in Norway, Sweden, and the Netherlands, and lowest in Japan, Malaysia, and Poland.

## B. Gender Egalitarianism and Female Board Representation in a Global Setting

We first study the relation between beliefs about gender roles and women serving in corporate leadership using global data. We find that women are more likely to serve on corporate boards in more gender-egalitarian countries. As an example, Table 1 reports that on average, in the five most gender-egalitarian countries, 17% of board members are female, whereas in the five least gender-egalitarian countries, only 7.5% of board members are female. This is consistent with earlier studies that find that female board representation is correlated with various cultural and institutional variables across countries (e.g., Carrasco, Labelle, Laffarga, and Ruiz-Barbadillo (2015), Nguyen, Bertsch, Warner-Soderholm, and Ondracek (2017)).

Table 2 further validates this relation using regressions. We obtain data on board membership from BoardEx. We include all firm-year observations with non-missing data for female board representation. We merge the BoardEx data with accounting and stock return data from Thomson Reuters Worldscope. All regressions have year and industry fixed effects, and standard errors that are clustered by country.[8] The World Values Survey values are time-invariant. For this reason, we cannot include firm or country fixed effects. The control variables are defined in the Appendix.

We report our regression results in Table 2. Regressions 1–3 reflect results for the entire sample of countries. Regression 1 is a probit regression with the dependent variable equal to 1 if the firm has at least 1 female board member, and 0 otherwise. Regression 2 is an ordered probit. The dependent variable is equal to 2 if there is more than 1 female director, 1 if there is only 1 female director, and 0 if there are no female directors. Regression 3 is an OLS regression, in which the dependent variable is the percentage of board members that are women. In all cases, the coefficient for the gender-egalitarianism index is positive and statistically significant.

In regression 1, the coefficient for the gender-egalitarianism index is 0.151 ($t$-stat = 3.99), showing that a 1-standard-deviation increase in the index leads to an increase of 0.173 in the probability that the board has at least 1 female director. About half of the firms in this global sample have at least 1 female board member, so this represents an economically significant effect. Similarly, in regression 3, the coefficient for the gender-egalitarianism index is 0.041 ($t$-stat = 4.19), showing that a 1-standard-deviation increase in the index leads to an increase of 0.047 of the percentage of board seats held by women. The average percentage of board seats held by women is 0.097, so again this is a significant effect.

Regressions 4–6 in Table 2 are like regressions 1–3, only we exclude country-years for which female board membership is required by law.[9] Laws have been passed in countries with high gender-egalitarianism (e.g., Finland and Norway) and

[8] In unreported results we cluster the standard errors by country and time, but the results were not impacted, which is expected as we include time fixed effects.

[9] Female board members are required for publicly traded firms in Norway (post 2003), Israel (post 1999), France (post 2010), Spain (post 2007), Germany (post 2014), India (post 2013), Iceland (post 2010), Finland (post 2010), Belgium (post 2011), and Italy (post 2011).

TABLE 2

Female Directors and Culture: Global Results

Table 2 reports the coefficient estimates and *t*-statistics for probit, ordered probit, and OLS regressions in the global sample. In the probit regressions, the dependent variable is dummy variable equal to 1 if there is a female director, and 0 otherwise (regressions 1 and 4). In the ordered probit regressions, the dependent variable is equal to 0 if there is no female on board, equal to 1 if there is 1 female on board, and equal to 2 if there are more than 1 female directors on board (regressions 2 and 5). In the OLS regressions, the dependent variable is the percentage of female directors on a firm's board for firm *i* in year *t* (regressions 3 and 6). Regressions 1–3 include all firm-year observations of the global sample. Regressions 4–6 exclude firm-year observations for which the firm's country requires female board membership by law. GEN_EGAL is the country-level gender-egalitarian index constructed as the first principal component of country-level attitudes toward gender roles measures based on the World Values Survey and the Hofstede Survey. Detailed definitions for the variables are provided in the Appendix. The regressions include controls for firm-, board-, and country-characteristics. Coefficients for the probit and ordered probit regressions are marginal probabilities. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

| | Probit | Ordered Probit | OLS | Probit | Ordered Probit | OLS |
|---|---|---|---|---|---|---|
| | Female on Board | =0 If 0 Female =1 If 1 Female =2 If >1 Female | % of Female Directors | Female on Board | =0 If 0 Female =1 If 1 Female =2 If >1 Female | % of Female Directors |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| GEN_EGAL | 0.151*** | 0.408*** | 0.041*** | 0.109** | 0.278*** | 0.024*** |
| | (3.99) | (4.50) | (4.19) | (2.53) | (2.94) | (3.02) |
| log(ASSETS) | 0.005* | 0.023*** | 0.004*** | 0.003 | 0.018** | 0.003*** |
| | (1.86) | (2.62) | (3.45) | (1.19) | (2.11) | (3.11) |
| *Q* | 0.009*** | 0.028*** | 0.003*** | 0.009*** | 0.028*** | 0.003*** |
| | (5.23) | (7.26) | (12.12) | (5.27) | (6.76) | (12.04) |
| ROA | 0.089*** | 0.194*** | 0.006 | 0.086*** | 0.192*** | 0.006 |
| | (5.60) | (4.10) | (1.56) | (5.36) | (3.91) | (1.57) |
| DEBT/ASSETS | 0.007 | −0.029 | −0.010** | 0.003 | −0.038 | −0.011* |
| | (0.21) | (−0.40) | (−2.11) | (0.08) | (−0.45) | (−1.93) |
| SD(RET) | −0.326*** | −0.801*** | −0.048*** | −0.328*** | −0.818*** | −0.050*** |
| | (−5.33) | (−5.59) | (−5.00) | (−5.22) | (−5.71) | (−5.51) |
| R&D/ASSETS | −0.052 | −0.237 | −0.035** | −0.059 | −0.238 | −0.035** |
| | (−0.83) | (−1.18) | (−2.30) | (−0.89) | (−1.15) | (−2.30) |
| BOARD_SIZE | 0.063*** | 0.157*** | 0.005*** | 0.064*** | 0.161*** | 0.006*** |
| | (4.23) | (5.35) | (3.11) | (4.15) | (5.20) | (3.44) |
| %_OF_OUTSIDE_DIRECTORS | 0.283*** | 1.110*** | 0.124*** | 0.290*** | 1.145*** | 0.127*** |
| | (6.27) | (15.33) | (7.48) | (6.00) | (18.31) | (8.28) |
| log(GDP) | −0.007 | 0.072 | 0.014 | −0.020 | −0.024 | 0.001 |
| | (−0.19) | (0.70) | (1.46) | (−0.32) | (−0.14) | (0.09) |
| SCHOOL_ENROLL (%) | −0.013** | −0.039** | −0.004** | −0.008* | −0.022** | −0.002** |
| | (−2.47) | (−2.31) | (−2.14) | (−1.94) | (−1.99) | (−2.24) |
| RULE_OF_LAW | −0.023 | −0.190 | −0.024 | 0.016 | −0.015 | −0.002 |
| | (−0.36) | (−1.07) | (−1.35) | (0.20) | (−0.07) | (−0.10) |
| MARKET_CAP/GDP | 0.000 | 0.000 | −0.000 | 0.000 | 0.000 | −0.000 |
| | (0.34) | (0.34) | (−1.02) | (0.57) | (0.61) | (−0.19) |
| No. of obs. | 106,822 | 106,860 | 106,860 | 102,503 | 102,539 | 102,539 |
| Adj./pseudo $R^2$ | 0.185 | 0.178 | 0.257 | 0.178 | 0.173 | 0.245 |

low gender-egalitarianism (e.g., Italy and India). Removing these country-year observations does little to impact our findings, as the results reported for regressions 4–6 closely resemble those reported for regressions 1–3. In regression 4, the coefficient for the gender-egalitarianism index is 0.109 (*t*-stat = 2.53), showing that an increase in the index still leads to a meaningful increase in women on corporate boards.

## C. Measuring Beliefs About Gender Roles in the United States

We generate our gender-egalitarianism index for U.S. counties using information from the 1900 U.S. Census and the country-level gender-egalitarianism index

described in the previous section. Census data are obtained from the Integrated Public Use Microdata Series (IPUMS) database at the University of Minnesota (see Ruggles, Flood, Goeken, Grover, Meyer, Pacas, and Sobek (2018)). The census provides information on the respondents' country of birth and in later censuses (post-1980), self-reported ancestry. Using this information, we link each census respondent to their corresponding country of origin, assign the corresponding gender-egalitarian index value (from Table 1) to each person, and then average the values across all of the persons in each U.S. county.[10]

We conduct our main analyses using the 1900 Census because it is exogenous in our setting, as virtually all of the firms in our sample were founded after 1900. We are using gender-egalitarianism index values that are based on surveys conducted in more recent years, so we are assuming that differences in beliefs about gender-egalitarianism across countries that are present in recent years when the surveys were taken were also present in 1900.

We are also assuming that the gender-egalitarianism index is persistent, that is, the index in 1900 predicts the index during our sample period. To validate this assumption, we construct gender-egalitarian indices using U.S. Census data from 2000 and 2010. A regression of the 2000 index on the 1990 index yields a coefficient or beta of 1.048 and a *t*-statistic of 29.09. Similarly, a regression of the 2010 index on the 1990 index yields a coefficient or beta of 0.964 and a *t*-statistic of 27.43. These findings suggest that regional demographics are quite persistent, likely because the descendants of the original inhabitants continue to live in the same area, and because subsequent immigrants move to regions that have residents of the same origin. In the Supplementary Material, we report results using the 2000 Census, and they largely mirror the results that we report in the article using the 1900 Census.

We further validate our gender-egalitarianism index with measures of gender-egalitarianism used in other studies. Figure 2 is a heat map that displays the 1900 county-level gender-egalitarian index values. It shows that parts of Texas and the South have the least gender-egalitarian views, whereas the Northern parts of the Midwest have the most gender-egalitarian views. This is consistent with Rice and Coates (1995) and Di Noia (2002), who find, via surveying current residents and comparing status attainment between genders, that southern states are less gender-egalitarian. The findings here suggest that gender-egalitarianism in the South is at least in some part the result of the cultures from where the ancestors of the southern population emigrated.[11]

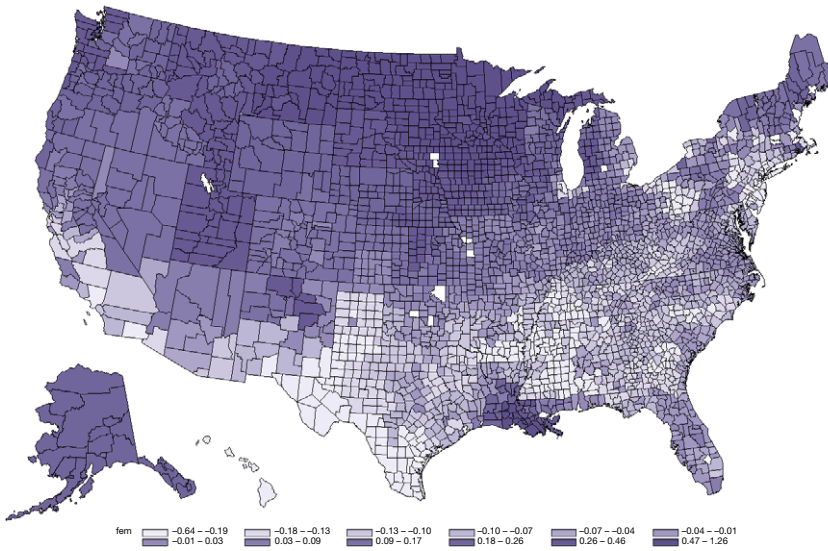
[10]The smallest geographic area in the 1900 Census is county. However, in the 2000 and 2010 censuses, the smallest geographical area that the database identifies with respect to each person is the Public Use Microdata Area (PUMA). PUMAs partition each state or equivalent entity into geographic areas containing no fewer than 100,000 people. Many small counties are aggregated into one PUMA. In all these cases, we assign the PUMA information to all counties from the corresponding PUMA-district. Some large counties consist of multiple non-overlapping PUMA districts. In all these cases, we aggregate the corresponding PUMA information to the level of the county. For example, we identify 2,071 different PUMAs in census 2000.

[11]In the Supplementary Material, we also replicate our main regressions using a dummy variable "Southern," which is equal to 1 if the firm is located in the southern states, as defined in Rice and Coates (1995), and 0 otherwise. The results are consistent with the findings reported in the article in that firms located in the southern states are less likely to have female leaders.

FIGURE 2

Inherited Attitudes Toward Gender Egalitarianism

Figure 2 shows county-level averages for the gender-egalitarianism index, GEN_EGAL, which reflects inherited beliefs about gender roles. Higher values (darker color) of GEN_EGAL reflect greater gender-egalitarianism.




We also validate our index using the index from Charles et al. (2019), who create a state-level sexism index using the General Social Survey, which is a current survey of American cultural attitudes. Charles et al. find that U.S. states with greater sexism have lower wages and lower labor force participation for women.[12] A regression of the Charles et al. index on our gender-egalitarian index yields a *t*-statistic of 16.94, and shows that a 1-standard-deviation increase in our index results in 0.233 reduction in sexism, per the Charles et al. index. The mean of the sexism index is 0.252, so this is a meaningful effect. The Charles et al. index is measured at the state level, whereas our index is measured at the county level. There is heterogeneity in our index across counties within a state, so the fact that the Charles et al. index is measured at the state level adds some noise to this test, yet despite this we still find a highly significant correlation. This suggests that modern beliefs about gender roles can in part be explained by immigration patterns from 120 years ago.

## D. Firm-Level Variables and Sample

To construct our firm-level sample, we begin with firms covered in BoardEx for the period of 2000 to 2019. We include all observations with non-missing data

[12]For our purposes, we prefer the gender-egalitarian index that we develop, as it is constructed at the county level, and is largely exogenous in our setting. As an example, women serving on boards and as executives could impact the gender-attitudes reflected in the GSS, but could not impact our index.

on female board representation, and merge this data with accounting and stock return data from Compustat and CRSP. We provide definitions for each variable in the Appendix.

Table 3 reports summary statistics for our sample. It shows that 59.4% of firms have at least 1 female director, while 25.7% of firms have more than 1 female director. Hence, many firms have no female directors and the majority of firms do not have more than 1. Women account for 10.2% of directors at the average firm. The average board size is 8.7 members, and 80.5% of directors are "outside" directors, that is, not directly affiliated with the firm or its business.

TABLE 3

Summary Statistics

Table 3 reports summary statistics for the variables in our sample. The first variable is the gender-equality variable. In Table 1, this variable is summarized for each country. In this table, the variable is summarized by U.S. county. To create the county-level variables, we link U.S. Census respondents to their country of origin and assign the country's gender-equality value to each country. Afterward, we take an average of the gender-equality values across all respondents within each county. These variables are calculated using the U.S. 1900 Census. Summary statistics of other U.S. county variables including female labor participation, pay gap, household income, college education, percentage of female head of households, percentage of registered Democrats, and population are also provided in this table and based on U.S. 2000 Census. Adjusted female labor participation and pay gap variables are calculated by each industry/occupation and county adjusted by national averages. The other variables reported are firm-year averages. The board and executive officers' data are from BoardEx. Accounting and stock return data are from Compustat and CRSP. The sample period is 2000–2019. Detailed descriptions of all variables are provided in the Appendix.

| Variables | Mean | Median | Std. Dev. | P10 | P90 | No. of obs. |
|---|---|---|---|---|---|---|
| *County Variables* | | | | | | |
| *Inherited Beliefs (1900)* | | | | | | |
| GEN_EGAL | 0.507 | 0.315 | 0.610 | 0.008 | 0.138 | 680 |
| *Female Labor Participation and Pay Gap* | | | | | | |
| %_FEMALE_LABOR | 0.463 | 0.464 | 0.019 | 0.439 | 0.487 | 3,127 |
| FEMALE_INC/MALE_INC | 0.626 | 0.623 | 0.062 | 0.553 | 0.704 | 3,127 |
| %_FEMALE_STEM | 0.506 | 0.509 | 0.050 | 0.441 | 0.568 | 3,127 |
| FEMALE_STEM_INC/MALE_STEM_INC | 0.631 | 0.633 | 0.071 | 0.533 | 0.717 | 3,127 |
| %_FEMALE_LABOR (ADJ.) | 0.018 | 0.019 | 0.022 | −0.010 | 0.046 | 3,127 |
| FEMALE_INC/MALE_INC (ADJ.) | 0.070 | 0.045 | 0.239 | −0.030 | 0.142 | 3,127 |
| %_FEMALE_STEM (ADJ.) | 0.017 | 0.016 | 0.037 | −0.028 | 0.069 | 3,127 |
| FEMALE_STEM_INC/MALE_STEM_INC (ADJ.) | 0.037 | 0.026 | 0.104 | −0.073 | 0.151 | 3,127 |
| *Other County Variables* | | | | | | |
| log(HHIncome) | 10.745 | 10.710 | 0.187 | 10.540 | 10.986 | 3,127 |
| COLLEGE_DEGREE (%) | 0.189 | 0.170 | 0.076 | 0.121 | 0.285 | 3,127 |
| %_OF_FEMALE_POP | 0.517 | 0.516 | 0.015 | 0.501 | 0.535 | 3,127 |
| %_OF_DEMOCRATS | 0.406 | 0.401 | 0.114 | 0.265 | 0.547 | 3,115 |
| log(POPULATION) | 10.241 | 10.069 | 1.518 | 8.568 | 12.182 | 3,127 |
| *Firm Variables* | | | | | | |
| *Female Board and Executives* | | | | | | |
| %_OF_FEMALE_DIRECTORS | 0.102 | 0.100 | 0.103 | 0.000 | 0.250 | 80,116 |
| ≥1_FEMALE_DIRECTOR | 0.594 | 1.000 | 0.491 | 0.000 | 1.000 | 80,116 |
| ≥2_FEMALE_DIRECTORS | 0.257 | 0.000 | 0.437 | 0.000 | 1.000 | 80,116 |
| ≥1_FEMALE_IMPORTANT_COMMITTEE_CHAIR (GIVEN_FEMALE_ON_BOARD) | 0.226 | 0.000 | 0.418 | 0.000 | 1.000 | 47,559 |
| ≥1_FEMALE_IMPORTANT_COMMITTEE_CHAIR (ALL) | 0.135 | 0.000 | 0.341 | 0.000 | 1.000 | 79,894 |
| ≥1_FEMALE_COMMITTEE_CHAIR (GIVEN_FEMALE_ON_BOARD) | 0.262 | 0.000 | 0.440 | 0.000 | 1.000 | 47,559 |
| ≥1_FEMALE_COMMITTEE_CHAIR (ALL) | 0.156 | 0.000 | 0.363 | 0.000 | 1.000 | 79,894 |
| HAS_A_FEMALE_CEO | 0.034 | 0.000 | 0.181 | 0.000 | 0.000 | 61,137 |
| HAS_AT_LEAST_1_FEMALE_TOP_EXECUTIVE | 0.527 | 1.000 | 0.499 | 0.000 | 1.000 | 62,420 |
| HAS_AT_LEAST_2_FEMALE_TOP_EXECUTIVES | 0.205 | 0.000 | 0.403 | 0.000 | 1.000 | 62,420 |
| %_OF_FEMALE_EXECUTIVES | 0.113 | 0.100 | 0.130 | 0.000 | 0.286 | 62,420 |
| log(ASSETS) | 6.820 | 6.842 | 2.142 | 3.969 | 9.490 | 80,116 |
| *Q* | 2.066 | 1.412 | 2.471 | 0.966 | 3.710 | 66,147 |
| ROA | −0.015 | 0.044 | 0.338 | −0.215 | 0.160 | 66,140 |
| DEBT/ASSETS | 0.181 | 0.101 | 0.212 | 0.000 | 0.479 | 79,858 |
| SD(RET) | 0.117 | 0.094 | 0.085 | 0.047 | 0.213 | 76,279 |
| R&D/ASSETS | 0.047 | 0.000 | 0.125 | 0.000 | 0.142 | 80,116 |
| BOARD_SIZE | 8.739 | 8.000 | 2.808 | 6.000 | 12.000 | 80,116 |
| %_OF_OUTSIDE_DIRECTORS | 0.805 | 0.833 | 0.112 | 0.667 | 0.909 | 80,116 |

We include executives that are listed in BoardEx and ranked among the top 5 based on compensation. The presence of women in executive roles is significantly less than that of directorships. Only 13.9% of firms have a female executive, and women represent only 5.3% of all executives. Only 3.4% of firms have a female CEO.

## III. Inherited Beliefs About Gender Roles and General Labor Market Outcomes

We begin our U.S. investigation by asking whether inherited beliefs about gender roles matter for general labor market outcomes, such as female labor force participation, the gender pay gap, and female participation and pay gaps in STEM occupations. Significant effects in these outcomes would support the idea that inherited beliefs about gender roles create labor market conditions that could lead to more women in corporate leadership positions, which we study in the next section.

In the census data, we can observe a person's gender, occupation, county of residence, and income. We use the 2000 Census data to create gender-pay gap and gender-employment gap variables for each U.S. county. Our employment gap variable reflects the number of women working in a county relative to the entire workforce in the county. It is adjusted by the national average for each occupation, that is, we first measure the percentage of women working in occupation $O$ in county $C$. We then subtract the average ratio for occupation $O$ for the entire country.

$$\text{(1)}\quad \text{ADJUSTED\_EMPLOYMENT\_GAP}_c = \frac{1}{N}\times\sum_{O=1}^{N}\left(\frac{\text{WOMEN\_EMPLOYED}_{O,C}}{\text{TOTAL\_EMPLOYED}_{O,C}} - \text{NATIONAL\_AVERAGE}\frac{\text{WOMEN\_EMPLOYED}_{O}}{\text{TOTAL\_EMPLOYED}_{O}}\right).$$

The adjusted pay gap is defined the same way, only we focus on the median pay for women and men.

$$\text{(2)}\quad \text{ADJUSTED\_PAY\_GAP}_c = \frac{1}{N}\times\sum_{O=1}^{N}\left(\frac{\text{MEDIAN\_FEMALE\_PAY}_{O,C}}{\text{MEDIAN\_MALE\_PAY}_{O,C}} - \text{NATIONAL\_AVERAGE}\frac{\text{MEDIAN\_FEMALE\_PAY}_{O}}{\text{MEDIAN\_MALE\_PAY}_{O}}\right).$$

We also construct the above variables with a sample that is limited to STEM occupations. It is well documented that women are underrepresented in STEM occupations. Guiso et al. (2008) show that girls score better in math relative to boys in more gender-egalitarian countries. It could therefore be the case that inherited

beliefs about gender roles encourage women to study more technical subjects and pursue STEM occupations. We define STEM occupations following Adams and Kirchmaier (2016), who use O*NET (2015), which lists occupations that require education in science, engineering, or mathematics. Summary statistics for our general labor market outcome variables are provided in Table 3.

We report our findings in Table 4. The control variables include the percentage of the population in the county that has a college degree, the logarithm of average household income, the county's total population, the percentage of the population that is female, and the percentage of the population that is registered as Democrat. The findings show that overall, there is greater female labor force participation and lower gender pay gaps in counties that are more gender-egalitarian; there is also greater female participation in STEM occupations more gender-egalitarian counties. The effect of gender-egalitarianism for the gender pay gap in STEM is insignificant though. Overall, the findings here support the idea that inherited beliefs about gender roles impact the roles that women play in the labor market.

The control variables show that having a larger percentage of the population registered as Democrat has varying effects in this setting. On the one hand, it is associated with more women in the workforce, smaller gender pay gaps overall and in STEM. On the other hand, it is not significantly correlated with women working in STEM. Counties with more educated populations and larger populations have fewer women in the workforce and in STEM, whereas wealthier counties have more

TABLE 4

Female Labor Participation, STEM Participation, and Gender-Pay Gaps Across U.S. Counties

Table 4 reports county-level regression results for which the female labor participation rate and the gender pay gap are the dependent variables. Female labor participation rate is the % of labor force that is female in each industry/occupation group within each county, adjusted by the national average. Gender pay gap is measured as median female pay divided by median male pay within each industry-occupation-county, adjusted by the national average. Similarly, female STEM labor participation rate is the % of labor force that is female in STEM occupations within each county, adjusted by the national average. STEM gender pay gap is measured as median female pay divided by median male pay within STEM occupations, adjusted by the national average. Details regarding the construction of all variables are provided in the Appendix. *t*-statistics are reported in the parentheses and standard errors are robust and clustered at state level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

| | Female Labor Participation Rate | Gender Pay Gap | Female STEM Labor Participation Rate | STEM Gender Pay Gap |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| GEN_EGAL (1900) | 0.007*** | 0.025*** | 0.012*** | 0.003 |
| | (3.97) | (3.39) | (4.95) | (0.69) |
| COLLEGE_DEGREE (%) | −0.180*** | 0.054 | −0.225*** | 0.018 |
| | (−8.88) | (0.30) | (−8.25) | (0.18) |
| log(HHIncome) | 0.046*** | −0.020 | 0.036*** | −0.044 |
| | (5.03) | (−0.30) | (2.72) | (−1.01) |
| %_FEMALE_POP | 0.260*** | 0.687 | 0.404*** | 0.595 |
| | (2.90) | (1.17) | (2.99) | (0.88) |
| %_OF_DEMOCRATS | 0.020** | 0.211*** | 0.031 | 0.095** |
| | (2.24) | (3.73) | (1.61) | (2.16) |
| POPULATION | −0.005*** | 0.001 | −0.004*** | 0.000 |
| | (−5.02) | (0.13) | (−2.79) | (0.06) |
| CONSTANT | −0.547*** | −0.160 | −0.517*** | 0.161 |
| | (−5.04) | (−0.19) | (−2.98) | (0.23) |
| No. of obs. | 2,766 | 2,766 | 2,766 | 2,766 |
| Adj. $R^2$ | 0.294 | 0.016 | 0.206 | 0.024 |

women in the workforce and in STEM. Not surprisingly, counties with more women have more women in the workforce and in STEM.

## IV. Inherited Beliefs About Gender Roles and Female Corporate Leadership

In this section, we study how inherited beliefs about gender roles impact female board representation (Section IV.A), the leadership roles that women have on boards (Section IV.B), and the presence of female executives (Section IV.C).

### A. Female Directors

We now test via regressions the hypothesis that inherited beliefs about gender roles impact the extent to which firms have female directors. The first two regressions in Table 5 are probit regressions that use firm-year observations.[13] The dependent variable is equal to 1 if the firm has at least 1 female board member, and 0 otherwise. The regressions include industry and time-fixed effects, but not firm-fixed effects, as our gender-egalitarian index is measured at the county level and does not vary within-firm. The standard errors are clustered at the county level. The first regression includes firm-level controls, while the second regression includes both firm-level and county-level controls.

We observe that the coefficient on the gender-egalitarian index is positive and significant in both regressions. Combining the gender-egalitarianism index's coefficient in the second regression with the summary statistics in Table 3, we estimate that the probability of having a female director is 10.4% higher in a high gender-egalitarian (90th percentile) county as compared to a low gender-egalitarian (10th percentile) county. The unconditional mean of having at least 1 female director is 59.4%, so the difference in probability of 10.4% is a meaningful effect.

The third regression in Table 5 is an ordered probit. The dependent variable is equal to 2 if there is more than 1 female director, 1 if there is only 1 female director, and 0 if there are no female directors. Taken together with the summary statistics in Table 3, the results show that a firm located in a high gender-egalitarian county has a 25.8% greater chance of being in a higher order group (2 vs. 1 or 1 vs. 0) than a firm located in a low gender-egalitarian county.

The final regression in Table 5 is an OLS regression, in which the dependent variable is the percentage of board members that are women. From the regression output, we can estimate that the percentage of women serving on boards in a high gender-egalitarian county is 2.06% higher than in a low gender-egalitarian county. As we mention earlier, in our sample on average only 10.2% of directors are female, so a 2.06% difference is a meaningful effect.

The results in Table 5 show that several of the control variables are also important with respect to women on boards. A firm is more likely to have women on its board if it is larger, has a higher Tobin's $Q$, has a larger board, and has more outside directors. Firms that have fewer women on their board are riskier, that is,

[13] In unreported tests, we collapse our sample from firm-year observations into firm-level observations, by averaging the firm-year variables. We find the same results using this method. We also obtain the same results using only the first year's observations or the last year's observations of the sample firms.

TABLE 5

Inherited Beliefs About Gender Roles and Female Directors

Table 5 reports the coefficient estimates and *t*-statistics for probit, ordered probit, and OLS regressions. In the probit regressions, the dependent variable is dummy variable equal to 1 if there is a female director, and 0 otherwise (regressions 1 and 2). In the ordered probit regressions, the dependent variable is equal to 0 if there is no female on board, equal to 1 if there is 1 female on board, and equal to 2 if there is more than 1 female directors on board (regression 3). In the OLS regression, the dependent variable is the percentage of female directors on a firm's board, that is, the number of women board members scaled by the total number of board members for firm *i* in year *t* (regression 4). GEN_EGAL (1900) is the county-level gender-egalitarian index based on U.S. 1900 Census. Detailed definitions for the variables are provided in the Appendix. The regressions include controls for firm-, board-, and county-characteristics. Coefficients for the probit and ordered probit regressions are marginal probabilities. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Our sample period is 2000–2019.

| | Probit | Probit | Ordered Probit | OLS |
|---|---|---|---|---|
| | | | =0 If 0 Female<br>=1 If 1 Female | |
| | Female on Board | Female on Board | =2 If >1 Female | % of Female Directors |
| | 1 | 2 | 3 | 4 |
| GEN_EGAL (1900) | 0.075*** | 0.076*** | 0.188*** | 0.015*** |
| | (4.45) | (4.20) | (4.99) | (5.80) |
| log(ASSETS) | 0.064*** | 0.064*** | 0.175*** | 0.012*** |
| | (14.68) | (15.17) | (18.24) | (16.53) |
| *Q* | 0.010*** | 0.010*** | 0.026*** | 0.002*** |
| | (5.50) | (5.53) | (7.42) | (6.22) |
| ROA | 0.010 | 0.007 | 0.028 | 0.003 |
| | (0.59) | (0.37) | (0.63) | (0.87) |
| DEBT/ASSETS | −0.062** | −0.057** | −0.150*** | −0.010** |
| | (−2.57) | (−2.38) | (−2.78) | (−2.53) |
| SD(RET) | −0.187*** | −0.183*** | −0.510*** | −0.033*** |
| | (−3.51) | (−3.63) | (−4.03) | (−4.13) |
| R&D/ASSETS | 0.085 | 0.060 | 0.164 | 0.006 |
| | (1.57) | (0.99) | (1.08) | (0.53) |
| BOARD_SIZE | 0.077*** | 0.077*** | 0.193*** | 0.005*** |
| | (23.66) | (23.70) | (28.91) | (8.61) |
| %_OUTSIDE_DIRECTORS | 0.502*** | 0.511*** | 1.486*** | 0.102*** |
| | (10.39) | (10.52) | (12.72) | (12.96) |
| log(HHIncome) | | 0.087 | 0.256* | 0.019* |
| | | (1.49) | (1.74) | (1.76) |
| COLLEGE_DEGREE (%) | | −0.144 | −0.338 | −0.018 |
| | | (−1.15) | (−1.21) | (−0.85) |
| %_FEMALE_LABOR | | −0.144 | −0.093 | 0.006 |
| | | (−0.30) | (−0.08) | (0.08) |
| %_OF_DEMOCRATS | | 0.304*** | 0.915*** | 0.064*** |
| | | (3.70) | (4.78) | (4.62) |
| POPULATION | | −0.028*** | −0.064*** | −0.004*** |
| | | (−3.51) | (−3.16) | (−2.80) |
| No. of obs. | 62,462 | 62,462 | 62,478 | 62,478 |
| Adj./pseudo $R^2$ | 0.257 | 0.260 | 0.226 | 0.262 |

they have more leverage and higher stock return volatility. This finding is consistent with Huang and Kisgen (2013), who find that male executives are more overconfident and take more risks than women executives. With respect to the county-level controls, firms have more women board members in counties with smaller populations and with a larger percentage of Democrats.

## B. Gender-Egalitarianism and Female Leadership Roles on Corporate Boards

In this section, we ask whether greater gender-egalitarianism leads to more female leadership on corporate boards. Using the same regression specification as

in Table 5, we test whether it is more likely that women are chairing board committees at firms located in more gender-egalitarian counties. If a woman is chairing a board committee, it suggests that her appointment to the board is not merely window dressing. Field, Souther, and Yore (2020) find that although female and minority board membership has increased over time, female and minority leadership roles in boards are still more limited. This suggests that the increase in board diversity that they document may be cosmetic. We ask here whether such window dressing can explain our results.

In the first two regressions of Table 6, the dependent variable is equal to 1 if a woman chairs an important board committee, and 0 otherwise. Important board

TABLE 6

Inherited Beliefs About Gender Roles and Female Board Leadership

Table 6 reports the coefficient estimates and *t*-statistics for probit regressions in which the dependent variable is equal to 1 if there is at least a woman chairing an important board committee (regressions 1 and 2) or is equal to 1 if there is at least 1 board committee chaired by a woman (regressions 3 and 4). Important committees are audit committee, nominee committee, compensation committee, and governance committee. Regressions 1 and 3 include all firm-year observations. Regressions 2 and 4 include only firm-year observations with at least 1 female director on the firm's board. The coefficients are marginal probabilities. GEN_EGAL(1900) is the county-level gender-egalitarian index based on U.S. 1900 Census. Detailed definitions for all variables are provided in the Appendix. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Our sample period is 2000–2019.

| | Full Sample | Firm-Years with Female Directors | Full Sample | Firm-Years with Female Directors |
|---|---|---|---|---|
| | Important Comm. Chair | Important Comm. Chair | Any Comm. Chair | Any Comm. Chair |
| | 1 | 2 | 3 | 4 |
| GEN_EGAL(1900) | 0.032*** | 0.035*** | 0.034*** | 0.036*** |
| | (5.27) | (3.61) | (5.55) | (4.10) |
| log(ASSETS) | 0.013*** | 0.005 | 0.020*** | 0.015*** |
| | (6.69) | (1.56) | (10.31) | (4.98) |
| *Q* | 0.000 | −0.003 | 0.001 | −0.002 |
| | (0.55) | (−1.58) | (0.80) | (−1.36) |
| ROA | 0.006 | −0.002 | 0.003 | −0.008 |
| | (0.64) | (−0.14) | (0.32) | (−0.47) |
| DEBT/ASSETS | 0.018 | 0.033 | 0.016 | 0.032 |
| | (1.45) | (1.53) | (1.17) | (1.40) |
| SD(RET) | −0.046* | −0.003 | −0.050* | 0.005 |
| | (−1.72) | (−0.06) | (−1.72) | (0.10) |
| R&D/ASSETS | 0.056** | 0.085** | 0.067** | 0.102** |
| | (2.32) | (2.03) | (2.43) | (2.11) |
| BOARD_SIZE | 0.008*** | −0.003 | 0.011*** | 0.000 |
| | (6.45) | (−1.25) | (8.16) | (0.03) |
| %_OUTSIDE_DIRECTORS | 0.240*** | 0.216*** | 0.275*** | 0.252*** |
| | (10.64) | (5.28) | (11.04) | (5.75) |
| log(HHIncome) | 0.031 | 0.037 | 0.028 | 0.024 |
| | (0.91) | (0.69) | (0.83) | (0.48) |
| COLLEGE_DEGREE (%) | −0.062 | −0.086 | −0.056 | −0.062 |
| | (−0.92) | (−0.82) | (−0.88) | (−0.66) |
| %_FEMALE_LABOR | −0.367* | −0.563* | −0.237 | −0.329 |
| | (−1.77) | (−1.66) | (−1.12) | (−0.98) |
| %_OF_DEMOCRATS | 0.124*** | 0.151*** | 0.138*** | 0.164*** |
| | (3.93) | (3.04) | (4.27) | (3.29) |
| POPULATION | −0.008*** | −0.005 | −0.009*** | −0.006 |
| | (−2.77) | (−1.29) | (−3.03) | (−1.51) |
| No. of obs. | 62,374 | 36,663 | 62,374 | 36,663 |
| Adj./pseudo $R^2$ | 0.076 | 0.028 | 0.092 | 0.027 |

committees include audit, compensation, nominee, and governance committee. In the first regression, the coefficient for the gender-egalitarianism index is positive and significant, showing that the probability of a woman chairing an important committee is higher in more gender-egalitarian counties. Taken together with the summary statistics in Table 3, the coefficient in regression 1 shows that the probability is 4.4% higher in high gender-egalitarian counties as compared to low gender-egalitarian counties. Table 3 reports that 13.5% of firms have a woman chairing an important committee, so this is an economically significant effect.

In regression 2 of Table 6, we limit the sample to include only firm-years that have at least 1 female director. The results show that the probability of having a female director is 4.8% higher in high gender-egalitarian counties as compared to low gender-egalitarian counties. Table 3 reports that 22.6% of the firm-year observations with at least 1 female director have an important committee chaired by a woman, so this is a large effect.

Regressions 3 and 4 in Table 6 are like regressions 1 and 2, only the dependent variable is equal to 1 if a woman chairs any board committee, and not just the more important ones. The unconditional probability that a woman chairs any board committee is 15.6%. In regression 3, the coefficient for the gender-egalitarian index is positive and significant, and shows that the probability of a woman chairing a committee is 4.7% higher in the high gender-egalitarian counties relative to the low gender-egalitarian countries. Regression 4 is limited to firms that have at least 1 female board member. Among these, 26.2% have a woman chairing at least 1 committee. Regression 4 shows that the probability of a woman chairing a committee is 4.9% higher in the high gender-egalitarian counties as compared to low gender-egalitarian counties.

The control variables in Table 6 show that a woman chairing a committee is more likely if the firm is larger, has more R&D spending, less stock price volatility, has a larger board, and has more outside directors. Essentially, these are large, stable firms that tend to invest more in R&D. At the county level, smaller populations and populations that are more democratic politically are more likely to have women chairing board committees.

## C. Female Executives

We now study the extent to which gender-egalitarianism is associated with having women in executive roles. We report these results in Table 7. We include executives that are listed in BoardEx and ranked among the top 5 based on compensation.[14]

The dependent variable in the first regression of Table 7 is equal to 1 if the firm has at least 1 female executive, and 0 otherwise. The independent variables are the same as those used in the previous tables. The coefficient for the gender-egalitarianism index is positive and statistically significant. Taken together with the summary statistics in Table 3, the gender-egalitarianism coefficient shows that

[14]We performed the same analyses using a data from Execucomp and obtained similar results. We chose to use BoardEx in order to align the executive sample with the sample used for directors.

TABLE 7

Inherited Beliefs About Gender Roles and Female Executives

Table 7 reports coefficient estimates and *t*-statistics for probit and ordered probit regressions in which the dependent variables reflect having women in executive roles. In regression 1, the dependent variable is equal to 1 if there is at least 1 female top executive, and 0 otherwise. In regression 2, the dependent variable is equal to 0 if there is no female top executive, 1 if there is 1 female top executive, and 2 if there is more than 1 top female executive. In regression 3, the dependent variable is equal to 1 if the CEO is a female, and 0 otherwise. In regression 4, the dependent variable is equal to the % of executives that are female. The coefficients are reported as marginal probabilities. GEN_EGAL (1900) is the county-level gender-egalitarian index based on U.S. 1900 Census. Detailed definitions for the variables are provided in the Appendix. The regressions include controls for firm-, board-, and county-characteristics. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Our sample period 2000–2019.

| | Probit | Ordered Probit | Probit | OLS |
|---|---|---|---|---|
| | =1 If There is At Least 1 Female Executive | =0 If 0 Female Exe; =1 If 1 Female Exe; =2 If >1 Female Exe | =1 If Female CEO | =% of Female Executives |
| | 1 | 2 | 3 | 4 |
| GEN_EGAL(1900) | 0.072*** | 0.180*** | 0.010*** | 0.070*** |
| | (4.14) | (5.15) | (2.97) | (4.03) |
| log(ASSETS) | 0.076*** | 0.195*** | 0.001 | −0.009** |
| | (17.83) | (21.15) | (0.80) | (−2.45) |
| *Q* | 0.009*** | 0.023*** | −0.000 | −0.001 |
| | (3.92) | (5.35) | (−0.06) | (−0.56) |
| ROA | 0.012 | 0.033 | −0.001 | 0.047*** |
| | (0.62) | (0.67) | (−0.27) | (2.69) |
| DEBT/ASSETS | −0.043* | −0.109* | −0.011* | 0.045* |
| | (−1.70) | (−1.79) | (−1.71) | (1.71) |
| SD(RET) | −0.270*** | −0.728*** | 0.019 | −0.092* |
| | (−4.78) | (−5.46) | (1.57) | (−1.94) |
| R&D/ASSETS | 0.112* | 0.271* | 0.003 | −0.035 |
| | (1.91) | (1.92) | (0.25) | (−0.56) |
| BOARD_SIZE | 0.058*** | 0.146*** | −0.001 | 0.034*** |
| | (16.17) | (18.82) | (−1.01) | (11.49) |
| %_OUTSIDE_DIRECTORS | 0.783*** | 2.116*** | 0.040*** | 1.404*** |
| | (13.57) | (16.06) | (2.74) | (23.99) |
| log(HHIncome) | 0.096 | 0.268* | 0.013 | 0.092 |
| | (1.62) | (1.86) | (0.72) | (1.28) |
| COLLEGE_DEGREE (%) | −0.124 | −0.256 | −0.013 | −0.139 |
| | (−1.00) | (−0.92) | (−0.37) | (−1.02) |
| %_FEMALE_LABOR | 0.061 | 1.037 | −0.029 | 0.105 |
| | (0.14) | (1.01) | (−0.20) | (0.21) |
| %_OF_DEMOCRATS | 0.239*** | 0.638*** | 0.069*** | 0.219*** |
| | (3.07) | (3.69) | (3.15) | (2.62) |
| POPULATION | −0.027*** | −0.059*** | 0.001 | −0.027*** |
| | (−3.58) | (−3.27) | (0.58) | (−3.24) |
| No. of obs. | 62,387 | 62,403 | 59,659 | 61,068 |
| Adj./pseudo $R^2$ | 0.245 | 0.217 | 0.062 | 0.249 |

a firm in a high gender-egalitarian county is 9.88% more likely to have a female executive than a firm in a low gender-egalitarian county. The unconditional probability of having a female executive is 52.7%, so this is a sizeable effect.

The second regression of Table 7 is an ordered probit. The dependent variable is equal to 2 if there is more than 1 female executive, 1 if there is only 1 female executive, and 0 otherwise. The coefficient is again positive and highly significant. The coefficient reveals that the probability of being in a higher ordered group (2 vs. 1, or 1 vs. 0) is 24.70% higher if a firm is headquartered in a high gender-egalitarian county as compared to a low gender-egalitarian county.

In the third column of Table 7, the dependent variable is equal to 1 if there is a female CEO, and 0 otherwise. Only 3.4% of the firms in our sample have a female CEO, yet the regression results here show that this likelihood is 1.37% higher in a high gender-egalitarian county as compared to a low gender-egalitarian county.

In the final column of Table 7, the dependent variable is continuous, it is the percentage of executives that are women. The gender-egalitarianism coefficient here is also positive and significant, indicating that the percentage of executives that are females is significantly greater at firms in counties with higher levels of gender-egalitarianism.

Overall, our findings here show that as with boards, the likelihood of having a female executive is higher for firms located in counties that are more gender-egalitarian. The findings here may also shed light on our board results. Board members are often executives at firms located close by (Knyazeva, Knyazeva, and Masulis (2013)). If firms in more gender-egalitarian areas are more likely to promote women to executive roles, then they create a greater supply of potential women board members for neighboring firms.

## D. Switching Headquarters

We now ask whether female board representation changes when a firm moves to a more gender-egalitarian county. We focus on boards, rather than executives as there are more board members and board membership is more dynamic, giving our tests more power. To conduct these tests, we create a sample of firms that moved their headquarters to a county that is more gender-egalitarian than its current headquarters' county. We include firm-year observations for 3 years before and 5 years after the move, and test whether board diversity is greater after the switch.[15] We also create a second sample of firms that moved to counties with lower gender-egalitarianism, and conduct the same experiment.

The results are reported in Table 8. Regressions 1–3 show that when a firm moves to a county with higher gender-egalitarianism, the gender-diversity of its board increases. In the first regression, the dependent variable is equal to 1 if there is at least 1 female board member, and 0 otherwise. The results show that this likelihood is higher by 35.8% in the years after the move as compared to the years before the move. The second regression is an ordered probit, where the dependent variable is equal to 2 if there are multiple women board members, 1 if there is only 1 female board member, and 0 otherwise. The coefficient shows that the likelihood of being in a higher ordered group is 24.2%. The regression in the final column shows that the percentage of women that make up a board is higher by 1.3% after the firms moves. The sample mean for this variable is only 10.2%, so this represents an economically meaningful effect.

Regressions 4–6 of Table 8 report results from the same experiment, only they are run in the sample of firms that moved to *less* gender-egalitarian counties. None of the coefficients are significant in these regressions, that is, moving to a less

[15] We obtain similar results if we include firm-year observations for 1 year before and 3 years after the relocation.

TABLE 8

Inherited Beliefs About Gender Roles and Female Board Leadership: Firms Switching Headquarters

Table 8 reports regression results among a sample of firms that have relocated their headquarters during the sample period to regions with higher (regressions 1–3) or lower (regressions 4–6) values of the gender-egalitarianism index. Our sample includes the 3 years before and 5 years after the switching year. We create a dummy variable "POST_SWITCH" that is equal to 1 for years after the switching year, and 0 otherwise. In regressions 1 and 3, the dependent variable is equal to 1 if there is at least 1 director, and 0 otherwise. In regressions 2 and 4, the dependent variable is equal to 0 if there is no female directors, 1 if there is 1 female director, and 2 if there is more than 1 female directors. In regressions 3 and 6, the dependent variable is equal to the % of directors that are female. The coefficients are reported as marginal probabilities. Detailed definitions for the variables are provided in the Appendix. The regressions include controls for firm-, board-, and county-characteristics. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

| | Moving to Higher GEN_EGAL Counties | | | Moving to Lower (Similar) GEN_EGAL | | |
|---|---|---|---|---|---|---|
| | Probit | Ordered Probit | OLS | Probit | Ordered Probit | OLS |
| | Female on Board | =0 If 0 Female =1 If 1 Female =2 If >1 Female | % of Female Directors | Female on Board | =0 If 0 Female =1 If 1 Female =2 If >1 Female | % of Female Directors |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| POST_SWITCH | 0.358*** | 0.242*** | 0.013*** | 0.138 | 0.088 | 0.003 |
| | (2.91) | (3.87) | (2.91) | (0.87) | (1.12) | (0.61) |
| log(ASSETS) | 0.231*** | 0.121*** | 0.009*** | 0.256*** | 0.197*** | 0.012*** |
| | (2.83) | (3.16) | (3.21) | (4.19) | (5.01) | (4.52) |
| *Q* | 0.090 | 0.038** | 0.002 | 0.073** | 0.033* | 0.002 |
| | (1.39) | (2.17) | (1.48) | (2.00) | (1.78) | (1.33) |
| ROA | −0.030 | −0.094 | −0.006 | 0.454 | 0.128 | 0.004 |
| | (−0.14) | (−1.02) | (−0.95) | (1.43) | (0.87) | (0.67) |
| DEBT/ASSETS | −0.201 | −0.121 | −0.008 | −0.425 | −0.511** | −0.031** |
| | (−0.42) | (−0.48) | (−0.42) | (−0.98) | (−2.48) | (−2.30) |
| SD(RET) | −0.567 | −0.312 | −0.012 | 0.291 | −0.074 | 0.000 |
| | (−0.64) | (−0.64) | (−0.46) | (0.37) | (−0.15) | (0.01) |
| R&D/ASSETS | −0.978 | −0.579* | −0.035 | 1.745* | 0.914* | 0.038 |
| | (−1.33) | (−1.66) | (−1.50) | (1.93) | (1.78) | (1.36) |
| BOARD_SIZE | 0.414*** | 0.242*** | 0.008*** | 0.422*** | 0.224*** | 0.006*** |
| | (4.92) | (5.93) | (2.84) | (7.41) | (8.04) | (3.49) |
| %_OUTSIDE_DIRECTORS | 3.127*** | 2.000*** | 0.123*** | 2.332*** | 1.502*** | 0.086*** |
| | (3.26) | (3.91) | (4.06) | (2.78) | (2.88) | (2.69) |
| log(HHIncome) | 0.749 | 0.072 | 0.005 | −0.483 | −0.145 | −0.004 |
| | (0.77) | (0.15) | (0.13) | (−0.55) | (−0.29) | (−0.11) |
| COLLEGE_DEGREE (%) | −0.544 | 0.160 | 0.018 | 2.244 | 0.634 | 0.036 |
| | (−0.25) | (0.15) | (0.21) | (1.19) | (0.61) | (0.47) |
| %_FEMALE_LABOR | −1.849 | −3.515 | −0.228 | −14.656* | −3.573 | −0.272 |
| | (−0.21) | (−0.69) | (−0.59) | (−1.77) | (−0.87) | (−0.97) |
| %_OF_DEMOCRATS | 1.783 | 0.542 | 0.038 | 1.104 | 0.387 | 0.043 |
| | (1.26) | (0.68) | (0.61) | (0.87) | (0.61) | (0.90) |
| POPULATION | −0.070 | 0.014 | 0.001 | 0.004 | 0.029 | 0.001 |
| | (−0.60) | (0.20) | (0.25) | (0.03) | (0.43) | (0.23) |
| No. of obs. | 2,201 | 2,267 | 2,267 | 1,963 | 2,056 | 2,056 |
| Adj./pseudo $R^2$ | 0.251 | 0.226 | 0.224 | 0.240 | 0.232 | 0.255 |

gender-egalitarian county does not seem to have an effect on board gender-diversity. This shows that the results are not simply caused by board diversity increasing over time, or being some feature of firms that move. When firms move, board diversity only tends to increase in firms that move to a more gender-egalitarian county. This is consistent with the idea that the local culture has some impact on the firm's culture. We cannot rule out the idea that the firm moved because it wanted to be in a county with a different culture. Yet the firm could have easily changed its board diversity right before the move, and we limit our

sample to the 3 years before the move. The fact that the change does not come until after their move suggests that the move had some impact.[16]

## V. Robustness: The Effects of Larger Cities and Board Persistence over Time

In this section, we perform several robustness checks. We study the effects of large cities on our findings. We also provide some additional tests concerned with the persistence of our board variables.

### A. The Effects of Large Cities

We now study the effects of large cities on or findings. We redo our main analyses but using two separate samples (firms not located in the 10 largest Combined Metropolitan Statistical Areas (CMSA), and firms that are located in the 10 largest CMSA). The top 10 CMSAs encompass major cities such as New York, Los Angeles, San Francisco, Boston, Chicago, and others.

Panel A of Table 9 reports our main results with firms outside of the top 10 CMSAs and Panel B of Table 9 reports our main results with only firms located in the top 10 CMSAs. The results in the two panels are similar and consistent with the results reported throughout the article. Our findings are therefore not driven by large cities and are also not driven by less populated regions. Instead, we find that the relation between gender-egalitarianism and female corporate leadership is robust in both types of regions.

### B. Board Persistence

The board and executive variables that we employ tend to be persistent, and we regress them on other variables that are persistent. Petersen (2009) points out that many articles in corporate finance have this issue, in that they regress persistent traits on other persistent traits. Petersen (2009) further shows that one way to deal with this is to cluster the standard errors, which we do throughout the article.

As additional robustness tests, we retest for the effects that we document in the previous tables but focus either on the first year of each firm's observations, or on the last year of each firm's observations, or the time-series averages of all of the firm's observations. In each case, the results are consistent with the baseline results reported in the article. In the interest of brevity, we report results using just the first year or last year of data in the Supplementary Material. We report the results using the averaged variables in Table 10.

We create averages of the board variables by creating a new dummy variable that is equal 1 if the firm has a woman director in 50% or more of its sample years, and 0 otherwise. We create a second variable that is the average of the yearly percentage of directors that are women. We then create these same two variables for executives, that is, one executive variable is a dummy equal to 1 if the firm has a

[16]We also re-estimate our regressions in the previous tables excluding firms that have changed their headquarters during our sample period. Our results remain the same.

female executive in 50% or more of its sample years, and 0 otherwise, and the other executive variable is the average of the yearly percentage of executives that are women. We also create dummy variable equal to 1 if a firm has a female CEO in 50% or more of its sample years, and 0 otherwise.

We regress these new variables on firm-level averages of the control variables that were used in the earlier tables. Even using these averages, which are noisier and less powerful than the firm-level regressions reported in the earlier tables, we still find a positive and statistically significant relation between gender-egalitarianism and female representation on corporate boards and as executives. All six of the gender-egalitarianism index's coefficients are positive and significant in Table 10.

TABLE 9

Inherited Beliefs About Gender Roles and Female Board Leadership: Excluding Top 10 CMSAs and Top 10 CMSAs

Table 9 re-estimate the regressions in Tables 5 and 7 but focuses on two subsamples (firms that are not located in the top 10 CMSAs (Panel A) and firms that are located in the top 10 CMSAs (Panel B)). All variables are defined the same as those in Tables 5 and 7. GEN_EGAL (1900) is the county-level gender-egalitarian index based on U.S. 1900 Census. Detailed definitions for the variables are provided in the Appendix. The regressions include controls for firm-, board-, and county-characteristics. Coefficients for the probit and ordered probit regressions are marginal probabilities. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Our sample period is 2000–2019.

*Panel A. Excluding Top 10 CMSAs*

| | Probit | Ordered Probit | OLS | Probit | Ordered Probit | Probit | OLS |
|---|---|---|---|---|---|---|---|
| | Female on Board | =0 if 0 Female =1 if 1 Female =2 if >1 Female | % of Female Directors | =1 if There is At Least 1 Female Executive | =0 if 0 Female Exe; =1 if 1 Female Exe; =2 if >1 Female Exe | =1 if Female CEO | =% of Female Executives |
| GEN_EGAL(1900) | 0.076*** | 0.213*** | 0.018*** | 0.075*** | 0.202*** | 0.009*** | 0.072*** |
| | (4.32) | (5.74) | (6.79) | (4.54) | (6.04) | (3.33) | (3.71) |
| log(ASSETS) | 0.064*** | 0.181*** | 0.012*** | 0.075*** | 0.199*** | 0.000 | −0.010 |
| | (9.87) | (11.24) | (10.89) | (12.00) | (13.09) | (0.04) | (−1.61) |
| *Q* | 0.009*** | 0.021*** | 0.002*** | 0.010*** | 0.021*** | −0.001 | −0.000 |
| | (2.88) | (3.73) | (3.06) | (2.86) | (3.82) | (−0.82) | (−0.13) |
| ROA | 0.020 | 0.056 | 0.004 | 0.017 | 0.037 | −0.003 | 0.066** |
| | (0.70) | (0.71) | (0.73) | (0.62) | (0.50) | (−0.34) | (2.50) |
| DEBT/ASSETS | −0.078* | −0.179* | −0.013* | −0.088* | −0.213* | −0.002 | 0.009 |
| | (−1.86) | (−1.69) | (−1.70) | (−1.96) | (−1.93) | (−0.19) | (0.19) |
| SD(RET) | −0.152* | −0.430* | −0.025* | −0.255*** | −0.679*** | 0.008 | −0.088 |
| | (−1.87) | (−1.92) | (−1.82) | (−2.93) | (−2.98) | (0.52) | (−1.20) |
| R&D/ASSETS | 0.118 | 0.349 | 0.017 | 0.120 | 0.372* | −0.005 | −0.059 |
| | (1.34) | (1.39) | (0.92) | (1.49) | (1.88) | (−0.25) | (−0.68) |
| BOARD_SIZE | 0.070*** | 0.186*** | 0.004*** | 0.052*** | 0.138*** | −0.002 | 0.033*** |
| | (13.71) | (17.10) | (5.31) | (8.86) | (10.53) | (−1.35) | (6.81) |
| %_OUTSIDE_DIRECTORS | 0.566*** | 1.675*** | 0.110*** | 0.881*** | 2.369*** | 0.080*** | 1.614*** |
| | (7.01) | (8.40) | (8.96) | (11.08) | (12.61) | (3.73) | (21.11) |
| log(HHIncome) | 0.045 | 0.292 | 0.019 | 0.148 | 0.495* | 0.009 | 0.149 |
| | (0.35) | (0.93) | (0.85) | (1.12) | (1.66) | (0.26) | (1.08) |
| COLLEGE_DEGREE (%) | −0.186 | −0.834 | −0.056 | −0.363 | −1.087** | −0.020 | −0.352 |
| | (−0.81) | (−1.47) | (−1.37) | (−1.48) | (−1.97) | (−0.34) | (−1.36) |
| %_FEMALE_LABOR | −1.196* | −3.456** | −0.181* | −0.796 | −1.529 | −0.155 | −0.367 |
| | (−1.94) | (−2.31) | (−1.73) | (−1.27) | (−1.08) | (−0.99) | (−0.52) |
| %_OF_DEMOCRATS | 0.520*** | 1.523*** | 0.097*** | 0.370*** | 1.036*** | 0.100*** | 0.274* |
| | (3.87) | (4.62) | (4.15) | (2.76) | (3.40) | (3.73) | (1.96) |
| POPULATION | −0.010 | −0.018 | −0.000 | −0.008 | −0.015 | −0.000 | −0.010 |
| | (−1.08) | (−0.83) | (−0.12) | (−0.81) | (−0.69) | (−0.18) | (−0.79) |
| No. of obs. | 27,449 | 27,466 | 27,466 | 27,410 | 27,448 | 24,529 | 26,925 |
| Adj./pseudo $R^2$ | 0.265 | 0.234 | 0.277 | 0.245 | 0.220 | 0.105 | 0.265 |

*(continued on next page)*

TABLE 9 (continued)

Inherited Beliefs About Gender Roles and Female Board Leadership: Excluding Top 10 CMSAs and Top 10 CMSAs

*Panel B. Among Top 10 CMSAs*

| | Probit | Ordered Probit | OLS | Probit | Ordered Probit | Probit | OLS |
|---|---|---|---|---|---|---|---|
| | Female on Board | =0 if 0 Female =1 if 1 Female =2 if >1 Female | % of Female Directors | =1 if There is At Least 1 Female Executive | =0 if 0 Female Exe; =1 if 1 Female Exe; =2 if >1 Female Exe | =1 if Female CEO | =% of Female Executives |
| GEN_EGAL(1900) | 0.101** | 0.202** | 0.016** | 0.097** | 0.187** | 0.002 | 0.095* |
| | (2.48) | (2.05) | (2.05) | (2.39) | (2.14) | (0.28) | (1.89) |
| log(ASSETS) | 0.067*** | 0.177*** | 0.012*** | 0.079*** | 0.200*** | 0.001 | −0.009* |
| | (11.48) | (14.71) | (13.34) | (13.48) | (17.27) | (0.93) | (−1.76) |
| *Q* | 0.010*** | 0.029*** | 0.002*** | 0.008*** | 0.024*** | 0.000 | −0.001 |
| | (5.44) | (6.05) | (5.31) | (3.22) | (3.85) | (0.79) | (−0.50) |
| ROA | −0.002 | 0.011 | 0.002 | 0.008 | 0.028 | 0.001 | 0.037* |
| | (−0.08) | (0.21) | (0.50) | (0.31) | (0.44) | (0.27) | (1.71) |
| DEBT/ASSETS | −0.058** | −0.165*** | −0.010** | −0.026 | −0.072 | −0.018** | 0.057* |
| | (−2.06) | (−2.79) | (−2.25) | (−0.84) | (−1.00) | (−2.51) | (1.75) |
| SD(RET) | −0.203*** | −0.558*** | −0.039*** | −0.270*** | −0.749*** | 0.019 | −0.103* |
| | (−3.25) | (−3.86) | (−3.90) | (−3.64) | (−4.70) | (1.32) | (−1.72) |
| R&D/ASSETS | 0.016 | 0.069 | −0.000 | 0.101 | 0.225 | 0.016 | −0.031 |
| | (0.20) | (0.38) | (−0.01) | (1.27) | (1.21) | (1.02) | (−0.39) |
| BOARD_SIZE | 0.082*** | 0.200*** | 0.005*** | 0.063*** | 0.154*** | 0.000 | 0.033*** |
| | (20.11) | (26.33) | (7.45) | (16.70) | (19.80) | (0.28) | (10.06) |
| %_OUTSIDE_DIRECTORS | 0.457*** | 1.339*** | 0.094*** | 0.707*** | 1.945*** | 0.015 | 1.245*** |
| | (7.67) | (9.98) | (10.20) | (9.45) | (12.09) | (0.93) | (19.40) |
| Log(HHIncome) | 0.170* | 0.313 | 0.014 | 0.121 | 0.220 | 0.021 | −0.004 |
| | (1.86) | (1.36) | (0.81) | (1.43) | (1.04) | (0.89) | (−0.04) |
| COLLEGE_DEGREE (%) | −0.302* | −0.465 | −0.012 | −0.160 | −0.153 | −0.009 | −0.040 |
| | (−1.79) | (−1.22) | (−0.41) | (−0.97) | (−0.41) | (−0.20) | (−0.22) |
| %_FEMALE_LABOR | 0.189 | 1.598 | 0.067 | 0.290 | 2.190 | 0.145 | −0.337 |
| | (0.28) | (1.02) | (0.56) | (0.45) | (1.55) | (0.71) | (−0.48) |
| %_OF_DEMOCRATS | 0.260** | 0.631** | 0.047** | 0.225** | 0.470** | 0.033 | 0.253** |
| | (2.45) | (2.52) | (2.50) | (2.17) | (1.99) | (1.07) | (2.09) |
| POPULATION | −0.044*** | −0.106*** | −0.008*** | −0.043*** | −0.097*** | 0.004 | −0.053*** |
| | (−3.10) | (−2.93) | (−2.98) | (−3.32) | (−3.13) | (1.33) | (−3.28) |
| No. of obs. | 35,001 | 35,012 | 35,012 | 34,944 | 34,955 | 32,892 | 34,143 |
| Adj./pseudo $R^2$ | 0.267 | 0.230 | 0.266 | 0.256 | 0.225 | 0.079 | 0.247 |

## VI. Directors' Characteristics and Gender-Egalitarianism

In this section, we ask whether women and men directors are different in terms of five characteristics, and whether these characteristics vary across women directors with gender-egalitarianism. We limit our sample here to outside directors (i.e., non-executive directors) only, as some of the characteristics reflect differences between the board member's employer and the firm at which they are a board member.

### A. Directors' Characteristics

The five characteristics we study are as follows:

DISTANCE is measured as kilometers between a directors' employer's headquarters and the headquarters of the firm where the director serves as a board member, divided by the average of this difference for all of the firm's outside directors. The kilometers are computed in Stata as the number of kilometers between the zip codes of the two firms' headquarters.

TABLE 10

Inherited Beliefs About Gender Roles and Female Board Leadership: Firm Averages

Table 10 reports the coefficient estimates and *t*-statistics for probit and OLS regressions using single cross section of averaged variables. GEN_EGAL (1900) is the county-level gender-egalitarian index based on the U.S. 1900 Census. Detailed definitions for the variables are provided in the Appendix. The regressions include controls for firm-, board-, and county-characteristics, averaged over the sample period. Coefficients for the probit regressions are marginal probabilities. We include industry and year fixed effects in all models. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Our sample period is 2000–2019.

| | Probit | OLS | Probit | Probit | OLS |
|---|---|---|---|---|---|
| | =1 Female on Board >50% Sample Years | Avg. % of Female Directors | =1 Female CEO > 50% of Sample Years | =1 Female Exe > 50% of Sample Years | Avg. % of Female Exes |
| | 1 | 2 | 3 | 4 | 5 |
| GEN_EGAL (1900) | 0.076*** | 0.012*** | 0.010** | 0.065*** | 0.055*** |
| | (4.48) | (4.93) | (2.09) | (3.81) | (3.61) |
| log(ASSETS) | 0.080*** | 0.012*** | −0.000 | 0.080*** | 0.014*** |
| | (13.53) | (15.40) | (−0.01) | (13.82) | (2.99) |
| *Q* | 0.019*** | 0.003*** | 0.001 | 0.014*** | 0.008** |
| | (4.89) | (4.56) | (1.35) | (3.49) | (2.19) |
| ROA | −0.060* | −0.007 | −0.006 | −0.026 | 0.008 |
| | (−1.88) | (−1.34) | (−0.74) | (−0.76) | (0.29) |
| DEBT/ASSETS | −0.044 | −0.010 | 0.001 | −0.037 | 0.093** |
| | (−1.06) | (−1.61) | (0.09) | (−0.88) | (2.36) |
| SD(RET) | −0.127 | −0.054*** | 0.052 | −0.382*** | −0.449*** |
| | (−1.01) | (−2.75) | (1.57) | (−2.88) | (−3.84) |
| R&D/ASSETS | 0.012 | 0.003 | −0.023 | 0.121 | 0.071 |
| | (0.14) | (0.22) | (−1.05) | (1.35) | (0.93) |
| BOARD_SIZE | 0.077*** | 0.004*** | 0.000 | 0.066*** | 0.022*** |
| | (14.88) | (5.71) | (0.05) | (13.68) | (5.46) |
| %_OUTSIDE_DIRECTORS | 0.609*** | 0.122*** | 0.062** | 0.932*** | 1.681*** |
| | (7.94) | (10.95) | (2.55) | (11.40) | (27.12) |
| log(HHIncome) | 0.075 | 0.013 | −0.008 | 0.071 | 0.047 |
| | (1.18) | (1.36) | (−0.41) | (1.11) | (0.81) |
| COLLEGE_DEGREE (%) | −0.254* | −0.008 | 0.024 | −0.089 | 0.039 |
| | (−1.88) | (−0.41) | (0.58) | (−0.65) | (0.31) |
| %_FEMALE_LABOR | −0.799 | −0.057 | −0.246* | −0.564 | −0.225 |
| | (−1.59) | (−0.81) | (−1.67) | (−1.12) | (−0.50) |
| %_OF_DEMOCRATS | 0.395*** | 0.064*** | 0.097*** | 0.269*** | 0.243*** |
| | (4.70) | (5.31) | (3.86) | (3.19) | (3.13) |
| POPULATION | −0.028*** | −0.003*** | 0.000 | −0.033*** | −0.016** |
| | (−3.66) | (−2.83) | (0.08) | (−4.31) | (−2.33) |
| No. of obs. | 6,811 | 6,820 | 6,190 | 6,811 | 6,770 |
| Adj./pseudo $R^2$ | 0.224 | 0.195 | 0.056 | 0.212 | 0.177 |

SECTOR is equal to 1 if the 2-digit SIC code at the firm where a board member works and the firm at which they are a board member are the same, and 0 otherwise.[17]

QUALIFICATIONS is a BoardEx variable computed as the director's number of qualifications earned at their undergraduate studies and beyond, including things such as degrees and diplomas.

NETWORK is also a BoardEx variable, which is computed as the total number of overlaps among directors in BoardEx through employment, education, and other activities. A larger value of the variable indicates that the board member has more connections with other board members.

[17]Our results are robust if we use industry sector names (from BoardEx) or 3-digit SIC code.

TOTAL_NUMBER_OF_DIRECTORSHIPS is the total number of director positions held by each board member.

We test for differences in the five characteristics between male and female directors. The results show that women directors tend to work at firms located further away, and are more likely to work in a different industry, as compared to male board members. Women on average work at firms that are 16% further away as compared to men. A total of 76% of female directors work in a different industry, as compared to 60% for men. In our sample, women represent only 3.4% of CEOs and 11.3% of executives, so it makes sense that firms may have to go to greater lengths to find female directors, as a common qualification for a director is executive experience. Female board members tend to have more qualifications and larger networks than male board members. The difference in the number of directorships between male and female board members is not significant.

## B. Differences Across Women Directors and Gender-Egalitarianism

We now test whether the five characteristics vary across firms' female board members with county-level gender-egalitarianism. We test for such differences using firm-level tests and control for the fact that differences across firms may exist for male board members as well. For each firm with at least 1 female director, we take the average value of the variable for the female directors, and subtract the average value for the male directors. We then test whether this difference varies with gender-egalitarianism.

As an example, for IBM, we compute the average distance for the female board members, and then do the same for the male board members. We then subtract the average male distance from the average female distance, and scale this by the overall average distance for both males and females. This firm-level variable is created for every firm and then regressed on the gender-egalitarianism index along with industry fixed effects. This is akin to a difference-in-difference test, in that we ask whether the treatment (gender-egalitarianism) has a disproportionate impact on women in leadership roles.

We report the findings in Panel B of Table 11. The results show that, relative to women directors in low gender-egalitarianism counties, women directors in high gender-egalitarian counties have more directorships. Women directors in high gender-egalitarian counties also work at firms that are closer by. These findings are sensible. Our findings discussed earlier in the article show that in more gender-egalitarian counties, there are more women in the workforce and more women executives. It should therefore be easier for firms in more gender-egalitarian counties to find women working in the same region to serve as directors, which is what our results here show.

The effects for industry similarity, qualifications, and network are all insignificant. The coefficients for qualifications and network are positive and both *t*-statistics are above 1.5, so the significance for these effects is close to conventional levels. This would suggest that women directors in more gender-egalitarian counties have more qualifications and larger networks than women in the less gender-egalitarian counties. This reinforces the notion that the board appointments of

TABLE 11

Inherited Belief About Gender Roles and Differences Between Male and Female Directors

Panel A of Table 11 reports the difference between female and male directors in five different characteristics. DISTANCE is the physical distance in kilometers between the location of a director's full-time employment and the location of the board the director serves on, scaled by the average distance of all of the board's directors. DIFFERENT_INDUSTRY is equal to 1 if a director's primary industry affiliation (2-digit SIC code) is different from the industry of the firm whose board the director serves on. NUMBER_OF_QUALIFICATIONS is constructed by BoardEx. It is the number of qualifications of each director earned at the undergraduate level or above, such as degrees and diplomas. NETWORK_SIZE is also a BoardEx variable, it is computed as the total number of overlaps with other directors in BoardEx through employment, education, and other activities. NUMBER_OF_DIRECTORSHIPS is the total number of directorships held by the director. Panel B tests whether five different characteristics vary with gender-egalitarianism across female directors. These are firm-level tests. For each firm, we take the average of the characteristics for the female board members, and subtract the average of the characteristics for the male board members. We subtract the average of the male board members to control for the fact that the characteristics may vary across firms for men as well. GEN_EGAL (1900) is the county-level gender-egalitarian index based on the U.S. 1900 Census. We include industry fixed effects in each regression. Standard errors are robust and adjusted for clustering at the county level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

| | DISTANCE (Scaled by Firm Average) | DIFFERENT_INDUSTRY (by 2-Digit SICs) | NUMBER_OF_QUALIFICATIONS | NETWORK_SIZE | TOTAL_NUMBER_OF_DIRECTORSHIPS |
|---|---|---|---|---|---|
| *Panel A. Differences Between Male and Female Directors* | | | | | |
| Directors | | | | | |
| Male | 0.961 | 0.604 | 2.130 | 1624 | 3.148 |
| (*N*) | (28,788) | (9,335) | (46,367) | (45,300) | (46,367) |
| Female | 1.116 | 0.764 | 2.343 | 2146 | 3.109 |
| (*N*) | (6,255) | (1,862) | (9,596) | (10,644) | (9,596) |
| All | 0.989 | 0.630 | 2.167 | 1724 | 3.141 |
| (*N*) | (35,043) | (11,197) | (55,963) | (46,020) | (55,963) |
| Female–Male | 0.16*** | 0.17*** | 0.21*** | 522*** | 0.038 |
| *t*-stat | (9.48) | (12.20) | (16.012) | (25.59) | (0.726) |
| *Panel B. Inherited Beliefs About Gender Roles and Differences Across Female Directors* | | | | | |
| GEN_EGAL (1900) | −0.218*** | −0.005 | 0.027 | 0.010 | 0.026** |
| | (−3.36) | (−0.18) | (1.58) | (1.56) | (2.13) |
| CONSTANT | 2.084*** | 0.171*** | 0.709*** | 1.001*** | 0.870*** |
| | (51.45) | (9.70) | (75.03) | (292.16) | (138.17) |
| No. of obs. | 2,995 | 1,087 | 3,915 | 4,315 | 4,031 |
| Adj. $R^2$ | 0.04 | 0.06 | 0.02 | 0.02 | 0.03 |

women in more gender-egalitarian counties are not merrily window dressing, although the significance is just below conventional levels.

## VII. Conclusion

The presence of women in corporate leadership varies a good deal across U.S. firms, with some firms having women executives and directors and others having none. We ask whether some of this heterogeneity can be explained by regional differences in inherited beliefs about gender roles. We create a U.S. county-level index of inherited beliefs about gender roles. We use the 1900 U.S. Census, trace the reported country of origin of each respondent, and link it to surveys taken in each country that reflect beliefs about gender-egalitarianism. We find that U.S. counties in which the population originated from countries with more gender-egalitarian beliefs have more women in the labor force, more women in STEM occupations, and smaller gender-pay gaps. Firms headquartered in these

counties have more women directors and executives. Our findings show that inherited beliefs about gender roles can have significant effects on the labor market and corporate leadership.

## Appendix: Variable Descriptions

### *Country-Level Survey Variables on Gender Attitudes*

WORLD_VALUES_SURVEY. The World Values Survey is a cross-country project coordinated by the Institute for Social Research of the University of Michigan. It carries out representative national surveys of the basic values and beliefs of individuals in a large cross section of countries.[18]

Following Guiso et al. (2008), we focus on the seven questions concerning individual perceptions about women's role and society. For each country, we average the responses of the seven questions and construct a gender-egalitarianism index based on the average score. The first question asks the respondent whether they agree or disagree with the statement "When jobs are scarce, men should have more right to a job than women"; the second question asks whether the respondent agrees with the following statement "A working mother can establish just as warm and secure a relationship with her children as a mother who does not work"; the third question asks whether the respondent thinks that "[b]eing a housewife is just as fulfilling as working for pay"; the fourth question asks whether "[b]oth the husband and wife should contribute to household income"; the fifth question asks whether the respondent thinks that "men make better political leaders than women do;" the sixth question asks whether the respondent agrees that "[i]f a woman earns more money than her husband, it's almost certain to cause problems"; and the seventh question asks whether the respondent thinks that "university education is more important for a boy than for a girl." Since the answers to the first question are "agree," "neither," and "disagree," we coded a response of "disagree" with 1. For all remaining questions, respondents express their level of disagreement on a scale from 1 to 4. As noted above, we inverted the answers to the second and the fourth questions, so that higher values indicate a more egalitarian role for women in society.

A key feature of the World Values Survey data is that it contains individual responses, which allows us to build separate male and female survey variables. Besides the one that is based on responses from all respondents, we also construct two variables that are based on responses from either male or female respondents.

HOFSTEDE. The second attitude variable is taken from Hofstede (1980), (2001). It is based on survey results conducted among IBM employees of different foreign subsidiaries. Hofstede classifies national cultures along four dimensions, one of which is "masculinity."[19] Masculinity refers to how much a society values traditional male and female roles. High masculinity scores correspond to countries where men are expected to be strong, assertive, and the main provider in the family.

[18]We use the average of the first five waves of the survey covering the period 1981–2009. The downloadable data can be found here at https://www.worldvaluessurvey.org/WVSDocumentationWVL.jsp.

[19]See https://www.hofstede-insights.com/models/national-culture/. Hofstede added a fifth dimension, long-term orientation, in the 1990s. We do not include this variable in the analysis because it covers relatively small number of countries.

Low masculinity societies, on the other hand, are more gender-egalitarian (they do not reverse the gender roles). We reorder the variable, so that a higher level indicates greater gender-egalitarianism.

### *Board Variables*

FEMALE_ON_BOARD: For probit regressions, a dummy variable equal to 1 if there is a female director, and 0 otherwise; for ordered probit regressions, a variable equal to 0 if there is no female on board, equal to 1 if there is 1 female on board, and equal to 2 if there is more than 1 female directors on board. Source: BoardEx, both U.S. sample and international sample.

FEMDIRPERC: % of female directors. Source: BoardEx, both U.S. sample and international sample.

BOARD_SIZE: Number of directors on board. Source: BoardEx.

OUTSIDEPERC: % of outside directors, that is, percentage of directors that are not the firm's employee. Source: BoardEx.

FEMALE_IMPORTANT_COMMITTEE_CHAIR: A dummy variable equal to 1 if a woman chairs an important board committee, and 0 otherwise. Important board committees include audit, compensation, nominee, and governance committee. Source: BoardEx.

FEMALE_COMMITTEE_CHAIR: A dummy variable equal to 1 if there is a female board committee chair. Source: BoardEx.

FEMALE_EXECUTIVE: For probit regressions, a dummy variable equal to 1 if there is at least 1 female top executive, and 0 otherwise; for ordered probit regressions, a variable equal to 0 if there is no female top executive, 1 if there is 1 female top executive, and 2 if there is more than 1 top female executive. Source: BoardEx.

FEMALE_CEO: A dummy variable equal to 1 if the CEO is female, 0 otherwise.

%_OF_FEMALE_EXECUTIVES: % of top 5 executives who are female. Source: BoardEx.

### *Other Firm-Level Variables*

log(ASSETS): Natural logarithm of book value of assets.

*Q*: Tobin's *Q*, measured as (market value of equity + book value of assets – book value of equity)/book value of assets.

ROA: Return on assets, measured as earnings before income and tax divided by assets.

DEBT/ASSETS: Total long-term debt divided by book value of assets.

R&D/ASSETS: R&D expenditure divided by assets.

SD(RET): Standard deviation of stock returns over the previous 12 months.
Source: Worldscope for global sample; CRSP and Compustat for U.S. sample.

*U.S. County-Level Variables*

%_OF_FEMALE_LABOR: The ratio of women employed in each county. Source: Census 2000.

FEMALE_INC/MALE_INC: The average ratio of median female income over median male income within each county. Source: Census 2000.

%_OF_FEMALE_LABOR (ADJ.): The average ratio of women employed in each industry/occupation groups of the county adjusted by the national average. This ratio is calculated conditional on being employed and have non-missing information and each county at least having 10 Census respondents. Source: Census 2000.

INDUSTRY: An industry classification by the U.S. Census (classification code IND1990). Source: Census 2000.

OCCUPATION: An occupation classification by the U.S. Census (classification code OCC1990). Source: Census 2000.

FEMALE_INC/MALE_INC (ADJ.): The average ratio of median female income over median male income in industry/occupation groups within each U.S. county adjusted by national average. So, if this variable increases, women are making more money relative to men (less GAP). This ratio is calculated conditional on being employed and have non-missing information and each county at least having 10 census respondents. Source: Census 2000.

%_FEMALE_STEM: The average percentage of females employed in STEM (science, technology, engineering, and mathematics) within each U.S. county. Source: Census 2000.

FEMALE_STEM_INC/MALE_STEM_INC: The average ratio of median pay of female STEM to male STEM occupations within each county. Source: Census 2000.

%_FEMALE_STEM (ADJ.): The average percentage of female engaging in STEM (science, technology, engineering, and mathematics) in each industry/occupation group within each U.S. county adjusted by national average. This ratio is calculated conditional on being employed and have non-missing information and each county at least having 10 census respondents. Source: Census 2000.

FEMALE_STEM_INC/MALE_STEM_INC (ADJ.): The average ratio of median pay of female STEM to male STEM within each county adjusted by national average. This ratio is calculated conditional on being employed and have non-missing information and each county at least having 10 census respondents. Source: Census 2000.

COLLEGE_DEGREE: Percentage of people with a college degree. Source: Census 2000.

log(HHIncome): Logarithm of average household income in the county. Source: Census 2000.

%_FEMALE_POP: Percentage of female population. Source: Census 2000.

POPULATION: Logarithm of the county population in the year. Source: Census 2000.

%_DEMOCRATS: Percentage of the registered Democrats in each county. Source: Dave Leip's Atlas of U.S. Presidential Elections.

## Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S0022109023000431.

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