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Corporate board gender diversity and ethnic ownership of U.S. banks

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ABSTRACT

This study examines the association between U.S. banks' corporate board gender and ethnic ownership diversity, focusing on cultural gender norms relating to female leadership positions. Utilizing Federal Deposit Insurance Corporation (FDIC) Call Report and Summary of Deposit (SOD) data for 30 June 2018 and American Community Survey data for 2017, we analyze 136 Minority Depository Institutions (MDIs) and their matching sample of mainstream banks in the U.S. We find differential effects on both the gender composition of MDI corporate boards and the probability of having female members on corporate boards depending on the ethnic diversity of bank ownership. Black-owned banks show a strong positive impact, while Hispanic-owned banks show a strong negative impact, regarding board gender diversity, relative to mainstream banks. These results demonstrate the relationship between cultural gender norms and female leadership access across different ethnicities in the U.S. banking industry.

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1. Introduction

Recently, the share of women in American boardrooms has significantly increased. Female representation on the boards of Fortune 500 companies has more than doubled over the last 25 years, from 9.6% in 1995 to 22.2% in 2017¹ The share of women on the boards of the 3000 largest publicly traded companies in the U.S. is about 18% as of 2018² The recent influx of women on corporate boards and a growing interest in gender equality induced researchers to begin examining the link between executive board gender composition and firm performance. Some of these studies extend their research to examining board diversity, considering both gender and race. However, none of these previous studies address the cultural factors of racial/ethnic corporate ownership and its association with board gender diversity.

While women's labor force participation (LFP) has increased over time, corporate elites who make up the large majority of corporate board members have been and remain predominantly men. Women's LFP is closely related to the labor market structure

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This article has been corrected with minor changes. These changes do not impact the academic content of the article.

¹Pew Research Center, The Data on Women Leaders, Retrieved 3 July 2020 from <http://www.pewsocialtrends.org/fact-sheet/the-data-on-women-leaders/>.

²Fortune, Women Are Joining U.S. Boards At A Record Rate, June 2018..

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resulting from historical, institutional and socio-political factors, but it also reflects different gender attitudes and perspectives relating to women's performance in the labor market. While many prior studies on the underrepresentation of women in top corporate positions mainly attribute this to either pipeline effects or work-family conflicts to explain the glass ceiling, these studies do not rule out a role for gender discrimination or cultural factors limiting women's opportunities as well.

In addition, most empirical studies examining gender diversity in top corporate positions focus heavily on firm behavior and performance. Both demand and supply sides of board gender diversity are closely related to firm behaviors and performance. For instance, if there are pipeline problems of highly qualified women or the existence of tokenism, those few skilled women could be more attracted to successful firms which exhibit good firm performance. On the supply side, firms pursuing changes in firm governance due to poor performance or to improve current conditions may try hiring more non-traditional members (such as female board members) into top corporate positions. While a few studies show direct interest in the determinants of board gender diversity, none of these previous studies investigate how racial ownership structures impact gender diversity.

The motivation for this study arises from two factors. First, given that a board of directors protects the interest of the shareholders and formally approves key decisions of the company, gender norms or the preferences of shareholders can influence the process of director appointments to committees and corporate boards in general. Second, gender norms are culturally constructed systematic beliefs regarding the different responsibilities and rights attributable to women and men, which vary across different ethnic groups. Consequently, the racial/ethnic cultural backgrounds of corporate owners could affect the perspective of women's performance in leadership positions.

Considering the importance of shareholders to a board of directors and differences in gender-related attitudes across different ethnic groups, this article examines the association between American banks' corporate board gender diversity and ownership ethnic diversity. Our focus is on how gender diversity in top corporate positions is determined, and more specifically, how it is influenced by cultural gender norms related to ethnic diversity in ownership structure. Analyzing the gender composition of boards for Minority Depository Institutions (MDIs) and their matched sample of mainstream banks (non-MDIs) which are identified by Propensity Score Matching (PSM), this study demonstrates cultural differences in the perspectives and/or attitudes regarding women's corporate position that exist between different race/ethnic groups in the U.S. In addition, since the study investigates board gender diversity in the U.S. banking industry under roughly the same labor market structure (USA), this within-country study has the advantage of better controlling for factors resulting from different historical and institutional labor market structures compared with an international study. Most importantly, this is the first study to examine the role of ethnic ownership diversity on board gender diversity and female leadership positions. As such, this article contributes to the literature on gender and race as well as business inclusivity through analysis of board gender diversity and ethnic ownership structure of the banking industry in the U.S.

2. Prior literature and theoretical background

2.1. Gender norms and women in top corporate positions

Traditional explanations for the lack of gender diversity in top corporate positions usually involve either the pipeline or work-family conflict arguments. Pipeline problems address the lack of supply of women with appropriate human capital to serve in leadership positions, while work-family conflicts posit women's caring and responsibility role within the family as the main reason for limiting women's ability to enter corporate leadership positions. Considering the role of gender-related attitudes in both educational segregation by gender and the greater responsibility placed on women for caring and family work, the underlying reason for both the pipeline problem and work-family conflicts can more appropriately be seen as influenced by social gender norms. Gender norms are those cultural and systematic beliefs on the different rights, responsibilities, and obligations which exist for women and men. These gender norms are often reflected in gender stereotypes, which contribute to prejudice and a biased belief toward women's abilities.

Many studies in Economics, Sociology and Psychology show that prejudice toward women's ability biases performance evaluation of women (Bordalo, Coffman, Gennaioli, Nicola, & Shleifer, 2019; Heilman, 2001; Lyness & Heilman, 2006; Ridgeway, 2001). Biased beliefs toward women's ability can shape discrimination and prejudice against women in the labor market and impede women's upward mobility (Hoobler, Wayne, & Lemmon, 2009; Ridgeway, 2001). For instance, Hoobler et al. (2009) find bosses' perceptions of their women employees conflict between family and paid work helps explain the lack of females being promoted. Ridgeway (2001) explains that gender status beliefs are a major cause of the glass ceiling because they create a hierarchical element in our fundamental cultural conceptions about leadership positions. While the previous studies focus on the role of gender-biased beliefs, they do not consider variation in gender-related attitudes or gender norms across different racial/ethnic groups.

2.2. Gender norms and ethnicity

Although many gender-related studies investigate gender role attitudes in the U.S. context, fewer studies consider racial and ethnic variations of gender norms or gender role attitudes. Even the limited number of studies which do consider racial and ethnic variations mostly focus on one specific racial/ethnic group or its comparison to Whites (e.g. Blee & Tickamyer, 1995; Kamo & Cohen, 1998; Lam, McHale, & Updegraff, 2012). Reviewing research on gender norms across the world, Pearce and Connell (2016) emphasize the diversity of gender norms not only across the world but also within societies. However, only a few studies compare gender-related attitudes across different racial/ethnic groups in the U.S. (Harris & Firestone, 1998; Kane, 2000; Landale, Schoen, & Daniels, 2010; Roeling et al. 2005; Wilkie, 1993). In particular, Kane (2000) reviews the literature through the year 2000 related to the gender attitudes of three racial/ethnic groups (African Americans, Hispanics, and Whites) in gender attitudes and concludes that overall African Americans are more supportive of social action to reduce gender inequalities and have more equalized gender roles than Whites. On-the-other-hand, Hispanics appear to have less egalitarian and more traditional gender role attitudes than African Americans or Whites, although this conclusion should be drawn cautiously given that considerable heterogeneity exists within

Hispanics (Kane, 2000; Wilkie, 1993). More recent studies support these same conclusions (Landale et al., 2010; Roehling et al., 2005).

Most empirical studies linking ethnic gender norms to women's labor market participation focus on immigrants' data. These studies consider economic factors, such as the gender wage gap or women's labor supply and/or employment relative to men, for transmission of the source country values of gender norms (Antecol, 2003; Blau & Kahn, 2011; Blau, Kahn, Moriarty, & Souza, 2003; De Laat & Sevilla-Sanz, 2011). Some studies consider non-economic factors, such as attitudes toward women's work, sex roles or fertility rates, or home-country gender status and address the importance of socio-cultural factors on gender role attitudes across countries (Albrecht, Edin, & Vroman, 2000; Blau, Kahn, & Papps, 2011; Haller & Hoellinger, 1994; Huh, 2018, 2011). While these studies have shown differential effects on women's labor market participation across different ethnic backgrounds, none of these studies focus on board gender diversity or women's corporate leadership.³

2.3. Board gender diversity

Considering the relationship between shareholders and company executives, who actually make and enact the company's management decisions, both Traditional Agency Theory and Stakeholder Theory suggest that shareholders' interests would influence board gender diversity. Since the role of the board of directors is to monitor the company's executive management team, as well as provide advice and guidance, shareholder influence on corporate policies will be reflected through the composition and characteristics of the corporate board. Traditional Agency Theory suggests that directors might not act in the shareholder's best interests. Meanwhile, Stakeholder Theory suggests that a company's success depends on satisfying all stakeholders, including not only stockholders but also other stakeholders who are influenced by business, such as employees, consumer groups, suppliers, and communities. In both theories, shareholder preference for or belief in board gender diversity would influence the composition of women in the board of directors. Considering racial/ethnic differences on gender-related attitudes, board gender diversity can vary across different racial/ethnic ownership structures. Some studies on corporate social responsibility incorporate diversity characteristics of stakeholders (Edmondson & Carroll, 1999; Smith, Wokutch, Harrington, & Dennis, 2004). For instance, Smith et al. (2004) show that the diversity characteristics (female and Black) of stakeholders' (employees and customers) influence the perceptions of individuals regarding a firm's corporate social performance. Edmondson and Carroll (1999) find that owners of black-owned businesses consider philanthropic components of corporate social responsibility more important than legal and ethical components. However, none of the prior literature on board gender diversity or women's corporate leadership examines ethnic ownership diversity or racial/ethnic variations of gender-related attitudes.

³Only a few studies examine the association between board gender diversity and gender gaps in the labor market, such as executive compensation or unemployment, but they do not consider cultural factors associated with ethnic diversity (Cohen, Matt, & Huffman, 2007; Shin, 2012). For example, Shin (2012) found an association between the female share of board committees and gender gaps in executive compensation. Cohen et al. (2007) also found that more women in high-status positions narrows the gender-wage gap.

Most empirical studies dealing with board gender diversity focus on its relationship to corporate financial outcomes (Ahern & Dittmar, 2012; Cook & Glass, 2014; Galbreath, 2018; Hoobler, Masterson, Nkomo, & Michel, 2016; Post & Byron, 2015). Some of these studies investigate the effect of board gender diversity on firm performance or the role of female board directors as it relates to corporate governance in the banking industry (Berger, Kick, & Schaeck, 2014; Garcia-Meca, Garcia-Sanchez, & Martinez-Ferro, 2015; Pathan & Faff, 2013). The results of these studies are mixed, showing no clear consensus regarding the positive or negative impact of board gender diversity on firm performance.⁴ Furthermore, most of these studies do not consider the endogenous link between board gender diversity and firm performance.

Only a few studies on firm performance consider some endogenous relationship between board gender diversity and other factors (Adams & Ferreira, 2009; Francoeur, Labelle, & Sinclair-Desqaqne, 2008; Green & Homroy, 2018). For instance, Francoeur et al. (2008) discuss factors that characterize firms with more women in their board of directors using descriptive statistics,⁵ utilizing data from 230 publicly held firms on the Toronto Stock Exchange that are drawn from a long time period (1990–2004). They conclude that the promotion of women in business is viewed as a good policy regardless of the significance of the relationship between gender diversity and financial performance. Other studies used a proxy variable only related to board gender diversity but not correlated with firm performance. For instance, Green and Homroy (2018) used the gender-composition of male CEO's children as a proxy for CEO's preferences for female board representation and found a positive effect for female board representation on firm performance using EuroTop 100 firms from eleven western European countries. In their study, they also found a positive impact for a CEO who has a daughter on the probability of female representation on the firm's board and committees. On-the-other-hand, Adams and Ferreira (2009) found a negative average effect for gender diversity on firm performance, although board gender diversity has a positive effect on board effectiveness when firms have weak governance. They consider reverse causality as a result of a social network effect⁶ on gender board diversity to firm performance using an instrument variable (the fraction of male directors on the board who sit on other boards on which there are female directors). One study, Martin-Ugedo and Minquez-Vera (2014), considers ownership structure (family-owned vs. corporate-owned) and investigates the effect of firm performance on gender diversity for non-financial small and medium-sized Spanish enterprises. They found a positive but differential impact on firm performance between corporation-owned and family-owned companies attributable to board gender diversity, finding a statistically significant impact only on corporate-owned firms. Nonetheless, none of these previous studies take ethnic ownership diversity or any aspect of cultural gender norms across racial/ethnic backgrounds into their consideration as the reason for corporate board gender differences.

⁴Although statistically significant, the effects vary depending on the methods, timeframe, or data employed.

⁵Francoeur et al. (2008) found that firms with a higher proportion of women in their board generate enough value to keep up with normal stock market returns while it does not have a significant impact on financial performance (excess returns). Addressing characteristics of firms with more women on their board, they compared the difference between firms with low and high female representation (as officers, directors, or both).

⁶Given that networks occur when directors sit on multiple boards, Adams and Ferreira (2009) used the fraction of male directors on the board who sit on other boards on which there are female directors to reflect this social network effect.

This study makes two research contributions. First, the study provides empirical evidence in gender, race and business studies through integrating three research streams – gender studies, board diversity studies, and minority and business studies. The analysis contributes to gender studies by investigating how different gender-related attitudes across different racial/ethnic groups impact board gender diversity. The analysis also contributes to research on minorities and business studies through identifying differences between minority-owned U.S. banks and mainstream banks in the U.S. as well as investigating determinants of board gender diversity. Second, this study sheds more light on the importance of cultural gender norms related to ethnic diversity and the corresponding impact on female leadership. Individuals have not only gender identity but also racial/ethnic identity as members of society. Given the complexity of cultural elements on gender norms and the inter-relationship between gender and race/ethnicity, studies on gender status or gender diversity should incorporate the variation of gender norms across ethnicity. However, no empirical research on board gender diversity incorporates this inter-relationship between gender and ethnicity. This study demonstrates the importance of the interrelationship between gender and race by providing empirical evidence regarding the differential effects it has on the gender diversity of corporate boards and leadership positions. Focusing on ethnic ownership structure and board gender diversity in the U.S. banking industry, this study addresses a gap in the literature in gender, race, and business from an engendered perspective.

3. Data

Two types of data sources for banks and community information where banks are located were utilized. The primary resource for bank data comes from the Federal Deposit Insurance Corporation (FDIC) Call Reports for June 30 of 2018 (FDIC, 2018) and Summary of Deposits (SOD) data, provided by SNL Financial L.C. Call reports include the biography of board members and provide industry-specific financial data, which characterize bank performance, such as assets and return on assets etc. SOD is an annual survey for the location of bank branch offices and their reported deposits as of 30 June 2018; it provides the U.S. zip codes of bank branches allowing linkage with bank community characteristics from other data sources. The information on the gender composition of the board members for banks was collected from the call reports and verified using biographies from S&P Global and Bloomberg. The call report and SOD data were linked at the individual bank level for 5,593 U.S. banks.

A secondary source of data comes from the 2017 American Community Survey (ACS) data provided by the Integrated Public Use Microdata USA (Ruggles, Genadek, Goeken, Grover, & Sobek, 2019). The smallest identifiable geographic unit for these data is the Public Use Micro Area (PUMA), which contains at least 100,000 persons and does not cross state boundaries. These data provide demographic, social and economic information for a set of controls at the community level, such as poverty rate, urbanicity, and the Herfindahl Index.

These data sets are combined together as follows: First, postal zip codes for the location of all bank deposits from SOD data are mapped to the Census Bureau's Zip Code Tabulation Area (ZCTA), using crosswalks developed by Snow (2014). Second, the ACS data is estimated at the ZCTA level, using the MABLE/Geocorr2K geographic correspondence engines from the Missouri Census Data Center. Together, this creates a combined

dataset of bank characteristics, bank performance, and community characteristics where each bank is located.

As the first step to find information on ownership ethnic diversity of banks, we utilized the FDIC's list for Minority Depository Institutions (MDIs), which are comprised of banks with 51 percent or more ownership by Blacks, Hispanics, Asians and/or Native Americans.⁷ We collected and coded the information on the gender composition of the board members for banks by hand, through reading the bank call reports and verifying biographies from S&P Global and Bloomberg. Although resources exist (such as reports on each board member per bank), there is no simple or systematic data source which identifies the gender of each board member in the bank. Therefore, we had to gather the information by reading pages of resources and coding the gender identity of board members for each bank by hand. After getting the data for 136⁸ minority-owned U.S. banks, the practical impossibility of collecting the corporate board gender diversity information for all 5,593 U.S. banks became clear. As such, we identified a comparison sample of 136 mainstream banks (non-MDIs) which were similar to the MDIs using the Propensity Score Matching (PSM) Method from Rubin (1974)⁹ in order to analyze the impact of board gender diversity across both MDI and non-MDI banks.

PSM is suitable to construct this comparison sample of non-MDI banks since it was designed to solve a sample selection bias which exists when a treated group (here MDIs) is dissimilar from the non-treatment group (here other mainstream banks) in ways which are systematic. The PSM yielded 136 matching banks, but board of the directors' information was only available for 124 of these banks (with the losses including a bank which merged early in 2019). Consequently, the complete study sample includes 260 banks based in U.S. states or the District of Columbia, composed of 136 MDIs and 124 non-MDIs.¹⁰

Tables 1 and 2 present summary statistics for banks based on ethnic ownership and the sample. *Asian Banks*, *Black Banks*, *Hispanic Banks*, *Native American Banks*, and *White Banks* denote Asian-owned banks, Black-owned banks, Hispanic-owned banks, Native American-owned banks and non-minority (White) owned banks respectively. Mainstream (White) banks compose the largest part of the sample at 47.7%, while Asian-owned and Hispanic-owned banks make up 25.8% and 10.9% of the sample respectively. Black-owned and Native American-owned banks comprise 8.8% and 6.8% of the sample, respectively.

⁷Minority Depository Institutions (MDIs) under the Minority Bank Depository Program are defined as a federally insured depository institution, where 51 percent or more of voting stock is owned by minority individuals or where the board of directors is minority/majority and the bank serves a minority community (FDIC 2002).

⁸All processes were repeated including for women owned banks. The results did not change significantly.

⁹PSM is a matching procedure based on the propensity score, which is the probability for an observation to participate in a treatment group (here the minority bank group) given its observed characteristics. To implement PSM, we first estimate the propensity score through either a logit or probit model and find a matched sample of non-minority banks by implementing a matching algorithm which pairs non-minority bank units (nontreated units) to minority bank units (treated units).

¹⁰Collecting and coding the board data for the 260 banks (in the sample) required reading more than 2,424 individuals' biographies from both the call reports and S&P Global/Bloomberg. We also searched other internet resources to confirm the data before coding that information for each bank.

4. Empirical procedure: sample selection and models

4.1. Propensity score matching

The PSM method is employed to randomize data collection by finding a sub-sample of non-MDIs which are comparable to MDIs. Given that MDIs are only a small portion of all U.S. banks, the majority of which are non-MDIs, selecting a comparison sample of non-MDI's from the set of all U.S. banks could cause selection biases. The possibility of selection bias arises because a difference in gender board diversity between banks may be caused by factors that predict minority banks rather than racial ownership difference itself. Therefore, the PSM method is used to identify a subsample of non-MDIs, which are similar to MDIs on various characteristics to help eliminate this risk of selection bias.

PSM is applied using either the Logit or Probit regression model, with adjudication as to which method to use gauged by the similarity of summary statistics for the MDIs and subsamples of non-MDIs. To do so, a series of independent variables are used to predict membership in the treatment group (MDIs), either using probit or logit estimation (Caliendo & Kopeinig, 2008), such that the non-treatment subsample will be similar in terms of those variables. The models used to predict membership include five independent variables¹¹ bank assets, the Herfindahl index, the year the bank was established, the number of bank offices, and the proportion of deposits held in urban areas. For the study, the nearest neighbor matching (i.e. a matching non-MDI partner bank is chosen for an MDI that is closest in terms of the propensity score) is used and selection of matches is with no replacement in order to identify a non-MDI subsample of the same size as the sample of MDIs. The results of PSM without replacement can vary depending upon sorting of the data, given early treated observations may be superior to later matches after some matching observations have been used up. The data initially sort on the FDIC certificate numbers, which are created sequentially as banks come into existence, so rise over time. To evaluate any sorting effects, the PSM is repeated after reverse sorting on the certificate numbers. As stated before, the PSM yielded 136 matching banks, but board of the directors' information was only available for 124 of these banks. Consequently, the complete sample includes 260 U.S. banks, composed of 136 MDIs and 124 non-MDIs.

4.2. Regression models

Analyzing determinants of board gender diversity, OLS (Ordinary Least Square) and Logit regressions are employed. *Gender Diversity* is measured in two ways. First, it is measured by a dichotomous variable which indicates the presence of at least one woman on the board. Second, a simple proportion of women is used to represent the gender composition of the board. Two measurements are used as a dependent variable in Logistic regression and OLS regression, respectively. Similarly, determinants of gender diversity for the board chair position are also tested. The same equation with a dichotomous dependent variable, which indicates the gender of the chair of the board, is estimated using Logistic regression.

¹¹Note that the PSM method allows these variables to additionally influence the gender composition of the boards (Caliendo & Kopeinig, 2008). Stata version 15.1 is used for all analyses, along with the `psmatch2` do file (Leuven & Sianesi, 2003) for the PSM analysis.:

The full model is illustrated in the equation below.

$$\begin{aligned} GenderDiversity = & \beta_0 + \beta_1 Ownership + \beta_2 AssetSize + \beta_3 BranchNumber + \beta_4 BoardSize \\ & + \beta_5 BankAge + \beta_6 HHI + \beta_7 ROA + \beta_8 Tier1RiskBasedRatio \\ & + \beta_9 UrbanDepositProportion + \beta_{10} Poverty + \varepsilon \end{aligned}$$

The model includes variables for ownership structure reflecting ethnic ownership diversity and other bank characteristics, such as bank size, age, and the number of directors. *Ownership* is a series of categorical variables consisting of the ethnic information for bank ownership. It includes five categories based on major ethnicity of ownership, indicating Black-owned bank, Asian-owned bank, Hispanic-owned bank, Native American-owned bank, and White-owned bank. *Asset Size* and *Branch Number* denote asset size and the number of bank offices. The number of board members, *Board Size*, is included in the model to capture the fact that there is the potential for larger boards to have an increased likelihood to include women. *Bank Age* denotes years since bank was established. *HHI*, Herfindahl-Hirschman Index, from the SNL data is included as an indicator of bank competition, which may in turn influence bank behavior along a variety of metrics (Rosen, 2007). ε denotes error terms.

The base model includes additional variables, which may influence bank behavior, such as bank performance, risk-taking, and market competition. *ROA* denotes return on asset, reflecting profitability. *Tier1 Risk Based Ratio* denotes Tier 1 risk-based ratio and it is included as an inverse indicator of bank appetite for risk. Tier 1 risk-based ratio is the ratio of a bank's core Tier-1 capital (i.e. bank's equity capital and disclosed reserves) to its total risk-weighted assets (i.e. all assets that the firm holds that are systematically weighted for credit risk).

In the full model, we further control for two additional variables, the proportion of urban deposits and poverty rates, which reflect market conditions in the community where banks' offices are located. *Urban Deposit Proportion* denotes the proportion of deposits held in urban, Metropolitan Statistical Areas.¹² It is included as an indicator of market density. *Poverty* denotes the percentage of population in each ZCTA below 100% of the poverty line, weighted by the proportion of deposits each bank holds within each ZCTA that year.

5. Results

Table 3 presents descriptive statistics for subsamples from the PSM logit and probit methods. After comparing results from the logit and probit regression for propensity score estimation to the summary statistics of the treatment group (MDIs), the logit matched subsample is selected for further analysis since the logit matched subsample has less deviation from the MDIs means than the probit matched subsample. The largest percentage deviation from the MDI means is for the number of branches in the probit matched subsample (104% larger), followed by assets in the probit matched subsample (40% larger). The largest percentage difference for the logit matched subsample is 8.4% for the Herfindahl index, suggesting market competition is slightly lower for the logit matched subsample (by way of comparison, the mean Herfindahl value for the entire sample is

¹²SOD data place bank offices either inside or outside of Metropolitan Statistical Areas. The proportion of deposits held inside of those areas is used as a measure of urban presence.

0.133). The logit PSM was replicated after reverse sorting on the FDIC certificate number. The procedure resulted in an identical subsample, which is used for further analysis.

Table 4 provides descriptive statistics for the MDIs and mainstream banks. The proportion of women on boards is slightly higher at the MDIs (14.6% compared to 12.2%), although the proportion of women chairs is slightly lower (7.4% compared to 9.7%). As expected given the data generation process, assets, the Herfindahl index, the year established, number of bank offices, and urban proportion of deposits are similar. The ROA figure is higher for the mainstream banks (more than one-quarter of a percentage point), suggesting the MDIs are less profitable, while the Tier 1 risk-based ratio is over two percentage points higher for the MDIs, suggesting they are more cautious in lending decisions. While urban proportion of deposits are slightly higher for mainstream banks, the poverty rates are higher for the MDIs. The average board is smaller by 0.5 members among MDIs.

Detailed descriptive statistics for banks based on ethnic ownership diversity are presented in Table 5. All minority-owned banks have a higher proportion of women on their boards than mainstream banks, except Hispanic-owned banks. The percentage of women on boards is highest for Black-owned banks and the lowest for Hispanic-owned banks (22.4% compared to 6.8%). Meanwhile, Hispanic-owned banks have the highest number of branches and board members across all groups. For the average age of banks, Asian and Hispanic-owned banks have been established more recently than mainstream banks on average, while Black and Native American-owned banks have been established a bit earlier. Contrasting the oldest average bank ages, Native American-owned banks have the smallest number of branches (3.4 compared to 8.19 for mainstream banks). Bank competition is lowest for the Native American group of banks while other groups show similar market concentration. Asian-owned banks are the most risk-averse showing the highest Tier 1 risk-based ratio and have the greatest asset size among all groups. Urban proportion of deposits are highest for Asian-owned banks with a similar rate to Black-owned banks. As expected, urban deposits are lowest for the Native American-owned group. Bank performance, in terms of return on assets, is similar across all groups except Black-owned banks, which shows a slight negative return. Community poverty rates are highest for Black-owned banks followed by Hispanic-owned banks, and they are lowest for Asian-owned banks which have similar rates to mainstream banks.

Table 6 presents the results of OLS regressions using the gender composition of boards as the dependent variable. The first two columns, model (1) and (2), of Table 6 show regression results for the baseline model and the full model, without and with- controlling for community characteristics where banks are located- urban proportion of deposits and poverty rates. Overall, controlling for poverty rates and urban deposits did not change the main results. The third and fourth columns show regression results for models (3) and (4) which are the same models as the first two columns but replace some variables – *Asset Size*, *Branch Number*, *ROA*, and *HHI* – to lagged values from the previous year, 2017. Overall, the differential effects for ethnic ownership on the gender composition of the board are statistically significant for Black and Hispanic-owned banks, showing consistent signs for coefficients across all models. Controlling for the demographics of depositors did not change the main results. Compared to mainstream banks, Black-owned banks have 10.4 % more women on their boards, while Hispanic-owned banks have 4.3% less women in the boardroom compared to mainstream banks. While Asian-owned banks did not show a statistically significant effect in the first two models, they do show positive coefficients

across all models with statistically significant results for models (3) and (4) which replace ROA with the ROA from the previous year. In general, *Asset Size* and *Tier1 Risk-Based Ratio* have consistent and statistically significant impacts across all models, showing positive impacts for asset size and risk avoidance.

Table 7 presents the odds ratios for the Logit model described in the previous section. The likelihood of having at least one female board member is regressed using the same independent variables for the OLS regressions in Table 6. Overall, the signs of the odds ratios for control variables for the Logit models follow expectations. The second row of Table 7 indicates the probability of the presence of a woman on the board of directors increases for Black-owned banks (*Black Banks*) and is statistically significant at the 5% level across all models. Meanwhile, the third row of Table 7 shows a statistically significant negative impact of *Hispanic Banks* across all models, indicating Hispanic-owned banks are less likely to have a female director on the board relative to mainstream banks. The second column of Table 7 presents the results of the full model. The results show that the likelihood of having a female director on the board increases about five times for Black-owned banks, while Hispanic-owned banks are about 0.33 times less likely to have a female director on the board relative to mainstream banks. The seventh row of Table 7 shows the probability of having a woman on the board increases as the size of the board increases at the 1% statistically significant level across all models. The second column of the full model indicates that the predicted probability of having female directors on the board increases by 0.048 with one additional board member, holding all other variables at their average. Intuitively, a one standard deviation increase in the board size (*Board Size*) yields a 39% increase in the odds of having female directors on the board.¹³ Regarding gender diversity of board chairs, no statistically significant results are found (see Table 8 for the coefficients from the logistic regressions). It is understandable that a maximum likelihood could not capture any results given the extremely small number of female chairs in the sample (See Table 1).

5.1. Robustness checks

Overall, the results from all of the models indicate that ethnic ownership structure has a differential effect on board gender diversity. To test statistical significance, for both OLS and Logistic regressions, multiple sets of regressions were examined using sparser control

Table 1. Summary statistics for banks based on ethnic ownership.

Ethnic Ownership of Banks	N. of Banks	N. of Board Members	N. of Female Board Members	N. of Female Chairs
Asian Banks	67	594	49	5
Black Banks	23	199	20	2
Hispanic Banks	28	283	12	2
Native American Banks	18	160	13	1
White Banks	124	1188	86	12
Total(N)	260	2424	180	22

¹³The standard deviation of *Board Size*, the number of board members, is 3.150572.

A standard deviation factor change is calculated as follows: Exponent (Log Odds Ratio * S.D. of *Board Size*).

Thus, the likelihood of presence of female directors on the board increases 1.39 times [Exp (log (1.269408)

*3.150572) = 1.39]

Table 2. Summary statistics for the sample.

Variables	Mean	S.D	Min	Max
Percent of Women on Board	0.13	0.1254	0.00	0.60
Asset Size	\$1,096,952	\$3,335,226	\$17,369	\$38,000,000
Branch Number	8.3	16.7178	1	171
Number of Board Members	9.3	3.1506	2	27
Year Established	1973.6	34.4244	1860	2010
Herfindahl Index	0.1434	0.0646	0.0609	0.5209
ROA	1.1018	1.7392	-10.6500	10.9100
Tier 1 Risk-Based Ratio	18.1902	16.6206	4.4300	215.5700
Urban Deposit Proportion	0.8413	0.3501	0	1
Poverty <100	0.1448	0.0613	0.0366	0.3502

Table 3. Summary statistics for MDIs and matches from logit and probit methods.

	Asset Size	Herfindahl Index	Year Established	Branch Number	Urban Deposits
MDIs	\$1,169,492	.151	1977	8.4	.835
Logit matches	\$1,075,677	.138	1971.9	7.8	.856
Probit matches	\$1,635,367	.160	1975.6	17.1	.834

Note: All n = 136

Table 4. Descriptive statistics for minority owned banks and mainstream banks.

	MDIs	Non-MDIs (Sample)	All U.S. Banks (Population)
Women on Board	.146 (.137)	.122 (.110)	-
Chair: Woman	.074 (.262)	.097 (.297)	-
Asset Size	\$1,169,492 (3874146)	\$1,017,393 (2633941)	\$3,136,904 (49500000)
Herfindahl Index	.151 (.077)	.135 (.046)	.209 (.123)
Year Established	1977 (30.55)	1970.0 (38.00)	1933 (43.62)
Branch Number	8.43 (16.05)	8.19 (17.48)	15.35 (142.78)
Urban Deposit Proportion	.835 (.361)	.848 (.339)	.493 (.478)
ROA	.938 (2.200)	1.28 (.998)	1.37 (5.957)
Tier 1 Risk-Based Ratio (%)	19.33 (18.58)	16.94 (14.13)	22.25 (41.54)
Poverty Rate	.162 (.067)	.126 (.047)	.134 (.051)
Number of Board Members	9.09 (3.34)	9.58 (2.92)	-
Number of Observations	136	124	5,593

Mean with standard deviation in parentheses below.

For the full population of U.S. banks, the number of observations per each variable ranges from a minimum of 5,522 (Poverty and Urban Deposit Proportion) to the full set of 5,593 (Asset Size and Year Established) due to missing information.

vectors, segments of data, using lagged variables as well as changing models by adding or reducing explanatory variables. The results show consistent signs and magnitudes for coefficients as well as statistical significance relative to the main results. All regressions are repeated for only minority-owned banks, excluding mainstream banks. The main

Table 5. Descriptive statistics for U.S. banks across ethnic ownership structure.

	Asians	Blacks	Hispanics	Native Americans	Whites
Women on Board	0.151 (0.131)	0.224 (0.138)	0.068 (0.095)	0.148 (0.158)	0.122 (0.110)
Chair: Woman	0.075 (0.265)	0.087 (0.288)	0.071 (0.262)	0.056 (0.236)	0.097 (0.297)
Year Established	1989.4 (21.8)	1960.3 (31.8)	1980.5 (18.2)	1946.7 (42.0)	1970.0 (38.0)
Branch Number	9.21 (16.94)	5.22 (5.70)	12.43 (22.60)	3.44 (3.24)	8.19 (17.48)
Herfindahl Index	0.129 (0.043)	0.145 (0.053)	0.168 (0.112)	0.213 (0.102)	0.135 (0.046)
Assets Size	\$1,691,783 (5258093)	\$256,039 (219255.7)	\$1,320,040 (2306992)	\$158,414 (113249.4)	\$1,017,393 (2633941)
Urban Deposit Proportion	0.967 (0.172)	0.953 (0.208)	0.759 (0.411)	0.310 (0.454)	0.848 (0.339)
ROA	1.346 (1.873)	-0.919 (3.148)	1.140 (0.998)	1.478 (2.171)	1.281 (0.998)
Tier 1 Risk-Based Ratio	21.63 (25.40)	15.61 (6.42)	17.91 (7.88)	17.77 (6.31)	16.94 (14.13)
Poverty Rate	0.124 (0.036)	0.223 (0.059)	0.208 (0.079)	0.158 (0.050)	0.126 (0.047)
Number of Board Members	8.87 (3.15)	8.65 (2.04)	10.11 (4.73)	8.89 (2.61)	9.58 (2.92)

Mean with standard deviation in parentheses below

results are reinforced, showing a strong positive impact for Black-owned banks and a small negative impact for Hispanic-owned banks. All regressions are also repeated with assets in quadratic form (*Asset Size*²), as a measure of bank size, given banks differ dramatically on a host of performance metrics due to size divergence (e.g. Berger, Klapper, & Udell, 2001). The main results do not change. In addition, possible lagged effects of bank performance or bank size are also tested by replacing some variables, such as *Asset Size*, *Branch Number* and *HHI* from previous years.¹⁴ The results are even more strongly supported, showing statistical significance for all ethnic ownerships, except Native American-owned banks. Other tests such as multicollinearity and heteroscedasticity are also conducted, and no issues were found.

6. Conclusion

The prior literature on gender-related studies provides evidence of different gender-related attitudes across different racial/ethnic groups and the positive relationship between egalitarian gender attitudes and women's labor market participation and success. As expected in both Agency Theory and Stakeholder Theory, shareholder preference for or belief in women's leadership will influence board gender diversity. Considering different gender-related attitudes across different racial/ethnic groups, the racial/ethnic diversity of shareholders should be an important factor in determining board gender diversity. Despite the importance of the gender perspective across racial/ethnic variation, no previous studies examine ethnic ownership structure and its relationship to board gender diversity.

¹⁴Time-series analysis is not possible due to a lack of records for tenure of board members.

Table 6. OLS regression on board gender diversity of U.S. banks dependent variable: proportion of female board members.

Models	(1)	(2)	(3)	(4)
Independent Variables	Coefficients (Robust S.E)	Coefficients (Robust S.E)	Coefficients (Robust S.E)	Coefficients (Robust S.E)
<i>Asian Banks</i>	0.0298 (0.0189)	0.0264 (0.0191)	0.0365* (0.0190)	0.0332* (0.0193)
<i>Black Banks</i>	0.1041*** (0.0318)	0.0907** (0.0359)	0.1176*** (0.0316)	0.1020*** (0.0374)
<i>Hispanic Banks</i>	-0.0431** (0.0211)	-0.0483* (0.0266)	-0.0430** (0.0215)	-0.0477* (0.0270)
<i>Native American Banks</i>	0.0304 (0.0419)	0.0425 (0.0452)	0.0299 (0.0420)	0.0415 (0.0456)
<i>Asset Size</i>	0.0000** (0.0000)	0.0000** (0.0000)		
<i>Branch Number</i>	-0.0007 (0.0004)	-0.0008 (0.0005)		
<i>Board Size</i>	0.0001 (0.0022)	0.0002 (0.0022)	0.0002 (0.0023)	0.0004 (0.0022)
<i>Bank Age</i>	0.0004 (0.0003)	0.0004 (0.0003)	0.0004 (0.0003)	0.0005* (0.0003)
<i>Herfindahl Index (HHI)</i>	-0.1782 (0.1453)	-0.0900 (0.1497)		
<i>ROA</i>	0.0006 (0.0053)	0.0009 (0.0052)		
<i>Tier 1 Risk-Based Ratio</i>	0.0008** (0.0003)	0.0008** (0.0004)	0.0007** (0.0003)	0.0007** (0.0003)
<i>Urban Deposit Proportion</i>		0.0432 (0.0266)		0.0402 (0.0274)
<i>Poverty</i>		0.0842 (0.1705)		0.0800 (0.1752)
<i>Asset Size 2017</i>			0.0000*** (0.0000)	0.0000*** (0.0000)
<i>Branch Number 2017</i>			-0.0015** (0.0008)	-0.0016** (0.0008)
<i>HHI 2017</i>			-0.1642 (0.1413)	-0.0888 (0.1448)
<i>ROA 2017</i>			0.0054* (0.0032)	0.0044 (0.0035)
<i>Constant</i>	0.1146*** (0.0346)	0.0509 (0.0493)	0.1068*** (0.0343)	0.0480 (0.0506)
Observations	260	260	254	254
R ²	0.1217	0.1303	0.1357	0.1431
Adjusted R ²	0.0827	0.0844	0.0964	0.0967
F	4.270	3.498	8.872	7.214

Reference category for statistical significance. *p < 0.10; **p < 0.05; ***p < 0.01

Using FDIC's call reports and SOD data from SNL, this paper provides empirical evidence for the effect of ethnic ownership diversity on board gender diversity for the U.S. banking industry. In particular, we used MDIs (as defined by the FDIC) to find U.S. banks that have majority ownership by Asian, Black, Hispanic and Native American groups and identified a matching subsample of non-MDIs (mainstream banks) using the PSM method.

The results illustrate a substantial and statistically significant association between ethnic ownership diversity and board gender diversity, reflecting shareholder influence on board gender diversity, as expected in Traditional Agency Theory. As expected, for both the gender composition of the board and the probability of having female board member(s), Black-owned banks show a strong positive impact, in contrast to a negative

Table 7. Logistic regression on board gender diversity of U.S. banks dependent variable: A binary variable indicating the presence of a female board member.

Model	(5)	(6)	(7)	(8)
Independent Variables	Odds Ratio (Robust S.D)	Odds Ratio (Robust S.D)	Odds Ratio (Robust S.D)	Odds Ratio (Robust S.D)
<i>Asian Banks</i>	1.456 (0.528)	1.394 (0.519)	1.550 (0.572)	1.495 (0.565)
<i>Black Banks</i>	3.696** (2.429)	5.051** (3.869)	3.639** (2.345)	4.803** (3.648)
<i>Hispanic Banks</i>	0.250** (0.136)	0.332* (0.197)	0.228** (0.132)	0.295* (0.186)
<i>Native American Banks</i>	1.241 (0.732)	1.486 (0.913)	1.328 (0.795)	1.542 (0.966)
<i>Asset Size</i>	1.000 (0.000)	1.000 (0.000)		
<i>Branch Number</i>	1.011 (0.010)	1.011 (0.010)		
<i>Board Size</i>	1.270*** (0.081)	1.269*** (0.080)	1.267*** (0.085)	1.263*** (0.084)
<i>Bank Age</i>	1.002 (0.005)	1.003 (0.005)	1.003 (0.005)	1.003 (0.005)
<i>Herfindahl Index (HHI)</i>	2.928 (7.255)	10.026 (27.269)		
<i>ROA</i>	0.998 (0.111)	0.997 (0.110)		
<i>Tier 1 Risk-Based Ratio</i>	1.009 (0.009)	1.011 (0.009)	1.009 (0.009)	1.011 (0.009)
<i>Urban Deposit Proportion</i>		1.410 (0.728)		1.307 (0.676)
<i>Poverty</i>		0.027 (0.082)		0.045 (0.142)
<i>Asset Size 2017</i>			1.000 (0.000)	1.000 (0.000)
<i>Branch Number 2017</i>			0.979 (0.034)	0.984 (0.034)
<i>HHI 2017</i>			3.433 (8.474)	7.826 (20.911)
<i>ROA 2017</i>			0.950 (0.133)	0.960 (0.133)
<i>Constant</i>	0.155** (0.116)	0.148* (0.160)	0.151** (0.117)	0.151* (1.168)
Observations	260	260	254	254
Pseudo R ²	0.124	0.131	0.137	0.142
Chi-square	35.295	41.302	36.268	42.070
Prob > Chi2	0.000	0.000	0.000	0.000

Reference category for statistical significance. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

impact associated with Hispanic-owned banks. The results also demonstrate consistently positive signs for coefficients with similar magnitudes across all models for Asian-owned banks but show statistically significant results for only select models.

The main results are consistent with findings from previous literature on gender and race, along with different patterns of women's LFP among different ethnic groups in the U.S.¹⁵ Higher composition of female directors in Black-owned banks implies more support for female directors and equalized gender roles for African Americans relative to other racial/ethnic groups. A negative effect for Hispanic ownership on board gender

¹⁵Black women traditionally have higher LFP rates than white women, while Hispanic women's participation rates are consistently lower than those of white women (Blau & Winkler, 2017, pp.94–96).

Table 8. logistic regression on chair of the board of U.S. banks dependent variable: a binary variable denoting gender of chair (female = 1).

Models	(9)	(10)	(11)	(12)
Independent Variables	Coefficients (Robust S.E)	Coefficients (Robust S.E)	Coefficients (Robust S.E)	Coefficients (Robust S.E)
<i>Asian Banks</i>	-0.0211 (0.5507)	0.0965 (0.5566)	-0.0226 (0.5565)	0.1369 (0.5586)
<i>Black Banks</i>	-0.0648 (0.8621)	0.1802 (1.0063)	-0.3080 (0.7898)	0.0241 (0.9328)
<i>Hispanic Banks</i>	-0.1007 (0.8162)	-0.0244 (0.9564)	-0.1889 (0.8108)	-0.1018 (0.9983)
<i>Native American Banks</i>	-0.5072 (1.2592)	-0.7643 (1.3550)	-0.3090 (1.2760)	-0.5972 (1.3550)
<i>Asset Size</i>	-0.0000 (0.0000)	-0.0000 (0.0000)		-0.0000 (0.0000)
<i>Branch Number</i>	0.0461 (0.0483)	0.0432 (0.0462)		0.1084* (0.0566)
<i>Board Size</i>	0.0091 (0.0650)	0.0032 (0.0663)	-0.0429 (0.0666)	-0.0551 (0.0747)
<i>Bank Age</i>	0.0046 (0.0075)	0.0031 (0.0077)	0.0045 (0.0076)	0.0036 (0.0075)
<i>Herfindahl Index (HHI)</i>	-4.9117 (4.8925)	-7.4519 (5.0610)		
<i>ROA</i>	0.1226 (0.1353)	0.1031 (0.1309)		
<i>Tier 1 Risk-Based Ratio</i>	-0.0225 (0.0232)	-0.0247 (0.0248)	-0.0159 (0.0226)	-0.0204 (0.0247)
<i>Urban Deposit Proportion</i>		-1.0422 (0.7149)		-1.1241 (0.7609)
<i>Poverty</i>		-0.6217 (5.4458)		-0.2419 (5.7041)
<i>Asset Size 2017</i>			-0.0000 (0.0000)	
<i>Branch Number 2017</i>			0.1255* (0.0675)	
<i>HHI 2017</i>			-6.1221 (5.3687)	-8.3601 (5.2451)
<i>ROA 2017</i>			0.0230 (0.1061)	0.0344 (0.0922)
<i>Constant</i>	-1.6787 (1.1885)	-0.2596 (1.7125)	-1.4390 (1.2536)	0.0195 (1.8849)
Pseudo R ²	0.0339	0.0466	0.0644	0.0711
Log likelihood	-72.82	-71.86	-70.02	-69.51
Prob > Chi2	0.865	0.786	0.501	0.370
Observation	260	260	254	254

Reference category for statistical significance. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

diversity is also expected, given the more traditional gender role attitudes of Hispanics relative to other ethnic groups. The significance of the impact of ownership diversity demonstrates shareholder preferences or beliefs regarding female leadership, and they are reflected in the gender composition of the board. While not shown in this study, it is possible that when women participate more in the labor market, a more positive perspective on the performance of female leadership arises in the community. Although interesting, it is beyond the scope of this study and, as such, would be a good topic to explore further. Future studies of these issues should incorporate more fully ethnic diversity and cultural gender norms in any explanation of questions examining gender diversity in leadership positions.

Similar to findings in the previous literature on firm performance, banks risk-taking and asset size also influence the gender composition of their boards. The result shows that more risk-averse banks, as well as banks with larger asset size, have more women on their boards. Meanwhile, the size of the board does not show any statistically significant impact on the proportion of women on the board but it does show a positive impact on the likelihood of having at least one female board member. Thus, bigger board size increases the probability of including at least one woman, although it does not increase the percentage of women on the board. This may reflect efforts such as tokenism rather than true gender diversity in leadership.

Further, the results may imply possible policies for promoting more women to leadership positions in the corporate boardrooms of minority-owned banks. For instance, board gender diversity could be promoted through Community Reinvestment Act (CRA) reform. A main part of CRA ratings, which motivate banks to alter their behavior, is based upon lending to local low-and moderate-income areas¹⁶ where most MDIs are located. Thus, reforms in CRA ratings considering the inclusion of diverse investors on boards of directors may reduce the gender gap in leadership positions in the corporate boardroom.

This study clearly shows the differential ownership effect from ethnicity on corporate board gender diversity in the U.S. banking industry, providing potential policy implications for improving gender diversity. It provides a key foundation for a new dimension of economic analysis regarding women's leadership access and ethnic diversity, thereby establishing a new research agenda regarding the study of gender in the corporate organization. In this regard, this study also contributes to the literature on gender, race and business studies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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¹⁶The Community Reinvestment Act was enacted in an effort to encourage banks to serve the credit needs of low-and moderate-income (LMI) areas within communities and LMI individuals (Barr, 2005).

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