Risk aversion and social preferences – The effects of CEO gender and conservatism on lending decisions

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Abstract

In this study, I draw on upper echelons theory to empirically examine whether a credit union CEO's gender and political ideology influence their firm's lending decisions. Interestingly, credit unions led by female CEOs are not necessarily more risk averse than a male CEO, as gender's effect on risk aversion is shown to be conditional on one's political ideology. This reflects the similar ways the two characteristics (gender and conservatism) relate to one's risk preferences. However, these characteristics are not interchangeable, as CEOs' social preferences differ along these dimensions. Credit unions led by conservative CEOs are shown to place less emphasis on lending to historically disadvantaged applicants than their liberal counterparts, however, there is little difference observed based on a CEO's gender. Together these findings suggest that a CEO's revealed preferences based on their ideology are important to understanding variation in lenders' decision making.

Keywords: upper echelons theory, risk aversion, social preferences, credit culture, CEO gender and ideology.

Access to credit plays a significant role in enabling individuals to smooth consumption, start businesses, and build financial wealth. Access to mortgage credit is key to homeownership, which represents for most American households their largest asset. A mortgage loan allows homeowners to build generational wealth by paying down the loan's principal balance and increasing equity over time. It also allows for financial leverage, where despite owning a fraction of the home, one realizes the entire appreciation in their home's value. However, significant racial and ethnic disparities exist in homeownership rates, as 74% of non-Hispanic

whites are homeowners compared to 48% of Hispanics and 45% of black Americans (Census, 2025). Reducing these gaps requires, in part, greater and more equitable access to mortgage credit. Consequently, lenders' decisions about whether and to whom to allocate credit have significant implications for both economic prosperity and social equity.

The practices a lender uses to assess and manage risk in lending decisions are shaped by its underlying credit culture (Thakor, 2016). Credit culture reflects an organization's shared values and beliefs, which are influenced by management and their strategic choices. According to upper echelons theory, (Hambrick & Mason, 1984; Hambrick, 2007) differences in firms' strategic choices can be predicted by observable characteristics of their managers. These characteristics are believed to be attributed to managers' underlying risk and social preferences that guide decision making. For example, research suggests that women tend to exhibit personality traits associated with greater risk aversion than men (Aumeboonsuke & Caplanova, 2023; Dawson, 2023). Consistent with upper echelons theory (UET), studies (Faccio et al., 2016; Palvia et al., 2015; Peltomäki et al., 2016; Perrin & Weill, 2023) find firms led by female CEOs exhibit less risk taking in several different settings. Demographic characteristics such as gender, however, represent broad measures and are potentially a less effective indicator of a manager's preferences than purer psychological measures (Hambrick & Mason, 1984).

If gender is an incomplete measure of a CEO's risk preferences, this may explain why female CEOs are not always shown to be more risk averse. For example, Palvia et al. (2015) report that banks led by female CEOs hold greater capital and are more risk averse, whereas Van Rijn (2019) finds no significant difference in risk aversion between male and female CEOs in credit unions. These mixed findings suggest that other characteristics may serve as more effective indicators of risk preferences. Political ideology, like gender, is a characteristic

associated with one's core personality traits, yet it differs in that preferences are revealed based on one's choice of being conservative or liberal. In terms of risk preferences, both women and conservatives tend to share traits that theoretically increase risk aversion. Consequently, female CEOs may not be necessarily more risk averse than their male counterparts if the latter are conservative. However, when it comes to differences in social preferences, women generally have a stronger preference for equality of outcomes and social responsibility (Adams & Funk, 2012; Kamas & Preston, 2015), which is also found in a liberal ideology (Carney et al., 2008). I theorize that ideology may more accurately reflect a CEO's preferences and provide a more complete understanding of a firm's strategic decisions than gender alone.

This study examines whether a credit union CEO's gender and political ideology influence their firm's assessment of risk in lending decisions along two dimensions: risk aversion and social preferences. Credit unions are an interesting setting to examine UET and a CEO's characteristics because their uniquely structured boards grant CEOs a high degree of managerial discretion, thereby strengthening the influence of managerial characteristics on strategic decisions (Hambrick, 2007). By accounting for a CEO's ideology, I provide insight into why female led credit unions may not appear to be more risk averse (Van Rijn, 2019). In addition, by examining lending decisions and CEOs' social preferences, I extend prior research (Chin et al., 2013; Di Giuli & Kostovetsky, 2014) by demonstrating that CEO characteristics shape firms' socially responsible behaviors in a previously unexplored context with important implications for the equitable allocation of credit and broader social equity.

My primary analysis examines approximately 180,000 individual lending decisions made in 2015 by 1,647 credit unions. The results show that gender and ideology interact to shape a CEO's risk aversion in more complex ways than previously understood. Female CEOs are more

risk averse than male CEOs only when the latter are not conservative, indicating the presence of either characteristic (female or conservative) contributes to greater risk aversion. This result helps us to understand why female CEOs may appear more risk averse in one setting and not in another if one does not also control for their ideology. Although conservative and female CEOs display similar levels of risk aversion, they are shown to differ in their social preferences when lending to historically disadvantaged applicants. Credit unions led by conservative CEOs are more likely to deny female and black applicants than their liberal counterparts, however, there is no observed difference based on a CEO's gender. This finding contributes to our understanding of other factors that influence discrimination in lending decisions (Goenner, 2023; Patel et al., 2022; Secchi & Seri, 2017).

In what follows, I begin by discussing the theory and empirical evidence that relates managerial traits to both risk aversion and social preferences. This is then used to draw my hypotheses. In the methods section, I describe the construction of the dataset used in the empirical analysis and the estimation strategy. Results are then discussed, followed by interpretation of the findings and a discussion of their limitations.

Risk Aversion, Social Preferences, and Managerial Characteristics

Upper echelons theory (Hambrick & Mason, 1984) assumes that managerial discretion in corporate decision making is influenced by the unique characteristics (e.g. experience, values, personality) of the firm's top management. These managerial characteristics reflect underlying differences in managers' preferences, risk aversion, ability, and perceptions (Bertrand & Schoar, 2003) that affect their decision making. The implication is that managers faced with the same information set may make different choices based on different perspectives (e.g. cognitive base and values) that subjectively influence their perceptions of future outcomes. The theory asserts

that managers' observable demographic characteristics are an effective proxy for differences in perspective and explain variation in firms' strategic decisions.

Upper echelons theory (UET) identifies the management team as important in this regard, however, it is often customary to focus on a CEO alone (Hambrick, 2007). CEOs, not surprisingly attract the greatest attention, given their leadership of the management team and primary role in strategic decisions. Numerous empirical studies find evidence that a CEO's traits influence their firm's decision making. For a thorough overview of this literature see the meta-analysis by Wang et al., (2016).

The focus in this study is on the effects of CEO characteristics on credit union lending decisions. Credit unions are unique financial institutions as they are non-profit financial cooperatives owned by their members (i.e. depositors), who each share a common bond based on geography, employment, or group association. Credit unions play a pivotal role in society by providing financial services, such as savings and credit, to more than 142 million Americans of modest means (NCUA, 2024). CEOs of credit unions are given significant managerial discretion when it comes to decision making. This is due to having weak boards that provide less oversight. Board members of credit unions are unpaid volunteers elected from among the cooperative's members. Consequently, directors are less likely to be financial experts, which suggests they engage in less monitoring and impose fewer managerial constraints (Goddard et al., 2023). This limited oversight is further magnified by the fact that credit unions are member-owned, with each member owning an equal share. A diffuse ownership structure is also known to weaken managerial oversight. The importance of CEO characteristics on strategic decision making in UET is directly proportional to the degree of discretion they are given (Hambrick, 2007).

CEOs as the top executive are involved in all important strategic decisions. Federal guidelines (NCUA, 2025) used by regulators to evaluate a credit union's management quality indicate that a CEO's duties include setting a credit union's business strategy and loan policies. Credit union CEOs directly influence both by shaping the organization's credit culture (Koch and MacDonald, 2015). For an aggressive credit culture, the emphasis is on loan growth, such that loan underwriting policies actively pursue high-risk borrowers. A conservative culture, however, minimizes this risk by using more stringent policies and standards in exchange for slower loan growth (Koch and MacDonald, 2015). Consequently, differences in CEOs' preferences towards risk influence a credit union's culture and lending decisions. Cultural differences in norms and values have also been shown (de Graaf & Stoelhorst, 2009) to influence banks' commitments to corporate social responsibility. I theorize differences in credit union CEOs' characteristics reflect differences in their social preferences and shape whether a credit culture places greater emphasis on ensuring equitable access to credit.

Risk Aversion and Managerial Characteristics

Risk aversion can be explained by an investor's preferences toward risk and is represented by concavity in one's utility function. Concavity of the utility function also implies diminishing marginal utility of wealth, whereby financial losses reduce utility by more than the increase from an equivalent financial gain. However, investors with convex utility functions may also be risk averse if they are "sufficiently pessimistic" in their subjective perceptions of risky outcomes (Chateauneuf & Cohen, 1993). A pessimistic individual is more likely to emphasize negative outcomes and downplay positive ones in their assessment of risks (Dawson, 2023; Dohmen et al., 2023), which decreases subjective values of uncertain outcomes.

Individuals' risk preferences are influenced by differences in core personality traits that shape how individuals respond to stimuli. Women are shown (Goodwin & Gotlib, 2004; Schmitt et al., 2008) to exhibit personalities higher in neuroticism, a personality trait linked to experiencing greater fear and anxiety from negative outcomes (Suls et al., 1998) and risk aversion in decision making (Aumeboonsuke & Caplanova, 2023; Dawson, 2023). Optimism also varies by gender, with men tending to be more optimistic than women in their assessment of future financial situations (Bjuggren & Ellert, 2019; Dawson, 2023). Extensive experimental and empirical work (Croson & Gneezy, 2009; Dawson, 2023) finds that women tend to be more risk averse than men.

A lender, such as a credit union, relies on both hard and soft information when making lending decisions (Agarwal & Ben-David, 2018). Hard information consists of observable information provided in a loan application and for a mortgage loan includes characteristics of the applicant, property, and the loan terms. This information is used to construct measures of applicant risk, such as the debt-to-income (DTI) and loan-to-value (LTV) ratios, which respectively assess an applicant's ability and willingness to repay a loan. Lending standards refer to the underwriting guidelines or specific risk measures and criteria credit unions use to assess risk. Credit unions may strategically adopt more stringent or lenient standards (i.e. deny or approve more loans for a given observed measure of risk) in response to any number of internal and external factors. For example, in the aftermath of the 2008 financial crisis, lenders universally reduced their tolerance for risk and tightened mortgage lending standards, which made it more difficult for borrowers to obtain credit (Board, 2008).

I theorize a CEO's characteristics influence a credit union's credit culture and the underwriting standards it applies to assess lending decisions. A conservative credit culture is

more risk averse and as such implements more stringent lending policies based on the available hard information. For example, to approve a loan, they may require applicants to have a lower debt-to-income and loan-to-value ratios than a more aggressive culture. This strategic choice increases a lender's capital ratio (net-worth to total assets) on their balance sheet by reducing the volume of lending. Banks with female CEOs are shown (Palvia et al., 2015) to be more risk averse in this context, as they tend to have higher capital ratios, despite similar quality assets and liabilities. Van Rijn (2019), though, finds that a CEO's gender has no effect on a credit union's capital adequacy or other aggregate measures of risk.

However, risk aversion in lending decisions can be more directly examined by considering the variation in a lender's separate loan decisions using application data. Bellucci et al., (2010) use this approach and find that banks in Italy with a higher share of female loan officers are more risk averse, as they are less likely to provide additional lines of credit to businesses in response to an increase in applicant risk. I hypothesize a similar relation exists in mortgage lending, where credit unions led by female CEOs will exhibit greater risk aversion in their assessment of risk in individual lending decisions.

> *Hypothesis 1 (H1):* Credit unions led by a female CEO are more likely to deny a mortgage application for an increase in applicant risk.

Jost et al. (2003) discuss that individuals, in part, adopt a conservative ideology out of a psychological need to avoid uncertainty. Conservatives are shown (Gerber et al., 2010; Mondak & Halperin, 2008) to exhibit personalities higher in conscientiousness, a trait linked to preferences for greater prudence (John & Srivastava, 2001) and risk aversion (Aumeboonsuke & Caplanova, 2023; Boyce et al., 2016). Conservatives are also known to exhibit greater pessimism in their fear of things changing for the worse (Jost et al., 2003). Conservative

individuals are thus theoretically more likely to be more risk averse. Consistent with UET, firms led by conservative CEOs adopt more risk averse tax strategies (Christensen et al., 2015), are less leveraged and choose to invest in less risky assets (Hutton et al., 2014). Among lenders, Campbell et al. (2022) find that conservative CEOs of credit unions were more pessimistic during the financial crisis, as they made larger discretionary provisions for loan losses relative to before the crisis than their counterparts. Conservative CEOs were unique in this regard as they found no difference in the decisions made by liberal CEOs and those who didn't make contributions. I hypothesize that credit unions with conservative CEOs exhibit greater risk aversion in their assessment of risk in individual lending decisions.

> *Hypothesis 2 (H2):* Credit unions led by a conservative CEO are more likely to deny a mortgage application for an increase in applicant risk.

Social Preferences and Managerial Characteristics

Investment decisions are theorized to also be influenced by one's social preferences. In this case, utility is determined by one's expected payoff and from how one's choice affects others. Social preferences shape choice in a manner that explains prosocial behaviors of altruism, inequality aversion, and social responsibility. Inequality aversion, for example, reflects (Fehr & Schmitt, 1999) the willingness of individuals to accept a lower payoff for themselves if their payoff relative to others is more equal. The notion is that the "fairness" of outcomes can affect individuals' decision making.

In the context of lending decisions, socially responsible behavior refers to a more equitable allocation of credit. Historically, women and black applicants have been denied equal access to credit. Prior to passage of the Equal Credit Opportunity Act in 1974, single women and married women who were the main breadwinner in a family faced difficulties obtaining

credit, due to lenders' perceptions of women's future fertility decisions and labor market status (Card, 1985; Hyman, 2011). Today, unequal access to credit among women is less evident. Munnell et al. (1996) in their influential study find that female applicants were 4 percentage points less likely to be denied a mortgage loan in Boston than similarly qualified male applicants. However, more recently it has been observed (Dymski et al., 2013) that the increase in subprime lending prior to the financial crisis primarily targeted minorities and single women. Fang and Munneke (2020) show female borrowers in the subprime market also paid higher interest rates, despite similar measures of risk. Black loan applicants, though, have not shared in the same level of progress seen by women. Black applicants are consistently shown to be more likely to have their mortgage loans rejected (Blackburn & Vermilyea, 2006; Goenner, 2023; Munnell et al., 1996; Wheeler & Olson, 2015) and pay higher mortgage rates (Cheng et al., 2015) than similarly qualified white applicants.

Loan officers do more than just collect and verify application data, as they also meet with applicants to discuss a borrower's needs and any discrepancies in their application. Through these interactions, lenders may gain added insight that provides a better understanding of the applicant's underlying risk, which is not revealed by hard information. This soft information is not found in the loan application and is typically unobserved by the data analyst. The use of soft information can reduce defaults in lending decisions if informative (Agarwal & Ben-David, 2018), but it can also allow for explicit discrimination (Korver-Glenn, 2018) if loan officers are biased in their judgement of the soft information. Korver-Glenn (2018) observes evidence of this bias, as the lenders she interviewed admitted to knowing of cases where their peers relied more on negative racial stereotypes than a borrower's actual risk characteristics in denying loans to black and Hispanic applicants.

Whether bias occurs depends on a credit union's culture and management's commitment to corporate social responsibility. Credit union CEOs that value greater equality of lending outcomes may influence the credit culture by strategically implementing human resources policies that place greater emphasis on diversity in employee hiring decisions and anti-discrimination in their training programs. Wells Fargo, the fourth largest US bank, implemented such policies in 2020 in response to regulatory findings that they in the past had discriminated against black and Hispanic mortgage applicants. A culture that emphasizes and understands social responsibility I theorize is better at targeting their loan and education programs to better meet the needs of these underserved communities. I test this theory by comparing whether CEO characteristics influence a credit union's decisions to lend to disadvantaged applicants.

Research (Adams & Funk, 2012; Kamas & Preston, 2015) shows that women have psychologically stronger social preferences for equality of outcomes than men. This affects corporate decision making, as firms with female CEOs spend more on promoting corporate social responsibility (Di Giuli & Kostovetsky, 2014; Tang et al., 2018). Women have also been shown (Bapna & Granco, 2021; Greenberg & Mollick, 2017; Groza et al., 2020; Ruef et al., 2003) to have a strong social preference in their investment choices, as they are more likely to invest in other women, when conditioning on observable measures of risk. This is due to the homophily principle (McPherson et al., 2001), which asserts individuals tend to prefer interactions with those with similar characteristics. Similar behavior has been found in lending decisions in India based on caste (Fisman et al., 2017) and in the United States based on race (Goenner, 2023). Greenberg and Mollick (2017) find that those who face shared structural barriers are even more likely to support one another in investment decisions, in what they refer to as "activist choice homophily". I theorize that female CEOs, due to their social preferences,

place greater value on corporate social responsibility and on expanding credit access for female and minority applicants with whom they share an affinity.

Hypothesis 3 (H3): Credit unions led by a female CEO are less likely to deny a mortgage application from a female or minority applicant than their male led counterparts.

Carney et al. (2008) discuss that two key attributes of conservatism include resistance to change and support for inequality. Liberals, they note, exhibit personalities high in the trait of openness to experience, a trait linked to preferences for social change and greater equality. Conservatives and liberal individuals thus fundamentally differ in terms of their social preferences towards inequality and social responsibility. Evidence of this is found by Hong and Kostovetsky (2012) in investment decisions, as liberal mutual fund managers underinvest in socially responsible firms (e.g. guns, tobacco, defense) and overinvest in firms with higher corporate social responsibility (CSR) ratings, in relation to their conservative counterparts. Similarly, firms with liberal CEOs spend more on CSR (Chin, et al., 2013; Di Giuli & Kostovetsky, 2014) and are subject to fewer legal disputes tied to the environment, civil rights, and labor issues (Hutton et al., 2015). Together, this suggests conservative CEOs' social preferences are such that they more likely prefer to maintain the status quo with respect to access to credit by female and minority applicants, whereas liberal CEOs are more likely to prefer greater access. This preference may also be influenced by the effects of homophily, as women and minorities are more likely to identify as being liberal (Gerber et al. 2012). I hypothesize credit unions with credit cultures shaped by liberal CEOs will exhibit a greater social preference for lending to female or minority applicants, relative to cultures shaped by conservative CEOs.

Hypothesis 4 (H4): Credit unions led by a liberal CEO are less likely to deny a mortgage application from a female or minority applicant than their conservative led counterparts.

Method

Data and Sample

The individual loan application data used in the empirical analysis is drawn from a cross section of 1,647 credit unions in the year 2015 and is publicly available in the Home Mortgage Disclosure Act (HMDA) Loan Application Register.[1] The sample excludes a significant number (4,458) of small credit unions, as credit unions are only required to report their loan applicant information if their total assets are more than $44 million, they have an office or branch within a metropolitan statistical area (MSA), and they originate at least one mortgage loan. The analysis is limited to conventional loan applications for the purchase of single family (1-4 family), first lien, owner-occupied, properties. In total, the sample includes 180,845 mortgage loan applications. I observe for each mortgage loan applicant their risk characteristics, the census tract of the property location, details of the loan, and the lender's decision.

Measures

The dependent variable is an indicator of whether an applicant has been denied a loan. It takes the value of one if the loan is either denied or a preapproval request is denied and is equal to zero if the loan is either originated or approved and not accepted by the applicant. A lender's decision to deny a mortgage application is influenced by the risk and cost of default (Munnell et al.,1996), which depends on the applicant's risk and characteristics of the loan and property. Credit union *l's* decision to deny a mortgage loan from applicant *i*, in metro area *m*, is then given by equation (1):

$$Y_{l,i,m} = X_i\beta + \delta CU_l + \psi MSA_m + \varepsilon_{i,l} \quad (1)$$

Influencing the lenders' decision is a vector of risk characteristics observed by the lender from the loan application, denoted by X_i, and separate fixed effects for each credit union (*CU*) and metropolitan statistical area (*MSA*).

The HMDA loan application dataset includes a few standard measures of applicant risk, which include the applicant's income and the requested loan amount. Other things equal, one expects applicants with higher incomes to be less likely to have their loan applications denied. Loan amount is theorized (Black et al., 2001) to serve as a proxy for an applicant's accumulated wealth and is also expected to be negatively related to loan denial. The model specification includes the natural logarithms of applicant income and the loan amount, along with the ratio of loan amount to income. This ratio is said (Wheeler & Olson, 2015) to proxy for an applicant's housing debt-to-income (DTI) ratio, which is a key risk measure lenders use to evaluate a borrower's risk. The specification also includes indicator variables to control for applicants' gender (Avery et al., 2007; Wheeler & Olson, 2015) and race.[2] Our dataset includes applicants who are either white, Hispanic, Asian, or black, where white applicants are the omitted category in the analysis. A complete description of the variables used in the loan level analysis appears in Supplemental Appendix Table A1.

Different types of mortgage loans may be subject to different underwriting guidelines. Avery et al. (2007) identify two loan characteristics of conventional, single family, mortgage loans with potentially different underwriting guidelines that I include in the model. The first is an indicator whether an applicant sought loan preapproval and the second is an indicator whether an applicant used a piggyback loan. A piggyback loan is when a mortgage applicant takes out two loans simultaneously and uses the proceeds from the second as part of the downpayment for

the first mortgage. This allows the borrower to avoid paying private mortgage insurance (PMI) and reduces their monthly payment.

Location is an important factor in evaluating real estate, therefore geographical variation in unemployment rates, income, home price appreciation, and socio-demographics (Blackburn & Vermilyea, 2006) may all affect a lender's willingness to extend credit in a market. This variation across markets is controlled by a fixed effect for each metropolitan statistical area (MSA). I also allow for differences between neighborhoods within cities, by including a variable indicating whether the property is in a census tract where the majority of the population are minorities. Lenders may informally engage in redlining (Hillier, 2003), where they are less likely to extend credit in minority or low-income neighborhoods than to a comparable applicant in other neighborhoods. Korver-Glenn (2018) finds evidence of this behavior in Houston, Texas, where lenders use racial stereotypes in their assessment of whether to lend in minority neighborhoods.

Our model includes a fixed effect for each credit union to account for variation in each credit union's willingness to lend due to organizational differences. Credit unions are unique in that they are only able to extend credit to their members, who all share a common bond. Stronger common bonds (Kane & Hendershott, 1996) may improve some credit unions' ability to assess the risk of their applicants and thus increase their willingness to lend. Differences in financial conditions also matter. When delinquencies in a lender's loan portfolio rise, they typically respond by reducing their willingness to lend by applying stricter underwriting guidelines to all applicants. A credit union level fixed effect controls both observed and unobserved organizational factors of a credit union that similarly affects whether loan applicants receive credit.

To identify the name of each credit union's CEO, I use the end of year call report data that is required to be filed with the National Credit Union Administration (NCUA). I then use a three-step process to determine a CEO's gender. If a CEO's name includes a generational suffix (e.g. Jr., Sr., III), then they are coded as male. Next, I use a CEO's salutation contained in their credit union's profile information contained in NCUA Form 4501A to assign whether male (Mr.) or female (Miss, Ms. Mrs.). For CEO's whose salutation differs (e.g. Dr.), gender values were assigned based on first name and Social Security Administration (SSA) data if more than 85% of the population in the SSA database for a given name was a particular gender. The sample of CEOs is quite unique in terms of its gender diversity, as 26% of credit unions are led by a female CEO. For comparison, only 5.4% of the sample of banks Palvia et al. (2015) examine is led by a female CEO.

Whether an individual identifies ideologically as conservative or liberal, is closely related to whether one identifies as a Republican or Democrat (Gerber et al., 2012; Mondak & Halperin, 2008). Gerber et al. (2012) show that the same distinct core (Big 5) personality traits underly both an individual's ideology and party identification. Furthermore, they observe that ideology mediates the effects of personality on one's party identification, which suggests one's ideology is closely related to their party identification. To identify a CEO's party identification, similar to others (Campbell et al. 2022; Christensen et al., 2015; Di Giuli & Kostovetsky, 2014; Goenner et al. 2024; Hutton et al., 2014; 2015), I use a CEO's previous pattern of individual political contributions to candidates of the Democratic and Republican Parties to identify their party identification.[3] The political contribution data is drawn from the Federal Elections Commission (FEC) database, where I match a CEO's contributions made during the 1997-2014 election cycles based on their name and employer. To determine a CEO's party, I sum the dollar

amount of contributions made to Republican candidates and the Republican Party net of their contributions to Democratic candidates and the Democratic Party.[4] A CEO's pattern of political contributions are then used to proxy for their political ideology, where indicator variables distinguish between conservative, liberal, and non-partisan CEOs based on their net contributions being greater than, less than, and equal to zero. CEOs who did not make any partisan contributions are identified as non-partisan. Later, I discuss the robustness of my results to this assumption.

In the sample, 11.5% of credit unions are led by a conservative CEO and 8.1% are led by a liberal CEO.[5] Table 1 summarizes the political contributions made by these CEOs. Most conservative CEOs (73%) make contributions exclusively to Republican candidates, where the mean number and amount of their contributions is 3.4 and $1,725, respectively. For conservative CEOs who primarily give to the Republicans, the mean number (amount) of contributions to Republicans is 9 ($5,946) and is 3.6 ($2,233) to Democrats. A similar contribution pattern is observed among liberals. Most liberal CEOs (74%) also give exclusively to Democrats. The mean number of contributions is 2.5 and the mean contribution amount is $1,358. Liberals who give to both parties, make on average 2 contributions to Democrats for every contribution to Republicans and give $2.63 to Democrats for every $1 given to Republicans.

[Insert Table 1 about here]

Statistical Analysis

Including a fixed effect for each credit union in the model prevents us from also directly including indicators of CEOs' characteristics (gender and ideology) as their effects are absorbed by the fixed effect. Instead, I use the variation in decision making across applicants within and between credit unions to identify the effect a CEO's characteristics has on their credit union's

lending decisions.[6] Identification is based on the coefficient of an interaction term between a CEO and an applicant's characteristics. To identify the effect a CEO's gender has on their risk aversion (H1), I interact an indicator for whether the CEO is female with an applicant's debt-to-income ratio (*DTI*). This allows one to determine how credit unions led by female CEOs respond to an increase in applicant risk, relative to those led by male CEOs. CEOs will respond more strongly if they are more risk averse, such that a positive and statistically significant coefficient indicates female CEOs are more risk averse. Similarly, I identify whether a conservative CEO is more risk averse (H2) by using an interaction between an indicator of whether a CEO is conservative and an applicant's measure of risk.

To identify the effect a CEO's gender has on their social preferences (H3), I interact an indicator for whether the CEO is female with an indicator of whether an applicant is a member of a disadvantaged group (e.g., female or minority). A positive and statistically significant coefficient implies that female CEOs exhibit stronger social preferences towards equality of lending outcomes than their male counterparts. I use a similar test to compare the effects of differences in CEOs' ideologies on their social preferences (H4), where I include separate interactions for liberal and non-partisan CEOs with conservatives serving as the reference group.

I estimate the model specification using a linear fixed effects model. Wooldridge (2010) discusses this approach produces consistent and unbiased coefficient estimates in a model with a binary dependent variable and allows one to calculate the average partial effects (marginal effects) of the independent variables. I report cluster robust standard errors to correct for correlation of errors within lenders and the heteroskedasticity that is present due to the use of a linear model with a binary outcome.

Results

Descriptive statistics of the loan applications are presented in Supplemental Appendix Table A2. In the sample, 13% of loan applications were denied and the average applicant's income and loan amount are 93 and 207 thousand dollars, respectively. I observe that 28% of loans underwent the pre-approval process, while less than 1% used a piggyback loan. Racially, the sample of applicants is 80.3% white, 8% Hispanic, 5.2% Asian, and 6.5% black.

Estimates of the baseline model specification appear in Table 2, column 1. I find factors that reduce an applicant's risk decrease the probability an applicant is denied a mortgage. Increasing an applicant's income by 1% reduces the probability their application is denied by 6.7 percentage points. Increasing an applicant's wealth by 1%, using the proxy measure, reduces the probability their application is denied by 1.5 percentage points. Increasing the debt-to-income ratio measure by one standard deviation increases the probability of denial by 1.42 percentage points. To put the magnitude of these marginal effects into perspective, recall that 13% of applications in the sample are denied. Therefore, a 1.42 percentage point change is equivalent to a change of 11%.

Applications seeking pre-approval are 11.3 percentage points less likely denied and applicants using piggyback loans are 6.1 percentage points less likely denied. Both types of loans increase a borrower's interactions with their lender prior to completing an application. These added interactions may allow lenders to better identify applicants of low risk who they direct into both types of loans. The final set of controls includes demographic measures. I find female applicants are 0.85 percentage points less likely to be denied than male applicants. Hispanic applicants are 5.2 percentage points more likely to have their loan denied than a white applicant who is otherwise comparable. Asian and black applicants are 2.4 and 12.2 percentage points, respectively, more likely to have their applications denied than a white applicant. I find

this disparity in loan denial rates is also found for properties located in minority neighborhoods, which are 2.6 percentage points more likely denied.

[Insert Table 2 about here]

CEO Characteristics and Risk Aversion in Lending Decisions

In Table 2, column 2 I extend the baseline model in column 1 to test hypothesis H1 by including an interaction term between an applicant's debt-to-income ratio (*DTI*) and an indicator for whether a credit union's CEO is female. The estimate of the interaction term's coefficient indicates that credit unions led by a female CEO are 2.1 percentage points (16%) more likely to deny an application for a one standard deviation increase in risk, relative to credit unions led by a male CEO. The estimate is statistically significant at the 5% level (p-value 0.02). This result supports hypothesis H1 that female led credit unions exhibit greater risk aversion in their lending decisions.

A potential question is whether the impact I find with respect to a CEO's gender and risk aversion is influenced by the gender composition of the board of directors. Boards exist, in part, to monitor, advise, and constrain the decision making of the firm's management. Increasing female representation on boards has been shown to increase monitoring by the board (Adams & Ferreira, 2009) and affect strategic decisions (Endrikat et al., 2020; Johnson et al., 2013). Firms with female board members have also been shown to exhibit greater risk aversion (Chen et al., 2016; Palvia et al., 2015; Ward & Forker, 2017). Palvia et al. (2015) find among small banks in the United States that having a female chairperson of the board reduced their risk of failure during the 2008 financial crisis. Similarly, Ward and Forker (2017) find that increasing the share of female directors on credit unions' boards reduces risk by improving loan quality in Northern Ireland.

The inclusion of a fixed effect for each credit union allows for differences in board composition to influence a credit union's average denial rate. However, it is possible the gender composition of the board, similar to a CEO's gender, may also have a heterogenous effect on risk aversion for an increase in applicant risk. In this case, it may be the board's gender composition and not that of the CEO that matters in decision making. To test this possibility, I add to the specification (Table 2, column 2) an interaction term between the percentage of female directors on the board and an applicant's debt-to-income ratio.[7] The results (Table 2, column 3) indicate a CEO's gender has a similar sized impact on a credit union's risk aversion as in the previous model. However, the coefficient for the added interaction term with the share of female directors is not statistically significant (p-value 0.66). Thus, I find no evidence that the gender composition of the board has a heterogenous effect on a credit union's risk aversion.[8]

Next, I examine the effect a CEO's conservatism has on a credit union's culture towards risk aversion. I add to the baseline model an interaction term between a measure of applicant risk, debt-to-income ratio (*DTI*), and an indicator for whether a credit union's CEO is conservative. The estimate of the interaction term's coefficient (Table 3, column 1) indicates that credit unions led by a conservative CEO are 1.6 percentage points (12%) more likely to deny an application for a one standard deviation increase in risk, relative to credit unions led by a non-conservative CEO. The estimate is statistically significant at the 5% level (p-value 0.03). This finding supports hypothesis H2, whereby credit unions led by conservative CEOs exhibit greater risk aversion.

An important empirical question of interest is whether a CEO's conservatism shapes a credit union's risk aversion independently of their gender. To examine this question, I add back to the model specification the interaction between a CEO's gender and the debt-to-income ratio,

and a triple interaction term based on a CEO's gender, conservatism, and debt-to-income ratio. The results (Table 3, column 2) suggest that both CEO characteristics, separately, influence risk aversion. Credit unions led by a female CEO are 22% more likely to deny an application for an increase in risk, relative to credit unions led by a male CEO. Conservative CEO are 13% more likely to deny an application for an increase in risk, relative to their non-conservative counterparts. However, conditioning on a CEO being conservative, I find there to be no difference in the risk aversion of male and female CEOs (p-value 0.99). Similarly, conditioning on a CEO being female, I find there is no difference in the risk aversion of conservative and non-conservative CEOs (p-value 0.44). These results suggest that while the presence of either trait (female, conservative) increases risk aversion, the presence of both does not intensify the effect.

[Insert Table 3 about here]

In the sample, approximately 20% of credit union CEOs are political donors and those who do not make contributions are assumed to be non-partisan. While it seems reasonable to expect CEOs with stronger ideologies to also be more likely political contributors, it is prudent to test the sensitivity of my results to this assumption. The concern may be that the findings are driven by the majority of CEO's whose party affiliation and thus ideology is unobserved based on election contributions. To test the robustness of the results, I use a sub-sample of loan data where CEOs contribute exclusively to one political party. For these CEOs there is no uncertainty as to their political identification. In Supplemental Appendix Table B1, column 1, I find that credit unions led by a conservative CEO are 2.4 percentage points (18.5%) more likely to deny an application for a one standard deviation increase in risk, compared to credit unions led by a non-conservative CEO. This is slightly stronger than the 12% effect observed in the model with the full sample of observations. When I add to the model specifications the interactions between

a CEO's gender and their ideology the results (Table B1, column 2) are also quite similar to before. Female CEOs and conservative CEOs are more risk averse. Conditioning on a CEO being conservative, I find that a CEO's gender has no statistically significant effect on their risk aversion and that conditioning on being female, a CEO's conservatism also has no impact. Consequently, the previous findings are robust to my identification assumption of a CEO's ideology.

CEO Characteristics and Social Preferences in Lending Decisions

I hypothesize (H3) female led credit unions are less likely to deny female applicants than their male led counterparts. To test this, I extend the baseline model to include an interaction term between whether an applicant is female and whether the CEO of the credit union where they apply for a loan is female. The coefficient estimate for this interaction term (Table 4, column 1) is negative but is not statistically different than zero (p-value 0.55). Consequently, I do not find support for hypothesis H3 with respect to lending to female applicants.

With respect to their lending decisions to minority applicants, I find that female led credit unions are also no different than their male led counterparts. In Table 4, column 2 I add to the baseline specification three separate interaction terms between whether a CEO is female and an applicant's race/ethnicity (Hispanic, Asian, black). None of the three interaction terms is individually statistically significant or jointly significant (p-value. 0.57). I again do not find support for hypothesis H3 with respect to lending to minority applicants. There is no evidence to indicate that credit decisions shaped by women differ from those of men in terms of their social preferences and lending to groups of marginalized borrowers.[9]

[Insert Table 4 about here]

In the tests of hypothesis H4 I examine the effect a CEO's ideology has on their social preferences. To test the difference between liberal and conservative ideologies on lending decisions to marginalized borrowers, I add to the baseline specification an interaction between whether a CEO has a liberal ideology and an applicant's trait and another interaction between whether a CEO has a non-partisan ideology interacted with an applicant's trait. The coefficients of these two interactions then measure the impact of each ideology, relative to a conservative CEO. The results (Table 5, column 1) indicate that credit unions led by liberal CEOs are 1.4 percentage points (11%) less likely to reject female applicants than those of conservatives. This result supports hypothesis H4.[10]

In Table 5, column 2 I report the results that examine the impact ideology has on decisions to lend to minority applicants. Liberal led credit unions are 5 percentage points (38%) less likely to deny black applicants than conservative led credit unions. Non-partisan led credit unions are also 4 percentage points (30%) less likely to deny Asian applicants than conservative led credit unions, which is statistically significant at the 10% level (p-value 0.08). However, I find no differences in the denial rates among Hispanic applicants based on differences in ideology. With respect to hypothesis H4, I find support in the case of black applicants, where credit unions led by liberals are less likely to reject minority applicants than those led by conservatives.[11]

[Insert Table 5 about here]

Based on the separate findings that women and black applicants are each less likely to be denied by a credit union led by a liberal CEO, I also considered how a CEO's ideology effects lending to female minority applicants. The results from this model, reported in Supplemental Appendix Table C, find that liberal credit unions are 7 percentage points (p-value 0.02) less likely to deny

black female applicants, than their conservative counterparts. This result further supports hypothesis H4. However, I found no significant differences among female applicants who are either Hispanic or Asian.

Discussion and Conclusion

Theoretical Contributions

Management studies often find that female CEOs exhibit greater risk aversion in decision making than their male counterparts. However, this relationship is not always consistently observed across similar contexts. My study contributes to the upper echelons literature by showing that gender is an incomplete measure of a CEO's risk preferences and that a CEO's political ideology, which is revealed through choice, provides additional insight into a CEO's preferences. Specifically, I find that the relationship between a CEO's gender and ideology is complex, as gender's effect on risk aversion in lending decisions is conditional on whether a CEO is ideologically conservative. This suggests that women and conservatives have similar risk preferences, such that female CEOs are not necessarily more risk averse than male CEOs if the latter are conservative.

While women and conservatives share similar risk preferences, I find that they differ in terms of their social preferences and socially responsible decision making. My study extends the literature (Chin, et al., 2013; Di Giuli & Kostovetsky, 2014; Tang et al., 2018) that examines CEO characteristics and firms' social responsibility behaviors by examining a new context that directly contributes to understanding inequality in lending decisions (Goenner, 2023; Patel et al., 2022; Secchi & Seri, 2017). I find credit unions led by conservative CEOs are more likely to deny female or black applicants than credit unions led by liberal CEOs. However, my findings show that a CEO's gender has no effect on their social preferences. This result suggests female CEOs may feel there is no need for activism in their choices (Greenberg & Mollick, 2017) in

lending decisions. This is consistent with my data, as female applicants in my sample are not subject to structural barriers in accessing mortgage credit and are instead on average 6.5% less likely to be denied a mortgage. This result also supports past experimental studies (Croson and Gneezy, 2009) that find men and women exhibit similar social preferences.

Practical Implications

It is well established that there is a strong equity argument to be made for increasing the number of women in the C-suites of U.S. firms. This is evident among the credit unions examined in this study, where only 26% of CEOs are women. Of practical interest, is whether increasing female representation will change firm behavior and performance. In terms of credit unions' risk aversion, I find that credit unions led by female CEOs are 22% more likely than their male counterparts to deny an application for an increase in risk. Similarly, I find credit unions led by conservative CEOs are 13% more likely than their non-conservative counterparts to deny an application for an increase in risk.

These lending decisions influenced at the margin may be sufficiently large enough in the aggregate to influence a credit union's loan performance and asset composition. In credit cultures characterized by greater risk aversion, I would expect the origination of lower risk loans that exhibit, on average, lower delinquency rates. Similarly, the choice to originate fewer loans would alter a credit union's asset mix by increasing their share of less risky assets, such as cash and short-term bonds. To test for evidence of these effects, I use a cross-section of credit unions and model loan delinquency and the share of assets held in cash and short-term investments. Both models use the same control variables, including credit union size (natural log of total assets), the shares of lending in credit cards, auto loans, and unsecured credit, and measures of the economic conditions for a credit union's home market (unemployment rate, banking

competition, and home price appreciation).[12] The variable of interest is an indicator for whether a credit union is led by either a female or conservative CEO.

The results indicate that loan delinquency is lower for credit unions led by either a female or conservative CEO. As reported in Supplemental Appendix Table E2 (column 1), delinquency rates are 5 basis points (0.05%) lower, which is a reduction in delinquency by 9%. I find (column 2) the share of assets held in risk-free assets is 69 basis points (4.6%) higher among credit cultures led by female or conservative CEOs. These results provide further evidence of the effects greater risk aversion has on credit unions' performance.

Decisions about whom to allocate credit also have significant implications for both economic prosperity and social equity in our society. My results indicate that liberal CEOs are less likely than their conservative counterparts to deny credit to black applicants by 5.0 percentage points, which represents a reduction in inequality by 38 percent. In contrast, I find no difference between liberal and conservative CEOs in lending to Asian or Hispanic applicants. I believe that liberal CEOs may be constrained in their ability to further extend credit and reserve their intervention to black applicants who are subject to the greatest inequality in my data. Specifically, black applicants are on average 12 percentage points more likely denied than white applicants, compared with differences of 2 and 5 percentage points for Asian and Hispanic applicants. The results suggest credit unions led by CEOs with liberal views are more willing to provide mortgage credit to black applicants, which I noted is important to closing the racial gap in homeownership rates.

Limitations

A limitation of this study is the inability to observe other CEO characteristics that may influence a credit union's lending decisions. Including a credit union level fixed effect allows lending

policies to vary across both credit union and CEO, but it does not eliminate the possibility that unobserved CEO characteristics have heterogeneous effects on decision making. For example, Peltomäki et al. (2016) show that a CEO's age and gender both influence their firm's risk aversion. If unobserved characteristics are correlated with observed characteristics and they have a heterogeneous effect on lending decisions, then the estimates may be biased due to endogeneity. To address this concern, I construct an additional CEO characteristic that measures their job tenure as CEO. I expect CEO tenure to also proxy for age.

When I add to the models of risk aversion the interaction between applicant risk and a CEO's tenure, I find (Supplemental Appendix Table F1) my previous estimates of gender and conservatism's effects on risk aversion are qualitatively unchanged by inclusion of the interaction with CEO tenure. In addition, the interaction term's coefficient is not statistically significant in any of the specifications. Similarly, in the models of social preferences I do not find (Supplemental Appendix Tables F2 and F3) that controlling for CEO tenure and an applicant's characteristics has any effect on my previous findings with respect to a female or liberal CEO's social preferences toward lending to female or minority applicants. The only heterogenous impact of tenure is on lending to Asian applicants, as each additional year reduces the probability an Asian applicant is denied by 2.2%. However, tenure did not affect lending to either black or Hispanic applicants.

Another potential source of endogeneity in the model may stem from non-random selection between credit unions and CEOs with different characteristics. For instance, credit unions with conservative boards may be willing to accept lower returns in exchange for reduced risk and therefore select CEOs whose ideology aligns with these preferences. If this were the case, I would expect to observe systematic differences in the characteristics of credit unions led

by CEOs with different traits.[13] However, as shown in Supplemental Appendix Table G, overall performance (return on average assets) and risk-taking (capital adequacy ratio) are quite similar across credit unions whose CEOs differ by gender (Panel A) or ideology (Panel B). The difference in means between groups is less than 0.20 standard deviations for each pairwise comparison of risk and returns, which is considered small (Imbens, 2015).[14] This similarity also extends to measures of asset and liability management and their market environments. The only meaningful difference I observe is in the size of credit unions, where I find male led credit unions are 0.49 standard deviations larger than those led by women. Despite their difference in scale, I believe that male and female led credit unions are exchangeable given their similarity in terms of performance, risk, and asset and liability management characteristics. Nonetheless, I acknowledge that similarity based on observable characteristics lessens but does not eliminate the potential for selection bias.

If the ideology of a credit union's members and board (variable Z) influences both the ideology of the CEO that I observe (D) and lending outcomes (Y), then a regression model of Y on the covariates (X) and D will produce biased predictions as the expected value of the error term (U) is non-zero. The magnitude of the bias is unobserved and may be big or small. However, if I observe Z, I can simply include it in the specification and this will eliminate the correlation between U and Z, along with the bias. Recall, I am unable to directly identify the ideology of directors, but I can construct a proxy measure of credit union members' conservatism. The two groups (directors and members) are likely similar in terms of ideology as directors are elected from the membership. The proxy measure I use is the vote share received by the Republican candidate in the 2014 federal election in the congressional district where the credit union is located. Using 2015 data, I re-estimate my lending decision models that examine

risk-aversion and social preferences by adding to each specification an interaction with the measure of interest and members' conservatism. If variation in members' ideologies influence heterogeneity in lending preferences, I should see statistically significant effects between the proxy based on vote share and applicant characteristics. In none of these models do I observe a statistically significant effect based on members' conservatism. What I instead find in Supplemental Appendix H (Tables H1, H2, and H3) is that my original results and inferences (Tables 2, 3, and 4) are quite similar. I recognize that this analysis does not fully eliminate the possibility of selection effects, as other unobserved factors may still be at play.

My study, similar to prior work (Avery et al., 2007; Black et al., 2001; Goenner, 2023; Munnell et al., 1994) uses HMDA application data from a single year to examine lending decisions made in 2015. However, relying on a single year limits my ability to assess whether lending decisions vary over time. In 2015, a modest number of lenders began to ease lending standards on conventional mortgages, which had remained quite tight in the aftermath of the Great Financial Crisis (Board, 2015). This shift compelled credit unions to strategically consider whether to relax their own guidelines. CEOs faced a challenging dilemma. If they waited to ease standards they risked losing market share, while moving too quickly increased the likelihood of defaults if economic conditions failed to improve. As a result, CEOs experienced intense demands regarding their decisions during this period. According to upper echelons theory, when facing heightened job demands, CEOs are more likely to base decisions on past experiences and values shaped by their personal characteristics (Hambrick, 2007). Consequently, I expect competitive market pressures in 2015 to strengthen the relationships observed in my findings compared to prior years.

To test this assertion, I examine the relationship between CEO characteristics and lending decisions in 2014, a period with fewer job demands on CEOs. Results (Supplemental Appendix Table I1, columns 1-2) show that conservative CEOs are more risk averse regardless of their gender, while female CEOs are only more risk averse if also conservative (p-value 0.08). This differs from my analysis of 2015, where I found female CEO are only more risk averse if they are not conservative. The 2014 result implies that greater risk aversion is associated with the presence of both characteristics (female and conservative), whereas the 2015 result suggests it is associated with either. My CEOs' gender and conservativism each separately have a stronger effect on risk aversion in 2015 than in 2014.

Re-estimating the model using pooled (2014 and 2015) applications with a time fixed effect (Supplemental Appendix Table I1, columns 3-4) confirms that conservative CEOs remain more risk averse. The pooled analysis, though, reveals that a CEO's gender has no effect on risk aversion. This finding reflects the assumption in the pooled model that the effect of gender conditioning on a CEO's ideology is similar over time, which was observed to not be the case in the analyses of separate years.

For social preferences, 2015 loan applications show no relationship between CEO gender and lending decisions to female or minority applicants. Similarly, results from the 2014 and pooled samples (Supplemental Appendix Table I2) reveal no gender related differences in lending to female applicants. However, female CEOs displayed more favorable lending behavior toward Asian applicants. Female CEOs are 3 and 2.1 percentage points less likely to deny Asian applicants than male led credit unions in the 2014 and pooled samples, respectively. These magnitudes suggest that female led credit unions treat Asian applicants similarly to white

applicants, whereas male led credit unions are more than 3 percentage points more likely to deny Asian applicants.

With respect to ideology, I find no evidence in the 2014 or pooled samples (Supplemental Appendix Table I3) that CEO ideology affects lending to female applicants. This differs from my 2015 results, where liberal CEOs were less likely than conservatives to deny female applicants, suggesting that ideology had a stronger influence in 2015. However, a CEO's ideology continues to influence lending decisions to black applicants. Credit unions led by liberal CEOs are 7.3 and 6.1 percentage points less likely to deny black applicants than conservative led credit unions in my 2014 and pooled samples, respectively

Avenues for Future Research

An unresolved question in this study and an area for further research is whether the patterns observed in credit union lending decisions are generalizable to other types of lenders, such as commercial or mutual savings banks. As noted, credit unions are distinctive in their governance structure as non-profit cooperatives and this allows their CEOs considerable discretion in decision making. If bank CEOs are sufficiently constrained, then their characteristics may not matter. However, previous studies have shown that CEO characteristics, including gender, can influence banks' overall risk-taking, which suggests my results may extend to other lenders. In addition, the present analysis focused on loan applications made in 2015 and was extended to 2014 to examine whether variation in a CEO's job demands over time moderates the strength of CEO characteristics on decision making. Future studies may wish to further test whether other time periods or additional external factors may lead to variation in job demands that influence the relationship between a CEO's characteristics and strategic decisions.

In this and prior studies the focus is on decision making in relation to CEO characteristics. However, credit union CEOs rarely make strategic decisions in isolation of other executives and typically rely on subordinates for implementation. Consequently, the characteristics of executives, such as the Chief Financial Officer (CFO), who share responsibility for investment strategies may also affect lending decisions. This belief is consistent with upper echelons theory, which predicts (Hambrick, 2007) study of the characteristics of the top management team is likely to result in stronger predictions than a CEO alone. Extending my analysis to include the characteristics of other executives involved in lending decisions may then strengthen the findings. I also acknowledge the governance role of boards of directors in approving a credit union's strategic decisions, including lending policies. Although I found no evidence that board gender composition influenced lending decisions, it remains possible other director characteristics may affect decision making. Identifying and analyzing these decisionmakers' attributes, however, is a challenge left for future research.

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Notes

[1] The Home Mortgage Disclosure Act of 1975 requires lenders to report loan-level information for mortgage loan applications on a form known as the Loan Application Register. Data is publicly available at https://www.consumerfinance.gov/data-research/hmda/.

[2] Similar to others (Avery et al., 2007; Goenner, 2023), I use a hierarchical approach to classify individuals into a single category.

[3] An alternative approach to identify one's political party is to use voter registration data. However, this approach has two significant limitations. This data is not publicly available for most states and if available does not provide employer information, which is needed for matching.

[4] Contributions made to political action committees (e.g., Credit Union Legislative Action Council of CUNA) are observed in the data but are excluded from determining one's ideology.

[5] I identify 19.6% of credit union CEOs as political donors, which is the same as reported by Hutton et al. (2014) among executives of S&P 1500 firms.

[6] This differs from the approach used by Van Rijn (2019), where he observes for each credit union a single measure of risk in each period. To use the within variation in a credit union's risk taking then requires the use of multiple periods. Van Rijn (2019) estimates a difference-in-differences (DID) model to identify the impact a CEO's gender has on risk taking. The challenge is whether the variation over time in the gender of credit union CEOs is sufficient to precisely estimate the treatment effect. Limited variation may explain why he does not find that gender effects risk aversion.

[7] I used profile information contained in Form 4501A to identify the names and salutations of directors on the board for their gender identification.

[8] Previous research (Moussa et al., 2023) suggests a critical mass of female directors may be required to influence decision making. Using an indicator for whether the majority of board members are women was also used in place of the continuous measure and did not affect the results.

[9] In unreported results, the gender composition of the board also had no effect on lending decisions to either female or minority applicants.

[10] I also test the sensitivity of the results reported in Table 5 to our assumption regarding the identification of a CEO's ideology. Using a sub-sample of loan data from CEOs who gave exclusively to one party I find (Supplemental Appendix Table B2) that our inferences are qualitatively unchanged.

[11] I also considered whether differences in social preferences influenced the pricing of loans to disadvantaged applicants. I find (Supplemental Appendix Table D1) a CEO's gender has no effect on the pricing of loans made to women or minorities. Similarly, I did not find (Supplemental Appendix Table D2) that a CEO's ideology influences loan pricing to minority applicants. However, I did find weak evidence (p-value 0.07) that liberal CEO's price loans lower to women applicants than do conservative CEOs.

[12] A complete description of the variables is included in Supplemental Appendix Table E1.

[13] In cases where differences are observed between groups (e.g. Goenner et al., 2024; Palvia et al., 2015), it is common to use propensity score matching to reduce the potential for selection bias.

[14] Imbens (2015) discusses the normalized difference is preferred over the t-statistic for assessing covariate similarity between groups as the latter may be significant simply due to a large sample size.

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Table 1. The Political Contributions of Credit Union CEOs

	Exclusively Republican	Favor Republican		Equal		Favor Democrat		Exclusively Democrat
	REP	REP	DEM	REP	DEM	REP	DEM	DEM
Number	3.4	9.0	3.6	1	1	3.4	7.2	2.5
	(2)	(6)	(1)	(1)	(1)	(2)	(5)	(1)
Amount	$1,725	$5,946	$2,233	$260	$260	$1,434	$3,765	$1,358
	($750)	($2,450)	($750)	($250)	($250)	($750)	($2,375)	($500)
Number of CEOs	143	51		5		36		101

Summary of previous contributions made by credit union CEOs to political candidates of the Republican and Democratic Parties.

Table 2: The Impact of CEO Gender on Risk Aversion

	(1)	(2)	(3)
Income	-0.0666***	-0.0646***	-0.0648***
	(0.0063)	(0.0062)	(0.0062)
Loan amount	-0.0145***	-0.0163***	-0.0157***
	(0.0046)	(0.0045)	(0.0045)
Debt-to-income ratio (DTI)	0.0045***	0.0043***	0.0048***
	(0.0014)	(0.0013)	(0.0017)
Piggyback loan	-0.0607***	-0.0608***	-0.0631***
	(0.0187)	(0.0186)	(0.0205)
Pre-approval sought	-0.1127***	-0.1127***	-0.1127***
	(0.0215)	(0.0215)	(0.0217)
Female applicant	-0.0085***	-0.0084***	-0.0082***
	(0.0023)	(0.0023)	(0.0023)
Minority neighborhood	0.0256***	0.0256***	0.0257***
	(0.0041)	(0.0041)	(0.0041)
Hispanic applicant	0.0524***	0.0523***	0.0514***
	(0.0050)	(0.0050)	(0.0050)
Asian applicant	0.0239***	0.0239***	0.0231***
	(0.0077)	(0.0077)	(0.0078)
Black applicant	0.1220***	0.1220***	0.1219***
	(0.0122)	(0.0122)	(0.0123)
DTI * Female CEO		0.0066**	0.0068**
		(0.0027)	(0.0028)
DTI * Female Board (%)			-0.0017
			(0.0040)
Constant	0.4440***	0.4421***	0.4386***
	(0.0542)	(0.0541)	(0.0541)
Observations	180845	180845	178928

OLS estimates of a credit union's decision whether to reject a mortgage loan application. Each specification includes a lender level fixed effect and a MSA level fixed effect, which are not reported. DTI is an abbreviation for the debt-to-income ratio. Credit unions whose CEO changed in 2015 are excluded from the analysis if the gender of their CEO changed. Robust standard errors clustered by lender are reported in parentheses, where *, **, *** indicate the estimates are statistically different from zero at the 10%, 5%, and 1% level, respectively.

Table 3: The Impact of CEO Conservatism and Gender on Risk Aversion

	(1)	(2)
Income	-0.0655***	-0.0628***
	(0.0062)	(0.0063)
Loan amount	-0.0150***	-0.0174***
	(0.0043)	(0.0044)
Debt-to-income ratio (DTI)	0.0040***	0.0039***
	(0.0013)	(0.0013)
Piggyback loan	-0.0603***	-0.0608***
	(0.0185)	(0.0186)
Pre-approval sought	-0.1112***	-0.1119***
	(0.0217)	(0.0217)
Female applicant	-0.0085***	-0.0082***
	(0.0023)	(0.0024)
Minority neighborhood	0.0252***	0.0251***
	(0.0041)	(0.0041)
Hispanic applicant	0.0527***	0.0525***
	(0.0051)	(0.0051)
Asian applicant	0.0242***	0.0242***
	(0.0077)	(0.0077)
Black applicant	0.1210***	0.1211***
	(0.0121)	(0.0121)
DTI x Conservative CEO	0.0050**	0.0054**
	(0.0023)	(0.0027)
DTI x Female CEO		0.0092**
		(0.0045)
DTI x Female CEO x Cons. CEO		-0.0092*
		(0.0056)
Constant	0.4432***	0.4407***
	(0.0545)	(0.0544)
Observations	179610	178398

OLS estimates of a credit union's decision whether to reject a mortgage loan application. Each specification includes a lender level fixed effect and a MSA level fixed effect, which are not reported. DTI is an abbreviation for the debt-to-income ratio. Credit unions whose CEO changed in 2015 are excluded from the analysis if the ideology of their CEO changed (1) or if their gender changed (2). Robust standard errors clustered by lender are reported in parentheses, where *, **, *** indicate the estimates are statistically different from zero at the 10%, 5%, and 1% level, respectively.

Table 4: The Impact of CEO Gender on Social Preferences

	(1)	(2)
Income	-0.0666***	-0.0666***
	(0.0063)	(0.0063)
Loan amount	-0.0145***	-0.0145***
	(0.0046)	(0.0046)
Debt-to-income ratio (DTI)	0.0045***	0.0045***
	(0.0014)	(0.0014)
Piggyback loan	-0.0607***	-0.0607***
	(0.0187)	(0.0187)
Pre-approval sought	-0.1127***	-0.1127***
	(0.0215)	(0.0215)
Female applicant	-0.0080***	-0.0085***
	(0.0027)	(0.0023)
Minority neighborhood	0.0256***	0.0256***
	(0.0041)	(0.0041)
Hispanic applicant	0.0524***	0.0532***
	(0.0050)	(0.0057)
Asian applicant	0.0239***	0.0260***
	(0.0077)	(0.0088)
Black applicant	0.1220***	0.1225***
	(0.0122)	(0.0137)
Female applicant x Female CEO	-0.0034	
	(0.0056)	
Hispanic applicant x Female CEO		-0.0056
		(0.0135)
Asian applicant x Female CEO		-0.0164
		(0.0118)
Black applicant x Female CEO		-0.0037
		(0.0227)
Constant	0.4440***	0.4442***
	(0.0542)	(0.0544)
Observations	180845	180845

OLS estimates of a credit union's decision whether to reject a mortgage loan application. Each specification includes a lender level fixed effect and a MSA level fixed effect, which are not reported. Credit unions whose CEO changed in 2015 are excluded from the analysis if the gender of their CEO changed. Robust standard errors clustered by lender are reported in parentheses, where *, **, *** indicate the estimates are statistically different from zero at the 10%, 5%, and 1% level, respectively.

Table 5: The Impact of CEO Conservatism on Social Preferences

	(1)	(2)
Income	-0.0671***	-0.0672***
	(0.0064)	(0.0064)
Loan amount	-0.0137***	-0.0136***
	(0.0046)	(0.0045)
Debt to income ratio (DTI)	0.0045***	0.0045***
	(0.0014)	(0.0014)
Piggyback loan	-0.0601***	-0.0603***
	(0.0185)	(0.0185)
Pre-approval sought	-0.1113***	-0.1113***
	(0.0217)	(0.0216)
Female applicant	-0.0006	-0.0086***
	(0.0053)	(0.0023)
Minority neighborhood	0.0253***	0.0252***
	(0.0041)	(0.0041)
Hispanic applicant	0.0528***	0.0438***
	(0.0051)	(0.0108)
Asian applicant	0.0243***	0.0532**
	(0.0077)	(0.0215)
Black applicant	0.1210***	0.1378***
	(0.0120)	(0.0177)
Female applicant x Liberal CEO	-0.0139**	
	(0.0063)	
Female applicant x Non-partisan CEO	-0.0083	
	(0.0063)	
Hispanic applicant x Liberal CEO		0.0055
		(0.0168)
Hispanic applicant x Non-partisan CEO		0.0135
		(0.0132)
Asian applicant x Liberal CEO		-0.0276
		(0.0233)
Asian applicant x Non-partisan CEO		-0.0405*
		(0.0229)
Black applicant x Liberal CEO		-0.0502**
		(0.0250)
Black applicant x Non-partisan CEO		-0.0060
		(0.0235)
Constant	0.4435***	0.4461***
	(0.0535)	(0.0556)
Observations	179610	179610

OLS estimates of a credit union's decision whether to reject a mortgage loan application. Each specification includes a lender level fixed effect and a MSA level fixed effect, which are not reported. Credit unions whose CEO changed in

2015 are excluded from the analysis if the ideology of their CEO changed. Robust standard errors clustered by lender are reported in parentheses, where *, **, *** indicate the estimates are statistically different from zero at the 10%, 5%, and 1% level, respectively.