Marriage and CEO's Concern for Corporate Social Responsibility

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Research summary

Drawing on the evidence from the broad social science and humanities literature, we investigate the hypothesis that married chief executive officers (CEOs) tend to care more for corporate social responsibility (CSR). Based on a sample of 2,163 U.S. firms from 1993 to 2008, we find that firms headed by unmarried CEOs are associated with lower KLD-CSR scores. Further scrutiny indicates that unmarried CEOs score significantly lower on KLD-CSR strengths, particularly related to qualitative issues in diversity and employee relations. Our findings appear to be robust to potential endogeneity bias and indicate a negative externality in CSR introduced by the marital status of CEOs.

Managerial summary

Businesses spend trillions of dollars in an attempt to build a strong corporate image. Marriage can make a CEO more aware of the need to blend basic corporate goals with broader social and environmental missions. Our findings imply that while single CEOs typically do not exacerbate a firm's CSR concerns, they place less emphasis on the positive aspects of CSR. Our strong empirical link, likely even causal, between the CEO marital status and CSR informs corporate policy on CSR, compliance and new CEO orientation. Firms that ignore or disregard the influence of CEO marital status may run the risk of diminished social performance.

Keywords: Corporate Social Responsibility, Marriage, CEO, Risk Propensity, Incentives

JEL Classification: O3, G1, G3, D8

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INTRODUCTION

A large body of literature on the lifecycle psychology and the sociology of the family indicates that marriage is one of the most transforming events in life in which individuals embrace the goal of caring for each other and fostering the next generation (Garrison, 2008; Dahl, Dezso, and Ross, 2012). They suggest that married couples may be happier and more community-oriented than single individuals (e.g., Stoyanova, Diaz-Serrano, and Nilsson, 2007), and are more opposed than singles to bribe taking and tax evasion (Inglehart, Basanez, Diez-Medrano, Halman, Luijkx, 2004). Prominent judicial opinions and commentaries claim that states have a substantial interest in the marital status of their citizens (Bix, 2006). There is growing evidence that an enduring, low-conflict marriage provides larger public benefits through its positive impact on the health, wealth, and happiness of spouses and their children (Garrison, 2008). Another body of literature indicates that top managers' values, personal attributes and experiences (including their marital status) affect a wide range of corporate policies (e.g., Bertrand and Schoar, 2003; Chatterjee and Hambrick, 2007; Dahl, Dezso, and Ross, 2012; Roussanov and Savor, 2014).

These two strands of the literature suggest that the transition to marriage of a chief executive officer (CEO) makes values such as care and concern for others and the code of conduct more salient. Moreover, these attributes cultivated in the family environment are likely carry over to the workplace and influence her or his attitude towards various stakeholders, including employees, community and environment. However, little attention has been given to the impact of the marital status of CEOs on corporate social performance. Lacking a formal theory to guide us, we conjecture that married CEOs would favor firm policies promoting concern for the environment and social equity and welfare of other stakeholders. More specifically, we investigate the informal

hypothesis that there is a positive empirical association between CEO marital status and corporate social responsibility (CSR).

Using a sample of 2,193 U.S. firms (14,078 firm-years) from 1993 to 2008, we find that firms headed by unmarried CEOs are associated with lower scores on a widely-used corporate social responsibility (CSR) performance index, after controlling for CEO and firm characteristics. We employ a battery of robustness tests including propensity score matching, difference-in-differences, fixed effects, and instrumental variable analysis to address potential selection and endogeneity bias and establish a causal link between the CEO marital status and CSR. Although the high degree of overlap among the six qualitative dimensions of the CSR index make it difficult to pinpoint the areas of weak social performance, the unmarried CEOs' CSR scores seem significantly lower on the positive characteristics of CSR performance index (labelled as *CSR Strengths*, covering generous charitable contributions, noteworthy achievements on diversity and employee benefits programs, notably strong pollution prevention programs, and others). Additionally, the social performance of single CEOs appears to be particularly poor on: (a) diversity strengths (*DIV Strengths)* and diversity concerns (*DIV Concerns* - covering issues like hiring and promotion of women, minorities and disabled, affirmative action, and employee benefits); and (b) employee relations strengths (*EMP Strengths*, labor union relations, employee health and retirement benefits, safety and well-being, profit-sharing and stock ownership). However, their scores on overall *CSR* Concerns seem comparable to those of married CEOs.[1]

[1] Do firms headed by unmarried CEOs emphasize stockholder wealth maximization at the expense of their CSR performance? In untabulated results (see Appendix Table A.1.), we find that the net effect of unmarried (single) CEOs on firm value is insignificant, suggesting that the positive value effect of their aggressive investment and financing policies tend to offset the potential negative value effect of weak CSR performance.

Although we control for several firm and CEO characteristics, it is possible that the unobserved innate heterogeneity among CEOs is correlated with their marital status. We utilize multiple econometric tools to address potential selection and identification problems and improve our ability to attribute the observed poor social record of the firm to the CEO marital status. To mitigate heterogeneity in observable characteristics between treatment and control firms, we apply propensity score matching methods and select a matching firm-year headed by a married CEO for each firm-year headed by an unmarried CEO (Rosenbaum and Rubin, 1983; Robert and Whited, 2012). Moreover, we account for industry and year effects in all regressions and firm, state and county fixed effects to alleviate potential effects of unobservable heterogeneity.

To address concerns about the endogeneity of CEO marital status in the context of corporate risk-taking, Roussanov and Savor (2014) employ state-level divorce laws as an instrument for marital status. Since the choice between marriage and remaining single has costly income tax consequences, especially for wealthy people, the discriminating federal and state personal income tax laws should have an important effect on an individual's propensity to enter into marriage. In particular, single CEOs may prefer to work for firms located in states with the effective personal income tax burden no different from that for married taxpayers. To scrutinize the causal influence of CEO marriage on CSR further, we use the variation in maximum marginal personal income tax rates and brackets across states and years in our sample as a novel instrument for the marital status of CEOs (see Kim and Lu, 2011). It seems intuitive that the marginal income tax rate is uncorrelated with CSR. Further, our analyses show that the state-level marginal tax rates and brackets are negatively correlated with the single status of CEOs, thus bolstering instrument validity. The instrumental variable analyses support the hypothesized negative association between CEO marriage and CSR, thus lending credence to a causal link.

Our findings that married CEOs are positively linked to CSR speak to a tension between corporate social responsibility and legal protection against discrimination based on marital status. In the U.S., the Civil Service Reform Act of 1978 (CSRA) protects federal government employees from discrimination in personnel actions based on marital status, and half the states have outlawed employment discrimination based on marital status. While these social benefits are very important to protect and preserve, our discovery of a robust empirical, and potentially causal, link indicates a potential negative externality associated with the marital status of CEOs. We expect the evidence (that unmarried CEOs exhibit less inclination to engage in CSR) to inform corporate policy on environment, diversity, employee benefits, community engagement, executive compliance and new CEO orientation.

CEO MARITAL STATUS AND CSR

There is a large body of literature on corporate social responsibility, broadly defined as a firm's commitment to minimizing potential harmful effects of its operations on its stakeholders (owners, employees, customers, community and the society at large) and maximizing its long-run beneficial impact on society. It suggests that good CSR helps reduce the likelihood of regulatory and legislative actions (Berman et al., 1999; Hillman and Keim, 2001), and differentiate the firm and its product ex ante (see, e.g., Waddock & Graves, 1997; McWilliams and Siegel, 2000; Fishman et al., 2006; Boehe and Cruz, 2010). Furthermore, the transparency created by CSR helps expand investor base and improve access to cheaper external financing (Dhaliwal et al., 2011; El Ghoul et al., 2011; Cheng et al., 2014). Chattananon and Lawley (2007) study the influence of consumer demographic characteristics (such as gender, age, education level, income level and marital status) on their attitudes towards CSR and corporate image. While women and consumers with higher education and higher income level have more positive attitude towards socially responsible

companies (also see, Ndubisi, 2006), they note that no conclusion can be reached about the impact of marital status on consumer attitude towards corporate social responsibility.

Another strand of cross-country socio-demographic literature focuses on the profound effects of transition to marriage on health, attitudes and behavior. Several studies indicate that married people, especially men, are healthier, wealthier, live longer, and enjoy happier lives than their unmarried peers (see e.g., Stoyanova, Diaz-Serrano, and Nilsson, 2007). Wilson and Wilcox (2006) observe that children appear to do significantly better when raised by married parents, supporting the idea that adoption laws should favor married parents to care for their children. Surveying the attitudes toward the ethics of tax evasion over time in the U.S. and across the globe, Inglehart et al. (2004) find that married couple are significantly more opposed to tax evasion than single people. Hernandez and McGee (2014) examine attitudes towards the ethics of bribe taking in many countries and find that married individuals are more opposed to bribe taking relative to the single or never married group. However, several researchers caution that many of the documented positive marital status effects appear to be masked by unobserved heterogeneous individual effects that are correlated with marital status (e.g., Cornwell and Peter, 1997). For example, there is potential selection bias in linking marriage and health because ill people find it difficult to marry, so the married group is likely overrepresented by individuals with good health. Overall, theory and empirical evidence in the social sciences indicate that marriage reflects the intention of the spouses to assume relational and parental responsibilities, embrace the goal of caring for each other and foster the next generation. Marriage yields larger public benefits through its positive impact on the health, wealth, and happiness of spouses and their children (Bix, 2006; and Garrison, 2008).

Several papers have examined the influence of CEO characteristics such as reputation, overconfidence, risk propensity, tenure, age, gender, race, and CEO turnover on wide-ranging corporate policies (e.g., Bertrand and Schoar, 2003; Chatterjee and Hambrick, 2007; Malmendier and Tate, 2008; Dahl et al., 2012, and Hirshleifer, et al., 2012). Dahl et al. (2012) investigate how the birth and gender of a CEO's child differentially influences the wages of his female and male employees as well as his own wages. In a recent paper, Roussanov and Savor (2014) find that firms run by single CEOs assume more risk - they exhibit higher stock return volatility and pursue more aggressive investment policies.

Against this backdrop, it seems intuitive to think that the transition to marriage makes more salient top executives' innate values, preferences and skills such as empathy, awareness and willingness to recognize the feelings and needs of various stakeholders, including employees, community and environment and care for their well-being. The family status is likely to accentuate the CEOs' willingness to help employees talk about their differences while seeking common ground, resolve interpersonal conflicts of interest and promote harmony and productivity in a diverse workplace divided along race, religion, gender, class, ideology and ethnic backgrounds. Therefore, it seems natural to expect that married CEOs would favor firm policies promoting workplace diversity and welfare of all stakeholders. Specifically, we investigate the hypothesis that the CEO marital status has a positive influence on CSR.

DATA & SAMPLE

We examine a sample of 14,078 firm-years of data representing 2,163 publicly traded U.S. firms that are covered in Compustat, KLD CSR Research data, and ExecuCom databases, and have a proxy for marital status in the dataset used in Roussanov and Savor (2014) and appropriate control variables as discussed below.

Corporate Social Responsibility Proxies

For constructing proxies for corporate social responsibility we rely on KLD CSR ratings of, S&P 500 firms starting in 1991, but more recently of firms in Russell 2000 and broad market social indices. The ratings are compiled using information available from various company filings, government and non-government sources, based on which KLD gives qualitative ratings of yes/no (1/0) for several areas of CSR *strengths* and *concerns*. These qualitative ratings cover two broad areas, *CSR areas* and *controversial business areas*. There are seven CSR areas for which KLD provides qualitative ratings on both strengths and concerns: corporate governance, diversity, community, employee relations, human rights, the environment, and product. The controversial business issues, which constitute concerns by nature of the business itself, are alcohol, firearms, gambling, the military, nuclear power, and tobacco.

Of these, we ignore the controversial business issues and corporate governance CSR area following the literature (El Ghoul et al., 2011; Mishra, 2017). For the remaining six CSR areas (that is, diversity, community, employee relations, human rights, the environment, and product), KLD summarizes the number of strengths and concerns sorted by firm and year by adding items relating to strengths and concerns separately. From these KLD summaries, we estimate the firm-year net CSR score for each of these six areas, which is equal to strengths less concerns. Our main proxy for a firm's CSR performance (*CSR_NET*) is the total of net CSR scores across the six areas: diversity (*DIV_NET*), community (*COM_NET*), employee relations *(EMP_NET)*, human rights *(HUM_NET)*, the environment *(ENV_NET)*, and product *(PRO_NET)*. The *CSR_NET* takes values ranging from -9 to +15. We generally consider a firm socially responsible if it demonstrates a positive value for *CSR_NET*. These proxies are defined in Appendix A.

CEO Marital Stratus and Characteristics

We use the CEO marital status data from Roussanov and Savor (2014), who manually collect marital status using a variety of public sources including "*Marquis Who's Who in Finance and Industry, the Notable Names Database, the U.S. Securities and Exchange Commission's insider filings, and various media mentions*" (see Roussanov and Savor, 2014, P. 2498). Given the lack of systematic and comprehensive datasets that require mandatory disclosure of CEO marital status, these researchers recognize some limitations in their marital status dataset. Yet they believe that this data reasonably represents the marital status of top executives. One important data limitation is the lack of variation over time in marital status, some of which is due to scarce information on the date of marriage, date of divorce, or on an individual CEO's choice of staying with undisclosed marriage-like relationships. In our investigation, we follow Roussanov and Savor (2014) and rely on "*Single CEO*", a dummy variable that takes a value of 1 if the CEO marital status is denoted as unmarried/not in relationship and 0 otherwise.[2] From ExecuCom we also collect other CEO characteristics, such as Age, Tenure, gender and CEO ownership.

Control Variables

We select control variables for the firm-level CSR performance regressions from the recent literature (McWilliams and Siegel, 2001; Cheng et al., 2014; and Mishra, 2017). These variables are log of assets (*LogAssets*), capital expenditure divided by Plant, Property and Equipment (*CAPEX*), Returns on Assets (*ROA*), *Firm Age*, Research and Developed Expenses divided by Plant, Property and Equipment (*R&D/PPE*), Book Value of Debt divided by Total Assets (*Book Leverage*), and Market to Book value of equity (*MVBV*). We add CEOs' risk taking incentives measured as the volatility of firm returns (*Risk Propensity*), CEO Age (*Age*), CEO Tenure (*Tenure*), a measure of revenue generated for a given level of resources used (following Demerjian

[2] The married classification represents those legally married (and some married but separated). The *Single CEO* classification covers four sub-groups: single, living with a partner, divorced, and widowed.

et al., 2012 and Demerjian et al., 2013; *CEO Ability*), value of unexercised options owned by CEOs divided by total CEO compensation (*Opt_Own*), and CEO gender (*Female*) to account for CEO characteristics that may potentially affect a CEO's propensity to choose CSR. In addition to these controls, we account for unknown industry (using Fama-French 48 industry classification), time and firm fixed effects in our tests. All control variables are measured as of t=0. These variables are described in detail in Appendix A.

Insert Table 1 about here

Table 1 presents time series means of the main dependent and test variables over 1993-2008. The overall CSR score of a firm (our main dependent variable), *CSR_NET*, is the net score representing total CSR strengths less CSR concerns for each firm-year. It is estimated as the sum of six net scores on Product (*PRO_NET*), Community (*COM_NET*), Employee Relations (*EMP_NET*), Diversity (*DIV_NET*), Environment (*ENV_NET*), and Human Rights (*HUM_NET*). That is, *CSR_NET*, is equal to *PRO_NET* + *COM_NET* + *EMP_NET* + *DIV_NET* + *ENV_NET* + *HUM_NET*. Each of the components of overall CSR also is the net of strengths and concerns in that specific dimension. These variables are estimated as described in Appendix A. "*Single CEO*", defined as a dummy variable equal to 1 if the CEO is not married (or is not in relation), zero otherwise, is our proxy for the CEO marital status. Time subscripts *t* and *t+1* are relative to the year *t* of observing CEO marital status. *N* denotes the number of firm-year observations. The overall annual averages of contemporaneous and leading CSR scores range from -0.2309 to 0.9516. The number of firm-years associated with single CEOs varies from roughly 4% to 22% (of N_t) across 1993-2008.

We present summary statistics on the outcome and test variables, firm and several CEO characteristics in Appendix Table A.2. for brevity. Our sample includes over 13,000 firm-year

observations. The mean and median overall CSR scores (CSR_NET_{t+1}) are 0.142 and 0, respectively. The corresponding averages for CSR strengths (CSR_STR_{t+1}) and concerns (CSR_NET_{t+1}) are 1.850 and 1.712, respectively. Among the components of the CSR index, the net mean scores on diversity (DIV_NET_{t+1}) and community (COM_NET_{t+1}) are positive but the rest are negative. Firms with unmarried CEOs account for about 14% of our firm-year observations, implying that the majority of our sample firms are headed by married CEOs. On average, CEOs in our sample are about 55 years old, with roughly six years of tenure. The mean value of 1.7% for *Female* indicates that men dominate our CEO sample. Appendix Table A.3. shows pairwise correlations. Firm size, MVBV and profitability are all positively correlated with the net CSR score, which is consistent with our intuition. Of particular interest is the correlation between *Single CEO* and the net CSR score, which is negative (-0.08, significant at better than 1%) and consistent with our main hypothesis that that the CEO marital status is negatively correlated with CSR. As expected, the simple correlation between *Risk Propensity* and the net CSR score is negative, whereas the correlation between *Female* and the net CSR score is positive. Overall, we find suggestive evidence in favor of our hypothesis of a negative association between unmarried CEOs firm social performance.

4. RESULTS

Do Unmarried CEOs Care Less for CSR?

For a preliminary look at the data, we begin with a univariate test (untabulated, to conserve space) and find that 11,569 firm-years with married CEOs have a mean (standard deviation) of CSR_NET_{t+1} equal to 0.22 (2.56), whereas the corresponding values for 1,872 firm-years with unmarried CEOs are -0.34 (1.89). The difference in means (0.56) is significant at better than 1%, thus providing additional suggestive evidence that there is a significant negative relation between unmarried CEOs and standard norms of CSR.

To test our conjecture more carefully, we use annual panel data and perform multivariate analyses of contemporaneous and leading (i.e., $t+i$ = 0, 1, and 2) CSR scores on the indicator variable for unmarried CEOs (*Single CEO*, our test variable) and a set of control variables (*W*) drawn from the related literature along with industry and year fixed effects to control for unobserved heterogeneity (all as of time *t*):

$$CSR\_NET_{t+i} = \alpha + \psi Single\ CEO_t + \pi * W_t + \text{Industry and Year Fixed Effects} + \varepsilon_{it} \quad (1)$$

Based on relevant prior studies, control variables for firm characteristics include accounting performance (*ROA*), capital spending (*CAPEX*), market-to-book value (*MVBV*), research and development expenses scaled by property, plant and equipment (*R&D/PPE*), firm size (*LogAssets*), firm age (*FirmAge*), leverage, and entrenchment index (*EIndex*), see Mishra (2017). Our controls for CEO characteristics are age, tenure, gender, wealth (*Opt_Own*), and *Risk Propensity.* All tests are based on cluster-robust standard errors.

The regression results are reported in Table 2. In column (1), the coefficient estimate on *Single CEO* is negative (-0.2718) and highly significant, indicating a negative relation between unmarried CEOs and KLD CSR scores. In addition, three more CEO demographics are significant. Consistent with our expectation, older CEOs are associated with lower social performance, while female CEOs exhibit better scores on CSR.[3] Consistent with Roussanov and Savor (2014), we find a significantly negative relation between CEOs' propensity for risk-taking in investment and financing and the CSR index. With respect to firm characteristics, larger, more profitable and growth firms seem to perform better on CSR.

Insert Table 2 about here

[3] To understand the role of female single CEOs, we interact *Female* with *Single CEO* and find a negative and significant (-1.2443, at 5%) coefficient on the interaction term. This suggests that even the single female top executives are marked by lower CSR index relative to their married peers see Appendix Table A.4.

Since the level of commitment to CSR programs as well as whether to hire a married or unmarried CEO are subject to a firm's choice, our baseline tests using contemporaneous observations on *Single CEO* and the CSR index are vulnerable to endogeneity and selection biases. Both of these variables are not exogenous, and they may be jointly determined by the firm. Also, it is plausible that firms with less concern for CSR hire single CEOs who are more likely predisposed to less intensive CSR programs, implying that the direction of causality is opposite to the one we have hypothesized. An effective way to resolve this issue is to identify a reliable instrument for the CEO marital choice that is uncorrelated with the firm's selection of CSR activities. Since a perfect instrument is difficult to find, we initially use in columns (2) and (4) CSR index values taken from the following two years (*t+1* and *t+2*) relative to the base year *t* associated with the observation of CEO marital status. The re-estimated marginal effects of unmarried CEOs on average CSR worsen slightly from -0.2718 in the base year to -0.2946 in the following year and -0.3197 on the two-year ahead CSR, all highly significant. Moreover, one may argue that firm-level CSR policies and programs tend to be sticky over time with the result that index values in the succeeding years are highly correlated with those from prior years. To account for the effect of persistent historical CSR levels, we follow Bebchuk et al. (2009) and control for the prior CSR index as of year *t-3* (CSR_{t-3}) in our tests reported in the column (6), such that the estimated coefficients reflect sensitivity to changes in CSR over time. As expected, CSR_{t-3} is positive and highly significant, and the coefficient on *Single CEO* remains negative but its significance level drops to 10% in a one-tailed test. Overall, these tests serve to mitigate our concerns somewhat that CSR and single CEO are jointly determined and indicate that the CEO marital status effect is persistent over time.

Another source of concern is that some joint determinants of CSR and CEO marital status are omitted from our regression specifications. To address this issue, we use time and industry indicator variables in all our regressions, which are expected to account for the time- and industry-specific unobservable determinants with time-invariant effects. In addition, there may be other omitted variables that are correlated with our test variable as well as CSR. One such variable is governance mechanisms of the firm which favor CEO entrenchment, attract aggressive single CEOs and could lead to worse social performance. To mitigate this concern, we add the Bebchuk et al. (2009) EIndex (consisting of strong anti-takeover provisions, as a control variable in columns (3 and 5). The revised estimates in columns (3) and (5) indicate that the entrenchment index is insignificant, while the CEO marital status continues to have a highly significant negative effect on firm social performance. In summary, our tests reveal that unmarried CEOs are associated with a persistently poor track- record on corporate social responsibility. [4]

Identification and Other Endogeneity Issues: Propensity Score Matching

Our findings so far are suggestive of a tendency to neglect CSR on the part of single CEOs. However, studies in social science indicate that several important economic, physical, psychological, demographic, and social characteristics are associated with marital status.

[4] Further, our hypothesis suggests that CEO marital status could affect firm value. Existing studies find mixed evidence on the value effects of socially responsible corporate behavior. For example, Fombrun & Shanley (1990), Hamilton et al. (1993), Klassen & Whybark (1999), McWilliams & Siegel (2000), Miles, Munilla, & Covin (2002, 2004), Bauer et al. (2005), Brammer, Brooks & Pavelin (2006), Renneboog et al. (2008) demonstrate negative or lack of effect of CSR on firm performance; while Porter & van der Linde (1995), Hart & Ahuja (1996), Feldman, Soyka & Ameer (1997), King & Lenox (2001), Pil & Rothenberg (2003), Derwall et al.(2005), Hong & Kacperczyk (2009), Goss & Roberts (2010), Aktas et al. (2011), El Ghoul et al. (2011), Deng et al. (2013), Cheng et al. (2014), Chava (2014), show positive effect of CSR on firms' operating performance, access to finance, firm valuation, and cost of capital. If married CEOs are more likely to adopt socially responsible programs, it is plausible that their behavior would strengthen the positive impact of CSR on firm value. On the other hand, married CEOs are likely to pursue less aggressive (and perhaps less innovative) investment policy, which is likely to hurt firm value. By contrast, non-married CEOs are more likely to improve stock returns by exploiting more risky and innovative growth options, but their weakened concern for socially responsible programs might adversely affect firm value. Since the net effect is hard to predict, the impact of CEO marital status on firm value is an empirical issue. In untabulated results we find that the net effect of CEO marital status on firm value (as proxied by Tobin's Q) is indeed insignificant.

Therefore, the observed relationship between marital status and CSR may be spurious, attributable not to marital status but to innate heterogeneity that is correlated with CEO and firm characteristics.

To mitigate this identification problem, we have controlled for several important firm and CEO characteristics in our prior tests. Now we turn to propensity score matching, which carefully matches the treatment (single CEO) and control (married) groups on several firm and CEO characteristics as well as year and industry. This alternative method of constructing the counterfactual matched sample leaves little room for significant differences in firm and CEO characteristics between the treatment and control groups and improves our ability to identify the true mechanism underlying the *CSR-Single CEO* relation.

The literature suggests that the propensity score matching technique largely mitigates endogeneity and selection bias due to observable characteristics (Rosenbaum and Rubin, 1983; Robert and Whited, 2012). In our context, it involves selecting matching firm-years that have a similar probability of having single CEO given a large number of firm and CEO characteristics that are likely to influence both CEO marital status and the choice of CSR from a large number of firm-years with married CEOs. The idea is to ensure that there is little heterogeneity in observable characteristics between the firm-years with single CEOs (treatment group) and the matching firm-years with married CEOs (the control group). This approach significantly alleviates the possibility of misspecification that is likely to occur when research design assumes an incorrect functional relationship between the variables. Therefore, first, we perform a univariate test of difference in *CSR_NET* between the treatment group of firm-years with a single CEO and a propensity score matched control group of firm-years with a married CEO (see Table 3). Second, we perform regression tests using the same group of firms, see models 3 and 4 in Table 4.

Insert Table 3 about here

In matching a firm-year of single CEO with a control firm-year involving a married CEO, we apply the nearest neighbor-matching technique of propensity score without repetition for a control firm, such that one married CEO firm-year enters the sample only once. To estimate propensity scores, we rely on carefully chosen firm, industry and CEO characteristics such that heterogeneity in such characteristics could have implications for CEO marital status and its impact on corporate social responsibility.

In implementing this procedure, we identify 1,635 pairs of firm-years with single CEOs and matching firm-years with married CEOs. In the matched sample, the overall median (mean) bias (untabulated) is approximately 2.44% (3.6%), the pseudo r-square is smaller at 0.00519 and the LR chi-square value is small at 3.8 and highly insignificant. Apart from this, post-matching differences in means of the firm and CEO characteristics between treatment and control firms that enter our propensity score matching equation are insignificant for all variables, see Table 3. More importantly, we find that difference in CSR_NET between the treatment and control group of firms is about -0.312, which is significant at better than 1% level in both the paired t-tests of differences (t-stat of -4.59) and the unpaired t-test of difference in means (t-stat of -4.51). Thus, the univariate tests based on propensity score matching support our hypothesis of a negative relation between single CEOs and CSR.

We report three additional sets of tests in Table 4. First, in models (1) and (2), we control for firm fixed effects to account for unknown firm-specific factors, and we continue to find a significant negative coefficient on CEO marital status. Second, Models (3) and (4) use the sample of firm-years derived from propensity score matching. While our sample size drops to about 3,000 firm-years, the negative impact of CEO marital status on CSR remains highly significant. Third, one may argue that CEO ability may be an omitted variable in our regressions as more able

managers may prefer risk-taking (as single CEOs seem to do). Therefore, in Models (5) and (6) we control for a proxy for managerial ability (*CEO Ability*), a measure of revenue generated for a given level of resources used, following Demerjian et al. (2012) and Demerjian et al. (2013). We find that this measure of managerial ability is, indeed, negatively associated with the firm-level CSR performance. More important, in controlling for *CEO Ability*, our key findings about the effect of CEO marital status on CSR remain strong and robust.

Insert Table 4 about here

It is still possible that other unknown omitted variable bias in CEOs (as opposed to unknown heterogeneity across firms) is driving both marriage and CSR. We are unable to use CEO fixed effects to address this concern, but we repeat propensity score matching using a more comprehensive set of CEO characteristics as compared to those in Table 3. The expanded set includes *Opt_Own* (defined as value of unexercised incentive compensation options granted to CEO divided by total executive compensation), Shares Owned (total shares owned by CEO), Change in Comp (change in total compensation), CEO-Prominence (frequency of CEO media mentions), CEO Ability, Inst Own (Institutional Ownership). We are able to gather a small sample of 1,317 pairs of firm-years with single CEOs and matching firm-years with married CEOs (see Appendix Table A.5.) After matching, the differences in means of the observable CEO characteristics between treatment and control firms are insignificant for all variables. The difference in CSR_NET between the treatment and control groups is -0.226, significant at 1% in both the paired t-test of differences (t-statistic of -2.86) and the unpaired t-test of difference in means (t-statistic of -2.79).

Another type of correlated omitted variable bias stems from the location of a firm's headquarters - county or state of incorporation - because differences in labor union power, political

beliefs, environmental policies, etc. across regions could affect both CSR and the decision of a single CEO to work for a firm headquartered in a specific state. Landier, Nair, and Wulf (2009) use labor union power (measured as the state-level union coverage (membership) density in which the firm's headquarters is located) to proxy for CEO's employee friendliness. To further mitigate this class of potential omitted variable bias, we reestimate the regressions by adding state as well as county fixed effects. The revised results presented in Table 5 confirm our previous estimates and indicate the presence of a highly significant negative relation between the family status of CEOs and social performance of their firms (with the *Single CEO* coefficients varying from -0.4232 to -0.2337).

A related issue is that our control for state fixed effects could also capture democratic ('blue') vs. republican ('red') political beliefs and potentially influence our test and outcome variables. To isolate the effects of state-level political beliefs, we construct a *Blue State* dummy, which classifies a state as a permanent blue state if democratic presidential candidates consistently won all elections held in 1992, 1996, 2000, 2004 and 2008 and takes a value of one, zero otherwise. We rerun the CSR_NET regression by adding the Blue State dummy to the list of other controls in our original specification, see columns (5 and 6). The coefficient estimate on *Blue State* is positive (0.5567 and 0.5595) and significant at 1%, consistent with our expectation that firms located in permanent democratic states are CSR-friendly. More importantly, our test variable, *Single CEO*, continues to be negative (-0.3094) and highly significant.

Insert Table 5 about here

Instrumental Variable Analysis

It is possible that firms first choose their goals and strategies (including social responsibility) and then hire the matching candidate for the top executive position, thus reversing the causality from the CEO marital status to CSR assumed thus far. Moreover, firm, county and state fixed effects

control only for time-invariant effects. We initially address causality concern by regressing CSR_NET estimated as of 1 and 2 years after observing marital status (see Table 2, Columns 2 to 6). To further address concerns about endogeneity due to reverse causality and time-variant omitted variables, we now turn to an instrumental variable (IV) approach (e.g., Kim and Lu, 2011). Roussanov and Savor (2014) employ variation in state-level divorce laws across community property and common law states to instrument for CEO marital status.[5] Searching for a novel instrument for the marital choice of executives in relation to our research question, we find huge variation in income tax laws across states and years as well as the federal tax code over our sample period, resulting in marriage penalties for some couples and marriage bonuses for others. In general, a single taxpayer faces higher tax liabilities than a married couple with the same total income, and this 'tax on singles' is magnified particularly in states with higher maximum marginal

[5] Community property laws (adopted by nine states) require that husbands and wives share all of their income (and assets) equally and allow each spouse to pay federal income taxes on one-half of the couple's income. Although such a treatment equalizes taxes for couples with the same (identical) income, it offers a marriage bonus to couples with different individual earnings, leading to lower taxes after marriage than before. In effect, these laws provide a marriage bonus for most couples, thus eliminating neutrality of tax laws with respect to marriage. Common law (adopted by 41 states) taxes each spouse based upon his or her individual income. As there is likely to be much more variation in differential marginal personal income tax rates and brackets between single taxpayers and married filing jointly across states in the United States (in relation to divorce laws), we use the variation in income tax consequences as a plausibly exogenous instrument for the marital status of CEOs in relation to its effect on CSR.

tax rates for single taxpayers and less than half the maximum marginal tax bracket for individual filers relative to married filing jointly.[6]

Kim and Lu (2011) use the sum of maximum state and federal marginal personal income tax rates as an instrument for CEO ownership in examining the relation between CEO ownership and firm value. Personal income taxes may affect a wealthy individual's choice of marital status. Single CEOs may prefer to work for firms located in a state that taxes them lightly relative to married taxpayers. Also, their marital or divorce choice and timing of the decision may be affected by anticipated changes in marginal tax rates and brackets, leading to a correlation between the tax rates and CEO marital status.[7] Although it is difficult to identify a valid IV (i.e., one that is exogenous, influences the marriage decision, but not CSR otherwise), it seems intuitive that state-level personal income tax rates are not correlated with our dependent variable other than via their effect on marital status. Following Kim and Lu (2011), we assume a CEO is wealthy on average and is subject to maximum marginal income tax rates of the state where her company's

[6] For a detailed discussion, see the Congressionsl Budget Office (CBO) report "For Better or For Worse: Marriage and the Federal Income Tax", 1997. At the start of our study period (in 1993), an analysis by CBO shows that eight states have no income tax (and therefore no tax discrimination based on marriage), and six states impose a single tax rate on all filers, regardless of income level or filing status, resulting in very small differences in (state) tax liabilities between single and married filers. Thirty-six states and the District of Columbia fall into three groups that treat the taxation of married couples differently as described below. Fifteen states have schedules that reduce or eliminate any tax penalty on marriage, of which eight states create tax brackets for married couples by doubling the width of the rate brackets for individual filers, which creates marriage bonuses for virtually all couples. The other seven states widen but do not double the brackets for married couples, thereby lowering penalties for some couples. Among the 36 states with marriage penalty and bonus, nine states and the District of Columbia allow couples to use one return but pay taxes on their separate incomes as if they were single, resulting in a marriage bonus, especially when the earnings of the spouses are substantially different. Couples in twelve states face marriage penalties and bonuses similar to those at the federal level. The same eight states with no income tax in 1993 have no tax in 2008. Since we donot have complete data on marriage penalties and bonuses for the intermediate years (between 1993 and 2008), we assume that this pattern of state income taxes generally persists thorough our sample period.

[7] For most couples the potential tax costs (marriage penalties) or benefits (bonuses) of marriage and divorce are small and highly uncertain in relation to other psychological, social and economic considerations and are not sufficient to alter marital decisions. Alm and Whittington (1995,1999) and Sjoquist and Walker (1995) find that income tax penalties have a small but significant effect on delaying marriage, and reducing the likelihood of marriage for women, but not for men. Whittington and Alm (1997) report small effects of income taxes on a couple's decision to divorce, particularly for women. However, top executives are far wealthier on average, and we expect these marriage tax effects to be much more pronounced for wealthy executives facing large tax liabilities.

headquarters is located. Since it is exogenous, correlated with the marriage decision but plausibly not with CSR, we contend the variation in maximum personal marginal tax rates across states and years in our sample (labeled as *Tax Rate*) is a good instrument for the marital status of CEOs. As maximum federal marginal income tax rates and brackets are common for all CEOs, adding state-level personal income taxes has the advantage of capturing variation in income tax liabilities across different points in time.

In our context, there are three key determinants of the maximum marginal personal income tax burden: marital status of taxpayer (single or married), marginal tax rate and marginal tax bracket. In most years during our sample period, the maximum marginal personal income tax rate is identical between single and couple taxpayers, but the marginal tax bracket (MTB) is often 50% lower for single taxpayers. Moreover, we have much better access to data on marginal tax rates but only limited access to marginal tax brackets. In light of this data constraint, we begin our analysis with *Tax Rate* as our instrumental variable for the CEO marital status. *Tax Rate* is a representative maximum personal income tax rate, defined as federal rate on wages plus state rate on wages for a married taxpayer filing joint returns sorted by state and year and is provided by National Bureau of Economic research (NBER).[8] During our sample period, the mean *Tax Rate* is 41%, varying from 32% (minimum) to 48% (maximum). We report the first and second stage IV (ordinary least squares (OLS) and probit) estimates in Table 6 (but suppress control variables for brevity). In columns (1) and (3), the significance of *Tax Rate* in the first-stage regressions at 5% (-0.0036 and -0.0192) indicates that the variation in state-level income tax rates is a reasonably

[8] *Tax Rate* is estimated for an additional $1000 of income on an initial $1,500,000 of wage income (split evenly between husband and wife for a taxpayer assumed to be married and filing jointly. Estimates assume personal deductions of mortgage interest deduction of $150,000 and the calculated state income tax. The tax data are taken from http://users.nber.org/~taxsim/state-rates/ Maximum State Income Tax Rates 1977-2015. Although *Tax Rate* applies to married taxpayers filing jointly, these tax rates are very often equal to those facing single taxpayers.

good instrument for the CEO marital status. Moreover, both coefficient estimates on *Predicted Single CEO* (-6.2102 and -1.1635, see columns (2) and (4)) are negative and significant, consistent with our prior OLS results.[9] Furthermore, as an alternative to the NBER's synthetic maximum personal income tax rate, we use the sum of highest state and federal (wage) income tax rates by year for married couples filing joint returns to proxy for the CEO's marginal personal tax rate. This rate ranges from 35% to 66%. Then we construct a *High Marginal Tax Rate* dummy by state and year, which takes a value of 1 for marginal rates greater than the median, 0 otherwise. Using this binary variable as an alternative IV for the family status of CEOs, we find estimates on *High Marginal Tax Rate* and *Predicted Single CEO* virtually identical to those reported in Table 6 (see Appendix Table A.6.)

Insert Table 6 about here

Tax Rate, our instrument, suffers from a measurement problem in that it does not explicitly consider maximum personal tax brackets for single and married taxpayers across states. Since state-level maximum marginal tax brackets (MTB) are often 50% lower for single taxpayers, we construct another instrument, *DMTB$*, defined as the difference in marginal tax brackets for couples filing joint returns and single taxpayers based on 2015 tax brackets across all states.[10] We further assume that these 2015 marginal state personal tax brackets apply to 1993-2008, our sample period. *DMTB$* ranges from a minimum of zero to a maximum of $1.06 million, with a mean equal

[9] It is possible that personal income taxes are related to CSR if states with high corporate taxes have more friendly CSR policies and if changes in personal taxes are accompanied by concurrent changes in corporate taxes. However, as Kim and Lu (2011) note there are no such contemporaneous changes in both personal and corporate tax rates during our sample period.

[10] For example, for Connecticut the 2015 maximum personal income tax bracket for single taxpayers is $250,000 and above vs., $500,000 and over for couples filing jointly. By contrast, the maximum tax brackets are identical at $1 million for both groups in California. There are 17 states that have top tax bracket at least 50% higher for married couples, with no state where married filing jointly have a lower top tax bracket than single taxpayers. We donot have access to time series data on personal income tax brackets across states and assume that our approximation that the 2015 brackets apply to 1993-2008 is reasonable given the persistence of state-level tax brackets through time.

to $111,000. In addition, we construct *Tax Rate Dummy* with a value of one for 25 states with higher than the median value of *Tax Rate*, sorted by year, zero otherwise. To mitigate concerns about the measurement of our previous IV, we use the interaction term, *Tax Rate Dummy* x *DMTB$*, as our alternative IV and present the estimates in Table 7. The relative merit of this IV is that it combines both the (presence of) the maximum marginal personal income tax rate and the difference between the married and single maximum tax brackets across states. The coefficient estimates on the new IV (-0.0005 and -0.0042 in columns (1) and (3)) as well as *Predicted Single CEO* (-5.2341 and -0.6342 in columns (2) and (4)) are negative and highly significant.[11] These robustness tests strengthen our claim that the observed negative link between the single CEO status and CSR may be more than a strong empirical correlation, perhaps a causal relation.[12]

Insert Table 7 about here

Marital Transitions

To further scrutinize our claim of causal inference that marriage itself matters rather than other CEO attributes, we turn to marital transitions (i.e., changes in CEO marital status) over time. Ideally, we would like to focus on with-in CEO change in marital status, i.e., an unmarried CEO getting married while continuing to hold the top executive position at the firm, or a married CEO getting a divorce while continuing to run the firm. Both of these changes in marital status entail no turnover in CEOs, but we donot find them in our sample. Our next best alternative to look at cases where marital transitions are combined with CEO turnover. We consider four types of these joint changes: a married CEO is replaced by a single CEO, a single CEO leaves the firm and a

[11] These IV estimates remain virtually unchanged if we use *DMTB$* instead of *Tax Rate Dummy* as our instrument.
[12] In addition, we define a *Different State Tax Bracket Dummy* variable, which takes a value of one for the 17 states that have top tax brackets for couples at least 50% higher than those for single taxpayers in 2015, zero otherwise. This proxy has possibly less measurement error because it simply indicates the presence or absence of marriage-neutrality in state-level tax brackets. As before, we assume this bracket differential holds good throughout our sample period. The IV estimates based on this alternative instrument, presented in Internet Appendix Table A.7., offer support for our prior inference.

married CEO takes over, a married CEO makes room for another married CEO, and a single CEO is appointed to replace an outgoing single CEO. Our dataset includes a rather small sample of 346 firm-year observations on the married-to-single CEO type of change in the status of top executives. Regressing these changes in the CEO marital status (jointly with CEO turnover) on changes in CSR, we find a significant drop in average CSR (see the coefficient estimate of -0.3423 on *Married-to-Single CEO* in column (5) of Table 7)), supporting our hypothesis of lower CSR scores for unmarried CEOs. Although this difference-in-differences regression test is very informative, it is important to note that even this marital transition tests is confounded because it is associated with changes in CEOs as well.

Persisting with our attempts to isolate the influence of the change in CEO marital status from that of CEO turnover, we focus on firms that experience at least two changes in the CEO marital status during our study period, i.e., from single to married and married to single or vice versa. Then we compare the change in net CSR scores of these firms with those of corresponding firm-years with no change in the CEO marital status, see the difference-in-differences tests presented in Table 8. The base case is the mean change in CSR (0.085) when there is no change in the top executive's family status (576 observations on single-to-single and married-to-married CEO turnovers), which measures the average influence of CEO turnover unaccompanied by a change in their marital status. Compared with this change, the average change in CSR is negative when a married CEO replaces a single CEO (50 observations), but the difference between the two changes is statistically insignificant. By contrast, relative to the base case the mean drop in CSR scores (equal to -0.364) is significant at 5% level when a single CEO replaces a married CEO (68 observations). Although based on a small number of observations, this difference-in-differences

test is a bit more effective in isolating the influence of CEO marriage transitions from turnover of CEOs and helps to strengthen our claim about a causal link between CEO marriage and CSR.

Insert Table 8 about here

In summary, the wide range of tests including propensity score-matched samples based on firm and CEO characteristics, industry, year, firm, state, and county fixed effects, and our exploitation of marginal personal taxes and brackets across states as instrumental variables for the CEO marital status increase our confidence in the inference that that our findings are less likely to stem from unknown heterogeneity inherent in the firm and CEO attributes, and there may be a causal (negative) relation between single CEOs and CSR.

CSR STRENGTHS AND CONCERNS

In this section we ask: how deep and serious is the negative association between the single CEO status and corporate social performance? If single CEOs exhibit less concern for CSR in comparison to their married peers, do they score poorly on both CSR strengths and concerns related to environmental, diversity and other issues? To explore these issues, we repeat our tests by decomposing the overall CSR index, CSR_NET (our dependent variable), into its positive (representing strengths) and negative (representing concerns) sub-indices - total CSR strengths (*CSR_STR*) and total CSR concerns (*CSR_CON*). C*SR_STR* is equal to *PRO_ STR +COM_ STR + EMP_ STR + DIV_ STR + ENV_ STR + HUM_ STR*. We define *CSR_CON* analogously using scores on CSR concerns.

The first four models in Table 9 use *CSR_STR* as the outcome variable and indicate that the coefficient estimates on *Single CEO* are all negative and highly significant. In sharp contrast, the coefficient estimates on *Single CEO* are all insignificant in models (5) through (8), all of which use *CSR_CON* as the dependent variable. These results indicate that single CEOs score on average

the same as their married peers on activities classified as CSR concerns. But single CEOs tend to perform poorly relative to their married counterparts on activities classified as CSR strengths. These findings imply that unmarried CEOs do not ignore CSR codes and standards that may raise concerns, however, they seem to show less concern for positive CSR programs. These findings appear to show that *Single CEOs* offer symbolic support, rather than embracing CSR.

Insert Table 9 and Table 10 about here

To further scrutinize the channels of social benefits and costs of the marital status of CEOs, we repeat the tests in Table 2 using the net scores on each of the six specific areas covered by the KLD CSR index: product (*PRO_NET*), diversity (*DIV_NET*), human rights (*HUM_NET*), environment (*ENV_NET*), employee relations (*EMP_NET*), and community (*COM_NET*). The estimates for each of these six outcome variables are available in Panel A of Appendix Table A.8. Panel B presents estimates related to strengths (*STR*) and concerns (*CON*) on each of the six constituent areas of the CSR index. To conserve space, we suppress all control variables and report coefficient estimates of our test variable, *Single CEO*. In Panel A, only the estimate on *Single CEO* in the *DIV_NET* regression is negative (-0.1825, significant at 1%), indicating that unmarried CEOs score poorly on diversity issues which covers hiring and promotion of women, minorities and disabled, affirmative action, and employee benefits. Their poor score on social performance is not significantly related to the remaining five areas covered by the CSR index. In panel B, we repeat the tests in Panel A using CSR Strengths and in Panel C using CSR Concerns for each of the six qualitative issues areas. The results in Panels B and C reveal that unmarried CEOs have significantly lower scores on diversity–strengths (-0.0773) and higher scores on diversity–concerns (0.0821, significant at 1%). Moreover, they score poorly on employee relation-strengths

(-0.0631, significant at 5%) which covers labor union relations, employee health and retirement benefits, safety and well-being, profit-sharing and stock ownership.[13]

Does the above evidence imply that the negative externality of the unmarried status of CEOs is limited to diversity and employee relations and does not extend to other dimensions of corporate social performance? To address this question, it is helpful to review the qualitative areas covered by the KLD CSR index, particularly the degree of overlap among the six metrics. For example, the diversity (*DIV*) category includes hiring and promotion of women, minorities and disabled, affirmative action, and employee benefits, and the employee relations area covers labor union relations, employee health and retirement benefits, safety and well-being, profit-sharing and stock ownership. These descriptions suggest a good deal of interrelation among the topics covered by these two metrics, which is confirmed by a simple correlation of 14%, significant under 1%. Similarly, the pairwise correlations of *DIV* with each of *ENV, COM, HUM,* and *PRO* are (in that order) 6%, 30%, -12%, and -17%, all of which are significant at 1% level (untabulated). Furthermore, we perform separate contemporaneous regressions of *DIV* and *EMP* scores on the remaining four dimensions, other controls and *Single CEO* and present the results in Table 10. In columns (1) and (2) we find that *DIV* and *EMP* are significantly correlated with the majority of the remaining components of CSR. Regression (1) suggests that *Single CEO* continues to have a highly significant and negative influence on *DIV* even after controlling for the other four categories of CSR, but its effect on *EMP* is negative but not significant. These results suggest that although the effect of *Single CEO* seems to be concentrated in *DIV* and *EMP*, these two qualitative aspects themselves are (highly) correlated with many of the remaining

[13] Untabulated tests using the propensity score-matched sample confirm the full-sample finding that the poor scores on corporate social performance of single CEOs is largely concentrated in diversity–strengths, diversity–concerns, and employee-strengths.

dimensions of CSR. That is, the significant effects of *Single CEO* on *DIV* and *EMP* indicate that the CEO family status is indirectly influencing the remaining components of CSR as well. Therefore, the CEO marital status appears to have a broader negative association with many dimensions of CSR.

CSR measurement issues

Although we rely on the KLD measures of CSR (arguably the most comprehensive and widely used social rating), Chatterji, Durand, Levine, and Touboul (2016) observe little overlap and fairly low pairwise correlations among the ratings of six major agencies including KLD, thus casting doubt on our inference about CEO marriage and corporate social performance.[14] In addressing this concern, it is worth noting that KLD is the social rating industry leader and uses all publicly available information (including surveys, corporate reports, and news articles) to determine its ratings of CSR strengths and weaknesses (Kim, Park, and Wier, 2012). Evaluating the correlating between KLD ratings with other performance metrics based on reputation and social responsibility surveys, Szwajkowski and Figlewicz (1999) report that these ratings have strong internal discriminant validity. Hrazdil, Nazari, and Mahmoudian (2016) use textual analysis and focus on the tone, readability, length, numerical content, and horizon content of the narratives to develop a measure of quality of CSR reports. They find that this report quality measure is positively associated with KLD ratings of CSR as well as equity analysts' earnings forecast accuracy, thus confirming the informativeness of the KLD CSR ratings.

To examine the sensitivity of our findings to KLD ratings, we turn to an alternative measure of a firm's reputational risk exposure to environmental, social, and governance issues,

[14] The six major social rating agencies covered by this study are KLD, Asset4, Calvert, FTSE4Good, DJSI, and Innovest.

labelled *RepRisk*.[15] Ranging from 0 to 100, higher *RepRisk* index values indicate lower social performance, and most firms score below 50, often zero or negative. Unfortunately, within our sample period, it is available only for 2007and 2008, the last two years of our study. We compare the reputational risk index values of 233 firms with single CEO (treatment group) with those of the propensity score matched sample of married CEOs (control group, based on nearest neighbor 1-on-1 matching without replacement), see Appendix Table A.9. The mean index values for the treatment and control groups are 4.6 and 3.6, respectively, but the difference is not significant at 10%. Next, we compare the annual change in reputational risk following the change in the CEO status from married to single with the propensity score matched sample of firms where the CEO remains married in both years. While the average change in *RepRisk* for firms where the CEOs remain married is zero, it increases significantly (at 5%) for the treated firms where top executive's status changes from married to single, in both paired and unpaired t-tests. Although derived from a small number of annual changes in index values (sample of 18 from 2007 and 2008), this evidence provides some comfort that our basic inference that the single status of CEOs has a negative influence on CSR remains robust to using a different measure of CSR (i.e. Reputation Risk).

DISCUSSION

Prior studies on the choice of CSR activities stress firm size and performance, research and development activities, agency issues, access to capital, and strategic goals to build corporate reputation (see McWilliams and Siegel, 2001; Cheng et al., 2014; Mishra, 2017). Another strand of literature highlights the importance of managerial characteristics (in addition to firm

[15] "RepRisk leverages media, stakeholder, and third-party data to understand a company's risk exposure – serving as an early warning signal and offering a different perspective on company performance, which supports transparency and informed decision-making," see https://www.issgovernance.com/esg/reprisk/.

characteristics) such as reputation, overconfidence, risk propensity, tenure, age, gender, race, and CEO turnover on corporate investment, financing and performance (see, for example, Malmendier and Tate, 2008; Hirshleifer, Low, and Teoh, 2012; Jacobsen, 2013). In a recent paper, Roussanov and Savor (2014) find that unmarried CEOs take more investment risk than their married counterparts. We complement their study by investigating whether unmarried CEOs show less concern for CSR covering diversity, employee relations, environment, human rights, and product and services.

Our investigation is motivated by a wide range of studies in the social sciences on marital status and human attitudes and behavior suggesting that married people generally show more consideration for the well-being of their spouses, children and communities, are more opposed to taking bribes and tax evasion, and less predisposed to risky 'life-style' activities and financial investment choices. More specifically, we investigate the hypothesis that married CEOs have a positive impact on their firms' concern for CSR.

While much of the current discussion on CSR focuses on how to transform companies that seek shareholder wealth maximization into public benefit corporations that prioritize both firm value and social responsibility, ours is the first study (to the best of our knowledge) to present cautionary evidence suggesting that unmarried CEOs tend to pursue risky CSR policies exhibiting a weaker commitment to corporate social responsibility. Specifically, unmarried CEOs are marked by significantly lower scores on the positive characteristics (CSR Strengths) of the social performance index such as diversity–strengths and employee relation-strengths and higher scores on diversity–concerns.

Our study contributes to a better understanding of the underlying dynamics of the influence of CEO marital status on firm policies and practices with respect to corporate social responsibility.

Evidence indicates that businesses spend trillions of dollars in an attempt to build a strong corporate image. Our findings imply that while single CEOs typically do not exacerbate a firm's CSR concerns, they place less emphasis on the positive aspects of CSR such as supporting community activities, stakeholder engagement, voluntary activities to mitigate climate change and so on. Because poor CSR ratings can harm a company's performance and reputation (Chatterji, Levine and Toffel, 2009), it is imperative for stakeholders, social investors, and the board of directors to recognize that the effectiveness of CSR programs of a firm depends significantly, among other things, on the marital status of the CEO. Our intent should not be misconstrued as advocating discrimination based on the marital status of CEOs (which is illegal). To the contrary, we seek to draw attention to a strong empirical link, likely even causal, between the CEO marital status and CSR. We recommend that the board of directors offer more guidance to new CEOs and other officers on the development and execution of CSR initiatives and exercise more oversight over their social performance.

To the policymakers, regulatory authorities, and CSR rating agencies, our findings underscore the importance of this demographic factor on the attitudes of CEOs and their management teams towards CSR. Firms that ignore or disregard the influence of CEO marital status may run the risk of diminished corporate image, potential consumer boycott, increased regulatory scrutiny and litigation problems (see e.g., Cheah et al., 2007). This cautionary note may be of particular importance to companies operating in businesses where corporate social performance is scrutinized more closely (e.g., Chemicals, Oil & Gas, Power).

Appendix A

Variable Construction

Variable	Definition	Source
Panel A. Dependent variables		
CSR_NET	Firm-level CSR performance measured as the sum of the net CSR scores for six qualitative issue areas: Community (COM_NET), Diversity (DIV_NET), Employee (EMP_NET), Environment (ENV_NET), Human Rights	KLD CSR/ Author's Computation

	(HUM_NET), and Product (PRO_NET). Within each of these six categories, NET refers to number of strengths less number of concerns.	
CSR_STR	Total number CSR Strengths in six qualitative areas as defined above	Same as above
CSR_CON	Total number of CSR concerns in six qualitative areas as defined above	Same as above
Panel B. CEO Characteristic		
Single CEO	Dummy representing an unmarried (or not in relationship) CEOs	Roussanov and Savor (2014)
CEO Age	Age of CEO	ExecuCom
CEO Tenure	Tenure of the CEO	ExecuCom
Female CEO	Dummy that takes a value 1 for female CEO	ExecuCom
OPT_OWN	Value of unexercised CEO options divided by total compensation	ExecuCom/ Roussanov and Savor (2014)
Panel C. Control variables		
LogAssets	Natural Log of Total Assets by Fiscal Year End	Compustat
Firm_Age	Numbers of years a firm was part of the Centre for Research in Security Prices (CRSP) return files.	CRSP/Author's Computation
ROA	Firm's operating earnings before depreciation and taxes divided by total assets at the beginning of the fiscal year.	Compustat/Author's Computation
CAPEX	Total capital spending divided by Plant, Property and Equipment (PPE)	Compustat/Author's Computation
BOOK LEVERAGE	Book value of current liability plus book value of long term debt divided by total assets	Compustat/Author's Computation
R&D	Research & Development Expenses divided by PPE	Compustat/Author's Computation
MVBV	Market value of equity divided by book value of equity	Compustat/Author's Computation
Risk Propensity	Volatility of returns estimated consistent with Roussanov and Savor (2014)	Roussanov and Savor (2014)
CEO Ability	This is the proxy of managerial efficiency estimated as the decile rank by industry-year of the MA-Score (i.e., ma_score_2012_rank) in year t.	Demerjian et al. (2012)
EIndex	Bebchuk et al. (2009) Entrenchment Index	Bebchuk et al. (2009)
Shares Owned	CEO Share ownership exclusive of options	ExecuCom
CEO Prominence	Frequency of CEO media mentions estimated as the number of news stories mentioning CEO in Factiva Dow Jones database.	Roussanov and Savor (2014)
Inst Own	Percentage of firms equity held by Intuitional Owners	Thompson 13 F/Roussanov and Savor (2014)
Change in Comp	Change in Total Compensation (Salary + Bonus + Other Annual + Restriced Stock Grants + LTIP Payouts + All Other + Value of Option Grants) vs. the last year's Total Compensation	ExecuCom
Blue State	A state is classified as blue state if democratic presidential candidate consistently won all elections held from 1992 to 2008.	Author's Computation/ http://uselectionatlas.org/

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Table 1. Average Number of Single CEOs and CSR Scores

Year	CSR_NET_t	CSR_NET_{t+1}	Single%	Single	N_t	N_{t+1}
1993	0.1680	0.3438	0.0517	20	387	384
1994	0.4169	0.7413	0.0638	28	439	429
1995	0.7466	0.7867	0.0673	30	446	436
1996	0.7719	0.8229	0.0661	31	469	446
1997	0.8351	0.9516	0.0592	28	473	455
1998	0.9247	0.8571	0.0418	20	478	462
1999	0.8701	0.9170	0.0453	23	508	482
2000	0.8372	0.6633	0.0601	31	516	490
2001	0.3910	0.4027	0.0846	66	780	730
2002	0.3269	0.1631	0.0996	82	823	803
2003	-0.0580	-0.1947	0.1643	235	1430	1371

2004	-0.2309	-0.1451	0.1714	251	1464	1378
2005	-0.1798	-0.1390	0.1819	265	1457	1374
2006	-0.1860	-0.1380	0.1913	289	1511	1406
2007	-0.1571	-0.1247	0.1993	302	1515	1452
2008	-0.1679	-0.1780	0.2156	298	1382	1343

Variable definitions are provided in Appendix A

Table 2: CEO Marital Status and Corporate Social Responsibility

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CSR_NET_t	CSR_NET_{t+1}	CSR_NET_{t+1}	CSR_NET_{t+2}	CSR_NET_{t+2}	CSR_NET_{t+2}
Single CEO	-0.2718***	-0.2946***	-0.3197***	-0.3257***	-0.3708***	-0.1453*
	(-2.826)	(-2.870)	(-2.761)	(-3.086)	(-3.133)	(-1.630)
CAPEX	0.0059	0.0395	0.0895	0.0824	0.1922	0.2493**
	(0.080)	(0.471)	(0.632)	(0.976)	(1.289)	(2.337)
R&D/PPE	0.0062	0.0072	0.0453	0.0163	0.0442	0.0497
	(0.808)	(0.861)	(1.290)	(1.020)	(1.180)	(1.434)
LogAssets	0.1609***	0.1782***	0.2091***	0.2788***	0.3049***	0.2494***
	(3.313)	(3.388)	(3.678)	(5.104)	(5.189)	(6.811)
FirmAge	-0.0034	-0.0020	-0.0006	-0.0005	0.0007	0.0028
	(-0.863)	(-0.479)	(-0.135)	(-0.118)	(0.148)	(0.810)
ROA	2.3451***	2.3049***	2.4321***	2.5581***	2.7426***	1.9469***
	(3.924)	(3.646)	(3.323)	(3.969)	(3.682)	(3.689)
Book Leverage	-0.0273	-0.0442	-0.0656	-0.0360	-0.0675	-0.0618
	(-0.542)	(-0.853)	(-1.096)	(-0.594)	(-0.888)	(-1.189)
MVBV	0.1315***	0.1662***	0.2037***	0.1969***	0.2270***	0.1187***
	(3.774)	(4.808)	(4.790)	(5.311)	(4.983)	(3.118)
CEO Age	-0.0179***	-0.0185***	-0.0163**	-0.0197***	-0.0181**	-0.0065
	(-3.097)	(-2.969)	(-2.350)	(-3.000)	(-2.480)	(-1.217)
CEO Tenure	0.0091	0.0076	0.0045	0.0089	0.0041	0.0025
	(1.275)	(0.997)	(0.542)	(1.112)	(0.473)	(0.364)
Options Owned	-0.0056	-0.0040	-0.0066	-0.0068	-0.0090	-0.0043
	(-0.753)	(-0.508)	(-0.762)	(-0.786)	(-0.957)	(-0.617)
Female	2.1992***	2.3143***	2.3717***	2.2721***	2.3857***	1.1251***
	(5.640)	(5.599)	(4.821)	(4.946)	(4.302)	(4.078)
Risk Propensity	-0.7143***	-0.8193***	-0.6993***	-0.8093***	-0.7116***	-0.4211*
	(-4.308)	(-4.396)	(-3.308)	(-4.284)	(-3.264)	(-1.865)
Eindex			0.0710		0.0796	
			(1.478)		(1.557)	
CSR_NET_{t-3}						0.7023***
						(29.440)
Constant	-0.5282	-0.5946	-1.2875**	-1.0729*	-1.7004**	-2.3603***
	(-0.957)	(-1.000)	(-2.004)	(-1.743)	(-2.559)	(-4.917)
Observations	12,401	11,841	10,273	11,273	9,809	7,874
Adjusted R-squared	0.190	0.202	0.211	0.207	0.219	0.490
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes

Variable definitions are reported in Appendix A. Cluster-robust t-Statistics are in brackets. Stars indicate significance levels as follows: *** p < 0.01, ** p < 0.05, and * p < 0.1 (two tailed), and $p<0.1 (one tailed).

Table 3. Propensity Score Matching

Diagnostics-Difference in Means of Variables

Variable	Treated	Control	Difference	T-STAT
Firmsize	7.1339	7.1699	-0.03600	-0.3100
FirmAge	24.7060	24.1030	0.60300	0.4500
Book Leverage	0.3054	0.3363	-0.03088	-0.9600
CAPEX	0.3396	0.2967	0.04295	0.9500
R&D/PPE	0.6251	0.6256	-0.00050	0.0000
ROA	0.1391	0.1389	0.00018	0.0200
CEO Tenure	6.2557	5.9237	0.33200	0.8000
CEO Age	53.1760	53.6150	-0.43900	-0.7300
Female	0.0229	0.0267	-0.00382	-0.2800

Paired & Unpaired T-test of Differences in CSR_NET_{t+1}

Variable	Mean	Stdev	N	TSTAT
Pair (Treat - Control)	-0.312***	2.745	1635	-4.59
Control	-0.063***	2.036	1635	-4.51
Treatment	-0.375	1.920	1635	

Variable definitions are given in Appendix A. Significance level presented as *** p < 0.01, ** p < 0.05, * p < 0.1. Diagnostic tests include controls for Fama-French 48 industry membership.

Table 4. Corrections for Omitted Variable Bias

VARIABLES	(1) CSR_NET_{t+1}	(2) CSR_NET_{t+2}	(3) CSR_NET_{t+1}	(4) CSR_NET_{t+2}	(5) CSR_NET_{t+1}	(6) CSR_NET_{t+2}
Single CEO	-0.1280*	-0.1851**	-0.3092***	-0.2893***	-0.3031***	-0.3336***
	(-1.787)	(-2.144)	(-3.066)	(-2.746)	(-2.908)	(-3.086)
CEO Ability					-0.6225***	-0.5477**
					(-2.775)	(-2.323)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.5539	0.1470	-0.9338	-1.9436**	-0.9935	-1.4647**
	(1.219)	(0.287)	(-1.303)	(-2.574)	(-1.575)	(-2.214)
Observations	11,858	11,290	3,223	2,999	9,931	9,462
Adjusted R-squared	0.733	0.688	0.181	0.185	0.224	0.231
Year Effects	NO	NO	Yes	Yes	Yes	Yes
Industry Effects	NO	NO	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	NO	No	No	No
Propensity Score Match	NO	NO	Yes	Yes	No	No

Variable definitions are given in Appendix A. Cluster-robust t-Stats are in brackets. Significance level are shown as follows: *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 5. State & County Fixed Effects

VARIABLES	(1) CSR_NET_{t+1}	(2) CSR_NET_{t+2}	(3) CSR_NET_{t+1}	(4) CSR_NET_{t+2}	(5) CSR_NET_{t+1}	(6) CSR_NET_{t+2}
Single CEO	-0.2337**	-0.2648**	-0.4218***	-0.4232***	-0.3094***	-0.3365***
	(-2.089)	(-2.351)	(-3.751)	(-3.565)	(-3.024)	(-3.210)
Blue State					0.5567***	0.5595***
					(4.641)	(4.444)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.3582**	-3.1136***	-1.6782*	-2.3583***	-0.8683	-1.3462**

	(-2.227)	(-3.486)	(-1.914)	(-2.982)	(-1.437)	(-2.148)
Observations	10,223	10,014	8,448	8,037	11,742	11,181
Adjusted R-squared	0.251	0.252	0.342	0.340	0.214	0.218
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	NO	NO	NO	NO
County Fixed Effects	NO	NO	Yes	Yes	NO	NO

Variable definitions are given in Appendix A. Cluster-robust t-Stats are shown in brackets, and significance level presented as *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 6. Instrumental Variable Analysis – Maximum Marginal Personal Income Tax Rate

	OLS	**OLS**	**PROBIT**	**OLS**
	(1)	(2)	(3)	(4)
VARIABLES	Single CEO	CSR_NET $_{t+1}$	Single CEO	CSR_NET $_{t+1}$
Tax Rate	-0.0036**		-0.0192**	
	(-2.208)		(-2.534)	
Predicted_Single CEO		-6.2102**		-1.1635**
		(-2.111)		(-2.123)
Other Controls	Yes	Yes	Yes	Yes
Constant	0.7244***	2.5223**	1.8914***	0.3260
	(13.440)	(2.021)	(4.588)	(0.658)
Observations	12,292	11,742	12,231	11,682
Chi-Square	.	.	1349	.
Adjusted R-squared	0.105	0.203	.	0.200
Year Effects	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes

Table 7. Instrumental Variable Analysis – Maximum Marginal Personal Income Tax Rates and Brackets

	OLS	**OLS**	**PROBIT**	**OLS**	**PS_OLS**
	(1)	(2)	(3)	(4)	(5)
VARIABLES	Single CEO	CSR_NET $_{t+1}$	Single CEO	CSR_NET $_{t+1}$	ΔCSR_NET $_{t+1 - t}$
Tax Rate Dummy x DMTB_Dollar	-0.0005***		-0.0042***		
	(-6.338)		(-5.982)		
Predicted_Single CEO		-5.2341***		-0.6472***	
		(-3.498)		(-3.494)	
Married-to- Single CEO					-0.3423**
					(-1.995)
Other Controls	Yes	Yes	Yes	Yes	Yes
Constant	0.5868***	2.3010**	1.0513***	-0.0222	-1.1566
	(16.302)	(2.466)	(2.919)	(-0.061)	(-1.131)
Observations	12,292	11,742	12,231	11,682	346
Chi-Square	.	.	1327	.	
Adjusted R-squared	0.106	0.204	.	0.200	0.099
Year Effects	Yes	Yes	Yes	Yes	Yes

Industry Effects	Yes	Yes	Yes	Yes	Yes

Variable definitions are given in Appendix A. Cluster-robust t-Statistics are in brackets, significance levels are reported as *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 8. Marital Transitions -Unpaired t-test of Difference-in-Differences

CEO Change	ΔCSR_NET - Mean	ΔCSR_NET - Stdev	N	Diff vs. NoChange	TSTAT
Single to Married	-0.180	1.650	50	-0.265	-1.11
No Change	0.085	1.239	576		
Married to Single	-0.279	1.348	68	-0.364**	-2.13

Variable definitions are given in Appendix A. Significance levels are shown as *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 9. Corporate Social Responsibility Strengths and Concerns

VARIABLES	(1) CSR_STR_{t+1}	(2) CSR_STR_{t+1}	(3) CSR_STR_{t+2}	(4) CSR_STR_{t+2}	(5) CSR_CON_{t+1}	(6) CSR_CON_{t+1}	(7) CSR_CON_{t+2}	(8) CSR_CON_{t+2}
Single CEO	-0.2017**	-0.2453**	-0.2528***	-0.3124***	0.0907	0.0715	0.0730	0.0584
	(-2.311)	(-2.489)	(-2.771)	(-3.027)	(1.352)	(0.956)	(1.073)	(0.775)
Eindex		-0.0985**		-0.0948**		-0.1666***		-0.1745***
		(-2.350)		(-2.131)		(-5.138)		(-5.255)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-5.1189***	-5.6085***	-6.2292***	-6.5060***	-4.6823***	-4.2561***	-5.1563***	-4.8056***
	(-9.416)	(-10.040)	(-11.125)	(-11.219)	(-12.357)	(-11.096)	(-13.072)	(-12.268)
Observations	11,510	10,017	11,273	9,809	11,841	10,273	11,273	9,809
Adjusted R-squared	0.374	0.395	0.401	0.420	0.415	0.440	0.426	0.452
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Variable definitions are given in Appendix A. Cluster-robust t-Stats are in brackets, and significance levels are shown as *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 10. CEO Marital Status and CSR Diversity and Employee Relations

VARIABLES	(1) DIV_NET_{t+1}	(2) EMP_NET_{t+1}
Single CEO	-0.1711***	-0.0553
	(-3.167)	(-1.310)
COM_NET_{t+1}	0.3325***	0.0825***
	(8.777)	(2.587)
PRO_NET_{t+1}	0.0021	0.1491***
	(0.057)	(4.735)
ENV_NET_{t+1}	0.1182***	0.0828***

	(3.855)	(2.720)
HUM_NET_{t+1}	-0.1467*	0.0530
	(-1.944)	(0.823)
Other Controls	Yes	Yes
Constant	-3.0526***	-0.4089*
	(-11.176)	(-1.899)
Observations	11,841	11,841
Adjusted R-squared	0.367	0.148
Year Effects	Yes	Yes
Industry Effects	Yes	Yes

Variable definitions are given in Appendix A. Cluster-robust t-Stats are in brackets, and significance levels are shown as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Marriage and CEO's Concern for Corporate Social Responsibility
Appendix – Supplemental Material for Review

Table A.1. CEO Marital Status, Corporate Social Responsibility and Firm Value

VARIABLES	(1) Q t+1	(2) Q t+1	(3) Q t+2	(4) Q t+2
Single	0.0100	0.0040	0.0453	0.0436
	(0.371)	(0.146)	(1.512)	(1.426)
CSR_N	0.0171***	0.0163***	0.0171***	0.0161***
	(4.571)	(4.241)	(4.418)	(3.994)
Single*CSR_N	**-0.0096**	**-0.0093**	**-0.0004**	**0.0005**
	(-0.881)	**(-0.887)**	**(-0.032)**	**(0.039)**
LogAssets	-0.0173**	-0.0183**	-0.0219***	-0.0239***
	(-2.263)	(-2.309)	(-2.831)	(-2.993)
FirmAge	-0.0025***	-0.0026***	-0.0021***	-0.0021***
	(-3.922)	(-4.051)	(-3.136)	(-3.109)
Delaware	0.0074	0.0034	0.0065	0.0025
	(0.395)	(0.175)	(0.332)	(0.125)
Managerial Own	-0.0037*	-0.0042*	-0.0029	-0.0032
	(-1.678)	(-1.879)	(-1.102)	(-1.214)
Leverage	-0.0269	-0.0329	-0.0217	-0.0270
	(-1.082)	(-1.244)	(-0.944)	(-1.125)
ROA	5.4403***	5.4983***	4.6956***	4.7337***
	(25.354)	(24.543)	(21.005)	(20.328)
CAPEX	-0.0251	-0.0254	-0.0254	-0.0233
	(-0.591)	(-0.591)	(-0.564)	(-0.505)
R&D	0.0176*	0.0190*	0.0217	0.0226
	(1.863)	(1.812)	(1.330)	(1.262)
Female	-0.1428**	-0.1411*	-0.2212***	-0.2298***
	(-1.976)	(-1.879)	(-3.072)	(-3.075)
Risk Propensity	0.0260	0.0321	0.0247	0.0415
	(0.275)	(0.329)	(0.265)	(0.431)
Q t-3	0.2561***	0.2493***	0.2313***	0.2253***
	(19.585)	(18.991)	(17.106)	(16.660)
CEO Age		-0.0014		-0.0021
		(-0.977)		(-1.410)
CEO Tenure		0.0009		0.0019
		(0.512)		(1.072)
Constant	0.7574***	0.8577***	1.0801***	1.2320***
	(9.451)	(7.484)	(12.356)	(10.145)
Observations	12,242	11,716	11,741	11,244
Adjusted R-squared	0.478	0.475	0.428	0.425

Year Effects	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes

Presents the relationship of firm value with CEO marital status and Corporate Social Responsibility using a sample of U.S. firms represented in KLD CSR and ExecuCom databases from 1993 to 2006. The dependent variable CSR_NET is net overall CSR score representing total CSR strengths less CSR concerns, estimated as PRO_NET +COM_NET +EMP_NET+ DIV_NET+ ENV_NET+HUM_NET estimated as described in Appendix A. Proxy of CEO marital status "Single" is the dummy representing 1 if the CEO is not marries or is in relation, which we borrow the proxy of single vs. married from Roussanov and Savor (2014). Dependent variable is Q=Tobin's Q. Subscripts representing number of years prior (negative) and after (positive) to observing CEO marital status. All control variables are as of t=0. Variable definitions are given in Appendix A. Cluster-robust t-Stats are in brackets, where stars refer to significance level as *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$ (two tailed), and $p<0.1 (one tailed).

Table A.2. Summary Statistics of Key Variables, 1993-2008

Variable	Mean	STDEV	P.05	P.25	Median	P.75	P.95	N
CSR_NET_{t+1}	0.142	2.484	-4.000	-1.000	0.000	1.000	4.000	13441
CSR_STR_{t+1}	1.850	2.321	0.000	0.000	1.000	3.000	7.000	13057
CSR_CON_{t+1}	1.712	1.892	0.000	0.000	1.000	2.000	6.000	13441
PRO_NET_{t+1}	-0.240	0.748	-2.000	0.000	0.000	0.000	1.000	13441
EMP_NET_{t+1}	-0.067	0.982	-2.000	-1.000	0.000	0.000	2.000	13441
DIV_NET_{t+1}	0.519	1.351	-1.000	0.000	0.000	1.000	3.000	13441
ENV_NET_{t+1}	-0.130	0.835	-2.000	0.000	0.000	0.000	1.000	13441
HUM_NET_{t+1}	-0.081	0.313	-1.000	0.000	0.000	0.000	0.000	13441
COM_NET_{t+1}	0.142	0.670	-1.000	0.000	0.000	0.000	1.000	13441
Single CEO	0.142	0.349	0.000	0.000	0.000	0.000	1.000	14078
CAPEX	0.278	0.318	0.062	0.129	0.205	0.330	0.690	13115
R&D/PPE	0.355	2.206	0.000	0.000	0.000	0.163	1.574	13575
LogAssets	8.015	1.632	5.568	6.803	7.870	9.085	10.849	14077
FirmAge	27.988	15.952	7.000	13.000	25.000	43.000	54.000	14078
ROA	0.134	0.089	0.000	0.076	0.128	0.185	0.292	14077
Book Leverage	0.348	0.531	0.000	0.148	0.336	0.502	0.804	14077
MVBV	1.949	1.390	0.947	1.140	1.502	2.215	4.464	14075
CEOAge	54.939	7.200	43.000	50.000	55.000	60.000	66.000	13487
CEOTenure	5.816	4.961	0.000	2.000	5.000	8.000	14.000	14078
OPT_OWN	2.816	5.082	0.000	0.168	1.079	3.089	11.611	13974
Female	0.017	0.130	0.000	0.000	0.000	0.000	0.000	14078
Risk Propensity	0.340	0.193	0.135	0.212	0.293	0.414	0.694	14016
EIndex	2.452	1.306	0.000	2.000	3.000	3.000	4.000	12038

Variable definitions are provided in Appendix A

Table A.3. Correlation Coefficients

Variable	CSR_NET_{t+1}	Single	CAPEX	R&D/PPE	LogAssets	FirmAge	ROA	Book Leverage	MVBV	CEOAge	CEOTenure	OPT_OWN	Female	Risk Propensity
Single CEO	-0.08													
CAPEX	0.05	0.06												
R&D/PPE	0.02	0.06	0.25											
LogAssets	0.12	-0.22	-0.16	-0.13										
FirmAge	0.00	-0.16	-0.25	-0.11	0.33									
ROA	0.07	0.02	0.09	-0.08	-0.24	0.02								
Book Leverage	0.00	-0.02	-0.08	-0.04	0.21	0.09	-0.13							
MVBV	0.14	0.04	0.22	0.12	-0.22	-0.17	0.54	-0.14						
CEOAge	-0.05	-0.11	-0.11	-0.06	0.08	0.15	0.02	0.02	-0.07					
CEOTenure	-0.05	-0.04	-0.02	0.01	0.02	0.01	-0.02	-0.01	-0.03	0.19				
OPT_OWN	0.06	0.00	0.11	0.04	0.02	-0.13	0.15	-0.04	0.29	0.01	0.08			
Female	0.13	0.00	0.01	0.01	-0.05	-0.02	0.01	0.01	0.02	-0.06	-0.02	-0.01		
Risk Propensity	-0.05	0.07	0.16	0.12	-0.24	-0.24	-0.11	-0.02	0.08	-0.12	-0.02	-0.01	0.03	
EIndex	-0.04	0.00	-0.08	-0.04	-0.06	0.08	-0.04	0.05	-0.13	-0.01	-0.05	-0.05	-0.02	-0.06
N	13441	14078	13115	13575	14077	14078	14077	14077	14075	13487	14078	13974	14078	14016

Variable definitions are provided in Appendix A

Table A.4. Female Single CEOs and Corporate Social Responsibility

VARIABLES	(1) CSR_NET_t	(2) CSR_NET_{t+1}
Single CEO	-0.2733***	-0.3030***
	(-2.625)	(-2.835)
Single CEO*Female	-1.2443**	-1.3002**
	(-2.186)	(-1.977)
Female	2.4718***	2.4403***
	(5.381)	(4.774)
Other Controls	Yes	Yes
Constant	-0.6039	-1.0846*
	(-1.015)	(-1.762)
Observations	11,841	11,273
Adjusted R-squared	0.202	0.207
Year Effects	Yes	Yes
Industry Effects	Yes	Yes

Variable definitions are given in Appendix A of the published manuscript. Cluster-robust t-Statistics are in brackets, and significance levels are shown as *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$ (two tailed), and $p<0.1 (one tailed).

Table A.5. Propensity Score Matching for CEO characteristics

Diagnostics Statistics-Difference in Means of Variables

Variable	Treated	Control	Difference	T-STAT
Female	0.0175	0.0395	-0.02193	-1.4100
CEO Age	53.1180	53.1930	-0.07500	-0.1200
Tenure	6.4474	6.5526	-0.10520	-0.2300
Opt_Own	1.2882	0.9297	0.35847	1.2300
Shares Owned	1.1865	0.7958	0.39073	1.3400
Change in Comp	25.7310	21.5270	4.20400	0.5000
CEO_Prominence	4.0742	3.8808	0.19340	1.3300
CEO Ability	0.5711	0.5803	-0.00921	-0.3900
Inst Own	0.8356	0.8440	-0.00837	-0.6600

Paired & Unparied T-test of Difference in CSR_NET_{t+1}

Variable	Mean	Stdev	N	TSTAT
Pair (Treat - Control)	-0.226***	2.868	1317	-2.86
Control	-0.139***	2.197	1317	-2.79
Treatment	-0.365	1.955	1317	

Variable definitions are given in Appendix A. Significance level presented as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diagnostic tests include controls for Fama-French 48 industry membership.

Table A.6. Instrumental Variable – High Marginal Tax Rate

	OLS	OLS	PROBIT	OLS
	(1)	(2)	(3)	(4)
VARIABLES	Single	CSR_NET $_{t+1}$	Single	CSR_NET $_{t+1}$
High Marginal Tax Rate	-0.0190***		-0.1172***	
	(-2.647)		(-3.475)	
Predicted_Single CEO		-5.7436**		-0.9380**
		(-2.370)		(-2.378)
Other Controls	Yes	Yes	Yes	Yes
Constant	0.6127***	2.6632*	1.1881***	0.3322
	(16.776)	(1.823)	(3.342)	(0.630)
Observations	12,401	11,841	12,340	11,781
Chi-Square	.	.	1362	.
Adjusted R-squared	0.104	0.200	.	0.197
Year Effects	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes

Table A.7. Instrumental Variable Regression - Different State Tax Bracket Dummy

	OLS	OLS	PROBIT	OLS
	(1)	(2)	(3)	(4)
VARIABLES	Single	CSR_NET $_{t+1}$	Single	CSR_NET $_{t+1}$
Different State Tax Bracket Dummy	-0.0323***		-0.1879***	
	(-4.914)		(-5.237)	
Predicted_Single CEO		-2.5146*		-0.4432*
		(-1.703)		(-1.746)
Other Controls	Yes	Yes	Yes	Yes
Constant	0.6005***	0.6784	1.1002***	-0.2836
	(16.678)	(0.742)	(3.058)	(-0.695)
Observations	12,292	11,742	12,231	11,682
Chi-Square	.	.	1339	.
Adjusted R-squared	0.106	0.203	.	0.199
Year Effects	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes

Variable definitions are given in Appendix A of the published manuscript. Cluster-robust t-Statistics are in brackets, and significance levels are shown as *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A.8. Decomposition of Corporate Social Responsibility Strengths and Concerns

PANEL A: Net CSR Scores by Components

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	PRO_NET_{t+1}	DIV_NET_{t+1}	EMP_NET_{t+1}	HUM_NET_{t+1}	ENV_NET_{t+1}	COM_NET_{t+1}
Single CEO	-0.0140	-0.1825***	-0.0608	0.0107	-0.0288	-0.0193
	(-0.463)	(-3.263)	(-1.439)	(1.071)	(-0.779)	(-0.815)
Controls & Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,841	11,841	11,841	11,841	11,841	11,841
Adjusted R-squared	0.287	0.337	0.129	0.165	0.200	0.140

PANEL B: CSR Strengths by Components

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	PRO_STR_{t+1}	DIV_STR_{t+1}	EMP_STR_{t+1}	HUM_STR_{t+1}	ENV_STR_{t+1}	COM_STR_{t+1}
Single CEO	-0.0086	-0.0973**	-0.0633**	0.0005	-0.0274	-0.0079
	(-0.505)	(-2.132)	(-2.133)	(0.209)	(-1.155)	(-0.406)
Controls & Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,841	11,841	11,841	11,510	11,841	11,841
Adjusted R-squared	0.118	0.351	0.179	0.064	0.204	0.226

PANEL C: CSR Concerns by Components

	(7)	(8)	(10)	(9)	(11)	(12)
VARIABLES	PRO_CON_{t+1}	DIV_CON_{t+1}	EMP_CON_{t+1}	HUM_CON_{t+1}	ENV_CON_{t+1}	COM_CON_{t+1}
Single CEO	0.0055	0.0852***	-0.0025	-0.0102	0.0013	0.0114
	(0.225)	(3.054)	(-0.081)	(-0.987)	(0.045)	(0.818)
Controls & Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,841	11,841	11,841	11,841	11,841	11,841
Adjusted R-squared	0.370	0.091	0.183	0.198	0.423	0.201

Variable definitions are given in Appendix A. Cluster-robust t-Stats are in brackets, and significance levels are shown as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.9. Propensity Score Matching for RepRisk

Diagnostic Statistics-Difference in Means of Variables

Variable	Treated	Control	Difference	T-STAT
Firmsize	7.9482	8.1959	-0.24770	-0.6600
FirmAge	28.4440	33.5560	-5.11200	-0.9500
Book Leverage	0.3670	0.3727	-0.00572	-0.0700
CAPEX	0.2569	0.2280	0.02892	0.5200
R&D/PPE	0.2308	0.1831	0.04774	-0.3200
ROA	0.1480	0.1542	-0.00615	-0.1800
CEO Tenure	1.0000	1.6111	-0.61110	-1.0500
CEO Age	51.0560	50.0000	1.05600	0.5600
Female	0.0000	0.0000	0.00000	.

Paired & Unparied t-Test of Differences in *RepRisk* Change

Variable	Mean	Stdev	N	TSTAT
Pair (Treat - Control)	6.778**	12.460	18	2.31
Control	0.000	0.000	18	
Treatment	6.778**	12.460	18	2.31

Variable definitions are given in Appendix A. Significance levels are shown as *** p < 0.01, ** p < 0.05, * p < 0.1. Diagnostic tests include controls for Fama-French 48 industry membership.