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CEO Marital Status and Insider Trading

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We investigate the association between chief executive officers' (CEOs') marital status and their tendency to profit from insider trading. We argue that marriage can constrain CEOs' opportunistic behaviour, which could increase litigation risk, and show that married CEOs earn lower insider trading returns compared to unmarried CEOs. Insider trades can be identified as either routine or opportunistic. We also find that married CEOs are less likely to engage in opportunistic trades, and they earn lower insider trading returns in firms with weaker corporate governance and higher information asymmetry. Our empirical results remain robust after accounting for several endogeneity tests.

Introduction

There has been growing research related to the impact of top managers' life experiences on corporate practices. These experiences include disaster experience in chief executive officers' (CEOs') early childhood (Bernile, Bhagwat and Rau, 2017), military involvement (Benmelech and Frydman, 2015; Law and Mills, 2017), professional experience (Dittmar and Duchin, 2016), poverty experience (Zhang, Wang and Jia, 2021) and family life (Cronqvist and Yu, 2017; Roussanov and Savor, 2014). In this paper, we focus on CEOs' marital status, which is arguably one of the most important life experiences of an individual. The business and finance literature has documented the significant effects of CEOs' marital status on various corporate activities such as risk taking (Roussanov and Savor, 2014), corporate social responsibility (CSR) performance (Hegde and Mishra, 2019), financial reporting quality (Hilary, Huang and Xu, 2017) and portfolio investment (Lu, Ray and Teo, 2016). However, we are not aware of any existing research that empirically examines the relationship between CEOs' marital status and the trading of their own company's stocks (i.e. insider trading) and the extent to which their insider trades are informed and profitable. Therefore, our study fills this gap.

Insider trading has long been a topic of interest for researchers and regulators. Corporate insiders can trade their company's shares for liquidity or diversification reasons; however, it is illegal to take advantage of material non-public information about the firm and earn abnormal profit through insider trading based on such information (Section 10b5 of the Securities Exchange Act of 1934). For example, Erickson (2010) finds that about 60% of derivative lawsuits against directors and officers contain allegations of illegal insider trading. Although there is mixed empirical evidence to support or oppose insider trading on the grounds of market efficiency (e.g. Aktas, de Bolt and Van Oppens, 2008; Fernandes and Ferreira, 2009; Fishe and Robe, 2004; Huddart, Hughes and Levine, 2001), it is argued that insider trading is neither fair nor economically efficient, since it leads to an unlevel playing field for uninformed outside investors (see e.g. Werhane, 1989, 1991).

Despite a gradual decrease in managerial stock ownership over time, corporate managers still hold, on average, 12% of the shares in the firms they manage (Fabisik *et al.*, 2021), and this represents a nontrivial proportion of their personal

wealth (Cohen, Malloy and Pomorski, 2012). This high stake necessitates managers trading their firm's stocks from time to time and for different motives. Researchers have provided evidence that insiders trade on private information and earn abnormal profits (e.g. Billings and Cedergren, 2015; Chen, Martin and Wang, 2013; Jeng, Metrick and Richard, 2003). Cohen, Malloy and Pomorski (2012) show that while insiders do not earn profits for routine trades, they earn as much as 0.81% monthly abnormal returns from trades that are defined as opportunistic. Ahern (2017), in their hand-collected data on insider trading networks from the cases filed by the SEC, finds that about 622 inside traders made an aggregated $928 million in trading profits between 2009 and 2013 through sharing inside information. However, it is challenging for regulators and investors to interpret the information content of insiders' trades and assess which trade is illegal. At the same time, the ambiguity and uncertainty in the legal space in determining what constitutes an illegal trade also poses challenges for insiders in their decisions to take litigation risk and trade on private information (Jiang, Wintoki and Xi, 2021).

In our paper, we focus on CEOs, arguably the most important group of insiders, and their marital status to examine whether the characteristics embedded in this status affect their insider trading behaviour. Social and family studies have shown that marriage is associated with an individual's social virtue, well-being, relational responsibility and tendency to avoid risky behaviours (e.g. Garrison, 2007; Greenberg, 1998; Notare and McCord, 2012; Persson, 2020; Sampson, Laub and Wimer, 2006). Business and management research argues that individual attributes such as attitudes to risk affect insider trading performance (Hillier, Korczak and Korczak, 2015). We argue that a CEO's normative commitment to married life can negatively relate to the CEO's risk appetite, which is consistent with existing evidence that married CEOs are less likely to implement risky decisions. For example, Roussanov and Savor (2014) and Hilary, Huang and Xu (2017) show that married CEOs are more risk averse than single CEOs, and this is reflected in more conservative corporate policies and a lower degree of earnings management. In addition, there is evidence that insiders change their trading behaviour due to litigation risk (e.g. Billings and Cedergren, 2015; Cheng and Lo, 2006; Chen, Martin and Wang, 2013). Typically, Seyhun (1992) and Huddart, Ke and Shi (2007) find that insiders are less likely to trade immediately before major events such as earnings and takeover announcements, while Chen, Martin and Wang (2013) show that managers reduce their insider selling activity if their firms are to receive a going-concern opinion from the auditors. Adhikari, Agrawal and Sharma (2019) document that shareholders' ability to sue corporate insiders for their allegedly illegal trades has a significant impact on insiders' opportunistic trading. Given that litigation risk may potentially have damaging effects on married CEOs regarding unemployment, reputation, disruption in their ability to meet family consumption commitment and erosion in the quality of family and children's life (e.g. Bradley and Corwyn, 2002; Ribar, 2015; Roussanov and Savor, 2014), we expect that married CEOs are more likely to abstain from information-driven insider trading than single CEOs.

To test our ideas, we use a large sample of insider trading transactions made by CEOs of US public firms from 1996 to 2019. Following Jagolinzer, Larcker and Taylor (2011), we capture CEOs' trading profit using the alpha from the four-factor Fama and French (1992) and Carhart (1997) model during the 180-day window following their purchase or sale transactions. We obtain marital information for CEOs from Roussanov and Savor (2014) and the Marquis Who's Who in Finance and Industry database. Our analyses show that married CEOs earn lower future abnormal returns compared to unmarried CEOs (which covers primarily single CEOs). Our results are robust to the exclusion of CEOs with divorced or deceased spouses. The results support our main argument that married managers are less likely to conduct informed insider trading for gains relative to single (or unmarried) CEOs.

Our results remain strong after several robustness checks and endogeneity tests. To further confirm that our inferences are not driven by firm-level unobserved heterogeneity, we employ a difference-in-differences (DiD) methodology by identifying those firms that experience changes from married (single) to single (married) CEOs and by determining the impact of within-firm changes of CEO marital status on insider trading returns. We show that firms switching from single to married (married to single) CEOs,

relative to those switching from single to single (married to married) CEOs, display a statistically significant decline (increase) in insider trading returns.

We further explore potential moderating effects on the relationship between CEOs' marital status and informed trading. First, firms with better corporate governance could curb insiders' ability and willingness to profit from insider information (Dai, Parwada and Zhang, 2015; Dai *et al.*, 2016; Jagolinzer, Larcker and Taylor, 2011). Second, since managers have motives to manipulate earnings to artificially inflate or deflate stock prices prior to their insider trading activities (Beneish, Press and Vargus, 2012; Chowdhury, Mollah and Al Farooque, 2018; Core *et al.*, 2006; Sawicki and Shrestha, 2008; Udpa, 1996), firms with a more transparent information environment could have lower insider trading returns. Consistent with our expectations, we show that the difference in the abnormal profit between single and married CEOs is more pronounced for firms with poor corporate governance and for firms with high information asymmetry.

Finally, we follow Cohen, Malloy and Pomorski's (2012) approach to identify 'opportunistic' traders based on their trading history and show that trades made by opportunistic traders, as opposed to 'routine' traders, are more information driven. If married CEOs are less likely to conduct profitable informed insider trading, we expect that they have a lower likelihood of participating in opportunistic trades and that the disparity in insider trading profitability between single CEOs and married CEOs arises primarily from opportunistic trades. Indeed, our analyses confirm these conjectures.

This study contributes to two specific strands of literature in corporate finance. A growing body of literature pays attention to the role of corporate board, top executives' personal traits in constraining corporate fraud (e.g. Bai and Yu, 2022; Dimungu-Hewage and Poletti-Hughes, 2022; Jia, Lent and Zeng, 2014). Our paper adds to this strand of literature by investigating whether CEOs' marital status affects their insider trading profits and propensity to trade opportunistically. Among them, Gregory *et al.* (2013) discover that female managers' trades are more informative about future corporate performance. Jia, Lent and Zeng (2014) provide evidence that CEOs' facial width-to-height ratio is positively associated with their opportunistic insider trading. Pham (2020) and Jiang, Wintoki and Xi (2021) find that executives with legal expertise earn significantly lower abnormal returns in their insider trading.

The second strand of literature explores the impact of CEOs' marital status on corporate outcomes. For example, Hilary, Huang and Xu (2017) find that single CEOs tend to manipulate earnings more than their married counterparts. Hegde and Mishra (2019) find that firms run by married CEOs have better CSR performance. Roussanov and Savor (2014) find that firms with married CEOs tend to pursue less aggressive corporate policies and consequently have lower stock return volatility. By extending the previous research into CEOs' personal attributes and insider trading, our study is the first to examine the relationship between CEO marital status and insider trading returns.

In the remainder of the paper, we first develop our hypotheses in the next section. In the third section, we describe our data and methodology. The fourth section presents our main empirical results, including the endogeneity tests. The fifth section presents the effects of corporate governance and information quality on the CEO marriage–insider trading relationship. The sixth section examines the impact of opportunistic trades. The final section presents our concluding remarks.

Theoretical framework and hypothesis development

Theoretical background

The literature in finance, law and business has answered the call for the examination of the fairness and efficiency perspectives of insider trading. Regarding the effects on market efficiency, the extant literature shows mixed evidence. On the one hand, Huddart, Hughes and Levine (2001) and Aktas, de Boldt and Van Oppens (2008) find that insider trading improves price discovery, and this improvement is observed across a number of countries (Fernandes and Ferreira, 2009).[1] On the other hand, Fishe and Robe (2004) present

[1]Ataullah et al. (2014) show that insiders could use their trades to express their confidence in the firm's diversification strategy and outside investors react positively to that.

evidence that insider trading decreases market liquidity, hence exhibiting a negative effect on market efficiency. Werhane (1989, 1991) argue that insider trading is unfair to outside investors since insiders profit themselves using their informational advantage. To restrain insiders from exploiting private information, investors depend on regulatory constraints, the quality of corporate governance, corporate policies on insider trading restrictions and media scrutiny (e.g. Bettis, Coles and Lemmon, 2000; Dai, Parwada and Zhang, 2015; Dai *et al.*, 2016; Jagolinzer, Larcker and Taylor, 2011; Seitzinger, 2016). However, existing evidence shows that insiders' characteristics exhibit a significant impact on their insider trading activity and profitability (e.g. Hillier, Korczak and Korczak, 2015; Jiang, Wintoki and Xi, 2021). In our study, we aim to explore the role of marital status of CEOs on their insider trades.

Business and management research has reported ample evidence on the link between top executives' characteristics, including values, dispositions, prior experiences and their corporate behaviour and organization outcomes (Chatterjee and Hambrick, 2007; Kamiya, Kim and Park, 2019; Meier and Schier, 2020; Westphal and Fredrickson, 2001). This strand of literature is built on upper echelons theory inspired by the work of Hambrick and Mason (1984). The upper echelons perspectives have emphasized the behaviour and psychology aspects of executives' decision-making process and how it may bring changes to their organization's strategic results. Among the studied characteristics of top executives, CEOs' prior experiences occupy a prominent position. Previous research, based on evidence from publicly listed firms in the United States, has shown that CEOs' early-life disaster experiences (Bernile, Bhagwat and Rau, 2017), military participation (Benmelech and Frydman, 2015; Law and Mills, 2017), professional experiences (Dittmar and Duchin, 2016) and whether CEOs have undergone the great economic depression (Malmendier and Nagel, 2011) or poverty (Zhang, Wang and Jia, 2021) have close ties to corporate outcomes. As for CEOs' family life experiences, Roussanov and Savor (2014) discover that married CEOs have a relatively low propensity to pursue risk-taking firm strategies, and Cronqvist and Yu (2017) document that firms run by CEOs with a daughter possess higher CSR performance.

Marriage is a normative construct representing an individual's family life that can generate variations in his/her social virtues and psychological well-being, and generate positive economic outcomes (Burnham *et al.*, 2003; Garrison, 2007; Hegde and Mishra, 2019; Lerman *et al.*, 2018; Notare and McCord, 2012; Persson, 2020; Stack and Eshleman, 1998). There is also debate on the impact of marriage on individuals' risk preferences (Agnew, Balduzzi and Sunden, 2003; Bertocchi, Brunetti and Torricelli, 2011; Grable, 2000; Lupton and Smith, 1999). For instance, Roussanov and Savor (2014) find that marriage has a negative impact on CEOs' risk appetite. In the field of household finance literature, Christiansen, Joensen and Rangvid (2015) show that single men take on more financial risk than married men, while Bertocchi, Brunetti and Torricelli (2011) show that marriage represents a safe asset for married women that makes them more likely to invest in risky financial assets. Despite the recognition that CEOs' marital status is a relevant factor in explaining firm outcomes and their asset management, little work exists on how the marital status of CEOs influences the way they trade their company's shares.

Hypothesis development

A burgeoning literature in business and finance connects marital status with an individual's risk appetites (Roussanov and Savor, 2014). In our study, we aim to test whether marital status affects the way CEOs trade and profit from their insider transactions. We argue that a normative commitment to married life can negatively relate to the degree to which a CEO is willing to take risk. This is in line with Roussanov and Savor (2014), who show that married CEOs are more risk averse, and it is reflected in their more conservative and less risky corporate policies. Hilary, Huang and Xu (2017) show that firms managed by a married CEO are less prone to earnings management, which is highly correlated with shareholder litigation risk. Insider trading is subject to litigation, and managers may pass up profitable insider trading opportunities to avoid litigation risk (Huddart, Ke and Shi, 2007). Johnson, Nelson and Pritchard (2007) show a strong correlation between litigation and abnormal insider selling. Cheng and Lo (2006) note that insider sales lead to litigation if there is a

subsequent significant price decrease, as investors may accuse insiders of trading on material non-public information leading to price declines. Chen, Martin and Wang (2013) find that insider selling followed by negative news increases the likelihood of receiving regulators' scrutiny and auditor going-concern opinions. On average, married CEOs can be more conservative and have lower risk tolerance; we therefore hypothesize that married CEOs are less likely to conduct insider trading that could increase litigation risk.

Moreover, Roussanov and Savor (2014) argue that, compared to single CEOs, married CEOs have a higher level of family consumption commitment. Potential unemployment caused by litigation hinders married individuals' ability to meet family consumption and other legally binding commitments. This line of reasoning also indicates that married CEOs may have a lower inclination to take risk and get involved in insider trading. Since married CEOs, with greater household financial responsibility, suffer more from job loss, they are more concerned about potential dismissals brought by lawsuits. Therefore, we expect that married CEOs are less likely to profit from insider trading compared to single CEOs.

On the other hand, married CEOs might be more likely to engage in informed trading. Yao *et al.* (2021) argue that leadership couples can increase centralized control of corporate resources and thus lead to higher opportunistic motivation to manipulate financial reporting. Single CEOs, compared to their married counterparts, may care more about their social image, as they need to compete for mates in the marriage market (Roussanov and Savor, 2014).[2] Gao, Lisic and Zhang (2014) argue that firms that are more CSR-conscious refrain from informed trading via lower insider trading profits. Similarly, one can argue that single CEOs are more likely to refrain from informed insider trading so as to maintain a good image and high social status. Furthermore, a high-conflict marriage or poor marital quality might have adverse effects on CEOs' emotional quality, which potentially leads to unhealthy and risky behaviour (Horwitz, McLaughlin and White, 1998; Robles, 2014). In a related study, Lu, Ray and Teo (2016) show that hedge fund managers who are distracted by marital events have lower ability to perform their investment tasks due to limited attention, resulting in lower risk-adjusted performance of such funds. These prior studies imply that married executives performing poorly in their corporate activities might experience a loss in their performance-based compensation, and thus are motivated to increase their secondary compensation via insider trading activities (Demsetz, 1986). In addition, financial pressures related to family consumption could be one of the driving factors for illegal behaviour (Dorminey *et al.*, 2012; Rustiarini *et al.*, 2019). Thus, the above contrasting evidence suggests that the effect of marital status on insider trading profits is debatable and remains an empirical question.

Data and methodology

Sample and data description

Data for our analyses in this study come from five main sources. First, we obtain insider trading information from the Thomson Financial Insider Filing Data (TFN) over the period 1996 through 2019, which contains insider trading reported on SEC Forms 3, 4 and 5. We focus on trades of common shares by CEOs. Following the prior literature (e.g. Frankel and Li, 2004), we include only open market transactions. Second, we obtain CEOs' marital status from Roussanov and Savor (2014)[3] and the Marquis Who's Who in Finance and Industry database. We follow Roussanov and Savor (2014) and construct the dummy variable Married that takes the value 1 if a CEO's marital status is denoted as legally married (and in some cases, married but separated) and 0 if unmar-

[2]In a similar vein, Bai and Yu (2022) argue that rookie directors may care more about their reputation than seasoned directors.

[3]Roussanov and Savor (2014) manually collected the marital status of CEOs from 1996 to 2008 and the dataset was used by previous studies in accounting and corporate finance (e.g. Hegde and Mishra, 2019; Hilary, Huang and Xu, 2017). As noted in Roussanov and Savor (2014), since data on exact dates of marriage are largely unavailable, CEOs ever mentioned as being married are considered as married throughout their tenure, and other CEOs are considered as unmarried throughout their tenure. This is a reasonable assumption in our setting, and the rationale is as follows. According to US census data, the median age of men for their first marriage was 27 in 2000. Although unmarried CEOs might get married later in their tenure during our sample period, our median (minimum) CEO age for the married sample is 56 (36), which is significantly higher than the median age of men for their first marriage.

Table 1. CEO transactions

Year	Married # CEOs	Single # CEOs	Average purchases per CEO			Average sales per CEO		
			Married	Single	Difference (married − single)	Married	Single	Difference (married − single)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1996–2000	356	79	25,404	12,936	12,468	89,883	34,197	55,687
2001–2005	545	132	15,635	9,596	6,039	84,918	35,111	49,807
2006–2010	563	141	52,594	35,945	16,649	62,025	32,174	29,851
2011–2015	366	106	155,743	27,408	128,335	81,167	43,399	37,768
2016–2019	167	44	42,019	89,142	−47,123	85,227	34,197	51,030
Average	399	100	58,279	35,006	23,274	80,644	35,815	44,829

Note: This table reports the sample distribution of CEO trades over each of the 5-year periods during the sample period. The sample consists of all open-market transactions made by CEOs of US firms during 1996 through 2019. Columns 2 and 3 report the number of distinct married and single CEOs. Columns 4–6 report the average number of shares purchased per CEO each year. Similarly, columns 7–9 report the number of shares sold per CEO each year. The last row reports the average value for each column.

ried, which covers primarily single (never married) CEOs.

We obtain data for firm-level control variables from the CRSP and Compustat databases. CEO characteristics such as CEO income, gender, age and tenure are obtained from the ExecuComp database. Finally, we merge the insider trading data with Roussanov and Savor's (2014) data. We require CEOs to have at least one insider purchase or sale during our sample period to be included in our analyses. These criteria yield 15,137 insider transactions (i.e. CEO-transaction observations) made by 1142 (902 married and 240 single) CEOs from 1140 unique publicly traded US firms.

Table 1 presents the total number of married and single CEOs as well as their total number of transactions for every 5-year period.[4] We find that married CEOs have more transactions (both purchases and sales) than single CEOs.

Measuring transaction-level trading profit

Following previous literature (e.g. Frankel and Li, 2004; Gao, Lisic and Zhang, 2014; Huddart and Ke, 2007; Jagolinzer, Larcker and Taylor, 2011), we estimate trading profits for each transaction, by employing the following Fama and French (1992) and Carhart (1997) four-factor model over the 180-day window following each transaction:[5]

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i (SMB_t) + h_i (HML_t) + m_i (UMD_t) + \varepsilon_{it} \quad (1)$$

where R_i is firm i's daily stock return; R_f and R_m are the daily risk-free interest rate and CRSP value-weighted market return, respectively. SMB, HML and UMD are the size, book-to-market and momentum factors obtained from Kenneth French's website.[6] Our measure of insider trading profit is the potential gains (losses avoided) follow-

[4]Female CEOs account for 4.2% (3.4%) in the married (single) CEO group.

[5]We present and discuss results mainly on the 180-day trading profits. We also repeat all our tests by estimating the 120-day and 90-day trading profits. We find that our results (regression coefficient signs and significance) are consistent with those with 180-day trading profit (the results for 120-day and 90-day trading profits are available upon request). In the paper, we focus on insider trading profits measured using 180-day windows for two reasons. (1) Six months is the shortest plausible trading horizon for an insider because Section 16(b) of the Securities and Exchange Act of 1934 states that officers and directors who purchase and sell the company's securities within a 6-month period must disgorge all profits of the company (see limitations on 'short-swing' transactions, i.e. a sale and purchase of company stock if both transactions occur within a 6-month period). (2) Several studies find that, when abnormal returns extend to 6 months or more following insiders' trades, the price drift is greatest immediately after the trade and becomes negligible in months 9 through 12 (Seyhun, 2000). This suggests that computing returns over a horizon longer than 180 days may introduce noise into the trading profits.

[6]Available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html.

ing insider purchases (sales), and it is equal to α ($-\alpha$) from Equation (1) for purchases (sales).

Control variables

The choice of control variables in our analyses was motivated by recent literature in corporate finance that examines the relationship between firm profitability and director characteristics (Cohen, Malloy and Pomorski, 2012; Gao, Lisic and Zhang, 2014; Roussanov and Savor, 2014). We control for research and development expenditure ($R\&D_{t-1}$) because previous studies (Coles, Daniel and Naveen, 2006; Roussanov and Savor, 2014) argue that R&D is a strong proxy for CEO risk taking. We also control for analyst coverage ($Analyst_{t-1}$) and an indicator for negative earnings ($Loss_{t-1}$). Ravina and Sapienza (2010) show that volatility is a strong predictor for insider trading profits. We hence also add $Volatility_{t-1}$. $Turnover_{t-1}$ is defined as aggregate trading volume over the (−380, −20)-day interval before each trade scaled by total number of shares outstanding. We also control for firm sales growth ($SaleGrow_{t-1}$). $Restrict_{t-1}$ is the percentage of trades that occur in a 30-day window following an earnings announcement in the previous fiscal year and zero otherwise. By including $Restrict_{t-1}$ as a control variable, we account for the impact of corporate insider trading rules in regulating insider trading and reducing trading profits (Bettis, Coles and Lemmon, 2000). We also add market-to-book ratio (BTM_{t-1}) and annual returns before the trade (RET_{t-1}) to capture the momentum for insiders' potential contrarian behaviour. In addition, following Roussanov and Savor (2014), we control for CEO characteristics such as CEO gender (Gender), age (Age), resulting shares the insider held at the time of the transaction (Holdings), total compensation (Compensation), a dummy variable classifying whether a CEO is overconfident (Overconfidence), educational background (MBA) and tenure (Tenure).[7] Appendix Table A1 presents detailed descriptions of all variables used in this research.

Empirical results

Summary statistics and univariate results

Table 2 presents the descriptive statistics (mean, median and standard deviation) for our trading profit measure, the indicator variable for CEO marital status and control variables. We find that on average 79% of the CEOs in our sample are married, relatively comparable to the 86% married CEOs reported by Hegde and Mishra (2019) for their sample between 1993 and 2008. We also report correlation coefficients among the variables. Consistent with our hypothesis, we find that Trading_Profit is negatively correlated with Married. The negative correlation provides initial evidence that married CEOs earn lower returns on insider transactions relative to single CEOs.

Table 3 presents our overall Trading_Profit for married and single CEOs. We also separately report the profits for opportunistic and routine trades inspired by the classification in Cohen, Malloy and Pomorski (2012).[8] We find that on average, married CEOs earn a statistically significant negative profit relative to single CEOs. Moreover, the difference is greater for opportunistic trades (−0.020) than for routine trades (−0.0160). The preliminary results in Table 3 suggest that married CEOs earn significantly lower abnormal returns and are less opportunistic compared to single CEOs.

Multivariate results

Since our insider trading data are at the transaction level, we use unbalanced pooled data to estimate transaction-level regressions in determining the relationship between Trading_Profit and Married with a set of control variables (X) based on the extant literature (e.g. Dai *et al.*, 2016; Gao, Lisic and Zhang, 2014; Hegde and Mishra, 2019).

[7]Note that we use the subscripts for lagged variables, and those variables without any subscripts are at year t.

[8]Specifically, at the beginning of each calendar year (i.e. assessment year), we define a routine trader as one who places a trade in the same calendar month during the previous three consecutive years. We define opportunistic traders as the rest of the CEOs for whom we cannot detect an obvious discernible pattern in the same period. Then, we classify all trades by a routine (opportunistic) trader in the assessment year as routine (opportunistic) trades.

Table 2. Descriptive statistics

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i(SMB_t) + h_i(HML_t) + m_i(UMD_t) + \varepsilon_t \quad (1)$$

Var. #	Variable name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Mean	−0.01	0.79	0.51	0.14	0.03	7.65	3.97	0.65	0.51	0.00	0.18	55.62	9.47	7,300	0.92	0.77	0.23	85
	Median	0.00	1.00	1.00	0.00	0.03	6.00	3.11	0.74	0.45	0.00	0.12	56.00	8.00	3,441	1.00	1.00	0.00	0
	SD	0.16	0.41	0.50	0.35	0.02	5.67	3.49	0.34	0.41	0.03	0.95	8.36	7.05	18,080	0.28	0.42	0.42	738
1	Trading_Profit (%)	1.00																	
2	Married (%)	**−0.04**	1.00																
3	$R\&D_{t-1}$	**−0.06**	**−0.07**	1.00															
4	$Loss_{t-1}$	**0.04**	**−0.07**	**0.12**	1.00														
5	$Volatility_{t-1}$	**−0.05**	**−0.12**	**0.15**	**0.42**	1.00													
6	$Analyst_{t-1}$	**−0.07**	**0.18**	**0.03**	**−0.12**	**−0.10**	1.00												
7	$Turnover_{t-1}$	0.01	**−0.03**	**0.13**	**0.14**	**0.31**	**0.34**	1.00											
8	$Restrict_{t-1}$	0.01	**−0.03**	**0.05**	−0.01	**0.05**	**−0.08**	−0.01	1.00										
9	BTM_{t-1}	**0.07**	**0.05**	**−0.25**	**0.05**	**−0.07**	**−0.11**	**−0.18**	**−0.03**	1.00									
10	RET_{t-1} (%)	0.00	−0.01	**0.02**	−0.01	**0.01**	**0.01**	**0.00**	0.00	**−0.02**	1.00								
11	$SalesGrowth_{t-1}$ (%)	**−0.05**	0.01	0.01	**0.02**	**0.03**	**0.01**	**0.00**	**0.02**	**0.03**	−0.01	1.00							
12	Age (years)	**0.05**	**0.16**	**−0.09**	**−0.10**	**−0.37**	**0.05**	**−0.19**	**−0.10**	**0.18**	−0.01	**−0.14**	1.00						
13	Tenure (years)	**0.03**	**−0.02**	**−0.09**	**−0.03**	**−0.18**	**0.03**	**0.00**	**−0.06**	−0.01	−0.01	**−0.15**	**0.37**	1.00					
14	Compensation (100s)	**−0.15**	**0.10**	**0.05**	**−0.04**	**0.08**	**0.27**	**0.04**	**0.04**	**−0.09**	−0.01	**0.18**	**−0.04**	**−0.02**	1.00				
15	Gender	**0.02**	0.00	**−0.02**	**−0.13**	**−0.03**	0.00	**−0.11**	**0.02**	**0.12**	**0.02**	**−0.05**	**0.07**	**0.02**	0.00	1.00			
16	Overconfidence	**−0.05**	0.01	**0.05**	**−0.01**	**0.07**	**0.16**	**0.12**	**0.02**	**−0.16**	0.01	**0.08**	**−0.06**	**0.12**	**0.09**	**−0.05**	1.00		
17	MBA	**−0.02**	**0.07**	0.01	**−0.08**	**−0.08**	**0.07**	**−0.04**	0.01	**−0.02**	0.01	**0.04**	**−0.03**	−0.01	**0.12**	**0.00**	0.14	1.00	
18	Holdings (1000s)	**−0.01**	**0.04**	**0.01**	0.00	**0.01**	**0.07**	0.00	**0.02**	**−0.02**	0.00	0.00	−0.01	**0.07**	**0.04**	**0.00**	0.01	**−0.03**	1.00

Note: This table reports descriptive statistics and the correlation matrix of firm and CEO characteristic variables. The first three rows of the table provide summary statistics of the variables followed by the correlation matrix. The bold values are statistically significant at the 5% level or lower. Variable definitions are presented in Appendix Table A1. Trading_Profit, α as per Equation (1), is calculated through the transaction-specific regression of daily returns on four common risk factors, SMB, HML, $R_m - R_f$ and UMD, using a 180-day trading window. α for sales is multiplied by (−1).

Table 3. Univariate analysis

		Married		Single		Difference (married − single)	
Trading_Profit		Value	p-Value	Value	p-Value	Value	p-Value
Overall	Mean	−0.013***	<0.0001	0.001	0.525	−0.015***	<0.0001
	Median	0.000***	<0.0001	0.000***	<0.0001	0.000***	<0.0001
Opportunistic	Mean	0.030***	<0.0001	0.049***	<0.0001	−0.020**	0.050
	Median	0.001***	<0.0001	0.002***	0.002	−0.001*	0.052
Routine	Mean	−0.020***	<0.0001	−0.004**	0.049	−0.016***	<0.0001
	Median	0.000***	<0.0001	0.000	0.145	0.000***	<0.0001

Note: This table reports the average daily alphas for a 180-day trading window for married and single CEOs, further classified into opportunistic and routine trades. Alphas for sales are multiplied by (−1). Insider trades are classified into routine and opportunistic trades as in the text. Trading_Profit, α, is calculated through the transaction-specific regression of daily returns on four common risk factors using a 180-day trading window. Two-tail p-values are reported. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Specifically, we estimate the following transaction-level regression model with firm and year fixed effects to account for unobserved heterogeneity:

$$Trading\_Profit_t = c + \beta Married + \delta X + \eta_y + \varepsilon_t \quad (2)$$

where Trading_Profit_t is the risk-adjusted buy-and-hold abnormal return for an insider transaction on day t. This trading profit is estimated as per Equation (1). The control variables are discussed in the main text and defined in Appendix Table A1. η_y denotes firm and year dummies. Our coefficient of interest is β, which is expected to be negative for the constraining effect of CEO marriage on trading profits.

Table 4 reports the pooled ordinary least squares (OLS) regression results of Equation (2). Model 1 estimates the effect of Married on Trading_Profit after controlling for firm-level characteristics. Model 2 re-estimates Model 1 with firm and year fixed effects. Models 3 and 4 include additional CEO characteristics as controls. In all the models, we find that the coefficient estimates for Married are negative and statistically significant. In Model 1, the coefficient on Married is −0.014 (p-value < 0.0001) and is statistically significant at the 1% level. Similarly, the Married dummy variable in Models 2–4 shows a strongly negative relationship with Trading_Profit, with its coefficient value being −0.015, −0.007 and −0.009, respectively. Economically, the magnitude of this effect is also sizeable. For example, the coefficient of −0.009 in Model 4 suggests that, for a given transaction, married CEOs exhibit 0.9% lower insider trading profits than their single counterparts; that translates to a 5.62% (0.9%/16%, where 16% is the standard deviation of insider trading profits as reported in Table 2) standard deviation decrease in insider trading profits. Model 5 shows the results from a random effects model.[9]

Further, to ensure that our results are not significantly affected by CEOs who are divorced or whose spouses are deceased, we hand-collected

[9]We conduct a Hausman test to decide whether a fixed effects or random effects model is more appropriate in our setting. The assumption of the random effects model is that the individual error term is uncorrelated with the predictors (i.e. $\text{corr}(u_i, X) = 0$), which becomes the null hypothesis of our Hausman test. The chi-squared test shows that our null hypothesis is rejected (chi-squared statistic = 326.95); therefore, the fixed effects model is preferred.

Table 4. CEO marital status and trading profit

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Married	−0.014***	−0.015***	−0.007***	−0.009***	−0.025***	−0.009***
	(<0.0001)	(<0.0001)	(0.006)	(0.001)	(0.005)	(0.001)
$R\&D_{t-1}$	−0.008***	−0.008***	−0.008***	−0.008***	−0.018***	−0.008***
	(0.000)	(<0.0001)	(0.000)	(0.000)	(0.006)	(0.001)
$Loss_{t-1}$	0.024***	0.028***	0.026***	0.029***	0.025***	0.028***
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
$Volatility_{t-1}$	−0.266**	−0.351***	−0.583***	−0.692***	−0.926***	−0.677***
	(0.048)	(0.000)	(0.000)	(<0.0001)	(<0.0001)	(<0.0001)
Log $Analyst_{t-1}$	−0.004***	−0.004***	−0.001	0.000	0.033***	−0.001
	(0.003)	(0.001)	(0.632)	(0.854)	(<0.0001)	(0.656)
$Turnover_{t-1}$	0.001***	0.002***	0.002***	0.002***	0.006***	0.002***
	(0.006)	(<0.0001)	(0.006)	(<0.0001)	(<0.0001)	(<0.0001)
$Restrict_{t-1}$	0.009***	0.005	0.013***	0.010***	0.011***	0.013***
	(0.008)	(0.128)	(0.000)	(0.002)	(0.002)	(0.000)
BTM_{t-1}	0.013***	0.012***	0.010***	0.007**	−0.021***	0.006*
	(<0.0001)	(<0.0001)	(0.002)	(0.035)	(<0.0001)	(0.064)
RET_{t-1}	−0.043	−0.050	−0.047	−0.050	−0.058*	−0.043
	(0.475)	(0.123)	(0.479)	(0.159)	(0.066)	(0.229)
$SaleGrow_{t-1}$	−0.003	−0.003***	−0.056***	−0.056***	−0.009	−0.064***
	(0.101)	(0.001)	(<0.0001)	(<0.0001)	(0.168)	(<0.0001)
Log Age			−0.034***	−0.019**	−0.046**	−0.022**
			(0.002)	(0.029)	(0.031)	(0.015)
Log Tenure			−0.002	0.003	0.007**	0.003
			(0.321)	(0.141)	(0.031)	(0.150)
Gender			0.042***	0.045***	0.031	0.045***
			(<0.0001)	(<0.0001)	(0.166)	(<0.0001)
Log Holdings			0.000	0.000*	0.000	0.000
			(0.482)	(0.051)	(0.337)	(0.200)
Log Compensation			−0.005***	−0.005***	−0.005***	−0.005***
			(<0.0001)	(<0.0001)	(0.007)	(<0.0001)
Overconfidence			−0.006**	−0.009***	−0.037***	−0.008***
			(0.023)	(0.002)	(<0.0001)	(0.003)
MBA			−0.002	−0.002	0.017**	−0.002
			(0.543)	(0.377)	(0.039)	(0.406)
Firm FE	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	No	Yes
Adjusted R^2	0.024	0.014	0.042	0.034	0.051	0.037
Observations	15,137	15,137	13,611	13,611	13,611	13,361

Note: This table reports the transaction-level pooled OLS regression results. The dependent variable is Trading_Profit, calculated through the transaction-specific regression of daily excess returns on four common risk factors using a 180-day trading window. Married is a dummy variable equal to one if the CEO of a given firm is married, and zero otherwise. Other variables are described in Appendix Table A1. Model 5 employs a random effects model. Model 6 excludes divorced CEOs and CEOs with deceased spouses. Intercept is unreported. Two-tail p-values in parentheses are based on robust standard errors clustered at the firm level. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

information on CEOs' divorce or deceased-spouse status through internet searches and Marquis Who's Who and identified a total of 21 cases, resulting in 250 CEO transactions during our sample, representing 1.7% of the insider transaction sample. Next, we excluded these transactions and re-estimated Equation (2) in Model 6 of Table 4. In Model 6, we find that the coefficient for Married is qualitatively similar (i.e. estimate = −0.009, p-value < 0.0001). In sum, the baseline results in Table 4 support our hypothesis that married CEOs earn lower abnormal profits from insider trades compared to their single counterparts, which could be because married CEOs are more conservative relative to single CEOs about information-driven insider trading due to their concern about

potential litigation risk and family commitments in marriage.[10]

Addressing endogeneity concerns – evidence from CEO turnovers

One potential issue that might plague our results is that some unobservable firm characteristics could be correlated with CEOs' marital status, which in turn might drive the marriage–insider trading relationship.[11] In other words, these unobserved characteristics could simultaneously affect a firm's decision to hire a married or single CEO and its insider trading environment. For instance, one could argue that married CEOs could be associated with firms having good corporate governance practices and higher information quality. Therefore, the negative relationship can be driven by the selection of CEOs to the firms. To address the potential endogeneity issues, we adopt a DiD analysis using CEO turnover events and investigate the impact of CEO turnover on insider trading profits.

To do so, we identify CEO turnovers in our sample and observe that there are a total of 167 CEO turnover events. Next, we classify the cases where a single CEO is replaced with a married CEO as treated (identified as Treated). We use turnovers involving a change from a single to another single CEO as control events. We also identify another group of treated turnovers, which includes cases where a married CEO is replaced with a single CEO and use turnovers where a married CEO is replaced with another married CEO as the control group. We then estimate a DiD regression with year and firm fixed effects and present our results in Table 5. CEO turnover is a dummy variable that is equal to one for 3 years following CEO turnover events. To ensure that the results do not arise because of firm-specific or transaction-specific changes following CEO turnovers, we also control for the interactions between CEO turnover and our baseline controls.

In column 1 of Table 5, we find that the coefficient on our DiD term for the treated sample (representing married CEOs replacing single CEOs) is negative and statistically significant

Table 5. Difference-in-differences analysis of CEO turnover events

	(1) Treated = Single to married CEO	(2) Treated = Married to single CEO
CEO turnover × Treated	−5.705***	0.468***
	(0.002)	(0.001)
CEO turnover	−0.529***	−0.173***
	(<0.0001)	(0.010)
Treated		3.679
		(0.678)
Controls	Yes	Yes
Controls × Treated	Yes	Yes
Firm and Year FE	Yes	Yes
Adjusted R^2	0.718	0.583
Observations	187	1503

Note: This table reports DiD regression results using transaction-level data. The dependent variable is Trading_Profit, calculated through the regression of daily returns on four common risk factors using a 180-day trading window. Treated is a dummy variable equal to one for the treated sample and zero for the control sample. In column 1 (column 2), the treated sample includes CEO transactions in firms where a single (married) CEO is replaced with a married (single) CEO; the non-treated sample is for firms where a single (married) CEO is replaced with another single (married) CEO. Other control variables are described in Appendix Table A1. Treated in column 1 is absorbed by firm fixed effects since there are no multiple CEO turnovers within the same company. Two-tail p-values in parentheses are based on robust standard errors clustered at the firm level. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

[10]We also acknowledge that some executives may have long-term partners without formal marriage, which could alter our results (we thank an anonymous reviewer for pointing this out). Although we cannot provide evidence on the relationship between CEO long-term partnership and insider trading, we can infer that if indeed a subgroup of single CEOs in our sample have long-term partners and they engage in fewer information-based profitable insider trades than their single counterparts, then our estimate (single CEOs earning higher trading alpha than married CEOs) is an underestimation of the actual impact of marriage.

[11]We also acknowledge that one source of potential endogeneity can arise through CEO-specific characteristics. To deal with this issue, we follow Gormley and Matsa (2014) and employ an instrumental variables (IV) approach within the fixed-effects estimation framework to recover the coefficients on variables that are constant within (CEO) groups. Specifically, we first estimate the effects of all group-varying control variables (except Gender, Married and Overconfidence) on trading profits within the CEO fixed-effects framework and obtain the residual insider trading profits. In the second step, we regress group-average residual insider trading profits on Married, Gender and Overconfidence with the controls used in the first step (variables that vary within groups) as the instruments. We find that the coefficient on Married is −0.006 (p-value = 0.037), consistent with our main finding.

at the 1% significance level.[12] In column 2, we find that the coefficient on our DiD term for the treated sample (representing single CEOs replacing married CEOs) is significantly positive at the 1% significance level. Collectively, the estimates in columns 1 and 2 indicate that insider trading profits significantly increase (decrease) following a within-firm change in CEO marital status from married (single) to single (married) relative to their counterparts that do not face changes in CEO marital status. The results in this section provide confidence in our estimations in Table 4 and suggest that the CEO marital status and trading profits relationship is causal and not driven by endogenous factors.[13]

Moderating effects of corporate governance and information quality

So far, our results suggest a negative relationship between CEO marital status and their insider trading profits. Nonetheless, this negative relationship could be driven by the informational advantage of single CEOs relative to married CEOs or lack of personal reputation concern for single CEOs.[14] Therefore, in this section we employ additional tests to isolate the constraining effect of marriage on CEOs' tendency to participate in informed trading. We focus on two moderating variables, corporate governance and information quality, and conduct cross-sectional analyses.

We argue that single CEOs, in comparison to married CEOs, are more inclined to pursue abnormal insider trading profits. Since insiders' profitable trading opportunities decrease with good corporate governance systems (Dai *et al.*, 2016) and a transparent information environment (Chowdhury, Mollah and Al Farooque, 2018; Dai, Parwada and Zhang, 2015), we expect that single (relative to married) CEOs would capture a greater amount of insider trading profits when they work for firms with poorer corporate governance mechanism or those with poorer information quality, and vice versa. In this section, we formally test this proposition using the G-index from Gompers, Ishii and Metrick (2003) and the F-score from Dechow *et al.* (2011). We define Governance as an indicator of better governance that is equal to one when a firm's G-index is below the sample median, and zero otherwise. We define Information_Quality through the F-score, a scaled probability based on a misstatement prediction, that serves as an indicator of good information environment. Information_Quality is a dummy variable equal to one when a firm's F-score is below the sample median, and zero otherwise. Note that a lower (higher) than median F-score indicates high (low) information quality.

The results in Table 6 show that the coefficients of Married × Governance in Model 1 and Married × Information_Quality in Model 2 are both positive and statistically significant at the 1% level. These results show that the insider trading profit of single CEOs earned over their married counterparts is smaller in firms with better information quality or corporate governance. For other variables, the negative coefficient on Married is consistent with our main argument that married CEOs earn less profits (or single CEOs earn more) in poorly governed firms. The negative coefficient on Governance is consistent with Jagolinzer, Larcker and Taylor's (2011) result that corporate governance can curb informed insider trading. Also, the negative coefficient on Information Quality is in line with the positive association of earnings management (lower levels of information quality) and insider trading profits.

[12]Note that the Treated dummy in column 1 is subsumed by firm fixed effects. However, it is not subsumed in column 2 since some firms in this subsample experience more than one CEO turnover.

[13]To further validate that the negative relationship between trading profit and CEO marital status is not an artifact of other CEO traits such as CEO education, compensation or overconfidence (because CEO marital status can be endogenously determined by other observable CEO characteristics, which could potentially affect insider trading outcomes), we also conduct a matched sample analysis by estimating a propensity score matching (PSM) approach. We first match the married CEOs with single CEOs on observable CEO characteristics. Next, we compare the insider trading profits between married CEOs in the treatment group with those of single CEOs in the PSM matched control group; the mean Trading_Profit for married CEOs is significantly lower than that for single CEOs (−0.91% vs 0.02%) for the matched sample with a statistically significant negative difference of −0.89%.

[14]For example, Dai, Parwada and Zhang (2015) show that the disciplinary effect of media in reducing insiders' future trading profits operates by reducing the information advantage of insiders. Moreover, insiders of firms in the media spotlight avoid opportunistic trading strategies since the dissemination of insider trading news can adversely affect executives' personal reputation.

Table 6. Moderating effects of corporate governance and information quality

	Model 1: Governance		Model 2: Information_Quality	
Parameter	Estimate	p-Value	Estimate	p-Value
Intercept	0.159***	0.001	0.053	0.147
Married	−0.022***	<0.0001	−0.003	0.429
Married × Governance	0.030***	<0.0001		
Governance	−0.018***	0.004		
Married × Information_Quality			0.014***	0.008
Information_Quality			−0.031***	<0.0001
$R\&D_{t-1}$	−0.015***	<0.0001	−0.009***	<0.0001
$Loss_{t-1}$	0.029***	<0.0001	0.030***	<0.0001
$Volatility_{t-1}$	−0.600***	0.000	−0.685***	<0.0001
Log $Analyst_{t-1}$	0.006***	0.003	0.001	0.413
$Turnover_{t-1}$	0.003***	<0.0001	0.002***	<0.0001
$Restrict_{t-1}$	0.013***	0.001	0.010***	0.002
BTM_{t-1}	0.027***	<0.0001	0.007**	0.032
RET_{t-1}	−0.148***	0.001	−0.052	0.148
$SaleGrow_{t-1}$	−0.069***	<0.0001	−0.061***	<0.0001
Log Age	−0.045***	0.000	−0.013	0.147
Log Tenure	−0.008***	0.001	0.002	0.281
Gender	0.076***	<0.0001	0.043***	<0.0001
Log Holdings	0.000*	0.083	0.000**	0.032
Log Compensation	−0.005***	0.001	−0.006***	<0.0001
Overconfidence	−0.005	0.151	−0.009***	0.001
MBA	0.002	0.642	−0.001	0.554
Firm FE	Yes		Yes	
Year FE	Yes		Yes	
Adjusted R^2	0.046		0.040	
Observations	10,115		13,580	

Note: This table reports the pooled OLS regression results. The dependent variable is Trading_Profit, calculated through the transaction-specific regression of daily returns on four common risk factors using a 180-day trading window. Married is a dummy variable equal to one if the CEO of a given firm is married, and zero otherwise. Other control variables are described in Appendix Table A1. The Governance dummy variable equals one when the G-index compiled by Gompers, Ishii and Metrick (2003) is below the sample median, and zero otherwise. A lower (higher) G-index represents a high (low) level of corporate governance. The Information_Quality dummy variable is equal to one when the fscore, a scaled probability based on a misstatement prediction documented in Dechow et al. (2011), is below the sample median, and zero otherwise. A lower (higher) fscore represents a high (low) level of information quality. Two-tail p-values are based on robust standard errors clustered at the firm level. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Opportunistic vs routine trades

In this section, we test whether married CEOs are related to lower levels of opportunistic trading. We follow Cohen, Malloy and Pomorski (2012) and define a routine trader as one who places a trade in the same calendar month for at least three consecutive years. All other traders are deemed opportunistic traders. We apply this classification to our CEO transactions at the beginning of each calendar year. Then, all the subsequent transactions made by routine (opportunistic) CEOs in that year are classified as routine (opportunistic) transactions. This classification yields 54% and 46% of all CEO transactions in our sample to be routine and opportunistic, respectively. Our estimates are quite close to the corresponding 58–42 percentage split reported in Cohen, Malloy and Pomorski (2012) for their 1989−2007 period.

Panel A of Table 7 estimates a logistic regression with Opportunistic, which is a dummy variable equal to one for opportunistic trades and zero otherwise, as the dependent variable. We find that the coefficient estimate for Married is negative and statistically significant with an estimate of −0.232 (p-value < 0.000), suggesting that married CEOs are 15.4% less likely to engage in opportunistic trades relative to single CEOs.[15] To

[15]We calculate the average marginal effects of the coefficient for Married on Opportunistic to determine the prob-

Table 7. Opportunistic vs routine trades

	Panel A: Logistic regression		Panel B: OLS regression	
Parameter	Estimate	p-Value	Estimate	p-Value
Intercept	0.613	0.437	0.048	0.188
Married	−0.232***	<0.0001	−0.002	0.517
Opportunistic			0.043***	<0.0001
Married × Opportunistic			−0.023***	<0.0001
$R\&D_{t-1}$	−0.209***	<0.0001	−0.008***	0.001
$Loss_{t-1}$	0.037	0.594	0.028***	<0.0001
$Volatility_{t-1}$	2.309	0.375	−0.699***	<0.0001
Log $Analyst_{t-1}$	−0.104***	0.000	0.000	0.877
$Turnover_{t-1}$	−0.044***	<0.0001	0.002***	<0.0001
$Restrict_{t-1}$	0.388***	<0.0001	0.007**	0.025
BTM_{t-1}	0.685***	<0.0001	0.003	0.390
RET_{t-1}	0.390	0.544	−0.055	0.121
$SaleGrow_{t-1}$	−0.839***	<0.0001	−0.056***	<0.0001
Log Age	−0.706***	<0.0001	−0.015	0.101
Log Tenure	−0.177***	<0.0001	0.005***	0.004
Gender	0.218	0.109	0.044***	<0.0001
Log Holdings	0.015***	<0.0001	0.000*	0.093
Log Compensation	0.056***	0.002	−0.005***	<0.0001
Overconfidence	−0.057	0.276	−0.009***	0.001
MBA	−0.232***	<0.0001	−0.001	0.835
Firm FE	Yes		Yes	
Year FE	No		Yes	
Observations	13,611		13,611	
Adjusted R^2	0.043		0.043	

Note: Panel A reports logistic regression to model the likelihood of opportunistic trades as a function of CEO marital status. The Opportunistic dummy, as the dependent variable in Panel A, takes the value one for opportunistic trades, and zero otherwise. Panel B reports the pooled OLS regression results for trading profit on CEO marital status interacted with Opportunistic dummy. Trading_Profit, as the dependent variable in Panel B, is calculated through the transaction-specific regression of daily returns on four common risk factors using a 180-day trading window. The Married dummy is defined as one if the CEO of a given firm is married, and zero otherwise. Other variables are described in Appendix Table A1. Two-tail p-values are based on robust standard errors clustered at the firm level. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

further examine the economic significance of the coefficient for Married, we compare the marginal effects of Married on Opportunistic with the unconditional probability of Married in a similar vein to Callen and Fang (2015) and Li and Zeng (2019). Specifically, we examine the proportion of opportunistic trades by married CEOs with the coefficient for Married. We find that 46% of the transactions of married CEOs are opportunistic trades. Therefore, the economic significance appears to be 33.5% (0.154/0.46).[16] Thus, the effect of Married is both economically and statistically significant. Overall, the results from Panel A show that married CEOs are less prone to engage in opportunistic trades. In Panel B of Table 7, we present the pooled OLS regression results to determine whether married (single) CEOs earn lower (higher) trading profits through opportunistic trades. We find that the interaction coefficient of Married × Opportunistic is negative and statistically significant, suggesting that married CEOs earn significantly lower trading profits relative to single CEOs for opportunistic trades.[17]

ability of married CEOs engaging in opportunistic trades. We find that the average marginal effect for Married is 0.154. The marginal effect is computed using Stata command 'margins, dydx( )'.

[16]We also estimate a chi-squared test for equal proportions to determine whether the proportion of opportunistic (routine) trades is significantly lower (higher) for married CEOs. We find the chi-squared statistics to be 226 (p-value < 0.000), suggesting that married CEOs have a significantly lower proportion of opportunistic trades. On the other hand, we find that single CEOs have a higher proportion (59%) of routine trades compared to opportunistic trades (41%). We also find the proportion of opportunistic trades for single CEOs to be statistically significant.

[17]There may be a concern that married CEOs' lower profits from opportunistic trading might be because they could extract private benefits from other sources, for example, overinvestment. However, Roussanov and Savor (2014) show that married CEOs have lower firm investment, suggesting that married CEOs are less likely to benefit themselves by conducting overinvestment or building empires. In addition, prior studies find that married CEOs have a lower tendency to manipulate earnings (Hilary, Huang and Xu, 2017), are less likely to hide bad information which leads to subsequent crash risk (Kim, Liao and Li, 2021) and are less subject to agency problems due to low cash holdings (Elnahas, Hossain and Javadi, 2022). The evidence suggests that married CEOs are less likely to seek private benefits than single CEOs. We thank an anonymous referee for raising this point.

Conclusion

A growing body of literature pays attention to the role of top executives' personal traits and experiences in corporate outcomes (e.g. Bai and Yu, 2022; Bernile, Bhagwat and Rau, 2017; Dimungu-Hewage and Poletti-Hughes, 2022; Law and Mills, 2017). Our paper adds to this strand of literature by investigating whether CEOs' marital status affects abnormal insider trading returns and the propensity to trade opportunistically.

We show that married CEOs earn significantly lower insider trading returns than their single counterparts. Our results are robust to several tests that account for endogeneity biases, using CEO turnover events. Furthermore, the negative relationship between marital status and insider trading returns is attenuated when firms have strong corporate governance or possess a high level of information quality. We also examine CEOs' past transaction history and provide evidence that married CEOs are less likely to trade opportunistically and earn less profits on opportunistic trades relative to single CEOs.

Our study makes important contributions to both insider trading and leadership literature. We expand the research on insider trading by directing the focus to CEOs' marital status, which is a common social construct that causes variations in individuals' risk attitudes and litigation concerns. We demonstrate that CEOs' marital status, aside from influencing corporate risk-taking policies (Roussanov and Savor, 2014), CSR activities (Hegde and Mishra, 2019) and firms' accrual management practices (Hilary, Huang and Xu, 2017), also exerts a significant impact on their insider trading behaviour.

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