CEO age and CEO gender: Are female CEOs older than their male counterparts?

Pradit Withisuphakorn\textsuperscript{a}, Pornsit Jiraporn\textsuperscript{b,∗}

\textsuperscript{a} National Institute of Development Administration (NIDA), NIDA Business School, Bangkok, Thailand
\textsuperscript{b} Pennsylvania State University, Great Valley School of Graduate Professional Studies, Malvern, PA 19355, USA

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\textbf{A B S T R A C T}

Motivated by the debate on gender inequality, we study CEO gender and CEO age. Because women face significantly more obstacles in advancing their careers, it may take them longer to reach the top position, i.e., the chief executive officer (CEO). If this is the case, female CEOs should be older than their male counterparts on average. Our evidence shows that female CEOs are actually younger on average, approximately two full years younger than male CEOs, after controlling for firm and board characteristics. The two-year difference represents as much as 26% of the standard deviation in CEO age.

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1. Introduction

Gender inequality has been increasingly in the spotlight. However, in spite of the rising attention on this issue, it is well-known that women are still at a disadvantage in several ways. For instance, women do not get paid as much as men are for doing a similar job. The scarcity of female executives in large corporations also implies that it is substantially much harder for women to be given an executive position. Motivated by the issue of gender equality, we investigate CEO gender and CEO age. Women face many more obstacles than men do when they try to advance their careers. Women are less likely to get promoted or get promoted later than men are. So, it is reasonable to expect that it takes more time for women to reach a high-ranking position. In this study, we concentrate on the highest position in the firm, i.e., the chief executive officer (CEO). Because it takes more time for women to advance their careers, by the time they become a CEO, they are expected to be older than men of comparable quality. So, it can be argued that female CEOs should be older on average.

On the contrary, given the specific and rare combination of skills necessary to ascend to the CEO position, there should be no difference between males and females among top executives (Faccio, Marchica, Mura, 2011). In fact, women who can overcome so many obstacles and so much adversity in the male-dominated world must possess extraordinary skills. If this is the case, women can reach the CEO position no later than men can and, perhaps, even earlier. As a result, female CEOs are not older and may be even younger than their male counterparts. Our study is the first to shed light on the issue of CEO gender and CEO age.

\textsuperscript{∗} Corresponding author.
E-mail address: pjiraporn@gmail.com (P. Jiraporn).

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There are several theoretical arguments as to why women are at a disadvantage in corporations. For instance, the human capital theory (Becker, 1964) argues that women lack adequate human capital for a high-ranking position. Gatekeepers, who are mostly male, do not offer women the same organization rewards, such as training and development, nor promotion and pay (Oakley, 2000; Terjesen, Sealy, and Singh, 2009). The social identity theory argues that individuals seek to surround themselves with people who share similar demographic profiles, perspectives, and values. Given that most executives are male, women are probably viewed less favorably, according to the social identity theory (Tejel and Turner, 1986). Because of the disadvantages discussed above, it can be argued that it is much harder and therefore takes substantially longer for women to reach the CEO position, resulting in female CEOs being older on average.

Based on more than 12,000 observations over 15 years, our empirical evidence shows that female CEOs are actually younger than their male counterparts, approximately two full years younger to be specific. The two-year difference represents as much as 26% of the standard deviation of CEO age. The age difference remains even after controlling for several firm characteristics, board structure, as well as variations over time and across industries. We also execute a fixed-effects analysis, which control for any firm-specific time-invariant omitted variables, and obtain consistent results. Because only about 10% of the CEOs in our sample are female, we conduct an analysis using propensity score matching. For each firm with a female CEO, we identify a comparable firm with a male CEO based on a large number of firm and board characteristics. Thus, our treatment and control groups are indistinguishable in terms of observable characteristics, and therefore should hire CEOs of comparable age if gender were irrelevant. Nevertheless, even with the propensity score matching, we still find that female CEOs are younger.

To mitigate reverse causality, we execute an instrumental-variable (IV) analysis. First, we employ CEO gender in the earliest year for each firm as the instrument. CEO gender in the earliest year could not have resulted from CEO age in any of the subsequent years, thereby reducing reverse causality. Our IV analysis shows that female CEOs are younger. Moreover, we confirm the results using an additional instrumental variable, i.e. proportion of female CEOs of companies in the same 3-digit zip code. Because firms tend to recruit their employees from geographically-proximate areas, firms located close to one another share the same employee pool. Using as our instruments CEO gender in the earliest year and proportion of female CEOs of firms in the same area, we continue to find that female CEOs are younger than their male counterparts.

In addition, to ensure that our results are not driven by unobservable heterogeneity, we run a fixed-effects regression analysis. This approach controls for unobservable characteristics that remain constant over time. The fixed-effects analysis confirms our results. Further, we exploit the insight in Altonji et al. (2005) to estimate how strong selection from unobservables would have to be to render our results invalid. We find that selection from unobservables would have to be 9 times stronger than selection on observables, an extremely unlikely probability. It does not appear that our results are vulnerable to the omitted-variable bias. Finally, we execute a fixed-effect instrumental-variable analysis, which controls for both unobservable heterogeneity as well as reverse causality. The results remain consistent and therefore appear to be robust to endogeneity.

A number of recent studies investigate gender diversity in corporations. For instance, Ahern and Dittmar (2012) document that the introduction of mandatory board member gender quotas led to an increase in acquisitions and performance deterioration in Norway. Weber and Zulehner (2010) find that start-ups with female first hires are more likely to survive. Other recent studies on gender diversity include Levi, Li, and Zhang (2011), Matsa and Miller (2012), and Faccio, Marchica, and Mura (2016). Most studies in gender diversity focus on the effect of CEO gender or firm performance or corporate outcomes. Our study is the first, however, to explore how CEO gender and CEO age are related. We find strong empirical evidence that female CEOs are younger than their male counterparts.

Despite of so many obstacles and disadvantages, women reach the CEO position earlier than men do on average. Our results can be explained by the status characteristics theory ((Biernat and Kobrynowicz, 1997). This theory posits that the standards of ability for low-status groups (such as women) are higher than those for high-status group members (i.e. male). Thus, to reach the same position, a woman must be of substantially higher quality. Because of their extraordinary skills and ability, female CEOs do not reach the top of the company later than do their male counterparts. In fact, they reach the top even earlier.

2. Sample selection and data description

Our data on CEO gender is from the EXUCOMP database. Firm characteristics are from COMPSTAT. The sample period is from 1996 to 2010. We exclude financial and utility firms from the sample because they are regulated and therefore possess unique firm characteristics. The final sample consists of 12,112 firm-year observations, representing 1787 unique firms (an unbalanced panel data set).

Following the literature, we control for a number of firm characteristics. In particular, we control for firm size (total assets), profitability (EBIT/total assets), leverage (total debt/total assets), investments (capital expenditures/total assets), intangible assets (advertising and R&D), firm age, and year and industry dummies to control for variations over time and across industries.

Table 1 shows the summary statistics. A few statistics are noteworthy. The proportion of firms with a female CEO is 9.9%. The average CEO age is 55.43 with a standard deviation of 7.476. The average percentage of independent directors on the board is 68.775%. The average board size has 8.989 directors. Table 1 also shows the statistics for a number of firm characteristics.

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