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Do activist hedge funds target female CEOs? The role of CEO gender in hedge fund activism

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ABSTRACT: Using a comprehensive hedge fund activism dataset, we find that activist hedge funds are about 52% more likely to target firms with female CEOs compared to firms with male CEOs. We find that firm fundamentals, the existence of a "glass cliff," gender discrimination bias, and hedge fund activists' inherent characteristics do not explain the observed gender effect. We further find that the transformational leadership style of female CEOs is a plausible explanation for this gender effect: instead of being self-defensive, female CEOs are more likely to communicate and cooperate with hedge fund activists to achieve intervention goals. Finally, we find that female-led targets experience greater increases in market and operational performance subsequent to hedge fund targeting.

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1. Introduction

Hedge fund activism has become an increasingly significant phenomenon in recent years. For example, activist hedge funds had more than $100 billion under management in 2018, growing from $12 billion in 2003.[1] In our sample, which spans 2003 to 2018, hedge funds targeted an average of 5.6% of firms each year, and 26% of firms were targeted at least once. This dramatic increase in hedge fund activism has attracted considerable attention from academics, with their focus being primarily on the determinants and consequences of hedge fund activism. For example, activist hedge funds tend to target undervalued firms, with shareholders benefiting from this activism in both the short- and long-run (e.g., Brav, Jiang, Partnoy, and Thomas, 2008; Bebchuk, Brav, and Jiang, 2015; Brav, Jiang, and Kim, 2015).

Despite this significant increase in academic research on hedge fund activism, not much is known about the extent to which, hedge funds consider management characteristics when deciding to target a firm. What is known, however, is that hedge fund activists interact frequently with their target firms' managers before, during, and after interventions, and activist hedge funds prefer cooperation from management to achieve their value-improving agendas (Brav et al., 2008).[2] In this paper, we attempt to fill the gap in the literature by investigating the impact of CEO gender on hedge fund activism.

Anecdotal evidence suggests that hedge fund activists are more likely to target firms with female CEOs compared to those with male CEOs. For example, *The New York Times* reports

[1] The activist revolution, J.P. Morgan: https://www.jpmorgan.com/jpmpdf/1320693986586.pdf. And, Dealing with Activist Hedge Funds; https://corpgov.law.harvard.edu/2019/01/25/dealing-with-activist-hedge-funds-and-other-activist-investors-2/

[2] Prior studies show that individual managers have a significant influence on corporate decisions and are crucial to the success of their corporations (e.g., Hambrick and Mason, 1984; Bertrand and Schoar, 2003; Chava and Purnanandam, 2010; Huang and Kisgen, 2013; Francis, Hasan, Park, and Wu, 2015).

that "at least a quarter of them (female-led firms) has fallen into the crosshairs of activist investors."[3] In a more forthright article, *Fortune* states that Nelson Peltz, one of the most prominent hedge fund activists, "simply can't resist women."[4] More recently, ValueWalk wrote: "With Carl Icahn's targeting of Xerox (XRX), it's official, activist investors are out to get female CEOs."[5]

This anecdotal evidence raises several interesting and important questions. First, is there a systematic association between female CEOs and the probability of activist hedge funds targeting their firms? Second, if yes, why do activist hedge funds single out female CEOs? Third, do activist campaigns exhibit different tactics and patterns when female CEOs are the targets? Fourth, do female-led target firms perform differently after targeting compared to male-led target firms? In this paper, we provide answers to these questions.

Using a sample of 42,831 firm-year observations for 2,410 hedge fund activism events during 2003-2018, we find that activist hedge funds are significantly more likely to target firms with female CEOs compared to their male counterparts, holding firm attributes and other CEO characteristics constant. Based on our estimates, firms with female CEOs are associated with a 2.9% marginal probability of being targeted by activists, which is about 52% higher than the unconditional probability (i.e., 5.6%) that an activist targets a firm. [6] Given that female CEOs only account for 3.4% of the full sample, to provide a more balanced comparison, we conduct a propensity score matching analysis and continue to find that, using the matched sample,

[3] http://dealbook.nytimes.com/2015/02/09/the-women-of-the-s-p-500-and-investor-activism/?_r=1
[4] http://fortune.com/2015/01/12/nelson-peltz-women-dupont/
[5] http://www.valuewalk.com/2015/12/activist-attack-female-ceos/
[6] Our result is persistent for almost all sample years, including the years before, during, and after the 2008-2009 financial crisis.

activist hedge funds are more likely to target firms with female CEOs.[7]

We explore possible explanations for why activist hedge funds target firms with female CEOs. First, the "glass cliff" theory argues that firms are more likely to hire female CEOs during corporate downturns (Ryan and Haslam, 2005; Adams, Gupta, and Leeth, 2009), thus making them more likely hedge fund targets.[8] To explore this possibility, we perform a difference-in-differences analysis based on CEO turnovers that lead to changes in the CEO gender. We find that firms that experience more decreases in ROA, Tobin's Q, market value, sales, and cash holding prior to CEO transitions are more likely to appoint female CEOs than male CEOs, consistent with the premise of the "glass cliff" phenomenon. Using firms that experience male-to-female CEO transitions and firms that experience male-to-male CEO transitions, we conduct a difference-in-differences analysis. We find that hedge fund activists are more likely to target female successors than male successors even after controlling for the pretransition performance trend, suggesting that the "glass cliff" cannot explain the observed gender effect.

Second, it is documented that females are discriminated against in the labor market (e.g., Eagly and Karau, 2002). It is possible that our finding captures this prejudice by studying the actions of hedge fund activists, of whom more than 99% are male.[9] If this is the case, because prejudice rather than economics is the overarching reason for targeting female CEOs, the

[7] Another econometric concern is that firms do not randomly select female CEOs. For example, Adams and Ragunathan (2017) find that female executives in the financial industry do not exhibit risk-aversion preferences similar to the general population of females. Our propensity score matching analysis in Section 3.3, the difference-in-differences analysis in Section 4.1, and the placebo test in Section 4.3 help mitigate this endogeneity concern.

[8] Ryan and Haslam (2008) argue that firms seek females in such a stressed environment because they are "felt to be more nurturing, creative, and intuitive." Given that hedge fund activists most often target underperforming firms in order to criticize CEOs for not doing their jobs, a female CEO who is "set up" to experience a corporate downturn may be more likely to find herself in a hedge fund activist's crosshairs.

[9] In our event sample, we find that 276 of 278 hedge fund managers are male.

expected value improvement for female-led firms should be lower, and consequently the market should react more negatively to target news about female-led firms than to target news about male-led firms. However, using Schedule 13D filing dates as event dates, we find that the short-term abnormal market returns associated with targeting female CEOs are actually more positive than those associated with targeting male CEOs.[10] A long-term calendar-time event study shows that there is no reversal of this increase in market returns for female-led target firms over the subsequent three to five years. Consistent with the event study evidence, after-targeting performance analysis finds that female-led targets increase their operational performance more than male-led targets. Overall, our results suggest that gender discrimination is a less likely explanation for the observed gender effect.

Third, it is possible that the inherent characteristics of hedge fund activists, rather than CEO gender, drive our finding. To examine this possibility, we use Schedule 13G as a placebo test. Instead of filing Schedule 13D, institutions are required to file Schedule 13G when they cross the 5% shareholding threshold but do not intend to interfere in the management of the underlying firm. Because filing Schedule 13G indicates passive investments and does not require active interactions between passive institutions and firm managers, target firms' managerial characteristics should have less or no impact on hedge funds' passive investment decisions. For the same group of hedge fund activists, we find no preference for female CEOs when filing Schedule 13G, indicating that the inherent characteristics of hedge fund activists do not explain why they are more likely to target female CEOs during hedge fund interventions.

[10] Anyone who acquires more than 5% of a firm's outstanding shares with the intention to intervene in the underlying firm's management, must file a Schedule 13D within 10 days of passing the 5% line. See Section 2.1 and Brav et al. (2008) for more details.

So far, our evidence suggests that firm fundamentals, the existence of a "glass cliff," gender discrimination bias, and hedge fund activists' inherent characteristics do not explain the observed CEO gender effect on hedge fund activism. Brav, Jiang, and Kim (2010) show that the most common objective of hedge fund activists is to communicate with management to maximize shareholder value. The leadership literature has well-documented gender differences in terms of leadership style (e.g., Eagly and Johnson, 1990; Mandell and Pherwani, 2003; Eagly and Carli, 2007; Glass and Cook, 2016). Specifically, it points out that in contrast to male leaders who are more transactional in style, tend to be top-down, and tend to use command-and-control methods, female leaders often have a more transformational style, which tends to be more democratic and emphasizes participative communication and cooperation.[11]

Consistent with the literature, survey evidence supports the more transformational style of female leaders. For example, Zenger and Folkman (2012) find that female leaders are rated significantly higher than male leaders in building relationships, collaboration and teamwork, communication, and connecting to the outside world. Similarly, Horowitz, Igielnik, and Parker (2018) find that female leaders score much higher than male leaders in terms of working out compromises.[12] When facing an activism campaign, we conjecture that female CEOs are more likely to communicate and cooperate with activists than go to war against them, which reduces implementation costs and increases success rates, thus increasing target firms' expected returns.

[11] Past finance literature largely focuses on the view that either females are risk-averse or males are overconfident (see, e.g., Sunden and Surette, 1998; Bernasek and Shwiff, 2001; Malmendier and Tate, 2005; Huang and Kisgen, 2013; Francis et al., 2015). Dezső and Ross (2008) find a "female management style" adds value for R&D firms but not at the CEO level. Meanwhile, various studies demonstrate that females tend to behave differently than males in very competitive environments and symbolic positions (see, e.g., Brescoll, 2011).

[12] In a survey of 2,816 executives from 149 countries, Mohan (2014) describes female executives with words such as "aligning, rewarding and feedback, team building and emotionally intelligent" but describes male executives with words such as "rational, tough, self-interest and dominate." She also argues that "men are more aggressive in negotiation and risk-taking and are more interested in self-achievement and power."

Using detailed hedge fund activism campaign information from FactSet's SharkWatch dataset, we find that instead of maintaining a defensive posture, female CEOs are more likely to communicate and cooperate with activist hedge funds. Specifically, when hedge fund activists target female CEOs, they are less likely to rely on hostile tactics and more likely to obtain board seats, settle proxy fights before voting, and ultimately achieve all or some of their goals. Further, target firms with female CEOs tend to hold more board meetings and are less likely to issue rebuttal letters or adopt "poison pills" during hedge fund activism campaigns. Our results thus support the notion that gender differences in managerial styles is a plausible explanation for the observed gender effect.

Our paper contributes to the hedge fund activism literature by showing that CEO gender plays an important role in determining both the targets and tactics of activists, as well as the outcomes of their campaigns. [13] Our findings that activists are more likely to target female-led firms and are likely to use less hostile tactics for female-led targets are consistent with the more transformational leadership style of female managers and the major objective of activists to communicate and cooperate with management in order to maximize shareholder value.

Our paper also adds to the literature that examines individual characteristics of firm managers by showing how different characteristics affect different situations. For example, although Kaplan, Klebanov, and Sorensen (2012) find managers' general ability and execution skills more advantageous than communication and interpersonal skills in buyout and venture capital transactions, we find that relationship-building and collaboration skills, alongside a

[13] Prior studies largely focus on firm fundamentals and corporate governance, and they find that activist hedge funds tend to target "value" firms with low market valuations and weak governance (e.g., Brav et al., 2008; Clifford, 2008; Greenwood and Schor, 2009; Boyson, Gantchev, and Shivdasani, 2017; Gantchev, Gredil, and Jotikasthira, 2019). For comprehensive reviews of hedge fund activism literature, see Brav et al. (2010) and Denes, Karpoff, and McWilliams (2015).

connection-oriented communication style, are more favorable in hedge fund activism.

2. Data and descriptive statistics

2.1. Data and sample selection

We follow the approach in Brav et al. (2008) to collect hedge fund activism events.[14] We gather Schedule 13D forms filed between 2003 and 2018 from the SEC's EDGAR database. After excluding banks, brokerage firms, regular corporations, foreign institutions, individuals, insurance firms, pension funds and trusts based on the information in item 2 of Schedule 13D, we use the internet to identify a list of hedge funds. Based on information from the Schedule 13Ds filed by the hedge funds on our list, we exclude events related to distress financing, risk arbitrage, M&As, target investment trusts, or closed-end funds.

We obtain CEO gender information from BoardEx, which Management Diagnostics, Ltd. initially constructed, to provide extensive information (including personal characteristics, educational background, employment history, social networks, compensation packages, etc.) on corporate executives. These data cover active and inactive U.S. firms with market capitalizations larger than $10 million and are mainly from the SEC's DEF 14A forms, which feature the top five paid executives in a firm. Consistent with prior research using this dataset (e.g., Cohen, Frazzini, and Malloy, 2010; Adams and Ragunathan, 2017), we find that the number of data points is sparse before 2003; consequently, we start our sample in 2003.[15]

We acquire accounting information from Compustat to calculate most of our firm-level

[14] We thank Wei Jiang and Alon Brav for kindly sharing activism events from 1994 to 2007. Please refer to Brav et al. (2008) for a more detailed description of the activism-event collection procedure.
[15] For information missing in BoardEX or targeted firms not in the BoardEx universe, we hand-collect CEO gender and other related information from 10-K filings, Execucomp, DEF-14A filings, and news media.

control variables, with institutional holding data from the Thomson Financials CDA/Spectrum database (form 13-F). Stock market data are from the Center for Research in Security Prices (CRSP). After merging these data, we obtain a final sample of 42,831 firm-year observations for 2,410 hedge fund activism events during 2003-2018.

In Table 1, Columns 3 and 4, we report the number of hedge fund activism events, and as a percentage of observations by year. Consistent with prior studies (e.g., Krishnan, Partnoy, and Thomas, 2015), we find that the number of events decreases during the financial crisis and then increases, and that on average, activists target 5.63% of firms in a given year and 26% of firms at least once during our sample period.

[Insert Table 1 here]

In Columns 5 and 6 of Table 1, we report the number of female CEOs by year and as a percentage of total observations. Our sample contains 427 unique female CEOs who lead an average of 3.37% of firm-years between 2003 and 2018. Although there is an underrepresentation of female CEOs, their percentage increases steadily over the aforementioned time span, reaching 5.57% of the overall group of corporate CEOs by 2018.

2.2.Summary statistics

Panel A of Table 2 reports summary statistics for the target firms, the full sample, and the differences between them. Consistent with prior studies (e.g., Brav et al., 2008; Clifford, 2008; Greenwood and Schor, 2009; Boyson, Gantchev, and Shivdasani, 2017; Gantchev, Gredil, and Jotikasthira, 2019), target firms tend to have smaller market values and lower Tobin's Q compared to the full sample, thus resembling "value" firms. The target firms also have, on average, higher leverage and lower payout yields, suggesting potential agency problems.

In addition to firm fundamentals, we compare the differences in CEO personal characteristics, CEO compensation packages, and board characteristics between the target firms and the full sample. We find no significant differences in CEO age and network size; however, CEOs of target firms typically have shorter tenures and receive less total compensation. In addition, we find no statistical differences between target firms and the full sample in terms of equity-based compensation, the percentage of female board members, and the probability that a firm's CEO is the board chair. However, we do observe that target firms hold more board meetings.

[Insert Table 2 here]

Panel B of Table 2 presents summary statistics for target firms with female CEOs, target firms with male CEOs, and the differences between the two. Although target firms in general differ significantly from the full sample, female-led targets are similar to male-led targets in terms of firm fundamentals, with the exception of market value, sales growth, ROA, leverage, and payout yield. Specifically, we find that female targets have higher market values and payout ratios but lower ROA, leverage, and sales growth. To some extent, these findings alleviate the concern that activist hedge funds' targeting of female-led firms stems from differences in firm fundamentals between female- and male-led firms, because prior studies (e.g., Brav et al., 2008) find that hedge fund targets are generally associated with lower market values, higher ROA, and lower payout ratios, which are similar to the firm fundamentals for male-led targets.

We further find that female CEOs are different from their male counterparts with respect to several personal and professional characteristics. Specifically, female CEOs of target firms typically have a larger network through either education, professional associations, social

activities, or employment. This suggests that female CEOs have a greater tendency to connect and communicate with others compared to their male counterparts.[16] We also find that female CEOs of target firms are younger and have shorter tenure, suggesting that female CEOs are less powerful. We further find that although total compensation for female and male CEOs of target firms is not significantly different, female CEOs of target firms receive a higher percentage of equity-based compensation, which is consistent with Coxbill, Sanning, and Shaffer (2009).

3. Are activist hedge funds more likely to target female CEOs?

3.1. Descriptive analysis

To gain a visual sense of whether activist hedge funds are more likely to target female CEOs, in Fig. 1 we first plot the yearly probability of activist hedge funds targeting female- and male-led firms. The figure shows that in all years except for 2005, activist hedge funds are more likely to target female-led firms, including the years before, during, and after the 2008-2009 financial crisis. In addition, it shows a 7.9% probability of activist hedge funds targeting female-led firms, on average, which is 44% higher than the probability of activist hedge funds targeting male-led firms (5.5%). This result is less likely driven by any specific activist hedge funds, because more than 23% of all activist hedge funds, including both large and small funds, target female CEOs during our sample period.

[16] Further decomposition of CEO networks reveals that 87% of the difference in network size between female and male CEOs comes from professional associations and social activities, such as being a member of the local accountants' association. Different from connections through shared corporate boards, which is a strong tie, connections through professional associations and social activities are loosely organized and do not necessarily make CEOs more powerful. Please see Adams and Ragunathan (2017) for a reconstructed network size measure only using strong ties.

[Insert Figure 1 here]

3.2. Baseline regression results

Table 3 presents the results for our multivariate logit regressions regarding whether activist hedge funds are more likely to target firms with female CEOs. The dependent variable is *Target*, which equals one if a firm is the target of at least one hedge fund activist in a given year, and zero otherwise. The testing variable is *Female CEO*, which equals one if the CEO is female, and zero otherwise. In Column 1, we follow prior studies (e.g., Brav et al., 2008; 2015) and include the following firm-level control variables in our regression: firm size (*MV*), Tobin's Q (*Tobin's Q*), sales growth (*Sales Growth*), leverage (*Leverage Ratio*), payout ratio (*Payout Yield*), research and development expenditures (*R&D*), tangibility (*Tangibility Ratio*), institutional ownership (*Institution*), analyst coverage (*Analyst*), and segment diversification (*Segment HHI*). In Column 2, we add variables to control for CEO personal characteristics: CEO network (*Network Size*), CEO age (*Age*), CEO tenure (*Tenure*), and CEO race (*Non-American*). In Column 3, we further control for CEO economic incentives: CEO total compensation (*Total Comp.*) and CEO equity compensation (*Equity Comp.*). Column 4 contains all three sets of previously mentioned controls in one regression. We also control for industry and year fixed effects in all four columns to account for any industry- and time-invariant effects. Please see detailed definition of each variable in Appendix A.1.

[Insert Table 3 here]

We find that in all four columns, the coefficients on *Female CEO* are positive and statistically significant at the 1% level, suggesting that activist hedge funds are more likely to target firms with female CEOs compared to those with male CEOs. The results are also

economically significant. For example, in Column 4, the coefficient on *Female CEO* translates to an associated marginal probability of 2.9%. Given that the unconditional probability that an activist investor targets a firm is 5.6% in our sample, the marginal probability that an activist investor targets a female CEO is substantial (i.e., 52% higher than the unconditional probability).

The results on control variables are in general consistent with prior studies. For example, we find that activist hedge funds are more likely to target firms with lower market value, lower Tobin's Q, lower sales growth, and higher institutional ownership, resembling "value" firms with generalizable issues (e.g., Brav et al., 2008). In sum, our results in Table 3 suggest that after controlling for firm fundamentals, CEO personal characteristics, and CEO compensation, activist hedge funds are significantly more likely to target female-led firms.

3.3. Propensity score matching results

In our sample, only 3.4% of the firms have female CEOs. To make firms with female CEOs more comparable to firms with male CEOs, we employ a propensity score matching (PSM) methodology to match each firm with a female CEO to a firm with a male CEO and similar firm characteristics. From the program-evaluation perspective, we regard the existence of a female CEO as a "program" and female-led firms as being "treated"; male-led firms are the "untreated" control group. By matching "treated" firms with similar but "untreated" firms, along with several observable dimensions using estimated propensity scores, we eliminate observable differences between "treated" and "untreated" firms. We then estimate the probability of targeting female CEOs using the matched sample.

Panel A of Table 4 presents the logit model to estimate the propensity score for having a

female CEO. The dependent variable is *Female CEO*. We control for the full set of firm fundamentals as in Column 1 of Table 3, with an additional variable, the percentage of female directors on the board (*Female BOD*), which is strongly correlated with the appointment of female CEOs (Elkinawy and Stater, 2011; Matsa and Miller, 2011). The overall model is significant at the 1% level, as indicated by the $\chi 2$ test. The partial R^2 for our model excluding the fixed effects is 16.8%, suggesting that the independent variables explain a fair amount of variation in the dependent variable.

[Insert Table 4 here]

Using the predicted propensity score from the logit model, we match each firm-year observation with a female CEO to another firm-year observation with a male CEO, requiring that the matched pair of firm-year observations have the smallest distance possible in the predicted propensity score and for this difference to be less than 0.01.[17] We also constrain the matched pair to be from two different firms so that we do not match one firm-year observation with another firm-year observation from the same firm in a different year. We obtain 1,225 pairs of matched firm-year observations.

Because the quality of our matching procedure is crucial for identifying the effect of having a female CEO, we conduct several tests to evaluate its validity. Panel B of Table 4 presents the differences in control variables between the matched pairs. In Columns 1 and 2, we show the mean values for each of the control variables for female- and male-led firms, respectively. In Column 3, we calculate the percentage bias between the matched pairs. We conduct *t*-tests to

[17] For all the firms with female CEOs, the interquartile range of the estimated propensity score before matching is 0.188 (i.e., 0.045-0.233). For all the firms with male CEOs, the interquartile range of the estimated propensity score interquartile before matching is 0.037 (i.e., 0.005-0.042).

examine whether the differences are different from zero. As shown in the last two columns, none of the tests rejects the null hypothesis that the differences are zero at the 10% level, which indicates that the two matched groups are similar in all observable dimensions.

Next, we check the propensity score distributions for the treated and matched firm-year observations to ensure that our matching procedure yields similar results at this level. Panel C of Table 4 shows the propensity score distributions. The differences, including those at the two tails, are well below 0.01, thus rendering them negligible for the distribution. Thus, by removing observable differences, we are in a better position to isolate the effect of having a female CEO on activist hedge funds decisions to target firms.

After matching, we rerun the models reported in Table 3 using the matched sample. The results are reported in Panel D of Table 4. We find that the coefficients on *Female CEO* are all positive and statistically significant. Economically, the estimated difference from the PSM procedure is comparable to our univariate analysis and the logit regression results. For example, in Column 4, the coefficient indicates that the probability for an activist hedge fund to target a female-led firm is 2.3% higher than the probability that an activist hedge fund targets a male-led firm.[18]

4. Why are activist hedge funds more likely to target female CEOs?

4.1. The story of "glass cliff"

The "glass cliff" theory contends that a firm is more likely to hire a female CEO when it

[18] Given that there are substantially more male CEOs than female CEOs, one might be concerned that there is a lack of overlap in the tail of the propensity distribution, making the comparison of the units uncertain. To alleviate this concern, we follow Li, Morgan, and Zaslavsky (2018) and reestimate our PSM specification utilizing the overlap weights. The estimated difference in probability of being targeted between female and male CEOs is 1.99% and is significant at the 5% level.

is underperforming (Ryan and Haslam, 2005; Adams et al., 2009). Given that activists look for underperforming firms, it is thus likely that activist investors target female CEOs at a higher rate than male CEOs. To examine this possibility, we first construct a sample of firms with CEO changes. The CEO change information is from BoardEx. We examine the changes in ROA, sales, cash holding, Tobin's Q, and market value one year prior to the transition (i.e., differences between years *t*-1 and *t*-2) and report our results in Panel A of Table 5. Consistent with the "glass cliff" argument, we find that relative to their male counterparts, there is a higher likelihood of females becoming CEOs when firms experience relatively larger decreases in ROA, Tobin's Q, market value, sales, and cash holding.

To examine whether the "glass cliff" theory explains the observed gender effect, we perform a difference-in-differences analysis. Specifically, we examine whether new female CEOs are more likely to be targeted compared to new male CEOs after firms experience a CEO turnover. The treatment group includes firms with male-to-female CEO transitions, and the control group includes firms with male-to-male CEO transitions. The dependent variable is *Target* as defined earlier. The testing variables are *Male-to-Female CEO*, which is a dummy variable that equals one if a firm has a male-to-female CEO transition, and zero if a firm has a male-to-male CEO transition; *Post*, which is a dummy variable that equals one if a given year follows a CEO transition and, zero if a given year is prior to a CEO transition; and the interaction term between *Post* and *Male-to-Female CEO*. To control for the performance pre-trend, we add *ΔROA*, *ΔTobin's Q*, *ΔMarket Value*, *ΔSales*, and *ΔCash Holding*, which capture the differences between years *t*-1 and *t*-2, as additional controls in the difference-in-differences model.

Panel B, Table 5 presents the results. Column 1 contains results for a four-year window that includes two years before and two years after the transition. Column 2 presents results for a six-year window that includes three years before and three years after the transition.[19] To ensure that each CEO stays for the entire pre- or post-transition period, we require each CEO to be in office for at least two consecutive years in Column 1 and at least three consecutive years in Column 2. We find that the coefficients on the interaction term, *Post*Male-to-Female CEO*, are both positive and significant, indicating that after a CEO transition, activist hedge funds are more likely to target a succeeding female CEO than a succeeding male CEO. Because we continue to find that activist hedge funds are more likely to target female CEOs after controlling for CEO transition and the performance pre-trend, our difference-in-differences results suggest that the "glass cliff" cannot explain the observed CEO gender effect.

[Insert Table 5 here]

4.2. The story of gender discrimination

Women are consistently underrepresented among top executives, especially in public firms (e.g., Lee and James, 2007; Huang and Kisgen, 2013). It is also well documented that females are discriminated against in the labor market (e.g., Eagly and Karau, 2002; Koch, D'Mello, and Sackett, 2015). In our event sample, more than 99% of hedge fund managers are male; it therefore could be the case that "prejudice" (i.e., biases against female CEOs without valid reasons) is the driving force behind activist hedge funds' proclivity to target female-led firms. To examine this possibility, we study both the short- and long-term market reactions when

[19] We exclude the transition year to avoid the possible confounding effects. Nonetheless, our results hold if we include the transition year in our analyses.

activist hedge funds target female- and male-led firms. If prejudice is the reason that activist hedge funds are more likely to target female CEOs, we expect the market to react more negatively to targeting female-led firms than male-led firms because of the expected lower value improvement for female-led firms.

In Fig. 2, we first plot the buy-and-hold abnormal returns in excess of the value-weighted market-adjusted returns for the daily event window (-20, 20) surrounding the filing of Schedule 13D. We use OLS to estimate parameters using data from 301 days to 46 days before the event. The blue line represents female-led firms' buy-and-hold abnormal returns, and the red line depicts abnormal returns for male-led firms. Fig. 2 shows that abnormal returns for female-led firms are much higher than for male-led firms. For the daily event window (-20, 20), female-led targets experience average abnormal returns of 6.9%, compare to male-led targets which experience average abnormal returns of 4.1%.

[Insert Figure 2 here]

Differences in firm fundamentals could be reasons behind the observed differences in short-term abnormal returns between female-led and male-led targets. We therefore estimate a multivariate regression model to address this concern and present the results in Table 6. In Columns 1 and 3, the dependent variable is buy-and-hold abnormal return in excess of value-weighted market return for daily event window (-20, +20) and daily event window (-10, +10), respectively. In Columns 2 and 4, the dependent variable is buy-and-hold abnormal return in excess of value-weighted market-adjusted return for daily event window (-20, +20) and daily event window (-10, +10), respectively. After controlling for the same set of firm fundamentals as in Column 1 of Table 3, we find that across all four different specifications, the short-term

abnormal return for female-led targets is statistically higher than for male-led targets. This indicates that the market anticipates higher returns when activist hedge funds target female CEOs after controlling for differences in firm fundamentals, suggesting that prejudice is not the reason that activist hedge funds are more likely to target female-led firms.

[Insert Table 6 here]

It is possible that the negative short-term market reaction is driven by activist hedge funds' abnormal trading behavior around targeting events. If this is the case, the market value of target firms would revert to normal levels over the long-term, displaying negative buy-and-hold abnormal returns. In addition, if activist hedge funds target female-led firms because they are prejudiced against women, we expect the market to correct for short-term abnormal positive returns and expect negative abnormal returns in the long run. Therefore, to gain further insights into the driving force behind the gender effect, we examine targets' long-term abnormal returns.

Following Bebchuk et al. (2015) and Becht, Franks, Grant, and Wagner (2017), we use calendar-time portfolio regressions for our long-run event study. Table 7 presents the results. In columns labeled "Equal-Weighted Four-Factor Model," we use monthly Fama-French-Momentum four-factors as explanatory variables in the regression, and the dependent variable is the monthly equal-weighted portfolio return in excess of the risk-free rate. In columns labeled "Value-Weighted Four-Factor Model," we use value-weighted portfolio returns in excess of the risk-free rate. The monthly windows indicate the length of time a stock is in the portfolio. For example, for monthly window [+1, +36], we add the stock to the portfolio one month after the activism event and remove it 36 months after the activism event. *Alpha* is the estimated intercept term (abnormal return) where *Beta*, *SMB*, *HML*, and *MOM* indicate the respective

loading on the factors. *N* is the average number of stocks in each monthly portfolio, and R^2 is the R-square from the return regression.

[Insert Table 7 here]

Consistent with prior literature (e.g., Bebchuk et al., 2015), we find negative abnormal returns for both female and male targets prior to the activism events, ranging from -0.3% to -0.4% depending on model specifications. This is consistent with the extant literature showing that activist hedge funds are "value" investors that target underperforming firms (e.g., Brav et al., 2008). More importantly, no subsequent reversal in abnormal market returns occurs after hedge fund activism in the long run, as indicated by the positive *Alpha* for monthly window [+1, +36] and [+1, +60] in all our model specifications. These results hold for both female and male targets. Overall, our analyses for both the short-run and long-run stock market returns confirm that prejudice is less likely to be the full explanation for the gender effect of hedge fund activism.

4.3. Activist hedge funds' inherent characteristics

It is possible that certain unobserved common factors of activist hedge funds, rather than the CEO gender of target firms, drive the observed gender effect. To examine this possibility, we gather all the Schedule 13G filings from the same group of activist hedge funds for the same time period from the SEC's EDGAR database. Although filing a Schedule 13D resembles an "activist" event whereby a hedge fund intends to intervene in a target firm's operations, filing a Schedule 13G indicates passive investment and does not require interaction between hedge fund activists and firm managers. If some unobserved common factors among activist hedge funds increase the probability of targeting female CEOs, we expect that female CEOs are also

more likely to be targeted when the same group of hedge funds file Schedule 13Gs.

We identify 13G filings for the same group of hedge fund activists (4,027 events with no missing information) in the same sample period and use them as a placebo. Table 8 presents the logit regression results. The dependent variable is *Target(13G)*, which equals one if a firm is the target of 13G filings by one or more activist hedge funds in a given year, and zero otherwise. The model specifications are the same as in Table 3. Across each of the specifications, the coefficient on our variable of interest, *Female CEO*, is not statistically significant, indicating that common factors within the activist hedge fund group are unlikely to drive activist hedge funds' targeting behavior on female CEOs. Rather, it suggests that the "intervention," which logically results in the entanglement between activist hedge funds and corporate CEOs, makes female CEOs more likely targets for activist investors.

[Insert Table 8 here]

4.4. Gender differences in managerial leadership style

In the previous subsections, we examine several possible explanations for why activist hedge funds are more likely to target female-led firms, including differences in firm fundamentals, the "glass cliff," prejudice, and activist hedge funds' inherent characteristics. However, we do not find supportive evidence for any of these conjectures.

Brav et al., (2010) find that the first and most common objective of hedge fund activism (i.e., 47.9% of all hedge fund activism events) is to help managers maximize shareholder value through communication with management without resorting to aggressive tactics. Brav et al. (2008) point out that activist hedge funds prefer management cooperation to achieve their value-improving agendas, and if management does not cooperate, they find support from other

shareholders. Empirically, Brav et al. (2008) find that more than two-thirds of events are non-hostile.

The leadership literature recognizes gender differences in terms of leadership styles. Specifically, compared to male leaders, female leaders tend to be more democratic, participative, communicative, collaborative, and compromising when needed (e.g., Eagly and Johnson, 1990; Bass, 1991; Bass, Avolio, and Atwater, 1996; Eagly and Johannesen-Schmidt, 2001; Eagly, Johannesen-Schmidt, and Van Engen, 2003; Mandell and Pherwani, 2003; Glass and Cook, 2016). Survey and anecdotal evidence also supports these leadership differences (e.g., Zenger and Folkman, 2012; Horowitz et al., 2018).[20] These differences in managerial style between male and female executives can be important in the context of hedge fund activism. Activist investors are essentially there to reprimand CEOs for not running their firms the right way and take a firm's well-being into their own hands (e.g., Herscher, 2015). Hedge fund activists, in the process of achieving their goals, interact extensively with target executives.

As pointed out earlier, female managers tend to demonstrate more collaborative communication, share responsibility and credit by empowering others. This suggests that hedge fund activists and female CEOs are more likely to work together rather than be confrontational, which reduces implementation costs and increases the success rate of activism campaigns, resulting in higher expected returns. In contrast, male CEOs tend to be more aggressive in negotiations, more self-centered, and more power-oriented. Accordingly, they are more likely to resist hedge fund activists' suggestions, resulting in campaigns that are costly for both parties.

[20] Female social-role theory has long claimed that females are more affectionate, helpful, kind, sympathetic, interpersonally sensitive, and nurturing (e.g., Eagly, Wood, and Diekman, 2000). These communal traits are crucial to effective transformational leadership style.

In Appendix A.2., we provide two pieces of anecdotal evidence (one female-led firm and one male-led firm) to illustrate how different managerial styles lead to different developments of hedge fund activism events. Therefore, we conjecture that the observed gender effect could result from differences in managerial style between male and female executives.

Gantchev (2013) depicts shareholder activism as a sequential decision model involving three progressive stages: demand negotiations, board representation, and the proxy contest, with the proxy contest being the most expensive, costing on average $10.71 million. Boyson and Pichler (2018) argue that firms resisting activist hedge funds do not enjoy positive market reactions or improved operational efficiency unless hedge funds counter with more hostile and thus more costly tactics. As activist hedge funds endogenously choose their tactics to maximize returns based on the level of collaboration from target firms, we expect female CEOs to be more positively associated with non-hostile tactics, given that they are more likely to communicate and collaborate with hedge fund activists.

To examine this explanation, we supplement the hedge fund activism events identified through Schedule 13D with information from FactSet's SharkWatch database. By utilizing information from SharkWatch, we obtain detailed information throughout hedge fund activism campaigns, such as hedge fund activists' objectives and tactics, and the outcomes of proxy fights. The SharkWatch subsample contains 1,906 hedge fund activism events for which detailed information about the development of hedge fund activism campaigns is available.

Following Brav et al. (2008), we define an activism event as hostile if the hedge fund wages or launches a proxy fight, sues the firm, or offers to take over the firm. An activism event is non-hostile when hedge funds use tactics such as private communication, peaceful requests

for board representation, and shareholder proposals. We then use this classification to create a dummy variable that captures whether an activism event is hostile.

In Column 1 of Table 9, we report the results from a logit regression that examines whether activist investors are more likely to use non-hostile tactics for female-led targets than for male-led targets. Consistent with our expectation, we find that female CEOs have a positive and significant relationship with *Non-Hostile Events*, suggesting that communication and collaboration are more common after hedge fund activists target female CEOs.

[Insert Table 9 here]

In Column 2, we examine managers' reactions when activists send public letters to the management team and the board.[21] The dependent variable, *Manager Rebuttal Letter*, is a dummy that equals one if the target management team issues a rebuttal letter subsequent to sending of public letters by a hedge fund, and zero otherwise. We consider a rebuttal letter an indication of public resistance. Consistent with our expectation, we find that firms with female CEOs are significantly less likely to issue rebuttal letters, suggesting that female CEOs are more likely to compromise and collaborate with hedge fund activists.

In Column 3, we examine whether female CEOs are more likely to settle a proxy fight with activist investors. We create a dummy variable, *Settled Before Proxy Fight*, which equals one if a proxy fight occurs after a hedge fund intervenes but settles before actual voting, and zero if the fight goes to a voting procedure. We find that female CEOs are significantly more likely to settle proxy fights with hedge fund activists compared to their male counterparts.

[21] Activists sometimes use public letters to convey their demands and pressure management teams and boards. Although this tactic can serve the purpose of communication and is less hostile than proxy contests, lawsuits, or takeover bids, a significant number of letters are decisively confrontational.

Because proxy fights are costly and usually take place when private negotiation or other non-hostile tactics fail, this finding indicates that when hedge fund activists target firms with female CEOs, communication and collaboration are more likely to occur during activism campaigns.

In Column 4, we examine whether the target firms' boards are more likely to adopt a poison pill during the hedge fund campaign. We create a dummy variable *Poison Pill Adopted*, which equals one if the target board adopts a poison pill during the hedge fund campaign. We find a significantly negative association between female CEOs and the adoption of poison pills. Given that a poison pill is a self-defense mechanism that is costly to both the target firm and the hedge fund when facing an activist campaign, our result suggests that target boards are less likely to resort to poison pills when they have female CEOs.

Board seats are important channels for information sharing (Adams and Ferreira, 2009) and communication between hedge fund activists and CEOs. One of the most common tactics hedge fund activists use to achieve their goals is to obtain board seats (Brav et al., 2010). In Column 5, we examine whether activist hedge funds are more likely to obtain board seats when targeting female CEOs. We create a dummy variable, *Obtained Board Seats*, which equals one if an activism event results in activists' related board seats. Consistent with our conjecture, we find that activist hedge funds are significantly more likely to obtain board seats when their targets are female-led firms.

In Column 6, we examine another activity that could capture the communication and cooperation of CEOs: *Number of Board Meetings Increased*, which is the increase in the number of board meetings the target firm holds in the year prior to and the year after an activism

event.[22] Using a Poisson regression, we find that female CEOs increase the number of board meetings to a greater extent than male CEOs do, subsequent to being targeted. This suggests that female CEOs are more likely to respond to hedge fund activism with increased lines of communication within the board. Taken together, the results in Columns 5 and 6 suggest that female CEOs are more likely to communicate and collaborate with hedge fund activists by incorporating them into their boards and listening to their suggestions and demands.

Finally, we examine whether hedge fund activists are more likely to achieve their goals when targeting female CEOs. We create a dummy variable *Successful*, which equals one if all or part of hedge funds activists' demands are satisfied. We report the results in Columns 7. We find that activist hedge funds are significantly more likely to achieve all or some of their demands when their targets are female-led firms. The higher success rates are consistent with Brav et al. (2008; 2010), which find that activist hedge funds prefer management cooperation to achieve their value-improving agendas.[23] Our results are also consistent with Boyson and Pichler (2018), who argue that less hostile manager resistance leads to more positive changes in target firms.

4.5. Gender differences in CEO power

In the previous subsection, we find that female CEOs are more likely to cooperate with hedge fund activists. One could argue, however, that female CEOs are forced to cooperate with hedge fund activists due to a lack of power. Panel B of Table 2 indicates that targeted female

[22] We obtain the number of board meetings from MSCI GMI Ratings.

[23] We acknowledge that firms with a more transformative culture or strategic plan are more likely to hire or retain female CEOs. Therefore, it is also possible that hedge fund activists are more likely to target firms with a transformative culture or strategic plans.

CEOs typically have shorter tenures, are younger, and are less likely to be board of director chairs compared to their male counterparts, indicating a possible lack of power of female CEOs. To examine this alternative explanation, we construct four proxies for CEO power used in Adams, Almeida, and Ferreira (2005) and Morse, Nanda, and Seru (2011): *CEO-Chair Duality*, *CEO Tenure*, *Outside Directorship*, and *Director Tenure*. We expect that a CEO is more powerful if he or she is also the chairperson of the board, he or she has a longer tenure, the board members have fewer outside directorships, or the board members have shorter tenures. We divide our sample into two subsamples based on the median values of the proxies of CEO power. We rerun our baseline logit regression using the subsample where target firms exhibit above-median CEO power. We expect that if CEO power is the underlying explanation for our main finding, we should not observe a gender effect when female CEOs are powerful.

Table 10 reports the results. In Column 1, we use the subsample when a CEO is also the chairperson of the board; in Column 2 we use the subsample when a CEO has a tenure longer than the sample median. Column 3 reports the results for the subsample when the percent of outside directors is below the sample median. Finally, in Column 4, we use the subsample when the average tenure of board members is below the sample median. We find that all four coefficients on *Female CEO* are positive and statistically significant, indicating that hedge fund activists are still more likely to target powerful female CEOs than powerful male CEOs. Therefore, CEO power is not a plausible explanation of our main finding.

[Insert Table 10 here]

5. Dynamic changes in target firm performance

The relatively larger short-term market reaction for female-led targets compared to the market reaction for male-led firms could stem from two different sources. First, targeting female CEOs likely leads to less hostile tactics compared to targeting male CEOs, which are costly to both the hedge fund and the firm. Second, possessing strong relationship-building and collaboration skills, female CEOs may be in a better position to incorporate hedge fund activists' advice and expertise, thereby improving their firms' operational performance. In Section 4.4, we present evidence supporting the first conjecture; in this section, we examine the second possibility.

We follow an empirical design similar to Brav et al. (2008) who examine changes in firm performance following hedge fund activism events. In Table 11, we present the raw value and the industry-year adjusted value for female-led targets, male-led targets, and the difference between them for each variable studied: *ROA*, *Payout Yield*, and *Leverage*. We also examine the dynamic changes two years before to two years after the event. The industry-year adjusted value is the mean difference between the targets and their corresponding two-digit SIC codes, year-matched peers.[24]

The first variable, *ROA*, is a common proxy for profitability. After adjusting for industry and year effects, we find that female-led targets are less profitable than male-led targets before and in the year of the hedge fund activism events. However, although both female- and male-led targets increase operating profitability over the two years after the targeting event, the increase for female-led targets is larger than for their male counterparts. This difference in

[24] Matching target firms with their peers using a propensity score two years before an activism event yields qualitatively similar results. Hedge fund activism events also occasionally lead to the sale or M&A of target firms, making data attrition a concern. In unreported results (available upon request), we repeat the study with only firms that survive two years after activism events. The results are qualitatively similar.

profitability improvement is about 1.2% and is statistically significant after controlling for industry and year effects, suggesting that female-led targets increase operational performance significantly more than male-led targets.

Activist hedge funds often demand dividend increases as part of their negotiations with management (Brav et al., 2008). To examine if there are payout differences between male- and female-led firms subsequent to targeting, we examine *Payout Yield*, defined as stock and cash dividend scaled by the market value of the firm, for both types of targets. The evidence shows an increase in payout yield one year after activism events for both female- and male-led targets, with the increase more pronounced for female-led targets. Two years after activism events, however, the payout yield is not statistically different from the payout yield before the event year. A possible explanation is that the increase in dividend is a one-time payout of accumulated excess cash holdings rather than a permanent change in payout policies.

The final variable we examine is *Leverage*, which reflects firms' capital structure. Consistent with the literature (e.g., Huang and Kisgen, 2013), we find that female-led targets are less leveraged than male-led targets both before and after a hedge fund activism event. After adjusting for industry and year effects, female-led targets exhibit steady increases in leverage ratio after being targeted, although not statistically significant. In contrast, we observe a significant increase in leverage for male-led targets. Although leverage changes for female- and male-led targets are small relative to the overall leverage level, both female and male CEOs respond to activist hedge funds' demands for capital structure changes.

Taken together, our results indicate that, compared to male-led firms, female-led firms experience larger increases in profitability and are more likely to increase dividend payouts

after hedge fund activists target them. These findings are consistent with hedge fund activists' objectives of increasing target firms' performance and dividend payouts (Brav et al., 2010). Equally important, they show that female CEOs are more cooperative with hedge fund activists in achieving these goals.

[Insert Table 11 here]

6. Conclusion

This paper studies the role of target firms' incumbent managers in hedge fund activism. Although anecdotal evidence shows that hedge fund activists single out female CEOs, there is scant supportive empirical evidence. Using a comprehensive hedge fund activism dataset, we find robust empirical evidence that hedge fund activists are significantly more likely to target female CEOs compared to male CEOs after controlling for firm fundamentals, CEO personal characteristics, and CEO economic incentives. We explore possible explanations for the observed gender effect. We find that our results are not explained by the "glass cliff" phenomenon, or by gender discrimination. Rather, the results are supportive of female CEOs being targeted because of their strong communication and interpersonal skills which enable them to cooperate with hedge fund activists to achieve intervention goals.

Our paper contributes to the fast-growing literature on hedge fund activism. We take the first step toward unveiling the significant role incumbent managers play in hedge fund activism. By studying CEO gender, we show that female CEOs' more transformational style not only affects the probability of being targeted, but also has a significant impact on how activism campaigns advance and reshape target firms, as well as how they improve value for

shareholders. We believe our findings have important implications for regulators and investors in the capital markets.

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Table 1: Distribution of activism events and female CEOs by year

This table reports the yearly distribution of activism events and female CEOs where all control variables in our baseline model are available. Our full sample runs from 2003 to 2018 with 42,831 firm-year observations and 2,410 hedge fund activism events.

Year	# of Obs.	# of Activism Events	Percent	# of Female CEOs	Percent
2003	1,510	32	2.14%	34	2.22%
2004	2,434	72	2.96%	59	2.42%
2005	2,968	166	5.60%	76	2.56%
2006	3,009	206	6.84%	73	2.44%
2007	2,977	250	8.40%	68	2.29%
2008	2,817	194	6.88%	80	2.84%
2009	2,736	123	4.50%	89	3.26%
2010	2,690	113	4.19%	97	3.60%
2011	2,693	140	5.20%	82	3.06%
2012	2,684	134	4.98%	82	3.07%
2013	2,669	141	5.30%	82	3.09%
2014	2,665	187	7.03%	89	3.34%
2015	2,709	168	6.19%	103	3.82%
2016	2,730	160	5.85%	128	4.70%
2017	2,812	144	5.12%	147	5.22%
2018	2,728	180	6.58%	152	5.57%
Total	42,831	2,410	5.63%	1,441	3.37%

Table 2: Summary statistics

This table reports the summary statistics for the target firms and the full sample in panel A, as well as female-led targets and male-led targets in panel B. Our sample runs from 2003 to 2018 with 42,831 firm-year observations and 2,410 hedge fund activism events. Columns 1 through 3 in panels A/B reports mean, median, and standard deviation of target firms/female targets. Columns 4 through 6 in panels A/B reports mean, median, and standard deviation for the full sample/male targets. Columns 7 and 8 report the difference in mean/median. Significance in *t*-test is indicated by asterisks. We use the Wilcoxon signed rank test for comparing the median. Asterisks indicate significance at the 10%, 5%, and 1% levels, respectively. All variables are calculated one year before the activism event (except for *Target*) and are defined in Appendix A.1.

Panel A: Target sample vs. Full sample

	Target Sample			Full Sample			Diff. (Target-Full)	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target	1.000	1.000	0.000	0.056	0.000	0.237	0.944***	1.000***
Female CEO	0.048	0.000	0.219	0.034	0.000	0.182	0.014***	0.000***
Market Value	2364	264	7913	3922	641	9903	-1558***	-377***
Tobin's Q	1.812	1.374	3.557	2.285	1.599	3.964	-0.473***	-0.225***
Sales Growth	0.116	0.025	0.721	0.187	0.076	0.732	-0.071***	-0.051***
ROA	0.014	0.057	0.174	0.075	0.117	0.178	-0.061***	-0.060***
Leverage	0.257	0.183	0.381	0.227	0.177	0.321	0.030***	0.006***
Payout Yield	0.013	0.000	0.053	0.014	0.000	0.043	-0.001	0.000
R&D	0.067	0.000	0.144	0.064	0.002	0.138	0.003	-0.002
Institution	0.615	0.669	0.305	0.608	0.687	0.317	0.007	-0.018
Analyst	5.076	3.000	5.947	6.718	5.000	6.688	-1.642***	-2.000***
Segment HHI	0.457	0.381	0.263	0.403	0.352	0.227	0.054***	0.029***
Tangibility	0.521	0.392	0.441	0.508	0.377	0.432	0.013	0.015
Network Size	553	325	1259	522	307	1217	31	18
Age	63	63	9.030	64	64	8.653	-1	-1
Tenure	4.781	2.800	5.696	5.501	3.600	6.163	-0.720***	-0.800***
Non-American	0.060	0.000	0.238	0.059	0.000	0.235	0.001	0.000
Total Comp.	1187	1000	1302	1311	1040	1609	-124*	-40
Equity Comp.	0.792	0.860	0.196	0.817	0.880	0.167	-0.025	-0.020
Female BOD	0.120	0.111	0.115	0.121	0.111	0.109	-0.001	0.000
CEO also Chair	0.407	0.000	0.491	0.403	0.000	0.491	0.004	0.000
Board Meetings	9.332	8.000	5.219	7.855	7.000	3.789	0.940***	1.000***

Panel B: Female targets vs. Male targets

	Target Sample（Female）			Target Sample（Male）			Diff. (Female-Male)	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target	1.000	1.000	0.000	1.000	1.000	0.000	N/A	N/A
Female CEO	1.000	1.000	0.000	0.000	0.000	0.000	N/A	N/A
Market Value	3787	226	9899	2289	265	7554	1498*	-39
Tobin's Q	1.831	1.388	1.256	1.811	1.373	3.639	0.020	0.015
Sales Growth	0.060	-0.009	0.425	0.119	0.029	0.733	-0.059*	-0.038***
ROA	0.013	0.043	0.208	0.014	0.058	0.172	-0.002	-0.014*
Leverage	0.219	0.147	0.274	0.259	0.186	0.386	-0.040	-0.039*
Payout Yield	0.026	0.000	0.077	0.013	0.000	0.051	0.013*	0.000**
R&D	0.079	0.000	0.195	0.066	0.000	0.141	0.013	0.000*
Institution	0.629	0.697	0.289	0.614	0.667	0.306	0.015	0.030
Analyst	5.304	4.000	5.909	5.064	3.000	5.950	0.240	1.000
Segment HHI	0.492	0.452	0.267	0.454	0.363	0.324	0.038	0.089
Tangibility	0.572	0.503	0.406	0.518	0.385	0.443	0.054	0.118
Network Size	835	561	1694	538	318	1222	297***	243***
Age	61	61	7.058	63	63	9.249	-2.000***	-2.000**
Tenure	3.865	2.850	3.309	4.824	2.800	5.781	-0.959**	0.050
Non-American	0.061	0.000	0.242	0.060	0.000	0.237	0.001	0.000
Total Comp.	1409	1533	441	1178	1000	1323	230	533
Equity Comp.	0.921	0.940	0.058	0.787	0.855	0.197	0.134***	0.085**
Female BOD	0.239	0.222	0.157	0.113	0.111	0.108	0.126***	0.111***
CEO also Chair	0.355	0.000	0.482	0.410	0.000	0.492	-0.055	0.000
Board Meetings	9.222	8.500	4.004	9.339	8.000	5.283	-0.117	0.500

Table 3: Female CEOs and hedge fund activisms: Logit analysis

This table presents the logit regression results on the relation between female CEOs and hedge fund activism. The dependent variable is *Target*, which equals one if one or more hedge fund activists target a firm in the year. In Column 1, we include firm characteristics. In Column 2, we include firm and CEO characteristics. Column 3 includes firm characteristics and CEO compensation structure. Column 4 includes firm characteristics, CEO characteristics, and compensation structure. All control variables are lagged by one year and are defined in Appendix A.1. Sample size varies due to data availability. Logit coefficients are reported with *z*-statistics in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, ** and *** respectively.

	(1) Target	(2) Target	(3) Target	(4) Target
Female CEO	**0.349*** **	**0.571*** **	**0.484*** **	**0.675*** **
	(2.953)	**(3.448)**	**(2.874)**	**(3.174)**
Ln(MV)	-0.244***	-0.229***	-0.148***	-0.158**
	(-9.705)	(-6.113)	(-3.160)	(-2.490)
Tobin's Q	-0.260***	-0.321***	-0.375***	-0.425***
	(-10.106)	(-7.360)	(-6.947)	(-5.709)
Sales Growth	-0.063	-0.196**	0.049	-0.015
	(-1.498)	(-2.351)	(0.434)	(-0.089)
ROA	-1.125***	-1.124***	-2.137***	-2.085***
	(-5.436)	(-3.256)	(-4.576)	(-3.313)
Leverage Ratio	0.527***	0.436***	0.313	0.565**
	(5.544)	(2.769)	(1.514)	(2.106)
Payout Yield	-0.430	-1.051	1.000	0.798
	(-0.682)	(-0.862)	(0.970)	(0.604)
R&D	0.467*	0.555	1.377**	2.147**
	(1.717)	(1.241)	(2.174)	(2.429)
Institution	1.379***	1.325***	0.876***	0.787**
	(12.230)	(7.927)	(3.758)	(2.563)
Analyst	-0.002	0.008	0.004	0.011
	(-0.367)	(0.887)	(0.482)	(0.910)
Segment HHI	0.179**	0.281**	0.540***	0.806***
	(2.171)	(2.301)	(4.075)	(4.645)
Tangibility Ratio	0.036	0.093	0.137	0.107
	(0.469)	(0.781)	(1.025)	(0.602)
Ln(Network Size)		-0.009		-0.008
		(-0.263)		(-0.143)
Ln(Age)		0.992***		0.785
		(2.873)		(1.507)
Ln(Tenure)		-0.108***		-0.092**
		(-3.495)		(-2.103)
Non-American		-0.167		0.135
		(-0.953)		(0.608)
Total Comp.			0.077	0.022
			(1.336)	(0.302)
Equity Comp.			-0.259	-0.411*
			(-1.561)	(-1.882)
Constant	-2.963***	-7.098***	-4.648***	-6.460**
	(-5.162)	(-4.241)	(-3.807)	(-2.362)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	42,831	28,631	23,324	20,831
Pseudo R^2	0.066	0.084	0.084	0.108

Table 4: Female CEOs and hedge fund activism: Propensity score matching

This table reports diagnostic tests and propensity matching results for female CEOs and hedge fund activism. Using propensity scores estimated with a set of firm characteristics, we match each firm with a female CEO to a similar firm with a male CEO. We then estimate the difference in the probability of targeting female-run firms and male-run firms. We require the matched observations to be from two different firms and the difference in propensity score between matched firms to be less than 0.01. Panel A reports the pre-match propensity score logit regression, with the dependent variable being *Female CEO*. Panel B presents the difference in control variables between matched pairs. Panel C reports the distributions of the estimated propensity score. Panel D presents the estimated difference in the probability of being targeted between the female-run firms and matched male-run firms using only targets and matched control firms following the models in Table 3.

Panel A: Pre-match propensity score regression

	(1) Female CEO
Ln(MV)	-0.092***
	(-4.335)
Tobin's Q	0.002
	(0.108)
Sales Growth	-0.030
	(-0.736)
ROA	-0.098
	(-0.467)
Leverage Ratio	-0.181*
	(-1.827)
Payout Yield	-0.079
	(-0.126)
R&D	0.588**
	(2.139)
Institution	0.042
	(0.417)
Analyst	0.006
	(1.174)
Segment HHI	-0.030
	(-0.451)
Tangibility Ratio	0.236***
	(3.438)
Female BOD	4.966***
	(26.543)
Constant	-2.598***
	(-4.479)
Year fixed effects	Yes
Industry fixed effects	Yes
Observations	29,569
Pseudo R^2	0.222

Panel B: Difference in control variables

	Mean			t-test	
Variable	Female CEO	Male CEO	%bias	t	p>t
Ln(Market Value)	8.188	7.603	5.9	1.12	0.261
Tobin's Q	1.837	1.813	1.4	0.30	0.766
Sales Growth	0.084	0.076	1.6	0.70	0.484
ROA	0.101	0.104	-1.4	-0.29	0.769
Leverage Ratio	0.219	0.213	2.7	0.58	0.563
Payout Yield	0.018	0.017	1.5	0.43	0.667
R&D	0.049	0.045	4.0	0.78	0.437
Institution	0.761	0.772	-5.1	-1.06	0.287
Analyst	9.466	9.892	-7.2	-1.49	0.136
Segment HHI	0.441	0.426	4.1	0.95	0.342
Tangibility	0.553	0.546	1.8	0.46	0.646
Female BOD	0. 251	0. 248	2.4	0.43	0.670

Panel C: Estimated propensity score distributions

Propensity Score	N	Mean	S.D.	P1	P5	P50	P95	P99
Treatment	1,225	0.173	0.178	0.004	0.013	0.114	0.569	0.805
Control	1,225	0.172	0.174	0.004	0.013	0.114	0.565	0.799
Difference		0.001	0.004	0.000	0.000	0.000	0.004	0.006

Panel D: Multivariate regression using the matched sample

	(1) Target	(2) Target	(3) Target	(4) Target
Female CEO	**0.449****	**0.489***	**0.697****	**0.716****
	(2.164)	**(1.691)**	**(2.125)**	**(2.171)**
Ln(MV)	-0.042	0.025	-0.137	-0.038
	(-0.333)	(0.141)	(-0.739)	(-0.157)
Tobin's Q	-0.267**	-0.444**	-0.174	-0.692*
	(-2.048)	(-2.143)	(-0.850)	(-1.747)
Sales Growth	-0.798*	-0.570	-1.322	-2.453*
	(-1.762)	(-1.045)	(-1.343)	(-1.792)
ROA	-3.090**	-3.770*	-1.092	1.285
	(-2.355)	(-1.896)	(-0.417)	(0.325)
Leverage Ratio	1.105**	0.783	-0.786	-0.918
	(1.999)	(1.067)	(-0.892)	(-0.798)
Payout Yield	1.810	1.368	3.633	5.868
	(0.552)	(0.295)	(0.987)	(1.126)
R&D	-1.399	-1.332	-3.203	-1.227
	(-0.786)	(-0.489)	(-0.649)	(-0.180)
Institution	0.072	-0.772	-1.463	-1.792
	(0.123)	(-0.954)	(-1.644)	(-1.480)
Analyst	-0.015	-0.020	-0.036	-0.027
	(-0.507)	(-0.495)	(-1.013)	(-0.582)
Segment HHI	0.663	0.829	0.542	0.115
	(1.474)	(1.408)	(0.262)	(0.446)
Tangibility Ratio	-0.298	0.234	-0.028	0.458
	(-0.707)	(0.369)	(-0.043)	(0.491)
Female BOD	0.470	0.733	0.008	2.469
	(0.423)	(0.482)	(0.005)	(1.186)
Ln(Network Size)		-0.144		-0.301
		(-0.842)		(-1.188)
Ln(Age)		1.886		2.932
		(1.064)		(1.113)
Ln(Tenure)		-0.253*		-0.001
		(-1.675)		(-0.006)
Non-American		-1.561		0.214
		(-1.374)		(0.182)
Total Comp.			0.231	0.283
			(0.838)	(0.768)
Equity Comp.			0.678	1.758
			(0.839)	(1.404)
Constant	-1.631	-9.679	-0.981	-14.570
	(-0.949)	(-1.226)	(-0.372)	(-1.217)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	2156	1401	1226	1178
Pseudo R^2	0.119	0.173	0.174	0.226

Table 5: Female CEOs and hedge fund activism: Difference-in-differences

In Panel A, we report the changes in firm fundamentals prior to a CEO transition (from year t-2 to year t-1) and the differences in changes between Male to Female Transitions and Male to Male Transitions. Panel B reports the effect of CEO gender on hedge fund activist targeting using a DID design. The dependent variable is *Target*, which equals one if a firm is targeted by one or more hedge fund activists in a given year, and zero otherwise. We trace firms who change their CEOs from male to female (treated sample) and male to male (control group). *Post* is a dummy variable that equals one if a year is after CEO transition and zero if a year is before CEO transition. *Male to Female CEO* is a dummy variable which equals one if a firm is in the treated sample and zero if it is in the control group. In Column 1, we include a four-year window spanning two years before two years after a transition. In Column 2, we include a six-year window spanning three years before to three years after a transition. We require each CEO to be in office for at least two consecutive years in Columns 1 and for at least three consecutive years in Columns 2. Logit coefficients are reported with *z*-statistics in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: Changes in firm fundamentals prior to CEO transition (year *t*-2 to year *t*-1)

	Male-to-Female Transition			Male-to-Male Transition			Difference	
	Mean	Median	Std.Dev.	Mean	Median	Std.Dev.	Mean	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔROA	-0.008	0.000	0.096	-0.006	0.000	0.121	-0.002*	0.000
ΔSales	0.074	0.031	0.542	0.189	0.055	0.872	-0.115**	-0.024*
ΔCash Holding	-0.016	-0.003	0.159	-0.012	-0.001	0.231	-0.004*	-0.002
ΔTobin's Q	0.201	-0.024	4.399	0.196	-0.006	11.474	0.005	-0.018*
ΔMarket Value	34.35	0.000	1739.50	102.76	2.134	1082.02	-68.40*	-2.134

Panel B: Difference-in-differences analyses results

	(1) Target	(2) Target
	($t_{-2,-1,+1,+2}$)	($t_{-3,-2,-1,+1,+2,+3}$)
Post* Male-to-Female CEO	**1.571***	**1.358****
	(1.909)	**(2.075)**
Male-to-Female CEO	-0.369	-0.319
	(-0.711)	(-0.534)
Post	-0.208*	-0.267**
	(-1.775)	(-2.068)
Ln(MV)	-0.296***	-0.251***
	(-5.419)	(-4.205)
Tobin's Q	-0.195***	-0.255***
	(-3.050)	(-3.222)
Sales Growth	0.067	0.018
	(0.269)	(0.070)
ROA	-0.511	0.017
	(-0.909)	(0.024)
Leverage Ratio	0.142	-0.178
	(0.517)	(-0.538)
Payout Yield	0.483	-1.028
	(0.294)	(-0.444)
R&D	0.285	0.709
	(0.354)	(0.722)
Institution	1.227***	1.036***
	(4.910)	(3.687)
Analyst	0.022	0.027*
	(1.588)	(1.855)
Segment HHI	0.341*	0.344*
	(1.953)	(1.806)
Tangibility Ratio	-0.284*	-0.246
	(-1.810)	(-1.455)
ΔROA	-0.727	-0.575
	(-0.914)	(-0.595)
ΔSales	-0.034	-0.000
	(-0.217)	(-0.003)
ΔCash Holding	-0.592	-0.967**
	(-1.567)	(-2.101)
ΔTobin's Q	-0.036	0.206*
	(-0.622)	(1.663)
ΔMarket Value	0.124	-0.167
	(1.021)	(-1.076)
Constant	-1.562***	-1.774***
	(-5.064)	(-5.043)
Industry fixed effects	Yes	Yes
Observations	6,243	6,042
Pseudo R^2	0.034	0.031

Table 6: Buy-and-hold abnormal returns around filings of 13D

This table reports the effects of CEO gender on buy-and-hold abnormal returns around the filing of a 13D. In Column 1, the dependent variable is *BHAR_MM (-20, +20)*, which is buy-and-hold abnormal return in excess of value-weighted market return for daily event window (-20, +20). In Column 2, the dependent variable is *BHAR_MAR (-20, +20)*, which is buy-and-hold abnormal return in excess of value-weighted market-adjusted return for daily event window (-20, +20). In Column 3, the dependent variable is *BHAR_MM (-10, +10)*, which is buy-and-hold abnormal return in excess of value-weighted market return for daily event window (-10, +10). In Column 4, the dependent variable is *BHAR_MAR (-10, +10)*, which is buy-and-hold abnormal return in excess of value-weighted market-adjusted return for daily event window (-10, +10). Year and industry fixed effects are included in all columns. All variables are defined in Appendix A.1. Heteroskedasticity-robust *t*-statistics are in the parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1) BHAR _MM (-20, +20)	(2) BHAR _MAR (-20, +20)	(3) BHAR _MM (-10, +10)	(4) BHAR _MAR (-10, +10)
Female CEO	**0.037****	**0.032****	**0.023***	**0.021***
	(2.468)	**(2.417)**	**(1.802)**	**(1.851)**
Ln(MV)	-0.011*	-0.010*	-0.009**	-0.009**
	(-1.938)	(-1.941)	(-2.063)	(-2.043)
Tobin's Q	-0.001	0.001	-0.001	-0.001
	(-0.258)	(0.321)	(-0.557)	(-0.341)
Sales Growth	-0.007	-0.011	-0.009	-0.011*
	(-0.876)	(-1.393)	(-1.464)	(-1.701)
ROA	0.027	0.060	0.008	0.024
	(0.581)	(1.362)	(0.203)	(0.668)
Leverage Ratio	0.023	0.016	0.027	0.024
	(0.912)	(0.675)	(1.338)	(1.229)
Payout Yield	0.336***	0.299***	-0.020	-0.041
	(2.751)	(2.640)	(-0.212)	(-0.439)
R&D	0.086	0.101*	0.006	0.026
	(1.355)	(1.708)	(0.129)	(0.543)
Institution	0.060**	0.008	0.025	-0.002
	(2.341)	(0.336)	(1.259)	(-0.090)
Analyst	0.001	0.001	0.001	0.001
	(0.829)	(0.491)	(1.124)	(0.840)
Segment HHI	0.005	0.003	-0.001	-0.001
	(0.253)	(0.186)	(-0.094)	(-0.073)
Tangibility	0.034*	0.032*	0.036**	0.031**
	(1.880)	(1.934)	(2.546)	(2.240)
Constant	0.062	0.083**	0.074**	0.090***
	(1.486)	(2.157)	(2.287)	(2.831)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	2,166	2,166	2,166	2,166
Adjusted R^2	0.027	0.026	0.025	0.023

Table 7: Long-term stock market return

This table reports the abnormal returns for female and male targets from calendar-time portfolio regressions. In columns labeled "Equal-Weighted Four-Factor Model," we use monthly Fama-French-Momentum four-factors as explanatory variables in the regression; the dependent variable is the monthly equal-weighted portfolio return in excess of the risk-free rate. In columns labeled "Value-Weighted Four-Factor Model," we use value-weighted portfolio returns in excess of the risk-free rate. The monthly windows indicate when a stock is added to the portfolio. For example, for monthly window [+1, +36], the stock is added to portfolios one month after the activism event month and removed 36 months after. *Alpha* is the estimated intercept term (abnormal return) where *Beta*, *SMB*, *HML*, and *MOM* indicate the respective loading on the factors. *N* is the average number of stocks in each monthly portfolio, and R^2 is the r-squared from the return regression. Panel A includes only female targets; Panel B includes only male targets. We require each monthly portfolio to have at least 10 stocks. Heteroskedasticity-consistent test statistics are reported. *, **, and *** indicate statistical significance of the coefficients at the 10%, 5%, and 1% significance levels, respectively.

Window (Months)	Equal-Weight Four-Factor Model							Value-Weight Four-Factor Model						
	Alpha	Beta	SMB	HML	MOM	N	R^2	Alpha	Beta	SMB	HML	MOM	N	R^2
Panel A: Targets with female CEOs														
[-36, -1]	-0.003	0.883***	0.703***	0.401***	-0.188***	24	66.71%	-0.003	0.887***	0.289**	0.174*	-0.270***	24	54.29%
[+1, +36]	0.003	0.996***	0.493***	0.389***	-0.338***	21	70.56%	0.001	1.236***	0.161	0.536***	-0.554***	21	68.39%
[+1, +60]	0.002	1.010***	0.501***	0.339***	-0.261***	23	75.37%	0.001	1.291***	0.091	0.432***	-0.452***	23	69.50%
Panel B: Targets with male CEOs														
[-36, -1]	-0.003***	0.964***	0.826***	0.165***	-0.226***	331	90.40%	-0.004*	1.212***	-0.052	0.147	-0.292***	331	57.88%
[+1, +36]	0.001	0.993***	0.783***	-0.023	-0.299***	305	91.11%	0.003**	1.092***	0.108*	-0.086*	-0.130***	305	86.36%
[+1, +60]	0.001	1.001***	0.768***	-0.008	-0.270***	323	92.58%	0.003**	1.103***	0.078	-0.141**	-0.115***	323	87.24%

Table 8: Female CEOs and 13G filings

This table presents the logit analysis of CEO gender on hedge fund activists' target choice of 13G filing event. Although filing a 13D indicates an activist's intention to influence the control of a target firm, filing a 13G indicates no such intention. We identify 13G filings for the same group of hedge fund activists (4,027 events with no missing data) in the same sample period and use them as a placebo test. The dependent variable is *Target(13G)*, which equals one if a firm is the target firm of one or more 13G filings from the same group of hedge fund activists in the year. All control variables are lagged by one year and are defined in Appendix A.1. Sample size varies due to data availability. Logit coefficients are reported with *z*-statistics in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, ** and ***, respectively.

	(1) Target(13G)	(2) Target(13G)	(3) Target(13G)	(4) Target(13G)
Female CEO	**0.063**	**-0.005**	**-0.408**	**-0.841**
	(0.578)	**(-0.029)**	**(-0.634)**	**(-0.996)**
Ln(MV)	-0.320***	-0.448***	-0.481***	-0.745***
	(-14.693)	(-13.575)	(-5.437)	(-6.144)
Tobin's Q	-0.079***	-0.068***	-0.317***	-0.377***
	(-5.716)	(-2.932)	(-3.559)	(-3.055)
Sales Growth	0.055**	0.009	0.002	0.225
	(2.098)	(0.202)	(0.009)	(0.824)
ROA	-2.026***	-2.031***	-2.231***	-0.911
	(-13.186)	(-8.351)	(-2.883)	(-0.882)
Leverage Ratio	0.317***	0.412***	1.259***	1.458***
	(4.571)	(3.676)	(3.887)	(3.300)
Payout Yield	0.127	1.359	-0.401	2.913
	(0.230)	(1.616)	(-0.161)	(0.830)
R&D	0.353**	0.557**	1.656	1.501
	(2.025)	(1.968)	(1.413)	(1.029)
Institution	2.367***	2.579***	2.741***	2.260***
	(24.013)	(17.347)	(5.855)	(3.845)
Analyst	-0.014***	-0.013*	-0.022	-0.009
	(-2.620)	(-1.735)	(-1.421)	(-0.467)
Segment HHI	0.098	0.151	0.245	0.262
	(1.435)	(1.528)	(1.042)	(0.885)
Tangibility Ratio	-0.415***	-0.406***	0.238	0.169
	(-5.941)	(-3.890)	(0.916)	(0.498)
Ln(Network Size)		0.024		0.297***
		(0.888)		(2.834)
Ln(Age)		-0.544**		-0.438
		(-1.997)		(-0.443)
Ln(Tenure)		-0.069***		0.022
		(-2.699)		(0.261)
Non-American		-0.052		0.669*
		(-0.390)		(1.812)
Total Comp.			-0.000	-0.000
			(-0.636)	(-0.839)
Equity Comp.			-0.125	-0.396
			(-0.291)	(-0.751)
Constant	-0.498	2.757**	-0.324	0.143
	(-1.491)	(2.182)	(-0.288)	(0.032)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	42,831	28,631	23,324	20,831
Pseudo R^2	0.097	0.125	0.208	0.248

Table 9: Female CEOs and activism categories (condition on being targeted)

This table reports Logit and Poisson analyses of CEO gender on hedge fund activists' choice of tactics, stated objectives, and outcomes when detailed information is available from Factset's Sharkwatch. Following Brav et al. (2008), we define an activism event as non-hostile if only the following tactics are used: private communication, peaceful requests for board representation, and shareholder proposals. *Manager Rebuttal Letter* is a dummy that equals one if the target management team issues a rebuttal letter following an activist hedge fund's public letter, and zero otherwise. *Settled Before Proxy Fight* is a dummy that equals one if there is a proxy fight but it is settled before actual voting; it equals zero if the fight goes to voting procedure. *Poison Pill Adopted* is a dummy that equals one if the target adopts a poison pill during the hedge fund campaign and zero otherwise. *Obtained Board Seats* is a dummy variable that equals one if the activism event results in activists' board seats. *Number of Board Meetings Increased* is the increase in the number of board meetings the target firm holds in the year before the event and one year after the event. *Successful* is a dummy that equals one if all or part of an activist hedge fund's demands are satisfied. Coefficients are reported with *z*-statistics in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1) Non-hostile Events	(2) Manager Rebuttal Letter	(3) Settled Before Proxy Fight	(4) Poison Pill Adopted	(5) Obtained Board Seats	(6) Number of Board Meetings Increased	(7) Successful
Female CEO	**0.459****	**-0.836****	**0.462****	**-0.802*****	**0.621*****	**0.547*****	**1.231*****
	(2.005)	**(-2.116)**	**(2.017)**	**(-2.973)**	**(3.135)**	**(2.972)**	**(3.246)**
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CEO Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CEO Compensation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,906	816	338	1,906	1,906	1,495	1,906
Pseudo R^2/ R^2	0.064	0.126	0.163	0.172	0.064	0.095	0.078

Table 10: CEO power and hedge fund activism

This table investigates whether CEO power matters when hedge fund activists select targets. The dependent variable is *Target*, which equals one if one or more hedge fund activists target a firm in the year. In Column 1, we only include firm-year observations that the CEO is also the chairman of the board in year *t*-1. In Column 2, we only include firm-year observations with CEO tenure above the sample median in year *t*-1. In Column 3, we only include firm-year observations with a percentage of outside directors below the sample median at year *t*-1. In Column 4, we only include firm-year observations with a percentage of long-term directors (tenure over 10 years) below the sample median at year *t*-1. All control variables are lagged by one year and are defined in Appendix A.1. Logit coefficients are reported with *z*-statistics in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
	Target	Target	Target	Target
	CEO-Chair Duality=1	Higher CEO Tenure	Lower Outside Directorship	Lower Director Tenure
Female CEO	**0.404***	**0.462****	**0.403****	**0.470*****
	(1.705)	**(2.464)**	**(2.378)**	**(2.708)**
Ln(MV)	-0.221***	-0.186***	-0.306***	-0.254***
	(-4.175)	(-4.840)	(-5.322)	(-5.234)
Tobin's Q	-0.265***	-0.221***	-0.292***	-0.258***
	(-4.928)	(-5.870)	(-5.766)	(-5.748)
Sales Growth	-0.132	-0.002	-0.032	0.034
	(-1.187)	(-0.035)	(-0.374)	(0.574)
ROA	-1.561***	-1.351***	-1.429***	-0.791**
	(-3.303)	(-4.032)	(-3.254)	(-2.078)
Leverage Ratio	0.941***	0.570***	0.540**	0.478**
	(4.262)	(3.910)	(2.545)	(2.533)
Payout Yield	-2.014	-1.245	1.156	0.800
	(-1.086)	(-1.022)	(1.039)	(0.899)
R&D	0.042	0.456	0.974	0.337
	(0.058)	(1.033)	(1.640)	(0.667)
Institution	1.014***	1.071***	1.163***	1.270***
	(4.043)	(6.152)	(4.798)	(5.797)
Number of Analysts	0.000	0.003	0.004	-0.010
	(0.028)	(0.305)	(0.314)	(-0.920)
Segment HHI	0.265*	0.148	0.066	0.303**
	(1.677)	(1.170)	(0.392)	(2.107)
Tangibility Ratio	0.132	0.099	0.228	0.128
	(0.853)	(0.853)	(1.419)	(0.938)
Constant	-1.802	-3.883***	-0.845	-1.849*
	(-1.641)	(-3.523)	(-0.758)	(-1.688)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	1,4587	20,149	15,507	13,984
Pseudo R^2	0.076	0.057	0.087	0.077

Table 11: Dynamic changes of target firms before and after activism

This table reports the dynamic changes in different aspects of target firms before and after being targeted. We use both raw variables and industry-year adjusted variables (using *t*-2 propensity score matching adjusted variables yield qualitatively similar results). In columns labeled "Female," we report variables for targets with female CEOs. In columns labeled "Male," we report variables for targets with male CEOs. Columns labeled "Diff." report the difference in variable level for firms with female and male CEOs (Female - Male). Rows labeled "(*t*+1)-(*t*-1)" present the difference in the variables one year after the event year and one year before the event year. Rows labeled "(*t*+2)-(*t*-1)" present the difference in variable level two years after the event year and one year before the event year. All variables are defined in Appendix A.1. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	ROA						Payout Yield						Leverage					
Window	Raw Numbers			Industry-Year Adj.			Raw numbers			Industry-Year Adj.			Raw numbers			Industry-Year Adj.		
(Year)	Female	Male	Diff.	Female	Male	Diff.	Female	Male	Diff.	Female	Male	Diff.	Female	Male	Diff.	Female	Male	Diff.
t-2	3.0%	3.5%	-0.5%	2.0%	2.8%	-0.8%*	0.9%	1.7%	-0.8%*	-0.8%	-0.1%	-0.7%**	21.9%	25.9%	-4.0%**	-5.5%	-1.4%	-4.1%*
t-1	1.3%	1.4%	-0.1%	0.9%	2.1%	-1.2%*	1.2%	1.7%	-0.5%	0.0%	-0.1%	0.1%	20.6%	25.9%	-5.3%**	-5.8%	-0.9%	-4.9%**
Event	1.1%	0.8%	0.3%	0.2%	1.7%	-1.5%*	3.0%	1.8%	1.2%**	0.6%	-0.1%	0.7%*	21.1%	26.7%	-5.6%**	-5.4%	-0.7%	-4.7%**
t+1	2.2%	1.9%	0.3%	2.0%	2.1%	-0.1%	2.5%	2.0%	0.5%*	0.3%	0.0%	0.2%	21.4%	27.8%	-6.4%**	-5.2%	-0.0%	-5.2%**
t+2	3.0%	2.5%	0.5%	2.8%	2.8%	0.1%	1.8%	2.0%	-0.2%	-0.1%	0.0%	-0.1%	22.1%	28.6%	-6.5%**	-4.8%	0.0%	-4.8%**
(t+1)-(t-1)	0.9%*	0.5%*	0.4%*	1.1%*	0.0%	1.1%	1.3%**	0.3%	1.0%*	0.3%*	-0.1%	0.4%*	0.8%	1.9%*	-1.1%	0.6%	0.8%*	-0.2%*
(t+2)-(t-1)	1.7%**	1.1%*	0.6%*	1.9%*	0.7%*	1.2%*	0.6%	0.3%	0.3%	-0.1%	-0.0%	-0.0%	1.5%	2.7%*	-1.2%	1.0%	0.9%*	0.1%

Figure 1. Probability of being targeted by year (Male vs. Female CEOs)

This figure plots the yearly probability that an activist will target a firm, grouped by CEO gender. The blue bar represents the average targeting probability for a firm with a male CEO; the orange bar represents the average targeting probability for a firm with a female CEO.

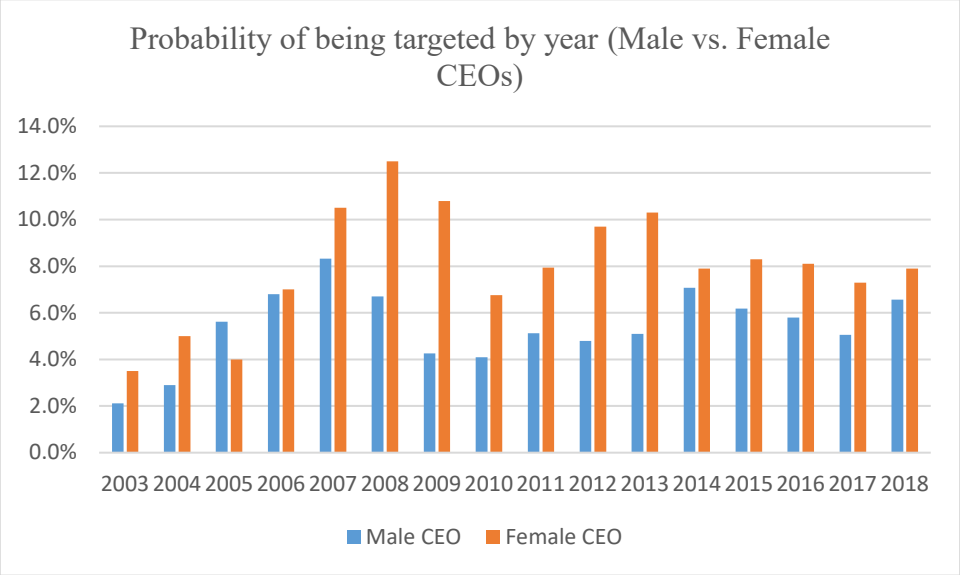
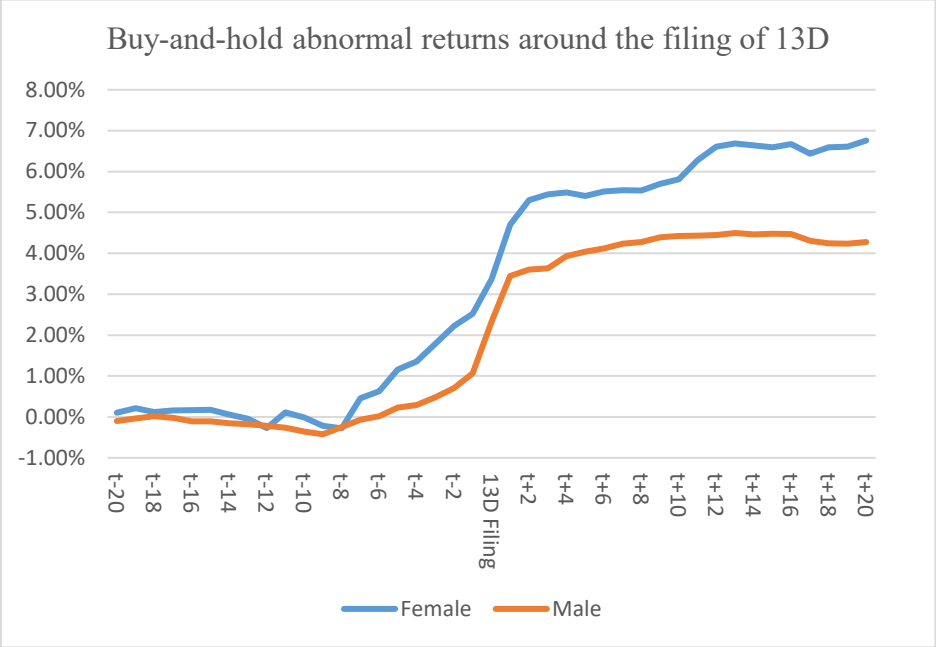


Figure 2. Buy-and-hold abnormal returns around the filing of 13D

Buy-and-hold abnormal return in excess of value-weighted market-adjusted return is plotted for (-20, 20) days surrounding the filing of a 13D. We estimate parameters with OLS using data 301 to 46 days before the event. The blue line plots buy-and-hold abnormal return for firms with female CEOs; the orange line plots buy-and-hold abnormal return for firms with male CEOs.



Appendix A.1. Variable definitions

	Definition
Key Variables	
Target	Dummy variable that equals one if one or more hedge fund activists target a firm in a given year, and zero otherwise.
Female CEO	Dummy variable that equals one if the CEO is female. As a precaution for rapid CEO turnover, we exclude CEOs with tenures less than six months.
Firm Characteristics	
Market Value	Market value of the firm at fiscal year-end in $ millions, defined as *prcc_f*csho.*
Tobin's Q	Ratio of market value to replacement value of the firm's assets, defined as *(prcc_f*csho+lt-txditc)/at.*
Sales Growth	Growth rate of sales, defined as $sale_t/sale_{t-1}-1$.
ROA	Return on assets, defined as *(pi – xi)/at.*
Leverage	Ratio of book value of total debt to total assets, defined as *(dltc+dltt)/at.*
Payout Yield	Dividend payout yield, defined as *(dvc+dvp)/(me+pstk).*
R&D	Research and development expense ratio, measured as *xrd/at*. Missing values in *xrd* are set to zero.
Institution	Aggregated institutional ownership using 13F filings.
Analyst	Number of analysts covering the firm from I/B/E/S.
Segment HHI	Herfindahl-Hirschman index of sales in business segments.
Tangibility	Tangibility ratio, defined as *ppegt/at.*
Cash Holding	Cash holding of the firm, defined as *ch/at.*
Total Asset	Total assets of the firm, defined as *at.*
CEO and Board Characteristics	
Network Size	Number of overlaps through employment, other activities, and education for the CEO, as defined in BoardEx.
Age	Current age of the CEO.
Tenure	The amount of time the CEO is in office.
Non-American	Dummy that equals one if the CEO is not American.
Total Comp.	The total compensation of the CEO, including salary and bonus as defined in BoardEx.
Equity Comp.	Equity-linked compensation as a proportion of total compensation, as defined in BoardEx.
Female BOD	The percentage of female directors on the board.
CEO-Chair Duality	Dummy equal to one if the CEO is also the chairman of the board.

Appendix A.2. Two examples of hedge fund activism events

We provide two examples (one female-led and one male-led firm) to illustrate how different managerial styles lead to different hedge fund activism events. In the first case, the female-led firm cooperates with the activist through tough but beneficial negotiations and initiates changes that ultimately result in better operating performance and increased market returns. In the second case, the male-led firm confronts the activist on several occasions and adopts a poison pill. The activist exits after its failed attempts, and the stock price closes below the price prior to the activist's entry.

Trian Fund Management and Mondelez[25]

Trian Fund Management, L.P. held a 2.5% stake in Mondelez on April 19, 2013, when the stock price was around $31.5. Nelson Peltz, the cofounder of Trian, publicly proposed a merger between Mondelez and Pepsi's snack and beverages business on July 17, 2013. Weeks later, on August 8, 2013, Mondelez announced a share repurchase authorization of $4.8 billion.

After several private meetings between Nelson Peltz and Mondelez CEO Irene Rosenfeld, Mondelez entered into an accelerated share repurchase program to buy back $1.7 billion worth of stock and announced a plan to adopt zero-cost budgeting and boost profit. On January 21, 2014, Nelson Peltz joined Mondelez's board in return for dropping the proxy context. Mondelez praised Peltz for his experience in the consumer industry and his unique functionality in the boardroom. Nelson Peltz reportedly was in agreement with the management team and would no longer push for a merger with Pepsi. Trian Fund Management maintained its stake in Mondelez. Operating margins

[25] http://www.wsj.com/articles/two-activists-put-one-ceo-on-the-spot-1450230598

for Mondelez reached 30%, increasing from 11.2% in 2013 and 10.4% in 2012. The stock closed at $44.8 on December 31, 2015.

Carl Icahn and Clorox

On February 11, 2011, Carl Icahn filed a Schedule 13D showing that he and related associates owned 9.1% of Clorox. In item 4 (“purpose of transaction”), he stated: “The Reporting Persons support the Issuer's plan to buy back between 10 and 11 million Shares by the end of its fiscal year. The Reporting Persons may seek to have conversations with management of the Issuer from time to time to discuss the Issuer's business.” The stock closed at $71.26 that day.

Clorox announced a share repurchase program worth $750 million on May 18, 2011. Eight weeks later, Icahn offered an unsolicited cash bid for Clorox at $76.50 per share. Clorox’s management team and its board of directors immediately rejected the bid and adopted a poison pill. Icahn criticized CEO/chairman Don Knauss’s resistance and continued to push for a sale with a higher offer. After another rejection, Icahn threatened a proxy contest and formally nominated a full slate of candidates to the board at the annual meeting on August 19, 2011. In defense, the incumbent team members supported their own candidates.

On September 23, 2011, Icahn withdrew his proxy fight. The last Schedule 13D/A was filed on December 1, 2011, stating that Icahn had decreased his ownership to below 5%. The stock closed around $65 that day.