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Better in the Shadows? Public Attention, Media Coverage, and Market Reactions to Female CEO Announcements

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Abstract: Combining media coverage data from approximately 17,000 unique media outlets with the full population of CEO appointments for U.S. publicly traded firms between 2000 and 2016, we investigate whether female CEO appointments garner more public attention compared with male appointments, and if so, whether this increased attention can help make sense of the previously reported negative market reaction to these events. Contrary to prior reports, our data do not indicate that the appointments of female CEOs elicit overly negative market reactions, on average. Our results do highlight an important moderating role of public attention, however. We demonstrate that greater attention—even when exogenously determined—contributes to negative market reactions for female CEO appointments but positive market reactions for male CEOs, all else held constant. Additionally, female CEO appointments that attract little attention garner significant positive responses in the market, compared with both male CEOs drawing similarly limited levels of attention and female CEOs drawing high levels of attention. Our results help to reconcile contrasting empirical findings on the effects of gender in executive leadership and parallel recent work on anticipatory bias and second-order discrimination in alternative empirical contexts. Implications for research on attention, gender bias, and executive succession are discussed.

Keywords: gender; prejudice; attention; economic sociology; CEO

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RESEARCH on the effects of gender in upper-level management has produced a notable contradiction. On the one hand, a growing collection of work in economics, organizational theory, and strategic management has demonstrated that gender diversity—and female executive leadership in particular—presents several unique advantages for firms, including enhanced capabilities for innovation (Dezso and Ross 2012), more collaborative work environments (Zenger and Folkman 2012), and, according to some studies, a positive effect on future firm performance (Khan and Vieito 2013; Weber and Zulehner 2010; Weschsler 2015).[1] On the other hand, research on gender bias in financial markets has shown that investors tend to respond unfavorably to the appointment of new female leadership (Dixon-Fowler, Ellstrand, and Johnson 2013; Dobbin and Jung 2010; Solal and Snellman 2019). In one such article, Lee and James (2007) report that firms appointing female CEOs trade at a 2.5 percent average discount following the announcement of the appointment.

If women are equally (or better) equipped to lead and manage companies compared with their male counterparts, why might investors respond negatively to the appointment of female executives? Prevailing explanations suggest that investors are prejudiced against women, uninformed about the benefits of gender diversity

and female leadership, or both. Consistent with this interpretation, studies on stereotype activation and gender discrimination have proposed that incongruities between the stereotypic traits of women and leaders—for example, docile, warm, and interdependent versus strong, calculating, and independent—may cause investors to question the appropriateness of female leaders (Eagly and Carli 2007; Fiske et al. 2002; Lee and James 2007). Likewise, because women continue to be numerical minorities among the rank of top managers, investors may expect female executives to face hurdles that can reduce their effectiveness as organizational leaders (Kanter 1977; Reskin 2005). Together, this prior work highlights a theoretical basis, grounded in individually held prejudices, for expecting the appointment of female CEOs to be met with negative market reactions.

Although we do not dismiss the possibility that some investors may hold prejudicial views toward women, we nevertheless find this explanation lacking in several important respects. To start, the explanation contradicts the fact that nearly half (48 percent) of all female CEO appointments occurring between 2000 and 2016 among U.S. publicly traded firms coincided with *positive* market reactions—that is, the appointing firms' stock price *increased* following the announcement (see Figure 1). This figure is nearly identical for firms that appointed male CEOs during the same time period. If investors were systematically biased against female leadership, as previous studies suggest, we should expect fewer positive market responses to female CEO appointments, relative to male appointments.[2] Second, prior accounts of the market bias against female executives have relied on strong and potentially oversimplified assumptions about the "meaning" of market reactions to important events, namely, that "investor reactions following an announcement of an executive appointment signal [investors'] beliefs about a leader's potential and subsequent firm performance" (Lee and James 2007:229). According to this view, negative market responses to female appointments are akin to a vote of "no confidence" among investors, indicating a belief that women are poor leaders compared with men.

In light of empirical evidence to the contrary, we propose here a more nuanced, social interpretation of market reactions by invoking Keynes' (1936) insight than an investor's ability to generate positive returns depends in large part on the trading decisions made by other investors. According to Keynes (1936):

> [Investors] are concerned, not with what an investment is really worth to a man who buys it 'for keeps', but with what the market will value it at, under the influence of mass psychology, three months or a year hence ... For it is not sensible to pay 25 for an investment of which you believe the prospective yield to justify a value of 30, if you also believe that the market will value it at 20 three months hence. (P. 120)

In the context of executive succession specifically, we propose that market reactions surrounding executive appointments not only signal investors' beliefs about a leader's potential but may also capture investors' expectations about the contemporaneous responses of *other investors* (cf. Allen, Morris, and Shin 2006; Beunza and Stark 2004; Knorr-Cetina and Bruegger 2002; MacKenzie and Millo 2003; Schijven and Hitt 2012; Zajac and Westphal 2004; Zuckerman 2012). By

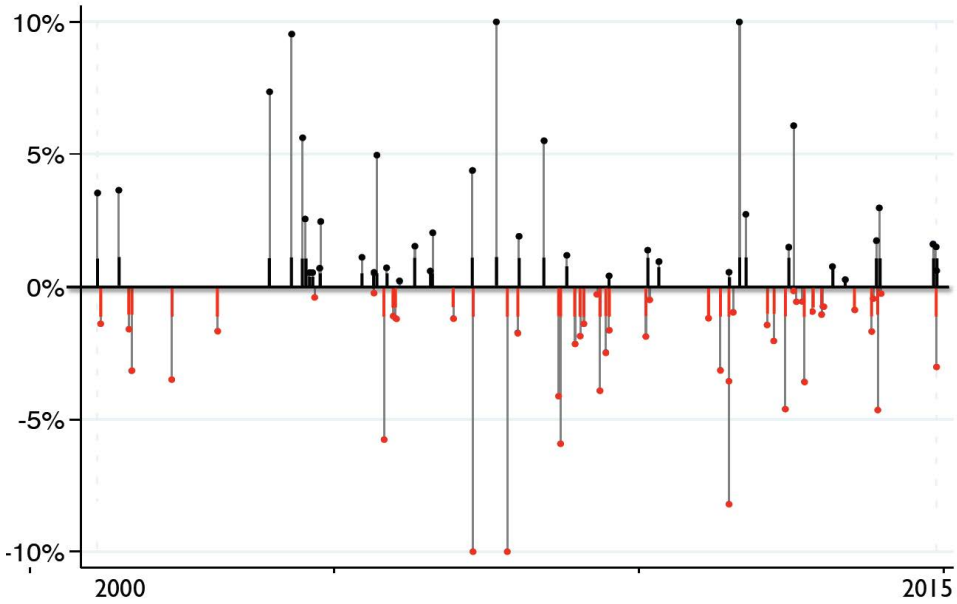

Figure 1: Market reaction (CAR) for female CEO announcements.

shifting our conceptualization of market reactions from one of solely individual, independent reactions to one of potentially interdependent reactions, we highlight an additional pathway by which to analyze and explain the previously reported negative market response to the appointment of female CEOs. In short, even unprejudiced investors, who may otherwise react favorably to the appointment of female executives, may nevertheless react *unfavorably* to these events when they (1) are motivated to consider the likely responses of other investors and (2) expect those investors to react unfavorably toward firms choosing to appoint women.

In what follows, we offer a more detailed introduction to our theoretical perspective and highlight a number of empirical and theoretical implications that derive from it. We then describe our data, which include a comprehensive sample of all CEO appointments among publicly traded U.S. firms between 2000 and 2016. Although women comprised less than two percent of all CEO successions during this time period, our data mark a threefold increase in the number of female appointments compared with prior research. After introducing our data, we next describe our analytic approach and present our results, working iteratively through several different identification strategies, including a quasi-experimental matched sample design, instrumental variable regression, and a direct comparison of short- and long-run market outcomes, which further enables us to disentangle our core argument from various alternatives. We conclude with a discussion of implications of our findings for theory and practice alike.

Theoretical Development

Second-Order Sensemaking and Market Bias

As we alluded to above, our approach rests on determining both *whether* and *when* investors are likely to think about other investors' beliefs. To do this, we draw on research on attention to propose that heightened public attention surrounding an event increases the likelihood that investors actively consider how other investors may respond to the same event (cf. Huberman and Regev 2001). We refer to this process as *second-order sensemaking* to highlight the important differences between an investor interpreting the significance of a firm event for the firm itself (i.e., first-order sensemaking) and speculating on other investors' possible interpretations. Simply put, when an event receives a considerable amount of public attention, investors can more easily infer that other investors are also aware of the same event (Allen, Morris, and Shin 2006; Beyer et al. 2010). Because the trading behaviors of other investors are important determinants of the financial returns an individual investor is able to realize (e.g., Zajac and Westphal 2004), heightened public attention carries with it a strong financial incentive to consider the anticipated behaviors of other investors and calibrate one's own response accordingly.

The extent to which second-order sensemaking will have a systematic effect on the pricing of a firm's stock depends on the nature of investors' beliefs about one another. In the specific context of female CEO appointments, we anticipate investors' second-order expectations to match Ridgeway and Correll's (2004:513–4) observation that "men and women enter most social relational contexts expecting that *others believe* that men are generally more competent than women" (see also Cuddy, Fiske, and Glick 2007; Ridgeway 2001; Ridgeway and Correll 2006). Accordingly, even if individual investors do not personally endorse such views, second-order inferences regarding others' gender biases can create the very conditions under which gender discrimination becomes manifest in financial markets. Ridgeway and Correll (2004:434) pinpoint the nature of a such a dynamic in the following way: "If I assume that most people share a status belief, then I expect that they will act in accord with that belief themselves [. . .] I must take that belief into account in shaping my own behavior whether or not I personally endorse the belief. In this way, the presumption that status beliefs are the views of most shapes peoples' mutual expectations for behavior in ways that tend to become self-fulfilling."

Taken together, our arguments give rise to the following empirical proposition: If high levels of attention surrounding an executive appointment cause investors to engage in second-order sensemaking, and if the average investor believes other investors to be prejudiced against women, then any observable market penalty against female CEOs will be greatest when the announcement of the CEO generates significant attention. By comparison, when attention is limited, investors should be less likely to consider the responses of others and thus are freer to respond to the news of an executive appointment in ways that reflect their own individual beliefs. Given existing research on the benefits of female leadership, the likelihood of markets responding *positively* to the appointment of female CEOs should be greatest in cases when the appointment garners little public attention.

Our alternative thesis marks an improvement over existing explanations of gender bias in financial markets for several reasons. First, our data indicate that female CEO appointments draw on average three times more attention—measured by media proxy[3]—on the day of an announcement compared with male CEO appointments, all else held constant. Although perhaps unsurprising given the relative rarity of female executives, this difference may be important for understanding the nature of any observable market biases against women for the reasons we have outlined. If the amount of public attention an executive appointment receives affects investors' likelihoods of considering other investors' beliefs, then public attention should constitute a critical moderating variable in dictating the market's response to executive succession.

Second, our alternative account can help to explain the existence—and persistence—of gender bias in ways that do not require the average or "marginal" investor to be inherently prejudiced against women. We readily acknowledge, of course, that some investors are likely to hold prejudiced gender beliefs, whether for reasons related to stereotyping (e.g., Fiske and Taylor 1991) or otherwise. Additionally, we anticipate that heightened public attention surrounding an event may also function to activate latent, first-order prejudices among investors (for conditional activation of stereotypes, see Dovidio, Major, and Crocker 2000; Macrae and Bodenhausen 2000). But we hasten to add that even nonprejudiced investors face financial incentives (in the short term, at least) to react unfavorably to the appointment of a female CEO when they believe other investors will react unfavorably. This observation carries important downstream implications; most importantly, eliminating individual-level prejudices may do little to mitigate collective market-level discrimination when individuals believe that others are prejudiced and subsequently base their trading decisions in part on those beliefs (Smith and Rand 2018).

Third, our account provides a mechanism-based explanation for cases in which female CEO announcements elicit *positive* reactions among investors. In light of research on the benefits of female leadership (Eagly and Carli 2003; Eagly and Carli 2007; Weber and Zulehner 2010), it follows that informed and unbiased investors *should* respond favorably to the appointment of female executives when they are not triggered to consider the responses of other investors. As we will come to show empirically, our data reveal exactly this pattern. Namely, firms that garner little public attention when appointing a female CEO—even when the amount of attention is exogenously determined—trade at a premium compared with matched firms that appoint male CEOs. In this way, our account can help to reconcile the fact that women can be both effective organizational leaders—and investors can reward firms that appoint them—with the observation that some firms are penalized in the market when they appoint female executives (Cook and Glass 2011; Dixon-Fowler, Ellstrand, and Johnson 2013; Lee and James 2007).

Fourth and finally, our theoretical approach mirrors recent advances in research on discrimination and prejudice in other empirical settings. Specifically, the shift from first-order bias, where individual decision makers are assumed to be prejudiced, to *second-order* bias, where individuals' opinions and actions depend on the expectations of others' prejudice, parallels recent empirical demonstrations of "anticipatory sorting" (Abraham 2020; Beckman and Phillips 2005; Fernandez-Mateo

and King 2011; Fernandez and Friedrich 2011) and "preemptive discrimination" (Lewis 2013).

Methods

Data and Measurement

Our data include all CEO succession events of publicly traded firms in the United States between 2000 and 2016. We focused our analyses on the role of CEO rather than other executive leadership positions, as past research has found that market responses to CEO announcements are significantly more pronounced, in part due to their increased visibility and greater effect on firm performance (Graffin, Boivie, and Carpenter 2013; Khurana 2002; Quigley and Hambrick 2015; Wolfers 2006). Following previous studies, we excluded interim-CEO appointments, subsidiaries of publicly traded firms, and firms that are traded over the counter or off-exchange (Lee and James 2007). We also excluded firms having share prices less than $3 due to the fact that such low-priced stocks can carry a disproportionate effect in regression models that use daily market returns as a dependent variable (Fang and Peress 2009; Loughran and McDonald 2011).

We used data from RavenPack News Analytics, a data aggregator that collects and indexes news content from more than 17,000 media outlets, covering more than 34,000 firms, to proxy for the amount of public attention surrounding executive succession events. The scope of the RavenPack database offers two distinct advantages for our research. First, it allows us to capture a broad spectrum of media coverage to which investors might be exposed, ranging from mass-circulation newspapers such as the *New York Times* and *Wall Street Journal* to more specialized niche publications, online news websites, and blogs. Second, by using the full RavenPack database to help identify CEO succession events, we were able to extend well beyond traditional convenience sampling strategies—such as using the S&P 500 or Fortune 1000 companies—resulting in a significant increase in the number of female CEO appointments included in our data.

We collected stock price and market capitalization data from the Center for Research on Security Prices, firm-level descriptive and accounting data from Compustat, institutional holdings data from Thompson Financial, board-level data from MSCI, and CEO-level data from RiskMetrics, Catalyst, and company press releases. Our individual-level variables include CEO age, previous CEO experience, and CEO insider/outsider status, which were hand coded when the data were not available elsewhere. Our final sample includes records of 8,179 CEO appointments associated with 2,573 unique firms.[4]

Dependent Variable

Market Reaction. The majority of our analyses investigate the market response to the announcement of new CEO appointments, as a function of both the gender of the CEO being appointed and the amount of public attention (as media coverage) surrounding the event. We measured market reaction using cumulative abnormal

returns (*CAR*), or the sum of the differences between the expected return of a stock and its actual return following the announcement of a new CEO (Binder 1998). The CAR measure is frequently used in event study research to analyze the effect of announcements of mergers, acquisitions, or other significant events on the economic returns realizable to investors (Dorobantu and Odziemkowska 2017; Wibbens and Siggelkow 2020). Formally, we measured market reaction by computing an *abnormal return*, or $AR_{it} = R_{it} - (\alpha_i + \beta_i(R_{mt}))$, where AR_{it} is the abnormal return for a firm that announces a new CEO appointment, R_{it} is the actual return, and α_i and β_i are the regression coefficients from the estimation of the firm's expected return net of the average market return, R_{mt}, using a standard three-factor Fama–French model (Fama and French 1993). Consistent with recent event study designs (Lee and James 2007), we estimated our expected return model using a 239-day event window preceding the announcement date and specified a three-day event window (t_{-1}, t_{+1}) to measure cumulative abnormal returns. In a supplemental analysis we increased the length of the event window to contrast short- versus long-term market responses. Note that the event window is centered on the date the appointment is announced, not when the actual transition takes place.

Independent Variables

CEO Gender. We generated our list of female CEOs using a variety of sources and triangulation methods. To start, we obtained data from Catalyst, an organization that works to promote female leadership in business. As Catalyst's records only contain information on firms in the Fortune 500, however, we next cross-referenced all women listed as CEO in the Execucomp database. This generated an additional 204 names, 27 of which were associated with publicly traded companies that were not already included in the original Catalyst data. We then created an algorithm to search the headlines and bylines of every media story in the RavenPack database related to executive succession, flagging those involving female appointees. We verified the resulting data using LexisNexis, Bloomberg's Executive Profile database, and company websites. Our data collection process yielded a total of 99 female CEO appointments. Due to missing firm-level data associated with five of those appointments, our final sample includes a total of 94 women.

Attention. As media coverage is both an important proxy and determinant of public attention (Davison 1983; Dyck and Zingales 2003; Golan, Banning, and Lundy 2008), we measured the amount of attention surrounding each appointment announcement event using a logged count of the total number of news articles—including company-issued press releases, news flashes, and full articles—related to a CEO appointment on the day of announcement.[5] Recent work in both sociology and finance has demonstrated that aggregate counts of daily news articles are useful for capturing the "visibility" of a person or event in the public sphere (Ahern and Sosyura 2014; van de Rijt et al. 2013), and as such, this measure is well suited for the questions we explore in the current article. Table 1 outlines our sample selection criteria, beginning with the full collection of 104,360,430 individual news articles drawn from 17,210 unique media sources. From this set, we identified 1,377,031 articles (from 2,819 unique sources) related to executive turnover, of which 1,054,864

Table 1: Details of sample construction

Filter	Sample size	Unique media outlets
Complete media coverage data (2000–2015)	104,360,430	17,210
Include only articles related to executive leadership	1,377,031	2,819
Include only articles related to CEO	185,652	1,561
Include only unique CEO succession events	62,566	1,202
Include only same-day media coverage of CEO succession events	41,417	1,156
Firm–year sample	8,567	
Number of unique firms	2,375	
Average number of CEO successions per firm between 2000 and 2015	3.61	

were specifically about executive appointments. We further narrowed our sample to include only those appointments involving the role of CEO, or any of its equivalent titles. This yielded a total of 185,652 articles from 1,561 unique sources. From here, we were able to identify our 8,179 unique CEO succession events and retained only those articles that were published on the same day as the announcement, yielding a final sample of 41,417 articles. Our decision to consider same-day media coverage was deliberate, as it reduces several potential sources of endogeneity that may otherwise affect our analyses and interpretation of results. Most importantly, using same-day media coverage mitigates the possibility of reverse causality whereby media coverage is affected by the market's response to an appointment.

Control Variables

In addition to industry (two-digit Standard Industrial Classification [SIC] code) and year fixed effects, our analyses control for several additional factors that might influence a firm's propensity to appoint a female versus male CEO, the amount of media coverage associated with such appointments, and the market's reaction. At the firm level, control variables include firm size (measured as the natural log of total firm assets; *Size*), previous performance (measured using return on assets with a one-quarter lag; ROA_{t-1}),[6] firm leverage (the ratio of a firm's debt to assets; *Leverage*), and book-to-market value (*Book-to-Market*), which prior research has used to indicate a firm's growth prospects (Fang and Peress 2009). Each of these controls is useful for addressing the possibility that poorly performing firms may be more likely to appoint female CEOs, a phenomenon referred to as the "glass cliff" (Ryan and Haslam 2007). We also included the percentage of firms' shares held by institutional investors (*Institutional Ownership*) and a dummy variable equal to one when a firm was listed on a major stock index (*Index*),[7] as each is likely to affect the magnitude of the market's response to a focal event and may also correlate with a firm's propensity to garner public attention.

We also included a variable to capture firms' overall levels of media prominence. Specifically, we measured *Previous Media Coverage* by aggregating the total number of news articles (on any topic) that were associated with a firm over the six months

prior to the executive turnover announcement. Beyond the effects of firm size, industry, performance, and the like, those firms that are prominent in the media may be more salient in the minds of investors (Barber and Odean 2008; Petkova, Rindova, and Gupta 2013; Solomon, Soltes and Sosyura 2014), which can influence how investors respond to an event such as a CEO succession (Rindova et al. 2005).

At the level of media, our analyses control for the average readership size of the media outlets covering an event (*Source Readership*) using the "source prominence" scores assigned by RavenPack, which range from 1 for outlets such as the *New York Times* to 4 for low readership blogs and local periodicals. Furthermore, we include controls for the content of coverage, as recent studies have suggested that media sentiment, tone, or "gendered-ness" may be important predictors of how markets respond to new information, including information on the appointment of new executive leadership (Baker and Wurgler 2007; Lee and James 2007; Tetlock 2007). Although our primary interest in the present article is on the moderating role of the *amount* of attention surrounding a CEO announcement, the role of media content is salient for our analyses, as content may differ systematically between male and female appointments and/or between appointments generating positive versus negative market reactions. To capture differences in media content, we used the gendered words dictionary reproduced in Appendix C of the online supplement, as well as Loughran and McDonald's (2011) sentiment dictionary, which is uniquely constructed to identify positive and negative words in financial contexts. Specifically, we measured *Gendered Words* and *Media Sentiment* of each article in our database by calculating the number of gendered words and the difference between positive and negative words included in the headlines and bylines, scaled by the number of total words, respectively.[8]

Lastly, we included three additional individual-level variables—*CEO Age*, *Firm Insider* (for insider/outsider status), and *Previous CEO Experience*—to capture differences among the appointed CEOs in our sample.[9] Age is an important control, as prior work has shown that age differences between men and women may help account for variation in economic outcomes such as pay (Blau and Kahn 2000). If male and female CEOs differ in the age at which they are appointed, on average, then it is possible that age differences, and not gender difference, per se, might account for variance in market reactions to female versus male appointments. Next, we controlled for whether the newly appointed CEO is a firm insider, as prior work suggests that market penalties against new executives, and female executives in particular, may be attenuated when women rise through the ranks of the organizational hierarchy (Lee and James 2007). Finally, we included an indicator variable set to one when the incoming appointee has prior CEO experience, zero otherwise, as prior experience may correlate with CEO gender and is likely to influence both the extent to which the appointment receives coverage in the media as well as influence investors' responses to the appointment.

Analyses and Results

Table 2 includes descriptive statistics of all variables included in our analyses and the pairwise correlations among them. Consistent with prior research, our

Table 2: Descriptive statistics

	Variable name	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	
(1)	CAR	−0.03	5.71							
(2)	Female	0.01	0.09	0.00						
(3)	Media Coverage	1.01	0.95	0.03	0.09					
(4)	Size	8.11	2.55	−0.01	−0.01	0.01				
(5)	ROA_{t-1}	−0.03	0.74	0.03	0.02	0.01	0.24			
(6)	ROA_{t+4}	0.00	0.66	0.00	0.01	0.00	0.20	0.33		
(7)	Book-to-Market	0.74	1.85	−0.02	0.00	0.01	−0.02	0.05	−0.01	
(8)	Institutional Ownership	0.57	0.32	−0.01	0.01	0.04	0.15	0.17	0.16	
(9)	Leverage	0.19	0.20	0.03	−0.01	−0.01	0.13	0.01	0.03	
(10)	Index	0.31	0.46	−0.01	0.01	0.01	0.52	0.15	0.13	
(11)	Source Readership	1.26	0.45	0.01	−0.06	−0.10	0.14	0.02	0.04	
(12)	Previous Media Coverage	5.02	13.27	0.00	−0.01	0.05	0.44	0.11	0.10	
(13)	Female Board Percentage	0.13	0.09	−0.03	0.09	0.00	0.26	0.06	0.06	
(14)	Media Sentiment	−0.02	0.05	−0.02	0.02	−0.05	0.04	0.04	0.02	
(15)	Gendered Words	0.51	0.09	0.00	0.03	0.01	0.12	0.04	0.04	
(16)	Trading Volume	13.72	2.34	−0.04	0.00	0.06	0.72	0.09	0.09	
		(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(7)	Book-to-Market									
(8)	Institutional Ownership	−0.02								
(9)	Leverage	−0.08	0.04							
(10)	Index	−0.01	0.33	0.02						
(11)	Source Readership	0.00	0.10	0.01	0.06					
(12)	Previous Media Coverage	0.00	0.03	−0.05	0.18	0.25				
(13)	Female Board Percentage	0.01	−0.03	0.02	0.21	0.07	0.13			
(14)	Media Sentiment	−0.01	−0.01	0.00	0.03	−0.02	−0.02	0.02		
(15)	Gendered Words	0.00	−0.01	−0.01	0.06	0.07	0.17	0.05	0.00	
(16)	Trading Volume	0.05	0.21	0.08	0.46	0.13	0.39	0.20	−0.00	0.07

Notes: N = 8,179. SD, standard deviation. *Previous Media Coverage* is in hundreds.

data indicate that *CAR* moves positively with ROA_{t-1} and negatively with *Size*, *Institutional Ownership*, and *Index* (Dezso and Ross 2012; Lee and James 2007; Solal and Snellman 2019). The negative correlations, specifically, suggest that larger companies experience negative market responses when appointing new CEOs, on average. As anticipated, *CAR* also moves positively with the amount of media coverage surrounding a succession event (Huberman and Regev 2001; Peress 2014) and negatively with the sentiment of that coverage (Tetlock 2007).

Table 3 includes descriptive statistics broken down by CEO gender and indicates several noteworthy differences between female and male appointments. To start, female CEOs receive 3.35 times more media coverage than male CEOs, on average, and tend to inherit firms that are both better performing and have a larger percentage of female board directors.[10] Table B2 in the online supplement confirms these results by way of regression using controls for all additional covariates. Although our primary argument about the moderating effect of media coverage is not contingent on this finding, the difference between the coverage devoted to female and male CEO appointments supports our initial premise that the amount of media coverage may be an important—and thus far unaccounted for—factor in understanding the nature of any market bias against female leaders.

The remaining tables in the article further examine the relationship between gender, media coverage, and market response, working iteratively through a range

Table 3: Descriptive statistics, by gender

Variable	Female CEO (n = 94) Mean	Female CEO (n = 94) Median	Male CEO (n = 8,095) Mean	Male CEO (n = 8,095) Median	Mean difference (full sample) p value
Firm-Level Characteristic					
Total Assets (Ln)	7.893	7.563	8.112	7.994	0.408
ROA_{t-1}	0.118	0.134	−0.003	0.007	0.000
ROA_{t+4}	0.081	0.126	−0.001	0.074	0.081
Book-to-Market	0.558	0.542	0.739	0.526	0.596
Institutional Ownership	0.603	0.715	0.574	0.666	0.212
Leverage	0.165	0.137	0.191	0.153	0.130
Index	0.340	0.000	0.312	0.000	0.309
Previous Media Coverage (Ln)	0.173	0.010	0.370	0.231	0.191
Female Board Percentage	0.241	0.222	0.137	0.128	0.000
Trading Volume	13.86	13.66	13.72	13.90	0.991
Event-Level Characteristics					
Media Coverage	15.67	7.000	4.678	2.000	0.000
Media Coverage (Ln)	1.851	1.946	1.001	0.693	0.000
Source Readership	1.018	1.000	1.259	1.000	0.024
Media Sentiment	−0.013	0.000	−0.021	−0.007	0.036
Gendered Words	2.160	14.66	0.488	5.454	0.002
Individual-Level Characteristics					
CEO Age	51.45	52.00	52.92	53.00	0.100
Firm Insider	0.434	0.000	0.512	1.000	0.380
Previous CEO Experience	0.187	0.000	0.711	1.000	0.009

Notes: Ln, natural log. Values of p for the mean difference (full sample) were calculated by the Wilcoxon rank-sum test.

of modeling approaches and estimation strategies to identify causality and rule out alternative explanations. We begin with the most basic ordinary least squares models in Table 4, which use the full sample to estimate the relationship between CEO gender, media coverage, and our remaining covariates on the market's response to CEO announcements. Model 1 includes control variables only and indicates that leveraged firms tend to yield positive market returns, on average.

Model 2 introduces the dummy variable, *Female*, and indicates that investors do not respond differently to the appointment of female CEOs, on average. This finding contradicts earlier work by (Lee and James 2007) and thus deserves special attention here. Specifically, the null effect of *Female* in Model 2 could simply imply that gender biases have lessened over time, as our data extend several years beyond the data used in prior research. We assessed this possibility directly by interacting *Female* with time, fit both linearly and as a series of dummy variables corresponding to year. We found no evidence for this explanation, either in our full sample or our matched samples discussed below. It is important to note that our date range has few overlapping years with the prior research; we elaborate on this further in the discussion.

Table 4: Ordinary least squares regressions of media coverage and CEO gender on cumulative abnormal returns

	Cumulative abnormal returns			
Variable name	(1)	(2)	(3)	(4)
Female		0.381	0.259	2.603*
		(0.627)	(0.637)	(1.214)
Media Coverage			0.179*	0.201†
			(0.069)	(0.072)
Female × Media Coverage				−1.286†
				(0.438)
Size	0.005	0.005	0.012	0.011
	(0.088)	(0.088)	(0.089)	(0.089)
ROA_{t-1}	1.945	1.939	1.922	1.918
	(1.964)	(1.965)	(1.968)	(1.968)
Leverage	1.434†	1.441†	1.447†	1.462†
	(0.435)	(0.435)	(0.435)	(0.435)
Book-to-Market	0.252	0.252	0.251	0.251
	(0.155)	(0.155)	(0.156)	(0.157)
Institutional Ownership	−0.381	−0.381	−0.374	−0.381
	(0.286)	(0.286)	(0.287)	(0.287)
Index	0.372	0.372	0.376	0.379
	(0.200)	(0.200)	(0.200)	(0.200)
Previous Media Coverage	−0.093	−0.091	−0.098	−0.096
	(0.118)	(0.119)	(0.118)	(0.118)
Source Readership	0.070	0.076	0.170	0.169
	(0.125)	(0.125)	(0.133)	(0.133)
Trading Volume	−0.138	−0.139	−0.145	−0.143
	(0.089)	(0.089)	(0.090)	(0.090)
Media Sentiment	−1.939	−1.951	−1.816	−1.875
	(1.406)	(1.405)	(1.414)	(1.414)
Gendered Words	0.000	−0.000	−0.000	0.003
	(0.005)	(0.005)	(0.005)	(0.005)
Constant	0.682	0.681	0.468	0.373
	(1.836)	(1.835)	(1.822)	(1.822)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,189	8,189	8,189	8,189
R^2	0.023	0.023	0.023	0.024

Notes: Robust standard errors in parentheses. † $p < 0.01$; ∗ $p < 0.05$.

Model 3 assesses the main effect of media coverage on market reactions to CEO appointments and indicates that higher levels of coverage on the day of announcement are associated with more favorable market reactions. All else held constant, a one-standard-deviation increase in media coverage corresponds to a 0.20 percent increase in cumulative abnormal returns. This finding is consistent with a growing body of research in finance, communications, and organizational theory demonstrating the benefits of increased firm visibility (Barber and Odean

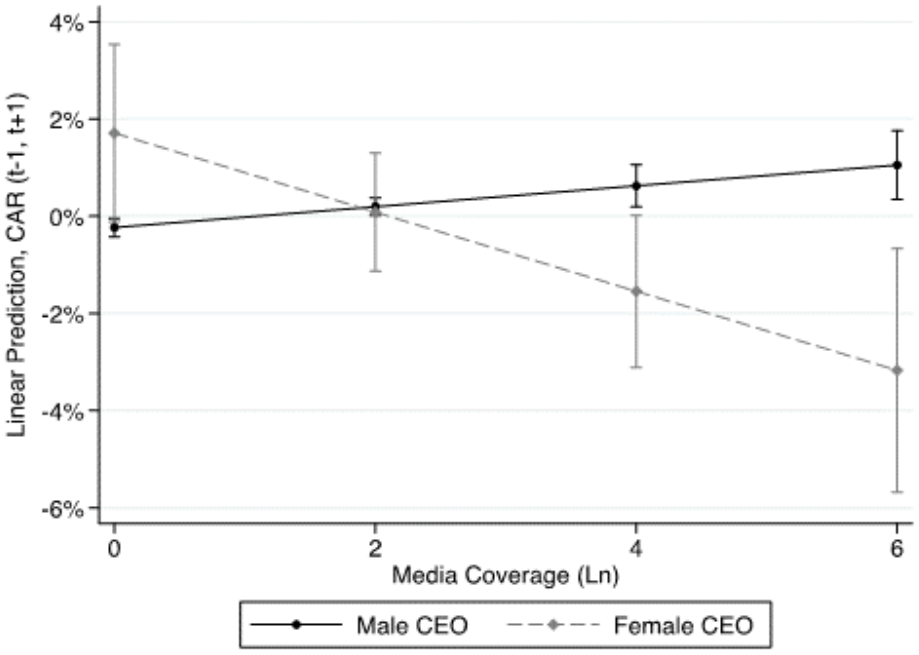

Figure 2: Marginal effects of media coverage on CAR, by CEO gender. *Note:* Ln, natural log.

2008; Peress 2014; Petkova, Rindova, and Gupta 2013; Pollock and Rindova 2003). The effect of CEO gender remains statistically insignificant in Model 3.

Model 4 assesses the effect of CEO gender on market response, contingent on media coverage. The significant interaction term between *Female* and *Media Coverage* indicates that increased coverage surrounding female CEO appointments is associated with a decrease in the abnormal returns experienced by the appointing firms (–1.286, $p < 0.01$). In other words, media coverage moderates the relationship between market reactions to a CEO announcement and the gender of the incoming CEO. Importantly, Model 4 also now reveals a *positive* coefficient on *Female* (2.603, $p < 0.05$), indicating that investors react *favorably* to those female appointees who receive little media attention at the time of announcement.[11] This result is both theoretically meaningful, as it offers initial support for our account, and economically significant. Holding constant all other variables, firms that yield the minimum amount of media coverage after announcing a female CEO generate just shy of two percent cumulative abnormal returns surrounding the announcement date. Note, too, that Model 4 helps to rule out the possibility that investors are simply unaware of CEO appointments that receive little media coverage. This result is shown visually in Figure 2, which contrasts the moderating effects of media coverage for male versus female appointees. Specifically, the association between media coverage and *CAR* is positive for firms appointing male CEOs but negative for firms appointing female CEOs.

The results in Table 4 call into question the prevailing view that investors are inherently biased against female leadership and instead provide insight into the conditions under which gender biases are most likely to emerge. The lack of a main effect of CEO gender on market response (Model 2)—together with the fact that nearly half of all firms appointing female executives experienced *positive* market reactions (see Figure 1)—suggests that gender differences alone are not sufficient to account for market penalties against female appointees. Instead, whether the market discounts firms for appointing female CEOs appears to be contingent on the amount of attention surrounding the appointment: only when attention is high do we see market reactions consistent with traditional prejudice-based accounts.

Selection and Coarsened Exact Matching

Our findings thus far highlight the salience of media attention and offer initial support for our alternative account regarding the market penalty associated with female executives. Despite these results, however, we are quick to point out that female CEOs are not randomly distributed among firms, as evidenced by the descriptive statistics in Table 3. The results in Table 4 may therefore be biased if any of the factors causing firms to select female CEOs are also significant drivers of media coverage, the market's response at the time of a new executive appointment, or both. To account for this nonrandom selection, we next matched each female CEO appointment to a set of male control cases—that is, male CEO appointments that are approximately equivalent on other observable dimensions. We used the coarsened exact matching (CEM) approach (Iacus, King, and Porro 2012) to identify those male announcements that are most similar to each female observation with respect to factors such as industry, firm size, year of the appointment, prior firm performance, et cetera. We then "pruned" the data to retain only matched observations, as matched cases provide the most reliable counterfactuals from which to make causal inferences (Stuart 2010).

In comparison with other methods designed to estimate causal effects from observational data, CEM has been shown to have several unique advantages. First, because it is a nonparametric approach to matching, CEM does not rely on traditional modeling assumptions about the distribution of covariates. Alternative approaches such as propensity score matching use estimates of overall covariate similarity to identify treatment and control observations, which do not guarantee equally distributed covariate values. The result is that such techniques can unintentionally *increase* the imbalance between certain covariates at the expense of reducing imbalance on others. By contrast, CEM does not suffer from this limitation because, by coarsening each covariate into bins—and only considering cases that are in these similar bins—CEM eliminates observations for which there is no counterfactual prior to analysis. The benefits of this approach over other techniques have been demonstrated in several studies and across a number of empirical settings (Chown 2020; Damaraju and Makhija 2018; Inoue 2020; Mazrekaj, De Witte, and Cabus 2020; Teodoridis, Bikard, and Vakili 2019), with CEM outperforming commonly used alternatives (Iacus, King, and Porro 2012). Second, CEM is uniquely useful for samples in which the ratio of control cases to treatment cases is large, as there

are considerably more counterfactuals among which to choose relevant matches (Iacus, King, and Porro 2012). Given the disproportionate number of men who occupy CEO positions in the United States, our study is well suited for one-to-many matching based on CEM.

We first identified exact matches between male and female observations based on industry and year of announcement. Observations were then matched on quartile "coarsened" versions of firm size, prior performance (ROA_{t-1}), and the percentage of female board members, as recent work by Gupta and Raman (2014) has shown that firms with a high number of women on their board are more likely to appoint a female CEO. In total, our matching approach yielded a reduced sample containing approximately 47 percent of the full data.[12] Results of the subsequent analysis are shown in Table 5, Model 5. The coefficient on the interaction between gender and media coverage remains negative and statistically significant (–1.338, $p < 0.01$), again supporting the premise that the market penalty for incoming female CEOs is contingent on receiving significant amounts of media coverage. The lower-order effect of *Female* also remains positive and significant (2.679, $p < 0.05$).

Models 6 and 7, by comparison, contain the results from a more stringent matching model using a one-to-one match, as opposed to the one-to-many match in Model 5. As there can only be one "best control" for any given case, it is possible that including anything other than the best match can introduce bias, leading to less precise estimated effects at the expense of reducing variance (Stuart 2010). The results of Model 6 indicate that the one-to-many matching approach in Model 5 had the effect of *suppressing* media's moderating effect. Substantively, the results of Model 6 indicate that, controlling for CEO selection, investors react favorably (3.458, $p < 0.01$) to firms that appoint female CEOs when those appointments draw little attention. By comparison, a one-standard-deviation increase in attention is associated with a 2.09 percent reduction in *CAR* ($p < 0.01$). The results of Model 7 are substantively identical to Model 6 but also include the three additional covariates *CEO Age*, *Firm Insider*, and *Previous CEO Experience* to further control for individual-level differences in the distribution of matched CEOs. Both firm insiders and those with prior experience as chief executive were positively correlated with CAR, but the inclusion of these variables had no effect on the previously reported results.

The models in Table 5 do not match on the amount of media attention, as Iacus, King, and Porro (2012) note that matching on anything other than pretreatment covariates has the potential to inadvertently introduce selection bias. Nevertheless, Figure 3 displays the results after first sorting our media coverage variable into three bins and then, within each bin, matching on each of the variables noted above. This approach yields an estimate of the sample average treatment effect on the treated for each tercile of media coverage. Consistent with the results presented thus far, Figure 3 visually demonstrates that for announcements receiving the lowest amount of coverage, firms appointing female CEOs benefit relative to those appointing a matched set of male CEOs. The opposite is true for high coverage announcements; female CEOs who garner the most attention face a significant market discount compared with matched male CEOs who receive similarly high levels of attention.

Table 5: Coarsened exact matching results of media coverage and CEO gender on cumulative abnormal returns

		CEM matched sample models	
Variable name	(5)	(6)	(7)
Female	2.679*	3.458*	2.906*
	(1.321)	(1.523)	(1.212)
Media Coverage	0.310*	0.763	0.591
	(0.122)	(0.402)	(0.387)
Female × Media Coverage	−1.338†	−2.087†	−1.906†
	(0.479)	(0.658)	(0.585)
Size	−0.101	−0.226	−0.341
	(0.153)	(0.648)	(0.639)
ROA_{t-1}	4.105	2.797	3.312
	(4.380)	(20.883)	(19.767)
Leverage	0.757	2.736	2.643
	(0.720)	(2.205)	(2.156)
Book-to-Market	0.419*	0.220	0.200
	(0.199)	(0.184)	(0.162)
Institutional Ownership	−0.530	−2.707	−3.097
	(0.502)	(2.422)	(2.336)
Index	0.140	1.370	1.110
	(0.304)	(0.990)	(0.920)
Previous Media Coverage	0.092	−0.752	−0.588
	(0.179)	(0.651)	(0.600)
Female Board Percentage	0.293	1.822	3.175
	(0.207)	(3.715)	(3.722)
Source Readership	−0.133	0.602	0.794
	(0.142)	(0.894)	(0.912)
Trading Volume	−1.087	0.194	0.241
	(2.586)	(0.517)	(0.505)
Media Sentiment	0.001	0.868	1.705
	(0.006)	(7.000)	(6.984)
Gendered Words	−0.101	0.052*	0.047*
	(0.153)	(0.025)	(0.023)
CEO Age			−0.035
			(0.050)
Firm Insider			2.161*
			(0.917)
Previous CEO Experience			2.291*
			(1.140)
Constant	2.876	−6.010	−5.804
	(2.272)	(4.747)	(5.781)
Year Fixed Effects	Yes	—	—
Industry Fixed Effects	Yes	—	—
Observations	3,848	188	188
R^2	0.066	0.275	0.249

Notes: All models are matched along the following covariates: year, size, ROA_{t-1}, female board percentage, SIC code. Robust standard errors in parentheses. † $p < 0.01$; ∗ $p < 0.05$.

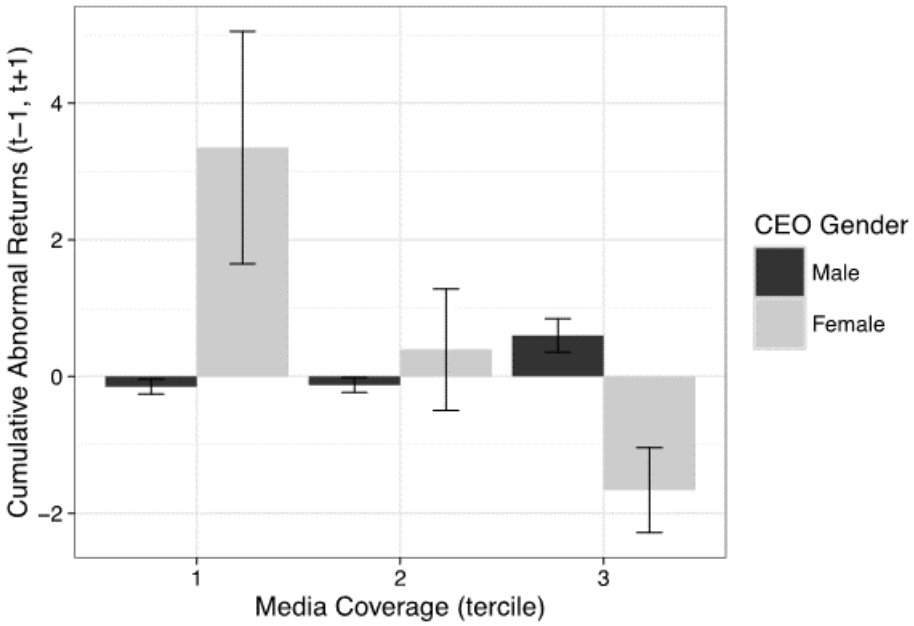

Figure 3: Treatment effects of appointing a female CEO on a firm's cumulative abnormal returns, by media coverage tercile. *Notes:* Error bars represent ± 1 SE. Each bar represents the mean CAR after matching on year, size, ROA_{t-1}, SIC code, and female board percentage, conditional on media coverage tercile.

Instrumental Variable Approach

The matched sample models add significantly to our ability to highlight real, substantive differences between firms that appoint male versus female CEOs. Yet even these more conservative estimates may continue to suffer from endogeneity if the market response associated with an appointment event *causes* media to report on that event. As we noted previously, our sampling strategy using only same-day coverage mitigates this possibility to a large extent.[13] Nevertheless, the nonrandom allocation of media attention that characterizes our data renders it theoretically possible that large sell-offs following the appointment of a female CEO may disproportionately capture the attention of multiple media outlets even on the day of announcement, causing them to report on the event and amplifying any selloff as a result (Engelberg and Parsons 2011).

To address this issue, as a robustness analysis, we employed an instrumental variable approach in an attempt to isolate exogenous variation in the amount of media coverage surrounding an appointment announcement. Specifically, we instrumented media coverage using a measure of market volatility on the day of each announcement. Market volatility provides a reasonable instrument for media coverage because when volatility is unexpectedly high, journalists are more likely to focus on broader macroeconomic conditions at the expense of firm-specific events (for similar reasoning, see Liu, Sherman, and Zhang 2014; Peng and Xiong 2006).[14] Accordingly, we expect firms to receive less media attention when announcing an executive succession on a day marked by abnormally high market volatility.

Conversely, CEO announcements that coincide with low volatility are likely to receive more attention because the media, unencumbered by macrolevel news, has more resources and bandwidth to dedicate to corporate announcements.

We measured daily "volatility shocks" as changes in the Chicago Board Options Exchange's Volatility Index, or VIX. For our purposes here, we defined *Volatility Shock* as a daily spike in market volatility that amounted to a two-standard-deviation increase (or greater) in market volatility as compared with the average market volatility over the prior 10-day trading period. According to these criteria, 13.72 percent of our observations were considered to have a volatility shock. Consistent with the requirements of instrumental variable regression, volatility shocks had a significant negative effect on the amount of media coverage associated with a given CEO appointment.[15] As such, unexpected volatility shocks represent an exogenous, quasi-random predictor of media coverage.[16] The second condition for a valid instrument is that the instrument should not be correlated with the outcome of interest except through its relationship with the key explanatory variable. For our analysis, this implies that volatility shocks should only affect a firm's announcement-related abnormal returns through its direct effect on public attention, and media coverage specifically. Although there is no way to empirically validate this condition, there are a number of reasons to believe that our instrument satisfies this "exclusion restriction." First, as volatility shocks are measured using the average volatility over the previous 10 days, such movements are likely to be random in nature. In other words, even when market volatility was historically high (such as during the financial crisis), our measure only treats days as volatility shocks when the VIX is significantly higher than what investors experienced over the prior two weeks. Additionally, it is unlikely that a macrolevel volatility event affecting the market at large would uniquely affect the return experienced by a specific firm—that is, one announcing a new executive appointment—other than via the volatility event's impact on attention.

Table B3 in the online supplement presents the results of both the first stage and reduced-form regressions. Specifically, Model 1 confirms that an increase in aggregate market volatility is negatively associated with the amount of media coverage afforded to new CEO announcements, thus supporting the argument that when overall market volatility is high, the media pays less attention to firm-specific events. It is also important to note that our instrument is strong, with an F-statistic of 15.94, surpassing the relevance condition ($F > 10.00$) advocated in Murray (2006). Model 2 further demonstrates that our instrument is orthogonal to our independent variables, as the inclusion of our previous control variables only marginally affects the coefficient estimate on *Volatility Shock*. The reduced-form regression in Model 3 indicates that volatility shocks are associated with more negative market reactions to a CEO announcement, on average.

Model 1 in Table B4 in the online supplement includes the results of the instrumental variable two-stage least squares (2SLS) regression, where *Media Coverage* is now instrumented by *Volatility Shock*. Results continue to support our prior findings. Specifically, the results illustrate that even exogenous variations in media coverage, caused by spikes in overall market volatility, carry important consequences for the market's response to CEO succession events. As before, Model 1, in Table

Table 6: Short-term versus long-term effects of media coverage and CEO gender on cumulative abnormal returns

Variable name	Cumulative abnormal returns		
	3-day window	11-day window	25-day window
Female	2.603*	1.349	4.402*
	(1.214)	(1.698)	(1.909)
Media Coverage	0.201†	0.468†	0.215
	(0.072)	(0.139)	(0.193)
Female × Media Coverage	−1.286†	−1.123*	−1.435
	(0.438)	(0.453)	(0.784)
Prior Controls Included	Yes	Yes	(0.784)
Observations	8,189	8,189	8,189
R^2	0.024	0.016	0.013

Notes: Robust standard errors in parentheses. † $p < 0.01$; ∗ $p < 0.05$.

B4, illustrates that whereas the market rewards male CEOs who garner increased media attention at their time of appointment announcement, female CEOs who attract comparable amounts of attention yield substantial market penalties. A one-standard-deviation increase in media coverage is associated with a 3.80 percent decrease in abnormal returns among firms appointing female executives.

Short-Term versus Long-Term Returns

Our final analysis examines market responses over longer time horizons. By comparing short- and long-term returns it is possible to further disentangle our argument from one based on individually held prejudices alone, as the two accounts offer contrasting predictions with respect to long-run outcomes. Specifically, if the market penalty associated with female executives is driven by individual prejudice, then one should expect that firms appointing female CEOs and garnering limited public attention would gradually experience a market discount as more (prejudiced) investors become aware of the appointment. Our data reveal an opposite pattern. Rather than being penalized over time, firms that appointed female CEOs and received limited attention—defined as those in the bottom tercile of media coverage—generated an additional 1.5 percent abnormal return over the subsequent three trading days following their announcement. Over an even longer 25-day time horizon, abnormal returns among these same firms continued to rise to more than six percent (Table 6). Even more strikingly, the models in Table 6 also indicate that the market penalty experienced by those firms that attracted significant attention following the appointment of a female CEO—those whose media coverage ranked in the top quartile—reversed over time. Twenty-five days after an appointment, the firms most likely to experience a short-term market discount posted an average 2.59 percent *positive* return (compared with 0.9 percent among a sample of matched firms who appointed male CEOs).

Our alternative account based on second-order sensemaking is consistent with this pattern of results. Given the speculative nature of second-order sensemaking, the short-term market penalty associated with highly covered female CEOs appears to reflect only temporary departures from firms' "true" values (cf. Zuckerman 2012). The resulting divergence between price and value presents an arbitrage opportunity for investors, resulting in a price reversal and long-run convergence on a market valuation that more accurately captures firms' future prospects. By comparing short- and long-term returns, our data offer strong evidence that heightened public attention surrounding the announcement of an executive appointment fosters speculative trading—that is, trading as a result of second-order sensemaking—that can disadvantage firms appointing female CEOs in the short term, although not necessarily in the long term.

Alternative Explanations

Our results highlight a causal relationship between media coverage and differential market responses to female versus male CEO appointments. In contrast to prior research, which has reported a negative main effect of female appointments on cumulative abnormal returns—and subsequently interpreted this effect as indicating that investors are prejudiced against female executives—our results show that such prejudicial reactions are both short-lived and depend on the amount of public attention associated with female CEO appointments at the time of announcement. Furthermore, whereas previous research has been unable to explain why some female CEO appointments are *not* penalized (or are even rewarded), our findings illustrate that firms appointing female CEOs that also receive little attention at the time of announcement tend to be favored by the market. One would not expect these results if investors were systematically biased against female leadership.

Instead, the empirical observations derived from our data suggest a different sort of mechanism. As we argued at the outset, we contend that mechanism to be related to investors' second-order expectations about the prejudices of other investors. To make this case more fully, we consider here three alternative explanations for our results. The first, which we refer to as the "visibility" or "bias activation" hypothesis, suggests that heightened media coverage raises the likelihood that prejudiced investors become aware of new (female) executive appointments. After all, if investors are unaware of an appointment, it is nearly axiomatic that they will not react to it. We do not dispute that media coverage is an important determinant of the visibility of an event. Indeed, in models omitted from the article we find that coverage is a significant predictor of trading volume. Nevertheless, for the visibility hypothesis to meaningfully affect our results, any increased activation of gender stereotypes among investors must be uncorrelated with two of our key control variables: trading volume and the institutional versus retail composition of firms' investors. This is unlikely to be the case. More importantly, as an alternative explanation the visibility hypotheses fails to explain two important observations: first, why the observable market penalty against female CEOs is observable only in the short run, and second, why female appointees who attract low levels of media coverage garner significant *positive* reactions in the market. Rather than being

unaware of those appointments that receive limited media coverage, investors appear to respond to such appointments in ways that are consistent with recent research on the benefits of female leadership (Dezso and Ross 2012; Khan and Vieito 2013).

A second alternative, which we will refer to as the "controversy hypothesis," relates to the possibility that only controversial female appointees draw the (negative) attention of the media and simultaneously the ire of investors. As with the "visibility hypothesis" above, we do not dispute this possibility offhand. As a sufficient cause of the patterns observed in our data, however, the "controversy hypothesis" falls short in several respects. First, if the female appointments that received the most media coverage were indeed more controversial and thus were also the most likely to experience negative market returns, one should also observe a negative correlation between the amount of media coverage associated with female appointments and the sentiment of that coverage. Our data reveal no such relationship. Second, our multiple identification strategies address this concern indirectly. Our instrumental variable approach, in particular, rules out the "controversy hypothesis," as it relies on exogenous shifts in media coverage to estimate the observed market penalties against firms appointing female executives.

Third, it may be the case that female CEOs who receive significant amounts of media coverage at the time of their appointment, and are thus more likely to be penalized by the market, also underperform male CEOs in the long run. According to this scenario, which we refer to as the "low performer hypothesis," the negative market response associated with high-coverage female CEOs might instead reflect the reactions of prescient investors. Although our matched sample regressions and instrumental variable work to eliminate this alternative, we further explored this possibility by directly comparing the *future* performance of female- and male-led firms one year following each CEO succession event. Ceteris paribus, if newly appointed male CEOs outperform female CEOs, it might be reasonable to expect significantly better firm performance following the appointment of male CEOs. Furthermore, if the media is more likely to cover the appointments of those women who are most likely to perform poorly, then our effects might be attributable to underlying (and unobserved) quality differences alone. The results of this analysis, which are included in Table B5 of the online supplement, lend no support to this alternative.

Discussion and Conclusion

We began this article by highlighting an apparent contradiction between two influential lines of research on female executive leadership—one demonstrating that women are effective leaders and another showing that investors tend to react unfavorably to the appointment of new female executives. We then sought to reconcile these seemingly inconsistent findings by considering an alternative pathway by which gender biases emerge in financial markets. Rather than assume investors are prejudiced against female executives, we posited that even nonprejudiced investors might react unfavorably to the appointment of female executives if and when they come to believe that other investors will react unfavorably. To assess our alternative

account, we first examined gender differences in the amount of media coverage dedicated to CEO succession events, as media coverage can be an important driver of investors' attention as well as a trigger for the sort of second-order sensemaking processes about which we theorize. Consistent with our expectations, our data revealed large and systematic differences in the amount of media coverage associated with male versus female CEO appointments (Table 3; Table B2 of the online supplement). Furthermore, our multiple analyses provided strong support for a causal relationship between media coverage and the market penalty against female CEOs (Tables 4 and 5; Tables B3 and B4 of the online supplement). When newly appointed female CEOs receive high levels of media coverage—even when such coverage was exogenously determined—the firms appointing them are at greater risk of garnering unfavorable reactions among investors. By comparison, firms appointing male CEOs reap market rewards for the same levels of heightened media attention, all else held constant. Thus, whereas heightened attention appears to legitimize incoming male CEOs in the eyes of investors, it acts as a liability for female CEOs.

At the opposite end of the spectrum, female executives who receive little media attention at the time of appointment tend to be rewarded by investors, relative to both female executives who receive more attention and male executives who receive comparable (limited) amounts of attention. Although at first blush this result might appear counterintuitive, especially in the light of the fact that media coverage is an important driver of the visibility of a given event, it is a logical extension of the alternative account we have proposed. When the appointment of a female CEO "remains in the shadows," so to speak, investors are less likely to consider the immediate responses of other investors when making investment decisions. Free from the constraints of second-order sensemaking, investors are able to respond to the appointment of a female executive in ways that reflect their first-order views—views that seem to be decidedly less prejudicial toward women. In this way, our account helps to reconcile the fact that women are effective organizational leaders with the observation that markets may disproportionately penalize some firms when they appoint a female chief executive.

Limitations

Given the nature of our data, our analyses are not without certain limitations. The first relates to our use of media coverage as an indicator of the amount of public attention afforded to a given CEO appointment. It is plausible that other, more specialized sources of event coverage not included in our data—for example, analyst reports, instant messaging, and informal correspondence—are comparable or even more salient drivers of investor behavior than mass media (Petkova, Rindova, and Gupta 2013). Although some of this communication will remain unobservable, future research on the role of attention in financial markets might strive to incorporate additional sources of media that have been shown to influence investor attention, including the use of real-time communication on various social media platforms (Bollen, Mao, and Zeng 2011).

A second limitation relates to our focus on same-day media coverage. Although this choice was necessary from a causal identification standpoint, it significantly limited our ability to observe and measure meaningful variance in media sentiment. Future research might fruitfully explore the interaction between gender and media sentiment by analyzing the market's response to a broader portfolio of firm events, as opposed to executive succession events only.

A third limitation is that we are unable to directly observe the process of second-order bias about which we have theorized. This is, of course, a consequence of the fact that our data provide no plausible avenue for observing investor decision-making at the individual level. To overcome this limitation, we have attempted to rule out several alternative accounts as sufficient explanations for the patterns observable in our data. Ultimately, we must rest on the fact that our interpretation explains more about the available data than any other. This is not to say that prior accounts of first-order prejudice and/or latent bias activation among investors are incorrect. Rather, our additional mechanism coupled with each of these existing accounts explains far more than prior research.

Finally, we leave unanswered any question about the extent to which firms can actively influence the level of media coverage surrounding a succession event. Although our results suggest that female CEOs may indeed be "better off in the shadows," we know little about whether or not the firms appointing those CEOs are capable of casting such shadows. For the sake of speculation, one might look to recent research in finance and strategic management on anticipatory impression management. Ahern and Sosyura (2014), for example, found that firms increase their corporate press releases prior to important events in order to capture investor attention and inflate their stock price. Similarly, Graffin, Boivie, and Carpenter (2013) reported that firms strategically disclose additional, superfluous information at the same time they announce major corporate changes. The authors of the second study argue that firms engage in such behavior so as to mitigate the possibility that such changes are directly linked to any negative market reaction following the event. Anecdotally, at least, one firm might be catching on. In November of 2011, two months after Virginia Rometty was appointed to succeed Sam Palmisano as the head of IBM, an article appeared with the headline "IBM Quietly Names a New CEO" (Thibodeau 2011). Was it the case that IBM simply "doesn't like drama," as the article went on to note, or might the company have suspected the very mechanisms we propose here?

Contributions and Future Directions

Empirically speaking, an important contribution of our article is that it extends a growing body of work assessing the effects of media coverage on the pricing of publicly traded securities (Ahern and Sosyura 2014; Da, Engelberg, and Gao 2011). Unsurprisingly, several prior studies have demonstrated that the amount of attention surrounding a firm-specific event can raise the visibility of that event vis-à-vis investors, uniquely impacting the price of a firm's stock in turn (Dyck and Zingales 2003; Huberman and Regev 2001). To this empirical finding we add two additional considerations. First, the full effect of media coverage likely encompasses

far more than visibility alone. Although media surely affects the salience of an event, our data indicate that the association between media coverage and stock price are ultimately contingent on the lenses through which investors interpret the coverage. Gender is one such lens, as our analyses have shown, although future research will undoubtedly uncover many more. Second, whereas the bulk of research to date has found that increased media coverage is associated with positive short-term market reactions, our data highlight an instance wherein media attention yielded negative price movements. In this respect our empirical findings lend support to Barber and Odean's (2008:785) cautionary note on the role of attention in finance: "if the salient attributes of an option are critical to our utility, attention may serve us well. If not, attention may lead to suboptimal choices." It is also notable that, compared with earlier studies (Lee and James 2007), our data set draws from more recent data and includes significantly more female CEO appointments. As the number of female CEO appointments increases, each one may be less novel and may therefore garner less attention. If true, this could be one reason why we see a more positive market reaction to female CEO appointments than previous work.

A second contribution of this study is to clarify the role of media on the persistence of gender bias, at least among top corporate leaders. A considerable amount of research has examined the hurdles that women must overcome to reach the top of the corporate hierarchy. Nevertheless, we know comparatively little about the constraints women face once they have secured such coveted positions. Park and Westphal (2013) offer a notable exception, reporting that white male CEOs tend to attribute high performance among minority CEOs to external conditions, but poor performance among those same CEOs to the individuals themselves. Presumably, the male CEOs in Park and Westphal's data are driven by first-order biases, whether conscious or not. Our results here offer an additional pathway by which discrimination may become manifest in market settings.

That some investors are biased against women is undoubtedly true. Our findings push beyond this account, however, by demonstrating how heightened media attention can trigger a second—and arguably more durable—form of bias. Finally, and most practically, then, our results carry implications for both female CEOs and the firms that appoint them. Researchers have recently shown that boards of directors tend to be highly attentive to how the market reacts to an executive appointment. For example, Graffin, Boivie, and Carpenter (2013) found that when markets respond negatively to the appointment of a new CEO, the CEO's future compensation is adversely affected. In light of this finding, it is possible that the heightened media coverage surrounding female appointments has an indirect negative effect on a female CEO's future compensation. When initial market reactions to new appointments serve as "first impressions" among board members, then the market penalties associated with high-coverage female CEOs may also give rise to other important sources of gender inequity, such as reducing the average tenure of female CEOs, limiting their ability to take new strategic directions for the firm, and even impacting their likelihood of being appointed in the first place. Although these consequences are beyond the scope of this study, they mark important areas of future research.

Notes

1 Recent evidence from Quantopian, a crowd-sourced algorithmic investment firm, demonstrated that a simple trading strategy of investing in female-led companies for the duration of the female CEO's tenure yielded 226 percent higher cumulative market returns than the S&P 500 between 2000 and 2014 (Rubin 2015).

2 Existing research focusing on the average magnitude of the market's response to female CEO appointments risks overlooking this important comparison.

3 We measure "public attention" by proxy, using data from one of the most comprehensive databases on (digital and print) media coverage ever assembled. We estimate that our final data sample represents more than 98 percent of all the media coverage related to CEO announcements within our time frame.

4 See Appendix A of the online supplement for further details on the filtering algorithm used to identify CEO announcements from the RavenPack media data.

5 In Table B1 of the online supplement, we explore alternative measures including the logged count measure adjusted by industry, a logged count of unique media outlets reporting on an appointment (as opposed to unique articles), a weighted logged measure where the weight assigned to any given article was roughly proportional to the media outlet's readership size, and a reduced measure where company press releases were excluded from the final count. The substantive results of our analyses are consistent across each of these alternative measurements.

6 Given that we include the lagged ROA for theoretical reasons grounded in the potential that poorer performing firms may be more likely to appoint female CEOs rather than male CEOs, we include only one lagged ROA variable to achieve this end (rather than multiple lagged ROA variables) and avoid the issue of high correlation between prior quarterly ROA measures.

7 Indexes include S&P 500, Fortune 1000, Russell 1000, and Russell 2000.

8 We also replicated these measures using full article texts for a smaller sample of observations. Following Solomon, Soltes, and Sosyura (2014) we randomly sampled two hundred articles, half of which covered female appointments and the other half of which covered male appointments. To ensure that the articles represented appointments with a wide range of surrounding media coverage, we sorted announcements by media coverage decile and randomly sampled articles reporting on both male and female CEOs from each decile.

9 Given the scope of our complete data, we collected these individual-level data for only a subset of observations included in a series of matched-sample regressions.

10 Although the relationship between prior firm performance and the appointment of a female versus male CEO contradicts research on the "glass cliff," it supports a recent article by Adams, Gupta, and Leeth (2009) that found no evidence of a glass cliff facing female CEOs at U.S. firms. As our results also indicate, women are more likely to be appointed to *better* performing firms, not worse.

11 We subjected our analysis to a series of sensitivity checks to assess whether our findings were the result of outlier observations. This included winsorizing the data at the 90th, 95th, and 99th percentiles, as well as excluding all female appointments that received media coverage more than two standard deviations from the within-female mean. Results are consistent under each of these specifications.

12 One female and 4,341 male observations were dropped due to there being no reliable match.

13 Indeed, prior research has suggested that the vast majority of same-day media coverage simply restates facts about the appointment announcement—oftentimes amounting to a copy of the appointing firm's own press release without generating additional information (Ahern and Sosyura 2014; Liu, Sherman, and Zhang 2014).

14 This approach follows on prior insights by Barber and Odean (2008) regarding the role of limited attention in financial markets.

15 Other measures of volatility that we explored included the proportional change in market price of the Dow Jones Industrial Average using a 30-day rolling average as well as "trading volume shocks," which we coded as a dummy variable for days that were greater than one standard deviation above the monthly mean. These measures were not strongly correlated with media coverage, however, and thus they did not satisfy the relevance condition for a valid instrument.

16 To further ensure confidence in the exogeneity of our instrument, we assessed whether firms appointing a female CEO "strategically announce" the appointment on high-volatility days. We regressed *Female* on *Volatility Shock* and separately on our continuous measure of market volatility (VIX). Both models show no significant relationship.

References

Abraham, Mabel. 2020. "Gender-Role Incongruity and Audience-Based Gender Bias: An Examination of Networking among Entrepreneurs." *Administrative Science Quarterly* 65(1):151–80. https://doi.org/10.1177/0001839219832813.

Adams, Susan M., Atul Gupta, and John D. Leeth. 2009. "Are Female Executives Over-represented in Precarious Leadership Positions?" *British Journal of Management* 20(1):1–12. https://doi.org/10.1111/j.1467-8551.2007.00549.x.

Ahern, Kenneth R., and Denis Sosyura. 2014. "Who Writes the News? Corporate Press Releases during Merger Negotiations." *Journal of Finance* 69(1):241–91. https://doi.org/10.1111/jofi.12109.

Allen, Franklin, Stephen Morris, and Hyun Song Shin. 2006. "Beauty Contests and Iterated Expectations in Asset Markets." *Review of Financial Studies* 19(3):719–52. https://doi.org/10.1093/rfs/hhj036.

Baker, Malcolm, and Jeffrey Wurgler. 2007. "Investor Sentiment in the Stock Market." *Journal of Economic Perspectives* 21(2):129–51. https://doi.org/10.1257/jep.21.2.129.

Barber, Brad M., and Terrance Odean. 2008. "All That Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors." *Review of Financial Studies* 21(2):785–818. https://doi.org/10.1093/rfs/hhm079.

Beckman, Christine M., and Damon J. Phillips. 2005. "Interorganizational Determinants of Promotion: Client Leadership and the Attainment of Women Attorneys." *American Sociological Review* 70(4):678–701. https://doi.org/10.1177/000312240507000407.

Beunza, Daniel, and David Stark. 2004. "Tools of the Trade: the Socio-technology of Arbitrage in a Wall Street Trading Room." *Industrial and Corporate Change* 13(2):369–400. https://doi.org/10.1093/icc/dth015.

Beyer, Anne, Daniel A. Cohen, Thomas Z. Lys, and Beverly R. Walther. 2010. "The Financial Reporting Environment: Review of the Recent Literature." *Journal of Accounting & Economics* 50(2–3):296–343. https://doi.org/10.1016/j.jacceco.2010.10.003.

Binder, John. 1998. "The Event Study Methodology since 1969." *Review of Quantitative Finance and Accounting* 11(2):111–37. https://doi.org/10.1023/A:1008295500105.

Blau, Francine D., and Lawrence M. Kahn. 2000. "Gender Differences in Pay." *Journal of Economic Perspectives* 14(4):75–99. https://doi.org/10.1257/jep.14.4.75.

Bollen, Johan, Huina Mao, and Xiaojun Zeng. 2011. "Twitter Mood Predicts the Stock Market." *Journal of Computational Science* 2(1):1–8. https://doi.org/10.1016/j.jocs.2010.12.007.

Chown, Jillian D. 2020. "Financial Incentives and Professionals' Work Tasks: The Moderating Effects of Jurisdictional Dominance and Prominence." *Organization Science* 31(4):887–908. https://doi.org/10.1287/orsc.2019.1334.

Cook, Alison, and Christy Glass. 2011. "Leadership Change and Shareholder Value: How Markets React to the Appointments of Women." *Human Resource Management* 50(4):501–19. https://doi.org/10.1002/hrm.20438.

Cuddy, Amy J.C., Susan T. Fiske, and Peter Glick. 2007. "The BIAS Map: Behaviors from Intergroup Affect and Stereotypes." *Journal of Personality and Social Psychology* 92(4):631–48. https://doi.org/10.1037/0022-3514.92.4.631.

Da, Zhi, Joseph Engelberg, and Pengjie Gao. 2011. "In Search of Attention." *Journal of Finance* 66(5):1461–99. https://doi.org/10.1111/j.1540-6261.2011.01679.x.

Damaraju, Naga Lakshmi, and Anil K. Makhija. 2018. "The Role of Social Proximity in Professional CEO Appointments: Evidence from Caste/Religion-Based Hiring of CEOs in India." *Strategic Management Journal* 39(7):2051–74. https://doi.org/10.1002/smj.2787.

Davison, W. Phillips. 1983. "The Third-Person Effect in Communication." *Public Opinion Quarterly* 47(1):1–15. https://doi.org/10.1086/268763.

Dezso, Cristian L., and David Gaddis Ross. 2012. "Does Female Representation in Top Management Improve Firm Performance? A Panel Data Investigation." *Strategic Management Journal* 33(9):1072–89. https://doi.org/10.1002/smj.1955.

Dixon-Fowler, Heather R., Alan E. Ellstrand, and Jonathan L. Johnson. 2013. "Strength in Numbers or Guilt by Association? Intragroup Effects of Female Chief Executive Announcements." *Strategic Management Journal* 34(12):1488–501. https://doi.org/10.1002/smj.2076.

Dobbin, Frank, and Jiwook Jung. 2010. "Corporate Board Gender Diversity and Stock Performance: The Competence Gap or Institutional Investor Bias." *North Carolina Law Review* 89(3):809–38.

Dorobantu, Sinziana, and Kate Odziemkowska. 2017. "Valuing Stakeholder Governance: Property Rights, Community Mobilization, and Firm Value." *Strategic Management Journal* 38(13):2682–703. https://doi.org/10.1002/smj.2675.

Dovidio, John F., Brenda Major, and Jennifer Crocker. 2000. "Stigma: Introduction and Overview." Pp. 1–28 in *The Social Psychology of Stigma*, edited by Todd F. Heatherton, Robert E. Kleck, Michelle R. Hebl, and Jay G. Hull. New York: Guilford Press.

Dyck, Alexander, and Luigi Zingales. 2003. "Media and Asset Prices." Working Paper No. 04-003, Harvard Business School.

Eagly, Alice H., and Linda L. Carli. 2003. "The Female Leadership Advantage: An Evaluation of the Evidence." *Leadership Quarterly* 14(6):807–34. https://doi.org/10.1016/j.leaqua.2003.09.004.

Eagly, Alice H., and Linda L. Carli. 2007. *Through the Labyrinth: The Truth about How Women Become Leaders*. Boston, MA: Harvard Business School Publishing.

Engelberg, Joseph E., and Christopher A. Parsons. 2011. "The Causal Impact of Media in Financial Markets." *Journal of Finance* 66(1):67–97. https://doi.org/10.1111/j.1540-6261.2010.01626.x.

Fama, Eugene F., and Kenneth R. French. 1993. "Common Risk-Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33(1):3–56. https://doi.org/10.1016/0304-405X(93)90023-5.

Fang, Lily, and Joel Peress. 2009. "Media Coverage and the Cross-section of Stock Returns." *Journal of Finance* 64(5):2023–52. https://doi.org/10.1111/j.1540-6261.2009.01493.x.

Fernandez-Mateo, Isabel, and Zella King. 2011. "Anticipatory Sorting and Gender Segregation in Temporary Employment." *Management Science* 57(6):989–1008. https://doi.org/10.1287/mnsc.1110.1333.

Fernandez, Roberto M., and Colette Friedrich. 2011. "Gender Sorting at the Application Interface." *Industrial Relations* 50(4):591–609. https://doi.org/10.1111/j.1468-232X.2011.00654.x.

Fiske, Susan T., and Shelley E. Taylor. 1991. *Social Cognition*. New York: Mcgraw-Hill.

Fiske, Susan T., Amy J.C. Cuddy, Peter Glick, and Jun Xu. 2002. "A Model of (Often Mixed) Stereotype Content: Competence and Warmth Respectively Follow from Perceived Status and Competition." *Journal of Personality and Social Psychology* 82(6):878–902. https://doi.org/10.1037/0022-3514.82.6.878.

Golan, Guy J., Stephen A. Banning, and Lisa Lundy. 2008. "Likelihood to Vote, Candidate Choice, and the Third-Person Effect - Behavioral Implications of Political Advertising in the 2004 Presidential Election." *American Behavioral Scientist* 52(2):278–90. https://doi.org/10.1177/0002764208321356.

Graffin, Scott D., Steven Boivie, and Mason A. Carpenter. 2013. "Examining CEO Succession and the Role of Heuristics in Early-Stage CEO Evaluation." *Strategic Management Journal* 34(4):383–403. https://doi.org/10.1002/smj.2019.

Gupta, Atul, and Kartik Raman. 2014. "Board Diversity and CEO Selection." *Journal of Financial Research* 37(4):495–517. https://doi.org/10.1111/jfir.12044.

Huberman, Gur, and Tomer Regev. 2001. "Contagious Speculation and a Cure for Cancer: A Nonevent That Made Stock Prices Soar." *Journal of Finance* 56(1):387–96. https://doi.org/10.1111/0022-1082.00330.

Iacus, Stefano M., Gary King, and Giuseppe Porro. 2012. "Causal Inference without Balance Checking: Coarsened Exact Matching." *Political Analysis* 20(1):1–24. https://doi.org/10.1093/pan/mpr013.

Inoue, Carlos. 2020. "Election Cycles and Organizations: How Politics Shapes the Performance of State-Owned Enterprises over Time." *Administrative Science Quarterly* 65(3):677–709. https://doi.org/10.1177/0001839219869913.

Kanter, Rosabeth Moss. 1977. "Some Effects of Proportions on Group Life: Skewed Sex Ratios and Responses to Token Women." *American Journal of Sociology* 82(5):965–90. https://doi.org/10.1086/226425.

Keynes, John Maynard. 1936. *The General Theory of Interest, Employment and Money*. London: MacMillan.

Khan, Walayet A., and João Paulo Vieito. 2013. "CEO Gender and Firm Performance." *Journal of Economics and Business* 67:55–66. https://doi.org/10.1016/j.jeconbus.2013.01.003.

Khurana, Rakesh. 2002. "The Curse of the Superstar CEO." *Harvard Business Review* 80(9):60–6, 125.

Knorr-Cetina, Karim, and Urs Bruegger. 2002. "Global Microstructures: The Virtual Societies of Financial Markets." *American Journal of Sociology* 107(4):905–50. https://doi.org/10.1086/341045.

Lee, Peggy M., and Erika Hayes James. 2007. "She'-E-Os: Gender Effects and Investor Reactions to the Announcements of Top Executive Appointments." *Strategic Management Journal* 28(3):227–41. https://doi.org/10.1002/smj.575.

Lewis, Kevin. 2013. "The Limits of Racial Prejudice." *Proceedings of the National Academy of Sciences of the United States of America* 110(47):18814–19. https://doi.org/10.1073/pnas.1308501110.

Liu, Laura Xiaolei, Ann E. Sherman, and Yong Zhang. 2014. "The Long-Run Role of the Media: Evidence from Initial Public Offerings." *Management Science* 60(8):1945–64. https://doi.org/10.1287/mnsc.2013.1851.

Loughran, Tim, and Bill McDonald. 2011. "When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks." *Journal of Finance* 66(1):35–65. https://doi.org/10.1111/j.1540-6261.2010.01625.x.

MacKenzie, Donald, and Yuval Millo. 2003. "Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange." *American Journal of Sociology* 109(1):107–45. https://doi.org/10.1086/374404.

Macrae, C.N., and G.V. Bodenhausen. 2000. "Social Cognition: Thinking Categorically about Others." *Annual Review of Psychology* 51:93–120. https://doi.org/10.1146/annurev.psych.51.1.93.

Mazrekaj, Deni, Kristof De Witte, and Sofie Cabus. 2020. "School Outcomes of Children Raised by Same-Sex Parents: Evidence from Administrative Panel Data." *American Sociological Review* 85(5):830–56. https://doi.org/10.1177/0003122420957249.

Murray, Michael P. 2006. "Avoiding Invalid Instruments and Coping with Weak Instruments." *Journal of Economic Perspectives* 20(4):111–32. https://doi.org/10.1257/jep.20.4.111.

Park, Sun Hyun, and James D. Westphal. 2013. "Social Discrimination in the Corporate Elite: How Status Affects the Propensity for Minority CEOs to Receive Blame for Low Firm Performance." *Administrative Science Quarterly* 58(4):542–86. https://doi.org/10.1177/0001839213509364.

Peng, Lin, and Wei Xiong. 2006. "Investor Attention, Overconfidence and Category Learning." *Journal of Financial Economics* 80(3):563–602. https://doi.org/10.1016/j.jfineco.2005.05.003.

Peress, Joel. 2014. "The Media and the Diffusion of Information in Financial Markets: Evidence from Newspaper Strikes." *Journal of Finance* 69(5):2007–43. https://doi.org/10.1111/jofi.12179.

Petkova, Antoaneta P., Violina P. Rindova, and Anil K. Gupta. 2013. "No News Is Bad News: Sensegiving Activities, Media Attention, and Venture Capital Funding of New Technology Organizations." *Organization Science* 24(3):865–88. https://doi.org/10.1287/orsc.1120.0759.

Pollock, Timothy G., and Violina P. Rindova. 2003. "Media Legitimation Effects in the Market for Initial Public Offerings." *Academy of Management Journal* 46(5):631–42. https://doi.org/10.2307/30040654.

Quigley, Timothy J., and Donald C. Hambrick. 2015. "Has the 'CEO Effect' Increased in Recent Decades? A New Explanation for the Great Rise in America's Attention to Corporate Leaders." *Strategic Management Journal* 36(6):821–30. https://doi.org/10.1002/smj.2258.

Reskin, Barbara F. 2005. "Including Mechanisms in Our Models of Ascriptive Inequality." Pp. 75–97 in *Handbook of Employment Discrimination Research*, edited by Laura Beth Nielsen and Robert L. Nelson. New York: Springer-Verlag. https://doi.org/10.1007/978-0-387-09467-0_4.

Ridgeway, Cecilia L. 2001. "Gender, Status, and Leadership." *Journal of Social Issues* 57(4):637–55. https://doi.org/10.1111/0022-4537.00233.

Ridgeway, Cecilia L., and Shelley J. Correll. 2004. "Unpacking the Gender System - A Theoretical Perspective on Gender Beliefs and Social Relations." *Gender & Society* 18(4):510–31. https://doi.org/10.1177/0891243204265269.

Ridgeway, Cecilia L., and Shelley J. Correll. 2006. "Consensus and the Creation of Status Beliefs." *Social Forces* 85(1):431–53. https://doi.org/10.1353/sof.2006.0139.

Rindova, Violina P., Ian O. Williamson, Antoaneta P. Petkova, and Joy Marie Sever. 2005. "Being Good or Being Known: An Empirical Examination of the Dimensions, Antecedents, and Consequences of Organizational Reputation." *Academy of Management Journal* 48(6):1033–49. https://doi.org/10.5465/amj.2005.19573108.

Rubin, Karen. 2015. "Research: Investing in Women-Led Fortune 1000 Companies." Quantopian. Retrieved November 2018. https://web.archive.org/web/20201108111649/https:/www.quantopian.com/posts/research-investing-in-women-led-fortune-1000-companies.

Ryan, Michelle K., and S. Alexander Haslam. 2007. "The Glass Cliff: Exploring the Dynamics surrounding the Appointment of Women to Precarious Leadership Positions." *Academy of Management Review* 32(2):549–72. https://doi.org/10.5465/amr.2007.24351856.

Schijven, Mario, and Michael A. Hitt. 2012. "The Vicarious Wisdom of Crowds: toward a Behavioral Perspective on Investor Reactions to Acquisition Announcements." *Strategic Management Journal* 33(11):1247–68. https://doi.org/10.1002/smj.1984.

Smith, Edward Biship, and William Rand. 2018. "Simulating Macro-level Effects from Micro-level Observations." *Management Science* 64(11):5405–21. https://doi.org/10.1287/mnsc.2017.2877.

Solal, Isabelle, and Kaisa Snellman. 2019. "Women Don't Mean Business? Gender Penalty in Board Composition." *Organization Science* 30(6):1270–88. https://doi.org/10.1287/orsc.2019.1301.

Solomon, David H., Eugene Soltes, and Denis Sosyura. 2014. "Winners in the Spotlight: Media Coverage of Fund Holdings as a Driver of Flows." *Journal of Financial Economics* 113(1):53–72. https://doi.org/10.1016/j.jfineco.2014.02.009.

Stuart, Elizabeth A. 2010. "Matching Methods for Causal Inference: A Review and a Look Forward." *Statistical Science: A Review Journal of the Institute of Mathematical Statistics* 25(1):1. https://doi.org/10.1214/09-STS313.

Teodoridis, Florenta, Michaël Bikard, and Keyvan Vakili. 2019. "Creativity at the Knowledge Frontier: The Impact of Specialization in Fast- and Slow-Paced Domains." *Administrative Science Quarterly* 64(4):894–927. https://doi.org/10.1177/0001839218793384.

Tetlock, Paul C. 2007. "Giving Content to Investor Sentiment: The Role of Media in the Stock Market." *Journal of Finance* 62(3):1139–68. https://doi.org/10.1111/j.1540-6261.2007.01232.x.

Thibodeau, Patric. 2011. "IBM Quietly Names a New CEO." *Computerworld*, November 7. https://www.computerworld.com/article/2550108/ibm-quietly-names-a-new-ceo.html.

van de Rijt, Arnout, Eran Shor, Charles Ward, and Steven Skiena. 2013. "Only 15 Minutes? The Social Stratification of Fame in Printed Media." *American Sociological Review* 78(2):266–89. https://doi.org/10.1177/0003122413480362.

Weber, Andrea, and Christine Zulehner. 2010. "Female Hires and the Success of Start-up Firms." *American Economic Review* 100(2):358–61. https://doi.org/10.1257/aer.100.2.358.

Weschsler, Pat. 2015. "Women-Led Companies Perform Three Times Better than the S&P 500." *Fortune*, March 3. https://fortune.com/2015/03/03/women-led-companies-perform-three-times-better-than-the-sp-500/.

Wibbens, Phebo D., and Nicolaj Siggelkow. 2020. "Introducing LIVA to Measure Long-Term Firm Performance." *Strategic Management Journal* 41(5):867–90. https://doi.org/10.1002/smj.3114.

Wolfers, Justin. 2006. "Diagnosing Discrimination: Stock Returns and CEO Gender." *Journal of the European Economic Association* 4(2–3):531–41. https://doi.org/10.1162/jeea.2006.4.2-3.531.

Zajac, Edward J., and James D. Westphal. 2004. "The Social Construction of Market Value: Institutionalization and Learning Perspectives on Stock Market Reactions." *American Sociological Review* 69(3):433–57. https://doi.org/10.1177/000312240406900306.

Zenger, Jack, and Joseph Folkman. 2012. "Are Women Better Leaders than Men?" *Harvard Business Review* 15:80–85.

Zuckerman, Ezra W. 2012. "Market Efficiency: A Sociological Perspective." Pp. 223–49 in *The Oxford Handbook of the Sociology of Finance*, edited by Karin Knorr Cetina and Alex Preda. Oxford University Press.

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