

WEB APPENDIX

Breaking the News: How Does CEO Media Coverage Influence Consumer and Investor Evaluations?

In this Web Appendix, we provide the following information:

- A. Empirical validation analysis of CEO related news categories
- B. Justification and explanation of control variables
- C. Overview of sources used in Factiva
- D. Details about the YouGov measurement
- E. Logit transformation of raw data
- F. Measurement and descriptive statistics of all variables
- G. Post-hoc analysis: drivers of consumer evaluation in the occurrence of CEO related news
- H. Main effects of CEO news types on stock return
- I. How consumer responses to CEO-related news determine stock prices

Web Appendix A. Empirical validation analysis of CEO related news categories

To better understand which CEO categories matter the most to consumers, we collected primary data via a survey using M-Turk. The aim of the survey was to identify the CEO categories consumers considered the most important, when building an opinion about the firm. Each survey taker was displayed with 12 individual news categories with an exemplary headline. The CEOs in these headlines were given a gender-neutral faux name “Aiden Smith” to remove any biases towards the CEO. These 12 CEO-related news categories were chosen based on prior academic literature and real world examples from newspapers. At a scale of 1-5, respondents rated each category as "least important" (1) to "most important" (5) for building an opinion about the firm. The results are illustrated in Table A 1.

Table A.1: Importance of CEO related news type categories

CEO related news type	Example	Mean	Deviation from overall mean
CEO scandal	CEO Aiden Smith accused of sexual misconduct	4.11	1.47
CEO altruism	CEO Aiden Smith to Spend Nearly \$100 Million To Address Homelessness	3.80	1.16
CEO compensation	CEO Aiden Smith tops CEO list with \$3.3 Billion pay	3.41	0.77
CEO political Ideology (political moves of the CEO)	CEO Aiden Smith is expected to be secretary of State	3.27	0.63
CEO accomplishment	CEO Aiden Smith is the CEO of the year	3.09	0.45
CEO changes	CEO Aiden Smith will retire in one month	2.69	0.05
CEO life style	CEO Aiden Smith just bought ten luxury villas on the coast	2.59	-0.05
CEO relationship	CEO Aiden Smith marries the founder of rival company	2.44	-0.20
CEO celebrity	CEO Aiden Smith lives a quiet and secluded life style	1.92	-0.72
CEO social media	CEO Aiden Smith tweets up to twelve times in a day	1.64	-1.00
CEO health	CEO Aiden Smith goes to gym daily	1.43	-1.21
CEO fashion	CEO Aiden Smith wears the same black shirt daily	1.34	-1.30

Notes: Means are based on 119 respondents. We selected the 6 most important CEO related news type categories out of 12.

Web Appendix B. Justification and explanation of control variables

Table B.1: Control variables: justification expectations, and literature support

Name of control variable	Justification, Expectations towards the effect	Literature support
CEO LEVEL		
CEO popularity	Popular CEOs were positively evaluated by the stock market.	Wade, Porac, Pollock, and Graffin (2008)
CEO gender	Female CEOs underperform their male counterparts in terms of shareholders' returns by roughly 0.35% per month.	Kolev (2012)
CEO duality	CEO duality impedes the boards ability to monitor a CEO's decision, thus leaving them to advance their personal interests, which may or may not always be in the firm's best interest, thus impacting the firm value	Fama and Jensen (1983); Jensen (1993)
CEO education	Hiring new CEOs with MBA degrees leads to short term improvements in operating performance. Further, an association is found between possession of a degree as well as where the degree was earned and the firm performance	Wang and Yin (2018); Jalbert, Furumo, and Jalbert (2010).
CEO country of origin	Foreign born CEOs are known over invest in non market strategy to gain trustworthiness, thus resulting in a skewed firm performance	Boone, Lokshin, Guenter, and Belderbos (2019); Bertrand et al. (2021)
CEO tenure	More tenured CEOs will contribute to firm performance positively as they increase their task knowledge resulting in value-enhancing decisions.	Simsek, (2007); Hambrick and Fukutomi (1991).
CEO outsider	The outsider CEOs may result in changing the strategies of resource allocation, resulting in drastic change in firm performance, thus controlling for it, reduces the impact of these changes.	Zhang, and Rajagopalan (2010); Jayaraman, Khorana, Nelling, and Covin (2000).
CEO social media presence	Consumers and investors form a special bond with the firm if the CEO has social media presence, which may impact their decision making process.	Elliott, Grant, and Hodge (2018).
FIRM LEVEL		
Prior brand equity	A well-established literature documents that there is a positive association between brand value and stock returns, thus controlling for prior brand value reduces the bias.	Dutordoir, Verbeeten, and De Beijer (2015)
Firm age	Firms with a long history have more information available to the market, likely to be in more mature industries, thus helping capture volatility at industry level.	Barry and Brown (1985); Zhang (2006).
Return on assets	In event studies, researchers often control for "return on assets" (ROA) because it is a key indicator of a company's financial health and efficiency in using its assets to generate earnings	Stäbler and Fischer (2020); Dinner, Kushawa, & Steenkamp (2019)
Financial leverage	There is reported evidence of anomalous returns for firms with high financial leverage than can be explained by traditional asset pricing models	Aharon, and Yagil (2019); Ho, Strange, and Piesse (2008); George, and Hwang (2010).
Firm size	Large firms have uniformly higher collateral across economic state compared to small firms, thus reducing	Perez-Quiros, and Timmermann (2000).

	their risks in volatile situations, which impacts firm performance.	
Industry	Each industry faced unique business circumstances and maintains distinct consumer relationships (Maloni and Brown 2006). Further, impact of corporate firms may differ by industry type (David, Kline and Dai 2005).	Maloni, and Brown (2006); David, Kline, and Dai (2005)
MEDIA		
Media valence	Media valence, or the positive or negative tone of media coverage, can significantly influence stock prices as it shapes investor perceptions and sentiment about a company, potentially leading to increased buying or selling activity.	Hewett et al. (2016)
Media volume	Media volume, referring to the quantity of media coverage a company receives, can impact stock prices by increasing the visibility and awareness of the company among investors,	Hewett et al. (2016), Stäbler and Fischer (2020)
Media political Orientation	The political orientation of media coverage can influence stock prices and consumer behavior by shaping the narrative and interpretation of a company's actions and policies through a particular ideological lens. This can lead to investor and consumer reactions that are aligned with their own political beliefs	Stäbler and Fischer (2020)

Web Appendix C. Overview of sources used in Factiva

Table C.1: Overview of sources used in Factiva

News type	Source	Political Orientation	Total circulation / viewers
<i>Newspapers</i>	USA Today (online and offline)	Central (3)	1,621,091
	New York Times (online and offline)	Left (2)	483,701
	Wall Street Journal (online and offline)	Right (4)	1,011,200
	New York Post (online and offline)	Right (4)	426,129
	CNN (online)	Very left (1)	-
<i>Magazines</i>	The Atlantic (online)	Central (3)	485,522
	Forbes (online and offline)	Central (3)	670,821
	Wired (offline)	Central (3)	901,276
<i>TV broadcasts</i>	ABC news	Left (2)	5,192,000
	CBS news	Left (2)	7,140,000
	Fox news	Very right (5)	4,623,000
	NBC news	Left (2)	6,330,000

Note: Newspaper circulation numbers by Cision Media Research (2019) available on <https://www.cision.com/us/2019/01/top-ten-us-daily-newspapers/>. Magazine's circulation by Alliance for Audited Media (2019) available on <http://abcas3.auditedmedia.com/ecirc/magtitlesearch.asp>. TV broadcast data is based on the number of viewers in 2019. Based on Variety research: available on <https://variety.com/2019/tv/news/network-ratings-top-channels-fox-news-espn-cnn-cbs-nbc-abc-1203440870/> <https://www.allsides.com/media-bias/media-bias-chart>

Web Appendix D. Details about the YouGov measurement

In the following, we describe the procedure YouGov uses to collect consumer evaluation data information. YouGov's BrandIndex – our measure of consumer evaluations – is a daily measure of brand health among the public, tracking many brands across multiple consumer sectors simultaneously. For the U.S. market, YouGov monitors the leading brands and conducts about 4,800 daily interviews. The BrandIndex consists of six items: perceived brand quality, brand value, brand satisfaction, brand recommendation, brand identification, and brand overall impression.

The data collection of YouGov can be described as follows: For each item respondents provided with a set brands for a pre-selected industry. First, respondents select those brands (per click) for which they agree with the positive statement of the brand item (e.g., good brand quality). Then, they select those brands for which they agree with the negative statement of the brand item (e.g., poor brand quality). The aggregate raw brand strength measure (YouGov BrandIndex) is calculated by counting the number of respondents who agree with the six positive statements (items) minus the number of respondents who agree with the six negative statements (items) divided by the total number of respondents (= number of positive + negative + neutral respondents) multiplied by 100. As a consequence, the YouGov BrandIndex brand strength measure is a ratio-scaled variable and lies within the range of -100 to +100. Table E.1 highlights the different dimensions.

The data also been used and validated by prior literature. Luo, Raithel, and Wiles (2013) and Stäbler and Fischer (2020) have used the same brand metrics as we do. They extensively tested for the psychometric properties of the two metrics in their data, which covered the universe of YouGov brands in different countries. The statistical analysis of the item correlation structure both across brands and within brands over time (yearly aggregated) provides strong evidence of construct validity in all dimensions and according to the established methodology and test statistics.

Table D.1: Survey dimensions

<i>Dimension</i>	<i>Questions</i>
Brand quality	Which of the following brands do you think stand for good quality? Now, which of the following brands stand for poor quality?
Brand value	Which of the following brands do you think provide good value for money (or you would be willing to invest parts of your spare time)? Now, which of the following brands do you think provide poor value for money (or you would be willing to invest parts of your spare time)?
Brand satisfaction	Choose all brands you are satisfied with or for which you believe you would be satisfied if you were a customer. Choose all brands you are dissatisfied with or for which you believe you would be dissatisfied if you were a customer.
Brand recommendation	Which of the following brands would you recommend to a friend or colleague? And which of the following brands would you recommend a friend or colleague to avoid?
Brand identification	Which of the following brands would you be proud of to work for or to be associated with? Now, which of the following brands would you be embarrassed to work for or be associated with?
Brand overall impression	Overall, of which of the following brands do you have a positive impression? Now, of which of the following brands do you have an overall negative impression?

Web Appendix E. Logit transformation of raw data

We follow prior research (Backhaus and Fischer 2016; Hanssens, Parsons, and Schultz 2001) and rearrange measurement of consumer evaluations as:

$$CE_{bt} = MIN + (MAX - MIN) \frac{1}{1 + e^{-f(X_{bt})}} \quad (1)$$

$$\widetilde{CE}_{bt} = LN \left(\frac{CE_{bt} - MIN}{MAX - CE_{bt}} \right) = f(X_{bt}) \quad (2)$$

CE_{bt} measures consumer evaluation of firm b and day t . The function $f(X_{bt})$ captures the influence of CEO news events and controls, summarized in vector X , on brand evaluation. MAX and MIN indicate previous range restrictions (-100 to 100). Taking the logarithm and rearranging terms, the relation between our independent variables and brand strengths follows an S-shape, satisfying the assumption of a normally distributed error term.

Web Appendix F. Measurement and descriptive statistics of all variables

Table F.1: Variable measurement and descriptive statistics

Variable	Scale	Description	Source	Mean	Max	Min	SD
Dependent variables							
Consumer evaluations	[metric]	Daily consumer evaluation data from the market research company YouGov. We apply a logit transformation to obtain a linear estimation equation that satisfies the range restrictions and the assumption of a normal distributed error term (for details, see section measurement of consumer evaluations of firms)	YouGov	.34	2.06	-.92	.36
Abnormal stock returns	[metric]	Abnormal stock return describes losses or gains generated by a CEO-related event (for more details, see section methodology)	Eventus	-.00001	.31	-.19	.03
Independent variables							
CEO-news type categories: CEO scandals CEO changes CEO compensation CEO accomplishments CEO altruism CEO political ideology	[0–1]	We use dummy coding to measure the CEO news type categories. Note, the percentage for the CEO categories does not add to 100% since we also identified news events that could not be assigned to one of the six categories. These events are captured in the category CEO miscellaneous.	Factiva Own research	25.38% 16.55% 14.48% 14.62% 4.00% 6.76%	1 1 1 1 1 1	0 0 0 0 0 0	- - - - - -
CEO characteristics							
CEO popularity	[metric]	CEO popularity is measured by using Google Trends data. Google Trends is a normalized index for search volume data. Even though these data do not reveal the absolute amount of search requests for a specific CEO, they inform about interest for a CEO relative to each other, which is sufficient for our purpose. Measurement requires a baseline against which searches for all other CEOs are indexed. Tim Cook is a well-searched CEO that serves as our baseline. We take the mean of the 30 days preceding the first media report on a CEO event.	Google trends	52.39	769.23	.00	119.71
CEO gender (=male)	[0–1]	Indicates gender (male =1)	Web research Execucomp	93.38%	1	0	-
CEO duality	[0–1]	Indicates if CEO is also a chairperson (=1)	Web research Execucomp	55.03%	1	0	-
CEO education	[0–3]	We measure CEO education reflecting the highest level of education attained and differentiate between the following categories: no college / not identifiable (=0), undergraduate (=1), master, JD, or MBA (=2), or PhD (=3).	Web research	1.26	3	0	.80
CEO country of origin: USA (reference) Europe Asia Elsewhere / not identifiable	[0–1]	We use dummy coding to measure a CEO's region of origin. We differentiate between USA, Europe, Asia, and elsewhere/ not identifiable.	Web research Execucomp	71.45% 4.41% 7.72% 16.41%	1 1 1 1	0 0 0 0	- - - -
CEO tenure	[metric]	Measured as the difference between the year they became CEO to the year of observation	Execucomp Web research	8.26	40	0	6.29
CEO outsider	[0–1]	We define CEO as an outsider (=1) when the CEO takes the title within one year of joining the firm.	Web research Execucomp	13.24%	1	0	-
CEO social media presence	[0–1]	CEO social media presence measure if a CEO has a profile on Twitter (=1) at the time of the event.	Web research	65.38%	1	0	-
Firm characteristics							
Prior brand equity	[metric]	We take the mean of the 14 days of the absolute brand index value provided by YouGov preceding the first media report on a CEO event following the approach of Stäbler and Fischer (2020).	YouGov	17.36	63.10	-37.31	17.78

Firm age	[metric]	The difference between the year of the focal event and the firm's founding year. We take the log of firm age	Compustat; firm website; D&B Hoovers	1.54	2.27	.60	.42
Return on assets	[metric]	Return on assets is measured as net income divided by total assets. To avoid causality issues, we take data from the focal event previous year.	Compustat	.04	.62	-1.01	.11
Financial leverage	[metric]	Financial leverage is measured as total liabilities divided by shareholder equity. To avoid causality issues, we take data from the focal event previous year.	Compustat	3.15	41.93	257.52	1.87
Firm size	[metric]	Firm size is measured as the log of total assets. To avoid causality issues, we take data from the previous year.	Compustat	4.85	11.34	1.47	.88
Industry: Service (reference) Retailer Durables Non-durables	[0–1]	We use dummy coding and classify the companies into retailer, services, durables, and non-durables following prior research.	Compustat/ YouGov	56.14% 5.79% 31.86% 6.20%	1 1 1 1	0 0 0 0	- - - -
Media characteristics							
Media valence	[metric]	Valence of news event is obtained through linguistics word counting. Following Hewett et al. (2016), we first obtained the percentage difference of both positive and negative words of an article using the Loughran and McDonald (2011) dictionary. We then calculated the average valence of all news articles that reported about the specific CEO event.	Factiva, Loughran and McDonald (2011) dictionary	-.41	.95	-1.00	.26
Media volume	[metric]	Media volume measures the total number of media outlets that report on a certain CEO event.	Factiva	1.61	7	1	1.15
Media political orientation	[1–5]	Political orientation is measured with a liberal–conservative scheme on a five-point rating scale. For each CEO-related event, we considered the political orientation of the news outlets reporting on the event and then averaged the political ratings. We provide the detailed classification of each news outlet in Web Appendix B.	AllSides Media Bias Chart™	3.06	5	1	1.01

Web Appendix G. Post-hoc analysis: drivers of consumer evaluation in the occurrence of CEO related news

Table G.1: How further variables impact consumer evaluation

DV: Consumer evaluation		
	Coeff.	Std. Error
(Constant)	−.0003	.0351
CEO characteristics		
CEO popularity	−.0001 ***	$.52 \times 10^{-4}$
EO gender (male = 1)	−.0191	.0124
CEO duality	.0027	.0076
CEO education level	−.0088	.0064
CEO origin: United States (reference)		
Europe	.0082	.0225
Asia	−.0329 *	.0175
Elsewhere / NA	.0474 ***	.0086
CEO tenure	−.0001	.0008
CEO outsider	.0217 *	.0113
CEO social media presence	.0044	.0109
Firm characteristics		
Brand equity	.0018 ***	.0005
Firm age	−.0412 ***	.0120
Return on assets	−.0699	.0574
Financial leverage	$.18 \times 10^{-4}$	.0001
Firm size	.0163 ***	.0056
Industry: Services (reference)		
Retailer	−.0176	.0178
Durables	−.0145	.0115
Non-durables	.0001	.0143
Media characteristics		
Media valence	.0409 ***	.0144
Media political orientation	$.27 \times 10^{-4}$	$.21 \times 10^{-4}$
Media volume	−.0041	.0033
N (CEO events)	N = 725	
R ²	R ² = .24	

Note: One-sided t-test only for expectations toward the mediating effect of consumer responses, two-sided t-test otherwise; * $p < .1$, ** $p < .05$, *** $p < .01$. WLS regression

Web Appendix H. Main effects of CEO news types on stock return

Table H.1: Main effects of CEO news types on stock

Dependent Variable:	Expect.	AAR(0) in Percentage			CAAR(−1, 1) in Percentage			CAAR(0, 5) in Percentage		
		CAAR	t-test		CAAR	t-test		CAAR	t-test	
CEO news types										
CEO scandals	—	-.71%	***	-5.342	-1.91%***	-8.254		-1.63%***	-4.993	
CEO compensation	−/+	.03%		.093	-.45%	-.820		-.71%	-.909	
CEO accomplishments	+	.66%	***	3.730	1.07%***	3.498		.44%	1.019	
CEO change	−/+	.23%		1.156	.37%	1.052		.64%	1.282	
CEO political ideology	−/+	.30%		1.408	.37%	.997		.40%	.765	
CEO altruism	−/+	.43%		1.163	.59%	.911		.46%	.504	
CEO miscellaneous		.02%		.114	.05%	.196		.43%	1.178	
Controls^a										

Sample size: N(firms) = 125

N(events) = 725

N(obs) = 189,225

Note: One-sided t-test only for directional expectations, two-sided t-test otherwise; ** $p < 0.05$, *** $p < 0.01$, ^awe use the Fama-French 4 factor model to control for developments within the market and within the firm.

Web Appendix I. How consumer responses to CEO-related news determine stock prices

Table I.1: The impact of consumer responses on cumulative abnormal returns

	Model 1: DV: CAR(-1,1)	
	Coeff.	Std. Error
(Constant)	-.0312	.0213
Consumer response		
Individual consumer responses	.0347 **	.0203
CEO characteristics		
CEO popularity	.44×10 ⁻⁴ **	.22×10 ⁻⁴
EO gender (male = 1)	.0223 ***	.0081
CEO duality	.0078 *	.0042
CEO education level	.0016	.0030
CEO origin: United States (reference)		
Europe	-.0064	.0101
Asia	.0127 ***	.0040
Elsewhere / NA	-.0066	.0079
CEO tenure	-.0006	.0004
CEO outsider	.0111	.0071
CEO social media presence	.0053	.0039
Firm characteristics		
Brand equity	-.0002	.0002
Firm age	.0012	.0057
Return on assets	.0151	.0216
Financial leverage	-.63×10 ⁻⁴	.0001
Firm size	.0016	.0026
Industry: Services (reference)		
Retailer	-.0021	.0113
Durables	-.0024	.0055
Non-durables	.0027	.0076
Media characteristics		
Media valence	.0145	.0085
Media political orientation	-.72×10 ⁻⁵	.24×10 ⁻⁴
Media volume	-.0005	.0015
N (CEO events)	N = 725	
R ²	R ² = .03	

Note: One-sided t-test only for expectations toward the mediating effect of consumer responses, two-sided t-test otherwise; * $p < .1$, ** $p < .05$, *** $p < .01$.

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