Firm Reputation and the Labor Market: The Effects of Corporate Scandals

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Abstract

We use corporate scandals to study how negative reputation shocks affect firms' relationships with job seekers and current employees. Using data from the website Glassdoor, we find that potential applicants are less likely to click on job postings for firms that have suffered scandals. Further, employer reviews reveal that workers perceive such firms more negatively. Firms respond to their diminished ability to hire and retain workers by increasing wages, particularly for advanced degree holders. Our results provide strong evidence that individuals value firm reputation when selecting employers, thus highlighting a novel channel through which reputation shocks can affect firm value.

1 Introduction

Firm reputation is a valuable asset (Kreps (1990), Tadelis (1999)). Positive reputation may allow firms to sell products at a premium (Shapiro (1983)), maintain employee productivity (Bull (1987)), and obtain cheaper credit (Diamond (1989)). Similarly, negative shocks to reputation resulting from financial misconduct or other transgressions yield adverse consequences such as increased stock price volatility and decreased earnings (e.g. Karpoff et al. (2008), Armour et al. (2017)).

In this paper, we study how unanticipated reputation shocks affect firms' relationships with both job seekers and current employees.[1] In particular, we evaluate changes in job application rates, employee reviews, and wages following corporate scandals. Academic studies and the popular press have long focused on how these events impact measures like stock prices and earnings.[2] We, instead, focus on labor market outcomes. Further, by considering only corporate scandals that impact perceptions of firms yet do not compromise their fundamentals, we can isolate the effects from a shock to reputation.

Our data come primarily from the job search engine and rating site Glassdoor, through which we have access to a surfeit of application decisions, reviews, and salary reports. The breadth and granularity of data allow us to measure the behavior and sentiment of individuals across a variety of personal, employer, and occupational characteristics. Prior studies have documented correlations between reputation and job seeker behavior (e.g. Turban and Cable (2003)), but to our knowledge, we are the first to present evidence of causal links between reputation, application decisions, and wages in the traditional labor market.

We begin by establishing that job seekers are less interested in applying to firms following a negative reputation shock. We find that 4-7 weeks after a scandal, the probability an individual clicks on a job posting belong to the affected firm conditional on having clicked

[1] Shocks are unanticipated from the perspective of the public. Certain firm insiders may be aware of impropriety prior to news breaking.

[2] See, for example, "Wells Fargo Posts Weaker Earnings After Sales-Practices Scandal," *Wall Street Journal*, October 13, 2017.

on a posting by a similar firm decreases by 0.05 percentage point. Relative to the baseline conditional probability of 4.3%, this represents an 11.6% drop. We find a comparable decline if one were to condition on the job seeker applying to the similar employer. Both decreases remain economically and statistically significant for several months, suggesting that shocks to reputation are persistent. We show the reduction in interest is driven primarily by advanced degree holders–who we expect operate in traditionally tighter labor markets. For such highly-educated individuals, we observe a 1.5 percentage point decrease in their conditional click probability 4-7 weeks after a scandal, relative to a baseline average of 5.1%. Our findings are broadly consistent with the labor search and matching literature, in which agents with low search costs and stronger outside options behave more selectively.[3]

We next investigate how corporate scandals affect employee sentiment. Using monthly counts, we show that the arrival rate of reviews increases sharply following an event. Further, we find a 0.15 star decline in overall rating in the three months after a scandal. Relative to the average pre-event rating of 3.03 out of 5 stars, this represents a 5% decrease. Exploiting data on various subcategories, such as work-life balance and career opportunities, we find the effect is driven primarily by changes in employees' opinions of their firm's culture and values. Evidence from the gig economy suggests that rating declines make it more difficult for firms to attract new applicants and retain current employees (Benson et al. (2018)). Further, Edmans (2011) shows that firms with higher employee satisfaction perform better in the long run. We also find that workers are less likely to recommend their firm to a friend after a scandal. Referral networks are a valuable recruiting resource (Brown et al. (2016)) and, thus, represent an additional channel through which a firm's ability to hire may be impaired.

Lastly, we study how negative reputation shocks impact wages. We find, after controlling for the standard observables used in estimating wages, that inflation-adjuted annual salaries for employers that experience a corporate scandal increase by an average of 2.7% in the post-

[3]A basic model and further references are presented in Mortensen and Pissarides (1999).

scandal years. Similar to our findings on application decisions, this result is driven by highly educated workers. While employees with less than a college degree do not appear to obtain a wage premium, those with a post-bachelor's degree earn 12-14% more than their peers at firms that have not faced negative reputation shocks. Again, our findings are consistent with the labor search and matching literature, in which firms pay wage premiums to increase the inflow or reduce the outflow of workers.[4] We also show that these effects are sharpest in the calendar year immediately after a scandal but do dissipate somewhat over time. This finding suggests that firm reputation can recover in the medium run.

The focus on corporate scandals is driven by our desire to isolate the effects of negative reputation shocks alone. Underlying characteristics may render certain firms more likely to face scandals, but we demonstrate that the adverse effects occur across a variety of scandal types. Moreover, we document that there are no differential trends in click rates, reviews, or wages between scandal firms and their peers in the months prior to a reputation shock.

Our paper contributes to the literature linking firm reputation and the labor market. Early theoretical contributions include Holmstrom (1981), Carmichael (1984), and Bull (1987). More recently, Turban and Cable (2003) document that business school graduates are more likely to apply to firms if they appear in *Fortune* or *Working Mother*'s lists of best employers or the book *The 100 Best Companies to Work for in America*. Benson et al. (2018) show that employers with high ratings are able attract workers more quickly on Amazon Mechanical Turk. We add to the literature by documenting a causal link between reputation, applications, and wages in the traditional labor market, where contract laws are well established.

Prior work on negative reputation shocks has investigated the effects of financial misconduct (Armour et al. (2017), Murphy et al. (2009), and Karpoff et al. (2008)), environmental violations (Karpoff et al. (2005)), and product recalls (Jarrell and Peltzman (1985), Liu and Shankar (2015)). The majority of these studies have shown declines in outcomes such as

[4]For a thorough review of the literature see Rogerson et al. (2005).

stock price volatility and earnings. In recent work, Akey et al. (2018) find that firms increase corporate social responsibility spending to offset losses in reputation associated with data breaches. Our paper differs from existing studies by focusing on labor market outcomes and, thus, highlights a separate and important channel through which firm value is lost.

We also add to the growing number of studies utilizing data from online job boards. Related work includes Brown and Matsa (2016), who find that distressed financial firms experience a decline in the both the quantity and quality of job applicants during the Great Recession, and Marinescu and Rathelot (2018), who show that applicants are less likely to apply to geographically distant jobs. Lenaerts et al. (2016) review of a broad array of online data sources that can be used for labor market research and provide a comprehensive survey the existing literature.

2 Data

2.1 Corporate Scandals

Our sample of corporate scandals is pulled from the popular press. Several publications, such as Fortune magazine, produce annual articles detailing the year's most notable "business misdeeds."[5] We aggregate these lists and, to ensure our results are not driven by news about company fundamentals, omit instances of accounting fraud and product recalls. We also exclude events involving smaller firms that are not well-represented on Glassdoor. The set of scandals used in our analysis is reported in Table 1. As we require sufficiently rich data both before and after a scandal, we only consider events that occur between July 2013 and March 2018. Inclusion in the salary, employer review, or user search analyses is based entirely on data availability.[6] Additional background information for each scandal is presented in the Online Appendix.

[5]See, for example, "The 10 Biggest Business Scandals of 2017," *Fortune*, December 31, 2017.

[6]Our initial data pull was partially truncated, so our sample should be larger in future versions of the paper.

[Table 1 about here.]

2.2 Glassdoor Data

Our data come from Glassdoor, an online platform with information about job vacancies and the labor market more generally. The website allows visitors to search for and apply to job listings, write reviews about (past and present) employers, report salaries earned during (current and prior) employment, and perform a host of other related functions. Glassdoor data are particularly well-suited for the study of corporate scandals, as they allow us to explicitly identify employers and observe the activity of job seekers at a very high frequency. Public surveys and other standard data sources, on the other hand, typically redact employer identities and are published at low frequencies. We make use of three separate Glassdoor datasets: i) employee salaries, ii) employer reviews, and iii) individual job search activity.

2.2.1 Salaries

Salary reports are provided voluntarily and anonymously by visitors to Glassdoor. Individuals are incentivized to disclose salaries through a "give to get" policy, whereby visitors gain access to more information on the website by contributing to its content. Since reports are anonymous, individuals have little, if any motive to distort wages. Karabarbounis and Pinto (2018) show that the distribution of Glassdoor salaries matches the Panel Study of Income Dynamics and other publicly available datasets, within, but not across industries. As our salary regressions exploit variation within firm and occupation category, the lack of representativeness does not compromise the validity of our results.

When submitting a salary report, respondents are asked for the following information: job title, year of salary, base income, non-base income, frequency of pay, gender, years of work experience, job location, job title, employment status, and employer name.[7] We assign job

[7]About 25% of salary reports are hourly wages and 2% are weekly wages. For full-time workers, we convert to an annual wage by multiplying the former by 2000 (50 weeks at 40 hours per week) and the latter by 50.

titles to an O*NETSOC occupation category using a textual analysis algorithm.[8] We restrict our dataset to full-time workers from 2008 to February 2019 for whom gender and years of experience are available. Base salaries are used as the primary metric for compensation. Because salary reports correspond to calendar years, we cannot identify when exactly an employee's compensation is determined. We take a conservative approach in our analysis, and only consider calendar years after an event to be "post scandal." Table 2 displays overall and post-scandal salary counts for each employer in our sample. To account for the variability in the number of reports and ensure our results are not driven by a single employer, we employ weighted regressions in our empirical analysis.

[Table 2 about here.]

2.2.2 Employer Reviews

Similar to salaries, company reviews are submitted to Glassdoor voluntarily and anonymously. Website visitors are incentivized to leave reviews through the same "give to get" policy.[9] Employer ratings are measured on a Likert scale from 1 stars to 5 stars, with more stars corresponding to higher degrees of satisfaction. Beyond an overall rating, employees can evaluate their firm along the following dimensions: culture and values, career opportunities, senior management, compensation and benefits, and work-life balance. Each of these additional categories is scored on the same scale of 1 to 5 stars. Reviewers are also asked if they would recommend the company to a friend. We interpret aggregated responses to this question as a proxy for the strength of a firm's referral network. Review counts for each firm are reported in the middle panel of Table 2. We again account for the disparity in the number of reviews by employing weighted regressions.

[8] Only mappings made with a reasonably high degree of confidence are retained.

[9] Self-reported reviews may exhibit selection bias, in that individuals may be more likely to leave a review if they have an extreme response (1 or 5 stars). For a discussion of how this bias is reduced under a "give to get" policy, see Marinescu et al. (2018).

2.2.3 User Search Activity

In addition to providing salary reports and employer reviews, visitors to Glassdoor can search and apply for jobs. The website's platform presents job seekers (referred to herein as users) with a list of job openings based on their search criteria. If a user is interested in an opening, they may choose to *click* on the job posting. After clicking, a user may further decide to *apply* for the job.[10] As each user has a unique identifier, we are able to track their entire history of clicks and applies. Our dataset on search activity spans from mid-2016 through January 2019. As described in Section 3, our empirical specifications require us to link scandal employers to control firms. Click counts for these controls are presented in the right panel of Table 2. Column 8 reports click counts for the actual scandal employers in a window around their event dates. The search activity data were the only dataset affected by the truncation of our data pull. The sample should expand appreciably in future versions of the paper.

3 Effects on Job Seeker Behavior

In this section, we use search activity data to study how negative reputation shocks affect the behavior of job seekers. A priori, We expect that individuals woudl be less inclined to work for firms that have faced a scandal. To test this hypothesis, we estimate the effect that scandals have on the probability a user clicks on a job posting by a firm, conditional on having clicked on a posting for a similar or "control" employer. Our empirical specification requires us to explicitly link scandal firms to controls. Matches are formed based on similarities in industry and locations of job postings. Table 3 presents a list of control firms, as well as the number of clicks each receives in a window around the event date for the the corresponding scandal firm.[11] Two of our employers have small conditional click probabilities, but this

[10] We do not observe if users complete applications that they start. Since we only seek to gauge job seekers' interest in employers pre- and post-scandal, making this distinction does not compromise our conclusions.

[11] Glassdoor presents users browsing job postings for a firm with a list of "Related Companies." Our controls all appear on these lists for their respective scandal employers, which we see as validation of our

shortcoming will be addressed when we remedy the truncation issue discussed in Section 2.2.3.

[Table 3 about here.]

Each observation in our search activity dataset represents a user i who clicked on a job posting for a control firm $c(j)$—that corresponds to scandal firm j—for occupation k in week t. Our baseline regressions look to estimate how conditional click and apply probabilities for scandal employers are altered after a scandal. In other words, we test if the scandal makes it less likely that a user, conditional on showing interest in a similar employer, shows interest in the scandal employer. The formal equation for our linear probability model is

$$C_{ijk\tau} = \gamma_{c(j)k} + \sum_{q \neq 2} \beta_q \cdot \mathbb{1}_{\tau=q} + \epsilon_{ijk\tau} \tag{1}$$

where $C_{ijk\tau}$ is an indicator equal to one if individual i also clicks on a job listing for occupation k belonging to the paired scandal firm j in week t and γ_{jt} is a control $\times$ occupation fixed effect. The τ indices correspond to 4-week bins relative to the event date. The first bin, $\tau = 1$, spans the 5-8 weeks prior to a scandal and $\tau = 2$ is the omitted group in the regressions. To avoid undue influence of large firms, we weight each observation for a scandal firm j by 1 divided by the total number of user clicks on postings corresponding to that firm's controls, i.e. $\sum_{i,k} w_{ijk\tau} = 1$. If negative reputation shocks reduce the conditional probability that users click on a firm, the β coefficients for bins after event dates will be negative.

Results from the baseline model are presented in the first three columns of Table 4. The small and insignificant coefficients in the first row indicate that conditional click rates are stable in the 8 weeks prior to a scandal. Column 1 shows that click probabilities decrease by 0.4 percentage point in the week of and three weeks after a scandal. Relative to the baseline probability of 3.9% this represents a 10% decline. The coefficient estimates for later bins reveal that the effect becomes more acute and remains statistically significant for 16

choices.

weeks. Column 2 reports results when we restrict the sample to control postings for which the corresponding scandal firm also has a job posting in the same occupational category. The magnitudes of our post-scandal coefficients become larger with this refinement. In Column 3, we additionally require that individuals follow through and apply to the control posting on which they have clicked. As evidenced by the estimates, this filter further sharpens our results. Relative to a baseline probability of 5.3%, the conditional click probability decreases by 1.5 percentage points in the period 4-7 weeks after a scandal, a near 30% decline. Our results confirm that reputation losses reduce overall interest in working for a firm.

[Table 4 about here.]

In the latter three columns of Table 4, we change the outcome variable of Equation 1 to an indicator equal to one if an individual *applies* to a scandal firm in the same week it clicks on a corresponding control. The results are consistent with those on clicks. Column 4 shows that 4-7 weeks after a scandal, job seekers are 0.3 percentage point less likely to apply to a firm conditional on clicking on a posting from a control. Relative to the baseline probability of 1% this represents a 30% decline. Columns 5 and 6 indicate that the magnitudes of our estimates once again increase when we impose occupation and application restrictions. Taken together, our results provide strong evidence that a scandal impairs a firm's ability to attract job seekers.

We next investigate the responses of advanced degree holders. These individuals face tighter labor markets than their less educated peers, so they may be more discerning in their search decisions. To test this hypothesis, we estimate Equation 1 using only the set of users with a master's degree, MBA, JD, MD, or PhD. Results are presented in Table 5. As expected, our coefficient estimates are larger than those derived from the full sample. Column 1, for example, shows that in our least restrictive specification conditional click probabilities decrease 0.7 percentage point compared to a baseline of 4.8%. These results are consistent with what we would expect given the theory on search and matching, which

suggests that job seekers with stronger outside options will leverage these alternatives and behave more selectively, bargain for higher wages, or both.

[Table 5 about here.]

In our final exercise on search activity, we study the behavior of job seekers who click on postings for the same control both before and after its paired firm suffers a scandal. As shown in Table 6, these individuals are markedly less likely to also click on postings for scandal firms after an event takes place. The 0.9 percentage point reduction in click rate reported in Column 2 represents a 13.7% decrease relative to the baseline probability of 6.6%. Since these specifications allow us to implicitly control for time invariant individual characteristics, we can rule out the possibility that our previous results are driven by changes in the composition of job seekers pre- and post-scandal.

[Table 6 about here.]

4 Effects on Employee Sentiment

We next use ratings data to study how corporate scandals affect employee sentiment. We start by exploring how negative reputation shocks alter the arrival rate of reviews. The scandals in our sample do not necessarily impact firms' work environments, so there is no reason to expect, ex-ante, they should change the number of reviews posted. Figure 1 suggests, however, that reviews become more frequent after an event.[12] Among our sample of scandal employers, the arrival rates of reviews for both current and former employees are stable prior to an event, but jump afterward. Relative to the 24-week pre-scandal averages, which are depicted by the dotted horizontal lines, the number of new reviews rise by an average of 13% and 16% for current and former employees, respectively. We interpret these increases as preliminary evidence that scandals polarize perceptions of firms.

[12]See the appendix for a more in-depth discussion about the monthly arrival rate of reviews after a corporate scandal.

[Figure 1 about here.]

Figure 2 depicts the evolution of ratings around event dates. To compute the plotted values, we average ratings for each firm within calendar months, then take equally-weighted three month moving averages across firms. The figures reveal that prior to the scandal, firm ratings overall and across sub-categories were increasing, suggesting that firms among our list of scandal employers were becoming more productive or more reputable prior to the scandal. There is also a general upward trend in Glassdoor ratings over time that we can't disentangle from these figures, but motivates our decision to implement a difference-in-differences approach.

The top left panel shows a marked decline in overall rating following a scandal. In the three months prior to a scandal, new employee reviews among our list of scandal employers averaged around 3.55 stars. In the months that followed a scandal, average overall ratings dropped precipitously to around 3.45 stars and continued to fall thereafter, reaching as low as 3.35 stars 10 months after the scandal, suggesting that such shocks to firm reputation are intransient. Beyond rating an employer overall, respondents can leave separate ratings for five sub-categories, specifically culture and values, career opportunities, senior management, compensation and benefits, and work-life balance. Average ratings for the five sub-categories compise the other panel of Figure 2. The three right panels suggest that the overall decrease is driven by changes in the perception of senior management, company culture, and work-life balance. The lower left panel depicts no clear effect of reputation shocks on total compensation, while the middle left panel suggests no impact on workers' perceptions of career opportunities at the firm, until perhaps 6 months after the scandal occurs. We study these outcomes in greater detail in Section 5.

[Figure 2 about here.]

Enduring a corporate scandal may also limit a firm's ability to hire through employee referrals. When leaving a review, employees are asked if they would recommend their firm

to a friend. We interpret aggregated responses to this question as a proxy for the strength of a firm's referral network. Figure 3 depicts average recommendation rates pre- and post-scandal. Proportions are once again computed as three-month moving weighted averages across firms. In the three month period before an event, the average referral share for scandal employers is roughly 56%. Seven months after a scandal, this rate drops all the way to 46%. The magnitude and persistence of the decline are particularly striking given the increasing trend in the pre-scandal period. As referral networks are a valuable recruiting channel (Brown et al. (2016)), Figure 3 provides additional evidence that scandals hinder a firm's ability to hire new workers.

[Figure 3 about here.]

We next formally test the hypothesis that negative reputation shocks affect employee sentiment. We expect that ratings for scandal firms will drop relative to other firms after an event takes place. In order to measure this effect while accounting for general time trends, we employ a generalized difference-in-differences framework. Our sample consists of ratings from all firms with at least four employee reviews in a given calendar month.[13] Our benchmark specification is given by the equation

$$R_{ijt\tau} = \alpha_j + \gamma_t + \lambda CurrEmp_i + \sum_{q \neq 3} \beta_q \cdot Scandal_j \cdot \mathbb{1}_{\tau=q} + \epsilon_{ijt\tau} \tag{2}$$

where α_j is a firm fixed effect, γ_t is a year-month fixed effect, $CurrEmp_i$ is an indicator equal to one if individual i is currently an employee at firm j, and $Scandal_j$ is an indicator equal to one for firms that face a scandal. The τ indices correspond to bins of three consecutive calendar months relative to the event date, though we consider the scandal month separately. The omitted bin, $\tau = 3$ is composed of the three months immediately preceding a scandal. To avoid undue influence of large firms, we weight observations by the inverse of the number of reviews for firm i in year-month t such that each employer is equally weighted in each

[13] This threshold precludes the noise of firm-months with only a few reviews from affecting our results.

calendar month. Standard errors are clustered at the firm level since employee ratings are likely to be correlated within a firm.

Results are reported in Table 7. We find a significant and persistent decrease in overall rating following a scandal. In the three months after an event, ratings drop by an average of 0.145 stars. Relative to the baseline rating of 3.03 out of 5 stars, this represents a 4.7% decrease. Because Glassdoor displays reviews from most recent to oldest, new negative ratings may have a particularly strong impact on the application decisions of job seekers. The magnitude of the coefficients in Column 3 suggest that the decline in overall rating is driven in part by diminished perception of a firm's culture and values. Ratings for work-life balance also drop appreciably, indicating that employees might find their work less meaningful in the aftermath of a scandal. The large but short-lived negative effect in Column 5 may reflect the fact that firms often replace key executives in the wake of a scandal. The stability of career opportunity ratings in Column 2 supports the notion that reputation shocks do not necessarily impact the fundamental quality of a firm.

Column 7 reveals an economically and statistically significant drop in employee recommendation rates. As noted previously, this decrease might have an adverse effect on referral networks. If firms have more difficulty attracting workers, one would expect them to respond by raising wages. The negative coefficients in Column 3 seem to rule out such a response, but firms may increase pay to retain their most valuable employees, while simultaneously lowering other employees' salaries to keep wage bills stable. We explore the effects of scandals on wages in greater detail in Section 5.

[Table 7 about here.]

5 Effects on Wages

Our findings in the preceding sections indicate that firms have more difficulty hiring and retaining employees following a negative reputation shock. The theory on labor search

suggests that firms may respond to larger search and hiring costs by increasing wages. From a worker's perspective, the additional salary can be thought of as compensation for accepting a position at a firm with weak reputation. Given that the search behavior of highly educated job seekers was most affected by scandals, we expect these individuals to obtain the largest wage premiums.

We formally test this hypothesis using a generalized difference-in-differences framework. The benchmark regression we estimate is

$$W_{ijkt} = \alpha_j + \gamma_{kt} + \lambda X_i + \beta \cdot PostScandal_{jt} + \epsilon_{ijkt} \tag{3}$$

where W_{ijkt} is the log of inflation-adjusted base pay, α_j is a firm fixed effect, γ_{kt} is an occupation-year fixed effect, X_i is a vector of individual controls, and $PostScandal_{jt}$ is an indicator equal to one if firm j faced a scandal prior to year t.[14] Standard errors are clustered at the firm level. To ensure our estimates are not driven by large firms with many employees, we use weighted least squares in some specifications. The weights in these instances are the inverse of the number of salary reports for firm j in year t divided by the total number of reports in year t. If, as hypothesized, wages increase following negative reputation shocks, the β coefficient will be positive.

Results are presented in Table 8. Columns 1 and 2 report coefficient estimates from a naive event study specification including only firms that face scandals. Both regressions control for differences in pay across employers as well as an array of worker observables, including occupation. In both columns, we find that firms pay 2-3% higher inflation-adjusted wages following a scandal, but the estimate is not statistically different from zero when employers are equally-weighted. Columns 3 and 4 contain our benchmark results. By expanding the sample of firms, we are able to introduce a richer set of controls, including occupation $\times$ year fixed effects. The tighter specification allows us to more cleanly identify the impact of

[14]Because salaries are reported by calendar year, we are unable to determine exactly when an employee's compensation is set. We therefore choose to classify salaries from years in which a scandal occurs as pre-scandal. This conservative approach likely leads us to understate the true impact of scandals on wages.

corporate scandals on wages. Consistent with the theory we find that firms which have faced a scandal pay an average wage premium of 1.4-2.7%.

[Table 8 about here.]

In Section 3, we show that the search behavior of highly educated job seekers is particularly affected by negative reputation shocks. Because these individuals have stronger outside options, we expect them to extract larger wage premiums at firms that have faced scandals. In Column 6 of Table 8, we interact individual educational attainment with our post-scandal indicator. The non-interacted term, which corresponds to less than a bachelor's degree, is negative but statistically insignificant. The bachelor's and post-bachelor's interactions, on the other hand, reveal a sizable wage premium. Workers with a degree beyond a bachelor's earn an extra 12% in the aftermath of a scandal. It appears that firms adjust salaries to the greatest extent for individuals with the most bargaining power.

By exploring the effect for highly-educated workers, we look for differences in the premium between skilled and unskilled labor. Another method by which to test for a differential effect between skilled and unskilled labor would be to examine differences through the lens of job requirements, which we address by incorporating a measure of job routiness derived from Acemoglu and Autor (2011). The metric is intended to capture the extent to which an occupation can be automated. Because skilled laborers earn more than their unskilled peers, one might expect them to extract larger premiums after a negative reputation shock. As reported in Column 5, interacting the post-scandal indicator with our non-routineness measure yields a small, statistically insignificant coefficient. This result is perhaps unsurprising given the breadth of non-routine occupations, but is interesting given our findings on the premium for highly-educated workers, as it suggests that the compensating differential for firm reputation arises through increased competition with similar firms over skilled workers.

We next look to see if the effects are sharper in the immediate aftermath of a scandal. To do so, we estimate Equation 3, but include separate indicators for 1 and 2+ years after events. An important caveat is that due to the recency of Facebook's scandal, the firm only

contributes to the 1-year coefficients. Results are reported in Table 9. Column 2 shows that wages are 4% higher in the calendar year after a scandal. The immediacy of the effect is unsurprising given our results from Section 3, which show that negative reputation shocks quickly erode job seekers' interest in a firm. The fact that scandal premiums dissipate over the medium term suggests firms' reputations recover over time. Column 4 confirms that individuals without a college degree do not garner higher wages following a scandal. Unlike other employees, those with post-bachelor's degrees continue to earn elevated salaries in the medium term. As wages are somewhat sticky, this persistence makes sense given the magnitude of the 1-year premium.

[Table 9 about here.]

6 Conclusion

In this paper, we explore how negative shocks to a firm's reputation affect its labor market outcomes. Using self-reported salaries, employee reviews, and job seeker search activity from the website Glassdoor, we find that corporate scandals have both immediate and longer-lasting effects. Our empirical analysis suggests that negative reputation shocks diminish a firm's appeal to job seekers, especially highly-educated individuals with robust outside options. Further, employees post more negative reviews and are less likely to recommend their employer to friends in the aftermath of a scandal. Firms respond to their diminished ability to attract and retain workers by raising wages.

Our results provide strong evidence that intangibles such as firm reputation affect individuals' labor market decisions. They also highlight a novel channel through which negative reputation shocks can affect firm value.

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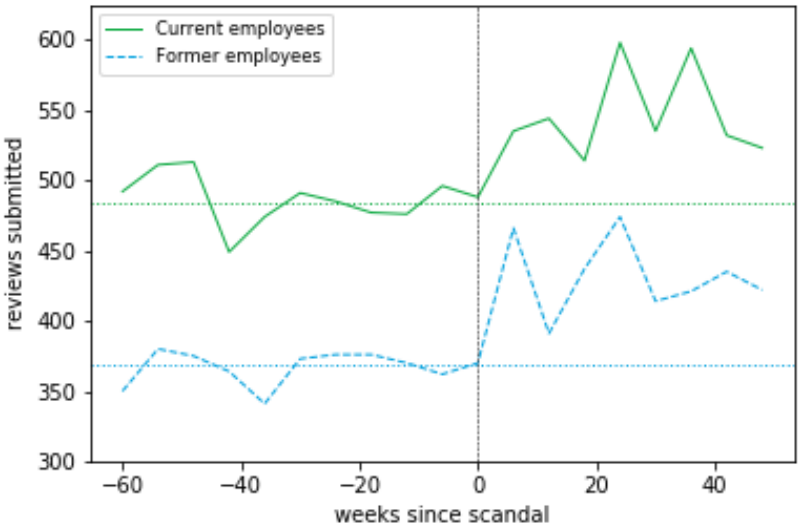
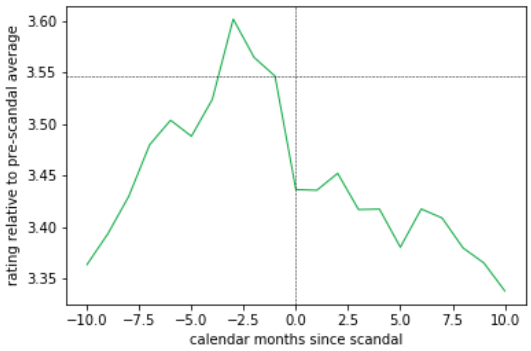
Figure 1: Number of Employee Reviews around Scandal Dates

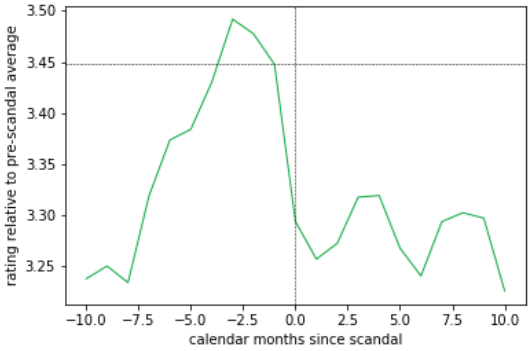


Notes: Figure displays the total number of reviews submitted in the weeks around scandal dates. Dotted horizontal lines depict averages over the 24 weeks prior to scandals. Employers included are Equifax, Facebook, GlaxoSmithKline, Guess?, Macy's, Mylan Inc., Sony, Uber, United Airlines, and Wells Fargo.

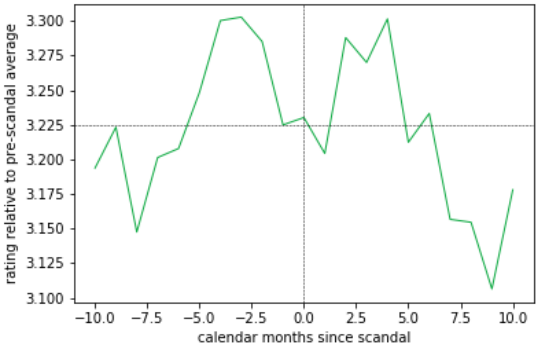
Figure 2: Employee Ratings around Scandal Dates



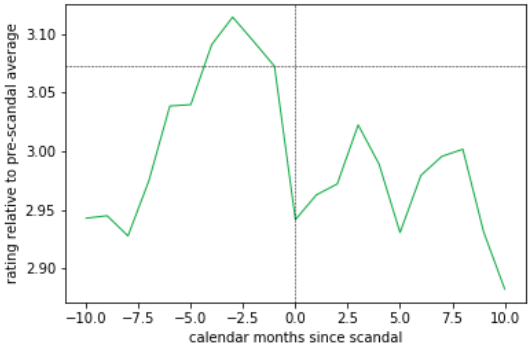
(a) Overall



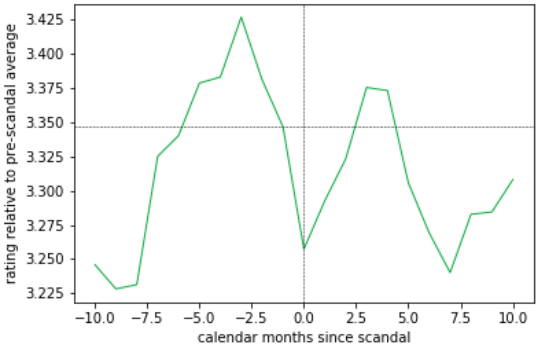
(b) Culture and Values



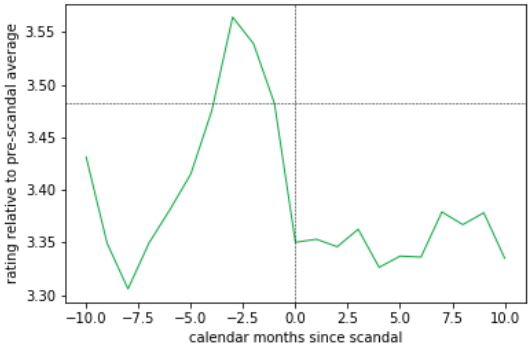
(c) Career Opportunities



(d) Senior Management



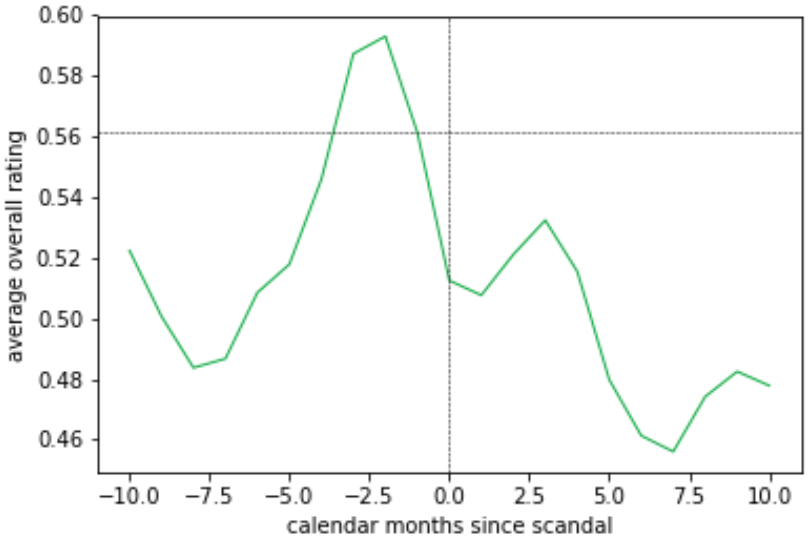
(e) Compensation and Benefits



(f) Work-Life Balance

Notes: Figures display three-month weighted moving averages of ratings around scandal dates. Horiontal dotted lines indiate the average over the three calendar months prior to the scandal event. The included employers are Facebook, Macy's, Uber, United Airlines, and Wells Fargo, Equifax, Guess?, Mylan Inc., and Sony. GlaxoSmithKline is omitted due to concerns about sample size.

Figure 3: Average Recommendation Rate around Scandal Dates



Notes: Figures display three-month weighted moving averages of recommendation rates around scandal dates. The included employers are Facebook, Macy's, Uber, United Airlines, and Wells Fargo, Equifax, Guess?, Mylan Inc., and Sony. GlaxoSmithKline is omitted due to concerns about sample size.

Table 1: Sample of Corporate Scandals

Company	Description	Date Public	Applies	Ratings	Wages
GlaxoSmithKline	Bribery	July 11, 2013	-	-	X
Macy's	Racial profiling	October 24, 2013	-	X	X
Sony	Data breach	December 05, 2014	-	X	X
Volkswagen	Emissions fraud	September 20, 2015	-	-	X
Mylan Inc	Price gouging	August 18, 2016	-	-	X
Wells Fargo	Account fraud	September 08, 2016	X	X	X
Uber	Sexual harassment	February 19, 2017	X	X	X
United Airlines	Customer abuse	April 10, 2017	X	X	X
Equifax	Data breach	September 07, 2017	X	X	X
Guess?	Sexual harassment	February 01, 2018	-	X	-
Facebook	Data misuse	March 15, 2018	X	X	X

Note: This table reports basic information on the corporate scandals in our sample. Inclusion in the Applies, Ratings, and Salaries analyses is based strictly on data availability.

Table 2: Counts of Salaries, Employer Reviews, and User Clicks for Scandal Employers

Employer	Salaries			Employer Reviews		Search Activity		
	total	post scandal	calendar year after scandal	total	post scandal	unique users clicked on control	user-week-occ control clicks	user-week-occ scandal clicks
Equifax	386	96	86	654	119	9,138	22,729	173
Facebook	1,836	79	79	2,351	497	70,947	348,302	14,491
GlaxoSmithKline	866	595	67	-	-	-	-	-
Guess?	-	-	-	821	98	-	-	-
Macy's	4,745	3,478	474	15,080	1,761	-	-	-
Mylan Inc.	246	109	69	-	-	-	-	-
Sony	516	162	50	877	170	-	-	-
Uber	1,129	354	310	4,752	1,339	10,827	31,378	3,379
United Airlines	1,117	183	148	2,157	446	5,739	13,059	119
Volkswagen	204	115	41	-	-	-	-	-
Wells Fargo	11,670	3,633	2,065	17,621	3,198	15,410	65,186	1,608

Notes: Counts are based on windows around scandal dates. For salaries, we consider all reports 2008 onward. For employer reviews, that window spans from 54 weeks before the scandal to 48 weeks after. For search activity, the period is 8 weeks before an event to 24 weeks after. At present, only have users for whom we know their age, gender, and education. Amending our data pulls will increase the number of firms in all three categories.

Table 3: Control Employers for Analysis of User Search Activity

scandal employer	first control employer	second control employer	third control employer
Equifax	ADP (13,565)	First Data (3,927)	TransUnion (5,237)
Facebook	Amazon (240,170)	Google (108,132)	-
Uber	Airbnb (6,744)	Lyft (15,941)	Twitter (8,693)
United Airlines	American Airlines (9,394)	Delta Airlines (3,665)	-
Wells Fargo	Bank of America (22,203)	Citi (18,252)	J.P. Morgan (24,731)

Notes: This table lists the controls associated with each scandal firm. Numbers in parentheses are the total number of clicks each control employer receives in the period 8 weeks prior through 24 weeks after the event date of the corresponding scandal firm.

Table 4: Search Activity for Scandal Employers Conditional on Interest in Control Employers

Weeks since scandal occurred	𝟙{clicked scandal employer given clicked control employer}			𝟙{applied scandal employer given clicked control employer}		
before: 5-8 weeks	0.001	0.001	0.002	0.001*	0.001	0.002
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
after: 0-3 weeks	-0.004***	-0.005***	-0.004	-0.001*	-0.001**	0.000
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
after: 4-7 weeks	-0.006***	-0.007***	-0.015***	-0.003***	-0.003***	-0.008***
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
after: 8-11 weeks	-0.003***	-0.004***	-0.007***	-0.002***	-0.003***	-0.006***
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
after: 12-15 weeks	-0.003***	-0.004***	-0.010***	-0.002***	-0.003***	-0.006***
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
after: 16-19 weeks	0.001	0.002	-0.004	-0.001*	-0.001*	-0.003*
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
after: 20-23 weeks	0.001	0.001	0.002	-0.000	0.000	0.003
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)
Constant	0.039***	0.043***	0.053***	0.010***	0.011***	0.024***
	(0.001)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)
O*NETSOC occupation x control employer fe	✓	✓	✓	✓	✓	✓
Equally weight employers with scandals	✓	✓	✓	✓	✓	✓
Has posting for same O*NETSOC occupation		✓	✓		✓	✓
Applied to control employer			✓			✓
N	480654	438082	99531	480654	438082	99531
R^2	0.09	0.08	0.11	0.04	0.04	0.07

Notes: Observations correspond to individuals who click on a posting by a control employer. The outcome variable is an indicator equal to one if the individual also clicks or applied to a posting by the corresponding scandal employer in the same week. The omitted group is the 4-week period before the scandal occurs. All specifications include occupation × control employer fixed effects. The scandal employers included are Facebook, Uber, Equifax, United Airlines, and Wells Fargo. *** p< 0.01, ** p< 0.05, * p< 0.01.

Table 5: Search Activity for Scandal Employers Conditional on Interest in Control Employers: Advanced Degree Holders

Weeks since scandal occurred	𝟙{clicked scandal employer given clicked control employer}			𝟙{applied scandal employer given clicked control employer}		
before: 5-8 weeks	-0.002	-0.002	-0.014***	-0.002*	-0.002*	-0.006
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
after: 0-3 weeks	-0.006***	-0.006**	-0.018***	-0.002	-0.002	-0.003
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
after: 4-7 weeks	-0.013***	-0.015***	-0.031***	-0.005***	-0.005***	-0.010***
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
after: 8-11 weeks	-0.007***	-0.007***	-0.019***	-0.004***	-0.004***	-0.011***
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
after: 12-15 weeks	-0.006***	-0.006***	-0.024***	-0.004***	-0.004***	-0.008**
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
after: 16-19 weeks	-0.001	-0.000	-0.015***	-0.003**	-0.003**	-0.009**
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
after: 20-23 weeks	-0.002	-0.001	-0.006	-0.002*	-0.002	-0.002
	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.004)
Constant	0.048***	0.051***	0.069***	0.015***	0.016***	0.031***
	(0.001)	(0.002)	(0.003)	(0.001)	(0.001)	(0.002)
O*NETSOC occupation x control employer fe	✓	✓	✓	✓	✓	✓
Equally weight employers with scandals	✓	✓	✓	✓	✓	✓
Has posting for same O*NETSOC occupation		✓	✓		✓	✓
Applied to control employer			✓			✓
N	138411	128562	30727	138411	128562	30727
R^2	0.11	0.10	0.15	0.06	0.06	0.12

Notes: Observations correspond to individuals who click on a posting by a control employer. The outcome variable is an indicator equal to one if the individual also clicks or applies to a posting by the corresponding scandal employer in the same week. The sample is restricted to users with either a master's degree, MBA, JD, MD, or PhD. The omitted group is the 4-week period before the scandal occurs. All specifications include occupation × control employer fixed effects. The scandal employers included are Facebook, Uber, Equifax, United Airlines, and Wells Fargo.. *** p< 0.01, ** p< 0.05, * p< 0.01.

Table 6: Search Activity for Scandal Employers Conditional on Interest in Control Employers: Users in Both Periods

	share clicked scandal employer given clicked control		share applied scandal employer given clicked control	
Dummy for 0-4 weeks after scandal	-0.011***	-0.009**	-0.004***	-0.004
	(0.003)	(0.004)	(0.002)	(0.002)
Constant	0.077***	0.066***	0.019***	0.021***
	(0.002)	(0.003)	(0.001)	(0.002)
Control employer fe	✓	✓	✓	✓
O*NETSOC occupation fe	✓	✓	✓	✓
Proportional weights by user clicks for control-occ	✓	✓		
Proportional weights by user applies for control-occ			✓	✓
Equally weight employers with scandals		✓		✓
N	1229	1229	794	794
R^2	0.58	0.53	0.43	0.56

Notes: Sample restricted to users who click on the same control employer both before and after the associated firm's scandal. The pre- and post-scandal periods are both 5 weeks. Period-control-occupation groupings are excluded if the scandal employer did not have a posting for the same occupation in the same period. The scandal employers included are Facebook, Uber, Equifax, United Airlines, and Wells Fargo.. *** p< 0.01, ** p< 0.05, * p< 0.01.

Table 7: Effects of Corporate Scandals on Employer Ratings

	Overall	Career_Opportunities	Comp_Benefits	Culture_Values	Senior_Management	Work_Life_Balance	Refer_Friend
before: 7-9 months	-0.054	-0.010	-0.015	-0.126*	-0.093*	-0.119*	-0.042***
	(0.057)	(0.030)	(0.049)	(0.074)	(0.055)	(0.072)	(0.016)
before: 4-6 months	-0.012	0.093	0.048	0.005	0.030	0.001	0.006
	(0.036)	(0.066)	(0.080)	(0.062)	(0.088)	(0.059)	(0.023)
month of scandal	-0.157	0.018	-0.162*	-0.246**	-0.252***	-0.212*	-0.057**
	(0.096)	(0.080)	(0.093)	(0.110)	(0.093)	(0.112)	(0.027)
after: 1-3 months	-0.145**	0.029	0.016	-0.140**	-0.067	-0.131***	-0.039
	(0.059)	(0.062)	(0.073)	(0.057)	(0.082)	(0.050)	(0.024)
after: 4-6 months	-0.128*	0.031	-0.073**	-0.200**	-0.082	-0.155*	-0.078**
	(0.075)	(0.053)	(0.035)	(0.080)	(0.056)	(0.082)	(0.040)
after: 7-9 months	-0.166*	-0.084	-0.034	-0.110	-0.091	-0.099	-0.047
	(0.088)	(0.064)	(0.048)	(0.113)	(0.088)	(0.074)	(0.045)
Constant	3.029***	2.837***	3.061***	2.989***	2.642***	3.035***	0.484***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)
N	3203195	2808503	2806232	2785714	2761793	2811548	2638420
R^2	0.24	0.22	0.23	0.24	0.24	0.21	0.20

Notes: Dependent variables are ratings out of five stars. All columns include employer fixed effects, year-month fixed effects, and an indicator for current employees. Standard errors are clustered by employer. Coefficients displayed are relative to the 3-month period preceding a scandal. The scandal firms included are Equifax, Facebook, Guess?, Macy's, Sony, Uber, United Airlines, and Wells Fargo. Employers are equally-weighted by setting observation weights as the inverse of the number of reviews for a firm-month divided by the total number of reviews in that month. *** p< 0.01, ** p< 0.05, * p< 0.01.

Table 8: Effects of Corporate Scandals on Wages

	Real base pay					
Post-scandal indicator	0.025***	0.027	0.014*	0.027*	0.028*	-0.053
	(0.004)	(0.015)	(0.009)	(0.015)	(0.016)	(0.052)
Post-scandal indicator x O*NETSOC std. non-routine score					0.016	
					(0.022)	
Post-scandal indicator x bachelor's degree						0.080*
						(0.048)
Post-scandal indicator x post-bachelor's degree						0.176***
						(0.053)
Employer fe	✓	✓	✓	✓	✓	✓
State, education, gender, experience controls	✓	✓	✓	✓	✓	✓
O*NETSOC occupation fe	✓	✓				
O*NETSOC occupation x year fe			✓	✓	✓	✓
Equally weight employers with scandals		✓		✓	✓	✓
N	22682	22682	2061542	2061542	2061542	949100
R^2	0.76	0.74	0.70	0.69	0.69	0.71

Notes: The dependent variable in all columns is the log of annual base pay. Salaries are adjusted for inflation using U.S. headline CPI. Because wage reports are by calendar year, we conservatively classify reports from firm-years in which a scandal occurs as pre-scandal. The scandal employers included are Equifax, Facebook, GlaxoSmithKline, Macy's, Mylan Inc., Sony, Uber, United Airlines, Volkswagen, and Wells Fargo. In equally-weighted specifications, weights are the inverse of the number of salary reports for a firm-year divided by the total number of reports in that year. We drop employers with fewer than 100 salaries over the sample period of January 2008 - March 2019. Standard errors are clustered by employer. The omitted group in the education specifications is comprised of individuals with less than a bachelor's degree. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 9: Effects of Corporate Scandals on Wages: Short vs. Medium Term

	Real base pay			
1 calendar year after scandal	0.029*	0.039***	0.040***	-0.030
	(0.014)	(0.012)	(0.012)	(0.028)
2+ calendar year after scandal	0.026	0.022	0.023	-0.065
	(0.021)	(0.021)	(0.022)	(0.080)
1 calendar year after scandal x O*NETSOC std. non-routine score			0.020	
			(0.032)	
2+ calendar year after scandal x O*NETSOC std. non-routine score			0.014	
			(0.023)	
1 calendar year after scandal x bachelor's degree				0.052*
				(0.029)
1 calendar year after scandal x post-bachelor's degree				0.169***
				(0.036)
2+ calendar year after scandal x bachelor's degree				0.095
				(0.070)
2+ calendar year after scandal x post-bachelor's degree				0.180**
				(0.076)
Employer fe	✓	✓	✓	✓
State, education, gender, experience controls	✓	✓	✓	✓
O*NETSOC occupation fe	✓			
O*NETSOC occupation x year fe		✓	✓	✓
N	22682	2061542	2061542	949100
R^2	0.74	0.69	0.69	0.71

Notes: Notes: The dependent variable in all columns is the log of annual base pay. Salaries are adjusted for inflation using U.S. headline CPI. Because wage reports are by calendar year, we conservatively classify reports from firm-years in which a scandal occurs as pre-scandal. The scandal employers included are Equifax, Facebook, GlaxoSmithKline, Macy's, Mylan Inc., Sony, Uber, United Airlines, Volkswagen, and Wells Fargo. In equally-weighted specifications, weights are the inverse of the number of salary reports for a firm-year divided by the total number of reports in that year. We drop employers with fewer than 100 salaries over the sample period of January 2008 - March 2019. Standard errors are clustered by employer. The omitted group in the education specifications is comprised of individuals with less than a bachelor's degree. *** p< 0.01, ** p< 0.05, *p< 0.10.