

Show Me the Amenity: Are Higher-Paying Firms Better All Around?

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Abstract

Do higher-paying firms offer more favorable work or compensate for less favorable work? Using matched employee-employer data for the United States, this paper estimates the joint distribution of wages, amenities, and job satisfaction across firms. Fifty unique amenities are captured by applying topic modeling to workers' free-response descriptions of their jobs. There are three main findings. First, high-paying firms are high-satisfaction firms because they offer better amenities: 88–92 percent of the rise in job satisfaction from moving to a higher-paying firm reflects improved non-wage aspects. Second, workers, especially high-earners, are willing to pay for job satisfaction, gaining in amenity value at least 50 percent of the average wage when moving from the worst- to the best-amenity firms. Third, since the elasticity of total compensation inclusive of amenity value to wages across firms exceeds one (1.05–1.10), incorporating non-wage amenities raises total compensation variance across firms at least 52 percent.

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1 Introduction

Jobs are inherently complex, reflecting “many margins” beyond just a wage (Clemens, 2021). Whether these many margins, i.e. job amenities, complement or substitute for wages remains empirically unanswered, despite the consensus that workers value non-pecuniary aspects of work (Akerlof et al., 1988; Mas and Pallais, 2017; Maestas et al., 2018). Do higher-paying firms offer more favorable amenities, or compensate for offering less favorable amenities? Since either is theoretically possible (Sorkin, 2018), data on firm-level amenities should offer the best opportunity to settle this debate.¹ Obtaining such data, however, has proven difficult. Current wage levels are easily observed and abundantly available, non-wage attributes are not. For one, it is not obvious what non-wage aspects would be included or even how to go about measuring them. In addition, workers may have heterogeneous experiences with amenities, meaning objective measures alone may not fully capture amenity quality.² Determining how firms’ amenities correlate with wages would require new data on amenities for workers and firms over time. With the advent of online employer reviews, such an exercise is now feasible.

This paper estimates which job amenities workers value, which firms offer more favorable amenities, and the aggregate importance of amenities as compared with wages. The building block for this analysis is workers’ free response descriptions of the positive and negative aspects of their jobs on the website Glassdoor. To extract nuanced amenities from these unstructured but meaningful texts, I apply the semi-supervised topic modeling approach of Gallagher et al. (2017). Topic modeling allows researchers to capture hard-to-define themes in text that humans may be unable to detect themselves. A semi-supervised approach allows researchers to further guide the model to help ensure the outputted themes are interpretable. Applying this model to workers’ reviews on Glassdoor, I summarize the quality of fifty amenities workers detail about their employers. The fifty amenities capture the multidimensional nature of different characteristics of work, including pecuniary traits related to wages and fringe benefits, as well as non-pecuniary traits related to working conditions, human capi-

¹On one hand, Rosen (1986) motives push wages and job attributes to move inversely, depending on firms’ marginal costs of providing amenities: Among firms of similar productivity levels, those with a comparative advantage in amenity provision provide better amenities but lower wages. On the other hand, Mortensen (2003) motives push wages and job attributes to co-move, as amenities are an alternative medium by which to compensate workers: More-productive firms can afford greater wages and more amenity value than less-productive ones. While some have presented evidence that the labor market operates within a compensating differential framework (Eriksson and Kristensen, 2014; Sorkin, 2018; Jäger et al., 2021), others have documented the absence of such differentials (Bonhomme and Jolivet, 2009; Maestas et al., 2018).

²Suppose, for instance, coworker quality has value to workers (Jäger et al., 2021) and is a function of both ability and friendliness. While the former can be proxied for using coworkers’ wages, the latter reflects a degree of sentiment that requires individuals’ own perceptions of their workplaces.

tal investments, and interpersonal relationships. Since each employee review constitutes an employee-employer match where I can identify the worker and the firm, by using data on job switchers who leave multiple reviews, I can capture firm-level differences in job satisfaction and the quality of each amenity vis-à-vis the firm fixed effects from the canonical two-way fixed effects model of [Abowd et al. \(1999\)](#), hereafter AKM.

This first main contribution of this paper fills a gap in our understanding of firms by first developing measures of job satisfaction and non-wage amenities that are firm-specific. Previous empirical work has established differences in amenity evaluations ([Maestas et al., 2018](#)) and job satisfaction ([Jäger et al., 2021](#)) between differently-paid workers, but has not been able to speak to the effects attributable directly to firms. Estimating each firm’s relative premium for wages and for job satisfaction, I find that higher-paying firms provide a higher degree of job satisfaction: a one-standard-deviation increase in the wage premium a firm offers its workers (compared with other firms) is associated with 0.10 standard deviations improved job satisfaction. As such, workers who transition to a higher-paying firm tend to enjoy not only greater wage growth on average, but also an associated increase in job satisfaction. This increase in satisfaction is broad-based, with workers reporting improved sentiment along dimensions of work at best indirectly related to wages, including career opportunities, culture and values, senior management, and work-life balance. This pattern is evident within and across industries, suggesting that inter-industry wage differentials do not fundamentally reflect equalizing compensation for unfavorable work ([Krueger and Summers, 1988](#)). Even when looking within the same firm, workers’ job satisfaction levels improve when the firm raises pay though the relation attenuates by three-quarters.

In capturing job amenities directly, my analysis does not rely upon the commonly used assumption that moves to lower-wage firms can be rationalized by unobserved, positive changes in amenities ([Bonhomme and Jolivet, 2009](#); [Sullivan and To, 2014](#); [Sorkin, 2018](#); [Lamadon et al., 2019](#); [Taber and Vejlin, 2020](#)). In fact, I find little empirical evidence validating this assumption: pay cuts in my data are more frequent moving to lower-satisfaction firms, not higher-satisfaction ones. Rather, most job amenities improve with pay. While high-paying firms offer worse job security, they provide better interpersonal relationships, invest more in human capital, supply more favorable fringe benefits, and offer superior working conditions. This finding runs counter to the notion that firms’ wage premia compensate for unfavorable job characteristics ([Rosen, 1986](#); [Sorkin, 2018](#)), and instead supports more-productive firms offering improved amenities ([Mortensen, 2003](#); [Lamadon et al., 2019](#)). Decomposing job satisfaction into these fifty amenities reveals that only 8–12 percent of workers’ job satisfaction ratings relate to pay satisfaction — in part reflecting how one-third of amenities have a more pronounced effect on job satisfaction than does satisfaction with pay.

The second main contribution estimates the value workers place on job satisfaction. Non-wage amenities, e.g. one’s coworkers, managers, autonomy, and respect, are non-pecuniary in nature and as such, not explicitly priced. In the spirit of [Gronberg and Reed \(1994\)](#), I estimate how long workers remain with an employer (job tenure) as a function of both wages and job satisfaction. If the utility a worker derives from her employment rises with her wage and satisfaction with the job, then both should positively influence whether she remains longer in the match. The resulting estimates can be used to provide a dollar-equivalent of job satisfaction in terms of its ability to attract and retain workers. Looking at workers’ completed job spells, since greater wages and improved job satisfaction each elongate firm tenure, workers exhibit a positive willingness to pay for job satisfaction. Even after removing the portion of job satisfaction attributable to pay satisfaction, there are stark disparities in non-wage amenity value between firms: workers gain in amenity value at least 50 percent of the average wage when moving from the first to the ninety-ninth percentile of firms.

The third main contribution of this paper examines whether amenities amplify or attenuate firm-level inequality in total compensation (wages plus amenity value). Settling this debate remains an ongoing issue: While [Lamadon et al. \(2019\)](#) find that more-productive firms offer better amenities, [Sorkin \(2018\)](#) concludes that three-quarters of the wage premia firms offer reflect compensating differentials. If high-wage firms offer less favorable non-wage amenities, then the disparity in total compensation will be thinner than the disparity in wages. The reverse is true if high-wage firms offer more favorable amenities. Since relating firms’ total compensation premia to their wage premia reveals an elasticity above one, amenities amplify inequality across firms. Incorporating non-wage amenities raises compensation variance across firms by 50–65 percent and widens the compensation gap between the tenth and ninetieth percentiles of firms by 10–15 log points. Job satisfaction data thus reveal that wages understate inequality between firms in the U.S. labor market. Improved amenities may therefore also help explain the high degree to which high-wage workers sort into high-paying firms ([Card et al., 2013](#); [Song et al., 2019](#); [Bonhomme et al., 2020](#))

The rest of this paper is organized as follows: Section 2 discusses the relevant literature, Section 3 describes and validates the Glassdoor data, Section 4 investigates the relation between wages and job satisfaction across firms, Section 5 introduces fifty job amenities extracted from workers’ descriptions of their employers, Section 6 quantifies how workers are willing to pay for job satisfaction, Section 7 estimates firm-level dispersion when amenity value is considered alongside wages, Section 8 investigates the robustness of the results to alternative modeling decisions, Section 9 highlights implications of the results while mentioning limitations, and Section 10 concludes.

2 Relevant Literature

In uncovering disparities in amenity quality across firms, this work relates to a number of important strands of the literature. First is a budding literature on the importance of the non-wage aspect(s) of jobs for understanding labor market dynamics. Non-wage characteristics of jobs have been found to be valued enough to affect workers’ preferences for jobs and labor market sorting (Sullivan and To, 2014; Hall and Mueller, 2018).³ Examples include occupational fatality risk (DeLeire and Levy, 2004), the degree of social interaction (Krueger and Schkade, 2008), and flexibility with respect to time and location (He et al., 2021). Non-wage attributes have also been found to be especially important in understanding differences in jobseeker behavior by gender.⁴

Since non-wage amenities vary between jobs, there is dispersion that wages alone may fail to capture. Taber and Vejlín (2020) estimate that the variance of wages plus non-pecuniary aspects is more than twice as large as the variance of wages alone — through the lens of a Roy model with compensating differentials (i.e., omitting the Mortensen (2003) channel), search frictions, and human capital. From omitting job characteristics, such as workplace safety (Park et al., 2021), working at convenient times of the day (Hamermesh, 1999), fringe benefits (Piketty et al., 2017), sexual harassment (Folke and Rickne, 2020), or labor rights violations (Marinescu et al., 2020), we may understate total inequality between workers of different education levels (Duncan, 1976) or wages (Maestas et al., 2018).

Second is a literature characterizing workers’ willingness to pay for non-wage attributes. Workers will accept lower wages to avoid bad working conditions and frequent physical activity (Gronberg and Reed, 1994), enjoy reduced workplace hazards and a flexible work schedule (Felfe, 2012), have job security (Bonhomme and Jolivet, 2009), avoid unanticipated work schedules (Mas and Pallais, 2017), receive faster earnings growth (Wiswall and Zafar, 2017), have a flexible work arrangement (Chen et al., 2019), conduct more meaningful work, experience less work-related stress and have job autonomy, teamwork, job training, and paid time off (Maestas et al., 2018). Willingness-to-pay estimates can also be quite large: Maestas et al. (2018) estimate that transitioning from the worst-amenity job to the best (as characterized by their set of nine amenities) would be valued at a 56 percent wage increase.

Third is a literature related to the determinants and implications of job satisfaction. Locke (1969) theorizes that job satisfaction captures every element of which a job is com-

³Improved signals of employer quality that reflect the non-wage aspects work have been shown to increase labor supply: Turban and Cable (2003) using “the best companies to work for” lists published by various media outlets and Sockin and Sojourner (2020) using Glassdoor employer ratings.

⁴Examples include the provision of parental leave benefits (Liu et al., 2019; Fluchtmann et al., 2020), commuting length (Herzog and Schlottmann, 1990; Le Barbanchon et al., 2020), competition (Sockin and Sockin, 2019b), and workplace flexibility (Bender et al., 2005; Goldin and Katz, 2011).

prised, and reflects not only the objective quality of each aspect, but individuals’ subjective perceptions and value rankings as well. Although greater pay is associated with more pay satisfaction (Bryson et al., 2012), overall job satisfaction has been found to predominantly reflect non-pecuniary rather than pecuniary aspects of work (Akerlof et al., 1988; Clark, 1998) — though disparities in pay among peers, which could arguably reflect non-wage characteristics such as fairness and respect, can stunt job satisfaction (Card et al., 2012). Consistent with other work that has found job satisfaction to be an important predictor for why workers voluntarily quit (Freeman, 1978; Bartel, 1982; Akerlof et al., 1988; Clark, 2001; Card et al., 2012), I find that more-satisfied workers exhibit longer firm tenure. And since job satisfaction primarily reflects non-wage characteristics (88–92 percent), job amenities constitute meaningful drivers for worker turnover.⁵ To borrow a quote from Akerlof et al. (1988), “As man does not live by bread alone, people do not quit only for wages.”

Last is a literature on the role of firms in explaining worker compensation. The AKM model quantifies the role of firms by regressing workers’ wages on fixed effects for the worker and the firm, a linearly additive view validated by Bonhomme et al. (2019). Estimates for the share of the variance in wages attributable to firms typically ranges from 15–25 percent (see Bonhomme et al. (2020) for a summary of the literature). That range falls to 5–13 percent and the contribution from the sorting of workers into firms rises after accounting for limited mobility, i.e. firms on average having few job switchers in the data (Andrews et al., 2008; Kline et al., 2020; Bonhomme et al., 2020). To account for limited mobility, I consider, in addition to the full sample of firms, a more-connected set of firms with many job switchers in the data. While there is some nascent work examining non-wage attributes across firms, empirical measures for amenities are almost entirely absent, likely reflecting the unavailability of such data.⁶ As a result, amenity value has to be inferred from wages and job transitions. The positive correlation I document between wages and non-wage attributes (without having to impute amenity value from wage data) lends empirical support to the findings of Lamadon et al. (2019), while at the same time, is in line with workers at higher-paying firms participating more in social insurance programs (Bana et al., 2018; Lachowska et al., 2021) and job satisfaction improving with coworkers’ wages (Clark et al., 2009).

⁵Jäger et al. (2021) find that in a survey where workers were asked their reasons for not switching to new employers, the primary reasons given pertained to non-wage components such as job security, work atmosphere, work schedule, and colleagues rather than difficulty in finding a better-paying job.

⁶One notable exception is the work of Lagos (2019) who captures amenities across Brazilian firms using a textual-based analysis of collective bargaining agreements between unions and employers. Whereas I use within-worker differences in job satisfaction to identify firm-level amenities and allow for vertical differentiation in amenities across firms, Lagos (2019) estimates firm-level amenities based on how collective bargaining agreements with the firm change over time, where amenity value is estimated conditional on wage growth vis-à-vis compensating differentials, capturing instead horizontal differentiation in amenities, i.e. analyzing how the wage-amenity bundle evolves holding productivity constant.

3 Data Description

3.1 Sources

The data for this analysis come primarily from the online platform Glassdoor, where job-seekers can go to obtain labor market information about prospective employers provided by current and former employees of each firm. Workers are incentivized to volunteer their own experiences through a “give-to-get” policy whereby contributors gain access to the information others have provided. Workers can submit one or more of the following: an employer review, a pay report, an interview review, or a benefits review. This work makes use of the first two: the former captures job satisfaction and non-wage amenities, the latter wages.

When submitting an employer review, each worker is first asked which firm they would like to review and whether they are a current or former employee of the firm. If she is a former employee, she is then prompted for the last year she was employed at the firm. The worker can then rate the employer overall on a one-to-five-stars integral scale, with more stars indicating greater satisfaction, and provide free-text responses describing the ‘Pros’ (i.e., positive characteristics) and the ‘Cons’ (i.e., negative characteristics) of working for the firm.⁷ In addition, the worker can rate the employer along five sub-dimensions (career opportunities, compensation and benefits, culture and values, senior management, and work-life balance) on the same one-to-five-stars scale. Each worker can also provide the location of their employment, their job title, and their years of tenure with the firm.⁸ For an in-depth description of the Glassdoor reviews data, which span 2008–2021, see [Green et al. \(2019\)](#).

When submitting a wage report, each worker is first asked for their job title and whether they are a current or former employee of the firm. Again, if she is a former employee, she is prompted for the last year employed with the firm. The worker then provides her base wage, pay frequency (annually, hourly, or monthly), variable pay (e.g., bonuses and commissions), years of experience, employment status (e.g., full-time or part-time), employer name, and location. Given that hours are not observed, I restrict the sample to only full-time workers. From here on, workers’ wages refers to their base earnings, meaning variable pay — which itself could be considered an employer’s fringe benefit — is omitted. For consistency across workers, I annualize wages assuming hourly employees work 2,000 hours per year and monthly employees work for twelve months. For a thorough discussion of the Glassdoor wage data, which span 2008–2021, see [Sockin and Sockin \(2019a\)](#).

⁷Respondents are not prompted to report their wage when submitting an employer review. As such, the concern that workers will not discuss pay when completing the free-response text because they provide wage information elsewhere in the submission form is not present.

⁸Disclosing one’s job title and one’s location is not required to submit a review.

3.2 External Validity

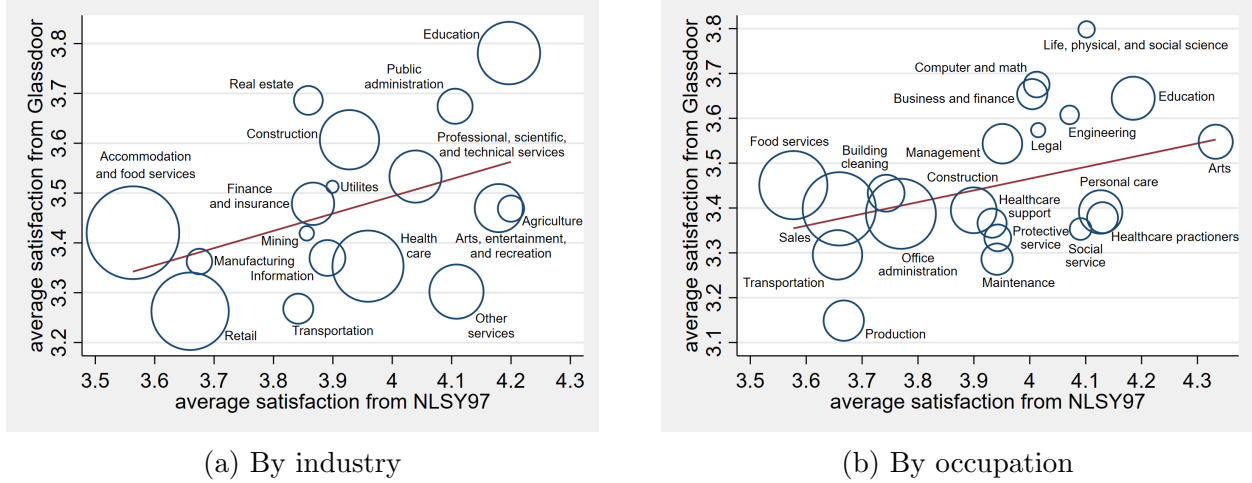
In order to make broad statements about the U.S. labor market, it is important to first show that Glassdoor ratings accurately capture labor market patterns observed in other datasets. Given the subjective nature of our main measure of interest, job satisfaction, possible datasets that can be used for comparison are necessarily restricted to worker surveys. Though measures of job satisfaction in publicly available surveys are scant, the National Longitudinal Survey of Youth 1997 (NLSY97) asks respondents whether they are satisfied with their jobs on a 1–5 integral ranking, the same as Glassdoor. Workers in the NLSY97 sample are more positive in their job assessments than workers in Glassdoor. In the NLSY97, the average satisfaction level is 3.85, and only 10.7 percent of workers report either of the two lowest satisfaction levels. For comparison, the average overall rating in Glassdoor is 3.47 and 25.4 percent of workers submit ratings of one or two stars.

Though the average and shape of the ratings distributions may be dissimilar, for our purposes, the validity of using Glassdoor ratings rests in whether the sample accurately reflects disparities observed between different job opportunities. To that end, I compare the average job satisfaction level between the two datasets by two-digit NAICS industry and two-digit SOC occupation, the scatterplots for which are displayed in panels (a) and (b) of Figure 1, respectively.⁹ Across seventeen industries, we observe a robust correlation (0.51, p-value = 0.037), meaning industries with high levels of satisfaction in the NLSY97 also have relatively high ratings in Glassdoor. The result is similar across twenty-one occupations (correlation of 0.47, p-value = 0.031).

Glassdoor wage data also capture broad trends in the U.S. labor market. [Karabarbounis and Pinto \(2019\)](#) find that, conditional on industry or region, the wage distribution in Glassdoor captures the respective distributions obtained from the Quarterly Census for Employment and Wages (QCEW) and the Panel Study of Income Dynamics (PSID); though [Karabarbounis and Pinto \(2019\)](#) note the distribution of employment by industry is not representative — an issue less relevant for this work given the focus on individual firms. [Martellini et al. \(2021\)](#) compare the average earnings of graduates by college within Glassdoor with averages produced by the U.S. Department of Education’s College Scorecard from tax data, and conclude that Glassdoor provides an unbiased sample. Additionally, Glassdoor wages have been used to validate results from other data ([Derenoncourt et al., 2021](#)). I add to this by showing that Glassdoor wages reflect differences observed in the Annual Social and Economic Supplement of the Current Population Survey (ASEC) between industries and occupations (Table 1). Glassdoor data capture the first moment of wages well,

⁹Across 309 NAICS industry x two-digit SOC occupation pairs, the correlation is 0.35 (p-value < 0.000).

Figure 1: Comparison of Glassdoor and NLSY97 Satisfaction Levels



Notes: This figure plots the relation between the average job satisfaction in the National Longitudinal Survey of Youth 1997 and average overall rating in Glassdoor by industry or occupation. Solid line indicates linear line of best fit and shaded region indicates 95% prediction interval. Industries and occupations are weighted by the total representative weight for each grouping from the NLSY97.

exhibiting a correlation above 0.9 with ASEC and an elasticity of 1.2–1.3, highlighting that Glassdoor somewhat overestimates earnings for high-wage jobs. With regards to the dispersion of earnings, the semblance between the two is noticeably weaker albeit still appreciably positive. For the standard deviation and interquartile range, we observe correlations of 0.44–0.48. Therefore, conditional on industry and occupation, Glassdoor data reflect meaningful differences in labor earnings observed in other data sources.

Table 1: Earnings in Glassdoor and the Annual Social and Economic Supplement (ASEC)

	ASEC earnings statistic			
	Mean log earnings	Median log earnings	Standard deviation log earnings	Interquartile range log earnings
Glassdoor wage statistic	1.348*** (0.028)	1.217*** (0.027)	0.709*** (0.072)	0.677*** (0.061)
Industry-occupations	409	409	409	409
R ²	0.85	0.83	0.19	0.23
Mean ASEC weight	18839	18839	18839	18839
Correlation	0.923	0.911	0.439	0.483

Notes: This table reflects coefficients from regressions of moments in ASEC-level earnings data on the same moments for Glassdoor wage data at the Glassdoor industry x two-digit SOC occupation. Earnings in ASEC reflect inflation-adjusted total pre-tax wage and salary income for full-time workers. Glassdoor wages excluding variable-based earnings such as bonuses, commissions, tips or overtime pay. Regressions are weighted according to representative ASEC weights. Industry-occupations restricted to those with at least fifty observations in Glassdoor. Significance levels: * 10%, ** 5%, *** 1%.

4 Relation Between Wages and Job Satisfaction

Despite the overwhelming growth in new data available to researchers, the question of whether wages and job amenities move inversely or in tandem remains an open debate. For attributes that are unambiguously undesirable *ex ante*, such as increased risk of fatality, the answer is fairly definitive.¹⁰ However, to what extent job characteristics that are harder to observe and harder to measure vary with wages remains unclear. While some empirical work has touched upon this question, more work is needed as jobs are complex and amenities numerous.¹¹ Starting with job satisfaction, I show in this section that high wages command greater levels of satisfaction, first presenting suggestive cross-sectional evidence and then estimating two-way fixed effects models.

4.1 Job Satisfaction as a Reflection of the Amenity Bundle

Determining whether variance in wages alone overstates or understates differences in total compensation requires also estimating the degree to which job amenities differ. The sheer breadth of possible job amenities makes this task especially daunting. To quote [Clemens \(2021\)](#), there is a “‘many margins’ problem, in which the relevance of various attributes may vary substantially across settings.” Some firms may offer better fringe benefits but offset those benefits with worse working conditions such as requiring more tasks and imposing more rigid work schedules. Some firms may invest more in on-the-job training while promoting a competitive environment with worse job security. Comparing any singular amenity though will inherently overlook the correlation with other amenities provided by the firm. To quantify the full scope of job amenities, especially non-pecuniary ones, ideally one would use an aggregation mechanism that incorporates how workers value the collective bundle. To this end, I use workers’ levels of job satisfaction.

The extent to which workers are satisfied with their jobs will depend not just on the pecuniary rewards they receive, but the non-pecuniary aspects as well. [Akerlof et al. \(1988\)](#) find that more than 80 percent of workers cite a non-pecuniary attribute as the primary reason for their satisfaction if they like their job. And just because a worker is highly-paid does not necessarily mean they will be more satisfied with their job: While high-wage workers in our sample on average report greater levels of job satisfaction (Figure I2: panel a), 18 percent of workers in our sample who earn above \$50,000 (in 2018 dollars) report either

¹⁰As [Smith \(1979\)](#) framed it then, the evidence of compensating differentials — in which wages trade-off with dis-amenities — has been ambiguous with regards to job attributes except for fatality risk.

¹¹For instance, [Pierce \(2001\)](#) shows that high-income earners receive more voluntary non-wage compensation vis-à-vis fringe benefits, [Dey and Flinn \(2005\)](#) that jobs offering health insurance pay higher wages, and [Maestas et al. \(2018\)](#) that working conditions appear to broadly improve with wages.

of the two lowest satisfaction levels.¹² My interpretation of job satisfaction is one akin to Hamermesh (2001), who argues that “the satisfaction that workers derive from their jobs, might be viewed as reflecting how they react to the entire panoply of job characteristics.” In other words, job satisfaction reflects a mapping from total compensation inclusive of amenities, (w, \vec{a}) , to a measure of satisfaction — where the resultant level of satisfaction also depends upon how the worker subjectively weights w and each amenity a .

Naturally then, if job satisfaction rises, this increase could reflect either an improvement in wages or amenities, or both. And conversely, if wages rise, we would expect job satisfaction to improve as workers become more satisfied with their pay. The fact that high-wage workers report greater levels of both job satisfaction and pay satisfaction (Figure I2: panel b) is consistent with this narrative; however, that high-wage workers also report greater levels of satisfaction with aspects of work at best tangentially related to pay, e.g., career opportunities, culture and values, senior leadership, and work-life balance (panels c–f) suggests they also enjoy higher quality amenities.

4.2 Estimating Firm-Specific Wage and Job Satisfaction Premia

The theory of compensating differentials reflects the wage premia required to equalize the advantages and disadvantages that arise between different work opportunities (Rosen, 1986). Given the utility-based nature of compensating differentials — necessitated by the fact that some aspects of work are non-pecuniary in nature — empirical researchers often estimate workers’ willingness to pay for job attributes to understand the trade-offs workers face. Typically, this has taken the form of studying job transitions (Bonhomme and Jolivet, 2009; Sorkin, 2018) or work decisions (Chen et al., 2019) through a revealed preference framework, or interpreting hypothetical employment choices workers make in surveys (Maestas et al., 2018; Wiswall and Zafar, 2017). These approaches exist through the perspective of workers choosing between a menu of options; however, the composition of said menu matters for understanding amenity valuations. If some amenities, for instance career opportunities, monotonically improve with wages, then job transitions alone will fail to dis-entangle the value workers place on career opportunities as no trade-off is present. To the extent that firms have control over both the wages they offer and the bundle of amenities (and their quality) that they produce, then the trade-offs workers face should arise from looking at supply-side differences across firms.

Given that Glassdoor wages and ratings data are comprised of employee-employer matches, I follow the two-way fixed effects literature to estimate firm-specific premia for wages and for

¹²This positive correlation between wages and job satisfaction is evident in other survey data, such as the NLSY97 (Figure I1), and is well-documented in the literature (Judge et al., 2010).

job satisfaction. Employee-employer matched data have been seldom used in the compensating-differentials literature, and when they have, the research question typically centers on understanding workers’ willingness to pay for safety and reduced fatality risk (Lalive, 2003; Dale-Olsen, 2006; Lavetti and Schmutte, 2018). Whereas the fixed effects in these analyses act as nuisance parameters to abstract from unobserved differences across workers and firms, this work uses the firm fixed effects as objects of study for understanding the causal effect from moving between firms, as in Bana et al. (2018) and Lachowska et al. (2021). Though each worker only provides a vignette of the firm by detailing a few attributes in a few reviews, the collection of experiences provided by the set of workers who have transitioned into or out of each firm provides a complete picture of firms’ amenity bundles.

For log wages and overall job satisfaction ratings — the distributions for which are presented in Figure I3 — I estimate AKM models of the form,

$$Y_{ikt} = \lambda_i + \lambda_k + \lambda_t + \gamma X_{it} + \varepsilon_{ikt} \quad (1)$$

where Y_{ikt} is log annual wage or overall star rating for worker i employed at firm k in year t , λ_i , λ_k , and λ_t are worker, firm, and year fixed effects, respectively, and X_{it} is a vector of workers observables (a fourth-order polynomial in work experience for wages; indicators for current or former employee and employment status, e.g., full-time or part-time, for overall ratings).¹³ In this model, the firm fixed effects λ_k are identified from job switchers who report their wage or satisfaction for different firms, thereby capturing the extent to which the same worker receives more or less pay and higher or lower satisfaction at firm k compared with the other firms at which the individual has worked.¹⁴ From workers’ wages, I obtain firm-specific pay premia $\hat{\lambda}_k^w$ — the traditional AKM application, and from workers’ overall ratings, I obtain firm-specific satisfaction premia $\hat{\lambda}_k^R$ — the novel AKM application intended to holistically capture dispersion in non-wage amenities.

To assess the importance of firms, I first decompose the variance of workers’ wages and overall ratings in Table 2 into components attributable to the worker, the firm, the covariance between the two, and the left unexplained error term. I consider two samples. The “Full” sample reflects any firm for which a fixed effect is obtainable, i.e. there exists at least two movers in our sample who transition into or out of the firm either from or to a firm which

¹³A firm represents the collection of establishments across the United States rather than each establishment separately, though treating establishments separately does not alter the findings (Table 8: Row 22).

¹⁴The firm fixed effects for wages are estimated using a mostly different sample of workers than that used to estimate the firm fixed effects for job satisfaction. Roughly three-quarters of the workers in each sample are not represented in the other. In turn, because most workers contribute to either the wage premia or the ratings premia but not both, this sidesteps the concern that the wage-satisfaction relation I observe across firms is driven by selection related to workers’ own wage-satisfaction preferences. The takeaway is unchanged though when only workers who are included in both panels are considered (Table 8: Row 23).

also has at least two such movers. The “Connected” sample restricts the set of firms to those with at least fifteen such movers, in the spirit of [Bonhomme et al. \(2020\)](#) to address the issue of limited mobility bias in two-way fixed effects models ([Abowd et al., 2003](#)).¹⁵

Firms account for 9.3 percent of the variance in log wages in the Full sample and 6.5 percent in the Connected sample. While below the roughly 20 percent consensus found in the literature ([Card et al., 2018](#)), these estimates are consistent with those from a more-connected set where limited mobility bias is of less consequence and positive sorting between workers and firms plays an increasingly important role ([Bonhomme et al., 2020](#)). For job satisfaction, firms play a more substantive role. Firms account for 21.9 percent and 11.0 percent of the variance in ratings for the Full and Connected samples, respectively — roughly twice the contribution of firms to wages. That firms are relatively more predictive of job satisfaction would suggest that firms play a more important role in setting amenities than wages, and that there is more dispersion across firms in amenities than in wages. While about 8 percent of the variance in wages is left unexplained by workers, firms, and observable characteristics, 23–26 percent of the variance in ratings is left unexplained. The unexplained variance in satisfaction could reflect myriad factors, such as match-specific effects, occupation, location, time-varying preferences, or measurement error induced by a discrete metric.

Table 2: Decomposition of Variance for Wages and Ratings

Variance	Log wages		Overall ratings	
	Full	Connected	Full	Connected
Total	0.279	0.276	2.284	2.124
Worker	0.189	0.190	1.376	1.199
Firm	0.026	0.018	0.499	0.234
Cov(Worker, Firm)	0.014	0.016	-0.191	-0.034
Residual	0.021	0.021	0.527	0.562
Number of Firms	117,749	14,230	99,167	9,841
Number of Workers	1,025,916	691,546	565,704	312,149
Number of Observations	2,207,583	1,497,251	1,263,222	703,147

Notes: This table displays the variance decomposition for log wages and overall ratings for the Full sample of firms (all firms) and the Connected sample of firms (firms represented by at least fifteen movers).

Further details regarding the panel of movers’ wages and ratings used in estimating these

¹⁵Limited mobility bias refers to how the precision with which the firm fixed effects in an AKM framework are estimated relies upon how many movers there are to represent each firm. The fewer movers there are, the more important firms are in explaining the variance across workers ([Andrews et al., 2008](#)). Since the job transitions of movers identify the firm-specific constants, using a more-connected set of firms with many movers can correct this bias. [Bonhomme et al. \(2020\)](#) argue this point by re-estimating their AKM model using iteratively smaller fractions of the total movers present for each firm. I implement a similar exercise for the Connected set of firms using the wages and ratings data in [Figure I4](#) and find similar patterns.

two-way fixed effects models are provided in Table I1. Although I observe more than one wage or overall rating for many workers — allowing for the identification of firm-specific premia — each worker records on average only 2.2 observations in the wages panel and 2.4 observations in the ratings panel. As such, one limitation of this analysis is the inability to conduct robustness exercises for these AKM models, such as controlling for match-specific differences that may endogenously determine mobility decisions (Lavetti and Schmutte, 2018), e.g., through learning about ability or match quality over time (Gibbons et al., 2005; Menzio and Shi, 2011), or estimating event studies of dynamic wage or ratings changes around job transitions between firms of varying premia to confirm exogenous growth at transitions (Card et al., 2013). However, estimating the gains and losses from transitioning to a firm of a higher or lower decile of firm premium for wages (Table I2) and satisfaction ratings (Table I3) reveals that the changes are roughly symmetric, supporting the linearly additive AKM framework. The average duration between a workers’ pair of observations is 2.5 years for wages and 2.0 years for ratings, 78–80 percent of pairs in each panel represent the worker switching firms, and transitions for both current and former employees are observed frequently in each sample, highlighting that the samples do not appear negatively selected on representing low productivity workers who have left the firm and searching off the job.

4.3 When Workers Transition Between Firms

In this subsection, I examine how workers’ individual outcomes change when transitioning to firms of different wage premia $\hat{\lambda}_k^w$ or job satisfaction premia $\hat{\lambda}_k^R$. Under the AKM framework, how workers’ earnings or satisfaction levels co-move with these firm-level measures can be interpreted as the causal effect of the firm.

Consider a worker i who was employed with firm k in year t and decides to transition to a new firm k' where they are observed in year t' . If the worker leaves an employer review for both firms, then I observe the pair of ratings $(R_{ikt}, R_{ik't'})$. Having experienced the wage-amenity bundles offered by each firm, the worker reports her overall satisfaction with each. How does the difference in wages offered by each translate into differences in satisfaction? On one hand, if higher-paying firms cut amenities to offset labor costs, then moving to a higher-paying firm may result in a non-positive change in job satisfaction, depending upon how workers subjectively weight wages and amenities. Inversely, if higher-paying firms supplement high wages with better amenities, then moving to a higher-paying firm should directly boost job satisfaction, as the compensation bundle improves along both dimensions.

I relate firm-level wage and satisfaction premia to individual outcomes by considering

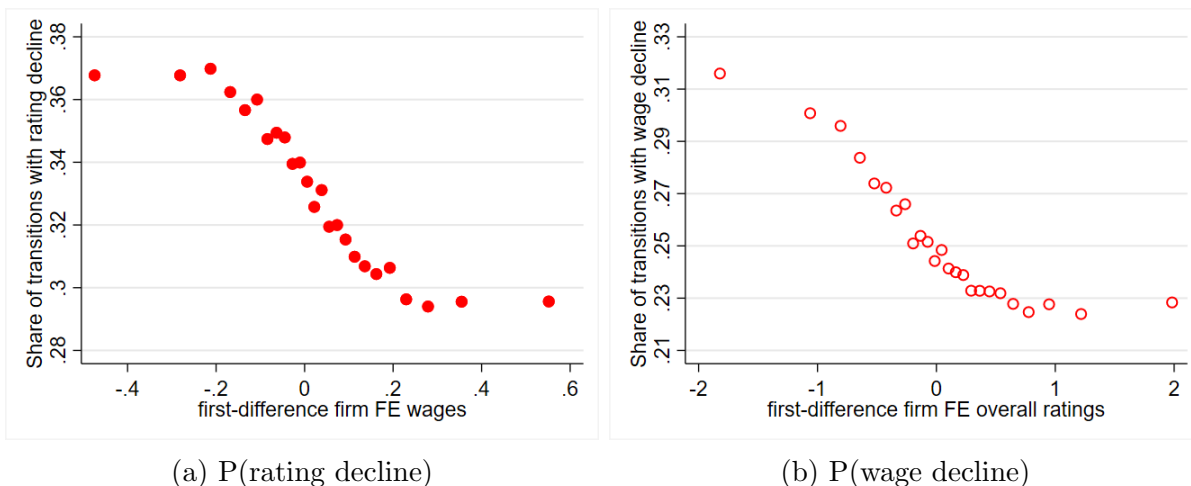
first-difference models of the form

$$\mathbb{1}\{R_{ik't'} < R_{ikt}\} = \beta_R(\hat{\lambda}_{k'}^w - \hat{\lambda}_k^w) + \xi_t + \xi'_t + \varepsilon_{iktk't'} \quad (2)$$

$$\mathbb{1}\{w_{ik't'} < w_{ikt}\} = \beta_w(\hat{\lambda}_{k'}^R - \hat{\lambda}_k^R) + \xi_t + \xi'_t + \varepsilon_{iktk't'}. \quad (3)$$

The first coefficient of interest, β_R , captures the difference in the probability of a worker experiencing a job satisfaction decline from working for a firm offering one percent greater wages. Panel a of Figure 2 depicts this relation within bins according to $\hat{\lambda}_{k'}^w - \hat{\lambda}_k^w$, and reveals a clear *negative* effect. As workers move to lower-paying firms, outside the tails of the distribution, the probability of experiencing a job satisfaction decline rises steadily.¹⁶

Figure 2: Growth in Job Satisfaction and Wages by the Change in Firm Premia



Notes: This figure depicts the probability of a worker experiencing a decline in overall rating (panel a) and the probability of a worker experiencing a (real) wage decline (panel b) when transitioning between firms that differ in their wage and ratings premia, respectively (x-axis). Observations are partitioned into twenty-five bins according to the measure on the x-axis.

The second coefficient of interest, β_w , captures the difference in the probability of a worker experiencing a real wage decline working for a firm that offers one star greater job satisfaction. Panel b of Figure 2 depicts this relationship within bins according to $\hat{\lambda}_{k'}^R - \hat{\lambda}_k^R$, and reveals a clear negative effect, i.e., pay cuts are increasingly *more* likely to occur when workers transition to lower-satisfaction firms. A worker accepting a wage decline is not an infrequent occurrence in the U.S. labor market, with estimates in the range of 23–43 percent of job transitions (Jolivet et al., 2006; Tjaden and Wellschmied, 2014; Sorkin, 2018). In Glassdoor wage data, 29 percent of job transitions are characterized by a real wage cut. Because workers are willing to accept lower wages at their new firms, the literature typically

¹⁶Using a survey of German workers, Jäger et al. (2021) find a similar pattern: individuals report higher levels of job satisfaction with work when moving to higher-paying firms.

rationalizes these observed flows by arguing that there must be a compensating differential through improved non-wage amenity value that these workers are receiving (Bonhomme and Jolivet, 2009; Sorkin, 2018; Taber and Vejlín, 2020). However, if this were the case, we would expect wage declines to be more frequent when moving to higher-satisfaction firms, not lower-satisfaction ones. In documenting the opposite, I find scant evidence in the data supporting the assumption that pay cuts are offset by improvements in job amenities. This evidence points to either higher wages driving the improvement in satisfaction — a possibility I rule out and bound in Section 5.4 — or better quality amenities fueling the increase.

One limitation of studying how the likelihood of a job satisfaction decline relates to firms’ wage premia within this sample is that why the workers transition jobs is unobservable. If workers in this panel only transition to lower-paying firms when they are fired or laid off, then the negative slopes observed in Figure 2 may not apply more broadly. In other words, voluntary job transitions may experience the inverse pattern if they are under-represented in the data. To address this concern, I confirm that this negative relation, i.e. a greater likelihood of a job satisfaction decline among lower-paying employers, is observed robustly across different types of job transitions that likely span both voluntary and involuntary moves (Table I4). These transitions include workers who exited short or long spells, workers who kept the same job title or transitioned to a managerial role, and workers who changed their employment status to full-time or part-time when switching firms.

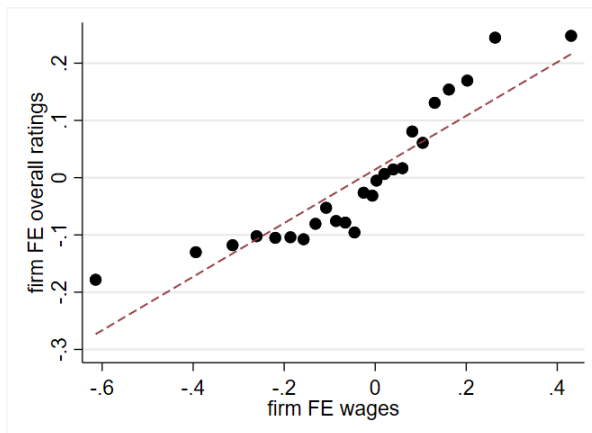
Suggestive evidence that the non-wage amenities workers enjoy improve when moving to higher-paying firms can be seen in studying how workers’ satisfaction changes for different sub-categories. Replacing the the left-hand side of equation 2 with the first difference in ratings for career opportunities, culture and values, senior management, compensation and benefits, and work-life balance reveals that seemingly every aspect of the job improves (Table I5). Perhaps not surprisingly, satisfaction with compensation and benefits rises the most, 0.15 standard deviations per one-standard-deviation increase in firm wage premia. But satisfaction even with non-pecuniary dimensions, such as career opportunities, culture and values, senior management, and work-life balance, improve as well, each rising on average 0.04–0.07 standard deviations per one-standard-deviation increase in wage premia.

4.4 Are High-Paying Firms High-Satisfaction Firms?

Given that workers experience fewer wage declines moving to higher-satisfaction firms and fewer satisfaction declines moving to higher-paying firms, naturally it follow to what extent then is attributable to the firm? Since I observe the wage premium $\hat{\lambda}_k^w$ and satisfaction premium $\hat{\lambda}_k^R$ for the same employer k , I can directly relate the two, $\hat{\lambda}_k^R = \rho\hat{\lambda}_k^w + v_k$. The

coefficient ρ then captures the extent to which greater wages translate into more satisfaction across firms. This relation is summarized in Figure 3, where a strikingly positive correlation is observed. Formally estimating this model reveals a coefficient of $\rho = 0.468$ (standard error = 0.017) for the Full set of firms.¹⁷ Given standard deviations of 0.22 and 1.03 in the wage and rating premia, respectively, a one standard deviation increase in firm-level wages is associated with 0.10 standard deviations greater job satisfaction. For the Connected set of firms, the estimate is even larger at 0.19 standard deviations.¹⁸

Figure 3: Relation between Firms' Pay and Job Satisfaction Premia



Notes: This figure depicts the firm fixed effects for wages $\hat{\lambda}_k^w$ (x-axis) against the firm fixed effect for job satisfaction $\hat{\lambda}_k^R$ (y-axis). The set of firms included reflects the Full sample. Observations are partitioned into twenty-five bins according to the measure on the x-axis.

Within the AKM framework, the effect from the firm by assumption is constant over time. However, firm fundamentals or outlooks may shift over time and spillover into changes in worker compensation. In the spirit of [Lachowska et al. \(2020\)](#), I re-estimate a time-varying version of equation 1 where the firm fixed effects are allowed to drift over time, λ_{kt} . For the same firm, I relate the growth in relative wage premium offered over time to the growth in relative job satisfaction provided over time by estimating $\hat{\lambda}_{kt}^R = \rho \hat{\lambda}_{kt}^w + \xi_k + \xi_t + v_{kt}$. Controlling for firm and year accounts for inherent differences across firms (e.g., industry, size, and location) and trends over time that may reflect sample composition or the business cycle. The results including and excluding ξ_k (presented in Table I7) reveal that ρ remains significantly positive even when looking within firms over time, further suggesting that wage growth corresponds to job satisfaction growth, consistent with widening wage inequality exacerbating satisfaction inequality ([Hamermesh, 2001](#)).

One potential explanation for observing improved satisfaction at higher-paying firms that

¹⁷Table I6 presents the results with and without industry fixed effects for the Full and Connected samples.

¹⁸For within and across industry discussions, see Appendices E and D, respectively.

would be orthogonal to the quality of non-wage attributes is a warm glow effect, whereby the stature of being employed with a higher-paying firm elevates one’s satisfaction with their job. This could reflect, for instance, a heightened sense of accomplishment from achieving employment with a high-paying firm, especially if such a feat is considered difficult or rare. One way to proxy for this warm glow effect would be to capture disparities in interview practices, such as the level of difficulty or success rate, across firms. On glassdoor, workers can separately detail their experiences interviewing with firms, including how challenging they perceived the interview to be and whether they received an offer.¹⁹ Estimating an AKM model for each of these two interview metrics and relating the resultant firm fixed effects to those for log wages and job satisfaction (Table I8) reveals that a warm glow is not driving this positive relation. While higher-paying firms carry out more difficult interviews and are more selective in extending offers (Column 1), accounting for differences in the interview process across firms attenuates the slope between firms’ wage and ratings premia by about 10 percent — suggesting warm glow effects play a limited role.

5 Introducing Job Amenities

How does one capture the ‘many margins’ of job amenities? Doing so would involve not only gauging the quality and/or availability of each attribute, but determining an exhaustive set to measure. Labor market surveys have attempted to gauge the non-wage characteristics of work to varying degrees.²⁰ However, unlike Glassdoor, the nature of each of these surveys precludes any firm-level analysis.

5.1 Semi-Supervised Topic Modeling

While workers provide ratings along five broad sub-dimensions, such as career opportunities and senior leadership (see Figure I2) when submitting an employer review, these sub-dimensions reflect how workers perceive an amalgamation of different work aspects. To

¹⁹Each observation in the Glassdoor interviews data is an employee-employer match that includes an assessment for the interview’s difficulty level on a one-to-five ordinal scale (corresponding in increasing order to very easy, easy, average, difficult, and very difficult, respectively) and an indicator for whether the worker received a job offer. There are roughly 180,000 observations covering 14,000 employers for the panel of workers with multiple interviews. For further discussion of the data, see [Sockin and Zhao \(2020\)](#).

²⁰In the ASEC, respondents are asked whether they receive health insurance or a pension from their employers — measures analyzed by [Simon and Kaestner \(2004\)](#) and [Clemens et al. \(2018\)](#) — as well as usual hours of work per week on the job. In the NLSY97, respondents are asked about work schedules, available fringe benefits, and in the most recent wave of the survey, required job tasks. More recently, the American Working Conditions Survey (AWCS), administered by RAND and studied in [Maestas et al. \(2018\)](#), captures differences along a range of workplace conditions (see Appendix C).

isolate specific job amenities, I make use of the free-text responses that workers submit for the ‘Pros’ and ‘Cons’ sections of their reviews. This has the advantage of, unlike other surveys where it is explicit what attributes are being captured, allowing workers to tell us (the researchers) what amenities matter to them. Advantageously, because workers partition their sentiment into the positive (‘pros’) and negative (‘cons’) features, I can measure an amenity’s quality based on whether it is discussed in the former or the latter. While workers do not mention every amenity, I interpret the worker choosing to mention an amenity as signaling that the quality is especially above or below average or expectation.

There are fifty amenities in total, spanning six main categories. Some are obvious, others motivated by the literature, and the rest identified after implementing unsupervised topic modeling to learn what latent attributes naturally arise. The first category is traditional pay or base earnings (pay and pay growth). The second is other forms of pecuniary compensation, including variable earnings²¹ (bonuses and commissions) and fringe benefits²² (paid time off, health insurance, retirement contributions, employee discounts and free food). The third and most extensive is working conditions, which includes work-life balance, hours, work schedule, short breaks, office space, commuting, teleworking, location, autonomy/responsibility, respect/abuse, communication, support, difficulty, requirements, stress, pace, safety, recognition, morale, fun, culture, diversity/inclusion, leadership, office politics, change, and job security.²³ Fourth is human capital, which includes career concerns, promotions, experience, skill development, on-the-job training, mentoring, recruiting, contracting, and industry.²⁴ The fifth is interpersonal relationships, comprised of managers, coworkers, teams, and cus-

²¹Wiswall and Zafar (2017) estimate workers’ willingness to pay for bonus compensation; Sockin and Sockin (2019b) relate jobseeker activity to the competitiveness of a role, where competitiveness is proxied for by the share of variable pay attributable to commissions.

²²Maestas et al. (2018) examine paid time off and Simon and Kaestner (2004) evaluate health insurance and retirement plans. Employee discounts and free food were included in surveys of workers by Glassdoor (2015), and Fractl (2020) shows that 15–30 percent of workers surveyed would consider accepting these fringe benefits over higher pay. I attempted to include an amenity for tuition assistance, which received a similar valuation in these surveys, but could not recover an interpretable topic.

²³Maestas et al. (2018) consider work schedule, teleworking, stress, pace, and autonomy/responsibility; Le Barbanchon et al. (2020) commuting; Hersch (2011) sexual harassment (respect/abuse); Bradler et al. (2016) recognition; Wiswall and Zafar (2017) hours; Wasmer and Zenou (2002) location; Autor and Handel (2013) job tasks (requirements), Gadgil and Sockin (2020) culture and leadership; Gronberg and Reed (1994) fun; Quinn (1974) the challenge of the job (difficulty), help (support), and physical surroundings (office space); and Park et al. (2021) workplace safety. Pollak (2019) finds workers value workplace diversity/inclusion; Carpenter et al. (2010) find office politics can hamper labor productivity; Breza et al. (2017) relate morale to the opacity of coworker productivity; and Hamermesh (1990) examines the marginal return to short breaks.

²⁴Acemoglu and Pischke (1999) examine on-the-job training; Tambe et al. (2020) skill development among information technology workers; Johnston and Lee (2013) promotions; Gibbons and Murphy (1992) career concerns; Starr et al. (2021) non-compete and Sockin et al. (2021) non-disclosure agreements (contracts); Dustmann and Meghir (2005) experience; Quinn (1974) job security; Athey et al. (2000) model the interaction of mentoring and diversity; and Faberman and Menzio (2018) relate recruiting intensity to starting wages.

tomers.²⁵ And the sixth is a residual category comprised of two un-anchored topics meant to freely capture the rest of the review text.

To extract amenities from review text, I borrow a topic-modeling machine learning algorithm from the computer science literature. I implement the Anchored Correlation Explanation (CorEx) model of [Gallagher et al. \(2017\)](#) — a semi-supervised approach that allows the researcher to specify topic-specific “anchor words” that guide topics to convergence.²⁶ The model is semi-supervised in that the researcher identifies part of the topic (the ‘anchor words’) while the machine fills in the rest of the topic according to the objective. A semi-supervised approach is used to ensure the topics can be interpreted as specific amenities.²⁷ The Anchored CorEx model is particularly well-suited for this task since compared with other topic modeling methods, it has been found to more readily produce coherent topics that are less overtly discussed and may not naturally emerge ([Gallagher et al., 2017](#)).

I first calibrate the CorEx model using the full review text (stacked pros and cons) for a sample of three-million reviews. Applying the model to a segment of text outputs a vector $\{p_a \in [0, 1]\}_{a=1\dots 50}$ of probabilities that amenity a is discussed. The twenty highest-incidence (or most-weighted in the case of anchors) words for each attribute are presented in Tables [H1–H5](#). For each of the 8.5 million reviews r , I separately score the pros and cons sections to obtain the vectors $\{p_{r,a}^{pro}\}$ and $\{p_{r,a}^{con}\}$. Taking the weighted difference between the two — where the weight (ω_r) is the share of review text in the pros section — I gauge the quality of amenity a from review r according to $q_r^a = \omega_r p_{r,a}^{pro} - (1 - \omega_r) p_{r,a}^{con} \in [-1, 1]$. If the amenity is not mentioned in the review, its quality will be neutral $q_r^a = 0$. The frequency with which each amenity is discussed within the panel of reviews is presented in [Figure I5](#). Amenities that are frequently discussed pertain to characteristics that are important predictors for overall job satisfaction but would be difficult to discern about the firm ex ante such as respect/abuse (26 percent), coworkers (18 percent) and leadership (17 percent). Importantly, it is not uncommon for workers to highlight satisfaction with pay (15 percent) or pay growth (3 percent), implying that one could capture the pass-through of pay satisfaction to overall satisfaction through these text-based amenities, as in [Section 5.4](#).

²⁵[Maestas et al. \(2018\)](#) consider teamwork; [Stinebrickner et al. \(2019\)](#) the beauty wage premium in jobs that rely upon interpersonal interaction (customers); and [Quinn \(1974\)](#) coworkers and supervisors (managers).

²⁶For details on how the CorEx model successfully identifies latent topics, see [Steeg and Galstyan \(2014\)](#) who first introduced the algorithm. When implementing the model in Python, I search for fifty topics with seed set at two and anchor strength set at nine.

²⁷An alternative topic-modeling algorithm that is more common — the Latent Dirichlet Allocation (LDA) model — was considered and even implemented using a semi-supervised, anchored approach; however, the topics that were produced with LDA were more amorphous and less interpretable than those produced with CorEx, even under the same assignment of anchor words.

5.2 Internal and External Validity of Amenities

Crucially, using the output from this topic modeling approach rests on the interpretability of the topics, i.e., the label assigned to each amenity is accurate. For reassurance, I first show that within Glassdoor reviews, the amenities are consistent with other measures of sentiment that respondents provide. Recall each worker evaluates their employer on a one-to-five stars scale along five sub-categories: career opportunities, compensation and benefits, culture and values, senior leadership, and work-life balance. Amenities that relate more to a given sub-category should play an outsized role in predicting an employee’s satisfaction along that dimension. Within the panel of workers’ reviews, I can relate the change in satisfaction within each of these sub-categories to the change in quality of each job amenity according to

$$Y_{ikt} = \sum_{a=1}^{50} \beta_a q_{ikt}^a + \lambda_i + \lambda_k + \lambda_t + \varepsilon_{ikt}, \quad (4)$$

where Y_{ikt} is the star rating and λ_i , λ_k , and λ_t represent worker, firm and year fixed effects, respectively. The coefficients β_a capture the degree to which amenity a predicts satisfaction *conditional* on the quality of the rest of the amenity bundle. While job satisfaction is positively correlated with every amenity individually (Table 3: Column 7), the estimates from equation 4 isolate the relative contribution of each amenity. The coefficients on overall rating and the five sub-categories are presented in the first six columns of Table 3. More-positive values of β_a signify more import, while more-negative signify less.

The first column reveals which amenities workers value the most when determining overall satisfaction. A few takeaways are worth highlighting. First, the most desirable amenities are those which are hard to observe from outside the firm. In other words, job satisfaction appears driven by attributes that are learned through experience, such as employee respect/abuse, leadership and management, work-life balance, culture, and morale. Second, aspects related to compensation and benefits are considerably less influential in determining employer quality. While improved pay and pay growth, health insurance, retirement contributions, and bonuses have a significant effect on workers’ overall satisfaction, they are second-order compared with the harder-to-observe intangibles such as culture and leadership. Third, workers appreciably value when employers make strides in issues related to social issues, as evidence by the strongly positive coefficient on diversity/inclusion — perhaps reflecting why employers are increasingly making investments on environmental, social, and governance (ESG) and diversity, equity, and inclusion (DEI) issues.²⁸ Last, workers seem to

²⁸The three largest institutional investors in 2017 successfully campaigned to increase female representation on corporate boards (Gormley et al., 2021) and 53 percent of S&P 500 companies now employ a chief diversity officer (Green, 2021). Moreover, in a 2019 survey of institutional investors and asset managers querying why

prefer work arrangements that are increasingly difficult or involve heightened responsibility through more requirements — possibly reflecting the importance workers place on developing their human capital.

Comparing the coefficients for overall rating with those for each of the sub-categories provides reassuring evidence that these amenities in fact reflect their labels. We see that the promotions amenity is more important for career opportunities than overall rating (0.23 vs. 0.04), as is the amenity for career concerns (0.25 vs. 0.14) and pay growth (0.17 vs. 0.09) — though not the amenity for pay, lending credence to the pay growth amenity capturing a separate and unique characteristic. For compensation and benefits, the coefficient on the pay amenity is more salient (0.38 vs. 0.14), as is that of pay growth (0.33 vs. 0.09), health insurance (0.25 vs. 0.10), retirement contributions (0.21 vs. 0.08), bonuses (0.19 vs. 0.08), employee discounts (0.14 vs. 0.03), paid time off (0.12 vs. 0.03), hours (0.09 vs. 0.00), and free food (0.04 vs. -0.02). For culture and values, encouragingly culture plays a more important role (0.48 vs. 0.33), as does diversity/inclusion (0.32 vs. 0.21). For senior leadership, the estimates are highly similar to those obtained from predicting overall rating — signifying the importance of management for overall satisfaction — though the coefficient on office politics is greater (0.26 vs. 0.17). And for work-life balance, we observe that the work-life balance amenity is by far the largest driver (1.14 vs. 0.38), but other amenities play an outsize role as well, including stress (0.32 vs. 0.07), work schedule (0.32 vs. 0.07), teleworking (0.17 vs. 0.03), paid time off (0.13 vs. 0.03), short breaks (0.05 vs. -0.01), and requirements (0.02 vs. -0.11). In all, the amenities appear internally consistent.

Importantly, these job amenities capture meaningful variation in other labor market data. Appendix B shows how seven of the amenities — diversity/inclusion, health insurance, hours, job security, paid time off, retirement contributions, and work-life balance — trace relevant patterns observed across industries and occupations in ASEC. Appendix C highlights how ten amenities mostly pertaining to working conditions — autonomy/responsibility, communication, on-the-job training, pay, recognition, safety, short breaks, support, work schedule, and work-life balance — align with the AWCS across industries and occupations. Given that both of these surveys are representative, I take this as evidence that inferences using these Glassdoor amenities are valid for the U.S. labor market more broadly.

5.3 Relation between Wages and Amenities

I next turn to how wages relate to individual amenities across firms. As with overall ratings, I estimate firm-specific premia for each amenity a by re-estimating equation 1 but substituting

they incorporate ESG in investment decisions, 47 percent cited brand image and reputation while 27 percent cited attracting new talent (Boffo and Patalano, 2020).

Table 3: Relative Importance and Validation of Amenities

Attribute	Bundled						Separate
	Overall rating	Career opp.	Comp. and benefits	Culture and values	Senior mgmt.	Work life balance	Overall rating
Respect/abuse	0.61 [†]	0.43 [†]	0.25 [†]	0.68 [†]	0.51 [†]	0.47 [†]	1.53 [†]
Residual I	0.44 [†]	0.44 [†]	0.25 [†]	0.42 [†]	0.50 [†]	0.26 [†]	1.32 [†]
Leadership	0.42 [†]	0.34 [†]	0.19 [†]	0.41 [†]	0.54 [†]	0.29 [†]	0.96 [†]
Residual II	0.38 [†]	0.29 [†]	0.24 [†]	0.31 [†]	0.31 [†]	0.28 [†]	1.30 [†]
Work-life balance	0.38 [†]	0.22 [†]	0.16 [†]	0.36 [†]	0.36 [†]	1.14 [†]	0.83 [†]
Culture	0.33 [†]	0.25 [†]	0.13 [†]	0.48 [†]	0.32 [†]	0.24 [†]	0.92 [†]
Managers	0.29 [†]	0.22 [†]	0.15 [†]	0.27 [†]	0.33 [†]	0.20 [†]	0.97 [†]
Morale	0.27 [†]	0.19 [†]	0.13 [†]	0.34 [†]	0.28 [†]	0.20 [†]	0.84 [†]
Diversity/inclusion	0.21 [†]	0.20 [†]	0.11 [†]	0.32 [†]	0.21 [†]	0.11 [†]	0.87 [†]
Support	0.21 [†]	0.18 [†]	0.12 [†]	0.21 [†]	0.22 [†]	0.17 [†]	0.87 [†]
Mentoring	0.20 [†]	0.20 [†]	0.14 [†]	0.16 [†]	0.19 [†]	0.10 [†]	0.74 [†]
Job security	0.19 [†]	0.21 [†]	0.04 [†]	0.19 [†]	0.23 [†]	0.03	0.79 [†]
Fun	0.17 [†]	0.14 [†]	0.09 [†]	0.18 [†]	0.13 [†]	0.10 [†]	0.67 [†]
Office politics	0.17 [†]	0.12 [†]	-0.02	0.21 [†]	0.26 [†]	0.04	0.62 [†]
Teams	0.16 [†]	0.14 [†]	0.07 [†]	0.16 [†]	0.17 [†]	0.12 [†]	0.87 [†]
On-the-job training	0.16 [†]	0.11 [†]	0.07 [†]	0.14 [†]	0.13 [†]	0.09 [†]	0.73 [†]
Coworkers	0.15 [†]	0.11 [†]	0.07 [†]	0.17 [†]	0.13 [†]	0.12 [†]	0.81 [†]
Career concerns	0.14 [†]	0.25 [†]	0.10 [†]	0.11 [†]	0.15 [†]	0.06 [†]	0.75 [†]
Pay	0.14 [†]	0.12 [†]	0.38 [†]	0.07 [†]	0.09 [†]	0.07 [†]	0.69 [†]
Commissions	0.12 [†]	0.11 [†]	0.17 [†]	0.08 [†]	0.10 [†]	0.06 [†]	0.76 [†]
Industry	0.12 [†]	0.12 [†]	0.07 [†]	0.08 [†]	0.12 [†]	0.03 [†]	0.73 [†]
Safety	0.11 [†]	0.06 [†]	0.05 [†]	0.15 [†]	0.09 [†]	0.11 [†]	0.78 [†]
Health insurance	0.10 [†]	0.08 [†]	0.25 [†]	0.07 [†]	0.08 [†]	0.00	0.62 [†]
Autonomy/responsibility	0.10 [†]	0.08 [†]	0.05 [†]	0.07 [†]	0.10 [†]	0.07 [†]	0.73 [†]
Pay growth	0.09 [†]	0.17 [†]	0.33 [†]	0.04 [†]	0.09 [†]	-0.06 [†]	0.62 [†]
Recognition	0.09 [†]	0.11 [†]	0.09 [†]	0.08 [†]	0.09 [†]	0.04 [†]	0.75 [†]
Bonuses	0.08 [†]	0.09 [†]	0.19 [†]	0.06 [†]	0.06 [†]	0.02	0.73 [†]
Retirement contributions	0.08 [†]	0.05 [†]	0.21 [†]	0.05 [†]	0.03	-0.03	0.62 [†]
Customers	0.07 [†]	0.06 [†]	0.03 [†]	0.08 [†]	0.06 [†]	0.06 [†]	0.71 [†]
Work schedule	0.07 [†]	0.01	-0.02	0.04 [†]	0.05 [†]	0.32 [†]	0.57 [†]
Stress	0.07 [†]	-0.04 [†]	-0.05 [†]	0.07 [†]	0.05 [†]	0.32 [†]	0.68 [†]
Recruiting	0.06 [†]	0.09 [†]	0.04 [†]	0.03 [†]	0.03 [†]	0.00	0.77 [†]
Skill development	0.06 [†]	0.09 [†]	0.00	0.01	0.02	-0.04	0.72 [†]
Pace	0.05 [†]	0.03	0.03	0.01	0.03	-0.01	0.44 [†]
Contracting	0.05 [†]	0.07 [†]	0.11 [†]	0.02	0.01	0.01	0.72 [†]
Promotions	0.04 [†]	0.23 [†]	0.05 [†]	0.02	0.09 [†]	-0.04 [†]	0.72 [†]
Employee discounts	0.03	0.03	0.14 [†]	0.05 [†]	0.02	0.01	0.50 [†]
Teleworking	0.03	-0.01	0.02	0.05 [†]	0.04	0.17 [†]	0.61 [†]
Paid time off	0.03 [†]	0.01	0.12 [†]	0.02	-0.01	0.13 [†]	0.72 [†]
Experience	0.03 [†]	0.04 [†]	0.00	0.01	0.02	0.00	0.74 [†]
Communication	0.02	-0.03 [†]	-0.06 [†]	0.03 [†]	0.04 [†]	0.00	0.75 [†]
Hours	0.00	0.02	0.09 [†]	-0.02	-0.04 [†]	0.02	0.55 [†]
Short breaks	-0.01	-0.04 [†]	-0.01	-0.02	-0.04 [†]	0.05 [†]	0.70 [†]
Office space	-0.02 [†]	-0.01	0.00	0.01	-0.02	0.00	0.69 [†]
Free food	-0.02	-0.02	0.04 [†]	0.01	-0.01	0.01	0.61 [†]
Commuting	-0.06 [†]	-0.08 [†]	-0.06 [†]	-0.05 [†]	-0.07 [†]	-0.04 [†]	0.52 [†]
Change	-0.07 [†]	-0.06 [†]	-0.07 [†]	-0.06 [†]	-0.02	-0.07 [†]	0.55 [†]
Location	-0.09 [†]	-0.07 [†]	-0.04 [†]	-0.10 [†]	-0.09 [†]	-0.06 [†]	0.38 [†]
Requirements	-0.11 [†]	-0.14 [†]	-0.08 [†]	-0.12 [†]	-0.14 [†]	0.02	0.53 [†]
Difficulty	-0.19 [†]	-0.16 [†]	-0.15 [†]	-0.21 [†]	-0.21 [†]	-0.14 [†]	0.28 [†]

Notes: This table displays the coefficients from regressing the amenities on the stars-based rating listed in the header of each column with worker, firm, and year fixed effects. Amenities listed in ascending order according to the coefficient for overall rating bundled. † indicates significance at the one percent level.

q_{ikt}^a , the quality of attribute a reported by worker i at firm k in year t , on the left-hand side. Then, relating the firm premia for each amenity $\hat{\lambda}_k^a$ to the corresponding firm’s wage premium $\hat{\lambda}_k^w$ — formally estimating $\hat{\lambda}_k^a = \rho^a \hat{\lambda}_k^w + v_k$ — captures the degree to which the quality of amenity a varies with the firm’s offered wage premium. I convert the amenity-related fixed effects to standardized normal for ease of exposition, and record the estimated coefficients for the Full set of firms in Table 4.²⁹

I emphasize three key takeaways. First, the pay and pay growth amenities elicit particularly positive relations with the wage premia, highlighting that workers not only recognize the receipt of greater wages, but that increased satisfaction with pay contributes to the improved perception of overall satisfaction. Second, nearly all amenities are improved at higher-paying firms. In particular, the full set of fringe benefits (free food, paid time off, health insurance, retirement contributions, and employee discounts) along with amenities related to flexible labor supply (short breaks and teleworking), working conditions (respect/abuse, leadership, safety, autonomy/responsibility, support, office space, recognition), interpersonal relationships (managers, coworkers, customers, and teams), and human capital development (career concerns, promotions, and experience) exhibit improved quality at higher-paying firms.³⁰ Third, there are few dis-amenities that come with working for higher-paying firms. The standout trade-off workers face is worsened job security, as a one-standard-deviation greater wage premium is associated with a 0.02-standard-deviations reduction in job security.

5.4 Decoupling Pay Satisfaction from Job Satisfaction

One concern with using job satisfaction to argue non-wage amenities are improved at higher-paying firms is that the increased job satisfaction may simply reflect improved pay satisfaction. If workers are more content with pay, naturally they will be more content with their jobs overall. With two amenities related to pay satisfaction (pay and pay growth), I can decompose the boon to job satisfaction enjoyed at higher-paying firms into the fraction that is attributable to pay satisfaction and the fraction that is not. This decomposition is feasible since each amenity contributes to overall job satisfaction with some weight ψ^a (Table 4: overall rating weight) and each amenity relates to wages with some slope ρ^a (Table 4: slope with wage FE). For each of the six amenity categories (the mappings for which are in Tables

²⁹The results change little when amenity quality is calculated without weighting by the share of the review text in each section (Table I9). Broadly, the coefficients fall slightly, with the negative coefficient for difficulty becoming statistically significant — though it is worth noting that, conditional on the rest of the amenity bundle, the loading for difficulty on overall satisfaction is appreciably negative.

³⁰One drawback is that amenity quality is assigned based on workers’ satisfaction with each amenity, but fringe benefits are inherently pecuniary in nature, e.g., the number of paid leave days or an employer’s contribution to a retirement account. Improved satisfaction with fringe benefits may not necessarily translate into increased spending by the firm though in practice, the two are likely to be highly correlated.

Table 4: Relation between Wages and Attributes Across Firms

Standardized amenity	Overall rating weight	Slope with standardized wage FE	Standardized amenity	Overall rating weight	Slope with standardized wage FE
Pay	0.14	0.070***	Commuting	-0.06	0.012***
Residual I	0.44	0.050***	Retirement contributions	0.08	0.012***
Residual II	0.38	0.037***	Diversity/inclusion	0.21	0.011**
Pay growth	0.09	0.035***	Promotions	0.04	0.011***
Respect/abuse	0.61	0.034***	Location	-0.09	0.011***
Short breaks	-0.01	0.033***	Recognition	0.09	0.011***
Managers	0.29	0.033***	Requirements	-0.11	0.010**
Culture	0.33	0.029***	Experience	0.03	0.009**
Industry	0.12	0.029***	Work-life balance	0.38	0.006*
Teleworking	0.03	0.028***	Work schedule	0.07	0.005
Free food	-0.02	0.026***	Mentoring	0.20	0.005
Leadership	0.42	0.025***	Contracting	0.05	0.004
Coworkers	0.15	0.025***	Fun	0.17	0.004
Teams	0.16	0.024***	Recruiting	0.06	0.004
Commissions	0.12	0.020***	Hours	0.00	0.002
Safety	0.11	0.020***	Pace	0.05	0.002
Health insurance	0.10	0.020***	Bonuses	0.08	0.002
Office politics	0.17	0.018***	Communication	0.02	0.002
Support	0.21	0.018***	On-the-job training	0.16	0.001
Career concerns	0.14	0.017***	Morale	0.27	0.001
Autonomy/responsibility	0.10	0.017***	Change	-0.07	-0.003
Office space	-0.02	0.017***	Stress	0.07	-0.005
Paid time off	0.03	0.016***	Skill development	0.06	-0.005
Employee discounts	0.03	0.014***	Difficulty	-0.19	-0.006
Customers	0.07	0.013***	Job security	0.19	-0.019***

Notes: This table reflects coefficients from a linear regression of the firm fixed effects for each amenity on the firm fixed effects for wages. Standard errors are bootstrapped. Overall rating weights reflect the first column of Table 3. Significance levels: * 10%, ** 5%, *** 1%.

H1–H5) — the contribution from group g to the cumulative effect on overall satisfaction can be approximated by

$$contribution_g = \frac{\sum_{a \in g} \psi^a \rho^a}{\sum_a \psi^a \rho^a}. \quad (5)$$

If the positive correlation observed between wages and job satisfaction across firms is driven primarily by workers reporting greater satisfaction with pay, then the contribution from the pay amenity group $g = \{pay, pay\ growth\}$ will near 100 percent; however, if the uptick in job satisfaction observed at higher-paying firms is attributable to non-wage aspects improving, then the contribution from the pay amenity group will be closer to 0 percent. The contributions using the Full and Connected sets are presented in Table 5.

Using the Full sample, it is clear that pay satisfaction is not driving the increased job satisfaction. The pay-based amenities are responsible for only 8 percent of the increase in overall satisfaction, meaning that 92 percent is attributable to aspects not related to satis-

faction with pay. Both improved working conditions (37 percent) and better interpersonal relationships (13 percent) account for larger shares than pay satisfaction. The two residual amenities — which capture general sentiment towards the firm — also account for 35 percent. That this residual grouping has an outsize contribution invites the possibility of under-counting the true contribution from pay satisfaction if these residuals (partially) reflect pay. However, examining the highest incidence words for each of the two residual amenities (Table H5) reveals no discernible semblance to pay, mitigating this concern. Evidently, non-wage amenities explain a predominant share (89–92 percent) of the improved satisfaction workers report at higher-paying firms. Further, the non-wage attributes fueling the increase in job satisfaction reflect hard-to-observe non-pecuniary qualities, such as working conditions and interpersonal relationships, rather than pecuniary ones — consistent with the results, presented in Appendix F, from analyzing workers’ ratings of fringe benefits directly.

Table 5: Contribution by Amenity Type to Increased Satisfaction at Higher-Paying Firms

Amenity category	Full	Connected
Pay	8.2%	11.1%
Fringe benefits	2.0%	1.9%
Working conditions	36.7%	28.8%
Human capital	4.9%	4.9%
Relationships	13.1%	9.7%
Residual	35.1%	43.6%

Notes: This table reports the percent of the total slope between job satisfaction and wage premia across firms attributable to each of the six amenity categories for the Full and Connected sets.

Further evidence pay satisfaction plays a limited role can be observed when relating the change in workers’ five subcategory ratings to the change in their overall rating. As workers become more satisfied with these sub-dimensions, overall satisfaction should rise; the rates at which these sub-ratings pass through to overall rating summarizes the relative importance of each dimension. A 1-star increase across all five subcategories raises overall rating by about one star (Table I10), yet the pass through for compensation and benefits is only .107 — indicating that only about 10 percent of overall satisfaction relates to compensation. This estimate accords with the text-based estimates of Table 5.

6 Workers’ Willingness to Pay for Job Satisfaction

The extent to which disparities in non-wage amenities contribute to inequality depends on how much value workers place on them. If workers are indifferent to the (dis-)amenities of

work, then workplace amenities will matter little for welfare. Researchers have utilized different methodologies for calculating workers’ willingness to pay for job attributes. The most common historically has been a hedonic approach, in which characteristics are considered implicitly priced into the accepted wage. A (usually unfavorable) amenity is added as a predictor for wages and the coefficient captures the additional wage needed to undertake the burden of the dis-amenity (Thaler and Rosen, 1976; Herzog and Schlottmann, 1990; Hwang et al., 1992; Lavetti and Schmutte, 2018). A more recent contingent valuation approach presents workers with a menu of hypothetical alternatives and from their choices, infers a willingness to pay (Mas and Pallais, 2017; Wiswall and Zafar, 2017; Maestas et al., 2018). There is also a revealed preference approach where willingness to pay is estimated using workers’ employment decisions, e.g., the length of job spells (Gronberg and Reed, 1994), the length of non-employment spells after childbirth (Felfe, 2012), or the timing of labor supply provision in a flexible work arrangement (Chen et al., 2019).

To estimate how much workers would be willing to pay for improved job satisfaction, in the spirit of Gronberg and Reed (1994), I study the length of workers’ job spells. If worker utility is increasing in both wages and amenities, then the decision to exit the match will factor in both wage and non-wage aspects of alternative offers.³¹ Workers would then stay at their firms longer if they receive greater wages, improved amenities, or both. To this end, I estimate an ordered probit model using workers’ completed job spells predicting a worker’s tenure with the firm as a function of both their wage and job satisfaction.³² Because firm tenure is recorded in discrete intervals (less than 1, 1–2, 3–4, 5–7, 8–10, and more than 10 years), an ordered probit approach preserves the ordinal scale while accounting for the non-linearity in time elapsed across intervals.³³

Define $tenure_{ijkt}$ as the years worker i with job title j spent employed at firm k as of year t . Since workers do not provide a wage when submitting an employer review, I impute a wage for each worker using the median among workers with the same job title, firm, and

³¹Identifying whether a worker exits because of a forced separation or voluntary quit is infeasible. Only whether the worker is a current or former employee when providing her review is known.

³²For now, I exclude workers who are still employed with the firm since their job spells are ongoing. Gronberg and Reed (1994) incorporate both complete and incomplete job spells using a maximum likelihood estimation (MLE) procedure in which a survival function is applied to ongoing spells. Applying a similar MLE procedure in this context is ongoing.

³³Excluded are the roughly 30 percent of workers who do not report their tenure at the firm.

year from the wage data.³⁴ Using each worker’s job satisfaction rating, R_{ikt} , I estimate

$$tenure_{ijkt} = \beta_w \bar{w}_{jkt} + \beta_R R_{ikt} + \lambda_{\iota(k)} + \lambda_t + \varepsilon_{ijkt}, \quad (6)$$

where $\iota(k)$ corresponds to firm k ’s industry.³⁵ Here, β_R captures the effect that a one-star increase in a worker’s overall job satisfaction has on the probability she spends more years employed with the firm. If $\beta_R > 0$, then this would confirm that workers value non-wage aspects of work when making employment and mobility decisions. Otherwise, this would suggest that conditional on their wage, workers do not factor the quality of job amenities into their separation decisions. Because workers may value job amenities differently depending upon their wage (Maestas et al., 2018), I implement equation 6 within wage quintiles. The results are presented in Table 6.

Consistent with Akerlof et al. (1988), the first row confirms that greater job satisfaction translates into longer employment spells (since β_R is robustly positive). This is true for workers of all wage levels, though the effect appears to increase monotonically with one’s earnings. For workers in the top quintile, the coefficient on job satisfaction is roughly 80 percent larger than that for workers in the bottom quintile. The second row reveals, perhaps unsurprisingly, that greater wages also lead to workers staying longer with their employers. Unlike with job satisfaction, the effect wages have on tenure is largest for workers in the (lower-)middle of the wage distribution. A wage increase elongates firm tenure more than 50 percent more for workers in the third quintile compared with workers in the upper two.

Because wages and job satisfaction affect firm tenure, comparing their contributions provides a means by which to convert stars of job satisfaction into dollars. The marginal willingness to pay (MWP) for a one-star increase in job satisfaction can be approximated by calculating $\frac{\beta_R}{\beta_w} \times \bar{w}$, the estimates of which are presented in the final row of Table 6. For the lower three wage quintiles, because the ratio of the coefficients is approximately half that of the upper two quintiles, the MWP in these wage brackets is noticeably less at \$2,200–3,900 per star. For the upper two quintiles, increased coefficient ratios combined with greater

³⁴Marinescu and Wolthoff (2020) find that job titles explain upwards of 90 percent of the variance in (the midpoints of) posted wages on an online job board, while Sockin and Sockin (2019a) find that 90 percent of base earnings are explained by the average among peers (same job title and firm). One alternative would be to instead use reported earnings from a worker’s wage report, but this requires a worker to submit both an employer review and wage report, more than halving the sample. Nonetheless, a similar albeit even steeper slope in MWP is observed for the upper-tail of the wage distribution (Table I11).

³⁵The industry of employment is included to account for heterogeneity in workers’ employment opportunities, as is allowed for in the model of Gronberg and Reed (1994). One could further account for differences in job opportunities by controlling for one’s occupation; however, occupation, which is obtained from Glassdoor’s mapping of job titles to occupations, is unavailable for two-thirds of full-time workers’ completed job spells. Nevertheless, adding occupational controls reveals the same overall pattern (Table I12) though with a more pronounced MWP for the highest-earners.

Table 6: Willingness-to-Pay for Improved Job Satisfaction by Wage Quintile

	1st Wage Quintile	2nd Wage Quintile	3rd Wage Quintile	4th Wage Quintile	5th Wage Quintile
Overall rating	0.063*** (0.002)	0.071*** (0.002)	0.083*** (0.002)	0.094*** (0.002)	0.114*** (0.002)
Log wage	0.680*** (0.019)	0.865*** (0.034)	0.922*** (0.035)	0.588*** (0.023)	0.607*** (0.010)
Observations	151944	150988	140225	147535	147481
Ratio of coefficients	.093	.082	.09	.159	.187
Mean wage	23266	32592	43702	61488	109746
MWP one additional star	2160	2665	3923	9785	20560

Notes: This table reflects ordered probit models of wages and overall job satisfaction ratings on firm tenure by the worker’s wage quintile, where the wage reflects the median among workers with the same job title and firm that year. Sample is restricted to completed job spells for full-time workers. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

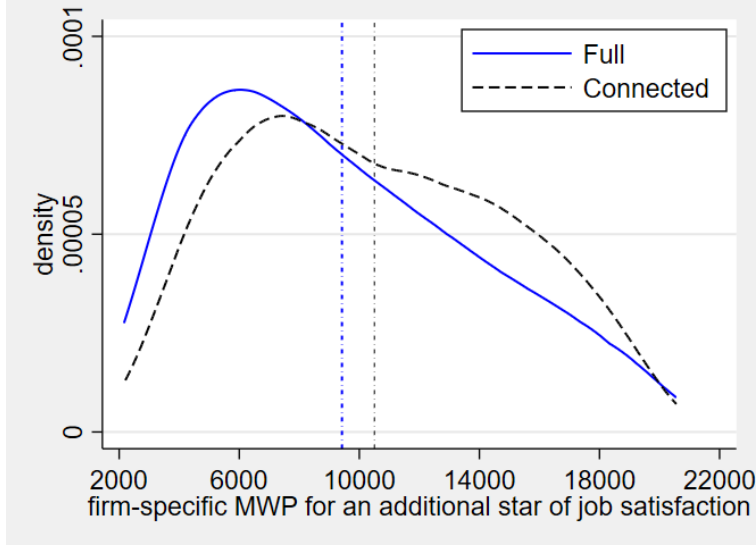
mean wages produces high MWP estimates of \$9,800–\$20,600 per star. The value of job satisfaction, and thus non-wage amenities, appears to rise monotonically with wages and increasingly so along the upper-half of the distribution.

Since workers of varying wage levels value job amenities differently, then the amenity value each firm offers its workforce will differ as well since the average MWP will differ depending on the composition of the firms’ workforce. Low-paying firms employ more low-wage workers with low MWP compared with high-paying firms which employ more high-wage workers with high MWP. To account for this heterogeneity in MWP, let ϕ_k^l represent the share of firm k ’s workers with wages in the l quintile. Then, the average MWP for firm k can be approximated by $MWP_k = \sum_{l=1}^5 \phi_k^l MWP^l$. For the Full and Connected sets, the distributions of MWP_k are plotted in Figure 4.³⁶ Because high-wage workers are willing to pay more for job satisfaction, then firms that increasingly employ high-wage workers offer greater amenity value. In turn, a firm’s MWP can range from \$2,000 to \$20,000 per star.

Section 5.3 documented a strong positive relation across firms between the wage premia offered and the job satisfaction experienced by employees. With estimates for the dollar-value workers place on an additional star of job satisfaction and the share of job satisfaction attributable to non-wage amenities in hand, I quantify the firm-specific amenity value in

³⁶The two distributions are highly similar in shape though the Connected sample’s is shifted slightly to the right, highlighting how the Connected set is comprised of higher-paying firms (which employ more workers in the upper two wage quintiles and so exhibit greater MWP).

Figure 4: Distribution of Firm-Specific Wage-Based MWP for Job Satisfaction



Notes: This figure plots the distribution for the MWP for a star of job satisfaction across firms. Solid blue line reflects the Full set of firms, the dashed black line the Connected set. The thick and thin dotted vertical lines reflect the means for the Full and Connected sets of \$9,400 and \$10,500, respectively.

dollars firm k offers its workers, A_k , according to

$$A_k = \underbrace{(1 - \text{contribution}_{pay})}_{\text{non-pay-satisfaction share of job satisfaction}} \times \underbrace{MWP_k}_{\text{dollar-equivalent of job satisfaction}} \times \underbrace{(\bar{R} + \hat{\lambda}_k^R)}_{\text{firm premia of job satisfaction}}. \quad (7)$$

The difference in firms' wage offerings W_k can be captured by converting the log wage premia $\hat{\lambda}_k^w$ into dollars through multiplying by the sample average \bar{w} , i.e.

$$W_k = \bar{w} \times e^{\hat{\lambda}_k^w}. \quad (8)$$

The firm's total compensation (relative to other firms) is then summarized by $W_k + A_k$.

7 Firm-Level Dispersion Accounting for Amenities

Just how important are firms for explaining the distribution of worker compensation (wages plus amenities)? Recent work has emphasized a more limited role for the firms themselves, documenting instead an increased role for labor market sorting of high-wage workers into high-paying firms (Card et al., 2013; Song et al., 2019; Bonhomme et al., 2020). Other work has attributed a sizable fraction of what differences there are in pay between firms to compensating differentials for less-favorable workplace attributes (Sorkin, 2018; Morchio

and Moser, 2019). However, because I find instead that higher-paying firms offer workers more amenity value, wages alone will in fact *understate* the degree to which firms explain the distribution of worker compensation.

Ignoring job amenities, the dispersion across firms is captured by the distribution of W_k . Incorporating amenities, the dispersion across firms reflects the distribution of wages plus amenity value, $W_k + A_k$. Using both the Full and Connected sets, three measures of dispersion — the variance, the log difference between the 10th and 50th percentiles, and the log difference between the 90th and 50th percentiles — for W_k and $W_k + A_k$ are presented in Table 7. Two specifications for $W_k + A_k$ are considered. The “Fixed MWP” approach computes A_k holding MWP constant across firms, i.e. $MWP_k = M\bar{W}P$. The “Wage MWP” approach computes A_k allowing MWP to vary across firms. The former captures differences in amenity value absent heterogeneous preferences, whereas the latter captures the additional dispersion attributable to variation in how workers value job amenities.

For wages alone, the variance across the Full sample is 4.8 log points. When the value of firms’ amenities are included, and assuming no heterogeneity in willingness-to-pay, the variance across firms rises to 8.7 log points, a 81 percent increase. This increase attenuates to 65 percent (7.9 log points) after accounting for the fact that low-to-middle wage workers exhibit relatively low MWP for job satisfaction. This would imply that the high wages enjoyed at higher-paying firms do not primarily reflect equalizing differences for worse fringe benefits, unfavorable working conditions, stunted human capital development, or poor interpersonal relationships. Rather, workers at these firms enjoy better wages and better amenities. When looking instead across the Connected set, the jump in compensation variance across firms is shallower but still pronounced at 50 percent, from 2.2 to 3.3 log points.

Table 7: Dispersion Across Firms Adjusting for Amenity Quality

Measure of dispersion	Full sample			Connected sample		
	Wages only	With amenities		Wages only	With amenities	
		Fixed MWP	Wage MWP		Fixed MWP	Wage MWP
Variance	0.048	0.087	0.079	0.022	0.034	0.033
p50 - p10	0.287	0.375	0.337	0.200	0.247	0.215
p90 - p50	0.227	0.290	0.325	0.164	0.222	0.250

Notes: This table summarizes how three measures of dispersion differ when the firm amenity value is incorporated into the difference in compensation across firms. Fixed MWP uses a constant MWP (the sample average) across firms, and Wage MWP reflects the distribution of firm-specific MWP displayed in Figure 4 that allows MWP to vary with workers’ earnings according to Table 6.

A similar takeaway of increased firm-level dispersion can be observed using distributional

comparisons such as the log difference between the 50th and 10th percentiles (50–10 ratio) or the log difference between the 90th and 50th percentiles (90–50 ratio). Comparing wages alone, 29 log points separate the median and 10th percentile while 23 log points separate the 90th percentile and the median. Incorporating amenity value absent heterogeneity, these two gaps widen by 9 and 6 log points, respectively. When heterogeneity in MWP is incorporated, the 90–50 ratio widens another 4 log points, while the 50–10 ratio attenuates 4 log points — reflecting the steep rise in MWP at the upper-tail of the wage distribution. Taken together, the gap between the 90th and 10th percentiles (90–10 ratio) widens by 15 log points, equivalent to a 29 percent increase. For the Connected set, a similar pattern arises: Accounting for amenities with firm-specific MWP raises the 90–10 ratio by 10 log points, equivalent to a 28 percent increase.

Taken holistically, the bundle of job amenities is inequality exacerbating, rather than attenuating. Employees at higher-paying firms benefit from higher-quality amenities, and in turn, higher-paying firms are even higher compensating than wages alone report. Although two-way fixed effects models have found a growing role for working sorting and a more limited role for the firm (Song et al., 2019; Kline et al., 2020), differences in amenity offerings between firms and a non-zero willingness to pay for improved amenities translates into missing dispersion between firms, on the order of 50–65 percent.

8 Sensitivity Analysis

In this section, I investigate the robustness of these findings under alternative specifications. For the baseline and each alternative, Table 8 details the following: the number of firms for which W_k and A_k are estimated, the slope and its standard error between firms’ wage and rating premia, the percent of the slope attributable to increased pay satisfaction, the difference in amenity value between the first and ninety-ninth percentile relative to the mean wage, the elasticity of total compensation inclusive of amenity value ($W_k + A_k$) to wages, and the increase in compensation dispersion across firms (variance and ninety-ten ratio) compared with wages alone. Rows 1 and 2 present these measures for the Full and Connected sets, respectively. For these two sets, the difference between the bottom (first percentile) and top (ninety-ninth percentile) firms by offered amenity value can be as large as 50–84 percent of the average wage; reassuringly, the 56 percent estimate of Maestas et al. (2018) for moving from the worst to the best jobs falls within the lower end of this range.

Under the baseline approach, wages reflect workers’ annualized base earnings and as such, omit the receipt of bonuses and commissions. Since more profitable firms increasingly offer variable earnings (Sockin and Sockin, 2021), omitting variable pay and focusing solely on

base earnings may understate the degree of dispersion in firms’ wage premia. As shown in row 3 however, incorporating variable pay into workers’ wages alters the results little.

Table 8: Alternative Specifications

Specification	Firms	Wages vs. ratings		Share pay satisfaction (%)	Amenity gap p1-p99 (% avg wage)	Elasticity	Increase from wages	
		Slope	Standard error				Variance (%)	90-10 ratio (log points)
1. Baseline	70,115	0.47	(0.02)	8	84	1.07	64	15
2. Connected sample	10,737	0.72	(0.04)	11	50	1.09	52	10
3. Incorporate variable pay [†]	68,566	0.46	(0.02)	8	83	1.07	59	15
4. Include length of spell FE [^]	70,115	0.46	(0.02)	8	83	1.07	64	15
5. Completed 0-1 years spell [^]	27,842	0.43	(0.04)	11	91	1.05	75	16
6. Completed 5+ years spell [^]	27,478	0.39	(0.04)	11	103	1.05	106	19
7. Reviews from full-time employees [^]	54,499	0.60	(0.03)	8	95	1.09	88	18
8. Reviews mentioning 5+ amenities [^]	22,488	0.77	(0.04)	7	105	1.10	124	21
9. Exclude possible sock puppetry [^]	41,163	0.49	(0.03)	9	86	1.07	74	15
10. Relax assumption of linear ratings [^]	70,095	–	–	8	93	1.05	68	14
11. Only female employees	28,632	0.49	(0.04)	11	101	1.08	98	18
12. Only male employees	30,185	0.45	(0.03)	7	88	1.07	64	16
13. Only current employees	29,061	0.61	(0.03)	5	95	1.08	88	19
14. Only industry switchers	35,729	0.39	(0.03)	11	84	1.06	52	13
15. Only low-paying jobs	16,737	0.55	(0.05)	12	137	1.10	165	26
16. Only high-paying jobs	19,235	0.66	(0.06)	7	90	1.10	131	20
17. Only job title stayers	9,642	0.41	(0.10)	10	127	1.06	319	22
18. Include metro-year and job title FE	38,616	0.63	(0.04)	10	101	1.09	131	21
19. Include order of observation FE	70,115	0.48	(0.02)	8	84	1.07	64	15
20. Workers with 3+ observations	20,951	0.43	(0.04)	8	81	1.07	59	13
21. Restrict sample to 2017–2019	13,772	0.43	(0.05)	5	109	1.08	119	21
22. Establishment (firm-metro) premia	56,052	0.49	(0.02)	7	104	1.08	84	19
23. Only workers in both panels	30,362	0.58	(0.03)	9	89	1.10	70	16

Notes: This table displays the coefficients from regressions of the firm fixed effects for job satisfaction on the firm fixed effects for wages under alternative specifications. Metros in Glassdoor correspond roughly to core-based statistical areas (CBSAs); there are 858 unique metros in Glassdoor and 929 CBSAs. Standard errors are bootstrapped. [^] indicates only the ratings panel is affected and the wages premia are unaltered. [†] indicates only the wages panel is affected and the ratings premia are unaltered.

In the AKM framework, the identification for each firm-specific premium relies on the experiences of job switchers entering or exiting the firm. But, not all job transitions are alike. Workers who experience a low-quality match, i.e. a job that lasts at most one year, will have different outside options and reasons for exiting compared with workers who experience a high-quality match, i.e. a job that lasts at least five years. To account for these factors related to firm tenure, I incorporate fixed effects for the length of the worker’s job spell when estimating the ratings premia; as shown in row 4, the results are unchanged. Additionally, workers who have experienced a low- or high-quality match may be uniquely situated to speak to differences in amenity quality across firms from having salient benchmarks for comparison. In rows 5 and 6, I restrict the sample to only workers who have experienced a low-quality or high-quality match, respectively, when estimating the ratings premia, and find that the takeaway results hold, even magnifying somewhat.

Next, I address concerns that related to sample composition with workers’ employer

reviews. First, while the wage premia are captured using only full-time workers (because hours are unobserved), the ratings premia are estimated using employees of various work arrangements, including full-time, part-time, contract, and intern workers. Re-calibrating the ratings premia using only reviews from full-time employees in row 7 only strengthens the results. Second, workers differ in their willingness to discuss workplace amenities. Quantifying amenity value — and the relative importance of pay satisfaction for overall satisfaction — could vary based upon whether the ratings premia are gauged from workers who are increasingly willing to volunteer information. Restricting the sample to only employer reviews that detail at least five of the fifty amenities in row 8 reveals even starker results after incorporating amenity value. Third, employees may plant dishonest reviews if they are incentivized or threatened by their firms to do so. Identifying potentially suspect reviews following the methodology of [Sockin and Sojourner \(2020\)](#) and excluding such reviews from the analysis in row 9 does not alter the results.

One key assumption under the baseline model is that workers interpret the five stars scale for ratings linearly. This implies that workers value jumping from one star to two as equally as they would moving from four stars to five. However, if workers are risk averse, then we might anticipate utility to be concave in job satisfaction rather than linear — as avoiding poor outcomes would be increasingly desirable. To relax this assumption, I create binary indicators for each of the five star ratings, $1\{R = r\}$. Then, rather than estimating premia in overall ratings λ_k^R and a willingness-to-pay per additional star MWP_k , I calculate firm-specific premia under a linear probability model for the likelihood of each star rating λ_k^r , a willingness-to-pay for each individual star rating (relative to a one-star rating), MWP_k^r , and aggregate $\sum_{r=1}^5 \lambda_k^r MWP_k^r$. As shown in row 10, the results are highly similar.

Next, to address concerns related to sample selection into the wages and ratings panels, I investigate whether the results are driven by any particular category of worker or job transition. First, although male employees are over-sampled in the Glassdoor data ([Sockin and Sockin, 2019b](#)), restricting the samples in the two panels to only include female or male employees in rows 11 and 12, respectively, reveals that both on average receive greater amenity value at higher-paying firms. Second, because Glassdoor is a platform through which workers learn about employment opportunities, the concern may arise that the workers supplying their wages and reviews to the website are negatively selected on ability, disgruntled former employees that have been laid off, or both. As shown though in row 13, restricting the sample to only wages and employer reviews provided by still currently employed workers changes the takeaway results little. Third, the salience of non-wage amenities may differ depending on whether the worker chooses to remain in or exit an industry. Workers may decide to switch industries precisely to achieve improved amenities, especially if there are

more salient differences across industries than within. Focusing only on industry switchers in row 14 however attenuates the results only slightly.

Additionally, workers' evaluations of job satisfaction and amenity quality could differ depending upon their position with the firm. As workers ascend the job ladder, amenities could differ because they exhibit heterogeneous preferences, have heterogeneous experiences, or both. In fact, looking across workers within the same firm, low- and high-wage workers have markedly different evaluations of amenity quality (Table I13).³⁷ Consequently, a firm's overall rating premium could differ depending upon whether the Glassdoor sample is comprised of low or high earners from the firm. Restricting the panels however to only low-paying or high-paying job titles in rows 15 and 16, respectively, only strengthens the results. In fact, focusing solely on job transitions in which workers retain their job title — and thereby minimizing differences between firms attributable to disparities in tasks or responsibilities — in row 17 while greatly reducing the sample of firms covered, reveals an even starker increase in dispersion when amenities are incorporated. Lastly, since amenities may vary between across locations as well, I show in row 18 that the results are robust to incorporating metropolitan area by year and job title fixed effects into the AKM models.³⁸

Further, the arrival of a new wage report or employer review may be non-random. For one, subsequent wages or employers reviews may be selected on whether match quality improves or worsens. Additionally, workers transitioning into a firm may report systematically different sentiment than workers separating from a firm. Addressing these concerns by including fixed effects for the arrival order of each workers' wage or review into the AKM models in row 19 does not alter the results.³⁹ Most workers in the two panels though are only observed twice, implying that the worker fixed effects from the AKM models will be imprecisely estimated, which in turn, could spillover into the firm fixed effects. Restricting the sample in row 20 to include only workers in each panel who are observed at least three times though does not change the results.

These findings are also not driven by employers' differential responses to the COVID-19

³⁷There are two takeaways worth highlighting. First, forty of the fifty amenities exhibit a statistically significant slope with wages. Second, the amenities that are negatively related with individuals' wages include many pecuniary attributes, whereas the amenities that are positively related with individuals' wages pertain to working conditions and interpersonal relationships — though job security and office politics are notable exceptions. One explanation is that low-wage workers care primarily about pecuniary compensation beyond wages, while high-wage workers care more about intangibles. Another is that as workers climb the job ladder, workers benefit from improved attributes that were previously inaccessible at lower rungs. Examining these possibilities further I leave to future researchers.

³⁸Since reporting one's location and job title in an employer review is optional and may reflect a strategic concealment decision (Sockin and Sojourner, 2020), the baseline approach conditions on neither.

³⁹Subsequent wages are on average more positive, consistent with movement up the job ladder over the life cycle or positive selection on unobservables, and subsequent ratings are on average more negative, possibly reflecting an increased propensity for workers to voice their views when dissatisfied (Table I14).

pandemic, or by structural changes to the website and its users over time, as restricting the sample to only wages and reviews for the three year period 2017–2019 in row 21 only strengthens the results. Finally, in the AKM literature, the employer traditionally corresponds to an individual establishment rather than a firm in aggregate. Because providing the location for an employer review is optional, the baseline approach does not distinguish between firms’ various establishments. Recalibrating the model in row 22 to separate firms into establishments according to metropolitan area offers the same findings.

9 Discussion and Limitations

If firms do not set amenities according to a compensating differential framework, it raises the question how do firms choose the quality of amenities to supply? Why do some firms offer better quality amenities than others? One obvious possibility is that firms differ in their marginal costs of amenity provision (Rosen, 1986). However, to be consistent with the positive relation observed across firms between wages and amenities, this would imply that high-paying firms uniformly exhibit economies of scale in providing amenities compared with their lower-paying counterparts. One alternative is that more-productive firms compensate workers through greater wages and amenities because both are normal goods, as in the theoretical exposition of Appendix A (Mortensen, 2003; Lang and Majumdar, 2004). Relating the firm premia for wages and satisfaction with a measure of average labor productivity for public firms available through Compustat (Figure I6) lends support to this view.

There are alternative theories though that warrant further exploration. For one, amenity provision may reflect a strategic decision for targeting optimal tenure with the firm. Since more satisfied workers stay longer on the job, firms interested in fostering a low-turnover, high-retention workforce may offer improved amenities. While a dollar in wages is identical across firms, observing the quality of an employer’s amenities may require direct inspection through on-the-job experience (Menzio and Shi, 2011), thereby rendering exiting a firm and relinquishing its amenities a risky decision. Second, improved amenities may cause productivity to increase and subsequently drive wage growth, though the evidence on this relation is mixed (Iaffaldano and Muchinsky, 1985; Böckerman and Ilmakunnas, 2012). If employees who are more satisfied — a concept that predominantly reflects non-wage aspects of work — are able to produce more efficiently (Bellet et al., 2019) or have improved complementarities with peers, then firms may become higher-paying through promoting amenity quality. Finally, the provision of high-quality amenities could reflect a means by which to attract top talent. Given that high-wage workers place more value on job satisfaction, higher-paying firms providing more-favorable non-wage amenities may help explain the high degree to

which productive workers sort into productive firms (Card et al., 2013; Borovičková and Shimer, 2017; Hagedorn et al., 2017; Lopes de Melo, 2018).⁴⁰

Although this work contributes to a budding literature on job amenities by making use of novel data on job switchers' satisfaction and amenity values at different jobs, there are a number of limitations that future work in this area may help address. For one, the analysis rests on the firm fixed effects being precisely estimated in the two-way fixed effects models for both wages and satisfaction levels. However, workers in each of the two samples only have on average 2.2–2.4 observations (Table I1). The thinness of the two panels implies that the worker fixed effects will be noisily estimated, which can spillover into the firm fixed effects being imprecisely estimated if there are few identifying movers. This concern is somewhat alleviated by the fact that the main takeaways follow through when the sample is restricted to a more-connected set of firms with many movers. However, the inability to observe the same workers' wages and amenities more frequently for each employer hampers the possibility of controlling for potential violations to the assumption of exogenous mobility, e.g. match-specific quality, on-the-job learning, peer effects, and labor demand shocks, as well as accounting for time-varying preferences in workers' valuations of the firms' amenities throughout their tenure with the firm.

Additionally, since I seldom observe each worker and only at instances of employment, the time between jobs is unobserved. The average duration between observations is 1.7–2.3 years (Table I1), suggesting workers' amenity preferences are unlikely to have changed much between observations. However, because workers are not observed consecutively — as is typical for administrative employee-employer matched data often used in the AKM literature — determining whether the pair of matches observed for job switchers constitutes a job-to-job transition, a job-to-nonemployment followed by a nonemployment-to-job transitions, or even if there were unreported jobs in between. The absence of continuous employment histories hampers determining whether the jobs I observe are selected in some manner relative to jobs that are unobserved. Moreover, the reason for each job separation is unobserved. Although the job duration approach to estimating willingness to pay of Gronberg and Reed (1994) incorporates voluntary and involuntary separations, the wage and satisfaction declines observed in the data may reflect low bargaining power following involuntary turnover rather than a willingness to separate from a match to accept lower pay or satisfaction at another.

Last, the empirical analysis is limited to coverage in Glassdoor. Only firms represented by job switchers are included. Unfortunately, I cannot test whether the results extend to

⁴⁰Since amenities are unobserved in administrative employee-employer matched datasets of labor earnings, they are necessarily omitted. Analyses using wages alone may then understate the role of firms and overstate the role of sorting. While the variance between firms has risen in the United States since the late 1970s, that increase has been attributed to changes in the composition of workers within firms (Song et al., 2019).

all U.S. firms. In particular, if there is heterogeneity in the relation between wages and amenities by firm age or size, then the applicability of these results for new or small firms that are more likely to be overlooked in the sample may be limited. In addition, because the sample period extends only as far back as 2008, making conclusions about how non-wage amenities, their relation to wages, and their dispersion have changed over time is not feasible. While [Pierce \(2001\)](#) speaks to how dispersion in fringe benefits has evolved over time, research that could speak to how dispersion in non-pecuniary amenities has changed over time would uniquely contribute to the inequality literature.

10 Conclusion

Using matched employee-employer data on workers' wages and job satisfaction levels, I find that higher-paying firms offer their workers more in amenity value than lower-paying firms. In gauging a comprehensive set of hard-to-observe, hard-to-quantify amenities from workers' descriptions of their employers, I document how nearly the entire bundle of amenities improves with the wage premium a firm offers, including better working conditions, fringe benefits, interpersonal relationships, and human capital development. This evidence runs contrary to the idea that the boon in wages workers enjoy from employment at a higher-paying firm primarily reflects an equalizing difference for lower-quality amenities. That is not to say though that there is not a compensating differential whereby workers are willing to accept somewhat lower wages in exchange for better amenities.⁴¹ However, when looking across vertically-differentiated firms, the higher-paying employer is more likely to offer an improvement in job amenities than a decline.

Since high-paying firms are high-amenity firms, wages alone understate labor market inequality. In turn, if we were to account for job amenities, low-wage workers would have even lower lifetime compensation than high-wage workers, the opportunity cost of work would be even greater for high-wage workers, and the returns to investing in human capital and climbing the firm ladder would be even more pronounced. Now that capturing hard-to-measure non-wage amenities is feasible given the advent of online job boards, linking such data to labor market interventions that may alter compensation packages, such as minimum wage laws ([Clemens, 2021](#)) and tax policies ([Powell and Shan, 2012](#)), as well as theories of job search, occupational sorting, educational attainment, worker bargaining, and firm dynamism would be promising avenues for future research.

⁴¹Implementing a hedonic approach for estimating the willingness to pay for an additional star of job satisfaction reveals a positive MWP, but only after conditioning on the productivity of the match through worker fixed effects. More details are provided in Appendix [G](#).

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A Positive and Negative Correlations Possible

In this appendix, I introduce a simple firm maximization problem which reveals through comparative statics that amenities can complement or substitute for wages. Suppose there is a continuum of firms of varying productivity z looking to hire a single worker for production. Each firm posts a compensation package (w, a) where w is the wage workers can then spend on consumption and a is the amenity bundle characterizing all of the job characteristics associated with working at the firm. The firm can produce amenities a at cost $c(a)$, where $c'(a) > 0$. There is a continuum of workers whose utility depends on both the wage and amenities consumed, $U(w, a)$, and is increasing in both arguments, i.e. $U_w(w, a) > 0$ and $U_a(w, a) > 0$. The objective function of the firm is to choose a compensation package that maximizes profits,

$$\max_{w, a \geq 0} z - w - c(a).$$

Under perfect competition with perfect information, firms make zero profits, so firms with productivity z will offer (w, a) such that $z = w + c(a)$.

Workers choose the employment opportunities that offer them the most utility. As such, they select the firm offering $(w = z - c(a), a)$ that solves

$$\max_{a \geq 0} U(z - c(a), a)$$

. The first order condition for the worker's maximization problem is given by $U_w(z - c(a), a)c'(a) = U_a(z - c(a), a)$. Rearranging slightly, we obtain the equation governing the equilibrium level of amenities provided by the firm:

$$c'(a) = \frac{U_a(z - c(a), a)}{U_w(z - c(a), a)}.$$

The left-hand side represents the marginal cost to the firm of providing more amenity a , while the right-hand side constitutes the marginal rate of substitution between amenities and wages for the worker, i.e. the added benefit the worker would gain from giving up part of their wage for more amenities.

Suppose that $U(w, a) = \log(w) + \beta \log(a)$, where β is a scaling parameter dictating to what extent workers prefer amenities compared with wages. Further, let us assume a linear cost function for amenity production $c(a) = \kappa a$. Under these functional forms, the wage and amenities offered by a firm with productivity z is

$$w = \frac{z}{1 + \beta} \text{ and } a = \frac{\beta z}{(1 + \beta)\kappa}.$$

Comparative statics reveal how the correlation between w and a can be positive or negative. Consider first the degree of firm productivity, z . In this case, $\frac{\partial w}{\partial z} > 0$ and $\frac{\partial a}{\partial z} > 0$, so $\text{corr}(w, a) > 0$ since both are positively correlated with firm output per worker. Second, consider the workers' preference for trading off amenities for wages, β . In this case, $\frac{\partial w}{\partial \beta} < 0$ and $\frac{\partial a}{\partial \beta} > 0$, so $\text{corr}(w, a) < 0$. Because workers with relatively high β increasingly prefer amenities to wages, firms will shift compensation for these workers away from wages toward amenities. Finally, with regards to the marginal cost of providing amenities κ , while the wage is unaffected, since $\frac{\partial a}{\partial \kappa} < 0$, the amenity value provided by the firm falls (Rosen, 1986). Therefore, the wage-amenity bundles we observe across firms will reflect differences in firms' productivity levels (z), employees' preferences for amenities (β), and costs of amenity provision (κ), which together, can induce a positive or negative relation between w and a .

B Comparison: ASEC and Glassdoor Amenities

In this appendix, I detail how the measures used for externally validating the Glassdoor amenities against the Annual Social and Economic Supplement (ASEC) dataset are constructed. I first restrict attention to the thirteen survey waves from 2008–2020, for which the microdata are made available by Flood et al. (2020) through IPUMS-CPS. I then map workers from their industries in ASEC according to 1990 Census Bureau classifications into twenty-two Glassdoor industries.⁴² I then map workers from their occupations in ASEC according to 2010 Census Bureau classifications into twenty-one two-digit standard occupational classification (SOC) occupations. Each of the measures used in Table B1 are then calculated by taking weighted averages (according to representative ASEC weights) by industry-occupation pairing for the following observables, where the relevant variables are included in parentheses.

- Offers pension: The worker responds that there is a pension plan at work, but she is not included or that she is included in a pension plan at work (*pension*).
- Offers insurance: The worker was included in an employer group health plan last year (*inclugh*).
- Using paid time off: The worker was absent from work last week or working part-time last week for a vacation or personal days (*whyabsnt*, *whyptlwk*).
- Absent due to layoff: The worker was unemployed because she was on layoff or lost her job for other reasons (*whyunemp*).
- Employment white-male: The worker responds that is male and white (*sex*, *race*).
- Weekly time at work: The worker’s usual hours worked per week at main job, conditional on the worker being employed at work (*uhrswork1*, *empstat*).

As shown in Table B1, Glassdoor amenities capture labor market patterns observed across metrics related to these variables. I first consider fringe benefit information contained in ASEC by calculating the share of workers for whom the firm offers a pension or group health insurance plan, as well as the share of workers who were absent from work or worked

⁴²The industries and corresponding Census Bureau mappings are: Accounting & Legal (841, 890); Arts, Entertainment & Recreation (800–810, 872); Biotech & Pharmaceuticals (891); Business Services (721–731, 740–741, 882, 891–893); Construction, Repair & Maintenance (60, 751–760); Finance (700–710); Health Care (812–840, 861–870); Information Technology (732); Insurance (711); Manufacturing (100–392); Media (440); Non-Profit (880–881); Oil, Gas, Energy & Utilities (450–472); Real Estate (712); Retail (580–640, 642–691); Telecommunications (441–442); Transportation & Logistics (400–432); and Travel & Tourism (762–770).

part-time last week because they were on vacation or using personal days. These three measures should each increase as the amenities for retirement contributions, health insurance, and paid time off, respectively, improve. Since the availability of (and thus likely satisfaction with) fringe benefits depends on hours worked, employment status controls are not included in the formal regressions. The first three columns confirm these patterns, with robustly positive and significant correlations of 0.39, 0.18, and 0.14, respectively, between the Glassdoor amenities and ASEC measures. Next, I consider whether actual increased risk of forced job separation by industry-occupation according to ASEC translates into an increasingly negative amenity for job security in Glassdoor reviews and find a robustly negative correlation of -0.18 . Next, I use the gender and racial composition of employment to examine whether the amenity for diversity/inclusion captures differences in diversity across labor market opportunities. In industry-occupations with a greater share of workers who are white males, the diversity/inclusion amenity is increasingly more-negative, with a correlation of -0.08 . In work arrangements where employees spend more hours on the job, we would anticipate workers to have less-favorable work-life balance, as they have less time for leisure. Column 6 confirms that jobs in which workers supply more hours on average have the dis-amenity of worse work-life balance, with a correlation of -0.19 . Finally, we would anticipate jobs where workers spend more hours on the job to report greater satisfaction with hours — as they have access to more full-time labor — but conditional on employment status, e.g. full-time or part-time, workers that spend increasingly many hours on the job would be more dissatisfied with the increased hours they spend on the job. The final two columns confirm this pattern: In Glassdoor reviews, workers in industry-occupations with more work hours are significantly more positive about hours, but upon controlling for the distribution of workers by employment status, workers with longer work hours are significantly more negative about hours.

Table B1: Relating Glassdoor Amenities and Outcomes from the Annual Social and Economic Supplement (ASEC)

Standardized Glassdoor amenity	Measure calculated from ASEC						Mean weekly time at work (hours)	
	Share offers pension (%)	Share offers insurance (%)	Share using paid time off (%)	Share absent due to layoff (%)	Share employment white-male (%)			
Retirement contributions	0.098*** (0.011)							
Health insurance		0.040*** (0.010)						
Paid time off			0.003*** (0.001)					
Job security				-0.010*** (0.002)				
Diversity/inclusion					-0.069*** (0.017)			
Work-life balance						-0.821*** (0.175)		
Hours							1.348*** (0.172)	-0.916*** (0.167)
Employment status controls				✓	✓	✓		✓
Industry-occupations	439	439	439	439	439	439	439	439
Pairwise correlation	0.385	0.180	0.142	-0.184	-0.080	-0.185	0.352	0.352
R ²	0.15	0.03	0.02	0.18	0.22	0.59	0.12	0.60
Mean ASEC weight	17699	17699	17699	17699	17699	17699	17699	17699
Mean ASEC measure	0.480	0.430	0.033	0.030	0.452	38.80	38.80	38.80

Notes: This table reflects coefficients from regressions of ASEC-level measures on (standardized normal) Glassdoor amenities at the Glassdoor industry x two-digit SOC occupation. Regressions are weighted according to the representative ASEC weights. Employment status controls refers to the share of workers of each employment status in the Glassdoor reviews sample. Industry-occupation pairings restricted to those with at least fifty Glassdoor employer reviews. Significance levels: * 10%, ** 5%, *** 1%.

C Comparison: AWCS and Glassdoor Amenities

In this appendix, I detail how amenities from the American Working Conditions Survey (AWCS) are constructed for comparison with Glassdoor amenities. There is only one wave of the AWCS that was fielded in 2015, and had 3,131 respondents. I restrict attention to individuals who are employed, but not self-employed, trimming the sample to 2,117 respondents. We obtain the worker’s two-digit North American Industry Classification System (NAICS) industry code (variable *q9_industrycode*) and two-digit standard occupational classification (SOC) occupation (variable *q3_occupationcode*). I then exclude any workers for whom industry or occupation is unavailable, trimming the sample further to 1,725 respondents. To compare with Glassdoor reviews, I map Glassdoor industries into NAICS codes.⁴³ Each amenity used in Table C1 is then measured by taking weighted averages (according to representative AWCS weights) by industry-occupation pairing, where the relevant variables are included in parentheses.

- Autonomy/responsibility: If the respondent is able to choose or change the order of tasks, the methods of work, and speed/rate of work. We sum these three indicators. (*q50a-q50c*)
- On-the-job training: If over the past twelve months, respondents had undergone training to improve their skills that was paid for or provided by their employer or on-the-job training. We sum these two indicators. (*q61a,q61d*)
- Work-life balance: In general, do your working hours fit, (1) very well, (2) well, (3) not very well, or (4) not at all well, in with your family or social commitments outside work? I create an indicator variable for the worker responds very well or well. (*q41*)
- Short breaks: Whether the respondent can (1) always, (2) most of the time, (3) sometimes, (4) rarely, or (5) never take breaks when wanted, where the integral value assigned to each option is included in parentheses. Inverting the scale, I obtain a metric that is increasing in the degree to which taking breaks when wanted is permissible. (*q51d*)

⁴³The seventeen industries and corresponding Glassdoor industries listed in parentheses are: 11 (Agriculture and Forestry); 21 (Mining and Metals); 22 (Oil, Gas, Energy and Utilities); 23 (Construction, Repair and Maintenance); 31 (Manufacturing, Aerospace and Defense); 44 (Retail); 48 (Transportation and Logistics); 51 (Media, Telecommunications); 52 (Finance, Insurance); 53 (Real Estate); 54 (Accounting and Legal, Business Services, Information Technology, Biotech and Pharmaceuticals); 61 (Education); 62 (Health Care); 71 (Arts, Entertainment and Recreation); 72 (Travel and Tourism, Restaurants, Bars and Food Services); 81 (Consumer Services); and 92 (Government).

- Work schedule: In response to whether changes to their work schedule occur often, respondents could say no or yes, with the latter further qualified by either on the same day, the day before, several days in advance, or several weeks in advance. We create an indicator variable for the worker responds no, so that this measure is inversely related to the frequency of scheduling changes. (*q40*)
- Safety: Whether the respondent is exposed to each of the following all of the time, almost all the of the time, around three-fourths of the time, around one-half of the time, around one-fourth of the time, almost never, or never: vibrations - hands tools/machinery, loud noise, high temperatures, low temperatures, breathe smoke/fumes/power/dust, breathe vapors, handling chemical products, breathe tobacco smoke, and handling infectious materials. We create an indicator for each that the worker is exposed at least one-half of the time or more. I then sum the nine indicators and multiply by -1 to obtain a metric that is increasing in the degree of workplace safety. (*q23a-q23i*)
- Support: Whether the worker agrees or disagrees with the statement that their immediate boss provides useful feedback and whether their immediate boss encourages and supports their development. I create an indicator variable for each and sum the two. (*q58f,q58g*)
- Recognition: With regards to their workplace, whether the respondent (1) strongly agrees, (2) agrees, (3) neither agrees nor disagrees, (4) disagrees, or (5) strongly disagrees employees are appreciated when done a good job, where the integral value assigned to each option is included in parentheses. Inverting the scale, I obtain a metric that is increasing in the degree to which the workplace offers employees recognition. (*q51d*)
- Communication: Whether the respondent would describe their work situation as one in which they (1) always, (2) most of the time, (3) sometimes, (4) rarely, or (5) never receive contradictory instructions, where the integral value assigned to each option is included in parentheses. (*q52e*)
- Pay: With regards to their job, whether the respondent (1) strongly agrees, (2) agrees, (3) neither agrees nor disagrees, (4) disagrees, or (5) strongly disagrees that they feel that they get paid appropriately, where the integral value assigned to each option is included in parentheses. Inverting the scale, I obtain a metric that is increasing in the degree to which the worker is satisfied with pay. (*q77b*)

I then test whether the Glassdoor amenities reflect patterns observed for these ten aspects of work in the AWCS. The relations, summarized in Table C1, confirm that Glassdoor amenities reflect differences in workplace conditions between industries and occupations. There are particularly strong correlations between the two datasets. A one-standard-deviation improvement in the Glassdoor amenity is associated with 0.44 and 0.34 standard deviations improved short breaks and safety in the AWCS, respectively. For work schedule, autonomy/responsibility, and on-the-job-training, we find robustly positive relations as well, with 0.24, 0.22, and 0.21 standard deviations increases in the AWCS per standard deviation in Glassdoor. Last, we find noticeably positive albeit weaker significant relations for support, work-life balance, pay, recognition, and communication between the two surveys with 0.09–0.13 standard deviations increases in the AWCS per standard deviation in Glassdoor. In all, this comparison offers further assurance that findings derived using Glassdoor amenities have real consequence for the U.S. labor market.

Table C1: Relating Glassdoor and American Working Conditions Survey (AWCS) Amenities

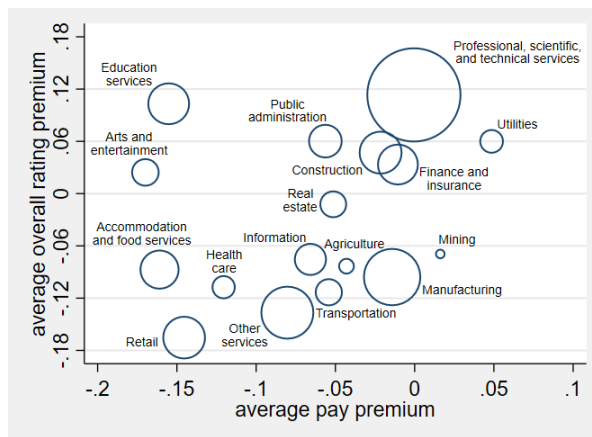
	Amenity in AWCS									
	Short breaks	Safety	Work schedule	Autonomy/responsibility	On-the-job training	Support	Work-life balance	Pay	Recognition	Communication
Amenity in Glassdoor	0.442*** (0.047)	0.335*** (0.057)	0.241*** (0.040)	0.216*** (0.053)	0.208*** (0.053)	0.133*** (0.041)	0.131*** (0.044)	0.122** (0.047)	0.111** (0.046)	0.085** (0.043)
Industry-occupations	203	204	204	204	204	203	204	204	203	204
Pairwise correlation	0.552	0.385	0.395	0.275	0.266	0.224	0.203	0.177	0.167	0.139
R ²	0.30	0.15	0.16	0.08	0.07	0.05	0.04	0.03	0.03	0.02
Mean AWCS weight	7.589	7.588	7.588	7.588	7.588	7.620	7.588	7.588	7.620	7.588

Notes: This table reflects coefficients from regressions of (standardized normal) AWCS amenities on (standardized normal) Glassdoor amenities at the two-digit NAICS industry x two-digit SOC occupation. Regressions are weighted according to the representative AWCS weights. Industry-occupation pairings restricted to those with at least fifty Glassdoor employer reviews. Significance levels: * 10%, ** 5%, *** 1%.

D Inter-Industry Wage-Satisfaction Relation

While greater wages corresponded to more job satisfaction across the 70,000 firms in the Full set, there may be heterogeneity between different types of firms. One particularly salient firm characteristic I observe is the industry in which the firm operates, of which there are seventeen NAICS categories. It is well-established that there are differences in pay between industries (Wachtel and Betsey, 1972; Krueger and Summers, 1988) and one posited theory for rationalizing these differences is that workers in higher-paying industries are compensated for worse working conditions (Holzer et al., 1991; Sorkin, 2018). If it were the case that inter-industry wage differences equalized inter-industry amenity differences, then we would anticipate an inverse relation across industries between the wage and satisfaction premia firms offer. Figure D1 plots for each industry ι , the average wage premium in the industry $\hat{\lambda}_\iota^w = \frac{1}{N_{k \in \iota}} \hat{\lambda}_k^w$ against the average satisfaction premium $\hat{\lambda}_\iota^R = \frac{1}{N_{k \in \iota}} \hat{\lambda}_k^R$. If such compensating differentials are evident, then low-paying industries would offer greater levels of job satisfaction, and vice-versa; however, the opposite is apparent. Relatively high-paying industries such as Professional, Scientific, and Technical Services and Finance and Insurance also provide more satisfaction than low-paying industries such as Accommodation and Food Services and Retail. Across industries, the weighted correlation between the wage and overall ratings premia is 0.47 (p-value=0.055). One industry where there may be strong compensating differentials is Educational Services, which offers relatively low wages but comparatively high levels of job satisfaction. Excluding Educational Services, the weighted correlation is 0.66 (p-value=0.005). Therefore, consistent with Krueger and Summers (1988), inter-industry wage differentials do not reflect compensation for disagreeable work characteristics.

Figure D1: Heterogeneity in Wage-Rating Premia Across Industries

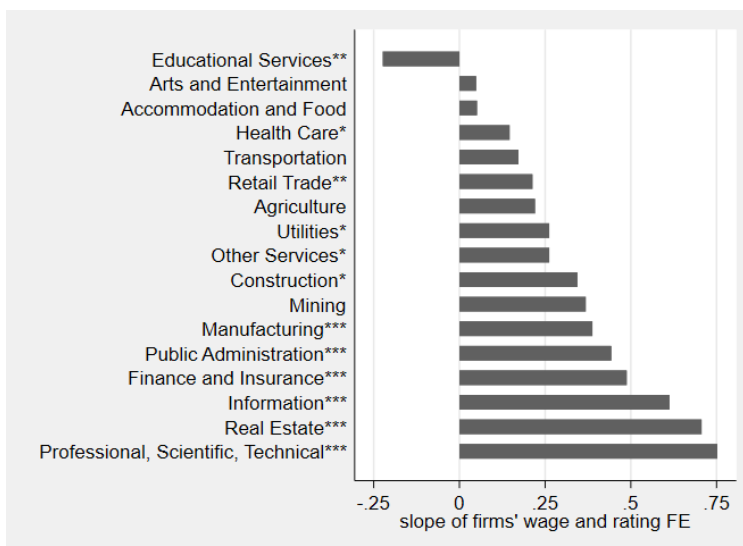


Notes: This figure plots the average wage premium against the average firm rating premium for each industry. Industries reflect two-digit NAICS and are weighted by firm count in the Full set.

E Intra-Industry Wage-Satisfaction Relation

In this appendix, I show that the positive relation observed between a firm’s wage and its job satisfaction premia does not reflect across-industry differences but holds within industries as well. First, each firm is mapped a two-digit NAICS industry according to the mapping from Glassdoor industries to NAICS detailed in Footnote 43. Then, for the set of firms in each NAICS industry σ , I estimate $\hat{\lambda}_k^R = \rho^\sigma \hat{\lambda}_k^w + v_k$. The seventeen coefficients are presented in ascending order in Figure E1. For most industries, ρ^σ is positive, with the most robust relations observed among high-skilled industries. The standalone exception is Educational Services, for which we instead observe a sharply negative relation.

Figure E1: Heterogeneity in Slope Between Wage and Rating Premia Within Industries



Notes: This figure shows the ρ coefficient from estimating $\hat{\lambda}_k^R = \rho \hat{\lambda}_k^w + v_k$ separately within each industry for the firms in the Full set. Industries reflect two-digit NAICS, and are displayed in ascending order according to ρ . Significance levels: * 10%, ** 5%, *** 1%.

From a fixed employer look-up table Glassdoor maintains, I obtain a rich set of firm characteristics, including firm type, age, and size. With regards to type, firms are partitioned according to private companies, public companies, subsidiaries, non-profits, colleges, governments, hospitals, and schools. Partitioning firms by type allows for a deeper investigation into the negative relation observed within the Educational Services sector. Is this inverse pattern driven by particular firms operating within education, such as primary and secondary school systems? I partition the sample into colleges (46 percent of employers), schools (21 percent) and all other education-based firms, and re-estimate the wage-amenity relation $\hat{\lambda}_k^R = \rho \hat{\lambda}_k^w + v_k$ separately for all employers, only colleges, only primary and secondary schools, and all firms that are neither colleges nor schools. The results are recorded in Table

E1. Column 1 confirms the stark inverse relation between wages and job satisfaction, but Columns 2–4 reveal that schools and colleges drive this pattern. For non-college, non-school employers in fact, we observe the positive correlation between wages and job satisfaction observed elsewhere. Learning institutions appear unique in their offering of improved amenities with lower wages.

Table E1: Relation between Firms' Pay and Satisfaction Premia within Education Sector

	Overall rating premia			
	All	Colleges	Schools	Other
Wages premia	-0.223*** (0.084)	-0.258* (0.152)	-0.418** (0.211)	0.377*** (0.140)
Std. dev. rating premia	0.979	0.893	1.041	1.027
Std. dev. pay premia	0.219	0.207	0.205	0.216
Observations	3715	1703	768	1244

Notes: This table reflects regressions of firms' overall ratings premia on firms' wage premia within Educational Services by employer type. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

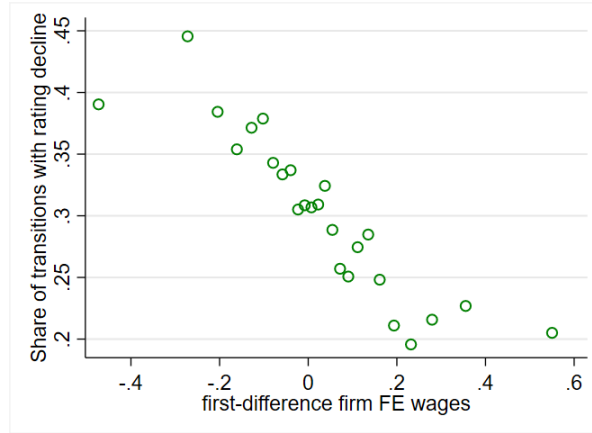
F Ratings of Firms' Benefits Packages Overall

In this appendix, I show further evidence that higher-paying firms are better-amenity firms by narrowing in explicitly on workers' satisfaction levels with their employers' fringe benefits. When contributing information to the website, a worker can choose to (separately) rate their employers' overall fringe benefits package.⁴⁴ Fringe benefits reviews begin in 2014, and are appreciably thinner in size compared with the wage and job satisfaction data. That said, the data constitute employee-employer matches and contain job switchers who rate the benefits overall for multiple firms, and so equation 1 can be re-estimated with worker i 's benefits rating for firm k in year t , B_{ikt} , on the left-hand side to obtain firm-specific premia in fringe benefits satisfaction $\hat{\lambda}_k^B$ for 11,965 firms.

Before relating $\hat{\lambda}_k^B$ to the firms' wage premia $\hat{\lambda}_k^w$, I re-estimate the first differences specification of equation 2 to see how the change in a workers' fringe benefits satisfaction levels ($B_{ik't'} - B_{ikt}$) relates to the change in the firms' wage premia $\hat{\lambda}_{k'}^w - \hat{\lambda}_k^w$. Panel a of Figure F1 reveals a clear *positive* effect: Workers who move to lower-paying firms on average report worse satisfaction with fringe benefits, and vice-versa. Looking instead at whether the worker experiences a decline in benefits satisfaction, $1(B_{ik't'} < B_{ikt})$, panel b of Figure F1 reveals that the probability of experiencing a decline in the quality of fringe benefits rises as workers move to lower-paying firms. This is true because, as evidenced in Column 1 of Table F1, firms that offer relatively greater wages also provide relatively better fringe benefits packages, consistent with Pierce (2001). That said, consistent with Table 5, differences in fringe benefits play a limited role in explaining firms' job satisfaction premia: Incorporating firms' benefits ratings premia attenuates the slope between the firms' wage and job satisfaction premia by only 6 percent (Columns 3 and 4). That fringe benefits explain so little of the job satisfaction premia implies that accounting for pecuniary differences in fringe benefits across employers would even further widen firm-level dispersion in total compensation beyond that obtained through gauging job satisfaction levels.

⁴⁴For a further discussion of overall fringe benefits ratings from Glassdoor, see Gadgil and Sockin (2020).

Figure F1: Growth in Benefits Ratings by the Change in Firm Wage Premia



(a) P(rating decline)

Notes: This figure depicts the average growth rate in workers' benefits ratings (panel a) and the probability of a worker experiencing a decline in fringe benefits rating (panel b) when transitioning between firms that differ in their wage premia (x-axis). Observations are partitioned into twenty-five bins according to the measure on the x-axis.

Table F1: Firms' Wage and Job Satisfaction Premia Accounting for Fringe Benefits

	Wage premia		Overall rating premia	
Benefits ratings premia	0.015*** (0.001)	0.077*** (0.005)	0.069*** (0.006)	
Wage premia			0.560*** (0.051)	0.527*** (0.042)
Average movers from wages	102	102	102	102
Average movers from overall ratings	58	58	58	58
Average movers from benefits ratings	4	4	4	4
Std. dev. benefits ratings	1.013	1.013	1.013	1.013
Firms	11965	11965	11965	11965
Adjusted R ²	0.01	0.01	0.02	0.02

Notes: This table displays the coefficients from regressions of the firm fixed effects for job satisfaction on the firm fixed effects for wages incorporating firm-level differences in satisfaction with fringe benefits. Benefits ratings reflect a one-to-five stars rating scale, with more stars indicating a greater level of satisfaction. Benefits ratings premia reflect the firm fixed effects from a two-way fixed effects model (with worker fixed effects) on the rating the worker assigns to the firms' overall fringe benefits package. For further description of Glassdoor benefits data, see [Gadgil and Sockin \(2020\)](#). Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

G Hedonic Approach to Estimating MWP

In this appendix, I estimate workers’ MWP for improved job satisfaction through a hedonic approach in which job satisfaction is an attribute priced into the wages workers are willing to accept following the two-way fixed effects methodology of [Lavetti and Schmutte \(2018\)](#) — though given the thinness of the wage panel, I do not first residualize workers’ wages by a match fixed effect. The attribute of interest that should be priced into workers’ accepted wages is $\bar{R}_{\iota\sigma t}$, which reflects the three-year rolling average of job satisfaction ratings at year t for each Glassdoor industry ι and two-digit SOC occupation σ . The hedonic specification is given by

$$w_{ikt} = \beta\bar{R}_{\iota\sigma t} + \gamma X_{it} + \lambda_i + \lambda_k + \lambda_\sigma + \lambda_t + \varepsilon_{ikt}. \quad (\text{G1})$$

where X_{it} represents a fourth-order polynomial in years of work experience. Note that since workers are mapped to industries by the firm, then controlling for industry is redundant when firm fixed effects are included. The results are presented in [Table G1](#).

If job satisfaction is an aspect of work that workers are willing to trade off with wages, then the coefficient β should be negative. Looking across the pooled cross-section of workers with multiple wage observations, absent controlling for the productivity of the worker, the *opposite* relation is observed ([Columns 1 and 2](#)). The positive coefficients capture how high-wage workers on average also enjoy greater levels of job satisfaction, not less. When worker fixed effects are included, β now captures the trade-off the same worker would be willing to make between their wage and expected level of job satisfaction as captured through differences across industry-occupations over time. Now, a negative coefficient is observed, consistent with a compensating differential. After further accounting for time-invariant differences across firms ([Column 4](#)), a significant compensating differential is observed, with the same worker willing to forego about \$3,300 ($\beta * \bar{w}$) in wages for each additional star of job satisfaction. Since Glassdoor ratings range from one to five stars, a worker would forego roughly \$13,200, or 18 percent of the average wage, to transition from a job with the lowest expected level of job satisfaction to one with the highest. Obtaining a hedonic estimate for MWP that is noticeably below estimates obtained from a tenure-based approach is not inconsistent with the literature ([Dale-Olsen, 2006](#); [Bonhomme and Jolivet, 2009](#); [Lavetti and Schmutte, 2018](#)). However, this could reflect asymmetry in timing: the measure of job satisfaction used in the hedonic specification is an *ex ante* expectation for a given labor market whereas the one used for the tenure-based approach is an *ex post* realization of the match. The hedonic methodology reveals that, although there is a compensating differential for job satisfaction (and thus non-wage amenities), this trade-off is not observed broadly across workers and firms.

Table G1: Willingness-to-pay for Improved Employer Quality, Hedonic Approach

	Hedonic Specification			
	Pooled	+Industry and Occupation	+Worker	+Firm
	(1)	(2)	(3)	(4)
Overall rating (3-Yr MA)	0.652*** (0.029)	0.131*** (0.015)	-0.060*** (0.011)	-0.046*** (0.006)
Observations	1239971	1239971	1239971	1239971
R ²	0.27	0.46	0.91	0.93
MWP one additional star	47295	9510	-3964	-3301
95% MWP confidence interval	[43242,51348]	[7379,11642]	[-4972,-2957]	[-4179,-2423]

Notes: This table reflects coefficients from a regression of average overall rating within an industry-occupation pair on wages, where the column headers reflect the level of fixed effects added to the specification. Mean wage for the sample is \$72,494. Industry-occupation pairs with fewer than 50 ratings are excluded. Standard errors are clustered by firm. Significance levels: * 10%, ** 5%, *** 1%.

H Description for Each Amenity

In this appendix, I provide the input and output from the Anchored CorEx model for each of the fifty amenities, along with the categories to which they have been assigned.

Table H1: Input and Output from Anchored CorEx Model: Amenities 1–10

#	Category	Amenity	Anchor words	Top twenty words
1	Pay	Pay	pay, salary, base, base pay, money	pay, salary, money, base, base pay, pay pay, discrepancy, disparity, way market, low ball, ridiculously low, offer competitive, making much, quite low, make ton, peanuts, differential, incredibly low, one lowest, great place work
2	Pay	Pay growth	raise, annual raise, salary increase, pay raise, raise base	raise, pay raise, salary increase, annual raise, raise base, yearly review, annual pay, infrequent, get cent, years without, room advancement, hard come, keep inflation, room growth, eyebrow, miniscule, minimal pay, chance advancement, little room growth, room promotion
3	Fringe benefits	Bonuses	bonus, performance, cash, stock option	bonus, performance, cash, stock option, bonus base, payouts, cow, make extra, appraisal, rsu, cows, low raise, bonus good, advancement base, eo, hard achieve, quartly, quaterly, recognition job, sti
4	Fringe benefits	Commissions	sales, commission, quota	sales, commission, quota, selling, sale, sales rep, territory, sales job, sales people, salesperson, base salary, cold calling, commission structure, sales manager, sales goal, make sales, cold call, sales training, sales position, sales person
5	Fringe benefits	Paid time off	vacation, pto, sick days, leave, pay time off	leave, pto, vacation, pay time off, sick days, bereavement, pto sick, benefit unlimited, good amount, must use, paternal, lot desire, generous amount, benefit pay, accumulation, hard take, maternal, benefit generous, vto, pay time off sick
6	Fringe benefits	Health insurance	insurance, health insurance, dental, vision	insurance, health insurance, vision, dental, offer health, health vision, pricey, medical vision, cost health, affordable health, tunnel, pto health, poor health, heath, excellent health, could better, insurance dental, good medical, dental health, unaffordable
7	Fringe benefits	Retirement contributions	retirement, 401k, pension, contribution	401k, contribution, retirement, pension, year, include, plan, benefit, state, increase, le, cover, high, area, policy, 401k match, average, option, match, holiday
8	Fringe benefits	Employee discounts	employee discount, discount, perk	discount, perk, employee discount, merchandise, clothes, clothing, coupon, gratis, credit cards, accessory, concession, merch, apparel, full price, jewelry, sale item, retail job, free movie, phone plan, cute clothes
9	Fringe benefits	Free food	lunch, food, free, cater lunch	free, food, lunch, cater lunch, tip, eating, massage, breakfast, occasional free, cook, delicious, free food, half off, get free, free breakfast, donut, salad, sandwich, menu, free drink
10	Working conditions	Work-life balance	work life balance, work life	work life balance, work life, balance ability, maintain healthy, promote healthy, balance none, balance limited, hard balance, imbalance, difficult maintain, culture good, hard maintain, good balance, culture benefit, balance, long hours little, balace, benefit culture, flexibility good, ballance

Notes: This table details the anchor words and resulting topics from the Anchored CorEx model.

Table H2: Input and Output from Anchored CorEx Model: Amenities 11–20

#	Category	Amenity	Anchor words	Top twenty words
11	Working conditions	Hours	hours, full time, part time	hours, full time, part time, work full time, part timer, part time employee, college student, get hours, seasonal, get full time, cut hours, position available, full time position, hours cut, require long, normal business, part time job, work part time, hours hours, benefit flexible
12	Working conditions	Work schedule	hours, shift, schedule, flex time	hours, schedule, shift, flex time, scheduling, availability, hour shift, early morning, pick extra, swap, pay flexible, monday friday, late night, inflexible, super flexible, offer flexible, night shift, extremely flexible, schedule change, week advance
13	Working conditions	Short breaks	break, rest, bathroom, lunch	break, lunch, rest, bathroom, take lunch, minute break, two minute, half hour, one hour, min lunch, laurels, hour long, min break, get break, pay lunch, break time, minute lunch, long lunch, 30min, unpaid lunch
14	Working conditions	Office space	office, desk, cubicle, cramp, building	office, building, desk, cubicle, cramp, quiet, windows, amenities, renovate, spacious, elevator, dallas, cube, remodel, natural light, beautiful new, renovation, noisy, layout, open floor plan
15	Working conditions	Commuting	commute, parking, bus, drive	drive, parking, commute, bus, traffic, downtown, shuttle, throw people, garage, public transportation, distance, depend live, long distance, valet, rush hour, parking spot, location free, locate downtown, meter, underground
16	Working conditions	Teleworking	telecommute, telework, work home, home office, remote	work home, remote, home office, telework, telecommute, one day week, flexible work, schedule ability, set hours, flexible work schedule, option available, flex schedule, days per week, hours ability, make schedule, equipment provide, flexibility ability, provide equipment, remote position, benefit ability
17	Working conditions	Location	city, location, metro	location, city, metro, rural, location location, salt lake, twin, suburb, geographic, culver, small town, jersey, inner, midtown, redwood, suburban, geographical, one location, satellite, philadelphia
18	Working conditions	Autonomy/responsibility	autonomy, independence, responsibility	responsibility, autonomy, independence, given lot, take additional, give lot, shirk, lots flexibility, shirking, variety task, lots freedom, many responsibility, deal flow, minimal supervision, kind coworkers, variety job, work pace, schedule lots, supportive coworkers, atmosphere lots
19	Working conditions	Respect/abuse	respect, dignity, abuse, harass, hostile	respect, abuse, hostile, harass, reason, lie, joke, upper management, write, literally, dignity, quit, unless, promise, woman, speak, blame, absolutely, claim, ignore
20	Working conditions	Communication	communication, issue, concern, meeting	issue, communication, meeting, concern, resolve, voicing, open line, meeting meeting, management listen, sometimes lack, get resolve, resolving, unresolved, many meeting, poor internal, inter department, inter departmental, need improvement, townhall, need improve

Notes: This table details the anchor words and resulting topics from the Anchored CorEx model.

Table H3: Input and Output from Anchored CorEx Model: Amenities 21–30

#	Category	Amenity	Anchor words	Top twenty words
21	Working conditions	Support	help, support, supportive, encourage	help, support, encourage, supportive, always available, always ready, always happy, nice willing, student need, worker willing, manager willing, available need, willing, pay school, further education, class size, support teacher, assist need, lots training, administrative support
22	Working conditions	Difficulty	challenge, growing pains, difficult, easy	challenge, easy, difficult, growing pains, job fairly, application process, peasy, getting time off, work life balance sometimes, communication sometimes, simple job, balancing work, job simple, mindless work, simple work, everyday different, decal, breezy, quick money, working public
23	Working conditions	Requirements	require, requirement, mandatory, optional	require, requirement, mandatory, optional, weekend work, five words, time commitment, weekend hours, pay low amount work, physical labor, heavy lift, extensive travel, low pay amount work, billables, lot travel, high productivity, memorization, lot paperwork, weekend require, exertion
24	Working conditions	Stress	stress, pressure, high stress, high pressure	stress, pressure, high stress, high pressure, undue, cooker, environment high, environment low, unneeded, environment little, reliever, lot unnecessary, stress high, heavy workload, much pressure, lots pressure, schedule low, high pressure environment, lots stress, heavy work
25	Working conditions	Pace	pace, fast pace, speed	fast pace, pace, speed, super fast, busy fast, snail, challenge fast, excite fast, breakneck, really fast, working fast, growing rapid, environment always, glacial, never boring, environment lots, dynamic fast, environment challenge, environment lot, learn fast
26	Working conditions	Safety	injury, dangerous, safety, conditions, workplace	workplace, safety, conditions, dangerous, injury, unsafe working, hazard, precaution, hazardous, chemical, ppe, safety employee, employee safety, safety culture, number one priority, weather conditions, safety first, extremely hot, safe work, fatality
27	Working conditions	Recognition	hard work, effort, reward	reward, hard work, effort, unnoticed, recognize reward, put forth, get reward, go unnoticed, make every, unrecognized, get recognize, recognize appreciate, always recognize, reward recognize, challenge yet, duplication, handsomely, management recognize, little recognition, working child
28	Working conditions	Morale	morale, atmosphere	atmosphere, morale, family type, upbeat, easy going, good working, booster, family friendly, relax work, positive work, family orient, good team, friendly family, friendly work, low staff, turnover low, family style, casual work, friendly fun, friendly relax
29	Working conditions	Fun	fun, boring, mundane, tedious	fun, boring, tedious, mundane, repetitive, lively, monotonous, interactive, chill, make coming work, fun fun, numbingly, lay back, company activity, summer job, get bit, work repetitive, repetitive work, get repetitive, interact customer
30	Working conditions	Culture	culture, values, environment, society, mission	culture, environment, mission, values, society, strong core, unsafe work, noble, cutthroat, fun office, pace work, comfortable working, amaze work, fantastic work, work fast pace, dog eat dog, relax office, highly political, like fast pace, great workplace

Notes: This table details the anchor words and resulting topics from the Anchored CorEx model.

Table H4: Input and Output from Anchored CorEx Model: Amenities 31–40

#	Category	Amenity	Anchor words	Top twenty words
31	Working conditions	Diversity/inclusion	diversity, ethnic, multicultural, inclusive, lgbtq, inclusion, equality, diverse	diversity, diverse, inclusive, inclusion, equality, lgbtq, multicultural, ethnic, gender, diversity equity, lack diversity, ethnicity, inclusivity, focus diversity, commitment diversity, race gender, patient population, inclusiveness, nationality, student body
32	Working conditions	Leadership	leadership, management	management, leadership, hands off, ceo upper, change upper, poor senior, overbear, upper middle, transparency upper, access senior, access upper, many level, lack strong, lack direction, exposure senior, support senior, lack true, direction upper, communication senior, poor middle
33	Working conditions	Office politics	politics, bureaucracy, red tape, office politics	politics, bureaucracy, office politics, red tape, get way, big company, politics politics, lots internal, lot internal, slow move, typical corporate, many layer, inter office, mire, typical large, interoffice, difficult navigate, lots red tape, lot bureaucracy, lots bureaucracy
34	Working conditions	Change	change	change, slow make, enact, resist, many change, lots change, averse, adverse, slow adapt, nothing would, slow implement, management change, schedule always, always change, abrupt, much change, scenery, chump, structure change, student life
35	Working conditions	Job security	layoff, lay off, turnover	turnover, layoff, lay off, severance, furlough, severance package, due covid, get lay off, result high, lead high, high rate, people lay off, reorgs, super high, lay off people, instability, downsizing, lay off employee, company lay off, layoff happen
36	Human capital	Career concerns	career, grow, improve, growth	growth, career, grow, improve, always room, tons room, personal career, due rapid, benefit room, room professional, communication could, ton room, real room, opportunity personal, great company, help advance, absolutely room, enough room, good place, place build
37	Human capital	Promotions	promotion, promote, job title	promote, promotion, job title, merit base, base merit, much room, internal candidate, promotion process, base know, hike, promote quickly, limited opportunity, tough get, come promotion, take long time get, promotion system, quick promotion, salary hike, promotion hard, lack promotion
38	Human capital	Experience	experience	experience, opportunity gain, lots hands, looking gain, make break, learn gain, memorable, none great, gain lots, really depend, able gain, place gain, gain much, lot hands, improve customer, help gain, highly dependent, unforgettable, without prior, courtroom
39	Human capital	Skill development	develop, skill	skill, develop, sharpen, help develop, develop new, hone, learn valuable, marketable, gain new, critical thinking, learn many, learn develop, opportunity develop, public speaking, transferrable, communication skill, develop professional, improve communication, transferable, lots opportunity learn new
40	Human capital	On-the-job training	train, training	training, train, trainer, sink swim, pay training, opportunity cross, throw wolf, shadowing, online training, training training, intensive, cpr, expect know everything, informative, management need, lack formal, cdl, provide adequate, provide proper, training do

Notes: This table details the anchor words and resulting topics from the Anchored CorEx model.

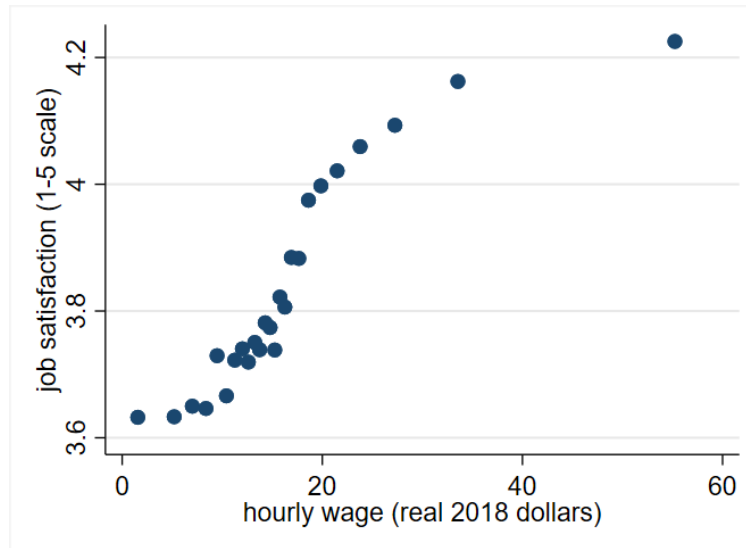
Table H5: Input and Output from Anchored CorEx Model: Amenities 41–50

#	Category	Amenity	Anchor words	Top twenty words
41	Human capital	Mentoring	intern, internship, mentor	intern, internship, mentor, internship program, learn lot, intern program, intern get, internship experience, intern work, great experience, intern event, hands experience, busy work, intern given, summer internship, even intern, unpaid internship, internship unpaid, end internship, intern project
42	Human capital	Recruiting	hire, recruit, interview, learn	hire, learn, interview, recruit, always something new, interviewer, phone interview, almost anyone, spree, recruit process, without experience, program new, lot information, lots things, multitask, informational, useful skill, service skill, quick hire, req
43	Human capital	Contracting	contract, offer, sign	offer, contract, sign, renew, non compete, contracting, contract end, contract work, clause, rescind, new contract, contract employee, contract company, month contract, contract position, contract hire, year contract, nda, contract sign, perm
44	Human capital	Industry	industry, market, startup, organization, project, product, technology, strategy, design	industry, product, project, organization, technology, market, design, startup, strategy, exposure, beauty, best product, bench, cannabis, manufacture, really interest, volatile, aerospace, bleeding edge, saturate
45	Relationships	Managers	boss, manager, ceo, owner	manager, ceo, owner, boss, micromanager, franchise, great guy, good manager, manager assistant, assistant store, good guy, absentee, difficult work, manager district, asst, manager need, need training, district regional, manager micro, manager good
46	Relationships	Coworkers	coworkers, people, friend, family, colleague	people, family, coworkers, colleague, friend, coworkers become, become close, make feel like part, get meet, meet best, mostly good, working smart, meet wonderful, good hard working, need hire, meet awesome, worker become, meet great, hire enough, generally nice
47	Relationships	Teams	team, teamwork, collaborative	team, teamwork, collaborative, depend team, immigration, feel part, value member, happy part, orientate, supportive leadership, interdisciplinary, great support, amaze leadership, experience depend, multidisciplinary, cooperative, excellent leadership, excellent management, work life balance depend, approachable management
48	Relationships	Customers	customer, client	customer, client, servicing, many client, client want, client client, working client, care client, one client, dealing angry, customer get, building relationship, impatient, client staff, many customer, deal rude, deal angry, customer customer, every client, caregiver
49	Residual	Residual I	-	work, make, like, tell, say, time, know, job, come, working, want, way, day, place, use, start, ask, month, expect, things
50	Residual	Residual II	-	company, employee, business, role, create, new, result, process, focus, provide, level, truly, idea, individual, opportunity, continue, success, bring, allow, means

Notes: This table details the anchor words and resulting topics from the Anchored CorEx model.

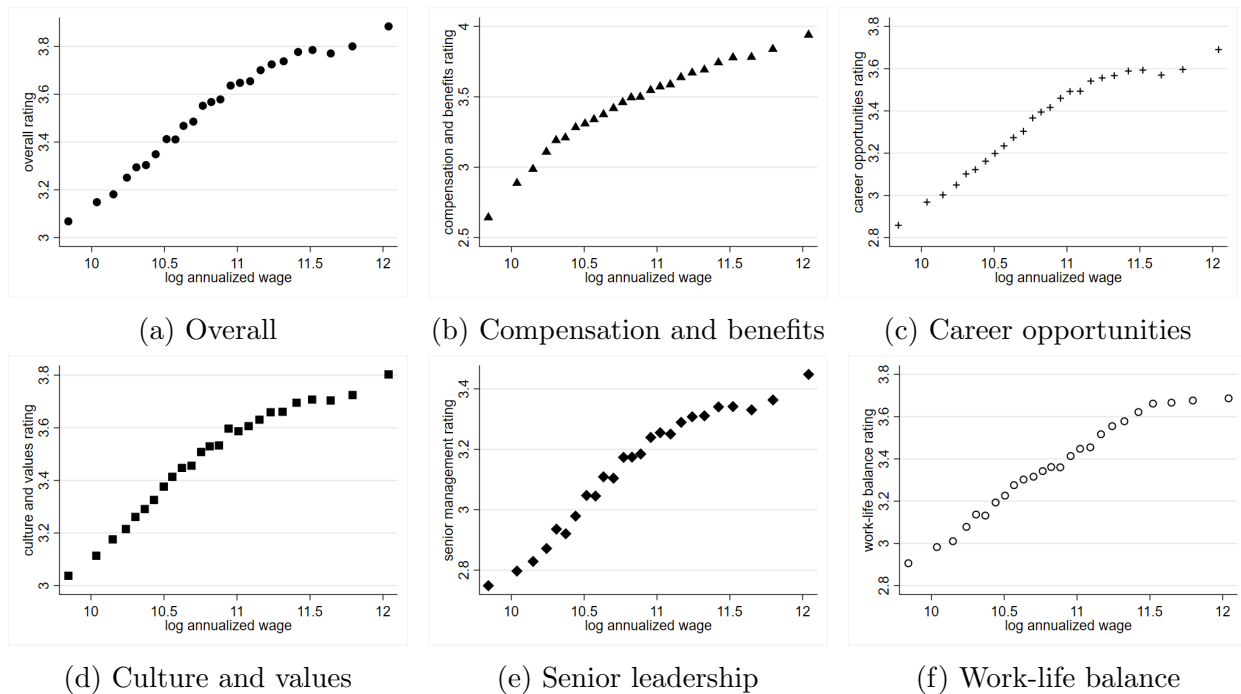
I Additional Figures and Tables

Figure I1: Job Satisfaction and Hourly Wage from NLSY97



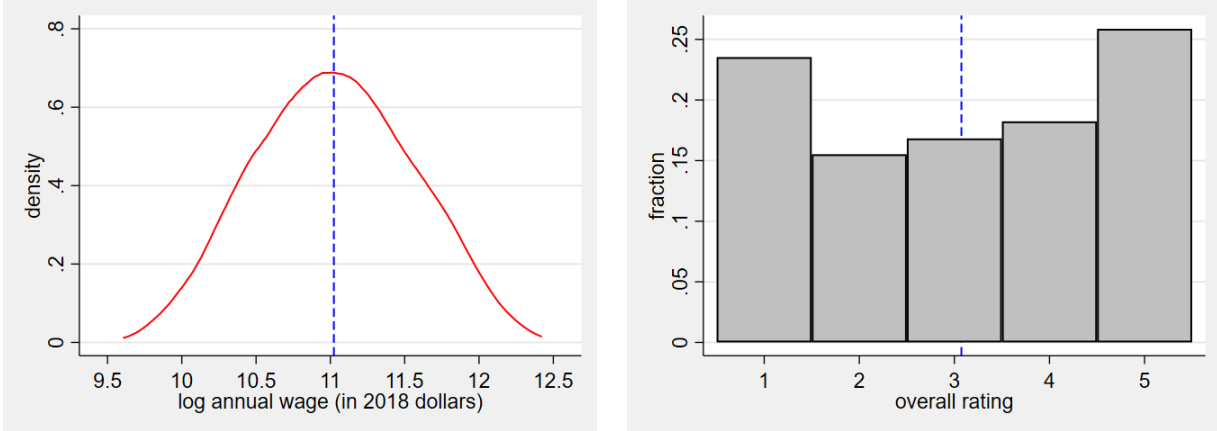
Notes: This figure depicts the average job satisfaction for each job held by respondents in the National Longitudinal Survey of Youth 1997 against the workers' log hourly wage.

Figure I2: Workers' Overall and Subcategory Ratings by Wage Level



Notes: This figure plots the average rating among Glassdoor reviews for overall ratings and the five subcategories against workers' log wages.

Figure I3: Log Wages and Overall Ratings Distributions

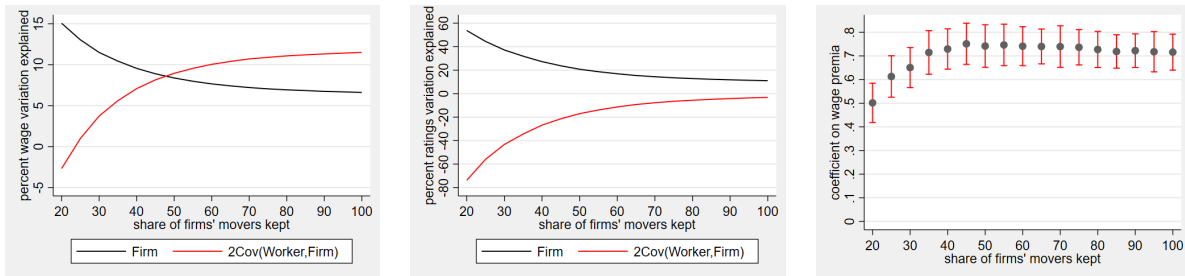


(a) Log wages

(b) Overall ratings

Notes: The figure plots the distribution of log wages (panel a) and overall ratings (panel b). Samples are restricted to the panel of workers with multiple wages or multiple reviews, respectively. Dashed blue vertical lines reflect the sample means of 11.042 and 3.053 for log wages and overall ratings, respectively.

Figure I4: Firm FE for Overall Rating with Sample Truncation



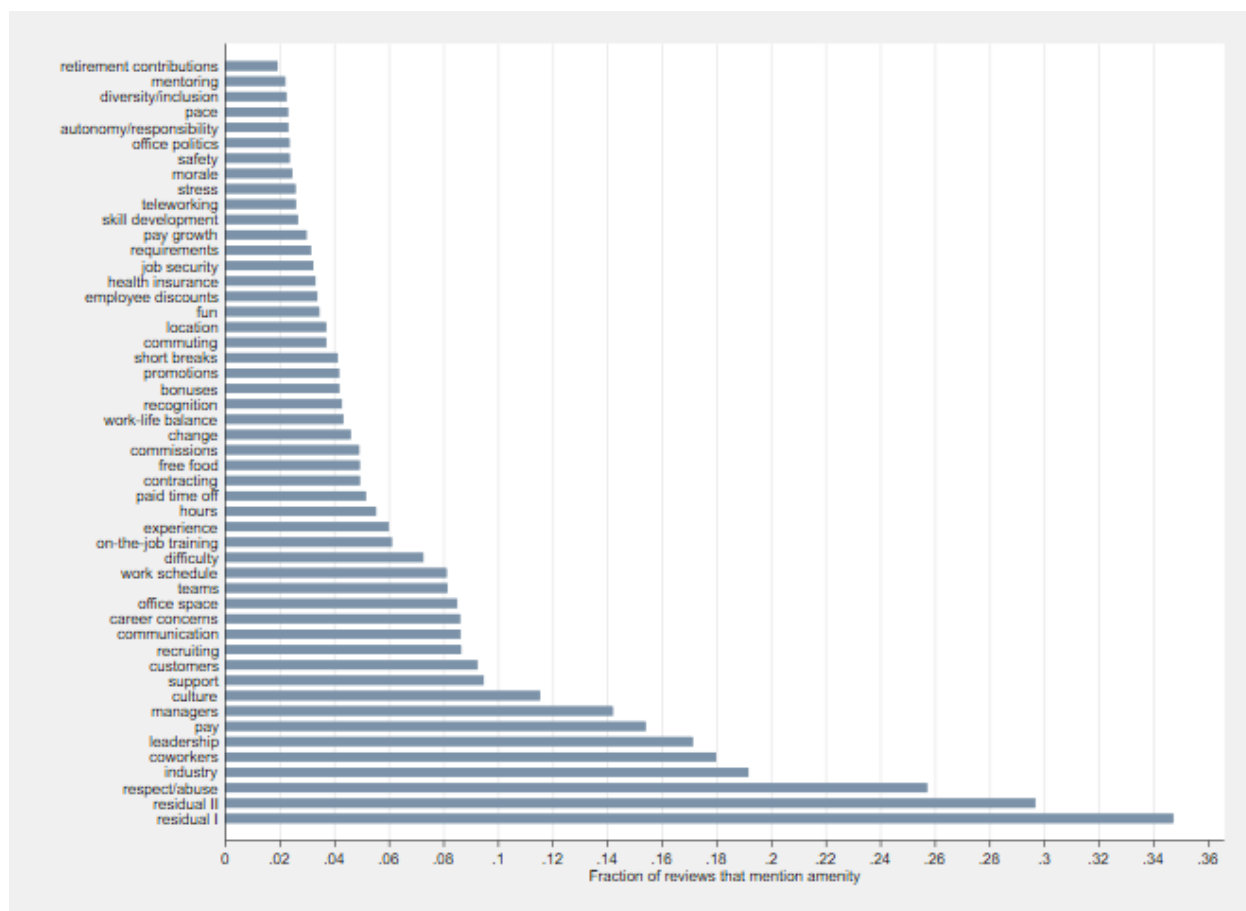
(a) Wage variance

(b) Ratings variance

(c) Wage-satisfaction relation

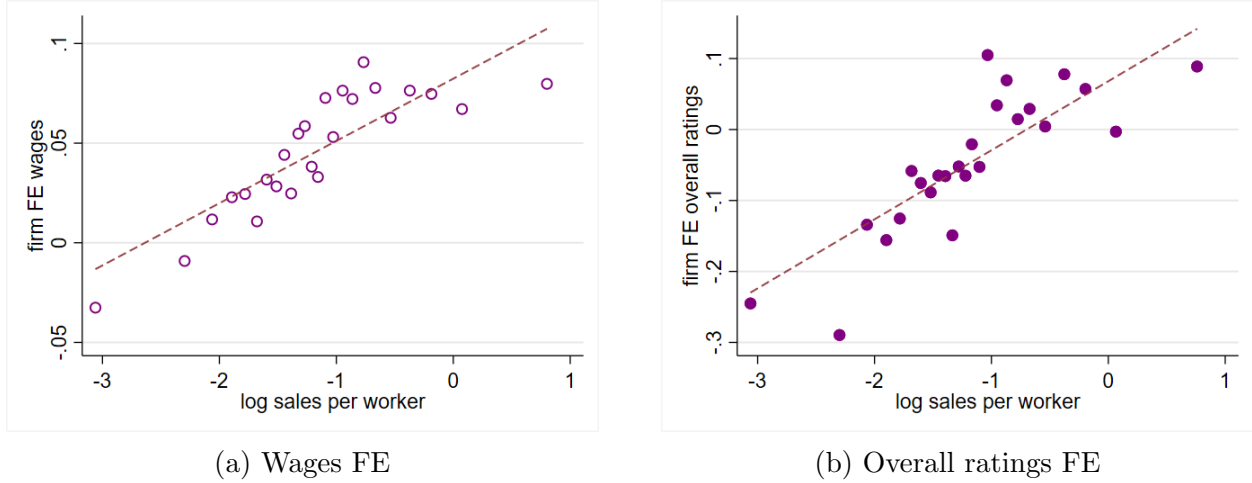
Notes: This figure depicts the share of the variance explained in wages (panel a), the share of the variance explained in overall ratings (panel b), and the coefficient ρ from estimating $\hat{\lambda}_k^R = \rho \hat{\lambda}_k^w + v_k$ (panel c) when the share of movers for each firm varies from 20 percent of the movers in the full sample to 100 percent. The sample of firms is restricted to those in the Connected sample. For each percentile of firm's movers kept, a random sample of movers is drawn fifty times and for each draw, the two-way fixed effects model of equation 1 is re-estimated. The firm fixed effects are then averaged across the fifty draws.

Figure I5: Incidence of Each Amenity in Workers' Reviews



Notes: The figure presents, for each of the fifty amenities, the share of reviews that mention the amenity. Sample is restricted to the panel of workers with multiple reviews. An amenity is considered to be mentioned in a review if $|q_r^a| \geq 0.01$, and not mentioned otherwise. Amenities are listed in ascending order according to the rate of incidence.

Figure I6: Firm Premia and Average Labor Productivity from Compustat



Notes: This figure plots the firm fixed effects for wages (panel a) and job satisfaction (panel b) against the firms' average labor productivity (log sales per worker). Log sales per worker available for public firms in Compustat, and so the sample of firms is restricted to public firms that can be matched from Glassdoor to Compustat. Observations are partitioned into twenty-five bins according to the measure on the x-axis.

Table I1: Summary Measures for Wages and Ratings Samples in AKM Framework

Panel measure	Log wages			Overall ratings		
	N	mean	std. dev.	N	mean	std. dev.
Worker-year observations	2.51	2.24	0.62	1.45	2.38	0.86
Years between observations	1.34	2.48	1.91	0.80	2.01	1.78
Growth between observations	1.33	0.15	0.34	0.80	-0.03	1.72
Experiences negative growth	1.33	0.29	0.45	0.80	0.32	0.47
Worker switches firm	1.34	0.78	0.42	0.80	0.80	0.40
Current employee at origin firm	1.34	0.65	0.48	0.80	0.48	0.50

Notes: This table displays the variance decomposition for low wages and overall ratings for the Full sample of firms (all firms) and the Connected sample of firms (firms represented by at least fifteen movers). Sample sizes (N) are listed in millions.

Table I2: Wage Growth Among Job Transitions by Firms' Rankings

Origin Firm Decile	Destination Firm Decile									
	1	2	3	4	5	6	7	8	9	10
1	-0.06	-0.11	-0.20	-0.29	-0.36	-0.40	-0.44	-0.54	-0.68	-0.86
2	0.11	-0.06	-0.09	-0.14	-0.18	-0.21	-0.25	-0.31	-0.41	-0.64
3	0.18	0.04	-0.05	-0.07	-0.11	-0.13	-0.17	-0.20	-0.29	-0.49
4	0.27	0.11	0.03	-0.05	-0.06	-0.08	-0.10	-0.14	-0.20	-0.38
5	0.34	0.18	0.09	0.03	-0.04	-0.03	-0.06	-0.09	-0.14	-0.28
6	0.42	0.22	0.13	0.07	0.02	-0.07	-0.03	-0.06	-0.09	-0.23
7	0.46	0.27	0.17	0.10	0.05	0.03	-0.04	-0.04	-0.07	-0.19
8	0.57	0.35	0.25	0.17	0.11	0.08	0.05	-0.03	-0.02	-0.12
9	0.72	0.48	0.35	0.26	0.19	0.15	0.12	0.06	-0.01	-0.05
10	0.95	0.69	0.53	0.40	0.32	0.28	0.24	0.16	0.11	-0.02

Notes: This table presents the mean wage growth for job transitions based on the rankings of the origin (initial) firm and destination (terminal) firm, where the firm rankings reflect deciles based on the firm fixed effects for wages obtained from equation 1. Sample wage growth is demeaned and residualized by the first difference in experience and years between observations.

Table I3: Change in Overall Rating Among Job Transitions by Firms' Rankings

Origin Firm Decile	Destination Firm Decile									
	1	2	3	4	5	6	7	8	9	10
1	-0.2	-0.8	-1.2	-1.5	-1.8	-2.1	-2.2	-2.6	-2.8	-3.4
2	0.8	-0.3	-0.4	-0.7	-0.9	-1.1	-1.3	-1.7	-2.2	-3.1
3	1.3	0.4	-0.2	-0.2	-0.5	-0.7	-0.9	-1.2	-1.7	-2.6
4	1.7	0.7	0.3	-0.2	-0.2	-0.4	-0.6	-0.9	-1.3	-2.3
5	1.9	1.0	0.6	0.2	-0.2	-0.2	-0.3	-0.7	-1.1	-2.1
6	2.0	1.2	0.8	0.4	0.2	-0.2	-0.2	-0.5	-0.9	-1.9
7	2.4	1.4	1.0	0.7	0.4	0.3	-0.2	-0.2	-0.7	-1.6
8	2.7	1.8	1.4	1.0	0.8	0.6	0.4	-0.2	-0.3	-1.3
9	3.1	2.4	1.8	1.5	1.2	1.1	0.8	0.5	-0.2	-0.8
10	3.6	3.1	2.6	2.4	2.1	1.9	1.7	1.3	0.9	-0.2

Notes: This table presents the mean growth in job satisfaction rating for job transitions based on the rankings of the origin (initial) firm and destination (terminal) firm, where the firm rankings reflect deciles based on the firm fixed effects for overall rating obtained from equation 1. Sample ratings growth is demeaned and residualized by the first difference of years between observations.

Table I4: Relation between Firms' Wage Premia and Probability of Rating Decline

	Full sample	Tenure at former job 0–1 years	Tenure at former job 5+ years	Job title stayer	Becomes a manager	Switched full-time to part-time	Switched part-time to full-time
First-difference firm FE wages	-0.105*** (0.004)	-0.139*** (0.007)	-0.109*** (0.009)	-0.117*** (0.019)	-0.120*** (0.010)	-0.060*** (0.018)	-0.076*** (0.011)
Mean probability rating decline	0.327	0.337	0.312	0.274	0.293	0.308	0.406
Std. dev. pay premia	0.185	0.198	0.153	0.112	0.170	0.211	0.227
Observations	614244	115946	86055	47847	53681	12800	31022

Notes: This table records the point estimate from equation 2 for different types of job transitions in the ratings panel. A managerial role refers to job titles that pertain to managers, presidents, directors, chiefs, supervisors, and principals. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

Table I5: Relation between Change in Firms' Pay Premia and Workers' Sub-Ratings

	Career opportunities	Compensation and benefits	Culture and values	Senior management	Work-life balance
First-difference firm FE wages	0.848*** (0.015)	1.569*** (0.014)	0.555*** (0.016)	0.581*** (0.014)	0.414*** (0.016)
Std. dev. rating	1.554	1.410	1.638	1.628	1.521
Std. dev. pay premia	0.133	0.133	0.133	0.133	0.133
Observations	479052	479052	479052	479052	479052

Notes: This table displays coefficients from regressions of the first-difference in the ratings workers leave for their employers along five sub-dimensions and the first-difference in the firm fixed effects for wages. The first difference in the number of years between observations included as a control. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

Table I6: Relation between Firms' Wage and Job Satisfaction Premia

	Overall rating premia			
	Full	Full	Connected	Connected
Wage premia	0.468*** (0.017)	0.419*** (0.019)	0.716*** (0.043)	0.803*** (0.050)
Sample	Full	Full	Connected	Connected
Industry FE		✓		✓
Average movers from wages	26	28	113	115
Average movers from reviews	17	18	62	63
Std. dev. rating premia	1.026	1.010	0.570	0.570
Std. dev. pay premia	0.220	0.217	0.148	0.149
Firms	70118	62421	10737	10338
Adjusted R ²	0.01	0.02	0.03	0.08

Notes: This table displays the coefficients from regressions of the firm fixed effects for job satisfaction on the firm fixed effects for wages. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

Table I7: Relation between Firms' Pay and Satisfaction Premia Over Time

Wage premia	Overall rating premia	
	0.353*** (0.024)	0.085*** (0.026)
Year FE	✓	✓
Firm FE		✓
Firm-years	77556	77556
Adjusted R ²	0.01	0.31

Notes: This table reflects regressions of the firm-year fixed effects for job satisfaction on the firm-year fixed effects for wages. Standard errors are clustered by firm. Significance levels: * 10%, ** 5%, *** 1%.

Table I8: Firms' Wage and Job Satisfaction Premia Accounting for Interview Process

	Wage premia	Overall rating premia	
	Probability of offer premia	-0.053*** (0.006)	-0.128*** (0.017)
Interview difficulty premia	0.052*** (0.003)	0.122*** (0.011)	0.082*** (0.009)
Wage premia		0.835*** (0.039)	0.749*** (0.045)
Average movers from wages	97	97	97
Average movers from overall ratings	57	57	57
Average movers from interviews	9	9	9
Std. dev. probability of offer	0.325	0.325	0.325
Std. dev. interview difficulty	0.696	0.696	0.696
Firms	13959	13959	13959
Adjusted R ²	0.05	0.02	0.05

Notes: This table displays the coefficients from regressions of the firm fixed effects for job satisfaction on the firm fixed effects for wages incorporating firm-level differences in the interview process. Interview difficulty reflects a one-to-five stars rating scale, with more stars indicating a greater level of difficulty. Interview difficulty premia reflect the firm fixed effects from a two-way fixed effects model (with worker fixed effects) on the difficulty rating the jobseeker assigns to interviewing with the firm. Probability of offer premia reflect the firm fixed effects from a two-way fixed effects model (with worker fixed effects) on a dummy variable for the jobseeker received an offer from the firm. For both two-way fixed effects models, the logarithm of months between the date of the interview and the date submitted to Glassdoor is included as a control variable. For further description of Glassdoor interviews data, see [Sockin and Zhao \(2020\)](#). Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

Table I9: Relation between Wages and Amenities Across Firms, Unweighted Amenities

Standardized amenity	Overall rating weight	Slope with wage FE	Standardized amenity	Overall rating weight	Slope with wage FE
Pay	0.14	0.30***	Recognition	0.09	0.04**
Residual I	0.44	0.23***	Retirement contributions	0.08	0.03*
Residual II	0.38	0.16***	Mentoring	0.20	0.03**
Pay growth	0.09	0.14***	Location	-0.09	0.03
Respect/abuse	0.61	0.13***	Commuting	-0.06	0.03
Short breaks	-0.01	0.13***	Employee discounts	0.03	0.03
Managers	0.29	0.12***	Experience	0.03	0.02
Culture	0.33	0.10***	Customers	0.07	0.02
Teleworking	0.03	0.09***	Bonuses	0.08	0.01
Industry	0.12	0.09***	Contracting	0.05	0.01
Leadership	0.42	0.09***	Work-life balance	0.38	0.01
Free food	-0.02	0.09***	Requirements	-0.11	0.01
Coworkers	0.15	0.09***	On-the-job training	0.16	0.01
Safety	0.11	0.08***	Fun	0.17	0.00
Health insurance	0.10	0.08***	Morale	0.27	0.00
Office politics	0.17	0.08***	Work schedule	0.07	-0.01
Teams	0.16	0.08***	Communication	0.02	-0.01
Support	0.21	0.08***	Recruiting	0.06	-0.01
Paid time off	0.03	0.06***	Hours	0.00	-0.01
Diversity/inclusion	0.21	0.05**	Change	-0.07	-0.01
Autonomy/responsibility	0.10	0.05***	Stress	0.07	-0.02
Career concerns	0.14	0.05***	Skill development	0.06	-0.02
Commissions	0.12	0.05***	Pace	0.05	-0.03
Promotions	0.04	0.05***	Job security	0.19	-0.08***
Office space	-0.02	0.04**	Difficulty	-0.19	-0.10***

Notes: This table reflects coefficients from a linear regression of the firm fixed effects for each amenity on the firm fixed effects for wages, where amenities for each review are calculating without the review-based weights ω_r . Standard errors are bootstrapped. Overall rating weights reflect the first column of Table 3. Significance levels: * 10%, ** 5%, *** 1%.

Table I10: Pass-Through of Sub-Category Ratings to Overall Ratings

	Relation to first difference on overall rating				
	Career opp.	Comp. and benefits	Culture and values	Senior mgmt.	Work life balance
First difference sub-category rating	0.233*** (0.001)	0.107*** (0.001)	0.280*** (0.001)	0.275*** (0.002)	0.120*** (0.001)

Notes: This table displays the coefficients from regressing the change in star rating for the five subcategories collectively on the change in overall star rating for the panel of workers with multiple employer reviews. Sample consists of 587,626 review pairs, and the R^2 is 0.80. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

Table I11: Willingness-to-Pay for Improved Job Satisfaction Using Reported Wages

	1st Wage Quintile	2nd Wage Quintile	3rd Wage Quintile	4th Wage Quintile	5th Wage Quintile
Overall rating	0.054*** (0.003)	0.062*** (0.003)	0.076*** (0.003)	0.106*** (0.003)	0.139*** (0.003)
Log wage	0.642*** (0.027)	1.115*** (0.047)	0.778*** (0.035)	0.668*** (0.033)	0.464*** (0.017)
Observations	69124	68959	69157	69725	68241
Ratio of coefficients	.084	.055	.098	.159	.3
Mean wage	25166	35806	45342	63213	108619
MWP one additional star	2103	1979	4430	10027	32628

Notes: This table reflects ordered probit models of wages and overall job satisfaction ratings on firm tenure following equation 6. Workers are partitioned into quintiles by their (imputed) wages. Sample is restricted to completed job spells for full-time workers. Standard errors are clustered by firm. Significance levels: * 10%, ** 5%, *** 1%.

Table I12: Willingness-to-Pay for Improved Job Satisfaction Controlling for Occupation

	1st Wage Quintile	2nd Wage Quintile	3rd Wage Quintile	4th Wage Quintile	5th Wage Quintile
Overall rating	0.065*** (0.003)	0.067*** (0.003)	0.082*** (0.003)	0.105*** (0.004)	0.132*** (0.004)
Log wage	0.558*** (0.032)	0.901*** (0.066)	0.849*** (0.047)	0.609*** (0.046)	0.456*** (0.021)
Observations	52608	50945	51776	51799	51750
Ratio of coefficients	.116	.074	.097	.172	.288
Mean wage	23992	33541	44688	62082	106569
MWP one additional star	2791	2491	4338	10666	30740

Notes: This table reflects ordered probit models of wages and overall job satisfaction ratings on firm tenure following equation 6 but adding fixed effects for two-digit SOC occupation. Workers are partitioned into quintiles by their (imputed) wages. Sample is restricted to completed job spells for full-time workers for whom their job title can be matched to an SOC occupation. Standard errors are clustered by firm. Significance levels: * 10%, ** 5%, *** 1%.

Table I13: Relation between Wages and Amenities Across Jobs Within Firms

Standardized amenity	Log wage coefficient	Standardized amenity	Log wage coefficient
Customers	0.115***	Managers	0.015***
Pay	0.109***	Career concerns	0.015***
Commissions	0.102***	Communication	0.014***
On-the-job training	0.098***	Residual I	0.009*
Respect/abuse	0.097***	Teams	0.008
Residual II	0.097***	Commuting	0.006
Pay growth	0.083***	Mentoring	0.006
Work schedule	0.078***	Diversity/inclusion	0.006
Short breaks	0.060***	Pace	0.003
Coworkers	0.059***	Experience	0.002
Support	0.045***	Skill development	-0.002
Stress	0.044***	Free food	-0.002
Hours	0.043***	Change	-0.003
Safety	0.042***	Paid time off	-0.004
Autonomy/responsibility	0.040***	Morale	-0.012**
Contracting	0.034***	Retirement contributions	-0.015***
Location	0.032***	Bonuses	-0.017***
Recruiting	0.029***	Culture	-0.017***
Requirements	0.027***	Teleworking	-0.019***
Promotions	0.027***	Difficulty	-0.031***
Office space	0.019***	Industry	-0.034***
Leadership	0.018***	Employee discounts	-0.034***
Fun	0.018***	Health insurance	-0.035***
Work-life balance	0.018***	Job security	-0.054***
Recognition	0.016***	Office politics	-0.086***

Notes: This table reflects coefficients from a regression of worker’s log wages on each amenity’s quality (standardized normal) separately. Sample is the pooled cross-section of workers with both a review and a wage . Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.

Table I14: Coefficients for the Order of Each Observation, Wages and Overall Ratings

	Arrival order of workers’ observations								
	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Log wages	0.039*** (0.001) [46.5]	0.080*** (0.001) [5.7]	0.115*** (0.002) [1.1]	0.143*** (0.004) [0.3]	0.147*** (0.008) [0.1]	0.157*** (0.012) [0.0]	0.181*** (0.020) [0.0]	0.162*** (0.038) [0.0]	0.166*** (0.061) [0.0]
Overall ratings	-0.102*** (0.004) [45.1]	-0.126*** (0.007) [7.1]	-0.159*** (0.012) [1.7]	-0.184*** (0.019) [0.6]	-0.196*** (0.030) [0.2]	-0.154*** (0.046) [0.1]	-0.217*** (0.063) [0.0]	-0.265*** (0.095) [0.0]	-0.514*** (0.153) [0.0]

Notes: This table displays the coefficients on indicators for the order in which the observation is observed when added to equation 1 for log wages and overall ratings. Point estimates are relative to the first observation. Numbers in brackets refer to the percent of the sample attributable to each order position. Standard errors are bootstrapped. Significance levels: * 10%, ** 5%, *** 1%.