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ORIGINAL ARTICLE

The role of the workplace in ethnic wage differentials

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Abstract

Using linked employer–employee data for Britain, we examine ethnic wage differentials among full-time employees. We find substantial ethnic segregation across workplaces. However, this inter-workplace segregation does not contribute to the aggregate wage penalty in Britain. Instead, most of the ethnic wage gap exists within the workplace, between observationally-equivalent co-workers. Lower pay satisfaction and higher levels of skill mismatch among ethnic minority workers are consistent with discrimination in wage-setting on the part of employers. The presence of recognized trade unions and the use of job evaluation schemes within the workplace are associated with a smaller ethnic wage gap. These findings indicate that more attention should be placed on ensuring fairness in wage determination.

1 | INTRODUCTION

The workforce in Britain has become increasingly diverse in recent decades. Whereas non-White ethnic groups accounted for 6 per cent of employees aged 16 and over in 2001, today the figure is 13 per cent (Office for National Statistics, 2022). The growth in the percentage of employees from minority ethnic groups is associated with new waves of in-migration from around the world, together with growth in the population who migrated to Britain one or two generations ago. However, labour market conditions remain challenging for ethnic minorities. Unemployment

and economic inactivity are more prevalent among ethnic minorities of working age than they are among White individuals, and those in employment experience substantial wage gaps, even when one conditions on differences in human capital and other wage-enhancing characteristics (Amadxarif et al., 2020; Blackaby et al., 2002; Dustmann & Theodoropoulos, 2010; Evans, 2020; Longhi & Brynin, 2017; Manning & Rose, 2021).

Such ethnic wage differentials are the product of factors on both the supply and demand sides of the labour market (Dustmann & Fabri, 2003; Hudson et al., 2013; Zwysen & Longhi, 2018). To date, however, none of the quantitative studies examining ethnic wage differentials in Britain have considered the role of the workplace in any detail. In particular, none have sought to investigate the relative importance of between-workplace segregation and within-workplace differences in wage-setting. This is a serious omission because the relative contribution of these two factors to the ethnic wage is relevant in determining whether attention should focus more on hiring practices or on ensuring fairness in wage determination. Evidence for other countries, notably for the United States (e.g. Carrington & Troske, 1998, p. 231), suggests that ethnic wage gaps are primarily a within-firm phenomenon rather than resulting from the segregation of workers of different ethnicities into high- or low-paying firms.

We shed light on this issue using linked employer–employee data from three successive waves of the Workplace Employment Relations Survey (WERS) for 1998, 2004 and 2011. We observe substantial ethnic wage gaps at the level of the whole economy for men and considerable segregation of White and ethnic minority employees across workplaces in Britain. However, segregation across workplaces by ethnicity does not contribute to the aggregate ethnic wage penalty for men: a substantial ethnic wage penalty persists among men, after controlling for workplace-level wage differences. We find no aggregate ethnic wage gap for women (in line with other evidence) but we find that, among women, ethnic minorities are more likely than Whites to work in higher-wage workplaces. A substantial ethnic wage penalty emerges among women after accounting for this between-workplace segregation, although the within-workplace wage gap is smaller in magnitude than that found among men. Each of these findings is in line with Carrington and Troske's (1998) earlier research for the United States.

We show that ethnic minority employees are less satisfied than Whites with their earnings, even after accounting for potential differences in non-pecuniary rewards (such as differences in job autonomy and job security), which might compensate for relatively low wages. We further show that ethnic minorities are more likely to feel over-skilled in their role. The broad picture is consistent with a scenario in which ethnic minority employees are treated unfairly in wage-setting within the workplace.

We go on to explore the role of workplace practices in reducing within-workplace wage gaps. We find that the ethnic wage gap is smaller in workplaces with a recognized trade union. It is also smaller in workplaces with a formal job evaluation scheme—a practice that seeks to establish a rational pay structure in the workplace through a systematic assessment of the relative value (or comparable worth) of different jobs. Together, these findings indicate that more attention should be placed on wage-setting practices as a means of reducing ethnic wage penalties in the labour market.

The remainder of the article proceeds as follows. Section 2 reviews the literature; Section 3 presents the data and our empirical strategy; Section 4 outlines the results on ethnic wage penalties; Section 5 examines evidence of discrimination and Section 6 examines mechanisms that may affect the size of ethnic wage gap. Finally, Section 7 concludes.

2 | LITERATURE

The literature on ethnic wage gaps in Britain indicates substantial heterogeneity in mean hourly wages across ethnic minority groups, as well as between ethnic minorities and White workers, with those differences varying by sex. Among men, Whites tend to earn more than most other ethnic groups, although some minority groups have traditionally earned at least as much as Whites—notably Chinese men (Modood et al., 1997, pp. 112–113). Among women, on the other hand, simple comparisons among employees have often shown ethnic minority women earning more than White women. However, substantial differences across ethnicity in terms of selection into employment make simple comparisons in earnings gaps among women in employment particularly susceptible to biases (ibid.).[1]

Simple differences in mean earnings across ethnic groups may, of course, reflect a number of factors, including education, social and cultural norms, and potentially discriminatory behaviour on the part of employers affecting ethnic minority individuals' ability to fully utilize the skills they possess in the British labour market. Studies that control for differences in the personal characteristics that employees bring to the labour market have tended to find that, among men, residual (covariate-adjusted) pay gaps are larger for Black men and Pakistani or Bangladeshi men than Indian men (Henehan & Rose, 2018; Longhi & Brynin, 2017; Manning & Rose, 2021). Residual pay gaps tend to be smaller among female employees than among male employees and exhibit less heterogeneity across ethnic groups, although Bangladeshi women are often found to experience the largest gap (Henehan & Rose, 2018; Longhi & Brynin, 2017; Manning & Rose, 2021).[2] Despite suggestions to the contrary (Commission on Race & Ethnic Disparities, 2021, pp. 106, 111), there is little evidence that such ethnic pay gaps have narrowed in recent decades (Longhi & Brynin, 2017; Manning & Rose, 2021). This is despite legislation outlawing discrimination in employment on the basis of race or ethnicity having been on the statute book in the UK for over 50 years.[3]

A large part of the theoretical literature seeking to explain these residual wage gaps focuses on discrimination on the demand side of the labour market. Becker's (1971) classic model of taste-based discrimination locates the origin in employers' own prejudicial tastes or those of incumbent employees or customers. Other models of discrimination focus on imperfect information (Phelps, 1972), suggesting that employers use ethnic stereotypes to make probabilistic judgments about the productivity of individual workers ('statistical discrimination'), causing the outcomes of hiring or wage-setting to vary by ethnicity. In perfectly competitive labour markets, such discrimination will lead to complete segregation but no wage gap. However, the existence of search frictions is sufficient to create the conditions under which a variety of employers (not only the prejudiced) will offer lower wages to ethnic minorities (Black, 1995).[4]

There is persuasive evidence that employers discriminate on the basis of ethnicity when hiring, although empirical studies are often not able to discern whether it is motivated by prejudice or information deficits. Heath and Di Stasio (2019) review 13 field experiments undertaken in the British labour market between 1967 and 2017 and conclude that hiring discrimination is an important and enduring feature of the British labour market: job applicants from ethnic minority groups typically have to submit 50 per cent more job applications to achieve the same number of successes as an equivalent White British applicant.[5] As in the United States (Hersch, 2008), discrimination against ethnic minorities is primarily based on skin colour: applicants from White minority groups face higher success rates than non-White minorities, who tend to face similar 'hiring' probabilities irrespective of the non-White group to which they belong (Heath &

Di Stasio, 2019, p. 1789). Hiring discrimination of this type clearly has the potential to skew the allocation of workers across workplaces by virtue of their ethnic group.

Inter-workplace segregation may also occur if job applicants perceive that intolerant employers might discriminate against them (Small & Pager, 2020, pp. 62–63). Avery and McKay (2006) review evidence showing that employers who signal diversity and tolerance in their recruitment materials attract higher levels of applications from women and ethnic minorities. Such 'organizational impressions' need not necessarily be accurate to affect job seekers' behaviour; indeed, it is well established that organizational policy on equality, diversity and inclusion does not always translate into practice (Hoque & Noon, 2004).

Any such inter-workplace segregation—whether caused by the actions of employers or the perceptions of job applicants—has the potential to affect aggregate ethnic wage differentials if the resulting pattern of segregation is correlated with the size of any firm-specific wage premia. There is now an extensive literature that demonstrates the presence of a firm-specific component to wages, distinguishing it from wage differences caused by worker heterogeneity (see Abowd et al., 1999), and a growing body of literature that seeks to explore the role of firm and workplace wage premia in generating wage inequality (e.g. Barth et al., 2016; Card et al., 2013; Faggio et al., 2010; Schaeffer & Singleton, 2019; Song et al., 2019).

In the presence of firm-specific wage premia, an ethnic wage gap may arise in favour of Whites if they are more likely than ethnic minorities to be hired by high-wage firms. Alternatively, ethnic minorities may sort disproportionately into high-wage workplaces if more-tolerant employers also offer higher wages, as might be the case when firms are seeking to send positive signals to job seekers in tight labour markets or if firms benefit financially from having socially responsible employment practices (Dineen & Allen, 2016; Edmans, 2011). The higher concentration of ethnic minorities in urban areas, which tend to be characterized by relatively high wages (Yankow, 2006), would generate a similar positive association between firm wages and ethnicity. In these instances, failure to take full account of where people work would lead to a biased assessment of the extent to which there is differential treatment of like workers.

Evidence suggests that workers are treated differently within some workplaces on the basis of their ethnicity. Wheatley and Gifford (2019, p. 38) report evidence from a survey of 5000 employees in the UK, in which 13 per cent of non-White employees reported experiences of unfair treatment at their current workplace, compared with 5 per cent of White employees. Here, unequal treatment is taken to comprise discrimination as well as offensive or threatening behaviour. Survey evidence from Heath and Cheung (2006, pp. 37–38) focuses specifically on unfair treatment in promotion or job advancement, experienced by 21 per cent of ethnic minority male employees but only 14 per cent of White males (the rates among women were 18 per cent and 11 per cent, respectively). One may question the validity of these self-reported data. However, studies of firms' personnel decisions also reveal evidence of bias in promotions and dismissals (Giuliano et al., 2011) and there are numerous cases of employees bringing successful claims for discrimination based on race or ethnicity.[6]

We know from existing studies for Britain that the workplace plays an important role in explaining wage gaps across other groups, such as men and women. For example, using the same series of WERS surveys that we use in this article, Mumford and Smith (2007) and Theodoropoulos et al. (2022) show that workplace segregation and within-workplace wage differentials are a key source of disadvantage for women. However, no prior studies have examined the relative importance of inter-workplace segregation and intra-workplace differences in wage-setting when seeking to understand ethnic wage gaps in Britain.

The issue is important because gauging the relative contribution of inter-workplace segregation and intra-workplace differences in wage-setting is relevant in guiding policy responses. If the wages of observationally-equivalent ethnic minority and White workers differ because of non-random segregation into different workplaces, this would suggest that laws to combat hiring discrimination need to be strengthened, or that more needs to be done to encourage ethnic minorities to apply to a wider range of firms. If on the other hand, most of the wage gap arises within firm, this would suggest that new policies are needed to ensure fairness in wage determination, for instance, making pay systems and promotion processes more transparent so that instances of unequal pay for work of equal value can be more easily identified and challenged.

Evidence on the importance of inter-workplace segregation and intra-workplace differences in wage-setting does exist outside Britain, however. Prominent examples are Carrington and Troske (1998) and Hellerstein and Neumark (2008). Many of these international studies suggest that intra-workplace differences are the major component of the aggregate ethnic wage gap.

Using linked employer–employee data from the manufacturing sector in the United States for the late 1980s and early 1990s, Carrington and Troske (1998) regress wages on a set of workplace fixed effects after controlling for workers' personal characteristics. They find that none of the Black/White wage gap is accounted for by the allocation of Black workers to workplaces that pay below-average wages. In fact, there is a weak degree of positive allocation into high-wage workplaces, such that the within-workplace wage gap is slightly larger than the aggregate wage gap in their different specifications. The effect is stronger for women than for men. Carrington and Troske conclude that the White–Black wage gap in the United States is primarily a within-workplace phenomenon, as opposed to a between-workplace phenomenon (p. 257). They find that around half of the within-workplace wage gap for men or women is accounted for by observed characteristics, such as education or experience, but a significant component remains unexplained.

Hellerstein and Neumark (2008) draw similar conclusions about the nature of Black/White wage differentials in the United States from their analysis of linked employer–employee data for 1990. Their data extend beyond manufacturing. They find that accounting for the non-random allocation of Black and White workers across workplaces (via the inclusion of workplace fixed effects) increases the Black wage penalty relative to Whites, suggesting that Black workers tend to work in higher-paying workplaces. Within workplaces, the Black wage penalty relative to similarly educated Whites is 16 log points confirming that within-workplace differentials play an important role in Black/White wage gaps in the United States. Hellerstein and Neumark (2008) provide contrary evidence for Hispanics, finding that this group tends to be over-represented in lower-paying workplaces. However, this accounts for less than one tenth of the overall wage gap so that, once again, the within-workplace wage penalty (22 log points, conditioning on language skills), is the main contributor to aggregate wage differentials.

Similar studies have been undertaken for Canada by Pendakur and Woodcock (2010) and for Brazil by Gerard et al. (2021). Pendakur and Woodcock (2010) use data from the Workplace and Employment Survey and focus on Canadian-born visible minorities. They find that men from minority groups are slightly over-represented in higher-wage firms but face a substantial within-firm mean wage gap of around five percentage points. Women from minority groups are over-represented in lower-paying firms, accounting for around one quarter of their economy-wide wage gap. The within-firm wage gap for minority women is around six percentage points. Finally, Gerard et al. (2021) use an administrative dataset that covers almost all formal jobs in Brazil over the period 2002–2014. They find that non-Whites are more likely to work at workplaces that pay

less to all ethnic groups. In their case, this accounts for around one fifth of the White–non-White wage gap for both men and women.[7]

These international studies are informative in pointing to the importance of ethnic segregation in the labour market and the ethnic wage gaps that exist within workplaces. However, it is unclear how they might translate to the setting in Britain for at least two reasons. First, they focus on ethnic groups that only partially overlap with those ethnic groups that are prevalent in Britain. Second, the United States, Canada and Brazil each have quite different labour market features and institutions Britain, including differences in the spatial concentration of ethnic groups, the geographical mobility of workers and the role played by unions and other institutions such as minimum wages; each of these might affect the size of ethnic wage gaps.

Following these studies, we use linked employer–employee data to explore the nature of ethnic wage gaps in Britain. All existing studies of ethnic wage gaps in Britain have relied on household surveys and thus have been unable to speak directly to the questions that we investigate. We examine ethnic wage gaps in Britain using ordinary least squares (OLS) and workplace fixed-effects models, using various measures of ethnicity, and for men and women separately. We go on to examine whether ethnic wage gaps are plausibly the result of unfair treatment in wage-setting within the workplace. Finally, we seek to identify workplace practices that are associated with smaller ethnic wage gaps.

3 | DATA AND ESTIMATION

3.1 | Data

We pool three linked employer–employee datasets for 1998, 2004 and 2011, using the most recent waves of the British WERS series (Department of Trade & Industry, 2007, 2014; Department for Business, Innovation & Skills, 2015). WERS is a nationally representative, linked employer–employee survey covering all workplaces with five or more employees (10 or more in 1998) and all industries with the exception of agriculture, forestry, fishing, mining and quarrying. The surveys link workplace-level data collected from senior managers with questionnaires issued to 25 randomly selected employees in each workplace, or to all employees in workplaces with fewer than 25.[8] This link makes it a very rich dataset, offering workplace-level and firm-level control variables that are not typically available in household or employee-only surveys, and an array of workplace and employee-level characteristics that would not typically be found in linked employer–employee datasets derived from administrative sources.[9]

As noted above, the 2004 and 2011 surveys contain workplaces with five to nine employees, but the population from which the 1998 survey is drawn is workplaces with 10 or more employees. We do not enforce this restriction on the 2004 and 2011 survey samples, preferring the larger sample sizes. Our analyses are, however, restricted to full-time employees (those who work more than 30 hours per week). Part-time workers are omitted, as the population of part-time employees is known to be particularly heterogeneous.

The employee survey provides information on a range of personal characteristics, including ethnicity, in addition to a range of job characteristics including wages. Employees are asked to categorize their ethnicity into one of a number of groups. The number of categories differs across the surveys (nine in 1998; 16 in 2004; 17 in 2011), as more detail was sought with time. However, it is possible to generate a consistent classification containing eight ethnic groupings. Table 1 shows the estimated share of employees within each of these eight ethnic groups in each survey year,

TABLE 1 Distribution of employees by ethnic group

	WERS 1998 Share (obs.) (1)	WERS 2004 Share (obs.) (2)	WERS 2011 Share (obs.) (3)	Pooled sample Share (obs.) (4)	Pooled sample Male Share (obs.) (5)	Pooled sample Female Share (obs.) (6)
White	0.962	0.936	0.912	0.937	0.940	0.932
	(n = 18,716)	(n = 14,645)	(n = 12,922)	(n = 46,283)	(n = 26,330)	(n = 19,953)
Black Caribbean	0.007	0.007	0.009	0.008	0.007	0.009
	(n = 153)	(n = 106)	(n = 118)	(n = 377)	(n = 176)	(n = 201)
Black African	0.004	0.010	0.012	0.008	0.008	0.010
	(n = 93)	(n = 136)	(n = 141)	(n = 370)	(n = 189)	(n = 181)
Black Other	0.002	0.005	0.006	0.004	0.004	0.005
	(n = 45)	(n = 76)	(n = 73)	(n = 194)	(n = 88)	(n = 106)
Indian	0.011	0.019	0.025	0.019	0.019	0.019
	(n = 197)	(n = 261)	(n = 295)	(n = 753)	(n = 426)	(n = 327)
Pakistani/Bangladeshi	0.004	0.006	0.010	0.007	0.007	0.006
	(n = 68)	(n = 81)	(n = 123)	(n = 272)	(n = 176)	(n = 96)
Chinese	0.002	0.003	0.005	0.003	0.002	0.004
	(n = 29)	(n = 45)	(n = 50)	(n = 124)	(n = 49)	(n = 75)
Other ethnic group	0.009	0.014	0.021	0.015	0.014	0.016
	(n = 185)	(n = 212)	(n = 258)	(n = 655)	(n = 342)	(n = 313)
All non-white	0.038	0.064	0.088	0.063	0.060	0.068
	(n = 770)	(n = 917)	(n = 1,058)	(n = 2,745)	(n = 1,446)	(n = 1,299)
All employees	1.000	1.000	1.000	1.000	0.608	0.392
	(n = 19,486)	(n = 15,562)	(n = 13,980)	(n = 49,028)	(n = 27,776)	(n = 21,252)

Note: The first value in each cell shows the share of employees in each ethnic group, after using the employee weights to obtain population estimates. In parentheses, we show the (unweighted) number of observations for each group. In 1998 WERS, we have 'Another ethnic group'. In 2004, our 'Other ethnic group' consists of 'Any other ethnic group', 'Any other Asian background', 'Any other mixed background' and 'White and Asian'. In 2011, our 'Other ethnic group' consists of 'Any other ethnic group', 'Arab', 'Any other Asian background', 'Any other mixed background' and 'White and Asian'. Column 1 excludes workplaces with between five and nine employees, as the 1998 WERS did not incorporate small workplaces.

along with the unweighted number of employee observations in the dataset.[10] In most of our analysis, however, we focus on the distinction between Whites (defined as those belonging to the White ethnic group) and non-Whites (defined as those belonging to all other ethnic groups). This binary distinction recognizes that the sample sizes for specific ethnic groups are relatively small, and maintains consistency with the employer-provided data on the share of ethnic minority employees at the workplace, which is not disaggregated by ethnicity. In the population covered by our sample, the share of employees belonging to a non-White ethnic group increased from 3.8 per cent in 1998 to 8.8 per cent in 2011. The data do not allow us to distinguish between employees born in Britain and those born abroad. Immigrants are therefore included alongside British-born employees in both the White and non-White groups.

Employees were asked 'How much do you get paid for your job here, before tax and other deductions are taken out? If your pay before tax changes from week to week because of overtime, or because you work different hours each week, think about what you earn on average'. In the 2011 WERS survey, respondents report within 14 bands representing earnings ranging from 'less than £60 per week/£3120 per year' to '£1051 or more per week/£54061 per year'.[11]

As wages are only observed within ranges, we use mid-points across the ranges. The highest band is open-ended, so we top-code it equal to 1.5 times its lower bound. Employees are also asked to report their usual weekly working hours, including overtime (a continuous measure). Our dependent variable is the log hourly wage, which is constructed by dividing the mid-point of the weekly earnings interval by the usual number of working hours per week.[12]

The employer survey provides information on the ethnic composition of the workplace, identifying the total number of employees belonging to a non-White ethnic group. It does not seek to decompose this total into specific ethnic groups or by gender. We use these data to investigate the characteristics of workplaces employing higher or lower shares of non-White employees, exploring the salience of geographical location, workforce composition, workplace size, industry sector and ownership characteristics. The employer also provides information on a number of other aspects of workforce composition, including the share of female employees, the share of younger and older employees, and the shares in each of the nine Major Groups of the UK's *Standard Occupational Classification (2000)* (Office for National Statistics, 2000).[13]

In Figure 1, we use the workplace-level and employee-level data to show the distribution of workplaces and employees according to the workplace share non-White. All estimates are weighted to be representative of the population covered by WERS. Around three-fifths (63 per cent) of workplaces in Britain do not employ any non-White employees; many of these are small workplaces—an issue that we explore in more detail in Section 4. In most workplaces that employ some non-White employees, these employees typically comprise less than 10 per cent of the workforce; non-Whites comprise a majority of the workforce in just 2 per cent of all workplaces. The degree of segregation of White and non-White employees across workplaces is further shown by the fact that the distribution of White employees is shifted to the top of the graph, while the distribution of ethnic minority employees is shifted substantially to the bottom in comparison.

3.2 | Estimation

We begin by investigating patterns of workplace-level segregation in more detail. We use the data provided by the workplace manager on the share of all employees belonging to a non-White ethnic group (*ShareNonWhite*) and run a type II Tobit estimator (Amemiya, 1984) to estimate this share as a function of workplace characteristics. The use of a Tobit specification recognizes that

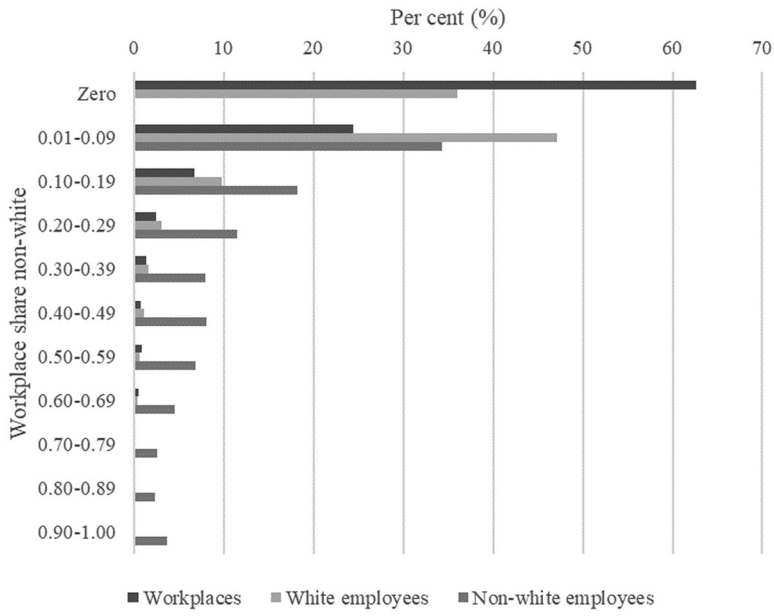

FIGURE 1 Distribution of workplaces, White employees and non-White employees by workplace share non-White

each workplace has a latent propensity to employ one or more non-White employees, which we take primarily to be a function of its location and size, but also a function of its choice of industry, occupational mix and ownership characteristics. In geographic areas (such as the East of England) where there are relatively few non-Whites within the resident population, the latent propensity may be sufficiently low as to imply that a substantial share of workplaces will employ no non-White employees at all at a given point in time—even in the absence of hiring discrimination. In geographic areas (such as London) where non-Whites comprise a relatively high share of the resident population, they remain a minority (Office for National Statistics, 2020), so small workplaces may again find themselves without any non-White employees. These propensities based on location and workplace size may be raised or lowered depending on whether the workplace is operating in an industry—or recruiting from occupations—in which non-White employees are over or under-represented. Ownership characteristics may be relevant insofar as they are correlated with employers' attitudes towards the employment of non-Whites.[14] The Type II Tobit model allows these employer characteristics to behave in different ways across the intensive and extensive margins, as might be the case if there are some employers who, by virtue of their own prejudices or those of their incumbent employees or customers, would never employ a non-White employee.[15] We pool all 3 years of data, but include year dummies in all regressions to account for time trends. The set of workplace characteristics includes the following controls: workplace size (number of employees) in six categories (omitted category: 1,000 or more employees); private-sector workplace; whether the workplace is one of a number of different workplaces in the UK belonging to the same organization, or is a single independent workplace not belonging to another body (omitted category: sole UK workplace of a foreign organization); whether it is a foreign-owned workplace; the degree of competition as captured by indicators of whether the workplace has many competitors (more than 5), or few competitors (5 or less); the share of female employees; the share working part-time; the share who are trade union members; the share aged 50 or

over; the share aged between 18 and 21; eight dummies capturing the largest occupational group in the workplace (omitted category: largest occupational group routine/unskilled occupations); eleven industry dummies (omitted category: other community services) and nine region dummies (omitted category: Yorkshire and Humberside).

Having examined the workplace characteristics associated with the employment of non-White employees, we then go on to explore the extent to which segregation by ethnicity may be allocating non-Whites into high- or low-wage workplaces. We compute the mean residual wage- for each workplace in each year (the mean wage net of differences in worker characteristics) and take this as a measure of the workplace component of wage-setting for its workers. We then regress this mean residual wage on the share non-White in the workplace via OLS. The specification is as follows:

$$\overline{Residual\ Wage_j} = \beta_0 \quad + \beta_1 ShareNonWhite_j + \vartheta_t + \varepsilon_j, \tag{1}$$

where $ShareNonWhite_j$ is the share of employees in workplace j that belong to a non-White ethnic group—entered as a linear or non-linear term in alternative specifications. ϑ_t is a vector of survey-year fixed effects and ε_j is the disturbance term. The coefficient β_1 shows whether workplaces with a higher share of non-White employees tend to pay higher or lower wages on average and thus provides a first indication of whether workplace-level segregation by ethnicity contributes to the aggregate ethnic wage gap.

Thereafter, the major part of our analysis focuses on the analysis of wages at the employee level. We run OLS regressions of log hourly wages, treating men and women separately, as the literature (e.g. Evans, 2020; Longhi & Brynin, 2017) indicates that ethnic wage gaps differ substantially by gender.[16] Again, we pool all 3 years of data, but include year dummies in all regressions to account for time trends.

Initially, we present raw wage gaps between White and non-White employees. Coefficients show the raw gap in log hourly wages between White workers, who are the reference category, and non-White workers. These are followed by conditional wage gaps where we condition on a range of employee- and workplace-level controls as listed below. The specification is as follows:

$$\log y_{i(j)} = \log\left(\frac{w_{i(j)}}{h_{i(j)}}\right) = \beta_0 \quad + \beta_1 \xi_{i(j)} + \beta_2' X_{i(j)} + \beta_3' W_j + \vartheta_t + \varepsilon_{i(j),} \tag{2}$$

where i indexes employees and j indexes workplaces. Note that $\log y_{i(j)}$ is the log hourly wage, constructed by dividing the mid-point of the weekly earnings interval by the usual number of working hours per week, $\xi_{i(j)}$ is a categorical variable indicating worker i's ethnicity in workplace j, $X_{i(j)}$ is a vector of observed employee covariates, W_j is a vector of observed workplace covariates, ϑ_t is a vector of survey-year fixed effects and $\varepsilon_{i(j)}$ is the disturbance term. We estimate this model using OLS; however, the results are robust to the use of interval regression (Stewart, 1983); estimates are available upon request.

The vector $X_{i(j)}$ includes the following controls: age, age squared/100, married or living with a partner, having dependent children in the age group 0–18, having a disability (long term illness or health problem that affects the amount or type of work one can do), five educational qualification dummies (omitted category: no academic qualification), having a vocational qualification, tenure, tenure squared/100, being a union member, having a permanent or a temporary job (omitted category: fixed period job with an agreed end date), and eight occupational dummies (omitted

category: routine/unskilled). The vector W_j is specified in the same way as for the workplace-level analyses of *ShareNonWhite*.

We supplement these OLS regressions with workplace fixed-effects estimates, exploiting the fact that we have multiple employee observations per workplace (on average approximately 10). In these models, we estimate the average size of ethnic wage gaps within the workplace, setting to one side the potentially non-random selection processes that lead to individuals of different ethnicities sharing the same workplace. The value in running these estimates is that they remove the effects of wage differentials between workplaces, which might be driven, at least in part, by unobserved workplace characteristics. The specification is as follows:

$$\log y_{i(j)} = \log\left(\frac{w_{i(j)}}{h_{i(j)}}\right) = \beta_0 + \beta_1 \xi_{i(j)} + \beta_2' X_{i(j)} + \lambda_j + \vartheta_t + \varepsilon_{i(j)}, \quad (3)$$

where λ_j is a vector of workplace fixed effects.

In the presentation of the results of Equations (2) and (3), we use Gelbach's decomposition (Gelbach, 2016) to show the contribution of different sets of employee and workplace characteristics in explaining the ethnic wage gap. We drop observations with missing information on wages, hours of work or the share of ethnic minority employees in the workplace. Because some control variables still have missing observations, we recode missing observations to their mean values and add a dummy variable to identify those observations.[17] Our final sample consists of 49,028 employees clustered in 5052 workplaces across the private and public sectors. Some 1365 of these workplaces provide employee observations from Whites and non-Whites; in these workplaces the mean number of White observations is 10, while the mean number of non-White observations is two. We use the full sample of 5052 workplaces in our estimation of equation (3). However, sensitivity tests that replicate the analyses using only those workplaces with employee observations from White and non-White workers are not substantively different and generate the same conclusions.

To correct for the use of variable probabilities of selection within the WERS sample design, and any observable non-response bias, our analyses use the workplace-level and employee-level weights that are provided with the survey data (see Forth & Freeth, 2014). Standard errors account for the clustering of employee observations within workplaces.

4 | RESULTS

We begin by examining the segregation of White and non-White employees across workplaces in Britain, using data from the employer component of the WERS survey on the share of all employees at the workplace who are from a non-White ethnic group.

The results from the type II Tobit estimator are shown in Table 2. As noted earlier, we allow employer characteristics to have different associations with the extensive margin (shown by the selection equation in column 1) and the intensive margin (shown in column 2). All statistically-significant coefficients have the same sign in both equations, but the association with workplace size is notably different. Small workplaces are particularly unlikely to employ any non-White employees (column 1)—a situation that can be expected when most job applicants are White.[18] However, in workplaces where at least one employee is non-White, the share of non-White employees also generally increases with workplace size, being highest in the very largest workplaces (those with 1000 or more employees) (column 2). These results indicate that the largest

TABLE 2 Type II Tobit model of the share non-White at the workplace

	(1) Extensive margin Selection	(2) Intensive margin Ln(Share Ethnic Minority)
Workplace size (Ref. 1000 or more employees)	Ref.	Ref.
Workplace size (≥5 to ≤24 employees)	−3.121***	−0.636***
	(0.216)	(0.162)
Workplace size (≥25 to ≤49 employees)	−2.573***	−0.760***
	(0.219)	(0.141)
Workplace size (≥50 to ≤99 employees)	−2.043***	−0.673***
	(0.214)	(0.125)
Workplace size (≥100 to ≤249 employees)	−1.501***	−0.675***
	(0.213)	(0.123)
Workplace size (≥250 to ≤499 employees)	−0.773***	−0.335***
	(0.222)	(0.130)
Workplace size (≥500 to ≤999 employees)	−0.567**	−0.404***
	(0.231)	(0.147)
Organizational structure (Ref. sole UK workplace of a foreign organization)	Ref.	Ref.
Part of a larger organization	0.210	0.167
	(0.165)	(0.247)
Single independent workplace	0.020	−0.078
	(0.170)	(0.255)
Private sector	0.154	0.153
	(0.111)	(0.171)
Foreign owned/controlled	0.072	0.264*
	(0.110)	(0.158)
Number of competitors (Ref. None)	Ref.	Ref.
Few competitors	−0.113	−0.097
	(0.088)	(0.133)
Many competitors	−0.022	0.046
	(0.089)	(0.134)
Share females	−0.175	−0.215
	(0.157)	(0.235)
Share part time	−0.086	0.136
	(0.133)	(0.209)
Share of employees who belong to a union	0.076	0.287*
	(0.112)	(0.164)
Share of employees over 50 years old	−0.992***	−1.504***
	(0.175)	(0.280)
Share of employees aged 18–21	0.273	0.235
	(0.242)	(0.367)

(Continues)

TABLE 2 (Continued)

	(1) Extensive margin Selection	(2) Intensive margin Ln(Share Ethnic Minority)
Largest occupational group (Ref. Routine unskilled)	Ref.	Ref.
Largest occupational group—Managerial staff	0.151	0.283
	(0.179)	(0.267)
Largest occupational group—Professional staff	0.225	0.158
	(0.142)	(0.216)
Largest occupational group—Technical staff	0.134	0.062
	(0.132)	(0.195)
Largest occupational group—Administrative staff	0.241*	0.323*
	(0.127)	(0.185)
Largest occupational group—Skilled trade staff	−0.189	−0.288
	(0.136)	(0.201)
Largest occupational group—Personal service staff	−0.020	−0.009
	(0.131)	(0.200)
Largest occupational group—Sales staff	0.275**	0.357**
	(0.118)	(0.163)
Largest occupational group—Process operative staff	0.027	0.153
	(0.139)	(0.202)
Industry sector (Ref. Other community services)	Ref.	Ref.
Manufacturing	−0.009	−0.084
	(0.150)	(0.209)
Utilities (electricity, gas, water)	−0.317*	−0.744***
	(0.176)	(0.221)
Construction	−0.210	−0.436*
	(0.164)	(0.225)
Wholesale and retail	0.099	0.105
	(0.132)	(0.193)
Hotels and restaurants	0.302**	0.391*
	(0.146)	(0.211)
Transport and communication	0.090	0.042
	(0.154)	(0.216)
Financial services	−0.082	−0.002
	(0.167)	(0.228)
Other business services	0.224*	0.333*
	(0.126)	(0.178)
Public administration	0.134	0.091
	(0.171)	(0.249)
Education	0.113	0.020
	(0.162)	(0.247)

(Continues)

TABLE 2 (Continued)

	(1) Extensive margin Selection	(2) Intensive margin Ln(Share Ethnic Minority)
Health	0.704***	0.813***
	(0.134)	(0.196)
Region (Ref. Yorkshire and Humberside)	Ref.	Ref.
North	−0.467***	−0.939***
	(0.157)	(0.248)
North West	0.129	−0.015
	(0.132)	(0.207)
East Midlands	0.192	0.106
	(0.138)	(0.217)
West Midlands	0.586***	0.788***
	(0.141)	(0.217)
East Anglia	−0.100	−0.321
	(0.180)	(0.292)
South-East	0.625***	0.848***
	(0.116)	(0.182)
South-West	−0.244*	−0.515**
	(0.144)	(0.222)
Wales	−0.365**	−0.883***
	(0.176)	(0.259)
Scotland	−0.491***	−0.954***
	(0.146)	(0.228)
Years (Ref. 1998)	Ref.	Ref.
Year 2004	0.163**	0.424***
	(0.071)	(0.100)
Year 2011	0.231***	0.682***
	(0.072)	(0.105)
Dummy for missing union density	0.132	0.125
	(0.089)	(0.114)
Dummy for missing age 50 and over	0.172	0.253
	(0.203)	(0.247)
Dummy for missing age 18–21	0.131	0.317
	(0.203)	(0.272)
/lnsigma		0.369***
		(0.038)
/athrho		2.295***
		(0.219)

(Continues)

TABLE 2 (Continued)

	(1) Extensive margin Selection	(2) Intensive margin Ln(Share Ethnic Minority)
sigma		1.446***
		(0.055)
rho		0.980***
		(0.009)
lambda		1.417***
		(0.065)
Observations		6818
Log pseudo-likelihood		−0.392
Pseudo R^2		0.151

Note: Estimates are weighted using workplace level weights. Robust standard errors are in parentheses. Levels of significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. A Wald test suggests that all parameter estimates are jointly statistically significant $\chi^2(100) = 3652.09$, p-value < 0.0001.

workplaces may be more attractive to (or better at attracting) non-White employees than smaller workplaces, a point that we return to below.

The residential concentration of ethnic minorities in London, the West Midlands and (to a lesser extent) other urban areas, naturally also has a strong bearing on the composition of workplaces. The workplace share of non-White employees is highest in the South-East and West-Midlands, and lowest in the North, Scotland and Wales. The nine Standard Statistical Regions are jointly statistically significant at the 1 per cent level.[19]

Carrington and Troske (1998) concluded that in the US labour market, the allocation of employees to workplaces by ethnicity is random conditional on their residential location. In our case, the share of non-White employees differs systematically across a number of other workplace characteristics after controlling for workplace location and workplace size. The share of non-White employees is notably higher in workplaces with a younger workforce, those in which the core group of employees are sales staff, and in those operating in the Hotels and Restaurants sector, Other Business Services and the Health sector.

We cannot determine the extent to which this workplace segregation by ethnicity arises as a function of ethnicity-related differences in preferences for particular occupations or industries or as a function of employer demand. The Health sector, which we show has a relatively high share of ethnic minority employees, appears to be characterized by relatively low levels of self-reported prejudice on the part of employers and managers (Heath & Cheung, 2006). However, it also has a long history of recruitment from overseas—particularly from India and South-East Asia—due to domestic shortages in the supply of nurses and doctors.

The positive relationship between the share of non-White employees and workplace size is suggestive of some degree of allocation into high-wage workplaces (there is an extensive literature that identifies a large-firm wage premium: see Green et al., 2021; Troske, 1999). We investigate the relationship between the share non-White and workplace-level wage premia more formally by using the method set out in Subsection 3.2. We first regress each employee's log hourly wage on a set of employee characteristics: ethnicity, gender, age, age-squared, educational level and occupation. We then compute the mean residual wage for each workplace and regress this on the

TABLE 3 OLS regression of average residual wage in the workplace on share non-White

	(1)	(2)
Share Non-White—Continuous	0.279***	
	(0.100)	
Share Non-White—Categorical (ref. None)		
>0%–6%		0.040**
		(0.019)
6.01%–12%		0.054
		(0.042)
12.01% or more		0.081**
		(0.037)
Observations	5052	5052
Adjusted R^2	0.0142	0.0132

Note: The dependent variable is the mean residual wage for each workplace. The only other control variables are survey-year dummies. Estimates are weighted using workplace level weights. Robust standard errors are in parentheses. Levels of significance: ***$p < 0.01$, **$p < 0.05$.

share non-White in the workplace. The results are shown in columns 1 and 2 of Table 3. When we enter the share non-White at the workplace as a linear term, the coefficient implies that a 10-percentage-point increase in the workplace share non-White is associated with an increase of 2.8 percentage points in the average residual wage. The results in columns 1 and 2 show that workplaces employing larger shares of ethnic minority workers have higher average wages after accounting for differences in workforce composition. This indicates that inter-workplace segregation by ethnicity may be acting to raise the average wage of non-White employees relative to White employees, thereby compressing the ethnic wage penalty seen in aggregate. We are unable to tell with these workplace-level data how these patterns may differ by gender, however, as the workplace manager is not asked to report on the share of non-White employees among men and women separately.

We turn to examine the ethnic wage gap in detail in Table 4, where we present the results of regressing employees' individual log hourly wages on a non-White dummy and various control variables. Panels A and B of the table present results for men and women separately; the results for a combined sample are also shown in Panel C. Column 1 presents the unconditional ethnic wage gap in the pooled 1998–2011 sample after accounting for time trends. Starting with male employees, we find an all-economy ethnic wage gap of –0.101 log points among full-time male employees. This gap stands at –0.130 log points in column 2 after controlling for employee, job and workplace characteristics. The addition of controls serves to improve the explanatory power of the model considerably: the adjusted R^2 increases from 0.138 to 0.600. In column 3, we take advantage of the clustered nature of our employee survey by controlling for workplace fixed effects, obtaining a further improvement in explanatory power. We have thereby removed the influence of wage differences between workplaces, such that the coefficient of –0.108 log points in column 3 can be interpreted as the mean within-workplace ethnic wage gap after accounting for differences in observed employee characteristics. The main result here is that, on average, male non-White employees experience a sizeable pay penalty of around 11 percentage points when compared with observationally-equivalent male White employees in the same workplace. The segregation of Whites and non-Whites across workplaces does not then contribute to the

TABLE 4 Ethnic wage gaps among full-time employees

	(1) Unconditional	(2) Conditional	(3) Workplace FE
Panel A: Male			
Non-White	−0.101***	−0.130***	−0.108***
	(0.026)	(0.016)	(0.015)
Observations	27,776	27,776	27,776
Adjusted R^2	0.138	0.600	0.707
Panel B: Female			
Non-White	−0.007	−0.075***	−0.069***
	(0.028)	(0.016)	(0.016)
Observations	21,252	21,252	21,252
Adjusted R^2	0.170	0.590	0.685
Panel C: All			
Non-White	−0.065***	−0.112***	−0.094***
	(0.021)	(0.012)	(0.010)
Observations	49,028	49,028	49,028
Adjusted R^2	0.143	0.595	0.689

Note: The dependent variable is the individual's log hourly wage. Column 1 includes survey year dummies only. Column 2 adds employee and workplace covariates, as described in Subsection 3.2. Column 3 replaces observed workplace characteristics with workplace fixed effects. Estimates are weighted using individual level weights. Robust standard errors are in parentheses. Levels of significance: ***$p < 0.01$.

aggregate ethnic wage gap for men; instead, the pay gap is a function of wage-setting within the workplace.

We use the decomposition method developed by Gelbach (2016) to identify the impact of specific sets of covariates on the aggregate ethnic wage gap for men. The results are presented in columns 1–5 of Table 5. Taken together, differences in personal and job characteristics widen the ethnic wage gap for men by around 3 log points (in other words, the ethnic wage penalty would be smaller if these were equalized). Differences in education narrow the gap by a corresponding amount, due to the higher share of non-Whites with degree-level qualifications. The segregation of White and non-White men by region has the effect of narrowing the wage gap by an additional 4 log points, but other workplace characteristics (largely unobserved) have a similar effect in the opposite direction.

Panel B of Table 4 presents estimates of the ethnic wage gap for women. Here, there is no unconditional economy-wide pay gap. This is a familiar finding (see Evans, 2020). However, a pay gap emerges in our data after controlling for personal, job and workplace characteristics (column 2). The pay gap is of similar magnitude after controlling for fixed unobserved workplace traits (column 3). The ethnic wage gap of –0.069 log points in column 3 of Table 4 is not as large as for men but, again, the main takeaway from this analysis is that female non-White employees experience a sizeable pay penalty, on average, when compared with observationally equivalent female White employees in the same workplace.

The decomposition results shown in columns 6–10 of Table 5 indicate that the wage penalty for women widens with controls primarily due to the role of workplace characteristics. The greater

TABLE 5 Decomposition of the ethnic wage gap among full-time employees, by gender

	Male employees					Female employees				
	Base	Conditional		Workplace FE		Base	Conditional		Workplace FE	
	β_1	β_1	Explained	β_1	Explained	β_1	β_1	Explained	β_1	Explained
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Non-White wage gap	−0.101***	−0.130***	−0.029	−0.108***	−0.007	−0.007	−0.075***	−0.068***	−0.069***	−0.062**
	(0.026)	(0.016)	(0.022)	(0.015)	(0.025)	(0.028)	(0.016)	(0.020)	(0.016)	(0.025)
Covariates:										
Personal characteristics	No	Yes	0.015***	Yes	0.014***	No	Yes	−0.002	Yes	−0.003
			(0.006)		(0.005)			(0.004)		(0.004)
Education	No	Yes	−0.032***	Yes	−0.028***	No	Yes	−0.013*	Yes	−0.010*
			(0.006)		(0.005)			(0.004)		(0.006)
Job characteristics	No	Yes	0.017***	Yes	0.015***	No	Yes	0.011***	Yes	0.013***
			(0.002)		(0.002)			(0.003)		(0.004)
Occupation	No	Yes	0.009	Yes	0.008	No	Yes	0.010	Yes	0.009
			(0.008)		(0.009)			(0.007)		(0.010)
Workplace size	No	Yes	−0.005**	No		No	Yes	−0.006**	No	
			(0.002)					(0.003)		
Workplace demographics	No	Yes	−0.002	No		No	Yes	−0.003	No	
			(0.002)					(0.003)		
Workforce characteristics	No	Yes	0.004	No		No	Yes	−0.018***	No	
			(0.004)					(0.004)		

(Continues)

TABLE 5 (Continued)

	Male employees					Female employees				
	Base	Conditional		Workplace FE		Base	Conditional		Workplace FE	
	β_1	β_1	Explained	β_1	Explained	β_1	β_1	Explained	β_1	Explained
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Largest occupational group	No	Yes	−0.003	No		No	Yes	0.004	No	
			(0.005)					(0.004)		
Industry	No	Yes	0.002	No		No	Yes	−0.007**	No	
			(0.004)					(0.003)		
Region	No	Yes	−0.036***	No		No	Yes	−0.044***	No	
			(0.005)					(0.005)		
Workplace FE	No	No		Yes	0.015	No	No		Yes	−0.072***
					(0.018)					(0.018)
Observations	27,776	27,776		27,776		21,252	21,252		21,252	
Adjusted R^2	0.138	0.600		0.707		0.170	0.590		0.685	

Note: Decomposition of the ethnic wage gaps shown in Panels A and B of Table 4 using the method of Gelbach (2016). Estimates are weighted using individual level weights. Robust standard errors are in parentheses. Levels of significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. A decomposition of the ethnic wage gap shown in Panel C of Table 4 is provided in Table S1 of the Appendix in the Supporting Information.

propensity for non-White women to be employed in larger workplaces and higher-paying industries raises their wages relative to White women, such that the wage penalty is 1 log point wider once this has been accounted for. Differences in workforce characteristics (primarily the greater propensity to be employed in workplaces with high union density) add 1.8 log points, and regional differences add a further 4.4 log points. Differences in job characteristics widen the ethnic wage gap for women by around 1 log point, but differences in education close it by a corresponding amount.[20]

Previous work has pointed to the fact that ethnic wage gaps may be partly hidden by higher levels of educational attainment among non-White employees (Evans, 2020; Henehan & Rose, 2018) and by their concentration in higher-wage areas (Evans, 2020; Longhi, 2020) but has not been able to account for a full set of workplace characteristics. Our estimates thus provide a more comprehensive account of the role of the workplace in ethnic wage gaps than has previously been possible.

4.1 | Sensitivity analyses

The results discussed above combine all non-White ethnic groups together. This is not ideal, but it is a practical response to the limited sample sizes of the individual ethnic groups in our data. Table S2 of the Appendix in the Supporting Information presents estimates of wage gaps for a disaggregated set of five ethnic groups: Black Caribbean; Black African; Black Other; Indian and Pakistani/Bangladeshi. The general finding from Table S2 of the Appendix in the Supporting Information is that the majority of the wage gaps that exist are found within the workplace (as in Table 4).

Among men, the estimates with workplace fixed effects show statistically significant intra-workplace wage penalties for all five groups. The coefficients have relatively large standard errors but they suggest that wage penalties may be larger for Black employees than they are for Indians and Pakistanis/Bangladeshis. The results also suggest that some of the pay penalty experienced by Indian men may be hidden in household surveys through an inability to control for unobserved workplace characteristics. Among women, there are intra-workplace wage penalties for each of the five ethnic groups, but the range is smaller than among men, as tends to be the case in household data (see Section 2), and the wage penalties are only statistically significant for Black Africans, Indians and Pakistanis/Bangladeshis.

We noted above that our results are estimated on a pooled sample of data from 1998, 2004 and 2011. To formally test whether there was statistical support for trends in earnings gaps over time relative to White employees, the non-White dummy for all employees in column 3 of Table 4 was interacted with year dummies. The interaction coefficients were individually insignificant as well as jointly (F-test for joint statistical significance: $F(2,5058) = 0.56$, p-value $= 0.570$). This finding accords with the broader literature, which indicates that ethnic wage gaps have not changed to any consistent degree over the past two or three decades (Evans, 2020; Longhi & Brynin, 2017). This also accords with other evidence indicating that ethnic penalties in job search have been persistent over time (Health & Di Stasio, 2019). While we have no more recent data with which to test whether the situation has changed in Britain since 2011, this body of evidence gives us reason to expect that the findings we obtain are liable to hold in subsequent years.

5 | EVIDENCE OF DISCRIMINATION?

One interpretation of the wage gaps identified in Tables 4 and 5 is that non-White employees are being treated unfairly in wage-setting within the workplace. This is hard to prove, and other explanations are possible.

One potential explanation is omitted variable bias. The models presented in Tables 4 and 5 control for an array of personal, job and workplace characteristics observed in the WERS data, including various measures of human capital (namely, qualifications, age and job tenure); our preferred estimates also control for workplace fixed effects. However, the wage gaps could potentially be explained by unobserved employee-level heterogeneity. For instance, non-Whites may be more likely than Whites to lack fluency in the English language, as the non-White group is likely to include a higher proportion of immigrants. Dustmann and Fabri (2003) show that, in the mid-1990s, a lack of English language fluency reduced the earnings of ethnic minority immigrants by around 20 per cent. It is difficult to predict how our estimates would respond to more-complete information on employee characteristics, but we can note that the inclusion of observables currently leads to a widening of the estimated wage gaps, rather than attenuation. The existing set of observed characteristics also explains a substantial fraction of the overall variance in wages. Both factors promote confidence, in our view, that the estimated wage gaps are not subject to considerable omitted variable bias.[21]

Another possible explanation for the wage gaps observed in Tables 4 and 5 is that non-Whites may be willingly trading off lower money wages for other rewards that they value, following the theory of equalizing differences (Rosen, 1986). For instance, non-White workers fearing prejudicial dismissal may be willing to trade off lower wages for greater job security (Bond & Lehmann, 2018). We investigate this possibility of equalizing differences by looking at the relative pay satisfaction of White and non-White employees. Employees are asked to rate their satisfaction with pay on a 5-point scale (*Very satisfied*, *Satisfied*, *Neither satisfied nor dissatisfied*, *Dissatisfied*, *Very dissatisfied*). If the lower wages of non-White workers documented in Section 4 represent trade-offs for other elements of the reward package, we would expect to see no difference in pay satisfaction by ethnicity after controlling for other elements of reward.

We run logit regressions of a binary (0,1) variable (where 1 = *Very satisfied*/*satisfied*), after controlling for other elements of the reward package and our standard set of personal, job and workplace characteristics. In columns 1 and 2 of Table 6, other facets of reward are measured using employees' statements about the actual extent of training, influence, security and time pressure in their job. In columns 3 and 4, we replace these items with employees' self-reported satisfaction with the extent of influence, achievement, scope/variety, training, security and involvement in their job, plus their satisfaction with the work itself.

The items covered in the two sets of models only partially overlap, but both cover key elements of the intrinsic and extrinsic rewards from employment, beyond money wages. Columns 1 and 3 control for observable personal, job and workplace characteristics; columns 2 and 4 replace workplace observables with workplace fixed effects. In all four specifications, employees from non-White ethnic groups are found to be less satisfied with their pay than observationally equivalent White workers earning the same wage and enjoying the same level of non-pecuniary rewards. This evidence is consistent with a situation in which non-White workers are treated unfairly relative to White workers.[22]

We also examine employees' evaluation of skill mismatch. If ethnic minority employees were less well rewarded for their skills and abilities, on average, than equivalent White employees,

TABLE 6 Ethnic differential in pay satisfaction after conditioning for other rewards

	(1) Logit	(2) FE Logit	(3) Logit	(4) FE Logit
Non-White	−0.039***	−0.015**	−0.037**	−0.013**
	(0.015)	(0.006)	(0.016)	(0.005)
Log hourly wage, mid-points	0.317***	0.116***	0.278***	0.066***
	(0.010)	(0.019)	(0.012)	(0.016)
Received training in past 12 months	0.055***	0.025***		
	(0.007)	(0.005)		
A lot of influence over how work is done	0.039***	0.015***		
	(0.007)	(0.004)		
A lot of influence over the pace at which you work	0.034***	0.012***		
	(0.007)	(0.004)		
A lot of influence over the tasks you do in your job	0.026***	0.010***		
	(0.007)	(0.004)		
Strongly agree/agree, feel my job is secure	0.130***	0.048***		
	(0.007)	(0.009)		
Strongly agree/agree, never enough time to get my job done	−0.066***	−0.022***		
	(0.006)	(0.005)		
Strongly agree/agree, my job requires that I work very hard	0.005	0.002		
	(0.007)	(0.003)		
Satisfaction with influence, very satisfied/satisfied			0.041***	0.009**
			(0.009)	(0.004)
Satisfaction with achievement, very satisfied/satisfied			0.035***	0.009**
			(0.010)	(0.004)
Satisfaction with scope, very satisfied/satisfied			0.001	0.002
			(0.010)	(0.003)
Satisfaction with training, very satisfied/satisfied			0.132***	0.036***
			(0.007)	(0.009)
Satisfaction with job security, very satisfied/satisfied			0.154***	0.043***
			(0.007)	(0.011)
Satisfaction with work itself, very satisfied/satisfied			0.064***	0.017***
			(0.010)	(0.005)
Satisfaction with involvement, very satisfied/satisfied			0.089***	0.023***
			(0.007)	(0.006)
Observations	48,424	48,424	29,542	29,542

Note: The dependent variable is a binary measure of satisfaction with pay taking the value of 1 if the individual reported satisfaction (very satisfied/satisfied), and 0 otherwise (neither satisfied nor dissatisfied, dissatisfied, very dissatisfied). Entries are average marginal effects obtained from a logit model in columns 1 and 3, and a fixed-effects logit model in columns 2 and 4. The set of control variables is identical to that used in columns 2 and 3 of Table 4. Columns 3 and 4 are estimated on pooled data from 2004 and 2011 only as some of the job satisfaction variables are not available in the 1998 WERS survey. Estimates are weighted using individual-level weights. Standard errors are in parentheses. Levels of significance: ***$p < 0.01$, **$p < 0.05$.

TABLE 7 Skills mismatch by ethnicity

Dependent variable: skills are 'much higher'/'a bit higher' than needed for current job	(1) Logit	(2) FE Logit
Non-White	0.059***	0.063***
	(0.015)	(0.018)
Observations	29,440	29,440

Note: The dependent variable comes from the following question asked to employees in the 2004 and 2011 employee questionnaires only: 'How well do the skills you personally have match the skills you need to do your present job?' Employees had to respond on a 5-point scale: '*much higher*; *a bit higher*; *about the same*; *lower*; *much lower*'. The dependent variable takes the value of 1 if employees responded to have skills that are 'much higher' or 'a bit higher' than needed for the current job, and 0 otherwise. Entries are average marginal effects obtained from a logit model in column 1 and a fixed-effects logit in column 2. The set of control variables is identical to that used in columns 2 and 3 of Table 4, in addition to the log hourly wage. Estimates are weighted using individual-level weights. Standard errors are in parentheses. Levels of significance: ***$p < 0.01$.

one would expect ethnic minority employees to be more likely to report being over-skilled for their role at a given level of pay. Employees are asked to rate the extent to which 'the skills you personally have match the skills you need to do your present job?'. Answers are invited on a 5-point scale (*Much higher*; *Higher*; *About the same*; *Lower*; *Much lower*). This question was not asked in the 1998 survey, so we rely on data from 2004 and 2011 only. We reduce the scale to a binary variable indicating that the employee is over-skilled for their present job and use logit models (equivalent to the specifications shown in Table 6) to examine whether there are differences in ratings of over-skilling between Whites and non-Whites after controlling for personal, job and workplace characteristics. The results are shown in Table 7, with non-White employees being more likely than Whites to judge that their skills are higher than those needed for their job.[23] A positive association between ethnicity and over-skilling may arise, for example, if employers do not appropriately reward qualifications or work experience acquired abroad by employees not born in the UK (see Lindley, 2009).[24]

The evidence presented in Tables 6 and 7 relies on subjective evaluations by employees, and we cannot discount the fact that there are systematic differences between non-White and White workers in how they evaluate different components of their job. For instance, it is possible that non-White employees may have higher expectations than White employees; this would increase the chances of observing ethnic penalties on job satisfaction and/or over-qualification. However, it seems equally plausible that non-White employees would have lower expectations, given wider evidence of unfair treatment of non-Whites in the labour market (Heath & Cheung, 2006; Heath & Di Stasio, 2019): such an argument is invoked by Clark (1997) to explain the absence of a gender gap in job satisfaction despite women's jobs being worse than men's by objective standards. In the absence of evidence to the contrary, we assume that our results are unbiased by any systematic differences in the way that White and non-White employees subjectively evaluate their job situation. Our results on both pay satisfaction and skill mismatch are thus plausibly consistent with a situation in which non-White workers are treated less favourably in wage-setting than their White colleagues.

6 | MECHANISMS FOR REDUCING ETHNIC WAGE GAPS

As non-White employees appear to be treated less favourably than Whites in the process of wage determination within the average workplace, it is important to identify whether there are wage-setting practices that are associated with higher or lower within-workplace ethnic wage gaps.

If one can identify employer practices that are associated with lower within-workplace wage penalties, this may point towards possible policy solutions.

We examine three employer practices that may be expected to affect within-workplace wage differentials by reducing the role of ethnicity in wage-setting. First, we examine the role of union wage bargaining. This may be expected to reduce ethnic wage differentials via two possible routes. Unions have historically helped to raise the wages of the lowest paid and have encouraged the use of more objective criteria in pay setting. It is then common to find that wages in unionized workplaces are less widely dispersed than those in non-union workplaces and less heavily determined by idiosyncratic employee characteristics (see Metcalf et al., 2001). In addition, unions may also support ethnic minority workers in pursuing grievances over unfair pay practices, as they have done for women (Conley, 2014), although the historical ambivalence of some unions to issues of racial equality has also been documented (Wrench, 2004). Second, we examine the role of employer monitoring. While most workplaces have an equal opportunities policy, a minority of employers go further by actively engaging in practices that seek to combat discrimination (Van Wanrooy et al., 2013, p. 34). One such practice is to review relative pay rates for different ethnic groups in the workplace. The act of identifying differentials does not necessarily imply that action will be taken to reduce them, but monitoring can reasonably be seen as a necessary precondition for such actions. Third, we examine the role of job evaluation schemes. Such schemes involve a systematic assessment of the relative value (or comparable worth) of a job in relation to other jobs within the workplace, with the purpose of establishing a rational pay structure. They are often used as part of Equal Pay audits and are argued to have the potential to reduce within-workplace gender wage gaps (European Commission, 2021; Figart, 2000; Ghobadian & White, 1991; International Labor Organisation, 2009), although their limitations in delivering equal pay for women have also been recognized (Chen et al., 1999; Gilbert, 2005; Lissenburgh, 1995).

We use our workplace-level data to identify those workplaces in which a trade union or staff association is 'recognized by management for negotiating pay and conditions for any section of the workforce', those in which employers report that they 'regularly review relative pay rates by ethnic background', and those in which there is a 'formal job evaluation scheme' (defined in the survey as a 'scheme for comparing systematically the relative value of different jobs in order to settle their relative rates of pay').

In Table 8, we present the results of models of log hourly wages in which we add dummy variables to indicate the use of each of these three practices. Each workplace practice is first entered alone in columns 1–6, before being entered alongside one another in columns 7 and 8. The models reported in odd-numbered columns utilize our standard set of personal, job and workplace characteristics, whereas those reported in even-numbered columns replace workplace observables with workplace fixed effects. In each model, the workplace practice dummy variables are interacted with the dummy identifying non-White employees. This interaction term indicates whether the ethnic wage gap differs between those workplaces that use the practice in question and those that do not.

The first row of the table shows that non-White employees earn less than observationally equivalent White employees in the absence of each of these workplace practices. Focusing on columns 7 and 8, we see that the ethnic wage penalty is between 12 and 16 log points in workplaces without any of the three practices. The presence of a recognized union and the use of job evaluation schemes are then both independently associated with a statistically significant reduction in the ethnic wage gap. The interacted coefficient for recognized unions in column 7 is just outside the bounds of statistical significance, but the coefficient is statistically significant after controlling for fixed effects and indicates that the presence of recognized unions reduces the ethnic wage gap by around 4 log points. The use of a formal job evaluation scheme is associated with a 4–5 log

TABLE 8 The role of workplace practices in closing the ethnic wage gap

	(1) OLS	(2) FE	(3) OLS	(4) FE	(5) OLS	(6) FE	(7) OLS	(8) FE
Non-White	−0.142***	−0.112***	−0.118***	−0.087***	−0.140***	−0.109***	−0.156***	−0.121***
	(0.021)	(0.019)	(0.016)	(0.014)	(0.019)	(0.017)	(0.023)	(0.021)
Union recognized	0.007						−0.0004	
	(0.016)						(0.017)	
Union recognized * Non-White	0.069**	0.054**					0.047	0.042*
	(0.030)	(0.025)					(0.031)	(0.025)
Review relative pay rates by ethnic background			−0.003				−0.007	
			(0.015)				(0.015)	
Review relative pay rates * Non-White			0.058	0.004			0.030	−0.022
			(0.040)	(0.036)			(0.039)	(0.036)
Formal job evaluation systems					0.037***		0.039***	
					(0.011)		(0.011)	
Formal job evaluation systems * Non-White					0.069**	0.056**	0.048*	0.043*
					(0.031)	(0.025)	(0.028)	(0.026)
Constant	1.141***	1.075***	1.146***	1.076***	1.118***	1.076***	1.119***	1.075***
	(0.066)	(0.052)	(0.065)	(0.052)	(0.065)	(0.052)	(0.067)	(0.052)
Observations	29,542	29,542	29,542	29,542	29,542	29,542	29,542	29,542
R^2	0.531	0.680	0.531	0.680	0.532	0.680	0.532	0.680
Adjusted R^2	0.530	0.639	0.530	0.638	0.531	0.639	0.531	0.639

Note: The dependent variable is the individual's log hourly wage. The set of control variables is identical to that used in columns 2 and 3 of Table 4. The models are estimated on pooled data from 2004 and 2011 only as the job evaluation scheme variable is not available in the 1998 WERS survey. Estimates are weighted using individual-level weights. Robust standard errors are in parentheses. Levels of significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

point reduction in the size of the ethnic wage gap: a difference that is statistically significant in columns 7 and 8. In contrast, the ethnic wage gap is no smaller in workplaces that review relative pay rates by ethnic background than in workplaces that do not. We have no further information as to why this practice is not associated with the size of the ethnic wage gap, but the absence of any association might indicate that such reviews do not necessarily lead to changes in wage-setting. Trade union recognition and job evaluation schemes, in contrast, seem more likely to give ethnic minority employees or their representatives influence over the wage-determination process.[25]

We cannot infer causality from these estimates as we have no valid instruments that would allow us to address the potential endogeneity of these wage-setting practices with respect to wage outcomes. However, if any of these practices had been implemented in response to unfair treatment in wage-setting by ethnicity, one would expect the interaction coefficients in Table 8 to be biased downwards, showing that ethnic wage gaps were larger in the presence of such practices. Instead, the presence of recognized trade unions and formal job evaluation schemes are associated with smaller wage gaps. If we could interpret these results in a causal way, they would suggest that the ethnic wage penalty is reduced by around one third, on average, in the presence of recognized trade unions, and by a further third in the presence of a formal job evaluation scheme.

7 | CONCLUSION

Using linked employer–employee data for Britain, we examine ethnic wage differentials among full-time employees across the economy. Our data are limited by offering relatively small samples for individual ethnic groups, and so much of our analysis focuses on the distinction between Whites and non-Whites. However, our data have other advantages over the household surveys that dominate the literature, providing a rich array of individual, job and workplace covariates, and observing multiple employees in each workplace. These data permit new insights into the role of the workplace in ethnic wage differentials.

We find substantial ethnic segregation across workplaces. However, this workplace segregation does not contribute to the ethnic wage penalty seen at the aggregate level. Instead, ethnic wage penalties are primarily a within-workplace phenomenon, a finding that is consistent with previous international literature, such as Carrington and Troske's (1998) study for the United States. In Britain, non-White male employees earn, on average, around 11 per cent less than observationally-equivalent White employees after accounting for wage differences across workplaces. Among female employees, the within-workplace wage penalty for non-Whites is around 7 per cent on average.

We find evidence of lower pay satisfaction among ethnic minority workers, and higher levels of skill mismatch. Although we cannot discount the possibility of ethnic differences in self-evaluations about one's job, the evidence is consistent with discrimination in wage-setting on the part of employers.

We examine three practices that can be expected to affect the size of the within-workplace wage gap by reducing the influence of ethnicity: the recognition of trade unions for pay negotiations; the review of relative pay rates by ethnic background and the use of formal job evaluation systems. We find that the ethnic wage penalty for full-time employees is reduced by around one third, on average, in the presence of recognized trade unions, and by a further third in the presence of a formal job evaluation scheme. Although we do not observe the details of how these practices influence wage-setting within the workplace, we speculate that they close the ethnic wage gap by tying wages more directly to an objective assessment of workers' skills, abilities and contributions and thus squeezing out the influence of ethnicity.

Together, these findings indicate that more attention should be placed on wage-setting practices as a means of reducing ethnic wage penalties in the labour market. It seems unlikely that the present UK government will move to mandate union recognition or job evaluation. Instead, the current focus of policy debate, at the time of writing, is on how one can stimulate greater transparency around wage outcomes within the workplace, with calls having been made for the introduction of ethnic pay gap reporting in the UK (e.g. Makortoff, 2021). The proposition is that making individual employers report publicly on their pay gaps will force them to explain why these gaps exist, and prompt them to take steps to narrow them. A requirement for all firms with 250 or more employees in the UK to report on their gender wage gap has been evaluated as a success, reducing the gender wage penalty by 15–20 per cent (Blundell, 2021; Duchini et al., 2020). As much of the ethnic wage gap exists within workplaces, rather than between them, extending the policy to ethnicity may bring rewards by encouraging firms to focus on internal wage differentials. However, the government currently favours the provision of voluntary guidance over a mandatory requirement (HM Government, 2022). As our results indicate, the mere act of inviting employers voluntarily to review pay rates is unlikely to lead to progress unless it also entails changes to wage-setting processes to reduce the potential influence of ethnic background on wage-setting.

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ETHICS STATEMENT

The data used in this article are made publicly available for research by the UK Data Service and were accessed under the terms of the UK Data Service's End User Licence. No individuals are identifiable in the data. The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

The data used in the article can be accessed via the UK Data Service website at https://ukdataservice.ac.uk/. Study Numbers: 3955 (WERS 1998); 5294 (WERS 2004) and 7226 (WERS 2011).

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ENDNOTES

[1] Similar observations have been made in respect of the United States (see Neal, 2004).

[2] Individual estimates vary according to the set of control variables that are utilized.

[3] The 1968 Race Relations Act made amendments to the 1965 Race Relations Act, extending the protection against discrimination (which had previously extended only to 'public places') to include the provision of housing, employment and public services.

[4] See Lang and Lehmann (2012) for an extensive review of these various models.

[5] For evidence from similar correspondence studies conducted in the United States, see Kline et al. (2022).

[6] Recent legal cases include a woman subjected to a 'hostile environment' and unfairly dismissed because of her ethnicity and age (Faragher, 2020) and a woman who was spied on and passed over for promotion because she was Black (Webber, 2018).

[7] There are other studies examining the effects of segregation on the ethnic wage gap, but which do not use linked employer–employee data and so face limitations in decomposing wages into their within-workplace and between-workplace components (e.g. Hirsch and Schumacher, 1992; Hirsch and Macpherson, 2004; Ragan & Tremblay, 1988). A further, related set of papers focus on the wage gap between immigrants and natives (e.g. Aydemir and Skuterudi, 2008); however, we do not consider these in detail as around half of the ethnic minority population in Britain is UK-born (Office for National Statistics, 2015, table 1).

[8] The management questionnaire response rate in 1998 (2004) [2011] was 80 per cent, (64 per cent) and [46 per cent], respectively, while the employee questionnaire response rate in 1998 (2004) [2011] was 64 per cent, (60 per cent) and [54 per cent], respectively.

[9] One limitation of the data, when compared with many administrative sources, is that employee observations cannot be linked over time.

[10] In the eight groupings shown in Table 1, we pool Bangladeshis and Pakistanis, as do some other studies (e.g. Henehan and Rose, 2018), due to small sample sizes for the separate groups. We do not distinguish White British from White Other, although it is worth noting that the latter have grown in incidence in recent years and have very high labour market participation rates (Evans, 2020).

[11] In WERS 2004, the corresponding pay bands ranged from 'less than £50 per week/£2600 per year' to '£871 or more per week/£45,241 per year'. In WERS 1998, 12 bands were used, ranging from 'less than £50 per week/£2600 per year' to '£681 or more per week/£35,361 per year'. All analyses include dummies for the year of the survey; these account for time-trends that are common to all employees, such as inflation.

[12] Bryson et al. (2018, p. 141) demonstrate the validity of the mid-point imputation procedures using continuous hourly wage data provided in the UK's Annual Survey of Hours and Earnings (ASHE). They use ASHE to estimate the mean hourly wage of all employees within each hourly wage interval observed in the WERS 2011 dataset. The correlation between this wage measure and the one obtained from the simpler, mid-point approach described in the text is 0.99.

[13] Managers were provided with an Employee Profile Questionnaire (EPQ) to complete ahead of their face-to-face interview; the EPQ included examples to assist managers with the categorization of their workforce by occupational group.

[14] Self-reported racial prejudice has been found to be greater among employers and managers in some parts of the private sector compared with the public sector (see Heath and Cheung, 2006, p. 63).

[15] We use the exponentiated Type II Tobit to allow for conditional correlation between the unobserved factors associated with these two margins (see Wooldridge, 2010, pp. 697–703); estimation of the model shows that the error terms from the two equations are positively correlated with one another.

[16] We thereby focus specifically on ethnicity, abstaining from a detailed consideration of patterns of gender segregation. As noted earlier, patterns of gender segregation have been explored elsewhere (Mumford and Smith, 2007; Theodoropoulos et al., 2022).

[17] These controls are the share of employees who are trade union members, the share of employees aged 50 or over and the share of employees aged between 18 and 21 years.

[18] Using the binomial distribution, and assuming random allocation of workers to workplaces, we can determine that the probability that a workplace employs at least one ethnic minority employee, when the overall share of ethnic minorities in the population is 0.063 (Table 1, column 4), is just 0.478 if the workplace has 10 employees but 0.999 if the workplace has 100 employees.

[19] No more-disaggregated identifiers for the location of the workplace are provided in the 1998 and 2011 WERS datasets; however, the 2004 WERS dataset includes data on the travel to work area (TTWA) in which each workplace is located, including the percentage of the residential population in that TTWA who belong to an ethnic minority group. Adding this control to the type II Tobit model increases the pseudo R^2 from 0.124 to 0.180 for the 2004 survey year, while the explanatory power of the dummies identifying Standard Statistical Region is much reduced. Workplace size, the age composition of the workforce, the identity of the largest occupational group

and the industry of the workplace remain significantly associated with the share ethnic minority, although the coefficients are somewhat reduced in size when compared with Table 2.

[20] Decomposition results for all employees (male and female pooled together), which complement Panel C of Table 4, are presented in Table S1 of the Appendix in the Supporting Information.

[21] These notions are formalized in Oster's test of coefficient stability (Oster, 2019). Oster's test relies on the observation that omitted variable bias is proportional to coefficient movements after the inclusion of observed controls, scaled by the change in R^2 when such controls are included. We follow Oster (2019) in estimating bias-adjusted coefficients under the assumption of equal selection on observed and unobserved variables ($\delta = 1$) and under the assumption that a hypothetical regression containing a full set of observed and unobserved controls would produce an R^2 of 1.3 times that of the models in columns 2 and 3 of Table 4, Panel C ($R_{\max} = 1.3$). Estimates are obtained via the Stata user-written program -psacalc- (Oster, 2013). For column 2 of Table 4, Panel C, the bias-adjusted wage gap for all employees is –0.140 (s.e. = 0.011). For column 3, the bias-adjusted wage gap is –0.119 (s.e. = 0.016).

[22] In separate models for male and female employees, the average marginal effects remain statistically significant (and negative) in all columns for women and in column 4 for men.

[23] In separate models for male and female employees, the average marginal effects remain statistically significant (and positive) in both columns.

[24] On the other hand, if such skills comprise an element of unobserved ability that is fairly rewarded by employers, this would likely magnify the residual wage gaps shown in Table 4 if it could be controlled for.

[25] In separate models for male and female employees, the interaction between the non-White dummy and union recognition remains positive and statistically significant for men in column 7 but is insignificant in column 8 and is insignificant in both columns for women. The interaction with job evaluation is positive and statistically significant in columns 7 and 8 for men but is insignificant for women in both. The interaction with reviewing pay rates is positive and statistically significant for women in column 7 but negative and statistically significant for men in column 8 and insignificant otherwise.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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