I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 14697

The Role of the Workplace in Ethnic Wage Differentials

John Forth
Nikolaos Theodoropoulos
Alex Bryson

AUGUST 2021

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 14697

The Role of the Workplace in Ethnic Wage Differentials

John Forth
City, University of London and IZA

Alex Bryson
University College London and IZA

Nikolaos Theodoropoulos
University of Cyprus

AUGUST 2021

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

The Role of the Workplace in Ethnic Wage Differentials[1]

Using matched employer-employee data for Britain, we examine ethnic wage differentials among full-time employees. We find substantial ethnic segregation across workplaces: around three-fifths of workplaces in Britain employ no ethnic minority workers. However, this workplace segregation does not contribute to the aggregate wage gap between ethnic minorities and white employees. Instead, most of the ethnic wage gap exists 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 use of job evaluation schemes within the workplace is shown to be associated with a smaller ethnic wage gap.

JEL Classification: J16, J31, M52, M54

Keywords: ethnic wage gap, workplace segregation, skill mismatch, pay satisfaction, job evaluation

Corresponding author:
John Forth
Faculty of Management
Bayes Business School
City, University of London, 106 Bunhill Row
London EC1Y 8TZ
United Kingdom

E-mail: John.Forth@city.ac.uk

[1] The authors acknowledge the Department for Business, Energy and Industrial Strategy, the Economic and Social Research Council, the Advisory, Conciliation and Arbitration Service and the National Institute of Economic and Social Research as the originators of the Workplace Employee Relations Survey data, and the Data Archive at the University of Essex as the distributor of the data. None of these organisations bears any responsibility for our analysis or interpretation. We thank Carl Singleton and participants at the 73rd annual meeting of the Labor and Employment Relations Association (LERA 2021) for helpful comments on an earlier version of this paper. The data that support the findings of this study are openly available from the UK Data Service at https://ukdataservice.ac.uk/. Study Numbers: 3955 (WERS 1998); 5294 (WERS 2004); and 7226 (WERS 2011).

1. INTRODUCTION

The workforce in Britain has become increasingly diverse in recent decades. Whereas 6% of employees aged 16 and over were non-white in 2001, today it is 12% (Office for National Statistics, 2021).[2] 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. Yet labour market conditions remain challenging for ethnic minorities. Unemployment and economic inactivity are more prevalent among ethnic minorities of working age than they are for white individuals, and those in employment experience substantial wage gaps, even when one conditions on differences in human capital and other earnings-enhancing traits (Blackaby et al. 2002; Dustmann and Theodoropoulos, 2010; Longhi and Brynin, 2017; Evans, 2020; Amadxarif et al., 2020; Manning and Rose, 2021).

Such ethnic wage differentials are the product of factors on both the supply and demand sides of the labour market (Dustmann and Fabri, 2003; Hudson et al., 2013; Zwysen and 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 since evidence for the United States suggests the earnings differential between black workers and white workers "is primarily a within-firm phenomenon" (Carrington and Troske, 1998: 231), as opposed to a between-firm phenomenon which could be driven by the segregation of workers from different ethnicities into firms in different parts of the firm-level earnings distribution.

[2] These figures are based on ONS estimates from the Labour Force Survey for those aged 16 and over. The estimate of 12% relates to the final quarter of 2019 and is the latest available.

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, workplace segregation by ethnicity does not contribute to the aggregate ethnic wage gap for men: a substantial ethnic wage gap persists within the workplace among men, after controlling for employees' place of work. 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 white women to work in higher-wage workplaces. A substantial ethnic wage gap then emerges within workplaces after accounting for this between-workplace segregation, though the within-workplace wage gap is smaller in magnitude to that found among men. Each of these findings is in line with Carrington and Troske's (1998) earlier research for the United States.

We go on to 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 or 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 job evaluation – a practice which seeks to establish a rational pay structure in the workplace through a systematic assessment of the relative value (or comparable worth) of different jobs - finding that the use of schemes within the workplace is shown to be associated with a smaller ethnic wage gap.

The remainder of the paper proceeds as follows. Section 2 reviews the literature; Section 3 presents the data and our empirical strategy; Section 4 outlines the results; Section 5 examines

evidence of discrimination; and Section 6 focuses on job evaluation as a mechanism for fairness in wage setting. Finally, Section 7 concludes.

2. LITERATURE

The literature on ethnic wage gaps in Britain indicates substantial heterogeneity in earnings across ethnic minority groups, as well as between ethnic minorities and white workers, with those differences varying by sex. Among men, whites have tended 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: 112-113). Among women, on the other hand, simple comparisons among employees have often shown ethnic minority women earning more than white women. But substantial differences across ethnicity in terms of selection into employment make simple comparisons in earnings gaps among women in employment particularly susceptible to biases (Modood et al., op. cit.).[3]

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 utilise the skills they possess in the British labour market. Studies which control for differences in the personal characteristics that employees bring to the labour market have tended to find that all ethnic minority groups earn less than whites at the mean after accounting for such factors (Manning and Rose, 2021). Residual (covariate-adjusted) pay gaps tend to be larger for men than women and, among both sexes gaps tend to be larger for black employees and those of Pakistani or Bangladeshi origin (ibid.). Moreover, despite suggestions to the contrary (Commission on Race and Ethnic Disparities, 2021: 106, 111), there is little evidence that such ethnic pay gaps have narrowed in

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

recent decades (Manning and Rose, 2021; Longhi and Brynin, 2017). 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.[4]

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. In Becker's (1971) classic model of taste-based discrimination, employers prefer white employees over ethnic minorities - either as a result of their 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 judgements 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).[5]

There is persuasive evidence that employers do discriminate on the basis of ethnicity, although empirical studies are often not able to discern whether it is motivated by prejudice or information deficits. It is particularly relevant in our context to discuss the many correspondence studies that have been undertaken in Britain over the course of the past five decades. Heath and Di Stasio (2019) review thirteen published studies undertaken in the British labour market between 1967 and 2017. The typical design involves sending matched fictitious job applications, differing solely on the ethnicity of the applicants, in response to advertised job vacancies. The ethnicity of the

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

applicant is typically signalled via the applicant's name. The responses received from the hiring firms (a rejection or call to interview) indicate whether applicants from ethnic minority and ethnic majority groups receive equally favourable treatment. Heath and Di Stasio conclude that hiring discrimination is endemic in Britain: job applicants from ethnic minority groups typically have to submit 50% more job applications to achieve the same number of successes as an equivalent white British applicant. The extent of this disadvantage appears to have changed little over time. Hiring discrimination is thus an important and enduring feature of the British labour market.[6] As in the US (Hersch, 2008), discrimination against ethnic minorities is primarily on the basis of 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 and Di Stasio, 2019: 1789). Hiring discrimination of this type clearly has the potential to skew the allocation of workers across workplaces by virtue of their ethnic group.

Such inter-workplace segregation may also occur if job applicants perceive that intolerant employers might discriminate against them.[7] 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. They argue that the preliminary impressions that organisations make on job seekers – through pictorial diversity in their recruitment materials and the inclusion of policy statements affirming commitments to equality, diversity and inclusion (EDI) - influence job seekers' perceptions of their 'fit' with organizations. These perceptions affect job-choice decisions.[8] Such 'organisational impressions' need not necessarily be accurate to affect job seekers' behaviour; indeed, it is well established that

[6] For evidence from similar correspondence studies conducted in the United States, see Kline et al. (2021).
[7] See Small and Pager (2020: 62-3) for a discussion of the relevance of perceived discrimination in driving behavioural outcomes.
[8] The demographics of the recruiter are also found to be relevant in some studies, but the evidence is less consistent on this point (see Avery and MacKay, 2006: 161-2).

organisational policy in the EDI arena does not always translate into practice (Hoque and Noon, 2004).

Any 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 in the presence of firm-specific wage premia. Many theories of the labour market allow for such premia. Models of efficiency wages contend that employers may raise wages above their market-clearing level in order to motivate employees who would otherwise be hard-to-monitor (Shapiro and Stiglitz, 1984). Theories of monopsony also give firms a measure of power over wages as a result of limited job mobility on the part of workers (Manning, 2003). Product market power may also allow for wage premia when combined with institutions that give workers bargaining power over the distribution of rents (Booth, 1995). There is now an extensive literature which 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 which seeks to explore the role of firm and workplace wage premia in generating wage inequality (e.g. Faggio et al., 2010; Card et al., 2013; Barth et al., 2016; Song et al., 2019; Schaeffer and Singleton, 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 (or more likely to apply to) 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 when firms are rewarded for providing good working conditions across multiple dimensions (Dineen and Allen, 2016; Edmans, 2011). The higher concentration of ethnic minorities in urban areas which tend to be characterised 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 an under-estimate of the extent to which there is differential treatment of like workers.

Turning now to consider experiences within the workplace, there is good evidence to indicate that workers are treated differently within some workplaces on the basis of their ethnicity. Wheatley and Gifford (2019: 38) report evidence from a survey of 5,000 employees in the UK, in which 13 per cent of non-white employees reported experiences of unfair treatment at the 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: 37-38) focuses specifically on unfair treatment in promotion or job advancement, which was 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 on the basis of race or ethnicity.[9]

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 paper, Mumford and Smith (2007) and Theodoropoulos et al. (2019) 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

[9] Recent 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).

inter-workplace segregation and intra-workplace differences in wage setting in relation to 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 to ethnic wage gaps 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 the focus should be on ensuring fairness in wage determination, for instance by 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).

Using matched 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 plant fixed effects before, after, or at the same time as 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 plants that pay below-average wages. In fact, there is a weak degree of positive allocation into high-wage plants, such that the within-plant wage gap is generally 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 US "is primarily a within-plant phenomenon" (p. 257), as opposed to an across-plant phenomenon. They find that

most of the within-plant wage gap is accounted for by observed characteristics, such as education or experience, but a significant component (around five percentage points for men and around two percentage points for women) remains unaccounted for.

Hellerstein and Neumark (2008) draw similar conclusions about the nature of black/white wage differentials in the US from their analysis of matched establishment-worker data for 1990. Their data have an advantage over that used by Carrington and Troske (1998), in extending beyond manufacturing. They find that accounting for the non-random allocation of black and white workers across establishments (via the inclusion of establishment fixed effects) increases the black wage penalty relative to whites – whether one conditions on education or not – suggesting that black workers tend to work in higher-paying workplaces. Within workplaces, the black wage penalty relative to whites who are similarly educated is 16 log points confirming, as in the case of Carrington and Troske (1998), that within-workplace differentials play an important role in black/white wage gaps in the US. Hellerstein and Neumark (ibid.) provide contrary evidence for Hispanics, finding that this group tend to be over-represented in lower-paying establishments. 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. (2018). Pendakur and Woodcock (2010) use data from the Workplace and Employment Survey – a linked employer-employee survey that bears similarities to the one used in our analysis. Focusing 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. (2018) 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 establishments 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.[10]

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 to those in 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 matched 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 so have been unable to speak directly to the questions that we investigate. We examine

[10] There are other studies examining the effects of segregation on the ethnic wage gap, but which do not use matched employer-employee data and so face limitations in decomposing wages into their within-workplace and between-workplace components. Ragan and Tremblay (1988) find that working in a racially mixed workforce carries a wage premium, one that for non-whites increases with the degree of integration. For whites, the existence of integration influences wages, but the extent does not. Hirsch and Schumacher (1992) and Hirsch and Macpherson (2004) find that the wage penalty associated with working in establishments with non-white workers reflects quality sorting as opposed to discrimination theories or the crowding hypothesis. A related set of papers consider similar issues with a specific focus on the wage gap between immigrants and natives (e.g. Aydemir and Skuterudi, 2008). However, we do not consider these in detail since around half of the ethnic minority population in Britain is UK-born (Office for National Statistics, 2015: Table 1).

ethnic wage gaps in Britain using OLS and workplace fixed effects models, using various measures of ethnicity, and for men and women separately.

3. DATA AND ESTIMATION

3.1 DATA

We pool three matched employer-employee data sets for 1998, 2004 and 2011 from the British Workplace Employment Relations Survey (WERS) (Department of Trade and Industry, 2007, 2014; Department for Business, Innovation and Skills, 2015). 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.[11] This match 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.[12]

Although the 2004 and 2011 surveys contain workplaces with 5-9 employees, the population from which the 1998 survey is drawn is the population of workplaces with 10+ employees. We do not enforce this restriction on the 2004 and 2011 survey samples, preferring the larger sample sizes. We do, however, restrict our analysis of wage gaps 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.

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

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

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 categorise 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, identified in Table 1. The table provides the estimated share of employees by ethnic group in each survey year along with the unweighted number of employee observations in the dataset. In most of our analysis, however, we focus on the distinction between whites and non-whites, recognising that the empirical evidence on employer discrimination (discussed earlier) finds skin colour to be the primary focus of prejudice.[13] In the population covered by our sample, the share of employees that are non-white increases from 3.8 per cent in 1998 to 8.6 per cent in 2011.

[TABLE 1]

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 income ranging from "less than £60 per week/£3,120 per year" to "£1,051 or more per week/£54,061 per year".[14]

[13] In our eight groupings, 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).

[14] In WERS 2004 the corresponding pay bands ranged from "less than £50 per week/£2,600 per year" to "£871 or more per week/£45,241 per year". In WERS 1998, they ranged from "less than £50 per week/£2,600 per year" to "£681 or more per week/£35,361 per year". All analyses include year dummies to account for inflation.

Since 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 working hours per week.[15]

The employer survey provides information on the ethnic composition of the workplace, identifying the number of employees belonging to a non-white ethnic minority group, though it does not seek to decompose this total into specific ethnic groups. 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. In terms of workforce composition, the employer provides information on a number of aspects besides ethnicity, including gender, age and the number of employees in each of the nine Major Groups of the UK's Standard Occupational Classification (2000).[16]

3.2 ESTIMATION

We begin by looking at the segregation of white and non-white employees across workplaces. We run standard (type I) Tobit regressions of the share of non-white ethnic minorities at the workplace, using the data provided by the workplace manager. The use of a Tobit specification recognises

[15] Bryson et al. (2018: 141) demonstrate the validity of the aforementioned 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.

[16] These nine groups are: Managers and senior officials; Professional occupations; Associate professional and technical occupations; Administrative and secretarial occupations; Skilled trades; Personal service occupations; Sales and customer service occupations; Process, plant and machine operatives; and Elementary occupations. Managers were provided with an Employee Profile Questionnaire (EPQ) to complete ahead of their face-to-face interview; the EPQ included examples to assist them with categorisation.

that 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. Similarly, 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) and so small workplaces may again find themselves without any non-white employees. These propensities 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.[17]

The use of a type I Tobit specification assumes that the factors which cause a workplace to employ non-white employees operate in similar ways across the extensive and intensive margins. This may not 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. Accordingly, we test the sensitivity of our results to the use of a type II Tobit estimator (Amemiya, 1984), in which employer characteristics are allowed to behave in different ways across the two margins. All of our workplace-level regressions use the workplace-level weights provided with the survey data to correct for the use of variable sampling fractions in the WERS workplace-level sample design (see Forth and Freeth, 2014, for details).

[17] 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: 63).

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, since the literature (e.g. Evans, 2020; Longhi and Brynin, 2017) indicates that ethnic wage gaps differ substantially by gender.[18] We pool all three 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 individual and workplace-level controls as listed below in the regression tables. The specification is as follows:

$$logy_{i(j)} \equiv log\left(\frac{w_{i(j)}}{h_{i(j)}}\right) = \beta_0 + \beta_1\xi_{i(j)} + \beta_4\boldsymbol{X}_{i(j)} + \beta_5'\boldsymbol{W}_j + \beta_6 Yr_{2004} + \beta_7 Yr_{2011} + \varepsilon_{i(j)},$$

where i indexes individuals and j indexes workplaces. $\xi_{i(j)}$ is a categorical variable indicating worker i's ethnicity in workplace j, $\boldsymbol{X}_{i(j)}$ is a vector of observed individual covariates, $\boldsymbol{W}_j$ is a vector of observed workplace covariates, Yr_{2004} and Yr_{2011} are dummy variables taking the value of 1 if the observation comes from the 2004 or 2011 cross sections and $\varepsilon_{i(j)}$ is the disturbance term. We estimate this model using OLS, however results are robust and available upon request to the use of interval regression (Stewart, 1983).

The vector $\boldsymbol{X}_{i(j)}$ 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

[18] 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., 2019).

health problem that affects the amount or type of 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 $\boldsymbol{W_j}$ includes the following controls usually available in household surveys: workplace size (number of employees) in six dummies, private sector workplace, eleven industry dummies (omitted category: other community services) and nine region dummies (omitted category: Yorkshire and Humberside). Further, it includes extra workplace controls that are a unique feature of the WERS data: if the workplace is one of a number of different workplaces in the UK belonging to the same organisation, or is a single independent workplace not belonging to another body (omitted category: sole UK workplace of a foreign organisation), if it is a foreign workplace, the degree of competition as captured by two dummies capturing if the workplace has many competitors (more than 5), or few competitors (5 or less), the share of female employees, the share of employees who are trade union members, the share of employees age 50 or over, the share of employees between ages 18 and 21, and eight dummies capturing the largest occupational group in the workplace (omitted category: largest occupational group routine/unskilled occupations).

We supplement these OLS regressions with workplace fixed effects estimates, exploiting the fact that we have multiple employee observations per workplace (on average about 10). In these models we are estimating 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:

$$logy_{i(j)} \equiv log\left(\frac{w_{i(j)}}{h_{i(j)}}\right) = \beta_0 + \beta_1\xi_{i(j)} + \beta_4\boldsymbol{X}_{i(j)} + \beta_5'\Phi_j + \beta_6 Yr_{2004} + \beta_7 Yr_{2011} + \varepsilon_{i(j)},$$

where Φ_j identifies each workplace in the sample.

We drop observations with missing information on wages, hours of work and on 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.[19] Our final sample consists of 49,021 employees clustered in 5,052 workplaces across the private and public sectors.

To correct for sample design and any observable non-response bias, our analyses of wages use employee level weights provided with the survey data (again, see Forth and 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. As noted earlier, the employer component of the WERS survey collects information on the share of all employees at the workplace who are from a non-white ethnic group.

In view of the relatively low incidence of ethnic minorities in the labour market (4.2% in 1998 rising to 9.3% in 2011 in the population covered by our sample – see Table 1), one would expect that, in most workplaces, the majority of employees are white, and this is indeed the case. Our data suggest that around three-fifths (62 per cent) of all workplaces employ no ethnic minority

[19] These controls are the share of employees who are trade union members, the share of employees age 50 or over and the share of employees between ages 18 to 21 years old.

workers. At the other end of the distribution, there are around one in twenty workplaces (4 per cent) in which ethnic minorities make up more than one fifth of the workforce.[20]

We link these workplace data to the observations provided by employees to show the distribution of white and non-white employees according to the share of non-white employees at the workplace; the results are shown in Figure 1. All-white workplaces account for around one-third of all employment. The degree of segregation of workplaces is shown by the fact that the distribution of white employees is shifted to the left of the graph, whilst the distribution of ethnic minority employees is shifted substantially to the right in comparison.

[FIGURE 1]

As discussed in the previous section, such segregation is partly a function of geography. The residential concentration of ethnic minorities in London, the West Midlands and (to a lesser extent) other urban areas, naturally has a strong bearing on the composition of workplaces by virtue of their location. However, other factors may also be at play. Column 1 of Table 2 presents the results of a Tobit regression which seeks to explain the share of non-white employees at the workplace as a function of its location and other characteristics. If the allocation of employees to workplaces by ethnicity is random conditional on their residential location (the conclusion reached by Carrington and Troske (1998) in their analysis of the US labour market), then we should find that

[20] We can use the binomial distribution to determine the probability that the average workplace is all-white under random allocation. From our data, we estimate that the average workplace in the population covered by WERS has 59 employees. The estimated share of ethnic minorities in the population is 0.068 (Table 1, column 4). The average workplace thus has a probability of 0.02 of being all-white, if workers are randomly allocated. As stated in the text, the observed probability that a workplace is all-white is 0.62. The probability that at least one-fifth of the workforce are ethnic minorities is less than 0.001 under random allocation, whereas the observed probability is 0.04. This suggests considerable non-random segregation by ethnicity, which we go on to investigate below.

the region in which the workplace is located is the sole determinant of workforce composition. In fact, the share of non-white employees differs systematically across a number of other workplace characteristics. The share of non-white employees is notably higher in larger workplaces. It is also 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 and the Health sector.

[TABLE 2]

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. Certainly, the Health sector, which we show to have a relatively high share of ethnic minority employees, is one of those sectors which Heath and Cheung (2006) note to be characterized by relatively low levels of self-reported prejudice on the part of employers and managers. 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 results from the type II Tobit estimator are shown in columns 2 and 3 of Table 2. Here, we allow employer characteristics to have different associations with the extensive margin (shown by the selection equation in column 2) and the intensive margin (shown in column 3). In fact, all statistically significant coefficients have the same sign in both equations, and a likelihood ratio test between the type I and type II Tobit models does not reject the null hypothesis that the type I model has the correct functional form. The type II model does provide some insights into the role of workplace size, however. Small workplaces are particularly unlikely to employ any non-white

employees. This can be expected in a situation where most job applicants are white.[21] However, column (3) shows that, 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 1,000 or more employees). This indicates that the largest workplaces may be more attractive to – or better at attracting – non-white employees than smaller establishments, a point that we return to below.

The final columns of Table 2 investigate the salience of geographical location in more detail. The nine Standard Statistical Regions included in columns 1-3 provide rather crude measures of the local area. 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 some information for 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. In columns 4 and 5 we test the sensitivity of the results discussed above to the use of this control for the composition of the local residential population. Column 4 presents the results of the specification in column 1 when run solely on the 2004 data; column 5 then shows the comparative results of a model which also controls for TTWA. The pseudo R-squared increases from 0.32 to 0.42 as a result, while the explanatory power of the dummies identifying Standard Statistical Region is much reduced.[22] The share of non-white employees in the workplace is no longer significantly different from the reference category (Yorkshire and Humberside) in East Anglia, the South East or Wales; the coefficient for Scotland has reduced by half and is now statistically significant at the 10% level. All other statistically significant coefficients in column 4 remain so in column 5,

[21] Using the binomial distribution, 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 0.068 (Table 1, column 4), is just 0.51 if the workplace has 10 employees but 0.99 if the workplace has 100 employees.

[22] F-test of region dummies in column 4: $F=10.82$, $p<0.001$. Column 5: $F= 2.27$, $p=0.016$.

with the exception of the coefficient on Professional staff. There is a small degree of attenuation in the coefficients associated with workplace size, share female, share older workers, Administrative staff and Sales staff. This suggests that there is a small degree of upward bias in these coefficients in column 1, arising from the coarse regional controls used there, but it is not substantial.

The main purpose of this analysis, however, is to explore the extent to which workplace segregation by ethnicity may be allocating non-whites into high or low wage workplaces. 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 which identifies a large-firm wage premium: see Troske, 1999 and Green et al., 2021). However, we investigate this more formally by first regressing each employee's log hourly wage on a set of employee characteristics, comprising: ethnicity, gender, age, age-squared, educational level and occupation. We compute the mean residual wage for each workplace (the mean wage net of differences in worker characteristics) and take this as a measure of the workplace component of wage setting for all workers in the establishment. We then regress this mean wage residual on the share non-white in the workplace, whilst controlling for a range of workplace characteristics that may also be correlated with wages. The results are shown in the first column of Table 3.

[TABLE 3]

Here, we find little statistically-significant evidence of the segregation of non-whites into high or low wage workplaces. When we enter the share non-whites at the workplace as a linear term, the coefficient is positive, but small and not statistically significant from zero. Allowing for non-linearities shows no significant evidence that wages are slightly higher or lower in workplaces with different share of non-white ethnic minority groups. In columns 2 and 3 we allow for different

effects by gender, and here there is some weak evidence that ethnic minority women are over-represented in higher-wage workplaces. In these specifications, we first compute the mean wage residual for each workplace solely among men (column 2) or women (column 3). We then regress this gender-specific 'workplace wage premium' on the workplace share of ethnic minorities.[23] Here, we find that workplaces with 7-12% of their workforce from ethnic minority groups (a share which sits above the mean of 6.5% and median of 1.3%) pay higher wages to women than workplaces with lower (or very high) shares of ethnic minorities. We may then expect to find, in our later analyses, that segregation across workplaces by ethnicity contributes little to the economy-wide ethnic wage gap for men, but may contribute to some extent for women.

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 sets of control variables. The first two panels of the table present results for men and women separately; the results for a combined sample are also shown in the third panel for completeness. Column 1 presents the raw 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 -0.098 log points. This gap reduces to -0.091 log points in column 2 after controlling for employee and job characteristics, such as gender, age, qualifications and occupation. This figure is broadly in line with other estimates of ethnic pay gaps for men (e.g. Manning and Rose, 2021). The small reduction in the magnitude of the pay gap between columns 1 and 2 indicates that non-white employees have fewer of the personal characteristics associated with high wages than white employees.

[TABLE 4]

[23] The WERS data do not provide a gender-specific measure of the share of ethnic minorities at the workplace.

In column 3 we add the workplace characteristics that would typically be found in the household surveys that are the staple of the literature on ethnic wage gaps in Britain (e.g. industry sector, region) and in column 4 we add additional workplace controls not commonly found in such surveys but which are available in WERS (e.g. whether foreign-owned; degree of product market competition). This latter group of variables adds to the share of wage variance explained by the model (the adjusted R^2 increases from 0.578 to 0.602) but they do not materially alter the estimated size of the ethnic wage gap, which is now -0.127 log points. Overall, controlling for employer characteristics has re-opened the wage gap, most likely due to the concentration of ethnic minorities in high-wage regions such as London.

Columns 3 and 4 are unable to account for unobserved workplace characteristics, but we are able to do so in column 5 where take advantage of the clustered nature of our employee survey by controlling for workplace fixed effects.[24] We have thereby removed the influence of wage differences between workplaces, such that the coefficient of -0.098 log points can be interpreted as the mean within-workplace ethnic wage gap. The main takeaway here is that, on average, male non-white employees experience a sizeable pay penalty of around 10 percentage points when compared with observationally-equivalent male white employees in the same workplace. The widening of the pay gap between columns 2 and 5 suggests that the economy-wide pay gap for male non-white employees is suppressed to a small degree by an over-representation of non-white males in high-wage workplaces. The segregation of whites and non-whites across workplaces does not then widen the ethnic wage gap for men; instead the pay gap is a function of wage setting within the workplace.

[24] We use the full sample here, including the observations from workplaces in which all of the employee observations are from white employees (or more rarely, all from non-white employees). However, sensitivity tests which replicate the analyses shown in column 5 of Table 5 using only observations from workplaces yielding employee observations from white and non-white workers are not substantively different and generate the same conclusions.

The second panel of Table 4 repeats the analysis for women. Here, there is no economy-wide pay gap either before, or after, controlling for personal and job characteristics. Again, this is a familiar finding (see Manning and Rose, 2021). However, a pay gap emerges after controlling for basic workplace characteristics (column 3) and this widens further and becomes statistically significant after controlling for additional workplace observables (column 4) and fixed unobserved workplace traits (column 5). The ethnic wage gap of -0.064 log points is not as large as for men, but it is sizeable. Moreover, it is under-estimated in analyses that do not take account of between-workplace wage differences. A comparison of columns 2 and 5 indicates that there is substantial over-representation of female non-white employees in higher-wage workplaces. When looking at the economy-wide gap, this serves to mask the considerable wage penalty experienced by non-white women within their place of work.

The results discussed above combine all non-white ethnic minority groups together. This is not ideal, although it is both a practical response to the limited sample sizes of the individual ethnic groups in our data and also aligns with the research (discussed in Section 2) which finds that hiring discrimination in Britain is mostly defined by skin colour rather than ethnicity per se. Nevertheless, in Table 5 we present estimates of wage gaps for a disaggregated set of ethnic groups. These estimates show some heterogeneity. Among men, wage penalties are generally larger for Black employees than they are for Indians and Pakistanis/Bangladeshis, whether one controls for workplace observables (column 5) or workplace fixed effects (column 6). Among women, wage gaps are negative for each ethnic group, but the only groups to experience a statistically-significant wage penalty compared to whites are Black Africans and Indians. In terms of the role of across and within-workplace wage differentials, the general finding is that the majority of the wage gaps that exist are found within the workplace (as in Table 4).

[TABLE 5]

Finally, we noted above that our results are estimated on a pooled sample of data from 1998, 2004 and 2011. We formally tested whether there was statistical support for trends in earnings gaps over time relative to white employees by interacting the non-white dummy for all employees in column 5 of Table 4 with year dummies. The interaction coefficients were individually insignificant as well as jointly (F-test for joint statistical significance: $F(2,5051)=0.66$, p.val=0.517). 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, 2019; Longhi and Brynin, 2017).

5. EVIDENCE OF DISCRIMINATION?

One interpretation of the wage gaps identified in Tables 4 and 5 is that non-white ethnic minority employees are being treated unfairly in wage-setting within the workplace. This is hard to prove, and other explanations are possible. One is that non-whites may be willingly trading off lower money wages in return 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 and 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 five-point scale (Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied). 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 elements of

the reward package 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. 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 these other elements of reward. However, in both fixed-effects specifications, non-white ethnic minority employees 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 is consistent with a situation in which non-white workers are less likely than white workers to receive a wage equal to their marginal product.[25]

[TABLE 6]

Further evidence comes from employees' evaluation of skill-mismatch. 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 five-point scale (Much higher; Higher; About the same; Lower; Much lower). This question was not asked in the 1998 survey and so we rely on data from 2004 and 2011 only. We reduce the scale to a binary variable indicating that the employee is over-

[25] The negative relationship between non-white ethnicity and pay satisfaction remains apparent in separate models for male and female employees, although the coefficient in column (2) for males is not statistical significant from zero (t=0.88).

skilled for their present job and logit regressions (equivalent to the specifications shown in Table 6) to examine whether there are differences in ratings of over-skilled between whites and non-whites after controlling for personal, job and workplace characteristics. Results are shown in Table 7. Non-white employees are more likely than whites to judge that their skills are higher than those needed for their job.[26]

[TABLE 7]

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. However, our results on both pay satisfaction and skill mismatch are consistent with a situation in which non-white workers are treated less favourably in wage-setting that their white colleagues.

6. JOB EVALUATION AS A MECHANISM FOR FAIRNESS IN WAGE SETTING?

Having presented evidence that non-white employees are treated less favourably than whites in the process of wage determination within the workplace, it remains to identify mechanisms through which this disadvantage can be ameliorated or eradicated. One practice argued to have the potential to reduce within-workplace gender wage gaps is job evaluation (Ghobadian and White, 1991; Figart, 2000; International Labor Organisation, 2009; European Commission, 2021). This involves 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. Job evaluation schemes are often used as part of Equal Pay audits, although their

[26] The positive relationship between non-white ethnicity and over-skilling remains apparent in separate models for male and female employees, but the coefficient for males is not statistically significant from zero (t=1.59).

limitations in delivering equal pay for women have also been recognized (Lissenburgh, 1995; Gilbert, 2005; Chen et al., 1999). Employer respondents in the 2004 and 2011 WERS are asked whether there is a formal job evaluation scheme at their workplace. In Table 8 we present the results of a model of log hourly wages in which we control for our standard set of personal, job and workplace characteristics, but add a dummy variable indicating whether the workplace operates a job evaluation scheme. This is interacted with the dummy identifying non-white employees. The table shows that non-whites experience a wage penalty of -0.132 log points in workplaces without a job evaluation scheme, compared with a penalty of -0.070 log points when a job evaluation scheme is present.[27] The reduction in the wage penalty comes about because ethnic minority workers receive a greater uplift in their wages in the presence of a job evaluation scheme than observationally-equivalent white workers (an additional 0.062 log points). We cannot infer causality as we have no valid instrument for the use of job evaluation. However, if a causal interpretation were valid, these results would suggest that the ethnic wage penalty is halved, on average, in the presence of a job evaluation scheme.

[TABLE 8]

At present, workplaces with job evaluation schemes account for only one third (36 per cent) of all employment. One may not seek to mandate such schemes: they are complex to undertake and, often, expensive. However, the broad principle here is one of transparency in wage setting within the workplace: examining pay differentials between jobs or workers in such a way as to encourage the employer to either justify those differentials or take pro-active steps to narrow them. Job evaluation is one mechanism through which such transparency may be achieved.

[27] In separate models for men and women, the coefficient on the interaction between non-white ethnicity and job evaluation is positive and statistically significant for men (beta=0.094; t=2.54) but non-significant for women (beta=0.009; t=0.22).

7. CONCLUSION

Using matched employer-employee data for Britain we examine ethnic wage differentials among full-time employees across the economy. Our data differ from the household surveys that dominate the literature by providing a rich array of individual, job and workplace covariates, and in observing multiple employees in each workplace. These data permit insights into the role of the workplace in ethnic wage differentials that have not been possible previously.

We find substantial ethnic segregation across workplaces: around three fifths of workplaces in Britain employ no ethnic minority workers. However, this workplace segregation does not contribute to the aggregate wage gap between ethnic minorities and white employees. Instead, ethnic wage gaps 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 10 per cent less than observationally-equivalent white employees after accounting for wage differences across workplaces. Among female employees, the wage penalty for non-whites is around 6 per cent.

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.

Turning to potential remedies, we find that the average ethnic wage penalty is around half as large in workplaces with a formal job evaluation scheme as in workplaces without such a scheme. This suggests that increased transparency within the workplace or firm is one route towards fairness in wage setting. Job evaluation is, of course, not the only mechanism through which such

transparency may be achieved: calls have been made for the introduction of ethnic pay gap reporting in the UK (e.g. Makortoff, 2021). 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 (Duchini et al., 2020; Blundell, 2021). Since much of the ethnic wage gap exists within workplaces, rather than between them, extending the policy to ethnicity may bring rewards.

REFERENCES

Abowd, J., Kramarz, F. and Margolis, D. (1999) "High wage workers and high wage firms", *Econometrica*, 67, 2: 251-333.

Amadxarif, Z., Angeli, M., Haldane, A. and Zemaityte, G. (2020) "Understanding pay gaps", Bank of England Staff Working Paper No. 877.

Amemiya, T. (1984) "Tobit models: a survey", *Journal of Econometrics*, 24: 3-61.

Avery, D. and McKay, P. (2006) "Target practice: an organisational impression management approach to attracting minority and female job applicants", *Personnel Psychology*, 59: 157-187.

Aydemir, A. and Skuterudi M. (2008) "The immigrant wage differential within and across establishments", *Industrial and Labor Relations Review*, 61, 3: 334-352.

Barth, E., Bryson, A., Davis, J. and Freeman, R. (2016) "It's where you work: Increases in the dispersion of earnings across establishments and individuals in the United States", *Journal of Labor Economics*, 34, S2: S67-S97.

Becker, G. (1971) *The Economics of Discrimination* (2nd edition). Chicago: University of Chicago Press.

Black, D. 1995. "Discrimination in an Equilibrium Search Model." *Journal of Labor Economics* 13, 2: 309–33.

Blackaby, D., Leslie, D., Murhpy, P. and O'Leary, N. (2002). White/Ethnic Minority Earnings and Employment Differentials in Britain: Evidence from the LFS, *Oxford Economic Papers*, 54, 270-297.

Blundell, J. (2021) "Wage responses to gender pay gap reporting requirements", CEP Discussion Paper No. 1750, London: Centre for Economic Performance.

Bond, T. and Lehmann, J. (2018) "Prejudice and racial matches in employment" *Labour Economics,* 51: 271-293.

Booth, A. (1995) *The Economics of the Trade Union*, Cambridge: Cambridge University Press.

Bryson, A., Forth, J. and Stokes, L. (2018) "The performance pay premium and wage dispersion in Britain", *The Manchester School*, 86, 2: 139-154.

Card, D., Heining, J. and Kline, P. (2013) "Workplace heterogeneity and the rise of West German wage inequality", *Quarterly Journal of Economics*, 128, 3: 967-1015.

Carrington, W and Troske, K. (1998) "Interfirm segregation and the black/white wage gap", *Journal of Labor Economics*, 16, 2: 231–260.

Chen, S., Orazem, P., Mattila, J. and Greig, J. (1999) "Measurement error in job evaluation and the gender wage gap", *Economic Inquiry*, 37, 2: 181-194.

Commission on Race and Ethnic Disparities (2021) *Commission on Race and Ethnic Disparities: The Report*, London: Commission on Race and Ethnic Disparities.

Department for Business, Innovation and Skills (2015) *Workplace Employee Relations Survey, 2011,* [data collection], 6th Edition, Colchester: UK Data Service. SN: 7226, http://doi.org/10.5255/UKDA-SN-7226-7

Department of Trade and Industry (2007) *Workplace Employee Relations Survey: Cross-Section, 1998*, [data collection], 7th Edition, Colchester: UK Data Service. SN: 3955, http://doi.org/10.5255/UKDA-SN-3955-1

Department of Trade and Industry (2014) *Workplace Employee Relations Survey, 2004; Cross-Section Survey, 2004 and Panel Survey, 1998-2004, Wave 2*, [data collection], 5th Edition, Colchester: UK Data Service. SN: 5294, http://doi.org/10.5255/UKDA-SN-5294-2

Dineen, B. and Allen, D. (2016) "Third party employment branding: Human capital inflows and outflows following "best places to work" certifications", *Academy of Management Journal*, 59, 1: 90-112.

Duchini, E., Simion, S. and Turrell, A. (2020) "Pay transparency and cracks in the glass ceiling", University of Warwick, mimeo.

Dustmann, C. and Fabbri, F. (2003) "Language proficiency and labour market performance of immigrants in the UK", *Economic Journal*, 113, 419: 695–717.

Dustmann, C. and Theodoropoulos, N. (2010) "Ethnic minority immigrants and their children in Britain", *Oxford Economic Papers*, 62, 2: 209-233.

Edmans, A. (2011) "Does the stock market fully value intangibles? Employee satisfaction and equity prices", *Journal of Financial Economics*, 101, 3: 621-640.

European Commission (2021) *Proposal for a Directive of the European Parliament and of the Council to Strengthen the Application of the Principle of Equal pay for Equal Work or Work of Equal Value Between Men and Women Through Pay Transparency and Enforcement Mechanisms*, COM(2021) 93, Brussels: European Commission.

Evans, T. (2020) *Ethnicity Pay Gaps in Great Britain 2019.* London: Office for National Statistics.

Faggio G, Salvanes K and Van Reenen J. (2010) "The evolution of inequality in productivity and wages: panel data evidence", *Industrial and Corporate Change*, 19, 6: 1919-1951.

Faragher J. (2020) "DWP must pay woman £400,000 after she wins claim for race and age discrimination", *Personnel Today*, 25th February.

Figart, D. (2000) "Equal pay for equal work: The role of job evaluation in an evolving social norm", *Journal of Economic Issues*, 34, 1: 1-19.

Forth, J. and Freeth, S. (2014). *The Design and Administration of the 2011 Workplace Employment Relations Survey*, London: Department for Business Innovation and Skills.

Gerard, F., Lagos, L., Severnini, E. and Card, D. (2018) "Assortative matching or exclusionary hiring? The impact of firm policies on racial wage differences in Brazil", NBER Discussion Paper No. w25176, Cambridge, MA: National Bureau of Economic Research.

Ghobadian, A. and White, M. (1991) *Job Evaluation and Equal Pay*, Department of Employment Research Paper No.58, London: Department of Employment.

Gilbert, K. (2005) "The role of job evaluation in determining equal value in tribunals: Tool, weapon or cloaking device?", *Employee Relations*, 27, 1: 7-19.

Giuliano, L., Levine, D.I. and Leonard, J. (2011) "Racial bias in the manager-employee relationship an analysis of quits, dismissals, and promotions at a large retail firm", *Journal of Human Resources*, 46, 1: 26-52.

Green, C., Heywood, J. and Theodoropoulos, N. (2021). "Hierarchy and the employer size effect: Evidence from Britain", *Economica*, 88, 351: 671-696.

Heath, A. and Cheung, S. (2006) *Ethnic Penalties in the Labour Market: Employers and Discrimination*, Department for Work and Pensions Research Report No. 341.

Heath, A. and Di Stasio, V. (2019) "Racial discrimination in Britain, 1969-2017: A meta-analysis of field experiments on racial discrimination in the British labour market", *The British Journal of Sociology*, 70, 5: 1774–1798.

Hellerstein, J. and Neumark, D. (2008) "Workplace segregation in the United States: Race, ethnicity, and skill", *Review of Economics and Statistics*, 90, 3: 459–477.

Henehan, K. and Rose, H. (2018) *Opportunities Knocked? Exploring pay penalties among the UK's ethnic minorities*, London: Resolution Foundation.

Hersch, J. (2008) "Profiling the new immigrant worker: The effects of skin color and height", *Journal of Labor Economics*, 26, 2: 345-386.

Hirsch, B.T and Macpherson, D.A. (2004) "Wages, sorting on skill, and the racial composition of jobs" *Journal of Labor Economics*, 22, 1: 189-210.

Hirsch, B.T and Schumacher, E.J. (1992) "Labor earnings, discrimination, and the racial composition of jobs" *Journal of Human Resources*, 27, 4: 602-628.

Hoque, K. and Noon, M. (2004) "Equal opportunities policy and practice in Britain: evaluating the 'empty shell hypothesis" *Work, Employment and Society*, 18, 3: 481-506.

Hudson, M., Netto, G., Sosenko, F., Noon, M., de Lima, P., Gilchrist, A., and Kamenou-Aigbekaan, N. (2013) *In-work Poverty, Ethnicity and Workplace Cultures*, York: Joseph Rowntree Foundation.

International Labor Organisation (2009) *Promoting Equity: gender-neutral job evaluation for equal pay. A step-by-step guide*, Geneva: International Labor Organisation.

Kline, P., Rose, E. and Walters, C. (2021) "Systemic discrimination among large U.S. employers", NBER Working Paper 29053.

Lang, K. and Lehmann, J. (2012) "Racial discrimination in the labour market: theory and empirics", *Journal of Economic Literature*, 50, 4: 959-1006.

Lissenburgh, S. (1995) "Implementing 'equal value' through collective bargaining and job evaluation", *Policy Studies*, 16, 4: 49-64.

Longhi, S. and Brynin, M. (2017) *The Ethnicity Pay Gap*. Equality and Human Rights Commission, Research Report No. 108, Manchester: Equality and Human Rights Commission.

Makortoff, K. (2021) "Business, unions and EHRC press government on ethnic pay gap reporting", *The Guardian*, 25th June.

Manning, A. (2003) *Monopsony in Motion*, Princeton University Press.

Manning, A. and Rose, R. (2021) "Ethnic minorities and the UK labour market", *CentrePiece*, Summer, pp. 2-5.

Modood, T., Berthoud, R., Lakey, J., Nazroo, J., Smith, P., Virdee, S. and Beishon, S. (1997) *Ethnic Minorities in Britain: Diversity and Disadvantage – The Fourth National Survey of Ethnic Minorities*, London: Policy Studies Institute.

Mumford, K. and Smith, P. (2007) "The gender earnings gap in Britain: including the workplace", *The Manchester School*, 75, 6: 653-672.

Neal, D. (2004) "The measured Black-White wage gap among women is too small", *Journal of Political Economy*, 112, 1 (part 2): S1-S28.

Office for National Statistics (2015) *2011 Census Analysis: Ethnicity and Religion of the non-UK born population in England and Wales, 2011*, London: Office for National Statistics.

Office for National Statistics (2020) *Regional Ethnic Diversity*, London: Office for National Statistics. Available at: https://www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/national-and-regional-populations/regional-ethnic-diversity/latest [Last accessed: 2nd August 2021]

Office for National Statistics (2021) *A09: Labour Market Status by Ethnic Group*, Table 13, Dataset edition: 18th May 2021, London: Office for National Statistics.

Pendakur, K. and Woodcock, S. (2010) "Glass ceilings or glass doors? Wage disparity within and between firms", *Journal of Business and Economic Statistics*, 28, 1: 181-189.

Phelps, E. (1972) "The statistical theory of racism and sexism", *The American Economic Review*, 62, 4: 659-661.

Ragan, J.F and Tremblay, C.H. (1988) "Testing for employee discrimination by race and sex", *Journal of Human Resources*, 23, 1: 123–137.

Rosen, S. (1986) "The theory of equalizing differences", Chapter 12, *Handbook of Labor Economics*, Ashenfelter, O. and Layard, R. (eds.), Vol. 1, 641-692

Schaeffer, D. and Singleton C. (2019) "Recent changes in British wage inequality: evidence from large firms and occupations", *Scottish Journal of Political Economy*, 67, 1: 100-125.

Shapiro, C. and Stiglitz, J. (1984) "Equilibrium unemployment as a worker discipline device", *The American Economic Review*, 74, 3: 433-444.

Small, M. and Pager, D. (2020) "Sociological perspectives on racial discrimination", *Journal of Economic Perspectives*, 34, 2: 49-67.

Song, J., Price, D.J., Guvenen, F., Bloom, N. and Von Wachter, T. (2019) "Firming up inequality", *The Quarterly Journal of Economics*, 134, 1: pp.1-50.

Stewart, M.B. (1983). "On least squares estimation when the dependent variable is grouped", *The Review of Economic Studies*, 50, 4: 737-753.

Theodoropoulos, N., Forth. J. and Bryson, A. (2019) "Are women doing it for themselves? Female managers and the gender wage gap", IZA Discussion paper: 12657, Bonn: IZA.

Troske, K. (1999) “Evidence on the employer size-wage premium from worker-establishment matched data”, *Review of Economics and Statistics*, 81, 1: 15-26.

Webber, A. (2018) “Woman who was spied on by employer wins race discrimination case”, *Personnel Today*, 5th November.

Wheatley, D. and Gifford, J. (2019) *UK Working Lives: Survey Report 2019*, London: CIPD.

Yankow, J. (2006) “Why do cities pay more? An empirical examination of some competing theories of the urban wage premium”, *Journal of Urban Economics*, 60, 2: 139-161.

Zwysen, W. and Longhi, S. (2018) “Employment and earning differences in the early career of ethnic minority British graduates: The importance of university career, parental background and area characteristics”, *Journal of Ethnic and Migration Studies*, 44, 1: 154–172.

Table 1: Distribution of employees by ethnic group

	WERS 1998	WERS 2004	WERS 2011	Pooled sample
	Share (obs.)	Share (obs.)	Share (obs.)	Share (obs.)
White	0.958 (n=18,782)	0.931 (n=14,688)	0.907 (n=12,568)	0.932 (n=46,038)
Black Caribbean	0.007 (n=154)	0.007 (n=106)	0.009 (n=118)	0.008 (n=378)
Black African	0.004 (n=93)	0.010 (n=137)	0.012 (n=138)	0.008 (n=368)
Black Other	0.002 (n=45)	0.005 (n=76)	0.006 (n=74)	0.004 (n=195)
Indian	0.011 (n=198)	0.019 (n=261)	0.025 (n=284)	0.018 (n=743)
Pakistani/Bangladeshi	0.004 (n=68)	0.006 (n=81)	0.010 (n=119)	0.007 (n=268)
Chinese	0.002 (n=29)	0.003 (n=45)	0.004 (n=47)	0.003 (n=121)
Other ethnic group	0.009 (n=271)	0.014 (n=303)	0.021 (n=336)	0.014 (n=910)
All non-white	0.038 (n=858)	0.063 (n=1,009)	0.086 (n=1,116)	0.063 (n=2,983)
All employees	1.000 (n=19,640)	1.000 (n=15,697)	1.000 (n=13,684)	1.000 (n=49,021)

Notes.

(i) 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.

(ii) In 1998 WERS we have "another ethnic group". In 2004 our "another ethnic group consists of any other ethnic group, any other Asian background, any other mixed background and White and Asian". In 2011 our "another ethnic group consists of any other ethnic group, Arab, any other Asian background, any other mixed background and White and Asian".

Table 2: Type I and Type II Tobit regressions of the share non-white at the workplace

	Type II Tobit	Type II Tobit		Type I Tobit	
	MQ Share Non-White	Selection	Ln. MQ Share Non-White	MQ Share Non-White 2004: no TTWA	MQ Share Non-White 2004: with TTWA
	(1)	(2)	(3)	(4)	(5)
Workplace size (>=5 to <=24 employees)	-0.265***	-3.109***	-0.630***	-0.251***	-0.219***
	(0.023)	(0.220)	(0.178)	(0.035)	(0.034)
Workplace size (>=25 to <=49 employees)	-0.189***	-2.574***	-0.760***	-0.150***	-0.119***
	(0.023)	(0.224)	(0.149)	(0.035)	(0.033)
Workplace size (>=50 to <=99 employees)	-0.121***	-2.057***	-0.668***	-0.073**	-0.061**
	(0.018)	(0.220)	(0.132)	(0.032)	(0.031)
Workplace size (>=100 to <=249 employees)	-0.066***	-1.513***	-0.675***	-0.001	0.003
	(0.017)	(0.218)	(0.130)	(0.032)	(0.031)
Workplace size (>=250 to <=499 employees)	-0.016	-0.803***	-0.355***	0.057*	0.054*
	(0.018)	(0.230)	(0.137)	(0.034)	(0.033)
Workplace size (>=500 to <=999 employees)	-0.009	-0.584**	-0.440***	0.020	0.048
	(0.019)	(0.235)	(0.155)	(0.035)	(0.034)
Part of a larger organization	0.041	0.198	0.172	0.077	0.077
	(0.049)	(0.167)	(0.256)	(0.099)	(0.085)
Single independent establishment	-0.003	0.011	-0.075	0.056	0.058
	(0.050)	(0.173)	(0.263)	(0.099)	(0.087)
Private sector	0.028	0.160	0.159	0.096	0.066
	(0.032)	(0.112)	(0.174)	(0.066)	(0.058)
Foreign owned/controlled	0.030	0.072	0.263	0.039	0.041
	(0.032)	(0.111)	(0.162)	(0.057)	(0.050)
Few competitors	-0.022	-0.116	-0.101	-0.074	-0.057
	(0.024)	(0.088)	(0.135)	(0.057)	(0.052)
Many competitors	0.003	-0.017	0.053	-0.040	-0.033
	(0.024)	(0.089)	(0.136)	(0.053)	(0.048)
Share females	-0.093*	-0.170	-0.183	-0.181**	-0.183**
	(0.048)	(0.158)	(0.240)	(0.081)	(0.076)
Share part time employees	0.007	-0.088	0.122	-0.034	0.025
	(0.040)	(0.134)	(0.217)	(0.073)	(0.068)
Share of employees who belong to a union	0.042	0.100	0.294*	0.066	0.043
	(0.031)	(0.112)	(0.167)	(0.052)	(0.045)
Share of employees over 50 years old	-0.300***	-0.996***	-1.518***	-0.564***	-0.475***
	(0.052)	(0.176)	(0.284)	(0.091)	(0.085)
Share of employees aged 18 to 21	0.023	0.278	0.246	0.107	0.145
	(0.069)	(0.242)	(0.372)	(0.118)	(0.111)
Largest occupational group – Managerial staff	0.051	0.155	0.299	0.075	0.014
	(0.059)	(0.180)	(0.270)	(0.077)	(0.070)
Largest occupational group – Professional staff	0.059	0.233	0.183	0.123*	0.096
	(0.042)	(0.143)	(0.221)	(0.069)	(0.068)
Largest occupational group – Technical staff	0.020	0.146	0.089	0.038	0.017
	(0.038)	(0.133)	(0.200)	(0.068)	(0.065)
Largest occupational group – Administrative staff	0.079**	0.246*	0.340*	0.157**	0.119*
	(0.037)	(0.128)	(0.189)	(0.067)	(0.062)
Largest occupational group – Skilled trade staff	-0.052	-0.196	-0.309	-0.076	-0.045
	(0.039)	(0.137)	(0.205)	(0.073)	(0.066)
Largest occupational group – Personal service staff	0.008	-0.011	0.000	0.057	0.018
	(0.037)	(0.131)	(0.204)	(0.070)	(0.064)
Largest occupational group – Sales staff	0.083**	0.281**	0.379**	0.169***	0.124**
	(0.034)	(0.118)	(0.167)	(0.059)	(0.056)
Largest occupational group – Process operative staff	0.029	0.034	0.141	0.005	0.014
	(0.042)	(0.139)	(0.207)	(0.083)	(0.078)
Manufacturing	0.009	-0.007	-0.061	0.076	0.079
	(0.040)	(0.150)	(0.212)	(0.076)	(0.071)
Electricity, gas, water	-0.078*	-0.338*	-0.762***	-0.079	-0.029
	(0.041)	(0.175)	(0.224)	(0.082)	(0.086)
Construction	-0.062	-0.202	-0.402*	-0.028	-0.039
	(0.044)	(0.164)	(0.229)	(0.083)	(0.077)
Wholesale and retail	0.043	0.112	0.108	0.054	0.053

	(0.038)	(0.132)	(0.196)	(0.066)	(0.063)
Hotels and restaurants	0.111**	0.309**	0.399*	0.176*	0.141
	(0.043)	(0.145)	(0.215)	(0.095)	(0.089)
Transport and communication	0.012	0.086	0.046	0.097	0.056
	(0.042)	(0.155)	(0.221)	(0.079)	(0.071)
Financial services	0.006	-0.087	-0.015	0.051	0.055
	(0.047)	(0.167)	(0.233)	(0.086)	(0.082)
Other business services	0.058	0.220*	0.317*	0.059	0.052
	(0.036)	(0.126)	(0.181)	(0.067)	(0.063)
Public administration	0.048	0.130	0.076	0.086	0.095
	(0.052)	(0.172)	(0.254)	(0.105)	(0.090)
Education	0.044	0.109	-0.003	0.235**	0.195**
	(0.047)	(0.162)	(0.250)	(0.094)	(0.082)
Health	0.190***	0.700***	0.804***	0.299***	0.309***
	(0.039)	(0.133)	(0.200)	(0.073)	(0.065)
North	-0.116***	-0.467***	-0.935***	-0.075	0.012
	(0.042)	(0.158)	(0.252)	(0.078)	(0.073)
North west	0.034	0.130	-0.008	0.081	0.088
	(0.039)	(0.134)	(0.214)	(0.068)	(0.062)
East Midlands	0.037	0.188	0.102	0.065	0.054
	(0.039)	(0.139)	(0.223)	(0.067)	(0.063)
West Midlands	0.141***	0.585***	0.797***	0.097	0.024
	(0.039)	(0.143)	(0.225)	(0.063)	(0.060)
East Anglia	-0.035	-0.101	-0.314	-0.136**	-0.076
	(0.051)	(0.182)	(0.299)	(0.067)	(0.062)
South East	0.164***	0.634***	0.868***	0.174***	0.048
	(0.033)	(0.117)	(0.188)	(0.055)	(0.051)
South West	-0.070*	-0.242*	-0.506**	-0.108	-0.016
	(0.039)	(0.145)	(0.227)	(0.066)	(0.061)
Wales	-0.100**	-0.362**	-0.881***	-0.192**	-0.101
	(0.047)	(0.176)	(0.263)	(0.078)	(0.072)
Scotland	-0.112***	-0.478***	-0.934***	-0.227***	-0.116*
	(0.042)	(0.147)	(0.233)	(0.065)	(0.060)
Year 2004	0.053***	0.155**	0.406***		
	(0.019)	(0.071)	(0.103)		
Year 2011	0.085***	0.229***	0.663***		
	(0.020)	(0.073)	(0.109)	0.057	0.040
Dummy for missing union density	0.031	0.175**	0.179	(0.042)	(0.044)
	(0.021)	(0.086)	(0.116)	-0.154**	-0.164
Dummy for missing age 50 and over	0.012	0.077	0.158	(0.075)	(0.116)
	(0.059)	(0.234)	(0.298)	0.140*	0.234**
Dummy for missing age 18 to 21	0.013	0.009	0.079	(0.076)	(0.111)
	(0.062)	(0.235)	(0.335)		
var(e.MQShareEthnic)	0.077***			0.088***	0.074***
	(0.006)			(0.010)	(0.009)
Constant	-0.058	1.783***	-4.087***	-0.100	-0.220*
	(0.081)	(0.354)	(0.458)	(0.141)	(0.126)
Pseudo R-squared	*0.230*		*0.149*	*0.321*	*0.421*
/lnsigma			*0.378***		
			(0.046)		
/athrho			*2.376***		
			(0.306)		
sigma			*1.459***		
			(0.067)		
rho			*0.983***		
			(0.010)		
lambda			*1.434***		
			(0.080)		
Observations	*6,568*	*6,568*	*6,568*	*2,086*	*2,086*
R-squared		*0.149*	*0.149*		

Notes. Robust standard are errors in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1. Columns 4 and 5 estimated on 2004 data only. TTWA: Ethnic minority share by travel to work area.

Table 3: OLS regression of average wage residual in the workplace on share non-white

	All		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
MQ Share Non-White - continuous	0.008		0.035		-0.029	
	(0.103)		(0.096)		(0.105)	
MQ Share Non-White - categorical (ref. None)						
>0-6%		-0.0003		0.004		0.001
		(0.021)		(0.021)		(0.021)
7-12%		0.036		0.038		0.047*
		(0.031)		(0.029)		(0.028)
13% or more		-0.005		0.005		-0.025
		(0.035)		(0.035)		(0.035)
Observations	*4,886*	*4,886*	*4,886*	*4,886*	*4,886*	*4,886*
R-squared	*0.284*	*0.286*	*0.362*	*0.363*	*0.355*	*0.358*

Robust standard errors are in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1.

The dependent variable is the mean wage residual for each workplace after netting out employee level characteristics (ethnicity, gender, age, age-squared, education level and occupation) from a first stage regression where the dependent variable is the individual's log hourly wage.

Controls: workplace size (6 dummies); private sector; industry (11 dummies; SIC(2007) Section level); region (9 dummies; Government Office Region); organisational structure (single independent workplace; part of larger firm with multiple workplaces in UK; sole UK workplace of foreign-owned firm); foreign owned; number of competitors (none; few; many); share female; share part-time; union density; share aged 50+; share aged 18-21; largest occupational group (nine dummies; SOC Major Group); dummies to identify variables with missing values; year dummies.

Table 4: Ethnic wage gaps among full-time employees

	(1)	(2)	(3)	(4)	(5)
	Raw + Time	+ employee controls	+ typical h/hold survey controls	+ extra workplace controls	Workplace FE
MALE:					
Non-white ethnic minority	-0.098***	-0.091***	-0.130***	-0.127***	-0.098***
	(0.026)	(0.018)	(0.017)	(0.016)	(0.016)
Observations	*27,773*	*27,773*	*27,773*	*27,773*	*27,773*
Adj. R-squared	*0.136*	*0.522*	*0.578*	*0.602*	*0.706*
FEMALE:					
Non-white ethnic minority	-0.006	0.002	-0.061	-0.072***	-0.064***
	(0.028)	(0.019)	(0.017)	(0.016)	(0.018)
Observations	*21,248*	*21,248*	*21,248*	*21,248*	*21,248*
Adj. R-squared	*0.169*	0.510	0.566	0.594	0.686
ALL:	-0.063***	-0.054***	-0.104***	-0.108***	-0.086***
Non-white ethnic minority	(0.021)	(0.014)	(0.013)	(0.012)	(0.011)
Observations	*49,021*	*49,021*	*49,021*	*49,021*	*49,021*
Adj. R-squared	*0.141*	*0.517*	*0.572*	*0.597*	*0.691*

Robust standard errors are in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1.
The dependent variable is the individual's log hourly wage.
All models include year dummies.
Employee controls: gender; age; age squared; married/cohabiting; dependent children; disability; academic qualifications (ref. none; low GCSE; high GCSE, A-level, first degree, postgraduate degree); vocational qualification; tenure; tenure squared; union member; contract type (ref. fixed-term; permanent; temporary); occupation (nine dummies; SOC Major Group).
Household survey controls: workplace size (6 dummies); private sector; industry (11 dummies; SIC(2007) Section level); region (9 dummies; Standard Statistical Region).
Extra workplace controls: organisational structure (single independent workplace; part of larger firm with multiple workplaces in UK; sole UK workplace of foreign-owned firm); foreign owned; number of competitors (none; few; many); share female; share part-time; union density; share aged 50+; share aged 18-21; largest occupational group (nine dummies; SOC Major Group); dummies to identify variables with missing values.

Table 5: Ethnic wage gaps among full-time employees: heterogeneity by selected ethnic groups

VARIABLES	(1) All Raw	(2) All Conditional	(3) All FE	(4) Males Raw	(5) Males Conditional	(6) Males FE	(7) Females Raw	(8) Females Conditional	(9) Females FE
Black Caribbean	-0.073*	-0.086***	-0.090***	-0.211***	-0.136***	-0.133***	0.107**	-0.025	-0.046
	(0.039)	(0.026)	(0.025)	(0.055)	(0.037)	(0.040)	(0.049)	(0.034)	(0.040)
Black African	-0.111**	-0.213***	-0.179***	-0.185***	-0.258***	-0.254***	-0.002	-0.143***	-0.091*
	(0.053)	(0.036)	(0.037)	(0.068)	(0.056)	(0.062)	(0.072)	(0.041)	(0.048)
Black Other	-0.205***	-0.134***	-0.104***	-0.365***	-0.232***	-0.161**	0.010	-0.001	-0.031
	(0.058)	(0.040)	(0.039)	(0.080)	(0.063)	(0.070)	(0.076)	(0.036)	(0.042)
Indian	-0.078**	-0.122***	-0.085***	-0.039	-0.113***	-0.087***	-0.142***	-0.114***	-0.070***
	(0.037)	(0.019)	(0.018)	(0.044)	(0.026)	(0.027)	(0.052)	(0.024)	(0.025)
Pakistani/Bangladeshi	-0.108**	-0.060**	-0.049	-0.128*	-0.065*	-0.042	-0.100*	-0.056	-0.061
	(0.050)	(0.030)	(0.033)	(0.071)	(0.035)	(0.047)	(0.052)	(0.048)	(0.050)
Constant	1.915***	0.578***	0.851***	1.977***	0.389***	0.751***	1.808***	0.679***	0.747***
	(0.013)	(0.053)	(0.038)	(0.015)	(0.066)	(0.053)	(0.014)	(0.069)	(0.065)
Observations	49,021	49,021	49,021	27,773	27,773	27,773	21,248	21,248	21,248
R-squared	0.143	0.599	0.723	0.139	0.604	0.754	0.172	0.596	0.753
R-squared adjusted	0.143	0.598	0.691	0.138	0.603	0.707	0.172	0.594	0.686

Robust standard errors are in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1.
The dependent variable is the individual's log hourly wage.
All models include year dummies. Except in rows 1, 4 and 7, specifications are identical to those shown in columns 4 and 5 of Table 4.

Table 6: Ethnic differential in pay satisfaction after conditioning for other rewards

	(1) Logit	(2) FE Logit	(3) Logit	(4) FE Logit
Non-white ethnic minority	-0.216***	-0.194**	-0.221**	-0.268***
	(0.074)	(0.076)	(0.088)	(0.086)
Log hourly wage, mid-points	1.578***	1.517***	1.486***	1.369***
	(0.060)	(0.067)	(0.075)	(0.083)
Training incidence	0.251***	0.325***		
	(0.034)	(0.038)		
A lot of influence how work is done	0.199***	0.197***		
	(0.034)	(0.037)		
A lot of influence at the pace at which you work	0.186***	0.170***		
	(0.035)	(0.038)		
A lot of influence at the tasks you do your job	0.134***	0.133***		
	(0.036)	(0.038)		
Strongly agree/agree, feel my job is secure	0.674***	0.628***		
	(0.031)	(0.035)		
Strongly agree/agree, never seem to have enough time to get my job done	-0.338***	-0.285***		
	(0.031)	(0.035)		
Strongly agree/agree, my job requires that I work very hard	0.024	0.021		
	(0.038)	(0.041)		
Satisfaction with Influence, Very Sat/Sat			0.222***	0.197***
			(0.051)	(0.056)
Satisfaction with Achievement, Very Sat/Sat			0.191***	0.199***
			(0.056)	(0.062)
Satisfaction with Scope, Very Sat/Sat			0.005	0.036
			(0.057)	(0.060)
Satisfaction with Training, Very Sat/Sat			0.714***	0.744***
			(0.040)	(0.045)
Satisfaction with Job Security, Very Sat/Sat			0.856***	0.910***
			(0.043)	(0.050)
Satisfaction with Work Itself, Very Sat/Sat			0.357***	0.352***
			(0.054)	(0.062)
Satisfaction with Involvement, Very Sat/Sat			0.511***	0.501***
			(0.040)	(0.046)
Constant	-2.680***		-3.568***	
	(0.239)		(0.323)	
Observations	*48,814*	*45,531*	*29,381*	*27,145*

Robust standard errors are in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1.
The dependent variable is a binary measure on satisfaction with pay taking the value of 1 if the individual reported (very satisfied/satisfied), 0 otherwise (neither satisfied not dissatisfied, dissatisfied, very dissatisfied).
Control variables: see notes to Table 4.
Columns 3 and 4 estimated on pooled data from 2004 and 2011 only.
Training incidence takes the value of 1 if the employee has received some training (less than 1 day, 1 to less than 2 days, 2 to less than 5 days, 5 to less than 10 days, 10 days or more), zero (none) otherwise.

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 ethnic minority	0.245*** (0.065)	0.246*** (0.076)
Observations	*29,280*	*28,187*
Pseudo R-squared	*0.034*	*0.027*

Robust standard errors are in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1.
The dependent variable comes from the following question asked to employees in the employee questionnaire only in 2004 and 2011 WERS surveys: "the skills you personally have match the skills you need to do your present job?" Employees had to respond on a five point scale: "much higher; a bit higher; about the same; lower; much lower". The estimation method is a logit model. Control variables: see Table 6. Estimated on pooled data from 2004 and 2011 only.

Table 8: The role of job evaluation in closing ethnic wage gaps

	(1) Log hourly wage
Non-white ethnic minority	-0.132***
	(0.019)
Job evaluation scheme	0.035***
	(0.011)
Non-white * Job evaluation scheme	0.062**
	(0.030)
Constant	0.911***
	(0.067)
Observations	*29,381*
R-squared	*0.536*

Robust standard errors are in parentheses. Levels of significance: *** p<0.01, ** p<0.05, * p<0.1.
The dependent variable is the individual's log hourly wage.
Control variables: see notes to Table 4.
Estimated on pooled data from 2004 and 2011 only.

Figure 1. Distribution of white and ethnic minority employees by workplace share non-white