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ABSTRACT

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This paper attempts to establish empirically the link between workplace gender diversity and employee job-related well-being. Using nationally representative linked employer-employee data for Britain, I employ econometric techniques that account for unobserved workplace heterogeneity. I find that gender diversity is associated with lower employee well-being among women in several of the equations estimated. The magnitudes of the estimated effects also tend to increase with (women's) group size. Workplace equality policies do not appear to ameliorate these effects.

JEL Classification: J16, J82, J7, I31

Keywords: gender diversity, job-related well-being, linked employer-employee data, Britain

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1. Introduction

The labour market participation of women has increased significantly in the industrialised world in recent years. In Britain, women's participation stood at 37.1 % in 1971 but this has increased to 45.8% in 2005 (ONS 2006). Inevitably, this has led to increase in workplace gender diversity. The increase in workplace gender diversity has been attributed to some important developments including demographic changes, tight labour market conditions, and regulatory measures. Despite the considerable change in workplace gender diversity and the growing prominence of equality and diversity related discourses, there is a dearth of empirical literature on the links between workplace gender diversity and employee job-related well-being. Intriguingly, the increasing diversity and interventions aimed at promoting diversity in Britain are taking place despite evidence of widespread discrimination at workplaces on the grounds of demographic characteristics including gender (Berthoud and Blekesaune 2007, Peccei and Lee 2005, Jones *et al.* 2003, Pudney and Shields 2000a b, Wright and Ermisch 1991). If discrimination is as widespread as the existing evidence suggests, the growing emphasis on diversity could well have adverse effect on employees' job-related well-being. This may particularly be the case if diversity is driven by labour cost considerations rather than by active equality policies supplementing anti-discrimination legislations. Job-related well-being is what people feel about themselves in relation to their job and it forms an integral part of overall well-being. Both forms of well-being are linked to the concept of mental health (Warr 1999, Rode 2004).

This paper attempts to establish empirically the link between gender diversity and employee job-related well-being. It also explores whether workplace HRM practices and policies have any bearing on the gender-wellbeing link. Firmly establishing the link between workplace gender diversity and employee job-related well-being is crucial for two important reasons. *First*, the growing (policy) importance attached to workplace diversity is not matched by rigorous research on diversity. Secondly, there is conflicting evidence regarding links between workplace gender composition and employee job-related well-being. For example, in a recent management study, Peccei and Lee (2005) imply that gender diversity has a negative relationship with job satisfaction (particularly for men). On the other hand, Fields and Blum (1997), also looking at the relationship between workgroup gender composition and job satisfaction, find both men and women working in gender-balanced groups to have higher levels of job satisfaction vis-à-vis their

counterparts working in homogeneous groups.[1] The conflicting evidence may be due to, among others, the way workplace composition is defined, the particular measure(s) of job-related well-being considered and the empirical methodology employed. Establishing firmly whether there is a link between workplace gender diversity and employee job-related well-being will be informative from the viewpoint of addressing issues of employee well-being. For example, Kochan *et al.* (2003) reported adverse effects of racial diversity on team processes being mitigated through training and development-focused initiatives.

This paper aims to fill gaps in the existing literature and has several strengths. *First*, it uses the WERS2004 data, nationally representative linked employer-employee data, with large number of demographically varied workplaces located across Britain. The linked data also have extensive information on workplaces, employees, and human resource management practices related measures. This enables controlling for observable influences on well-being much more comprehensively than has been done to date. *Secondly*, the data have extensive sets of measures on employee job-related well-being that include eight measures of facets of job satisfaction and six measures of affective well-being. This will allow investigating links between diversity and aspects of well-being hitherto unexplored. *Third*, gender diversity is measured as an index which allows accounting for nonlinearities existing studies in Britain fail to address. As recent U.S. based studies have demonstrated, using proportions of workers does not allow capturing nonlinear effects.[2] *Fourth*, the paper exploits the nested structure of the WERS2004 data to control for unobserved workplace heterogeneity, something that previous studies ignore. One important lesson that research in labour economics, particularly where there is a matched employer-employee data, underscores is the importance of unobserved factors in determining labour market outcomes (see, for example, Abowd *et al.* 1999). In the workplaces setting considered in this study, there may well be unmeasured aspects of workplaces that influence employee job-related well-being, which are accounted for in this study. The paper also employs alternative econometric models and, in each case, estimate models with several specifications as a robustness check.

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[1] Other (sociological) studies of similar nature, for example Wharton and Baron (1987), find men in mixed work settings to have lower job-related satisfaction and self-esteem and more job-related depression than men in either male- or female-dominated work settings and attribute this to the decline in quantity and quality of inter-group relations as groups become more balanced.
[2] A (fully) gender diverse workplace should have men and women with a 50:50 proportion. An increase in the proportions of women beyond 50 per cent means the workplace becomes less diverse, although a workplace with higher proportions of women might be regarded as diverse on the supposition that such a workplace has given more space for the traditionally disadvantaged gender group.

The focus on gender diversity in this paper is for two important reasons. *First*, the conflicting evidence mentioned earlier is specific to workforce gender composition, which this study specifically wants to address. *Secondly*, gender mix in the data is much more balanced than other measures of demographic compositions such as age (particularly, over-50), disability and ethnicity that are, as would be expected, proportionately small in the WERS2004 data. Focusing on gender diversity thus allows richer analysis of the relationship between gender diversity and job-related well-being.[3] The remainder of the paper is organised as follows. Section 2, makes a brief review of relevant theories and existing literature. In section 3, a description of the data and variables used in the empirical analyses will be made. Section 4 sets out the empirical models used in the estimation. Section 5 discusses the empirical results obtained while the final section concludes the paper.

2.   Related theory and research

2.1. Theoretical background

There are alternative theoretical explanations across the different streams of social sciences that can provide a framework for analysing links between workplace gender diversity and employee job-related well-being. In the economics context, the relevant theoretical explanations largely relate to theories of discrimination. In this regard, the leading explanations are those that relate discrimination to either preference (Becker 1957; Arrow 1972, 1973; Phelps 1972) or information (Aigner and Cain 1977). The former stipulates that discrimination occurs when people behave as if they refuse to change their stereotypes about the capabilities of discriminated individuals or groups. It is to do with preference and may not change in the face of favourable information about the group. The information explanation, on the other hand, states that (employer) discrimination is the result of asymmetric information regarding (productivity of) the discriminated individual and such stereotypes alter with information.[4]

Akerlof and Kranton (2000) formalised the earlier "taste" based discrimination explanations by incorporating identity into a model of behaviour and showing how identity influences economic outcomes. Their formulation is based on social identity theory that posits that an individual's social identity depends on all of the identifications

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[3] In contrast, the sub-samples of ethnic minorities (non-whites), the disabled and the over-50s in the data are relatively smaller in size and may not permit equally rich analysis.

[4] Other, theories of relevance include language (difference) based discrimination (Lang 1986) and Lazear (1999)'s communication costs explanation of (racial) diversity.

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the person uses in construing her/his views of the self. According to these explanations, a person experiences anxiety when the person's internalised rules of personality (or identity or ego or self) are violated somehow. In the context of work, they show how identity could be related to occupation arguing "occupations are associated with the social categories 'man' and 'woman,' and individual payoffs from different types of work reflect these gender associations" (Akerlof and Kranton, 2000, p. 732). A worker's identity could therefore be linked to occupation-based social categories and how people in them view each other. Limits on a person's identity or violations of their internalised rules, for example a woman/man joining an occupation with a man/woman social category, may lead to a reduction in the person's well-being. Alesina and La Ferrara (2000, 2005) also note how diversity may affect economic choices by directly entering individual behaviour/preferences. Their formalization of the social identity theory based on group participation predicts that individual utility from joining a group depends positively on the share of group members of one's own type and negatively on the share of different types. Unlike the earlier (taste-based discrimination) explanation, which is primarily aimed at explaining racial discrimination, this formalisation enables addressing gender discrimination considering that

Based on Becker (1957) and Akerlof & Kranton (2000), and building on Ragan and Tremblay (1988), I formulate a simple framework to study how workplace gender diversity may influence employee job-related well-being. Suppose that there are two groups of workers M, males, and F, females in a workplace. Consider also that M workers are 'dominant', in terms of group size and/or position in the employment hierarchy, rendering the workplace a 'man' social category. Simple social category based explanation would, in this case, suggest a reduction in male workers' well-being as a result of the presence of female co-workers. Nonetheless, it is more realistic to imagine women getting 'vexed' by their male co-workers, who dominate the workplace.[5] If so, it makes more sense to construct the theoretical framework that follows in terms of a reduction in the well-being of women workers.

Two types of predictions could be made regarding the link between workplace gender diversity and job-related well-being. First, assume the diversity-wellbeing link being independent of the level of gender mix at the workplace so that;

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[5] This line of thinking also goes in line with the wider literature on gender discrimination and evidence therein.

(1) $w_F = (1 - di)w_M$

where w stands for job-related well-being; $0<d<1$ and $i = 1$ if the workforce has at least one female employee and 0 otherwise. Secondly, assume the diversity-wellbeing link varies with the level of gender mix at the workplace. In this case, one could assume the job-related well-being of F workers as a negative function of the proportion of the M workers, i.e.

(2) $w_F = f\left(e_M / e_T\right)$

where $f' < 0$ and e_T is the sum of male and female workers.[6] If Alesina and La Ferrara (2000, 20055)'s social identity theory based prediction holds, I should also expect $f'' > 0$.

Based on this theoretical framework, I put forward the following hypotheses, which will be tested in the empirical analysis undertaken:

Hypothesis 1: gender diversity and employee job-related well-being are negatively related

This hypothesis will be tested on the basis of the coefficient of the main gender diversity correlate in each of the job-related well-being equations estimated.

Hypothesis 2: the negative relationship between gender diversity and employee job related well-being is associated with the 'traditionally' disadvantage group, in this case women.

The 'social category' argument needs to be viewed in conjunction with the gender composition of the general workforce. With the exception of few occupations such as nursing, secretarial work and primary school teaching, most occupations could be regarded as having a 'man' social category traditionally. If this is so, one could then argue that the recent increase in the labour market participation of women might put a limit in perceived identity of men which may in turn lead to a less than favourable reaction by

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[6] As explained in the methodology section, simple proportions fail to capture the full extent of workforce diversity. I use an index of gender diversity, instead of gender proportions.

men towards their female co-workers, including gender based discrimination. This may reduce the job-related well-being of women. The hypothesis will be tested on the basis of sub-group based empirical analysis.

Hypothesis 3: the size of each gender group in the workplace will have some influence on the well-being of members of each group. However, it may not be possible to hypothesise which group the size effect may be associated with straightforwardly. Thus;

Hypothesis 3a: Alesina and La Ferrara (2000, 2005)'s social identity theory based stipulation that individual utility from joining a group being dependent on the share of group members of one's own type means that I expect women's well-being to increase with gender diversity.

Hypothesis 3b: on the other hand, if balanced or near balanced workforce composition leads to more rivalry and possible confrontation (Wharton and Baron 1987), this may lead to tension and a reduction in job-related well-being. Such well-being reduction could be more relevant to women given the 'inferior' position they occupy in the workplace hierarchy.

Hypothesis 3 could be tested based on discrete measures of diversity that reflect varying degrees of gender diversity at the workplace. For example, if coefficients of the discrete measures that reflect higher level of gender diversity at the workplace are positive then this lends support to the first hypothesis (Hypothesis 3a).

Hypothesis 4: The type of HR policy and practice in place at the workplace could have some influence on the diversity-wellbeing link at the workplace. I hypothesise that workplace policies and practices have either of the following two outcomes;

Hypothesis 4a: workplaces with committed equality/diversity policy and practice, including staff training aimed at fostering gender equality would ameliorate the adverse well-being effect of gender diversity

Hypothesis 4b: workplaces with a policy and practice that only pays lip-service to gender diversity would fail to ameliorate the adverse effects of gender diversity.

This hypothesis could be tested for in two ways. First, I include summary measures/scores of workplace practice and policy in the empirical models estimated. Secondly, I interact the summary measure of workplace equality policy and practice with the gender diversity measure. The inclusion of the summary measures is expected to eliminate negative association/coefficient, if any, between the measures of job-related well-being and the gender diversity measure. Alternatively, I should be getting positive (and significant) coefficient on the interaction term

2.2. Review of the literature[7]

The literature on workplace gender diversity is fairly limited and quite recent. Moreover, it has an almost exclusive focus on the USA and relates to the relationship between diversity and such economic outcomes as firm performance (Kurtulus 2008, Leonard & Levine 2006), turnover (Leonard & Levine 2006, Giuliano *et al.* 2006) and promotions (Blau & DeVaro 2007, Giuliano *et al.* 2006). Kurtulus (2008) examines the effect of grouping workers into heterogeneous divisions on worker and division performance using panel data from a large US firm and finds some evidence that gender heterogeneity is associated with higher worker performance. Leonard and Levine (2006) study the effect of gender diversity on turnover among sales workers in retail branches of a large U.S. firm and find that gender diversity leads to higher quite rates among women. They also find that a male worker is more likely to quit the greater the proportion of workers in his branch belonging to a different race and gender group. Using the same data from the large US retail firm, Giuliano *et al.* (2006) study gender differences between managers and workers and find some evidence on worker quit rates. None of the three studies focus on the well-being effect of gender diversity as such. However, the well established link between job satisfaction and quite behaviour (for e.g. Akerlof *et al.* 1988, Freeman 1978) may mean that the latter two studies imply adverse relationship between subjective well-being and gender diversity. Fields and Blum (1997) look at the relationship between workgroup gender composition and job satisfaction using US data and find both men and women working in gender-balanced groups to have higher levels of job satisfaction vis-à-vis their counterparts working in homogeneous groups. In a recent UK focused study that uses the WERS1998 data, Peccei and Lee (2005) find that

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[7] It is essential to note that existing studies on diversity refer to the relationships between measures of diversity and various outcomes of interest as 'effects' and/or 'impacts' although they do not establish causation between the two. This section reports the review of existing literature as it is without making 'amendments'.

gender similarity has a positive relationship with job satisfaction, particularly for men. Rose (2005) finds some evidence of disparity in trends of job satisfaction in Britain with heavy gendered despondency.

There are several psychological and sociological studies that attempt to explain how differences between workgroup members along gender and other dimensions influence the attitude and subjective well-being of group members. However, most of these studies neither account for confounding influences nor use large and representative data (Knippenberg and Schippers 2007, Maume and Sebastian 2007, Jackson et al. 2003, Fields and Blum 1997). Jackson et al. (2003) also report that in their review of 63 studies for the period 1997-2002 they found very little focus on affective outcomes. Peccei and Lee (2005) found eight US studies assessing the relation of gender proportions to satisfaction, but similarly noted the paucity of control information in these studies.

The review in the preceding paragraph shows that there is conflicting evidence regarding the link between workplace gender diversity and employee well-being. This could be due to several reasons including: the nature of the data used, whether confounding factors are accounted for sufficiently, the nature of the well-being measure used, the way workplace gender diversity is measured and the type of empirical methodology employed. On data, Leonard and Levine (2006) state that an ideal diversity study would (*i*) have a large number of demographically varied workplaces, (*ii*) control for location to capture differences in the local labour market condition, (*iii*) minimize confounding variations across workplaces in management practices and workplace and job characteristics, and (*iv*) assign randomly different demographic mixed to each workplace. This paper uses data that addresses nearly all of these data related concerns including HR policies and practices in place at workplaces. It is essential that one differentiates between genuinely committed and strategic diversity policy from cases where employers pay lip-service to diversity and equal opportunities, which this paper attempts to accomplish.

Controlling for as many observable workplace and employee influences as possible has also been emphasised in previous studies. For example, Peccei and Lee (2005) stress this point in their study of workplace demographic composition and job satisfaction. Maume and Sebastian (2007) also reinforce this point. They find job satisfaction of whites being negatively related to the proportion of minority workers in the absence of controls, but the effect disappears when job characteristics are controlled for. Kochan *et al.* (2003) also report adverse effects of racial diversity on team processes

being mitigated through training and development-focused initiatives. This paper uses rich data that allow controlling for a range of employee, workplace, HR practice and policy, and geographic influences much more comprehensively than in any previous study.

The paper analyses the link between gender diversity and extensive set of job-relate well-being measures than in any previous research. Although there are few studies that dwell on single item measures of job satisfaction to study the effects of workgroup demographic composition, the use in this paper of eight different facets of job satisfaction provides the richness one would need to address possible sensitivities stemming from the way well-being is defined. Crucially, this study also uses measures of affective well-being that have not been used in previous studies investigating workplace diversity and job-related well-being. Psychological studies have emphasised the need for broader definition of work-related psychological well-being (than just job satisfaction). The general consensus, in this respect, is that affective well-being measures are amongst the most important, if not the most important, measures of psychological well-being (Warr 1994, Daniels 2000). Affective well-being measures are also less expectation driven than measures of job satisfaction.

That this paper employs alternative econometric models and accounts for unobserved heterogeneity in all cases are further strengths of the paper. With few exceptions (for example, Leonard and Levine 2006, Kurtulus 2008), most of the studies investigating the issue of diversity do not account for unobserved heterogeneity. Also, in most of the existing literature gender diversity is measured as the proportion of women at the workplace. As detailed in the next section, such a measure does not fully capture workplace diversity.

3. Data and variables

3.1 Overview of the Data

The data used in this paper come from the 2004 British Workplace Employment Relations Survey (WERS2004), which is one of the most authoritative sources of information on employment relations in Great Britain. It offers linked employer-employee data representative of all workplaces with five or more employees (Kersley *et al.* 2006). The survey covers a whole host of issues relating to both employers and employees, allowing the inclusion of an array of individual and workplace level attributes into the empirical analysis undertake. The estimation sub-sample used in this

paper comprises of 18064 employees in 1506 workplaces. This is from the initial matched sample of 22451 employees in 1733 workplaces. The final sample is the result of excluding those with: (*i*) missing values in any of the job-related well-being measures used, (*ii*) missing values in any of the employee and workplace covariates including the disability diversity measure and (*iii*) keeping only workplaces with at least two responding employees.

3.2 Definition of variables

3.2.1. Outcome (job-related well-being) variables

The first important set of variables relates to WERS2004 survey questions that monitor *employee job-related well-being*. These come from two different sources. *First*, the employee survey monitored how satisfied employees are with eight different aspects of their job. The survey asked employees to rate – on a five-point scale from 'very satisfied' to 'very dissatisfied' – how satisfied they were on: (*i*) the sense of achievement they get from their work; (*ii*) the scope for using their own initiative; (*iii*) the amount of influence they have over their job; (*iv*) the training they receive; (*v*) the amount of pay they receive; (*vi*) their job security; (*vii*) their work itself and (*viii*) their involvement in decision making. *Secondly*, the employee survey also monitored affective well-being measures. There are six questions that probe – on a five-point scale from 'all of the time' to 'Never' – how much of the time over the past few weeks employees felt (*i*) tense; (*ii*) calm; (*iii*) relaxed; (*iv*) worried; (*v*) uneasy, and (*vi*) content.[8] Each of these 14 variables is used as job-related well-being outcome measure. The appendix Tables A1 and A2 report descriptive statistics and correlation matrix of each of these 14 outcome variables.

3.2.2. Diversity and other control variables

The *gender diversity* variable of interest to this paper is constructed based on the proportion of female/male employees at each workplace, which is monitored in the WERS2004 establishment survey. As detailed in the methodology section of the paper, gender diversity is defined as one minus the sum of squared proportions of female and male workers at workplaces. Other control variables used relate to employee demographic and human capital characteristics, employee occupation, skills (mis)match, industry of employment, geographic area and travel-to-work area unemployment and

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[8] The order of responses signifying negative affects have been modified so that the six affective well-being measures become (*i*) NOT tense, (*ii*) calm, (*iii*) relaxed, (*iv*) NOT worried, (*v*) NOT uneasy and (*vi*) content.

vacancy rates. Table A3 in the appendix provides descriptive statistics on all variables used in the empirical analysis.

3.2.3. *Workplace practice and policy summary variables*

Differentiating between a genuinely committed and strategic diversity policy fostering gender diversity/equality and cases where employers pay lip-service to diversity and equal opportunities but lack systematic action could be important. The WERS2004 data have extensive information on workplace management practice and policy. Some method of reducing this vast data is essential if arbitrary choices of items are to be avoided. To this end two approaches have been used in this paper. *First*, a sub-set of workforce management and policy variables that are thought to reflect genuine commitment, as opposed to paying lip-service, towards employees have been carefully selected. In particular, aspects of workplace management practices and policies that demonstrate commitment towards (*i*) equality, (*ii*) training and development of employees and (*iii*) provisions of flexibility have been chosen. *Secondly*, factor analysis has been used to construct three different summary measures reflecting *equality*, *training* and *flexibility*.[9] The scores generated in this way are then used in the empirical analyses conduct forming one specification of the models estimated. The idea behind using these summary scores is to explore whether genuine employer commitment has any bearing regarding the links between workplace gender diversity and employee well-being. Appendix Tables A4 - A6 provide the list of workplace practice and policy variables used and Factor analysis related statistics.

4. Empirical methodology

There are important methodological considerations to be made in modelling subjective well-being measures. In this regard, two of the key issues are to do with the assumptions imposed on the meaning of satisfaction questions and the influence of unobservables (Ferreri-*i*-Carbonell and Frijters 2004). This paper follows the empirical economics tradition and assumes that responses to subjective well-being questions are comparable only ordinally. In other words, employees that give identical responses to a subjective well-being question will be assumed to derive similar levels of satisfaction on the particular aspect of their job.[10] I therefore estimate ordinal probability models. The

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[9] The factor scores have been generated using SPSS
[10] It is important to stress the role played by employee expectation in determining responses to subjective well-being questions.

non-experimental nature of the study makes it essential that unobserved heterogeneity is accounted for. The level of workplace gender diversity observed or the particular workforce management practice and policy therein are less likely to represent random phenomena, given possible employer and employee selection. To the extent that there is such selection, addressing the issue of non-randomness becomes crucial to avoid the potentially biasing selection effects. This paper attempts to account for such potential biases by estimating *random effects ordered logit models*, which allow controlling for workplace-level unobserved heterogeneity.[11]

As stated in the data related discussion, the WERS2004 data is a linked data with some employees selected from the same workplace. This means some shared observed and unobserved attributes pertinent to the workplace. This violates the independence assumption that (ordinal) regression models assume (Hedeker and Gibbons 1994). This paper exploits the nested structure of the WERS2004 data to overcome violation of the independence assumption and employs the multilevel modelling framework.[12] Estimating (workplace) fixed effects regression could have been an option. However, the cluster (or workplace) dummy variables would be correlated with important workplace characteristics including the gender diversity measure. Moreover, previous research has shown that attempts to estimate FE models with the cluster effects treated as dummy variables gives rise to inconsistent estimates of the ordinal and regression coefficients, in addition to possible incidental parameter problem (Crouchley, 1995).

To estimate the random-effects ordered logit models I convert the original five-scale responses into three-scale responses. The five-scale responses for the facets of job satisfaction are '*very satisfied*', '*satisfied*', '*neither satisfied nor dissatisfied*', '*dissatisfied*' and '*very dissatisfied*', which I convert into the three-scales of *satisfied*, *neither* and *dissatisfied* by collapsing the first and the last two responses. Likewise, the five-scale responses for the affective well-being measures are '*all of the time*', '*most of the time*', '*some of the time*', '*occasionally*' and '*never*', which are converted into the three-scales of *occasionally/never*, *sometimes* and *always/mostly*. Converting the original responses in this way avoids data

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[11] Since I use cross-section data, I am only able to explicitly account for workplace level unobserved heterogeneity however.

[12] The simplest way of addressing this would have been to use cluster option in a regression. However, this would not allow estimating a parameter measuring (shared) unobserved attributes. Neither would it allow testing the significance of such an influence.

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thinning in the extreme scales, which makes convergence difficult, particularly for random-effects ordered logit models.[13]

Previous studies (e.g. Peccei and Lee 2005) have defined diversity as the percentage of women in a workplace. However, a percentage measure would not capture the link between diversity and various outcome measures of interest fully. In their recent study, Leonard and Levine (2006) elucidate shortcomings of using percentage measure in that it increases linearly with the size of one group of interest even though such an increase would mean a reduction in the size of another. To be able to address this issue of nonlinearity, a gender diversity index, *G*, has been constructed in this paper where $G = 1 - \sum_i S_k^2$ and *S* represents the shares of female and male employees at a workplace with *i*=1, 2.[14]

The random-effects ordered logit model can be formulate as a threshold model with observed ordinal well-being responses w_{ij} of employee *i* in workplace *j* generated from the latent continuous responses w_{ij}^* as

$$(3) \qquad w_{ij} = \begin{cases} 1 & if & w_{ij}^* \leq \kappa_1 \\ 2 & if & \kappa_1 < w_{ij}^* \leq \kappa_2 \\ \vdots & & \vdots \\ S & if & \kappa_{S-1} < w_{ij}^* \end{cases}$$

The well-being response variable w_{ij} could be assumed to take values *s* with probability $p_{ij}(s) = \Pr(w_{ij} = s)$ and cumulative response probabilities $P_{ij}(s) = \Pr(w_{ij} \leq s) = \sum_{r=1}^{s} p_{ij}(r), \quad r = 1,...,s-1,$ for the *s* categories of ordinal outcome of w_{ij}. The cumulative probabilities can be given by $P_{ij}(s) = F(\kappa_s - \eta_{ij}), \quad s = 1,...,S-1,$

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[13] The alternative models I estimate are *linear random effects* model, which I estimate using the original five-scale responses, and *random effects logit* estimated on binary outcomes measures that assume 1 if satisfied or very satisfied and 0 otherwise (or 1 if always/mostly and 0 othersise). The linear random effects model allows checking whether using the cardinality assumption makes much difference in the empirical findings. Also, it is argued that when the number of categories is large (5 or more) it may be possible to approximate the distribution by a normal distribution and applying multilevel linear models (Snijders and Bosker, 2004). All three models are estimated in STATA using STATA's multilevel facility and GLLAMM. The multi-level analytical designs are best suited to the nested data used in this study. They are regarded as more attractive and advocated, for example, by Jackson *et al.* (2003).

[14] The diversity index is also known as one minus the Herfindahl Index and Blau's Index and assumes a theoretical value ranging, in my case, from a minimum of 0, signifying perfect homogeneity, to a maximum of 0.5, signifying perfect heterogeneity.

where F is the cumulative density function of the model residuals, ε_{ij} that can also be expressed as $P_{ij}(s) = R[P_{ij}(s)] = \kappa_s - \eta_{ij}$, $s = 1,...,S-1$, where $R = F^{-1}$ is the link function. Assuming the distribution of the model residuals for the latent well-being response, w_{ij}^*, to be logistic, the cumulative probabilities can be given by

(4a) $$P_{ij}(s) = \Pr(\varepsilon_{ij} \leq \kappa_s - \eta_{ij}) = \frac{exp(\kappa_s - \eta_{ij})}{1 + exp(\kappa_s - \eta_{ij})}$$

or, alternatively as

(4b) $$log\left[\frac{P_{ij}(s)}{1 - P_{ij}(s)}\right] = log\left[\frac{Pr(w_{ij} \leq s)}{1 - Pr(w_{ij} \leq s)}\right] = \kappa_s - \eta_{ij} \quad s = 1,...,S-1$$

where κ_c is the threshold parameter for categories $s = 1,...,S-1$ and $\eta_{ij} = \beta_{oj} + \sum_{l=1}^{L}\beta_{lj}X_{lij}$. The general model can thus be given by

(5) $$log\left[\frac{Pr(w_{ij} \leq s)}{1 - Pr(w_{ij} \leq s)}\right] = \kappa_s - \left(\beta_{oj} + \sum_{l=1}^{L}\beta_{lj}X_{lij}\right)$$

The vector X represents L covariates that include the diversity index as well as the whole array of covariates relating to employees, their workplaces and geographic location. Since the regression coefficients in equation (5) do not carry the subscript s, they do not vary across the ordinal categories. The intercept term β_{0j} in equation (5) has a workplace random component so that $\beta_{0j} = \beta_{00} + \xi_{0j}$, where β_{00} is the mean intercept and ξ_{0j} is the deviation of the establishment specific intercept β_{0j} from the mean. I make several assumptions in this set up including: (*i*) independence across the j workplaces (level-2 units), (*ii*) normally distributed employee error terms ($\varepsilon_{ij} | x_{ij} \sim N(0,\theta)$), (*iii*) no correlation between error terms associated with any two employees within a workplace, i.e. ($Cov(\varepsilon_{ij},\varepsilon_{i'j}) = 0$ for $i \neq i'$) and workplace level variations that are distributed normally and uncorrelated with individual/employee error terms, i.e. $\xi_{0j} | x_{ij} \sim N(0,\psi)$ and $Cov(\xi_{0j},\varepsilon_{ij}) = 0$, wihere $\theta \equiv Var(\varepsilon_{ij})$ and $\psi \equiv Var(\xi_{0j})$ (Rabe-Hesketh and Skrondal 2008, Hedeker and Gibbons 1994, Crouchley 1995, Snijders and Bosker 2004,)

5. Empirical results and discussion

Estimation results from the random-effects logit models are reported in Tables 1 through 21. Tables 1 to 14 report estimation results from full sample and gender based sub-group analysis. These are based on gender diversity measured continuously. Tables 15 to 21 report selected estimation results for the full sample and gender based sub-groups using discrete measures of diversity. The latter set of results is specific to the well-being equations that were found to indicate robust and statistically significant link between gender diversity and job-related well-being. They allow testing whether there is group size related effects.[15] As stated earlier, I estimate three different specifications of the well-being equations in each case as a robustness check. The first specification (Model 1) seeks to establish the link between the main gender diversity variable and employee job-related well-being, controlling only for employee-level characteristics. The second specification (Model 2) makes a further control for establishment-level characteristics, including labour market characteristics in the establishment's locality. The final specification (Model 3) controls for influences relating to workplace policy and practice by incorporating summary scores generated from Factor Analysis.

A descriptive statistics of the fourteen job-related well-being outcomes and a correlation matrix depicting the correlation structure among them are reported in Appendix Tables A1 and A2, respectively. The correlation matrix shows that affective well-being measures are positively correlated with all the facet satisfaction measures. The correlation is stronger among the affective well-being measures themselves, but there are also noticeably strong correlations between affective well-being measures and the facet satisfaction measures relating to the 'work itself', 'sense of achievement', 'amount of influence on the job' and 'scope for using own initiative' in particular. Of the facet satisfaction measures, satisfaction with "the work itself" has the strongest of correlations with all the other well-being measures, including affective well-being measures. This is in line with previous findings where satisfaction with the nature of work undertaken is found to be particularly closely associated with other facet-specific satisfaction and with overall job satisfaction (Warr 1999).

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[15] What I report are coefficients specific to the variable of interest – gender diversity. Full model outputs from the random effects logit models as well as those from linear random effects and random effects logit models are available on request. The estimated coefficients are un-weighted but my results are consistent with findings (on age, gender, education, union membership, and other controls I use) in the literature. Estimation conducted using GLLAMM.

Figure A1 in the Appendix depicts a plot of the workplace gender diversity index computed. It shows that nearly all workplaces have non-zero gender diversity, with a distribution skewed towards full diversity. The large spike at 0.5 suggests that nearly 15 percent of the workplaces in the final sample have full diversity comprising a 50-50 split between men and women. There are also some single-sex workplaces as the spike at 0 indicates. Appendix Table A3 reports descriptive statistics on the regressors used in the modelling. These include both employee and workplace characteristics. Accordingly, women constitute slightly more than 50 per cent of employees in the estimation sample while those that are 50 or over make up a quarter. Some 68 per cent of employees are married and only 5 per cent are non-white. Employees with disability constitute nearly 12 per cent of employees in the final sample. Nearly 60 per cent of employees report that their skills do not match the skills requirements of their job. Most employees (92%) are on permanent contract and 79 per cent of employees are employed full-time. Some 35 per cent of employees in the sample are trade union members. In terms of workplace characteristics, some 70 per cent of workplaces are private establishments. The proportion of workplaces that are sole establishments stands at 21 per cent, indicating that most workplaces are part of a multi-establishment setup. Also, most workplaces (82%) are establishments based in urban areas.

The reported descriptive statistics also includes the three summary measures of workplace HRM practice and policy representing provisions of equality, training and flexibility at the workplace. As stated in the data section, careful selection of variables that are likely to demonstrate employers' commitment towards employees has been made. The idea here is that if the employer is committed to these aspects of employee development and hence scoring high on the summary measures, then this may remove the potentially negative association between gender diversity and employee job-related well-being. Appendix Tables A4 to A6 report some outputs from Factor Analysis that generated the summary scores. Table A4 in the Appendix shows the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO statistic of 0.91 suggests that patterns of correlations among the variables selected are relatively compact and that factor analysis is highly likely to yield distinct and reliable factors. The Bartlett's test statistic means that the null hypothesis that the original correlation matrix is an identity matrix is rejected decisively.

The estimation results reported in Tables 1 – 14 show that the direction of the relationship between gender diversity and the fourteen measures of job-related well-being

is negative in all cases except 'satisfaction with pay'. In terms of statistical significance, only five of the well-being equations that indicate negative relationship are found to be statistically significant across the three specifications. These relate to 'satisfaction with the sense of achievement from work', 'satisfaction with job training received', 'satisfaction with the work itself', 'satisfaction with involvement in decision-making' and the affective well-being measure of 'feeling content'. Three more facet satisfaction measures that indicate negative relationship are also found to be statistically significant but these are not found to be robust. In contrast, the positive relationship between gender diversity and 'satisfaction with pay' is found to be only marginally significant in two of the three specifications. These findings suggest that five of the equations estimated support our first hypothesis that gender diversity is negatively associated with employee job-related well-being.

Tables 1 – 14 also report sub-group based estimation results relating to women and men. The estimation results indicate that for women, all eight of the facet satisfaction measures except 'satisfaction with pay' are negative and six of these are found to be statistically significant. In contrast, for men all eight facets of satisfaction except 'satisfaction with involvement in decision making' are found to be positive. None of these are found to be statistically significant for men, however. The sub-group analysis involving the affective well-being measures shows some systematic differences between men and women. Accordingly, for women it is found that gender diversity is associated positively with negative affects and negatively with positive affects. However, only the negative effects (relating to positive affects) are found to be statistically significant. For men, the results are the opposite in that gender diversity is associated positively with positive affects and negatively with negative affects. Only two of the positive effects are found to be statistically significant for men, however.[16] The sub-group based estimation results therefore lend support to the second hypothesis suggesting that the negative well-being effect of gender diversity is associated with women.

To test the third hypothesis, I undertook further empirical analysis using discrete measures of gender diversity that assume four different values. The first discrete measure assumes a value of 1 if gender diversity in a workplace is at most the 25th percentile of gender diversity for all workplaces and 0 otherwise. The second discrete measure assumes a value of 1 if diversity at the workplace is greater than the 25th

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[16] As explained in Section 3 (3.2.1), the negative affects have been converted into positive. This means that the positive coefficients associated with 'not tense', 'not worried' and 'not uneasy' would have been negative if these measures were not converted, i.e. 'tense', 'worried' and 'uneasy'.

percentile and at most the 50th percentile of diversity for all workplaces and 0 otherwise. The third discrete measure assumes a value of 1 if gender diversity at the workplace is above the 50th percentile and at most the 75th percentile of gender diversity across all workplaces while the last discrete measure assumes a value of 1 if gender diversity at the workplace is greater than the 75th percentile of gender diversity for all workplaces. As explained earlier, if there are systematic variations in the direction and significance of estimated effects across the discrete measures of gender diversity, this will allow us to test the third hypothesis. Tables 15 to 21 report estimation results based on these discrete measures of gender diversity for the well-being equations the previous analysis suggested robust and statistically significant link. The results indicate that the reduction in women's job-related well-being increases with the level of workplace gender diversity. Thus, compared with workplaces with gender diversity at most the 25th percentile of gender diversity for all workplaces, higher levels of workplace gender diversity are associated with more reduction in the well-being of women. This finding lends support to hypothesis 3b I sat up in Section 2 of the paper.

Test for hypothesis 4 come from two sources. Firstly, the third specification in each of the models estimated includes summary measures of workplace HRM practice and policy. However, the inclusion of such policy and practice variables does not appear to change the negative well-being effects the first two specifications find. This lends some support to hypothesis 4b that workplace policies and practices do not go far enough and may only be paying lip-service to gender equality and diversity. Though results are not included in this paper, a further test of hypothesis 4 involving the inclusion of an interaction of the gender diversity variable and the measure of workplace equality policy did not give positive and significant effect for the interaction term.

As can be seen from Tables 1 – 21, what I report are estimated coefficients specific to the variable of interest – gender diversity – and other parameters associated with the models estimated. One important finding worth noting is the parameter capturing unobserved workplace heterogeneity, which is found to be highly significant in all cases. This suggests the importance of accounting for unobserved workplace heterogeneity. Each of the specifications estimated include a range of employee and employer related characteristics summarised in Appendix Table 3A. Findings specific to these characteristics are very much consistent with findings in the literature.

6. Summary and Conclusion

This paper attempted to establish empirically the relationship between workplace gender diversity and job-related well-being using the WERS2004 data. It uses an index of workplace gender diversity and fourteen different measures of employee job-related well-being. The well-being measures include eight measures of facet satisfaction and six measures of affective well-being. The paper made extensive review of the relevant theoretical literature and sat up four testable hypotheses regarding: (*i*) the link between workplace gender diversity and each of the job-related well-being measures, (*ii*) whether there are differences between men and women regarding this link, (*iii*) if the link between gender diversity and well-being changes with the extent of workplace gender diversity and (*iv*) whether workplace HRM policy and practice have any bearing on the link between workplace gender diversity and employee job-related well-being. The paper assumed responses to subjective well-being measures to be comparable ordinally and employed random-effects ordered logit model. By doing so, it is able to account for unobserved workplace heterogeneity, something previous UK studies on gender composition ignore. This is achieved by exploiting the nested structure of the WERS2004 data. It also employed alternative specifications of the well-being equations, which confirm robustness.

Empirical findings based on the full sample confirm the first hypothesis regarding the relationship between workplace gender diversity and employee job-related well-being. Accordingly, workplace gender diversity and employee job-related well-being have negative and statistically significant relationship for a number of the equations I estimated. Sub-group based findings clearly indicate that the negative well-being effects of gender diversity are all associated with women, lending support to the second hypothesis I sat up. Estimation results based on discrete measures of workplace gender diversity indicate that higher levels of gender diversity are associated with more negative well-being effects for women. This is in line with findings in the literature that suggest a decline in the quantity and quality of inter-group relationships as groups become more balanced. The paper finds that workplace HRM policy and practice do not ameliorate the adverse well-being effects of gender diversity on women. This may be suggestive of ineffective workplace policies and practices. Improving the effectiveness of workplace policies and practices may hold the key to overcoming adverse well-being effects associated with workplace gender diversity.

Table 1: Gender diversity and satisfaction with the sense of achievement from work

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.588***	-0.466***	-0.391***	-1.204***	-0.928***	-0.833***	0.300	0.198	0.269
_Cut11 (Cons)	-3.228***	-3.095***	-3.033***	-3.459***	-3.278***	-3.242***	-2.732***	-2.572***	-2.487***
_Cut12 (Cons)	-1.820***	-1.685***	-1.623***	-2.041***	-1.857***	-1.821***	-1.320***	-1.159***	-1.075***
σ^2 (Workplace variance)	0.444***	0.410***	0.405***	0.409***	0.385***	0.386***	0.489***	0.456***	0.443***
Log-Likelihood	-13627.542	-13572.302	-13566.638	-6737.819	-6710.417	-6706.127	-6858.472	-6830.900	-6826.009
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 2: Gender diversity and satisfaction with the scope for using own initiative

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.216	-0.017	0.034	-0.428**	-0.095	-0.033	0.117	0.046	0.100
_Cut11 (Cons)	-3.090***	-3.004***	-2.986***	-3.278***	-3.035***	-3.024***	-3.033***	-3.084***	-3.046***
_Cut12 (Cons)	-1.749***	-1.662***	-1.644***	-1.882***	-1.638***	-1.626***	-1.740***	-1.790***	-1.752***
σ^2 (Workplace variance)	0.436***	0.406***	0.404***	0.442***	0.408***	0.405***	0.440***	0.398***	0.397***
Log-Likelihood	-13364.970	-13319.692	-13316.640	-6939.847	-6911.963	-6909.095	-6403.492	-6378.848	-6377.874
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 3: Gender diversity and satisfaction with the amount of influence over the job

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.223*	-0.012	0.066	-0.481***	-0.210	-0.142	0.136	0.229	0.338
_Cut11 (Cons)	-2.946***	-2.790***	-2.756***	-3.052***	-2.869***	-2.865***	-2.756***	-2.547***	-2.467***
_Cut12 (Cons)	-1.331***	-1.174***	-1.139***	-1.363***	-1.178***	-1.174***	-1.206***	-0.996***	-0.916***
σ^2 (Workplace variance)	0.419***	0.385***	0.381***	0.382***	0.347***	0.343***	0.463***	0.423***	0.416***
Log-Likelihood	-16492.619	-16437.975	-16431.424	-8588.899	-8558.026	-8553.389	-7874.216	-7845.012	-7840.557
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 4: Gender diversity and satisfaction with job training received

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.479***	-0.310**	-0.358**	-0.891***	-0.472**	-0.493**	0.110	0.080	0.007
_Cut11 (Cons)	-1.758***	-1.588***	-1.590***	-1.698***	-1.508***	-1.509***	-1.466***	-1.292***	-1.295***
_Cut12 (Cons)	-0.408***	-0.237	-0.239	-0.367**	-0.176	-0.176	-0.087	0.086	0.083
σ^2 (Workplace variance)	0.598***	0.567***	0.562***	0.606***	0.569***	0.567***	0.586***	0.555***	0.542***
Log-Likelihood	-17984.780	-17929.716	-17924.254	-9128.849	-9090.908	-9090.062	-8880.719	-8858.486	-8852.084
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 5: Gender diversity and satisfaction with the amount of pay received

	All			Female			Male		
	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff
Gender Diversity	0.125	0.251*	0.302*	0.163	0.143	0.222	-0.007	0.219	0.228
_Cut11 (Cons)	-1.523***	-1.598***	-1.574***	-1.585***	-1.853***	-1.832***	-1.976***	-1.825***	-1.819***
_Cut12 (Cons)	-0.420***	-0.493***	-0.470***	-0.513***	-0.777***	-0.756***	-0.818***	-0.667***	-0.661***
σ^2 (Workplace variance)	0.611***	0.586***	0.585***	0.606***	0.582***	0.582***	0.666***	0.642***	0.642***
Log-Likelihood	-18686.768	-18641.776	-18639.676	-9805.743	-9763.177	-9759.986	-8902.195	-8881.731	-8881.542
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 6: Gender diversity and satisfaction with job security

	All			Female			Male		
	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff
Gender Diversity	-0.549***	-0.203	-0.131	-1.287***	-0.688***	-0.585**	0.359	0.388	0.441
_Cut11 (Cons)	-1.504***	-0.993***	-0.969***	-1.632***	-1.02***	-1.000***	-1.427***	-1.194***	-1.16 ***
_Cut12 (Cons)	-0.068	0.445**	0.469**	-0.170	0.447*	0.464*	-0.002	0.231	0.266
σ^2 (Workplace variance)	0.937***	0.862***	0.861***	0.928***	0.863***	0.861***	0.957***	0.880***	0.880***
Log-Likelihood	-15254.757	-15167.159	-15164.199	-7591.175	-7539.878	-7535.061	-7779.015	-7722.191	-7721.672
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 7: Gender diversity and satisfaction with the work itself, all employees

	All			Female			Male		
	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff
Gender Diversity	-0.467***	-0.341**	-0.249	-0.995***	-0.692***	-0.552***	0.220	0.135	0.207
_Cut11 (Cons)	-3.030***	-2.747***	-2.694***	-3.731***	-3.319***	-3.271***	-2.700***	-2.531***	-2.471***
_Cut12 (Cons)	-1.607***	-1.322***	-1.270***	-2.294***	-1.880***	-1.831***	-1.286***	-1.118***	-1.058***
σ^2 (Workplace variance)	0.454***	0.418***	0.413***	0.507***	0.484***	0.479***	0.382***	0.327***	0.320***
Log-Likelihood	-13270.668	-13219.796	-13214.666	-6401.151	-6371.609	-6365.202	-6859.053	-6833.183	-6829.928
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 8: Gender diversity & satisfaction with involvement in decision-making, all employees

	All			Female			Male		
	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff
Gender Diversity	-0.726***	-0.556***	-0.462***	-1.178***	-0.968***	-0.868***	-0.210	-0.176	-0.083
_Cut11 (Cons)	-2.905***	-2.903***	-2.837***	-2.851***	-2.790***	-2.745***	-2.998***	-2.955***	-2.869***
_Cut12 (Cons)	-0.998***	-0.993***	-0.927***	-0.814***	-0.748***	-0.701***	-1.230***	-1.186***	-1.100***
σ^2 (Workplace variance)	0.561***	0.523***	0.518***	0.499***	0.481***	0.479***	0.579***	0.528***	0.518***
Log-Likelihood	-18406.610	-18340.171	-18330.742	-9621.079	-9588.543	-9583.454	-8773.140	-8731.264	-8724.223
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 9: Gender diversity and feeling not tense, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.042	-0.093	-0.042	0.047	0.022	0.081	-0.075	-0.058	-0.003
_Cut11 (Cons)	-2.225***	-2.349***	-2.348***	-2.204***	-2.335***	-2.342***	-2.239***	-2.333***	-2.306***
_Cut12 (Cons)	-0.123	-0.246	-0.244	-0.047	-0.174	-0.181	-0.179	-0.272	-0.245
σ^2 (Workplace variance)	0.388***	0.362***	0.358***	0.412***	0.393***	0.383***	0.378***	0.350***	0.349***
Log-Likelihood	-18167.662	-18129.447	-18123.307	-9434.910	-9408.763	-9400.801	-8723.965	-8703.743	-8702.477
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 10: Gender diversity and feeling calm, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.060	-0.024	0.018	-0.280*	-0.244	-0.198	0.391**	0.475***	0.519***
_Cut11 (Cons)	-1.183***	-1.142***	-1.132***	-0.884***	-0.807***	-0.801***	-0.853***	-0.827***	-0.806***
_Cut12 (Cons)	0.132	0.174	0.183	0.433***	0.511***	0.517***	0.468***	0.493***	0.514***
σ^2 (Workplace variance)	0.330***	0.310***	0.308***	0.338***	0.314***	0.312***	0.322***	0.297***	0.294***
Log-Likelihood	-19235.520	-19208.043	-19204.796	-10046.883	-10025.413	-10022.925	-9170.590	-9157.511	-9155.872
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 11: Gender diversity and feeling relaxed, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.166	-0.136	-0.081	-0.405**	-0.338**	-0.288*	0.285	0.273	0.345*
_Cut11 (Cons)	-0.690***	-0.635***	-0.630***	-0.575***	-0.437*	-0.442*	-0.346**	-0.342*	-0.310
_Cut12 (Cons)	0.601***	0.656***	0.662***	0.704***	0.842***	0.837***	0.970***	0.975***	1.007***
σ^2 (Workplace variance)	0.361***	0.335***	0.331***	0.398***	0.372***	0.368***	0.345***	0.308***	0.305***
Log-Likelihood	-18491.685	-18453.074	-18448.125	-9678.607	-9656.002	-9652.393	-8792.005	-8769.109	-8766.860
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 12: Gender diversity and feeling not worried, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.121	-0.179	-0.154	0.154	0.015	0.057	-0.403**	-0.271	-0.258
_Cut11 (Cons)	-2.465***	-2.482***	-2.495***	-2.420***	-2.424***	-2.432***	-2.791***	-2.869***	-2.878***
_Cut12 (Cons)	-0.369***	-0.385***	-0.398***	-0.261*	-0.265	-0.272	-0.749***	-0.826***	-0.835***
σ^2 (Workplace variance)	0.302***	0.272***	0.269***	0.351***	0.322***	0.317***	0.233***	0.195***	0.192***
Log-Likelihood	-16561.319	-16527.744	-16524.792	-8614.803	-8593.749	-8590.117	-7912.187	-7896.275	-7895.275
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 13: Gender diversity and feeling not uneasy, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.131	-0.118	-0.078	0.043	-0.012	0.033	-0.173	-0.029	0.013
_Cut11 (Cons)	-2.765***	-2.694***	-2.699***	-2.866***	-2.852***	-2.858***	-2.790***	-2.676***	-2.669***
_Cut12 (Cons)	-0.883***	-0.811***	-0.816***	-0.937***	-0.921***	-0.927***	-0.947***	-0.834***	-0.827***
σ^2 (Workplace variance)	0.324***	0.306***	0.303***	0.398***	0.384***	0.380***	0.228***	0.193***	0.188***
Log-Likelihood	-15323.686	-15301.168	-15297.578	-7805.831	-7791.764	-7788.116	-7501.199	-7488.566	-7487.018
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 14: Gender diversity and feeling content, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender Diversity	-0.383***	-0.324***	-0.263**	-0.745***	-0.656***	-0.577***	0.266	0.238	0.281
_Cut11 (Cons)	-1.454***	-1.289***	-1.266***	-1.560***	-1.346***	-1.338***	-1.334***	-1.175***	-1.136***
_Cut12 (Cons)	-0.113	0.054	0.076	-0.248*	-0.032	-0.024	0.043	0.204	0.243
σ^2 (Workplace variance)	0.385***	0.359***	0.357***	0.393***	0.369***	0.364***	0.361***	0.334***	0.330***
Log-Likelihood	-19267.657	-19221.364	-19217.806	-9993.652	-9967.898	-9962.037	-9261.085	-9235.355	-9233.818
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 15: Gender diversity and satisfaction with the sense of achievement

	All			Female			Male		
	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff
Gender diversity2	-0.076	-0.037	-0.026	-0.291***	-0.212***	-0.202**	0.132*	0.130	0.146*
Gender diversity3	-0.168***	-0.126**	-0.107*	-0.430***	-0.328***	-0.302***	0.160*	0.134	0.150*
Gender diversity4	-0.226***	-0.176***	-0.148***	-0.467***	-0.345***	-0.309***	0.067	0.025	0.051
_Cut11 (Cons)	-3.147***	-3.019***	-2.968***	-3.421***	-3.293***	-3.278***	-3.107***	-2.933***	-2.859***
_Cut12 (Cons)	-1.739***	-1.609***	-1.558***	-2.004***	-1.873***	-1.856***	-1.695***	-1.520***	-1.446***
σ^2 (Workplace variance)	0.444***	0.411***	0.405***	0.408***	0.384***	0.384***	0.489***	0.454***	0.441***
Log-Likelihood	-13627.798	-13572.26	-13566.46	-6738.541	-6711.237	-6706.565	-6857.310	-6829.127	-6824.316
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 16: Gender diversity and satisfaction with job training received

	All			Female			Male		
	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff	Model 1 Coeff	Model 2 Coeff	Model 3 Coeff
Gender diversity2	-0.083	-0.078	-0.087	-0.205***	-0.164**	-0.170**	0.042	0.041	0.033
Gender diversity3	-0.167***	-0.124*	-0.136**	-0.365***	-0.239***	-0.244***	0.080	0.075	0.058
Gender diversity4	-0.151**	-0.084	-0.101	-0.311***	-0.144*	-0.152*	0.044	0.034	0.011
_Cut11 (Cons)	-1.694***	-1.551***	-1.545***	-1.824***	-1.678***	-1.670***	-1.768***	-1.594***	-1.579***
_Cut12 (Cons)	-0.344***	-0.199	-0.193	-0.493***	-0.346	-0.338	-0.390**	-0.215	-0.202
σ^2 (Workplace variance)	0.598***	0.567***	0.561***	0.605***	0.566***	0.564***	0.586***	0.555***	0.542***
Log-Likelihood	-17985.65	-17929.80	-17924.52	-9128.559	-9089.399	-9088.571	-8880.42	-8858.162	-8851.795
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 17: Gender diversity and satisfaction with job security

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender diversity2	0.056	0.089	0.097	-0.158	-0.080	-0.069	0.239**	0.226**	0.234**
Gender diversity3	-0.042	0.069	0.088	-0.319***	-0.122	-0.097	0.257**	0.276***	0.289***
Gender diversity4	-0.193**	-0.059	-0.033	-0.516***	-0.281***	-0.244**	0.146	0.163	0.181
_Cut11 (Cons)	-1.365***	-0.895***	-0.883***	-1.362***	-0.790***	-0.801***	-1.578***	-1.350***	-1.325***
_Cut12 (Cons)	0.071	0.542***	0.555***	0.100	0.673***	0.663**	-0.154	0.075	0.100
σ^2 (Workplace variance)	0.934***	0.859***	0.858***	0.927***	0.862***	0.860***	0.953***	0.875***	0.874***
Log-Likelihood	-15253.80	-15165.66	-15162.57	-7591.392	-7539.786	-7534.856	-7776.557	-7719.646	-7719.129
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 18: Gender diversity and satisfaction with the work itself

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender diversity2	-0.019	0.018	0.033	-0.208**	-0.112	-0.092	0.149**	0.138*	0.152**
Gender diversity3	-0.127**	-0.083	-0.058	-0.361***	-0.245***	-0.208**	0.134*	0.115	0.133
Gender diversity4	-0.142**	-0.089	-0.053	-0.359***	-0.224**	-0.169*	0.101	0.072	0.100
_Cut11 (Cons)	-2.942***	-2.664***	-2.624***	-3.488***	-3.120***	-3.103***	-2.662***	-2.486***	-2.434***
_Cut12 (Cons)	-1.518***	-1.239***	-1.199***	-2.051***	-1.680***	-1.663***	-1.248***	-1.072***	-1.021***
σ^2 (Workplace variance)	0.455***	0.418***	0.413***	0.507***	0.484***	0.479***	0.380***	0.325***	0.318***
Log-Likelihood	-13271.49	-13219.97	-13214.47	-6401.947	-6372.158	-6365.385	-6857.453	-6831.506	-6828.124
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 19: Gender diversity & satisfaction with involvement in decision-making

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender diversity2	-0.124**	-0.061	-0.048	-0.341***	-0.241***	-0.228***	0.073	0.075	0.093
Gender diversity3	-0.212***	-0.159***	-0.135**	-0.394***	-0.318***	-0.291***	-0.012	-0.012	0.010
Gender diversity4	-0.286***	-0.217***	-0.182***	-0.501***	-0.413***	-0.374***	-0.084	-0.057	-0.025
_Cut11 (Cons)	-2.815***	-2.820***	-2.769***	-2.713***	-2.697***	-2.672***	-2.904***	-2.865***	-2.797***
_Cut12 (Cons)	-0.908***	-0.910***	-0.859***	-0.677***	-0.655***	-0.628***	-1.136***	-1.096***	-1.028***
σ^2 (Workplace variance)	0.561***	0.523***	0.518***	0.494***	0.478***	0.476***	0.578***	0.527***	0.517***
Log-Likelihood	-18407.35	-18340.21	-18330.58	-9619.832	-9587.925	-9582.638	-8771.617	-8730.107	-8722.957
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 20: Gender diversity and feeling relaxed, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender diversity2	-0.011	0.009	0.016	-0.082	-0.047	-0.038	0.079	0.080	0.088
Gender diversity3	-0.065	-0.054	-0.040	-0.179***	-0.155**	-0.142**	0.124*	0.121*	0.136*
Gender diversity4	-0.059	-0.053	-0.034	-0.134**	-0.107	-0.088	0.059	0.047	0.068
_Cut11 (Cons)	-0.667***	-0.613***	-0.617***	-0.775***	-0.669***	-0.694***	-0.414**	-0.430**	-0.417**
_Cut12 (Cons)	0.623***	0.679***	0.674***	0.503***	0.610***	0.585***	0.902***	0.887***	0.900***
σ^2 (Workplace variance)	0.361***	0.335***	0.331***	0.396***	0.370***	0.366***	0.344***	0.306***	0.304***
Log-Likelihood	-18491.4	-18452.43	-18447.52	-9678.143	-9655.286	-9651.556	-8791.730	-8768.599	-8766.659
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

Table 21: Gender diversity and feeling content, past few weeks

	All			Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
Gender diversity2	-0.066	-0.035	-0.026	-0.222***	-0.171***	-0.157**	0.116*	0.114*	0.121*
Gender diversity3	-0.104**	-0.082	-0.067	-0.261***	-0.218***	-0.196***	0.135*	0.121*	0.129*
Gender diversity4	-0.159***	-0.140***	-0.118**	-0.286***	-0.248***	-0.217***	0.034	0.018	0.030
_Cut11 (Cons)	-1.408***	-1.243***	-1.230***	-1.354***	-1.157***	-1.173***	-1.453***	-1.305***	-1.278***
_Cut12 (Cons)	-0.067	0.100	0.112	-0.042	0.156	0.141	-0.076	0.074	0.101
σ^2 (Workplace variance)	0.384***	0.358***	0.357***	0.392***	0.369***	0.363***	0.359***	0.331***	0.328***
Log-Likelihood	-19267.56	-19220.81	-19217.22	-9994.130	-9968.650	-9962.492	-9259.529	-9233.498	-9232.134
No. of employees	18064	18064	18064	9450	9450	9450	8614	8614	8614
No. of workplaces	1506	1506	1506	1409	1409	1409	1336	1336	1336

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Appendix

Figure A1: Workplace gender diversity
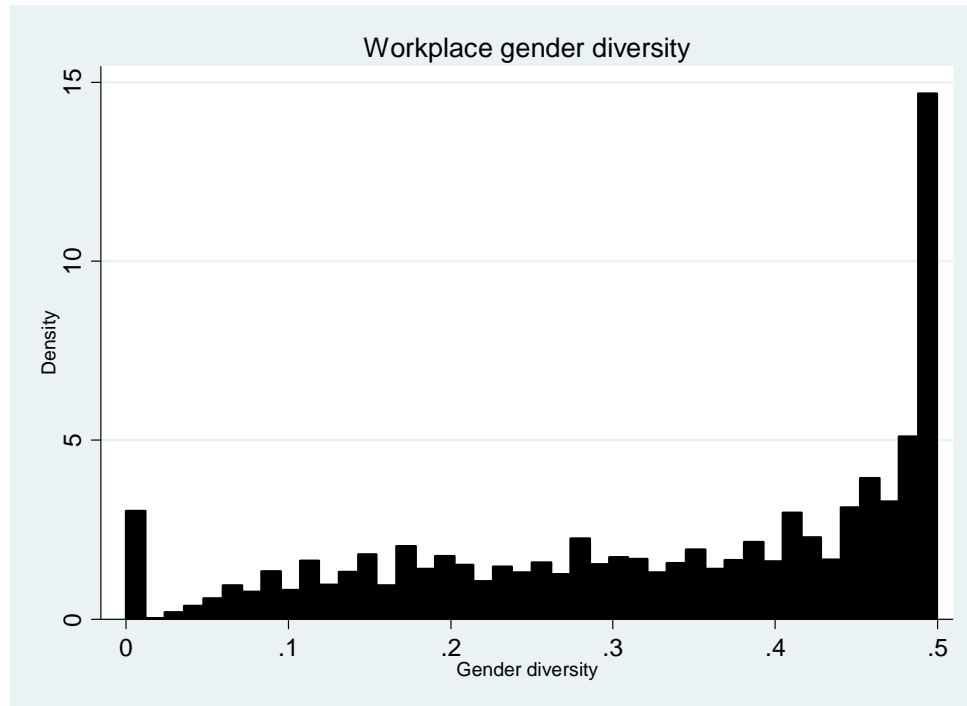
Table A1: Descriptive statistics, job-related well-being outcome measures (*N=18064*)

	Mean	Std. Dev.	Min	Max
Facet of Satisfaction:				
Achievement	2.609	0.662	1	3
Initiative	2.623	0.659	1	3
Influence	2.442	0.724	1	3
Training	2.280	0.808	1	3
Pay	1.960	0.871	1	3
Job security	2.472	0.747	1	3
Work itself	2.632	0.645	1	3
Decision	2.172	0.764	1	3
Affective well-being				
Not tense	2.196	0.731	1	3
Calm	1.945	0.837	1	3
Relaxed	1.769	0.820	1	3
Not worried	2.402	0.689	1	3
Not uneasy	2.525	0.661	1	3
Content	2.054	0.834	1	3

Table A2: Correlation matrix, job-related well-being measures in Table A1 (*N=18064*)

	Ach	Ini	Inf	Tra	Pay	Jse	Wrk	Dec	Nte	Cal	Rel	Nwo	Nun	Con
Achievement	1													
Initiative	0.56	1												
Influence	0.52	0.66	1											
Training	0.30	0.30	0.36	1										
Pay	0.21	0.21	0.26	0.28	1									
Job security	0.27	0.26	0.31	0.31	0.25	1								
Work itself	0.62	0.47	0.47	0.29	0.22	0.30	1							
Decision	0.39	0.44	0.51	0.36	0.31	0.29	0.36	1						
Not tense	0.18	0.13	0.17	0.18	0.13	0.16	0.21	0.16	1					
Calm	0.24	0.20	0.25	0.22	0.16	0.21	0.26	0.21	0.50	1				
Relaxed	0.23	0.19	0.24	0.23	0.15	0.21	0.25	0.21	0.48	0.78	1			
Not worried	0.14	0.10	0.14	0.14	0.10	0.17	0.17	0.11	0.60	0.38	0.37	1		
Not uneasy	0.23	0.18	0.21	0.19	0.13	0.23	0.25	0.19	0.55	0.36	0.34	0.69	1	
Content	0.42	0.33	0.37	0.29	0.23	0.28	0.43	0.33	0.39	0.57	0.57	0.31	0.36	1

Table 3A: Descriptive statistics, control variables (*N=18064*)

	Mean	Std. Dev.	Min	Max
Gender diversity	0.333	0.150	0	0.5
Employee characteristics:				
Age<30	0.216	0.412	0	1
Age30-39	0.256	0.436	0	1
Age50-59	0.217	0.412	0	1
Age60+	0.041	0.198	0	1
Female	0.523	0.499	0	1
Married	0.683	0.465	0	1
White	0.949	0.220	0	1
Children <7yrs old	0.181	0.385	0	1
Other dependents	0.160	0.367	0	1
Disabled	0.119	0.323	0	1
No academic qual.	0.146	0.353	0	1
O-level	0.231	0.421	0	1
A-level	0.092	0.288	0	1
Other qualification	0.327	0.469	0	1
Missing qualification	0.013	0.113	0	1
On permanent contract	0.923	0.267	0	1
Full-time	0.791	0.407	0	1
Work over 48 hrs	0.472	0.499	0	1
Skill req. is higher	0.531	0.499	0	1
Skill req. is lower	0.048	0.213	0	1
Prof. occupations	0.123	0.328	0	1
Associate prof. or tech.	0.166	0.372	0	1
Admin & secretarial	0.187	0.390	0	1
Skilled trades	0.068	0.252	0	1
Personnel services	0.087	0.282	0	1
Sales & customer services	0.066	0.248	0	1
Process, plant, mach. op.	0.077	0.267	0	1
Elementary occupations	0.098	0.298	0	1
Trade union member	0.357	0.479	0	1
Workplace characteristics:				
Log workplace age	3.249	1.135	0	6.802

Private establishment	0.698	0.459	0	1
Sole establishment	0.209	0.407	0	1
No. of employees	378.684	791.369	5	7740
Manufacturing	0.157	0.364	0	1
Construction	0.051	0.221	0	1
Whole sale & retail Trade	0.093	0.290	0	1
Hotel, rest & transport	0.092	0.289	0	1
Public & comm. services	0.158	0.364	0	1
Education	0.120	0.325	0	1
Health	0.151	0.358	0	1
Prop. (22+) on min. wage	0.014	0.083	0	1
Prop. in customer service	0.107	0.234	0	1
Urban area	0.823	0.382	0	1
Unemployment to vacancy ratio	3.393	2.401	0	10
Hpws (equality)	0.133	0.923	-2.498	1.191
Hpws (training)	0.067	0.984	-1.599	2.462
Hpws (flexibility)	0.037	0.982	-2.352	2.276

Table A4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.910
Bartlett's Test of Sphericity	Approx. Chi-Square	32488.533
	df	276
	Sig.	.000

Table A5: Rotated Component Matrix(a)

Workplace policy and practice variables:	Components		
	1	2	3
Equality variables:			
1. Explicit mention of racial equality	.938		
2. Explicit mention of gender equality	.938		
3. Explicit mention of disability equality	.928		
4. Explicit mention of belief/religion equality	.914		
5. Explicit mention of sexual equality	.827		
6. Explicit mention of age equality	.784		
7. Explicit mention of marital-status equality	.766		
8. Whether workplace has formal EO/Diversity policy	.757		
Training variables:			
1. Training covered team working		.755	
2. Training covered communication		.750	
3. Training covered leadership skills		.672	
4. Training covered problem solving methods		.640	
5. Training covered reliability & working to deadlines		.577	
6. Training covered customer service/liaison		.539	
7. Training covered computer training		.523	
8. Training covered quality control procedures			
Flexible work arrangement variables:			
1. Employee has the ability to change shift patterns			.703
2. Employee able to increase work hours			.697
3. Employee can work night shift			.655
4. Employee able to reduce work hours			.642
5. Employee can work compressed hours			.588
6. Workplace has schemes for working from home			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.