



**CEP Discussion Paper No 1460**

**December 2016**

**Diversity and Social Capital Within the Workplace:  
Evidence from Britain**

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## **Abstract**

This paper uses the British Workplace Employee Relations Survey to investigate the impact of gender and ethnic diversity on workers' level of trust in managers and the extent of identity with the values and objectives of the firm – dimensions of what we might call social capital within the workplace. These are both factors that one might expect to make firms more co-operative and, hence, productive. In contrast to much of the existing literature we pay particular attention to the estimation of causal effects, using an instrumental variable strategy. We find evidence that both women and minorities have higher levels of workplace trust and identity as individuals. But we also find evidence that a higher female share in the plant is associated with higher trust and identity (stronger for trust than identity) and that a higher minority share is associated lower trust and identity (stronger for identity than trust). However, in line with much of the literature, these results are not always significantly different from zero and they are sensitive to specification.

Keywords: trust, identity, diversity, workplace

JEL codes: M5

This paper was produced as part of the Centre's Community Programme. The Centre for Economic Performance is financed by the Economic and Social Research Council.

## **Acknowledgements**

Many thanks to UKCES for funding this project. All views expressed are those of the authors.

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Published by  
Centre for Economic Performance  
London School of Economics and Political Science  
Houghton Street  
London WC2A 2AE

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## Introduction

Many societies are becoming more diverse in a number of dimensions. Immigration has led to greater diversity in ethnicities and religions in many communities. And the entry of women into the workplace and changing gender roles within the household have led the worlds of women and men to intersect more often than they once did.

As diversity has increased so has interest in its effects on societies, communities and firms. There are two main arguments about the impact on firms. First, that diversity in people leads to diversity in thinking (Cox et al, 1991), and that, handled correctly, this adds value to organizations. On the other hand it is argued that more diversity makes co-operation harder as people find it harder to interact or tend to prefer their in-group to an out-group (see, for example, the review by Williams and O'Reilly, 1998), difficulties that it may or may not be possible to overcome.

There is a very large literature on the impact of diversity on a wide range of outcomes at the workplace level, spanning a wide range of academic disciplines including economics, management, psychology, sociology, and organizational behaviour. It is hard to summarize this vast literature but the meta-analysis of Joshi and Roh (2009) who survey the relationship between diversity and firm performance concludes that the direct effect of diversity on firm performance is zero, perhaps negative for the gender and ethnic diversity we consider in this paper (see Kochan et al, 2003, Knippenberg and Schippers, 2007, for surveys with a similar conclusion). However, many studies argue that the impact of diversity varies according to mediating factors, although such findings also tend not to be robust.

Our approach in this paper differs from much of the literature in the outcome variables we study. We focus on workers' trust of managers and the extent of workers' identity with the values and objectives of the firm. These might be thought of as two dimensions of the 'social capital' of the workplace. There is a large existing literature about the determinants of trust within organizations (e.g. see Mayer et al, 1995; Schoorman et al, 2007) or between organizations (e.g. Ozer et al, 2014, 2017) and how trust in leadership affects organizational performance (e.g. see the review of Burke et al, 2007). There is also a wider literature that links trust, identity and diversity to the economic and social wellbeing of nations and communities. For example, Knack and Keefer (1997) and Algan and Cahuc (2010) argue that higher trust is associated with higher economic growth and Putnam (2000) argued that trust is associated with higher measures of social capital (though see Uslaner, 2002, for a

different view). Putnam (2007) argued that higher diversity is associated with lower trust, a claim that has spawned a large and growing literature (see, for example, Portes and Vickstrom, 2001, Uslaner, 2012, and Tesei, 2014, for critical views). And there are a variety of papers arguing that ethnic diversity has undesirable impacts on economic and social outcomes (e.g. Easterly and Levine, 1997; Alesina, Baqir and Easterly, 1999; Alesina and La Ferrara, 2005, or van der Meer and Tolsma, 2014, for a review), impacts that may be mediated by low trust and a failure to establish a common identity.

Coase (1937) argued that transactions and interactions within firms are not mediated by markets so that interactions between people within firms might be influenced by some of the same factors as the interactions within communities. But the literature on how diversity affects the social capital of firms is much less developed than that on the social capital of communities. However, most of the mechanisms put forward for why diversity might affect trust could also be expected to apply within the workplace – and many people spend as much time at work as they do in their communities. So, we think it is interesting to consider the impact of diversity on trust and identity within the firm<sup>1</sup>.

But there is one aspect of diversity within the firm that is not shared within nations or communities. One might expect that a firm exerts more centralized control over the diversity of its workforce than nations or communities do over their residents (see, for example, Kalev et al 2006, for evidence on the effectiveness of affirmative action and diversity policies)<sup>2</sup>. This implies that diversity is very likely to be endogenous to the firm but the existing literature largely ignores this issue<sup>3</sup>. In this paper we pay more attention to estimating the causal impact of diversity.

The data we use comes from the UK Workplace Employee Relations Survey (WERS) for 2004 and 2011. We investigate the relationship between gender and ethnic diversity in the

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<sup>1</sup> One should also mention that the diversity of workers and customers may also have an effect on firm performance though the evidence on this is not strong – see, for example, Leonard, Levine and Joshi (2004).

<sup>2</sup> Though nation-building exercises are one way countries might seek to influence diversity - e.g. Miguel, 2004, on the comparison of Kenya and Tanzania. This is not to say that people do not choose their neighbourhoods based on ethnic composition, just that there is rarely a central authority controlling this process.

<sup>3</sup> Exceptions to this are some lab experiments that use an experimental design use most commonly with student subjects. But, it is not clear that results from these settings can be generalised to real-world work settings especially as the findings are so heterogeneous so seem (at best) dependent on the wider situation being considered. But outside the lab there is very little in the way of experimental or quasi-experimental evidence on the impact of diversity – this paper tries to address that gap.

workplace and trust of managers or identity with the values of the firm. We provide descriptive results and also develop instruments for both the female share and the minority share. We find evidence that both women and minorities have higher levels of trust and identity as individuals, interesting findings as both women and minorities are typically found to have lower levels of generalized trust (e.g. Alesina and La Ferrara, 2002). But we also find evidence that a higher female share in the plant is associated with higher trust and identity (stronger for trust than identity) and that a higher minority share is associated with lower trust and identity (stronger for identity than trust). These results are not contradicted when we instrument the female share and the minority share. IV estimates are however very imprecise, preventing us to draw strong conclusions regarding causality.

The plan of the paper is as follows. In the next section we briefly survey the literature on the impact of diversity in the workplace on outcomes. The second section then describes the data that we use and the third section our empirical methodology. The fourth section presents results and the final section concludes.

## 1. The Literature on Diversity and the Workplace

### a. Gender

Before briefly reviewing the existing literature on the impact of gender diversity on a wide variety of workplace outcomes, one might ask why one might think there is any impact at all. The most plausible answer is that there is accumulating evidence of gender differences in attitudes to risk, competition and attitudes to others (see Croson and Gneezy, 2009, for a survey, or Sapienza, Zingales and Maestripieri, 2009), though whether these are the result of nature or nurture is more debatable. It would not be surprising if these differences translated into differences in behaviour in the workplace.

There is a large literature on the impact of gender diversity of workplace outcomes and we do not attempt to survey it all. Here we summarize the strand of this literature that focuses on the impact of the share of women among senior management, sometimes chief executives, board members or senior executives as recent papers on this topic do try to obtain causal impacts<sup>4</sup>. Much of early literature exploits observed variation in the share of women on various outcomes, with very mixed results (see, for example, the overview in Ferreira, 2010, Deszo and Ross, 2012, O'Reilly and Main, 2012, and Noland, Moran and Kotschwar, 2016,

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<sup>4</sup> Mention should also be made of the literature on the impact of women having political rather than corporate power – see Pande and Ford (2011) for a review.

for a recent cross-country study that also cites the existing literature). A concern with these studies is that one is not identifying the causal impact of having more women in senior management positions (see Adams and Ferreira, 2009, for one attempt to deal with this endogeneity problem). Consequently a growing number of papers have explored the natural experiment in Norway of legislation requiring some firms to increase the board representation of women (see e.g. Ahern and Dittmar, 2012, Matsa and Miller, 2013; Bertrand et al, 2014, Dale-Olsen et al, 2014, Eckbo et al, 2015). Matsa and Miller (2013) found that affected firms undertake fewer workforce reductions than comparison firms, increasing relative labor costs and employment levels and reducing short-term profits. Bertrand et al (2014) found that there was little discernible impact on women's economic opportunities beyond the change in board composition itself. Ahern and Dittmar (2012) find large negative impacts on firm valuation but this conclusion is disputed by Eckbo et al (2015). Overall, the evidence for significant impacts is mixed.

However, while the gender mix of the board might affect the overall strategy of the firm, senior executives are possibly too remote to have much impact on the experience of work for those lower down the corporate hierarchy. It may be that the gender mix of one's co-workers is more important for that and there is a literature on how gender diversity affects outcomes. Ely (2004) investigated the impact of gender (and other types of diversity) on the quality of team-working and team performance in a retail bank. Gender diversity was not found to be related to the outcomes studied. Ellison and Mullin (2014) use panel data from a professional services firm to investigate how the variation in gender diversity at office level is correlated with measures of social capital and revenues, finding little strong evidence of such a link (though they do find that social capital is significantly higher if the firm is perceived to be supportive of diversity). Most of these studies also rely on observational variation in gender diversity, though Ellison and Mullin (2014) attempt to address this by estimating models with office fixed effects and exploiting within-office variation which could be argued to be more exogenous. Our study attempts to address this issue by using instruments for plant-level gender diversity.

#### b. Ethnic Diversity

There is also a large literature on the impact of ethnic diversity on firm performance (see, for example, Herring, 2009; Richard et al, 2013; Andrevski et al, 2014; Stojmenovska et al, 2017; Herring, 2017). There is also research on the impact of diversity on productivity (Ottaviano

and Peri, 2006), innovation (Ozgen, Nijkamp and Poot, 2011a, b), job separations (Miaari, Zussman and Zussman, 2012) and the relationship between manager and worker ethnicity (Giuliano, Leonard and Levine, 2011; Giuliano and Ransom, 2013; Aslund, Hensvik and Skans, 2014). But the literature on the impact of diversity on trust and identity within the workplace is small relative to the prominence this issue has received in the wider social capital literature (see, for example, Putnam, 2007, Dinesen and Sonderskov, 2012, the surveys by Portes and Vickstrom, 2011, and Van der Meer and Tolsma, 2014). Though whether there is a link between diversity and social capital in the neighbourhood is controversial e.g. in the UK see Laurence and Heath, (2008), Letki (2008), Andrews (2009), Fieldhouse and Cutts (2010), Twigg et al, (2010), Laurence (2011), Becares et al, (2011) Sturgis et al, (2011), Demireva and Heath (2014) and Langella and Manning (2019). As one can think of workplaces as communities in which interactions are not mediated by markets (Coase, 1937) the small size of the literature on social capital within the workplace is surprising.

## 2. Data

The workplace data used in this study comes from the 2004 and 2011 UK Workplace Employee Relations Studies (WERS), an establishment (i.e. plant) based survey of employee relations that has been conducted 6 times to date (Department of Trade and Industry, 2014; Department for Business, Innovation and Skills, 2015). We only use the latest two studies as the earlier ones do not contain the variables we need for this paper. The population for the 2004 and 2011 surveys is all workplaces in Britain that have 5 or more employees, excluding agriculture, fishing, forestry, mining and private households. The population was stratified by workplace size and industry sector in order to achieve a target number of responses in each stratum.

There is first an interview with the most senior manager responsible for personnel issues in which information about the demographic profile of employment in the plant is also collected. For workplaces in the market sector, there is also a financial performance questionnaire collecting accounting data on the workplace. There is also an interview with a worker representative if one exists, although we do not use this information in this paper. Finally, a self-completion questionnaire is distributed to 25 employees chosen at random (where the workplace has fewer than 25 employees, a questionnaire is given to all of them). The

achieved numbers of responses from employees was 22451 from 1733 workplaces in 2004 and 21891 from 1923 workplaces in 2011.

More details on sampling and response rates can be found for the 2004 survey in Chaplin et al (2005) and for the 2011 survey in Deepchand et al (2013). The raw data is not representative of the population of UK establishments or employees but weights are provided allowing for the sampling design and survey non-response. In data at the establishment level (e.g. the manager questionnaire) establishment weights are provided to be representative of the population of establishments and employee weights to be representative of total employment. In data at the individual level (i.e. the employee questionnaire) employee weights are provided to be representative of total employment. In what follows we always use the employee weights.

For our purposes we are most interested in information collected in the employee questionnaire about how they feel about their job. These form the dependent variables in which we are interested. The questions whose response we analyze can be grouped into the following categories:

- a. the level of trust between managers and employees
- b. the extent to which the worker identifies with the values of the employer

which can be thought of as two dimensions of the level of ‘social capital’ within the workplace. On the level of trust between managers and workers, employees are asked “to what extent do you agree or disagree with the following statements about working here?”

- a. Managers here can be relied upon to keep their promises
- b. Managers here are sincere in attempting to understand employees’ views
- c. Managers here deal with employees honestly
- d. Managers here treat employees fairly

The possible responses are on a 5-point Likert scale from strongly agree to strongly disagree. And there is a question

- e. In general, how would you describe relations between managers and employees here?

with five possible responses varying from very good to very bad.

The distribution of responses are reported in the first panel of Table 1. These use the employee weights so should give an indication of the distribution of views of workers in GB as a whole. We restrict the sample to non-managerial workers – perhaps unsurprisingly, managers have a higher opinion of managers. On average, workers are more likely to agree than disagree that their managers can be trusted though there is considerable variation. The five questions related to trust are very highly correlated – Panel A of Table 2 presents the correlation matrix. Because there is very little independent information contained in the five different measures we combine them into a single trust index computed as a simple mean of the five measures.

About the values and identity of the organisation, employees are asked “to what extent do you agree or disagree with the following statements about working here?”

- a. I share many of the values of my organisation
- b. I feel loyal to my organisation
- c. I am proud to tell people who I work for

The possible responses are on a 5-point Likert scale from strongly agree to strongly disagree. The mean values of these responses are presented in the second panel of Table 1. On average, workers are more likely to agree than disagree that they identify with their organization. Panel B of Table 2 also presents the correlation matrix for the identity measures - the correlations here are not as strong though still very positive. We construct a single identity index computed as a simple mean of the three measures. The questions on trust refer to how the respondent thinks that managers treat employees in general whereas the identity questions ask about how the respondent feels. In spite of this, it is also worth noting that the correlation between the trust and identity index at individual level is 0.60, meaning those who think managers can be trusted are likely to have a high level of identity.

The trust and identity indices are the outcome variables that we use in this study – they are natural analogies to the variables on trust and identity used in the literature on the determinants of social capital within communities.

Table 3 reports summary statistics on the demographic characteristics of workers, both for the overall sample and men/women and whites/minorities. Table 4 reports on the characteristics of the workplaces.

### 3. Empirical Strategy

Our basic estimation procedure has two steps. First, we regress the outcome of interest for individual  $i$  in plant  $j$   $y_{ij}$  on individual characteristics  $x_i$  and plant-specific effects  $\theta_j$  i.e. we have:

$$y_{ij} = \beta x_i + \theta_j + \varepsilon_{ij} \quad (1)$$

From this first-stage, we retrieve the estimated plant-specific effects,  $\hat{\theta}_j$  which we then regress on a set of plant-specific regressors,  $p_j$  and the main variables of interest, some function of the share of women,  $f_j$ , and minorities,  $m_j$ , in the workplace i.e. we have something like:

$$\hat{\theta}_j = \gamma_0 p_j + \gamma_1 \phi(f_j) + \gamma_2 \phi(m_j) + u_j \quad (2)$$

This two-step procedure allows us to study both the effect of being female or from a minority as an individual on the outcome of interest (from equation 1) and the effect of the female and minority shares on workers with similar observable characteristics across firms (from equation 2), as the plant effects  $\hat{\theta}_j$  are not influenced by the demographics of the respondents. Such a strategy has advantages over alternatives one might consider. One such alternative is to put  $(f_j, m_j)$  directly into (1) – however this leads to bias if the individual characteristics are correlated with  $u_j$ . Another is to collapse (1) to plant level – however this means that  $\beta$  is only estimated using between-plant and not within-plant information which throws away a lot of information so is likely to lead to less precision. More importantly, for our purposes, we want to be able to identify the impact of the plant-level female and minority share on the outcomes for all workers and collapsing to plant level would not enable us to identify separately these effects from the individual impact of being female or minority on the outcomes. The plant fixed effects are generated regressors but they are used as dependent variables in the second stage so the usual arguments for correcting standard errors do not apply. One might, however, want to weight the observations to reflect the different probabilities of being in the sample and the precision of the estimated plant effects (see Solon, Haider and Wooldridge, 2015, for a discussion of the arguments for and against weighting in

regressions). In all the reported regressions we use employee weights throughout but the results are very similar if we use unweighted data or a different set of weights.

We discuss issues relating to the measurement, functional form, the potential endogeneity of the female and minority shares, and more generally the sorting of workers across firms below. The endogeneity issue is particularly important given that individuals are very likely to sort into firms according to their preferences. This can directly affect the female and minority shares and we explain our IV strategy to deal with this problem in the next section. Sorting can also be an issue if individuals differ in how much they care about the female/minority share and sort towards plants they find more appealing. This problem is discussed in the next section.

#### 4. Results

##### *Individual-Level Regressions*

The results for the individual-level regressions are reported in Table A1. Apart from the female and minority share the other regressors included are age, gender, education, ethnicity, job tenure, 1-digit occupation, the log hourly wage, the log of hours, and whether on a fixed-term or temporary contract. There is not much interest in the particular coefficients though, given the focus of the paper on gender and ethnic diversity, it is worth noting that, within plants, both women and ethnic minorities are generally more likely to have trust in management and to identify with the firm. These findings contrast with the findings on generalized trust where women minorities often report significantly lower levels of generalized trust (Alesina and la Ferrara, 2002). Similarly, Manning and Roy (2010) and Nandi and Platt (2014) find lower levels of national identity for minorities (but not for women) though much of this is accounted for by the fact that they are more likely to be immigrants so may not translate directly to identity with their employer.

Because women and minorities have higher levels of trust and identity, female- and minority-intensive plants will, other things equal, have higher raw levels of trust and identity. But we are also interested in how the levels of trust and identity for all workers are affected by the female and minority shares. It is the plant fixed effects that are informative about this. We now turn to the analysis of these effects.

### *OLS analysis of Plant-Level Regressions*

We now consider estimation of the plant-level regressions (2). There are three main issues that we discuss. First, how the female and minority shares are to be measured; second, the functional form for the relationship between the shares and the outcomes, and, third, dealing with the endogeneity of the shares.

First, consider the precise form of how the female and minority share should be measured. For the share of minorities we have only one variable (the overall minority share in the workplace with no further breakdown into other minority groups) so there is no choice. But there is more choice over the measurement of the female share – should it be the overall proportion of women, the proportion of female managers or the share of women among non-managerial employees? Our main results use the overall female share within the plant but we investigate robustness to alternative measures below.

Secondly there is the question of the functional form for the link between social capital and  $(f_j, m_j)$ . The part of the literature that focuses on diversity typically uses a measure like the variance which, given that gender and minority (in our data) is a binary variable is a function of  $f_j(1-f_j)$  or  $m_j(1-m_j)$ . But restricting the impact of the shares to this functional form has the consequence of imposing the restriction that, for example, all-female and all-male workplaces have the same outcome when this may not be the case. It makes sense to include the share itself as a regressor and then to see whether the share squared is also significant. If the linear and quadratic terms have equal but opposite signs that would support the hypothesis that it is the diversity measure above that is important. In addition to the linear shares we actually use  $(f_j - 0.5)^2$  and  $(m_j - 0.1)^2$  so that the impact of the linear term for the female share can be interpreted as the effect of increasing the female share when there are equal numbers of men and women and the impact of the linear term for the minority share can be interpreted as the effect of increasing the minority share when it is 10%, close to the mean in the sample. Because the proportion of minorities is low in most of the sample, there is no prospect of identifying outcomes in plants with high shares of ethnic minorities with any degree of precision.

Table 5 presents the OLS results for the trust index. The first column regresses the raw mean of the trust index at plant level on a linear term in the female and ethnic minority shares and

other plant-level controls. Other plant-level controls that are included are the log of total employment in the firm, dummies for the age of the plant, whether the plant is part of a multi-plant firm, 2-digit or 3-digit industry dummies, and the share of minority groups in the ward in 1991. Panel A reports the results when we control for 2-digit industry, Panel B when we control for 3-digit industry. The results in the first column show that a higher female share leads, on average, to a significantly higher level of the trust index while there is no strong relationship with the minority share. The impact of the female share is unsurprising given that, within plants, women are more likely than men to trust management. The impact of the ethnic minority share is more surprising given our earlier evidence that ethnic minorities are more trusting as individuals but could be explained by the fact that whites become less trusting when working with ethnic minorities.

The second column of Table 5 uses the plant fixed effects from the first stage as dependent variables and these are not contaminated by the fact that women/minorities are more trusting than men/whites as individuals. There still remains a significant positive effect of the female share on levels of trust while the impact of the minority share is negative though only significantly different from zero at the 10% level. The third column includes quadratic terms which is one way of seeing whether it is gender or ethnic diversity that matters rather than the shares. The quadratic terms for either female or ethnic diversity are small and insignificantly different from zero. This means that while our results to this point suggest that there is an impact of the female share and minority share on plant-level trust it is not well-summarized by the statement that greater gender (ethnic) diversity improves (lowers) trust – it would be more accurate to say that more women improves trust while more ethnic minorities lowers it. The fourth column investigates the linearity in the gender effect further creating dummy variables for having a female share less than 20%, 20-40% etc<sup>5</sup>. It is striking that the coefficients suggest more positive effects on trust the higher is the female share. Linearity seems a good approximation to the relationship.

Turning to Panel B of Table 5, the relationship between trust and the female share is slightly weaker when we include 3-digit industry dummies as opposed to 2-digit dummies. However the relationship between trust and the ethnic minority share is stronger when 3-digit industry dummies are included and becomes significantly different from zero. The final column explores what happens when we include as an extra regressor the female share at national

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<sup>5</sup> We do not do the same for the minority share because the range of observed minority shares is much more compressed.

level at 4-digit industry (we cannot include dummies for 4-digit industry as the number of observations per industry is too small). The plant-level female share is more important than the industry share, suggestive of an effect at plant level. However whether this effect is causal we consider later.

The point estimates for the female share typically vary between 0.15 and 0.30, depending on the specification and the use of 2-digit or 3-digit industry controls. These estimates imply that a variation from 0 to 1 in the female share is associated with an increase of 20 to 40% of a standard deviation in the trust index (see Table 4). Similarly, a coefficient of -0.2 for the ethnic minority share (Panel B) means that going from no minority to only minority workers is associated with a decrease of about 30% of a standard deviation in the trust index.

Table 6 does a similar exercise with the identity index as dependent variable. For the female share there is a significant positive effect when both 2-digit and 3-digit industry controls are included. That is, plants with a higher proportion of women have a higher average level of identity with the employer. This is over and above the fact that, within plants, women have a higher level of identity than men. For the ethnic minority share we find a significant negative effect when both 2- and 3-digit industry controls are introduced.

Our main specification uses the female share of the plant as a whole as the relevant variable. But perhaps it is the female share among managers that is more important especially in generating trust in managers. The overall and managerial female shares have a correlation coefficient of 0.71 so it is hard to distinguish between their impacts but Table 7 reports estimates for the trust index and Table 8 for the identity index. The first column of Table 7 reports the estimate from column 2 of Table 5 where the overall female share is the regressor. Column 2 of Table 7 then uses the female share among managers as the regressor. The estimated effects are very small and less significant suggesting the overall female share is more important in practice in determining the trust index. This is confirmed by the results in the third column where both measures are included – the managerial female share has a negative sign but is not significantly different from zero. The interaction between the two female shares may also be important if, for example, female workers are more trusting of female managers. Accordingly, column 4 of Table 7 includes the interaction between the overall and managerial female shares – the coefficient is positive and large though the standard errors are large as well. Table 8 repeats the exercise for the identity index with similar results. The overall female share does seem the more important variable but high

collinearity with the managerial female share means one should be cautious in drawing this conclusion.

One concern with the results in Tables 5 and 6 is that the impact of female/minority share on trust is different for men/women and whites/minorities. To allay these fears Table 9 estimates the model separately for men and women i.e. estimates a separate plant fixed-effect for each gender. The effect of the female share on both trust and identity is stronger for men than for women, though the difference is not statistically different from zero at the 5% level. The negative effect of ethnic diversity on trust and identity however appears to be entirely driven by women, with the estimates for men being two to four times smaller and never statistically significant. In total, men seem to react more positively (or less negatively) than women to increases in both the female and the minority share.

Table 10 provides separate estimates for whites and minorities. The effects on identity are stronger for whites than minorities but otherwise there are no large differences.

The estimates presented so far assume that the impact of diversity is the same for all individuals when it is quite possible there is heterogeneity. If individuals were randomly assigned to plants then one could interpret our estimates as the average impact but there may be concerns that individuals who are more or less tolerant of diversity sort themselves into plants with different levels of diversity. Suppose that plant  $j$  has a female share  $f_j$  and that the average value attached to the female share among the workers employed in the plant is  $\gamma_{1j}$ . If workers who value the female share more are more likely to be found in female-intensive plants then we would expect that  $\gamma_{1j}$  and  $f_j$  are positively correlated. If  $\gamma_{1j}$  is unobserved then a regression of outcomes on the female share would be expected to find a convex relationship between the outcome and the female share. But we did not find much evidence for any non-linearity in Tables 5 and 6. And the IV procedure, described in more detail below, would be expected to produce LATE estimates. It might also be the case that there is a difference between workers who have been at the plant a long time and more recent recruits whose hiring may be more dependent on diversity in 2011. Table 11 reports different estimates for short- and long-tenure workers (defined as those who have been at the plant less or more than two years). There no evidence for significant differences between the two tenure groups.

Taken at face value, the results in Tables 5 and 6 suggest that female intensive plants have higher levels of trust and identity. On the other hand high minority share plants have lower levels of trust and identity. However these negative effects of the minority share almost exactly off-set the positive effects from the ethnic minority individuals which means that there is no overall correlation between trust, identity and the minority share as one can see in the first columns of Tables 5 and 6 where the dependent variable is the average trust and identity indices, with no correction for individual characteristics.

One potential problem with these conclusions is that the estimated impact of the female/minority share may not be causal. A finding that a higher share of women or minorities in the workplace is associated with higher levels of trust in management could mean that more women leads to higher trust or it could mean that women/minorities are attracted to workplaces with higher levels of trust for completely different reasons. For that reason we turn to an IV approach.

#### *The IV Strategy*

For the gender share, we report results with two instruments. The first instrument is the national female share in the 4-digit industry. The regressions do control for 2- or 3-digit industry so the validity of this instrument depends on assuming that, once one has controlled for broad industry, the gender mix of more disaggregated industries can be treated as exogenous. This is obviously an assumption that one might question though the results in Tables 5 and 6 do not find a powerful impact for the 4-digit female share once one controls for the plant female share, suggesting that there are no important omitted plant level characteristics correlated with the 4-digit female share conditional on the other regressors.

We also use an instrument based on the industry mix of the local area. Different areas specialize in different industries (largely for historic reasons) which have differing proportions of women in employment. This means that the structure of employment is more conducive to female employment in some areas than others while the variation in the female share of the population is very small. There is considerable variation in the gender intensity of industry across areas and we can use this to construct an instrument. Put simply, if area A specializes in female-intensive industries more than area B then it is likely that the plants in

area A will find it harder to recruit women so will, other things equal, be likely to have a lower fraction of women.

The instrument for area a is given by:

$$z_{fa} = \sum \theta_{ia} f_i$$

where  $\theta$  is the share of industry  $i$  in area  $a$  and  $f$  is the national female-intensity of industry  $i$ .

To implement this idea we use the geo-coded version of WERS that identifies the postcode of the workplace. We then map the postcode to the ward – there are almost 9000 wards in the UK with an average population of about 6500 people. We then map to the industry shares of employment by ward using data from the Business Register and Employment Survey (BRES). We compute the national female-intensity of each industry using the Labour Force Survey. Combining these two sources of information gives us an estimate of the female-intensity of employment in each ward. Because a plant typically draws its workforce not only from its own ward but from surrounding wards we use a weighted average of these ward-specific female-intensities as our instrument where the weights decline with distance from the home ward.

There is considerable variation in the predicted feminization of employment across wards for the plants in our sample - Figure 1 presents the histogram. Because workers in a plant do not all come from the same ward, we use a weighted average of the predicted female share around the workplace ward.

Our data source for the ethnic mix of local areas are the decennial censuses for 1991, 2001, and 2011. We impute values for the 2004 WERS (a non-census year) using linear interpolation between 2001 and 2011.

For the ethnic minority share we use the predicted minority share based on minority shares of nine ethnic groups in 1991 and the growth in population of different ethnic groups. That is, the instrument for area  $a$  is given by:

$$Z_{wa,y} = \frac{\frac{P_{w,y}^{UK}}{P_{w,1991}^{UK}} P_{wa,1991}}{\sum_g \frac{P_{g,y}^{UK}}{P_{g,1991}^{UK}} P_{ga,1991}}$$

where  $P_{ga,y}$  is the population of ethnic group  $g$  in year  $y$  in area  $a$ , and  $P_{g,1991}^{UK}$  is the UK population of ethnic group  $g$  in year  $y$ . This instrument can be thought of as the predicted white share in the ward if the population of all ethnic groups in the ward had grown at the same rate as the UK population for those ethnic groups. It is a ‘Bartik’ style instrument that is commonly used in the immigration literature (see, for example, Card, 2001). For the purpose of constructing this instrument we use 9 ethnic groups – whites, Black Caribbean, Black African, Black Other, Indian, Pakistani, Bangladeshi, Chinese, Asian Other and Other. We compute the predicted white share in each ward in 2011 (a census year) and 2004 (by interpolating between the 2001 and 2011 censuses). As for the female share instrument, we take a weighted average around the workplace ward. We can control for concerns about the baseline proportions of ethnic minorities being endogenous by including them as regressors.

Table 12 reports the first-stages for the female and minority share at plant level. The first column shows the results when 2-digit industry dummies are included, the second column when there are 3-digit industry dummies included. One can see that both instruments of the female share are relatively strong though the 4-digit industry share is stronger. The instrument for the minority share is always strong. We then use these instruments to estimate the basic model by IV – these results are reported in Table 13 for the estimated plant effects from the trust index and Table 14 for the estimated plant effects from the identity index. In all reported regressions we instrument both the female and minority share though sometimes we use both the 4-digit industry female share and the neighbourhood industry composition (this is the 2 gender instruments specification) and sometimes only the neighbourhood industry composition (this is the 1 gender instrument specification) when the 4-digit industry share is included as a control.

For the trust index, Table 13 shows that the female share has a generally positive impact on workplace trust though one estimate is negative and estimates are never significantly different from zero and very imprecise, especially when only one instrument is used. A similar conclusion can be drawn for the minority share: the estimated coefficient is always negative but never statistically significant.

For the identity index, Table 14 shows that we cannot detect a significant impact of the female share even though estimates are usually positive. The estimated impact of the minority share is always negative and it is statistically significant the two instruments for the female share are used. Estimates for both gender and minority tend to be much larger in the IV estimates than the OLS, but as their precision has decreased a lot, confidence intervals are large and we cannot conclude that the causal relationships are indeed larger. The magnitude of the point estimates should therefore be considered with caution.

The industry-mix of a local area seems a reasonably good instrument for the female share as it is unlikely to affect directly trust and identity in a specific workplace once we control for industries and regions. Even though we do control for 3-digit industry the female share in a 4-digit industry might however be a more questionable instrument as it relates to industry characteristics that may be related to social capital. The statistical analysis however suggests that it is necessary to use two instruments to get a sufficiently strong first stage and it should be noted that the 4-digit industry female share is not significant when included as a regressor.

We also investigated whether the IV estimates differ significantly by men and women<sup>6</sup>. The impact of the female share is usually not statistically significant, except on men's trust when 2 instruments and 2-digit industry controls are used. Similarly to the OLS, the impact of the female share is usually larger for men than women but there are never any significant differences in the estimated coefficients between men and women because the standard errors are too large. Turning to the minority share, we find that it has a similar impact on women's and men's trust, but a larger (though insignificantly different) impact on men's identity than on women's identity, which contrasts with the OLS results presented in Table 9.

Overall, estimates based on instrumental variables are consistent with OLS estimates. However, they tend to be large, imprecise, and rarely statistically significant. This prevents us to draw any conclusions regarding the magnitude of potential causal impacts, and to firmly conclude that the OLS relationships are causal. One exception is perhaps the effect of the minority share on identity, which remains statistically significant when instruments are used.

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<sup>6</sup> Detailed results available on demand. We cannot do a similar exercise for minorities because sample size for minorities is too small.

## 5. Trust, Identity and Workplace Performance

A key idea in Putnam (2000) is that trust and identity lead to better outcomes at the level of society. So it is natural to wonder whether one can find similar relationships within plants. WERS does contain a number of measure of performance of the plant. First, it contains subjective measures of both financial performance and productivity in which managers are asked to place plant performance on a five point scale from 0 to 4 with 0 being a lot below average and 4 a lot above average. Over 90% of managers place their plants at or above average. This is unlikely to be the case but it may be that the ranking contains some useful information. In addition, for a smaller sample of plants within the market sector, there is accounting information available that allows us to compute objective measures of performance. We use this to compute a measure of financial performance that is profits per worker, and a measure of productivity the log of value-added per worker. We normalize both of these variables to have zero mean and unit standard deviation in each year.

Table 15 presents the results of regressions in which the four measures of firm performance are regressed on the trust and identity indices and other plant-level characteristics. What is striking is that the subjective measures are significantly positively correlated with the trust and identity measures but not the objective measures. The differences cannot be explained by differences in the sample – estimating models on sub-samples with both subjective and objective measures available leads to a similar pattern (and Forth and McNabb,2008, found that the subjective and objective measures are not highly correlated). It is plausible that higher trust and stronger identity are associated with better workplace performance but we cannot establish such a link in our data.

It should be noted that the subjective performance measures come from managers while the trust and identity variables come from workers so one cannot explain the correlations in the subjective measures as the result of the same individual having a generally rosy view of the plant. But it does suggest that plants that feel more of a community with higher levels of trust and identity feel like they are high-performing but may not actually be so.

## 6. Conclusions

This paper has used the British Workplace Employee Relations Survey to investigate the impact of gender and ethnic diversity on the levels of workplace trust and identity, two dimensions of ‘social capital’ within the firm. Compared to the existing literature on the

impacts of diversity we focus on a somewhat different set of outcomes, and pay closer attention to estimating causal effects. And most of the existing literature on social capital focuses on communities or nations, not workplaces, the focus of our study. Yet many people spend as much waking time at work as in their communities and interactions between people within firms have many similarities to interactions between people within communities (Coase, 1937).

We find that women and ethnic minorities as individuals have significantly higher levels of trust and identity with the firm. But the main focus of the paper is on the impact of the female and minority shares on the trust and identity of all individuals once their individual characteristics, including gender and ethnicity, have been controlled for. We find a significant positive (negative) association between the female (minority) share and measures of social capital such as trust of managers or identity to the firm. However, causal estimates based on instrumental variables become very imprecise and rarely significant. So we would not claim that we have fully solved the problem of the existing literature of a failure to find consistent impacts of diversity.

The fact that the female and minority shares have opposite effects is interesting in itself and calls for different policy tools when addressing the under-representation of women or ethnic minorities in some jobs or occupations. Regarding gender, a consistent positive effect of the female share on trust is found of a similar magnitude (around 30 to 40% of a standard deviation) in cross section OLS specifications. While IV estimates are less conclusive, they are good enough to discard a negative effect of the female share on social capital. Our results therefore highlight that policies aimed at increasing exogenously gender diversity in traditionally male-dominated industries, jobs or occupations (such as quotas) should not have negative consequences for social capital, and may even be positive. This result also contradicts those who argue that gender diversity can be a source of conflicts<sup>7</sup>, or that men entrenched in traditionally male occupations may have negative stereotypes or priors against women doing similar jobs, and therefore be reluctant to work with women. Managers may hire women for male-dominated jobs with no fear that this is the case. Advertising such findings to decision-makers can be useful as their possibly erroneous beliefs about others' reactions to gender equity policies may prevent them to take action in cases where it could be desirable to do so.

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<sup>7</sup> Looking at the effect of the female share on conflicts (strikes or collective disputes) in the workplace, we do not find negative effects.

In contrast, the possibly negative effect of the share of workers from an ethnic minority might be a source of concern as it highlights that whites may be reluctant to work with minorities, which in turn may rationalize hiring discrimination against minorities in firms where there is a large pre-existing white workforce. However we do find that minorities have higher levels of trust in and identity with the firm so that employing a high share of minorities could be an attractive strategy for an employer. This discussion presumes that social capital positively affects firms' economic performance. Although we show that plants with higher levels of employee trust in management and higher levels of identity tend to perform better also have managers who perceive their workplace to be high-performing, the limited evidence available does not provide clear evidence for better performance on objective measures.

**Table 1: Trust and Identity Variables**

	Strongly disagree	disagree	Neither agree nor disagree	Agree	Strongly Agree	Mean (s.d)	Number of observations
<b>Trust Variables</b>							
Managers can be relied upon to keep their promises	6.6	17.5	28.7	36.6	10.5	2.27 (1.07)	34122
Managers are sincere in attempting to understand employees' views	5.9	15.7	24.3	42.1	12.0	2.39 (1.07)	34381
Managers deal with employees honestly	5.6	13.6	25.3	42.3	13.2	2.44 (1.06)	34212
Managers treat employees fairly	7.3	13.2	23.9	40.9	14.6	2.42 (1.11)	34506
Relations between managers and employees	4.0	11.4	23.5	40.8	20.3	2.62 (1.05)	34850
<b>Identity Variables</b>							
I share many of the values of my organization	2.6	6.8	19.4	49.8	21.3	2.80 (0.93)	34754
I feel loyal to my organization	3.5	7.3	26.8	40.5	21.9	2.70 (1.00)	34786
I am proud to tell people who I work for	6.6	17.5	28.7	36.6	10.5	2.27 (1.07)	34122

Notes:

1. Means come from numbering responses 0-4 as one goes from left to right
2. Responses to question on "Relations between managers and employees" go from very bad to very good.
3. Number of observations are unweighted totals but reported frequencies use the employee weights provided in the data set.

**Table 2: Correlations Among Trust and Identity Measures**

**Panel A: Trust Measures**

	Managers can be relied upon to keep their promises	Managers are sincere in attempting to understand employees' views	Managers deal with employees honestly	Managers treat employees fairly	Relations between managers and employees are good
Managers can be relied upon to keep their promises	1.00				
Managers are sincere in attempting to understand employees' views	0.79	1.00			
Managers deal with employees honestly	0.78	0.82	1.00		
Managers treat employees fairly	0.72	0.74	0.77	1.00	
Relations between managers and employees are good	0.72	0.75	0.74	0.74	1.00

Notes: The number of unweighted observations is 33157. Responses are weighted using employee weights.

**Panel B: Identity Variables**

	I share many of the values of my organization	I feel loyal to my organization	I am proud to tell people who I work for
I share many of the values of my organization	1.00		
I feel loyal to my organization	0.63	1.00	
I am proud to tell people who I work for	0.60	0.73	1.00

Notes: The number of unweighted observations is 33825. Responses are weighted using employee weights.

**Table 3: Descriptive Statistics: Individual Characteristics**

Variable	Whole Sample		Women		Men		Non-White		White	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Female	0.52	0.50	1.00	0.00	0.00	0.00	0.47	0.50	0.52	0.50
Age<=21	0.07	0.25	0.07	0.26	0.06	0.23	0.06	0.24	0.07	0.25
Age 22-29	0.18	0.38	0.18	0.38	0.17	0.38	0.27	0.44	0.17	0.37
Age 40-49	0.25	0.43	0.26	0.44	0.24	0.43	0.22	0.41	0.25	0.43
Age 50+	0.28	0.45	0.27	0.44	0.29	0.45	0.18	0.38	0.29	0.45
Highest Qual – A level	0.29	0.45	0.28	0.45	0.30	0.46	0.20	0.40	0.30	0.46
Highest Qual – GCSE	0.20	0.40	0.22	0.41	0.17	0.38	0.15	0.36	0.20	0.40
Highest Qual – none	0.14	0.35	0.14	0.34	0.15	0.36	0.15	0.35	0.14	0.35
Ethnicity- Asian	0.05	0.21	0.04	0.20	0.05	0.22	0.59	0.49	0.00	0.00
Ethnicity – Black	0.02	0.16	0.02	0.15	0.03	0.16	0.32	0.47	0.00	0.00
Ethnicity – Other	0.01	0.08	0.01	0.09	0.01	0.08	0.09	0.29	0.00	0.00
Tenure<1yr	0.16	0.37	0.16	0.37	0.16	0.36	0.22	0.42	0.15	0.36
Tenure 1-2yrs	0.12	0.33	0.13	0.33	0.12	0.32	0.16	0.37	0.12	0.32
Tenure 5-10yrs	0.21	0.41	0.21	0.41	0.21	0.41	0.18	0.39	0.21	0.41
Tenure 10yrs+	0.25	0.43	0.24	0.43	0.27	0.44	0.16	0.37	0.26	0.44
Log Hourly Wage	2.21	0.62	2.12	0.60	2.30	0.62	2.18	0.66	2.21	0.62
Log Hours	3.47	0.54	3.32	0.57	3.62	0.46	3.48	0.52	3.46	0.55
Fixed-term contract	0.03	0.18	0.03	0.18	0.03	0.18	0.06	0.23	0.03	0.18
Temporary contract	0.04	0.20	0.04	0.21	0.04	0.20	0.07	0.25	0.04	0.20
Professionals	0.14	0.35	0.12	0.32	0.16	0.37	0.14	0.34	0.14	0.35
Associate professional	0.18	0.39	0.19	0.39	0.18	0.38	0.19	0.39	0.18	0.39
Skilled Trade	0.08	0.27	0.01	0.11	0.15	0.36	0.04	0.21	0.08	0.27
Caring, Leisure, Service Occupations	0.09	0.28	0.13	0.34	0.03	0.18	0.10	0.29	0.08	0.28
Sales and Customer Service Occupations	0.09	0.29	0.13	0.34	0.05	0.22	0.11	0.31	0.09	0.29
Operatives	0.09	0.28	0.02	0.15	0.16	0.37	0.09	0.29	0.09	0.28
Elementary Occupations	0.14	0.34	0.11	0.31	0.17	0.37	0.17	0.38	0.14	0.34
Number of Observations	35201	35201	19935	19935	15266	15266	2434	2434	32767	32767

Notes: These are weighted means using the employee weights.

**Table 4: Descriptive Statistics: Plant-Level Characteristics**

	Sample Size	Mean	s.d.
Female Share of Total Employment	3361	0.514	0.290
Ethnic Minority Share of Total Employment	3361	0.082	0.148
Log Plant Employment	3361	4.560	1.709
Plant Age 0-5yrs	3361	0.114	0.296
Plant Age 6-15yrs	3361	0.257	0.426
Plant Age 16-25yrs	3361	0.201	0.409
Plant Age 25+yrs	3361	0.428	0.498
Single Plant Firm	3361	1.242	0.428
Year=2011	3361	0.486	0.500
Share Managers	3361	0.106	0.113
Share Professionals	3361	0.135	0.216
Share Associate Professionals	3361	0.103	0.195
Share Administrative Staff	3361	0.147	0.209
Share Skilled Trades	3361	0.063	0.156
Share Caring and Leisure	3361	0.093	0.243
Share Sales and Customer Service	3361	0.138	0.248
Share Operatives	3361	0.088	0.200
Share Elementary Occupations	3361	0.128	0.242
Predicted Neighbourhood Change in White Share	3361	-0.038	0.045
Female share in 4-digit industry	3361	0.499	0.226
Female intensity of industry in neighbourhood	3361	0.498	0.021
Trust Index	3356	3.065	0.747
Identity Index	3348	2.703	0.474
Subjective Financial Performance	3060	2.601	0.226
Objective Financial Performance	1051	0.009	0.826
Subjective Labour Productivity	2989	2.573	0.731
Objective Labour Productivity	975	0.004	1.040

Notes: These are weighted means using employee weights.

**Table 5: Effect of Female/Minority Share on Trust Index: OLS and Functional Form**

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Average trust index	Estimated Plant effects	Estimated Plant effects	Estimated Plant effects	Estimated Plant effects
<b>Panel A: 2-digit industry controls</b>					
Female share	0.362 (0.069)	0.292 (0.068)	0.272 (0.069)		0.314 (0.076)
(Female share-0.5) squared			0.302 (0.189)		
Ethnic Minority Share	-0.027 (0.082)	-0.148 (0.080)	-0.277 (0.149)	-0.144 (0.080)	-0.145 (0.080)
(Ethnic Minority share-0.1) sq			0.303 (0.279)		
Female share <0.2				-0.077 (0.049)	
Female share 0.2-0.4				-0.041 (0.041)	
Female share 0.6-0.8				0.050 (0.035)	
Female share >0.8				0.157 (0.042)	
Female share in 4-digit industry					-0.091 (0.136)
R-squared	0.211	0.173	0.174	0.174	0.173
<b>Panel B: 3-digit industry controls</b>					
Female share	0.230 (0.077)	0.162 (0.076)	0.138 (0.078)		0.195 (0.079)
(Female share-0.5) squared			0.301 (0.202)		
Ethnic Minority Share	-0.086 (0.084)	-0.198 (0.083)	-0.357 (0.153)	-0.194 (0.083)	-0.193 (0.083)
(Ethnic Minority share-0.1) sq			0.369 (0.284)		
Female share <0.2				-0.032 (0.054)	
Female share 0.2-0.4				-0.029 (0.044)	
Female share 0.6-0.8				0.027 (0.036)	
Female share >0.8				0.091 (0.046)	
Female share in 4-digit industry					-0.314 (0.187)
R-squared	0.258	0.221	0.222	0.221	0.222

Notes:

1. The number of unweighted observations is 3358.
2. Observations are weighted using employee weights
3. Standard errors are reported in parentheses
4. Other regressors are those reported in Table 12

**Table 6: Effect of Female/Minority Share on Identity Index: OLS and Functional Form**

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Average Identity index	Estimated Plant effects	Estimated Plant effects	Estimated Plant effects	Estimated Plant effects
<b>Panel A: 2-digit industry controls</b>					
Female share	0.204 (0.044)	0.172 (0.043)	0.161 (0.044)		0.206 (0.048)
(Female share-0.5) squared			0.171 (0.121)		
Ethnic Minority Share	-0.026 (0.052)	-0.165 (0.051)	-0.334 (0.095)	-0.162 (0.051)	-0.161 (0.051)
(Ethnic Minority share-0.1) sq			0.384 (0.178)		
Female share <0.2				-0.032 (0.031)	
Female share 0.2-0.4				0.015 (0.026)	
Female share 0.6-0.8				0.067 (0.022)	
Female share >0.8				0.119 (0.027)	
Female share in 4-digit industry					-0.137 (0.087)
R-squared	0.213	0.187	0.189	0.190	0.188
<b>Panel B: 3-digit industry controls</b>					
Female share	0.145 (0.049)	0.111 (0.048)	0.107 (0.049)		0.136 (0.050)
(Female share-0.5) squared			0.022 (0.128)		
Ethnic Minority Share	-0.065 (0.053)	-0.201 (0.053)	-0.392 (0.097)	-0.200 (0.053)	-0.198 (0.053)
(Ethnic Minority share-0.1) sq			0.424 (0.180)		
Female share <0.2				-0.049 (0.034)	
Female share 0.2-0.4				-0.004 (0.028)	
Female share 0.6-0.8				0.049 (0.023)	
Female share >0.8				0.060 (0.029)	
Female share in 4-digit industry					-0.248 (0.120)
R-squared	0.269	0.245	0.246	0.246	0.246

Notes:

1. Number of observations is 3350
2. Observations are weighted using employee weights
3. Standard errors are reported in parentheses
4. Other regressors are those reported in Table 12

**Table 7: Effect of Female Share on Trust Index: Experimentation with Female Share**

	(1)	(2)	(3)	(4)
<b>Panel A: 2-digit industry controls</b>				
Female share	0.292 (0.068)		0.340 (0.084)	0.390 (0.088)
Female managerial share		0.061 (0.046)	-0.050 (0.053)	-0.097 (0.059)
(Female share-0.5)* (Female managerial share-0.5)				0.293 (0.158)
Ethnic Minority Share	-0.148 (0.080)	-0.164 (0.082)	-0.133 (0.082)	-0.126 (0.082)
R-squared	0.173	0.169	0.173	0.174
<b>Panel B: 3-digit industry controls</b>				
Female share	0.162 (0.076)		0.180 (0.094)	0.235 (0.097)
Female managerial share		0.017 (0.047)	-0.035 (0.054)	-0.094 (0.060)
(Female share-0.5)* (Female managerial share-0.5)				0.362 (0.164)
Ethnic Minority Share	-0.198 (0.083)	-0.209 (0.084)	-0.188 (0.085)	-0.182 (0.085)
R-squared	0.221	0.221	0.222	0.223

Notes:

1. Number of observations is 3125
2. Observations are weighted using employee weights
3. Standard errors are reported in parentheses
4. Other regressors are those reported in Table 12

**Table 8: Effect of Female Share on Identity Index: Experimentation with Female Share**

	(1)	(2)	(3)	(4)
<b>Panel A: 2-digit industry controls</b>				
Female share	0.172 (0.043)		0.216 (0.054)	0.231 (0.057)
Female managerial share		0.055 (0.029)	-0.016 (0.034)	-0.030 (0.087)
(Female share-0.5)* (Female managerial share-0.5)				0.087 (0.102)
Ethnic Minority Share	-0.166 (0.051)	-0.173 (0.053)	-0.154 (0.053)	-0.126 (0.082)
R-squared	0.187	0.182	0.186	0.186
<b>Panel B: 3-digit industry controls</b>				
Female share	0.111 (0.049)		0.139 (0.060)	0.148 (0.062)
Female managerial share		0.030 (0.030)	-0.011 (0.035)	-0.021 (0.039)
(Female share-0.5)* (Female managerial share-0.5)				0.064 (0.105)
Ethnic Minority Share	-0.201 (0.053)	-0.211 (0.054)	-0.196 (0.054)	-0.194 (0.054)
R-squared	0.245	0.245	0.246	0.247

Notes:

1. Number of observations is 3118
2. Observations are weighted using employee weights
3. Standard errors are reported in parentheses
4. Other regressors are those reported in Table 12

**Table 9:****Impact of Female/Minority Share on Trust and Identity: Male and Female Equations**

Sample	Coefficient on Female Share		Coefficient on Minority Share		R-squared		Number of Observations
	2-digit controls	3-digit controls	2-digit controls	3-digit controls	2-digit controls	3-digit controls	
<b>Panel A: Trust Index</b>							
Women	0.267 (0.085)	0.156 (0.097)	-0.242 (0.100)	-0.257 (0.103)	0.140	0.192	3055
Men	0.406 (0.098)	0.246 (0.111)	-0.064 (0.112)	-0.111 (0.116)	0.156	0.207	2772
<b>Panel B: Identity Index</b>							
Women	0.139 (0.056)	0.056 (0.062)	-0.246 (0.065)	-0.265 (0.067)	0.152	0.207	3058
Men	0.196 (0.069)	0.156 (0.078)	-0.120 (0.078)	-0.146 (0.081)	0.155	0.207	2765

Notes:

1. Observations are weighted using employee weights
2. Standard errors are reported in parentheses
3. Other regressors are those reported in Table 12

**Table 10:****Impact of Female/Minority Share on Trust and Identity: White and Minority Equations**

Sample	Coefficient on Female Share		Coefficient on Minority Share		R-squared		Number of Observations
	2-digit controls	3-digit controls	2-digit controls	3-digit controls	2-digit controls	3-digit controls	
<b>Panel A: Trust Index</b>							
White	0.306 (0.074)	0.180 (0.085)	-0.097 (0.101)	-0.128 (0.103)	0.186	0.239	2784
Minority	0.319 (0.207)	0.333 (0.244)	-0.121 (0.177)	-0.079 (0.187)	0.128	0.208	1017
<b>Panel B: Identity Index</b>							
White	0.196 (0.049)	0.117 (0.056)	-0.260 (0.066)	-0.299 (0.067)	0.190	0.253	2777
Minority	0.160 (0.139)	0.174 (0.162)	-0.052 (0.121)	0.028 (0.125)	0.115	0.234	1034

Notes:

1. Observations are weighted using employee weights
2. Standard errors are reported in parentheses
3. Other regressors are those reported in Table 12

**Table 11: Impact of Female and Minority Share on Trust and Identity: Short and Long-Tenure Equations**

	Female Share		Minority Share		R-squared		Number of Observations
	2-digit controls	3-digit controls	2-digit controls	3-digit controls	2-digit controls	3-digit controls	
<b>Panel A: Trust Index</b>							
Short-tenure	0.214 (0.097)	0.094 (0.111)	0.025 (0.119)	-0.029 (0.124)	0.086	0.132	25965
Long-Tenure	0.322 (0.079)	0.141 (0.090)	-0.126 (0.097)	-0.174 (0.099)	0.182	0.238	3064
<b>Panel B: Identity Index</b>							
Short-tenure	0.124 (0.068)	0.098 (0.076)	-0.152 (0.082)	-0.179 (0.085)	0.119	0.190	2619
Long-Tenure	0.185 (0.050)	0.072 (0.056)	-0.089 (0.061)	-0.107 (0.062)	0.178	0.233	3049

Notes:

1. Observations are weighted using employee weights
2. Standard errors are reported in parentheses
3. Other regressors are those reported in Table 12
4. Short tenure is defined as having been at the workplace less than 2 years (about 20% of workers).

**Table 12: First-Stage Regressions**

Dependent Variable	Female Share				Minority Share			
	(1)		(2)		(1)		(2)	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Female share in 4-digit industry	0.804	0.023	0.625	0.034	-0.005	0.023	0.012	0.034
Female intensity of neighbourhood industry composition	-0.374	0.136	-0.431	0.135	-0.114	0.134	-0.183	0.134
Predicted Minority Share	0.179	0.070	0.165	0.070	-0.557	0.070	-0.579	0.070
Log Plant Employment	-0.012	0.001	-0.011	0.002	0.010	0.001	0.010	0.002
Plant Age 0-5yrs	-0.001	0.008	-0.005	0.008	0.008	0.008	0.007	0.008
Plant Age 6-15yrs	-0.011	0.007	-0.014	0.006	0.019	0.006	0.020	0.006
Plant Age 25+yrs	0.010	0.006	0.005	0.006	-0.006	0.006	0.002	0.006
Single Plant Firm	-0.005	0.006	-0.001	0.006	0.001	0.005	0.001	0.006
Year	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.001
Share Managers	0.231	0.027	0.248	0.028	0.025	0.027	0.053	0.027
Share Professionals	0.224	0.022	0.252	0.023	0.025	0.022	0.057	0.023
Share Associate Professionals	0.228	0.021	0.245	0.023	0.000	0.021	0.027	0.022
Share Administrative Staff	0.412	0.022	0.446	0.023	0.011	0.022	0.019	0.023
Share Skilled Trades	0.000	(omitted)	0.000	(omitted)	0.000	(omitted)	0.000	(omitted)
Share Caring and Leisure	0.411	0.022	0.425	0.024	0.059	0.022	0.071	0.023
Share Sales and Customer Service	0.382	0.021	0.387	0.022	0.075	0.020	0.050	0.022
Share Operatives	0.035	0.021	0.038	0.023	0.032	0.021	0.010	0.022
Share Elementary Occupations	0.254	0.020	0.227	0.023	0.070	0.020	0.022	0.022
Baseline Minority Share	-0.025	0.019	-0.031	0.019	-0.013	0.019	-0.010	0.019
Baseline Log Population Density	0.001	0.002	0.001	0.002	0.027	0.002	0.026	0.002
Constant	-0.727	1.483	-1.218	1.484	0.053	1.468	-1.185	1.483
Industry controls	2-digit		3-digit		2-digit		3-digit	
Sample Size	4731				4573			
R2	0.721		0.744		0.165		0.228	

Notes:

1. The dependent variable is female share in plant in first 4 columns, minority share for last 4.
2. Observations are weighted using employee weights.

**Table 13:**

**IV Estimates of the Impact of the Female/Minority Share on Estimated Plant Effects for Trust Index**

	OLS	IV – 2 gender instruments	IV – 1 gender instrument
<b>Panel A: 2-digit industry controls</b>			
Coefficient on Female Share	0.292 (0.068)	0.216 (0.151)	0.789 (1.58)
Coefficient on 4-digit Female Share			-0.462 (1.27)
Coefficient on Minority Share	-0.148 (0.080)	-0.521 (0.613)	-0.396 (0.761)
R-squared	0.173	0.167	0.160
<b>Panel B: 3-digit industry controls</b>			
Coefficient on Female Share	0.162 (0.076)	-0.285 (0.295)	0.860 (1.22)
Coefficient on 4-digit Female Share			-0.701 (0.736)
Coefficient on Minority Share	-0.198 (0.082)	-0.429 (0.599)	-0.231 (0.667)
R-squared	0.221	0.211	0.203

Notes:

1. The dependent variable is the estimated plant effect for the trust index.
2. Number of unweighted Observations is 3358
3. Observations are weighted using employee weights
4. Standard errors are reported in parentheses
5. Other regressors are those reported in Table 12
6. 2 instruments corresponds to the case where the 4-digit industry female share and the neighbourhood female share are used. 1 instrument corresponds only to the latter. In all cases we also use the instrument for the minority share.

**Table 14:**

**IV Estimates of the Impact of the Female/Minority Share on Estimated Plant Effects for Identity Index**

	OLS	IV – 2 instruments	IV – 1 instrument
<b>Panel A: 2-digit industry controls</b>			
Coefficient on Female Share	0.172 (0.043)	0.078 (0.102)	1.531 (1.13)
Coefficient on 4-digit Female Share			-1.179 (0.918)
Coefficient on Minority Share	-0.165 (0.051)	-1.23 (0.413)	-0.911 (0.551)
R-squared	0.187	0.082	0.084
<b>Panel B: 3-digit industry controls</b>			
Coefficient on Female Share	0.110 (0.048)	-0.212 (0.192)	1.209 (0.837)
Coefficient on 4-digit Female Share			-0.884 (0.511)
Coefficient on Minority Share	-0.201 (0.053)	-1.01 (0.392)	-0.770 (0.457)
R-squared	0.245	0.182	0.094

Notes:

1. The dependent variable is the estimated plant effect from equation (1) for the identity index.
2. Number of unweighted Observations is 3350
3. Observations are weighted using employee weights
4. Standard errors are reported in parentheses
5. Other regressors are those reported in Table 12
6. 2 instruments corresponds to the case where the 4-digit industry female share and the neighbourhood female share are used. 1 instrument corresponds only to the latter.

**Table 15: Estimates of the Impact of Trust and Identity on Objective and Subjective Measures of Firm Performance**

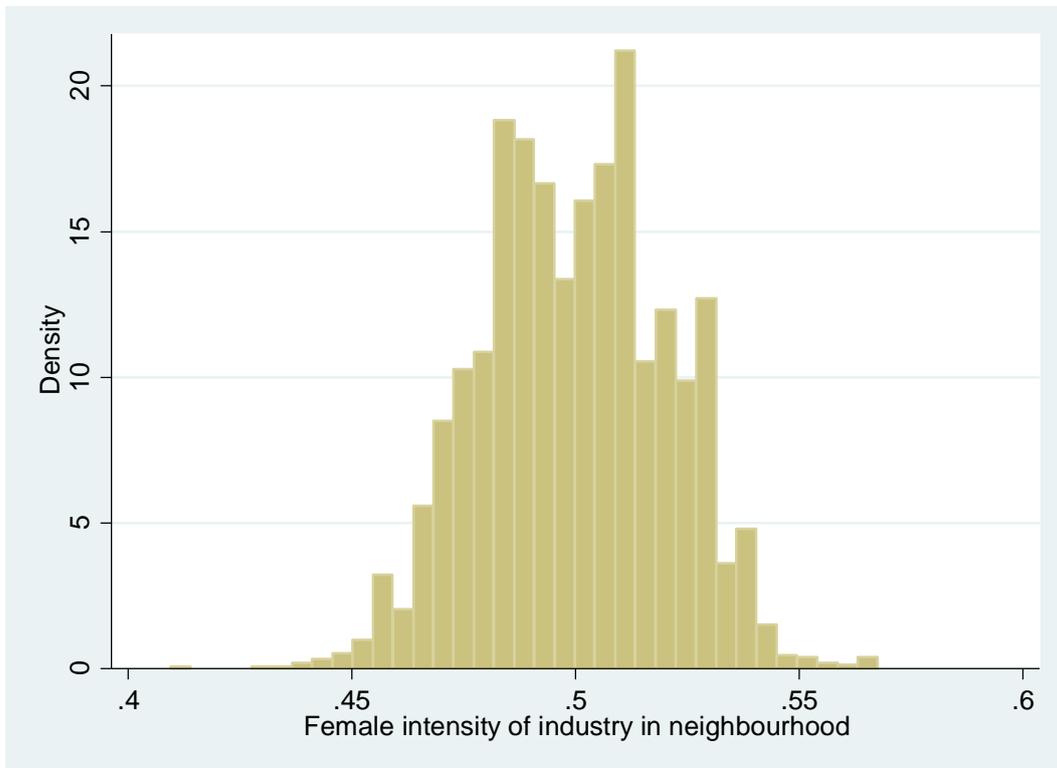
	Subjective Financial Performance	Objective Financial Performance	Subjective Labour Productivity	Objective Labour Productivity
<b>Panel A: 2-digit industry controls</b>				
Coefficient on Trust Index	0.073 (0.029)	0.066 (0.071)	0.063 (0.026)	-0.129 (0.064)
Coefficient on Identity Index	0.121 (0.044)	-0.145 (0.109)	0.097 (0.040)	-0.030 (0.099)
R-squared	0.067	0.043	0.069	0.212
Number of Observations	3136	1075	3066	995
<b>Panel B: 3-digit industry controls</b>				
Coefficient on Trust Index	0.069 (0.029)	0.065 (0.075)	0.059 (0.026)	-0.165 (0.067)
Coefficient on Identity Index	0.120 (0.046)	-0.183 (0.117)	0.090 (0.041)	-0.052 (0.104)
R-squared	0.120	0.131	0.128	0.320
Number of Observations	3136	1075	3066	995

Notes:

1. Observations are weighted using employee weights
2. Standard errors are reported in parentheses
3. Other regressors are those reported in Table 12

**Figure 1:**

The Female Intensity of industry in the neighbourhood: sample variation



Note: sample size is 3361 plants

## Appendix

**Table A1: Results of Individual-Level Regressions: Trust and Identity Index**

	Trust Index		Identity Index	
	Coeff	s.e.	Coeff	s.e.
Female	0.047	0.016	0.080	0.011
Age<=21	0.055	0.031	-0.030	0.022
Age 22-29	0.021	0.020	-0.056	0.014
Age 40-49	0.006	0.018	0.026	0.013
Age 50+	0.050	0.019	0.092	0.013
Highest Qual – A level	0.079	0.018	0.071	0.013
Highest Qual – GCSE	0.110	0.020	0.074	0.014
Highest Qual – none	0.205	0.024	0.129	0.017
Ethnicity- Asian	0.072	0.033	0.255	0.023
Ethnicity – Black	0.133	0.044	0.174	0.030
Ethnicity – Other	-0.060	0.076	-0.060	0.052
Tenure<1yr	0.431	0.021	0.149	0.015
Tenure 1-2yrs	0.180	0.022	0.029	0.015
Tenure 5-10yrs	-0.083	0.019	-0.021	0.013
Tenure 10yrs+	-0.107	0.019	-0.018	0.013
Log Hourly Wage	0.079	0.016	0.112	0.011
Log Hours	-0.020	0.015	0.093	0.011
Fixed-term contract	0.090	0.037	-0.006	0.026
Temporary contract	0.098	0.034	0.005	0.024
Professionals	-0.018	0.028	0.004	0.019
Associate professional	-0.029	0.023	0.007	0.016
Skilled Trade	-0.243	0.033	-0.160	0.023
Caring, Leisure, Service Occupations	-0.049	0.033	0.019	0.023
Sales and Customer Service Occupations	0.017	0.034	0.059	0.024
Operatives	-0.293	0.033	-0.199	0.023
Elementary Occupations	-0.105	0.029	-0.104	0.021
Constant	2.830	0.084	2.008	0.059
R-squared	0.340		0.285	
Number of obs	33157		33825	

Notes: Observations are weighted using employee weights and a dummy for year of survey (2004 or 2011) is also included.

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