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Article

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Within-Establishment Wage Inequality and Satisfaction

Ambra Poggi

Abstract
The aim of this paper is to provide fresh empirical evidence on the mechanisms through which wage inequality affects worker satisfaction.Theoretically, the wages of others may affect workers' utility for two main reasons: Workers may derive well-being from their social status (the comparison effect) and/or they may use others' wages to help predict their own future wage (the information effect). The author tests both hypotheses. To do this, she models individual utility from pay as a function of a workers own wage and the earnings of all other workers within the same establishment, and she estimates the model using matched British employer-employee data. The author assumes incomplete information about others' wages. She finds that the comparison effect matters. Interestingly, she also provides some evidence on a positive relation between well-being and inequality. Her results are robust to different specifications and different definitions of the reference group.

JEL C25 J28 J31 J33
Keywords Satisfaction; comparison income; co-workers; inequality; incomplete information

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1 Introduction

Since the early work of Hammermesh (1977) and Freeman (1978) many authors have analyzed the determinants of individuals' subjective assessment of the utility gained from their work environment. A significant amount of empirical work in recent economic literature has focused on the role of income comparisons in determining job satisfaction: the idea is that job satisfaction is not determined by absolute wages only, but rather by relative wages (for detailed reviews see Frey and Stutzer, 2002; Senik, 2005; Easterlin, 2006; Clark et al., 2008). This literature has generally concluded that income comparisons are important in determining workers' job or pay satisfaction.

Theoretically, the wages of others may affect workers' utility for two main reasons. Firstly, workers preferences may depend directly on their salary relative to their reference groups. We have comparison effects: workers derive well-being from their social status. In the well know model of Fehr and Schmidt (1999) utility depends positively on one's own income, but negatively on the differences between one's own income and that of others suggesting a dislike of others having more and a compassion of others having less. Thus, the model predicts a negative relation between well-being and inequality. But if, contrary to Fehr and Schmidt's hypotheses, we suppose that lower incomes for others raise individual's utility (prestige effect), we could in principle also predict a positive relation between well-being and inequality.

Secondly, workers may use others wages to help to predict their own future wage, as in the "tunnel effect" of Hirschman and Rothschild (1973). Thus, the more others earn, the happier the worker is, as others good fortune provides information about the workers' future prospects. We observe information effects. Workers may appreciate inequality if this signals future potential career improvements (at least in the short term).

The role of wage inequality in predicting subjective well-being is therefore controversial. In this article, we provide fresh empirical evidence of the mechanisms through which wage inequality may affect worker satisfaction. Both comparison and information effects are tested. To achieve our aims, we model individual utility from pay as a function of a worker's own wage and the earnings of all other workers within the same establishment, and we estimate the model using British employer-employee data. Contrary to previous literature, we assume

incomplete information about others wages and we control for establishment unobserved heterogeneity. We find that the comparison effects matter. Of most interest, we provide some initial evidence regarding a positive relationship between well-being and inequality. This evidence is the main contribution of the paper. In facts, the opposite finding is generically suggested by the literature. Our results are robust to different specifications and different definitions of the reference group. However, the existence of a positive relationship between well-being and inequality deserves to be further investigated to exclude that it depends on data specific characteristics. Thus, the paper also contributes to the literature stimulating future research.

This article is organized as follows. In Section 2, we review the relevant literature. Section 3 presents our empirical strategy. Section 4 describes data and illustrates some descriptive statistics. Section 5 reports the main set of results. Section 6 discusses the robustness of our findings, whereas the last section concludes.

2 Literature Review of the Models of Relative Concerns

Neoclassical approaches to utility suggest that it will vary positively with the absolute wage level and negatively with the number of hours worked. Put simply, workers like income and dislike effort. However, recent years have seen the formulation of models intending to highlight that relative wages will be an important determinant of utility. The very broad idea is the existence of externalities emanating from the wages of others. In other words, we observe preference interactions (as termed by Manski, 2000), where what others do, or what happens to them, directly affects my own utility. Therefore, utility is allowed to depend on "relative concerns". There are several ways in which this can be done.

Models of mean-dependence assume that utility is increasing one's own absolute income but there is also a relative component where one's own income is compared with the average income of others. Individuals care about how their income compares with the norm, or reference income, of a socially constructed comparison group. Thus, individuals gain utility to the extent that their income exceeds the average or reference income of people in their comparison set and lose

utility to the extent that their income falls below the reference level (Clark and Oswald, 1996). Many authors find that comparison income (i.e. average income of others) is negatively correlated with satisfaction (among the others, Pfeffer and Langton, 1993; Clark and Oswald, 1996; Sloane and Williams, 2000; McBride, 2001; Bygren, 2004; Blanchflower and Oswald, 2004; Luttmer, 2005). Ferrer-i-Carbonell (2005) finds that income comparisons are "upwards": poorer individuals' satisfaction is negatively influenced by the fact that their income is lower than the reference group, while richer individuals do not get happier from having an income above the average. Wunder and Schwarze (2009) Card et al. (2012) also shows empirical evidence supporting upward income comparisons.

More recently, a significant amount of work has focused on the discrepancies between current and desired or aspiration states (e.g. Gilboa and Schmeidler, 2001; Solberg et al., 2002; Stutzer, 2004). At the interface between economics and psychology, the idea that losses and gains are assessed not in absolute terms but in terms of the change they represent from a reference point (such as the current state) has received wide currency in prospect theory (Kahneman and Tversky, 1979) and related accounts (e.g. Vendrik and Woltjer, 2007). The implications for economic models of relative concerns have received much attention. Among others, Layard (1980), Frank (1985a, 1985b) and Robson (1992) show that individuals care about their rank. Brown et al. (2008) offer empirical evidence that one's utility not only increases one's own income but also the rank one holds in income. In particular, allowing for multiple reference point impacts on inequality (e.g. Frank 1985 a, 1985b; Van de Stadt et al., 1985; Quiggin, 1993; Wilkinson, 1996; Hopkins and Kornienko, 2004). The main idea is based on psychophysical models of contextual effects on judgments. It states that judgments of a wage are made relative to the wage distribution. Thus, judgments can be made with regard to the endpoints of a contextual distribution and/or the variance of the distribution (e.g. Volkmann, 1951; Janiszewski and Lichtenstein, 1999; Steward at al., 2003). The skewness of a distribution can also be relevant. The "range frequency theory" captures this idea as follow: the ordinal position of own wage within a ranked list of contextual wages (a comparison set) is important in determining judgment (e.g. Parducci, 1965; Parducci and Perrett, 1971; Mellers 1982, 1986; Hagerty, 2000; Highhouse et al., 2003; Brown et al., 2008; Boyce et al., 2010; Wood et al., 2012). For example, feelings of satisfaction will depend on the position of the rated wage

within an ordered set of comparison wages and with respect to the highest and lowest values in the comparison set (Seidl et al., 2005).

Judgments may also depend on perceived unfairness, in such cases models of inequity perception could be applied (see Hopkins, 2008, for a review). A good example is the well-known Fehr and Schmidt (1999) model where utilities depends positively on one's own income, but negatively on the differences between one's own income and that of others suggesting a dislike of others having more and a compassion of others having less. Thus, the model predicts a negative relation between well-being and inequality. But if, contrary to Fehr and Schmidt's hypotheses, we suppose that lower incomes for others raises an individual's utility (prestige effect), we could in principle also predict a positive relation between well-being and inequality. The model predicts returns to increased inequality if the benefits of prestige outweigh the cost of envy (see Hopkins, 2008).[1]

Finally, tournament theories are based on the "tunnel effect" of Hirschman and Rothschild (1973). Workers may use others wages to help predict their own future wage: the more others earn, the happier the worker is as the success of others provides information about workers' future prospects (information effects). Therefore, workers may appreciate inequality if it signals future potential career improvements, at least in the short term (for empirical evidence see, for example, Clark et al., 2009).[2]

3 Empirical Strategy

We empirically test a model of relative concerns (an adapted version of the model proposed by Fehr and Schmidt, 1999) that assumes that individual utility from pay, U^*, depends not only on an individual's own wage but also on the wage of others:

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[1] The principle contents of the Fehr and Schmidt model can be seen as a special case of a more general model of the "range frequency theory", as discussed by Brown et al. (2008).

[2] In the long run, if expectations for career advancements are not met, inequality can turn an explosive social device. Hirschman and Rothschild (1973) model predicts positive returns to increased inequality only if benefits of expectations outweigh the cost of envy.

(1) $U_{ik}^* = U^*(w_{ik}, w_{-ik}) = w_{ik} + (\alpha/n-1) \sum_{wjk>wik} (w_{jk}-w_{ik}) + (\beta/n-1) \sum_{wjk<wik} (w_{ik}-w_{jk})$

where w_{ik} is the wage of individual i in establishment k, and w_{-ik} are the wages other people in the reference group (with $w_{1k}<w_{2k}< \ldots <w_{i-1\,k}<w_{i+1\,k}<\ldots<w_{nk}$). The reference group is defined as the n–1 other people working in the same establishment. The first sum on the right hand side of Equation 1 represents the comparisons with better paid workers (upward comparisons). It can also give information about worker future prospects. The second sum represents the comparisons with worse paid workers (downward comparisons).

The effect of one's own wage on utility from pay is assumed to be positive. The parameters of interest are α and β, weighs respectively on the upward and downward comparisons. If $\alpha<0$, we have so called *envy*, a dislike of others having more (Friedman and Ostrov, 2008). If $\alpha>0$, we observe a *tunnel effect* (Hirschman and Rothschild, 1973): others good fortune provides information about my own future prospects. If β is negative, we have *compassion*, improvements for others impact positively on satisfaction (Fehr and Schmidt, 1999). If β is positive we have *pride*, a person perceives the approval of others for her own performance (Friedman and Ostrov, 2008).[3]

In a large population with wage distribution F(.), Equation 1 can be written as:

(2) $U_{ik}^* = U^*(w_{ik}, w_{-ik}) = w_{ik} + \beta (w_{ik}-\mu_{wk}) + (\alpha+\beta) R(w_{ik})$

where μ_{wk} is the average wage in establishment k and $R(w_{ik})=\int_{zik} (1-F(y))dy$ is the measure of relative deprivation introduced by Yitzahaki (1979). See Deaton (2003) for details. Looking at Equation 2, we can immediately notice a link between utility from pay and wage equality/inequality. As pointed out in Hopkins (2008), it can be shown that if there are two distributions $F(w)$ and $G(w)$ that have the same mean and the same support and if F is more equal in the sense of second order of stochastic dominance (equivalently generalized Lorenz dominance) then $R(w)$ is lower at all wage levels under F than under G. Actually, if the means are the same,

[3] If $\alpha=-\beta$, the model in Equation 1 reduces to a mean dependent model. In this case, wage comparisons are symmetric (that is, satisfaction is equally affected by changes in the wages of someone paid worse and by changes in wages of someone paid better).

generalized Lorenz dominance is the same as Lorenz dominance; if F Lorenz dominates G then the Lorenz curve associated with F is always closer to the line of complete equality than of G, implying a lower Gini coefficient (see Thistle, 1989; Shaked and Shanthikumar, 2007). Thus, in Equation 2, if $(\alpha+\beta)<0$, then an individual will have higher utility in more equal establishments (even keeping their own wage constant). If $(\alpha+\beta)>0$, then great intra-establishment wage inequality leads, on average, to high utility. The signs and the sizes of the parameters α and β are empirical questions.

To empirically test the signs of the parameter α and β, we estimate Equation 1. Once estimated these parameters, we are able to draw conclusions on the relationship between well-being and wage inequality pointed out in Equation 2 (without estimating Equation 2 directly). Specifically, building on the observation that utility from the pay of worker i in establishment k is unobservable, what we observe is only the response to a question on satisfaction with pay, U (that is a categorical ordered response variable), we could fit an ordered probit model. However, the results of the latter model might be not correct if there are establishments' unobserved characteristics (such as "organizational form", "profitability", etc.) that persist over time. Therefore, we include establishments' unobserved heterogeneity[4] and we estimate a random effects ordered probit model

$$(3) \qquad U_{ik}^{*}=X_{ik}\boldsymbol{\gamma}+\mu_k+\varepsilon_{ik}$$

$$U_{ik}=j \leftrightarrow \tau_{j-1}<U_{ik}^{*}\leq\tau_j \qquad \text{with } j=0..J$$

where we assume U^{*}_{ik} to be a linear function of the worker and job characteristics, X_{ik}, i.e. the latter vector includes the worker's wage, w_{ik} (logarithmically transformed), and the variables *upwards comparisons*, $((\sum_{wjk>wik}(w_{jk}-w_{ik}))/(n-1))$, and *downward comparisons*, $((\sum_{wjk<wik}(w_{ik}-w_{jk}))/(n-1))$; μ_k represents the random establishment effect, ε is the i.i.d. error term, J is the number of response categories and τ_j are threshold levels.

Note that the random effects estimator (RE) assumes orthogonality between the effects and all covariates: if this assumption fails, then RE is not consistent. In the latter case, we can follow two possible approaches. First, we can use the

[4] Unfortunately, we have cross-sectional data (and not panel data); therefore, we cannot control for workers' unobserved heterogeneity (i.e. we cannot include individual effects in the model).

Mundlak correction term (as in Clark et al., 2009): we decompose the establishment effect, μ_k, into a random effect, μ_{0k}, that is uncorrelated with the covariates and a mean value of some of the establishment varying covariates (i.e. average establishment wage) that are allowed to be correlated with the random effects. Second, we can follow the approach proposed by Ferrer-i-Carbonell and Frijters (2004) that considers satisfaction as a cardinal variable and applies linear techniques, producing within regression. As a robustness check, we apply both approaches.

4 Data and Descriptive Statistics

Data is taken from the 2004 Employee Relation Survey (WERS), a survey which aims to provide a nationally representative account of the state of employment relations and working life inside British workplaces/establishments. The survey includes: management questionnaires about the composition of the workforce; employee questionnaires (distributed to a random selection of up to 25 employees within each organization); financial manager questionnaires about the financial performance of the establishment; and, union and non-union employee representative questionnaires. The main advantage of using WERS data is the possibility to check for clustering within firms (e.g. we are able to control for unobserved establishment heterogeneity). The main limitations are that (i) employees are not followed over time and we will not be able to check for individual specific effects; (ii) the information on workers' and establishments' wages are given in arbitrary intervals and this implies limitations in the way we implement the assumption of incomplete information about others wages (see below).

From this dataset we have taken a sub-sample of employees aged 22+, working in establishments with 25 or more employees. After the elimination of observations with missing values on essential variables, 9822 employee observations, clustered in 1073 establishments, are used in the empirical analysis. The average number of employees in each establishment is about 446. The average number of observations for establishment is about 17. Employee weights are used as appropriate. See Table 1 for descriptive statistics about employees' characteristics.

Table 1: Descriptive Statistics

Variable	*%*	*Variable*	*%*
Female	45.49	Low education	33.18
Age 22-29	16.88	Medium education	37.54
Age 30-39	27.39	High education	29.28
Age 40-49	28.3	Long_tenure (tenure longer than 3 years)	48.22
Age 50-59	23.1	I feel my job secure (yes/no)	63.71
Age 60-64	4.33	Supervision activity (yes/no)	36.15
Establishment size: 25-49	18.36	Autonomy at work (yes/no)	35.94
Establishment size: 50-99	18.66	Flexi-time available (yes/no)	45.94
Establishment size: 100-199	17.24	Good relation with managers (yes/no)	56.16
Establishment size: 200-599	24.57	Training (yes/no)	41.17
Establishment size: >599	21.17	Living in couple	70.87
North East	4.13	Children	58.52
North West	14.35	No British	11.92
Yorkshire & the Humber	9.89	Public	28.57
East Midlands	6.62	Managers and senior officials	12.06
West Midlands	8.21	Professional employees	13.12
East of England	8.81	Associate professional, technical empl.	15.8
London	11.41	Administrative and secretarial empl.	16.75
South East	13.12	Skilled trade employees	7.83
South West	8.11	Caring, leisure, other personal services	6.87
Scotland	11.95	Sales and customer services employees	5.88
Wales	3.4	Plant, process machine operatives+drivers	10.03
		Routine unskilled employees	11.65
Disability	22.96	Hours worked per week (mean)	37.65

Education dummies are defined as follow. Low education: no education to low secondary education; medium education: secondary education or general certificate of education (gce); high education: university degrees, master or PhD.

Our dependent variable is "satisfaction with the amount of pay" that is measured on a scale from 1, "very dissatisfied" to 5, "very satisfied". The frequency distribution of the responses to the job satisfaction question shows that 34% of the workers in our sample are at least "satisfied" (only about 4% are "very satisfied"), while nearly 42% are "dissatisfied" or "very dissatisfied" (about 13.5% are "very dissatisfied").

Employees are asked how much they are paid each week (before tax and other deductions were taken out). They responded by ticking one of 14 boxes corresponding to bands of weekly gross pay. Figure 1 gives a graphical representation of the wage distribution. The shape of the rectangles (the height) indicates the relative frequency of each wage interval: the higher the rectangle, the larger the share of the population with wages in the interval. The median wage is in the range £310–£360. Even if the shape of the histogram is affected by the arbitrary definition of wages intervals (especially in the top if the wage distribution), we can observe that the frequency distribution is asymmetrical towards the left, thus implying that the proportion of employees earning less than the modal wage is larger than those earning more. Using this information, the workers' weekly wage is defined as the mean value of the band to which they belong. Moreover, managers are asked about the wage distribution at establishment level: that is, the number of employees in each of the four bands of hourly gross pay defined in the management questionnaire. The latter bands are defined as follows: £180 or less; £181–£200; £201–£599; £600 or more. This information allows us to define the variables *upward comparisons* and *downward comparisons*. Having only a limited number of wage bands, as well as having only categorical wage data, indeed represents limitations of the data. We assume incomplete information about others wages. However, the implementation of this assumption is imposed by the data: workers know the wage bands of the co-workers, but they do not know their exact wages. By construction, individuals do not feel envy, pride and compassion for others in the same band, but they exhibit envy, pride and compassion (as appropriate) for workers belonging to different bands of wages. In other words, individuals belonging to the same band have equal social status. No information about future career prospects is obtained from other workers in the same band. Figure 2 gives information about the levels of wage inequality (measured by Gini index) and relative deprivation existing in the

Figure 1: Wage Distribution

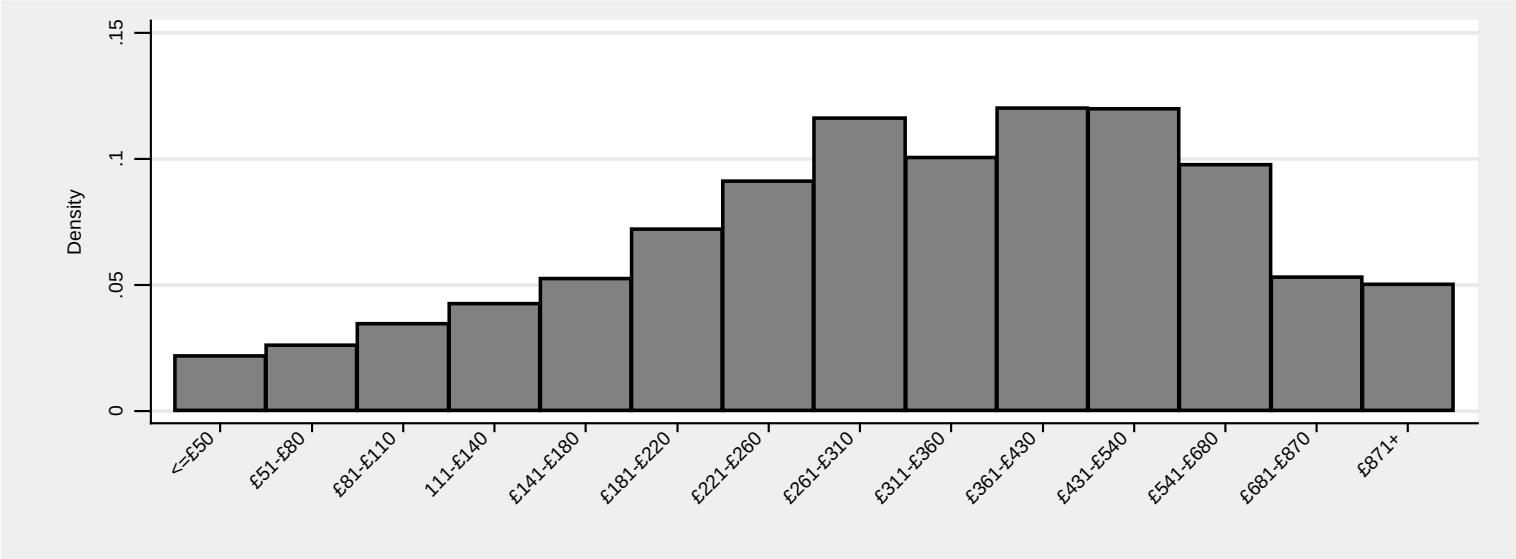
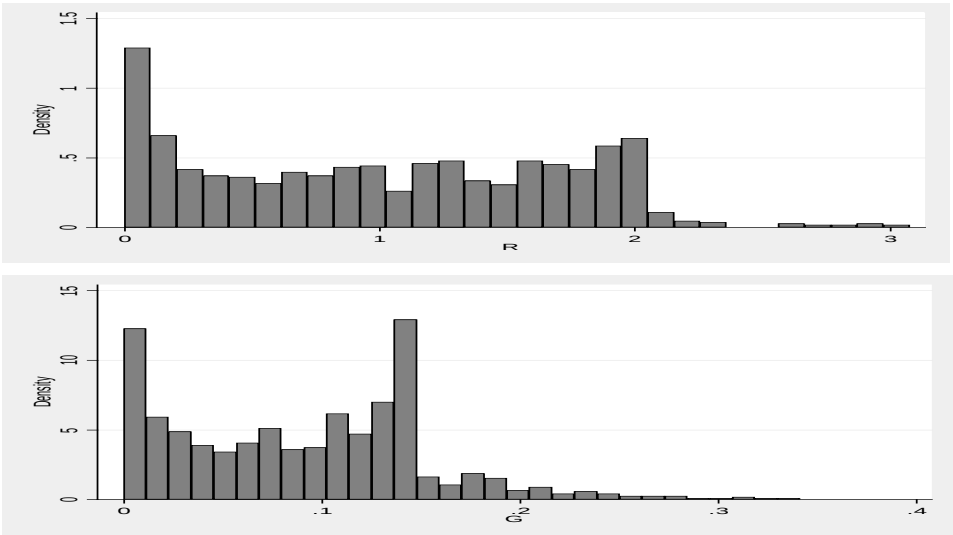


Figure 2: Within-Establishment Wage Inequality (R=Measure of Relative Deprivation; G=Gini Index)



establishments included in our sample. Even if the number of bands is limited, there is enough variability to perform our analysis.

5 Estimation Results

Three specifications are estimated: (i) the random effects ordered probit model; (ii) the random effects ordered probit model with the Mundlak correction; (iii) the linear fixed effect model. See Section 3 for details about these specifications.

We find similar results across all specifications. The estimated coefficient of one's own wage is positive and significant indicating a positive relationship between one's own wage and satisfaction (conditional to the other covariates). This relationship is expected and consistent with most results in the literature.

Of most interest, we focus on the comparison and information mechanisms determining satisfaction. We find that the estimated coefficient on *upward comparisons* is negative and significant ($\alpha<0$): there is evidence of envy, a dislike

of others having more. Workers prefer a distribution of wages in which they are not paid worse compared to other workers in the same firm. This can be also due to the fact that workers believe that their performance or productivity is not inferior to that of better paid workers and, therefore, their wages are inappropriate.

The estimated coefficient on *downward comparisons* is positive and significant ($\beta>0$): there is evidence of pride: the larger the average differences in wage is, with respect to workers paid worse in the same establishment, the higher the contentment with one's own achievement. In other words, workers perceive the approval of others for their own performance (prestige effect), which leads to a higher well-being.

Evidence of upward and downward comparisons is consistent with results in the literature (e.g. Ferrer-i-Carbonell, 2005; Wunder and Schwarze, 2009; Card et al., 2012). But, our results are different from the findings of previous literature because we find that downward comparisons dominate upward comparisons. In other words, prestige seems to be more important than the cost of envy ($\alpha+\beta>0$). This implies that great within-establishment wage inequality leads, on average, to high satisfaction. These results may depend on the realistic assumption of incomplete information about others wages. In fact, assuming incomplete information allows us to reduce noises due to small variations of wages across all workers and, therefore, impacts on the size of the mechanisms (envy, pride, satisfaction and information effects) determining satisfaction.

The above empirical evidence suggests that comparison effects matter. However, we also find some evidence of information effects. But, focusing on the second specification, the estimated coefficient of the average establishment wage (Mundlak term) is positive and significant suggesting that workers are more satisfied in establishments able to pay on average better wages. In fact, high average wages can be seen as signals about the worker's own future wage. This result is consistent with the findings of Clark et al. (2009).

In all specifications, we have also included a set of controls for personal characteristics and job attributes. These controls have significant (and expected) influences on satisfaction with pay. Women, workers with children, older workers and those with lower educational levels are more satisfied. Individuals experiencing good working conditions (security, autonomy, no stress, flexi-time, good relations with managers and training) are also more satisfied. Instead,

individuals working long hours, workers with tenure longer than three years and employed in the public sector are less satisfied.

6 Discussion

The results of this study indicate that there is a positive relation between satisfaction and wage inequality at the workplace. The opposite finding is generically suggested by the literature (e.g. Pfeffer and Langton, 1993). Therefore, the reader could argue that our result depends on the specification and/or the definition of the reference group. The following robustness checks show that this is not the case.

First, we estimate a slightly different specification. We use the one proposed by Ferrer-i-Carbonell (2005) that includes the set of explanatory variables, own wage and the following two variables[5]

If $w_{ik} > w_{rk}$ then richer = $ln(w_{ik}) - ln(w_{rk})$

poorer = 0

If $w_{ik} < w_{rk}$ then richer = 0

poorer = $ln(w_{rk}) - ln(w_{ik})$

If $w_{ik} = w_{rk}$ then richer = 0

poorer = 0

The idea is illustrated the same in our model: satisfaction is affected differently by a wage below that of the reference group and by a wage above the reference group. The average wage for the reference group is w_{rk}. Four definitions of reference group are used: (i) co-workers; (ii) same individual characteristics (age, gender and education); (iii) same job attributes (gender, tenure and occupation); (iv) co-workers in the same occupation. Estimates are presented in Table 2 (Model

[5] If comparison effects are symmetric, the model reduces to a mean dependent model. It becomes equivalent to the model in Equation (1) where ($\alpha = -\beta$).

A, Model B, Model C, Model D). Estimated coefficients are indeed similar to the one presented in Table 3. The downward comparisons again dominate the upward comparisons suggesting a positive relation between satisfaction and wage inequality. Results seem to not depend on the reference group.

Second, we estimate a specification including the set of explanatory variables, own wage and a dummy for whether the individual's wage is less than the median in their pay unit and occupation as in Card et al. (2012). We also include a dummy for whether the individual's wage is more than the 25 percentile wage in their establishment and occupation (see Model E). Once again we find that both upwards and downwards comparisons matter. Moreover, the latter outweighs the former.

Table 2: Alternative Specifications: Fixed Effects Linear Regressions

The dependent variable is: Satisfaction with pay	Model A		Model B		Model C		Model D		Model E	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Ln (own wages)	0.333 **	0.035	0.341 **	0.035	0.343 **	0.035	0.409 **	0.034	0.421 **	0.032
Richer	0.735 **	0.083	0.707 **	0.082	0.684 **	0.087	0.496 **	0.097		
Poorer	-0.209 **	0.068	-0.217 **	0.071	-0.223 **	0.077	-0.157	0.088		
Dummy wage<median									0.093 **	0.027
Dummy wage>pc25									-0.082 *	0.041
Covariates	Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.162		0.1703		0.1701		0.1611		0.1618	
Reference group	Co-workers		Gender, age, education		Gender, tenure, occupation		Co-workers in the same occupation		Co-workers in the same occupation	

** means statistically significant at 1% level; * means statistically significant at 5% level; for a list of covariates see Table 2

Table 3: Satisfaction and Comparisons

	RE Ordered probit			RE Ordered probit			FE Linear Regression		
Satisfation with pay	Coef.		SE	Coef.		SE	Coef.		SE
eq1									
Ln (own wages)	0.444	**	0.033	0.359	**	0.035	0.323	**	0.036
Downward comparisons (*)	0.617	**	0.078	0.063	**	0.007	0.754	**	0.085
Upward comparisons (*)	-0.145	*	0.066	-0.033	**	0.008	-0.198	**	0.069
Ln (average establishment wage) = the Mundlak term	no		no	0.063	**	0.009			
Female	0.180	**	0.028	0.181	**	0.028	0.165	**	0.028
Age 30–39	0.136	**	0.037	0.125	**	0.037	0.125	**	0.036
Age 40–49	0.103	**	0.039	0.087	*	0.039	0.100	**	0.037
Age 50–59	0.054		0.041	0.028		0.041	0.057		0.040
Age 60–64	0.328	**	0.070	0.301	**	0.070	0.308	**	0.067
Medium education	-0.077	*	0.030	-0.087	**	0.030	-0.082	**	0.029
High education	-0.153	**	0.037	-0.192	**	0.037	-0.166	**	0.036
Living in couple	0.056	*	0.026	0.044		0.027	0.048		0.025
Children	0.054	*	0.026	0.064	*	0.026	0.052	*	0.025
No British	-0.106	**	0.041	-0.083	*	0.041	-0.086	*	0.041
Hours worked per week	-0.018	**	0.001	-0.016	**	0.001	-0.014	**	0.001
Long_tenure (tenure longer than 3 years)	-0.078	**	0.025	-0.070	**	0.025	-0.076	**	0.024
Disability	-0.063	*	0.027	-0.061	*	0.027	-0.062	*	0.026
I feel my job secure (yes/no)	0.269	**	0.025	0.271	**	0.025	0.247	**	0.025
Supervision activity (yes/no)	-0.022		0.027	-0.011		0.028	-0.008		0.027
Autonomy at work (yes/no)	0.154	**	0.025	0.153	**	0.025	0.130	**	0.024
Flexi-time available (yes/no)	0.137	**	0.025	0.144	**	0.025	0.158	**	0.025
Good relation with managers (yes/no)	0.485	**	0.025	0.476	**	0.025	0.412	**	0.024
Training (yes/no)	0.116	**	0.025	0.125	**	0.025	0.117	**	0.024
Public sector	-0.111	**	0.039	-0.121	**	0.038	no		no
Occupation dummies	yes		yes	yes		yes	yes		yes
Sector dummies	yes		yes	yes		yes	no		no
Establishment sized dummies	yes		yes	yes		yes	no		no
Area dummies	yes		yes	yes		yes	no		no
Constant	no		no				-0.172		0.194
Estimated cut-points (4)	yes			yes			no		

(*) This variable is computed using wages logarithmically transformed.
** means statistically significant at 1% level; * means statistically significant at 5% level

7 Conclusion

In this paper, we model individual utility from pay as a function of a worker's own wage and the earnings of all other workers within the same establishment. We assume incomplete information about other wages. This realistic assumption leads to the following interesting results. Comparison effects matter in determining utility from pay. But, social status (that is, having a wage above the wages of others) matters more than the dislike of others having more. This leads to the conclusion that great within-establishment wage inequality implies, on average, high satisfaction. We also find some evidence of information effects: workers are more satisfied in establishments able to pay on average better wages as the latter can be seen as indications of the worker's own future wage.

Our results are important because satisfaction is potentially associated with the subsequent behavior in the labour market (measured by variables as job performance, worker turnover, absenteeism and endorsement of collective action strategies; see i.e. Harder, 1992; Levine, 1993; Leicht and Shapelak, 1994; Curtin, 1977; Weiner, 1980; Pattersson et al., 2004), therefore it is important to understand how wage inequality impacts on job performance through satisfaction. In particular, personnel economics has underlined the incentive role played by the earnings that certain others within the same establishment may receive. In particular, in the tournament model (Lazear and Rosen, 1981), relative worker performance determines social status (the winner) and, therefore, the level of individual effort increases with the earnings difference between winning and losing the tournament. Wage inequality appears to be an incentive. In parallel, the literature has highlighted the potential importance of wage compression (Akerlof and Yellen, 1990). The latter is seen pre-condition for fairness and cooperation among the workforce, and then better firm performance.

Our results can be interpreted as broadly supportive of the tournament model. In particular, the findings are supportive about the positive influence of wage inequality within a firm on the worker's effort through satisfaction. Thus, firms should implement a differentiated prize structure.

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