Wage comparisons in and out of the firm. Evidence from a matched employer–employee French database

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ARTICLE INFO

ABSTRACT

This paper looks at the association between wage satisfaction and other people's pay, based on a matched employer–employee dataset. Three notions of reference wage appear to be being of particular importance: (i) the median wage level in one's firm, (ii) the level of wage of similar workers in the region, and (iii) the top 1% wage in one's firm. The first one triggers a signal effect, whereby all employees – especially young ones – whatever their relative position in the firm, are happier the higher the median wage in their firm, holding their own wage constant. The second and the third ones are sources of relative deprivation, i.e. workers' satisfaction decreases with the gap between their own salary and these reference categories. These findings are based on objective measures of earnings as well as subjective declarations about wage satisfaction, awareness of other people's pay and reported income comparisons.

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1. Introduction

How do workers' engagement and job satisfaction depend on the patterns of the wage distribution within their firm? How does it feel to live in a place where the majority of your neighbors are wealthier than you are? The enquiry about feelings of relative deprivation due to income gaps can be traced back a long way, at least as far as Adam Smith (1759), and, later, Veblen (1899), Duesenberry (1949), Stouffer et al. (1949) and Runciman (1966). More recently, social scientists have tried to provide statistical evidence of this phenomenon, coined under the term of non-market social interactions. This appellation points to the fact that people's income may affect each other's wellbeing, not because of market-type interdependence, such as price eviction, playing through supply and demand effects ("constraint interactions"), but because of "preference

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interactions", "preference interdependence" or "observational learning [that generates] expectations interactions" (Manski and Straub, 2000). In the realm of the firm, the fact that employees care about the wage of their co-workers, and not only about the level of their own pay, can be viewed as a form of procedural utility, i.e. deriving not only from "what" people do during their working time but also from "how" they do it (Frey and Stutzer, 2005).

But how can one provide evidence of the hypothesized impact of income gaps? Since the mid-1990s, after the breach opened by the seminal paper by Clark and Oswald (1996), one route that researchers have explored is the recourse to subjective data. To date, a sizeable quantity of studies in the impact of relative income concerns on subjective happiness, life satisfaction, financial satisfaction and job satisfaction, has been accumulated (see the surveys by Clark et al. (2008) or Clark and D'Ambrosio (2014)). However, most of that empirical literature, based on subjective wellbeing statements, has relied on representative surveys of the general population, rather than on workplace surveys, for reasons of data availability. We have thus learned more about income comparisons between groups of the general population than about within-firms wage comparisons. This is, of course, regrettable, as income interactions on the job are likely to be of primary importance. In particular, if workers' motivation depends on their relative wage, taking care of distributional concerns should be an integral part of human resources management inside firms, as well as labor market policy. For instance, an important theoretical literature in personnel economics has analyzed the implications of other-regarding preferences on the optimal type of contract offered by firms to their employees. This literature stresses the particular importance of "behindness aversion" and its potential impact on wage compression within firms (Neilson and Stowe, 2010). One of the main questions of this literature is about the desirability of incentive pay, in particular piece-rate compensation versus flat-wage contracts, when agents are sensitive to relative wage concerns (Bartling, 2012), but more generally, it illustrates the importance of within-firm wage distribution. This paper contributes to this enquiry by providing empirical evidence on the relationship between wage satisfaction and wage gaps within and between firms, therefore shedding light on the specific nature of other-regarding preferences on the labor market.

Essentially, the literature has uncovered two different channels through which income gaps might impact subjective wellbeing: a pure preference for other people's pay or an indirect signal effect. This distinction has now been popularized as "status *versus* signal" or "jealousy *versus* ambition". The latter may take place when a person shares some common features with her reference group, such as similar productive skills, or some relations of interdependence, which creates the prospects of common future outcomes. The objective of this paper is to ask, empirically, which notions of income gaps are most strongly related to individual wage satisfaction, and what the nature of these relations is.

We take advantage of an exhaustive employer–employee database, obtained by matching a French survey of wage earners (SalSa, 2009) with a file of the social insurance organization (DADS-2008) that contains information about the worked hours and wages for all of the employees of the private sector, as well as local administration and hospital civil servants, as declared by their employer. For each surveyed individual, SalSa elicited a series of opinions and satisfaction statements, notably wage satisfaction as well as the direction and intensity of income comparisons. Using the DADS-2008 file, we construct, for each individual surveyed in SalSa, a number of objective measures that are candidates to act as reference wage benchmarks. We then explore the association between wage satisfaction and these notions of reference wage.

In summary, we take seriously the idea that people are not only interested in their own leisure and consumption (income), but also in other people's pay. If income utility is relative, we want to know what notion of relative income employees maximize. We take an agnostic view and test for the existence of all the aforementioned wage-based social interactions.

We uncover important signal effects within firms. Employees' wage satisfaction increases with the median level of wage in their firm, and with the pay level of the top quartile. These signal effects are stronger for younger people below 35. But we also find empirical support for relative status effects. Employees' wage satisfaction decreases when the wage of the top 1% best paid employees in the firm rises. Their satisfaction rises with their rank in the wage distribution of their firm. Employees are concerned by their relative wage as compared to their coworkers in the same broad category of occupation, in the same age group, in the same region, but in other firms. Both relative income concerns and signal effects are compounded by employees' knowledge about other people's pay and the importance that they attach to comparisons.

The next section reviews the literature on income-based social interactions. Section 3 presents the data, Section 4 the identification strategy, Section 5 the results, and Section 6 concludes.

2. Literature

Because attitudes to income gaps are non-market social interactions, researchers cannot follow the classic revealed-preference method to elicit them. Instead, social scientists have used subjective statements of satisfaction, collected in large surveys, in order to explore the relation between satisfaction and different moments of income distribution. The recourse to self-declared satisfaction, happiness and wellbeing has diffused across the social sciences for the last 20 years. The reliability and predictive power of such subjective data has been the object of many validation tests, as recalled, inter alia, by Clark et al. (2008).

The general method, based on these data, consists in estimating an individual satisfaction function U_i on a set of socio-demographic control variables (C_i), including individual income y_i plus a measure of the social magnitude of interest $(yi)^*$.

A large part of the literature has tried to test the existence and importance of relative income concerns, by assuming that people compare to some relevant others, a reference group, whose income plays the role of reference income, i.e. a benchmark used to gauge their own living standard. We here consider a wage satisfaction function. Assuming convexity and separability, and keeping leisure time constant, the latter can be written as:

$$U_i = \alpha_0 \cdot \ln(y_i) + \alpha_1 \cdot \ln(y_{i*}) + v \cdot C_i + \varepsilon_i \tag{1}$$

where U_i is the level of wage satisfaction of individual i, y_i is her income, C_i is a vector of individual controls (age, gender, occupation, region, tenure, log of firm size, nationality.), $\ln(y_i^*)$ is the aforementioned indicator of (the natural logarithm of) reference wage and is indexed by i when it varies across individuals, and ε_i is the error term. Of course, our interest here is with the conditional correlation between wage satisfaction and reference wage, as measured by parameter α_1.

In the absence of relative income concerns, we expect α_1 to be zero, i.e. once the employee's own wage is taken into account, other people's pay does not matter. Relative income concerns, on the other hand, imply that α_1 is negative. Finally, as suggested by Hirschman and Rothschild (1973), other people's wage may not act as a benchmark, but rather as a source of information about one's future prospects. The usual rationale of Hirschman type signal effects is that in situations of uncertainty and lack of information, such as exemplified by his famous tunnel parable, a person bases her expectations on the observation of other people's fortune. In the realm of the firm, the mechanism may be a slightly different, as the career of all workers depends jointly on the firm's outlook. According to this signal effect, we expect β_1 to be positive.

This literature has appealed to different datasets (in terms of countries and years), different measures of wellbeing (job and life satisfaction being the most predominant) and various measures of comparison income. In terms of reference groups, researchers have mainly investigated the relevance of professional groups, co-citizens and neighbors. To do so, they have typically constructed different measures of what they thought could be the typical income of one's reference group (y_i^*), and tested for their relevance. Most of these studies found evidence of relative income concerns, i.e. a negative association between satisfaction and reference income (see Clark and D'Ambrosio, 2014, for a survey).

Some authors have included direct subjective comparison questions in surveys that were run in the Netherlands (Melenberg, 1992), in the USA (McBride, 2001), in transition countries (Senik, 2009), in Europe (Clark and Senik, 2010), in Germany (Mayraz et al., 2010), and in China (Knight and Gunatilaka, 2011; Knight and Song, 2006). It generally appears that subjectively elicited comparisons work in the sense of relative income concerns rather than signal effect.

One of the findings of this literature is the difference between within-firm and outside-firm benchmarks (Cappelli and Sherer, 1988; Bygren, 2004). In his path-breaking work, Runciman (1966) had already underlined the importance of distinguishing relative deprivation within one's group, versus on behalf of one's group.

In spite of the evidence about "others as negatives" (Luttmer, 2005), some researchers have documented the existence of signal effects, in Transition countries (Senik, 2004, 2008), in Denmark (Clark et al., 2009) and in Europe in general (Clark and Senik, 2010). Studies that uncovered signal effects also found that the latter are particularly strong for young people. Obviously, the professional future of the young is both more uncertain and longer, and young people in their early career may have more reasons to expect a promotion than senior employees: for these reasons, the signal is likely to be of higher value to their eyes. Accordingly, other papers have underlined the life cycle variation in the intensity of status and signal effects (FitzRoy et al., 2011; Akay and Martinsson, 2012).

Beyond the impact of relative income, a few studies have shown evidence that self-reported wellbeing depends upon the objective ordinal rank of an individual's wage within a comparison group, such as her firm (e.g. Brown et al., 2008; Fafchamps and Shilpi, 2008; Clark and Senik, 2014). The difference between rank concerns and relative income concerns is that the former is a comparison with the entire distribution of wages in one's firm. It is likely that the rank occupied by an individual is associated with a symbolic value, and possibly power and prestige.

In surveys, however, the information on the actual social environment of individuals is most often unavailable so that it is difficult to measure the income of a person's actual coworkers or neighbors. This is most unfortunate, as social interactions are likely to be predominantly local. Clark et al. (2009) is one of the rare exceptions, as they were able to merge the Danish sample of the European Community Household Panel (ECHP) with administrative records. The British Workplace Employee Relations Survey is also a matched employer–employee dataset, but it is not exhaustive (see Brown et al., 2008). Another example is Brodeur and Flèche (2013). A recent randomized experiment was set up by Card et al. (2012), showing evidence of relative concerns among employees of the public universities of California when they had access to Internet information about the wage of their colleagues in the same department.

This paper is thus one of the first attempts to match a survey of employees that includes a great number of subjective other-regarding attitudes with an exhaustive administrative database about employees of all private firms and organizations in the country. We take advantage of this information to test for the relevance and importance of all of the different effects hypothesized by the literature, i.e. status, signal and rank effects. We compare within firm and out-of-the-firm income-based social interactions. We are particularly interested in eliciting the context in which signal effects overweight status effects, as the former contribute to wellbeing and satisfaction, whereas the latter is a destructor of these values.

3. Data

We match two French datasets. The first one comes from a survey that was run in 2009 among 3000 employees in France, with a special interest in the way they perceive their wage (SalSa, *Les salaires vus par les salariés*). The second one is extracted from the DADS-2008 administrative file, devoted to the calculation of social contributions. A detailed description of the surveys is provided at the beginning of Appendix. In particular, we show that SalSa is a representative sample of the employees in France, in terms of occupations and wages (Table A1).

We matched each individual surveyed in SalSa with his own records in the DADS as of 2008, as well as with the records of all his coworkers, i.e. employees working in the same establishment or firm, which makes a sample of 33,149,444 jobs. We use this large dataset to calculate the relevant income distribution and reference wage indicators for each employee of SalSa. Our regression sample (non missing observations) includes 2842 individuals surveyed by SalSa, aged 19–65 and equally balanced in terms of gender, as described in Table A2 in Appendix.

We use the wage levels declared by employers in the DADS rather than self-declared wages, as the latter are likely to be fraught with greater measurement errors.

The SalSa survey includes subjective questions that ask employees whether they are aware about the wage of their colleagues, managers and top-management (CEOs), whether they actually compare their own wage to that of coworkers, friends or family members, whether they consider quitting their current job, etc. We use the questions that are listed in Tables A3 and A4 in Appendix.

Table A3 shows that about half of the respondents are satisfied with their wage; only 37% are rather unsatisfied and 9.5% are very unsatisfied. However, 19% estimate that their wage is insufficient to make ends meet; 58% that their wage is low given their productivity; 61% that it is low given their experience; 33% that it is low given their education. Only 3.2% of employees say they do not like their job. 16.5% consider quitting their job, and half of the latter would do so for a higher wage. Only 45% of employees have already asked for a wage rise. 22% have participated in a collective action on the job place.

Turning to wage comparisons, 66% of respondents declare that they know the wage of some of their colleagues; 30% know the wage of their direct manager; 19% know the wage of their boss (CEO); 41% are aware of the wage of people working in the same profession in other firms; 50% declare that they do compare their wage to that of their colleagues in the same firm; 48% that they compare their wage to family members; 21% to former schoolmates; 44% to friends, and 41% to the minimum wage level (SMIC).

4. Specification

Matching SalSa with the DADS creates the opportunity to study wage-based social interactions, using information about workers' actual social environment. We consider different possible notions of reference wage: the average and median wage within one's firm and within one's establishment, as well as the top wage quartile (Q3) and the top centile (P99) within one's firm, or establishment. We also calculate the typical hourly wage rate of "people like me outside firm", as the median wage of all employees in the French private sector who belong in the same age category (18–35, 36–45, 46–55, 56–65), work in the same region (French *département*), in the same occupation (4 categories: blue collars, clerks, intermediate and managers) but in other firms. We ask whether and how these benchmarks affect wage satisfaction.

In order to confirm the relevance of these constructed notions of reference wage, we use the subjective declarations of respondents in the survey. We interact the aforementioned categories of reference wage with the intensity of knowledge of other people's income or the importance of comparisons, as declared by respondents. Hence, using each of the subjective questions presented in Section 2, we estimate the wage satisfaction equation (1), in which we include an interaction term between the notion of reference wage and the subjective attitude X. In Eq. (2), for instance, we expect that the correlation between reference wage and wage satisfaction be reinforced when respondents are aware and interested in the wage of other people, i.e. that the coefficient on the interaction term α_4 be statistically significant:

$$U_i = \alpha_0 \cdot \ln(y_i) + \alpha_1 \cdot \ln(y_{i*}) + \alpha_2 X_i + \alpha_3 \cdot \ln(y_i) \times X_i + \alpha_4 \cdot \ln(y_{i*}) \times X_i + v \cdot C_i + \varepsilon_i \qquad (2)$$

We also look at the heterogeneity of the relation between reference wage and wage satisfaction across demographic groups. In particular, it is likely that wage interactions are more of a signal type for young people, and more of a status type for elder workers. In order to test for this hypothesis, we introduce interaction terms involving demographic categories and measures of income distribution (median wage and reference wage), following the specification of Eq. (2). Note that we also interact individuals' own wage with X_i, in order to allow for the potential heterogeneity of the relationship between wage and satisfaction.

We run OLS estimates of wage satisfaction and other subjective attitudes, the result of which are readily interpretable in terms of elasticity. We refer, classically, to Ferrer-i-Carbonell and Fritjers (2004) for a justification of this linear approximation. For robustness, we ran equivalent estimates using an ordered probit model; the magnitude and sign of the coefficients were similar in both specifications. In the tables, we present regression coefficients and their standard errors in parentheses below, as well as the standardized coefficients (where all of the variables are divided by their standard deviation) beneath into square brackets.

5. Results

All of the estimates include the same basic controls, as displayed in Table A5 in the Appendix, i.e. gender, nationality, education dummies, a dummy for working in the hospital or local public sector (as opposed to the private sector), age, age squared, tenure, tenure squared, ln (firm size) and ln (hourly wage rate).

5.1. Within-firm signal and status effects

We start with the estimation of Eq. (1) including different notions of within-firm reference wage.

5.1.1. My coworkers are rich

Table 1 shows that most of within-firm concepts of reference wage are positively associated with wage satisfaction. Given her own wage, an employee is more satisfied with her pay the higher the level of the median wage in her firm (legal definition) and in her establishment (as defined by the address of the place where a worker is employed), as shown by rows (2) and (3). Identically, she is more satisfied the higher the income level of the top quartile (Q3) in her firm, or establishment (rows 4 and 5). The order of magnitude of these effect is given by the standardized coefficients into square brackets. When a firm's median wage rise by one standard deviation, wage satisfaction rises approximately by 6 percentage points of a standard deviation.

Table 1
Alternative notions of reference wage. OLS estimates of wage satisfaction.

	Wage satisfaction		
	Reference wage: $\ln(y^*)$, where y^* is: ↓	Coef. β_1 (s.e.)	Adj. R^2
1	Firm average wage	0.046 (0.050) [0.019]	10.82
2	Firm median wage	0.178** (0.061) [0.063]	11.03
3	Establishment median wage	0.176** (0.061) [0.064]	11.04
4	Q3 wage inside the firm	0.112* (0.050) [0.049]	10.95
5	Q3 wage inside the establishment	0.111* (0.050) [0.050]	10.95
6	P99 in the firm	−0.046* (0.027) [−0.037]	10.89
7	Rank in the firm	0.078 (0.064) [0.029]	10.85
8	Median wage of outside firm similar others[a]	−0.142* (0.069) [−0.060]	10.93
9	Average wage of outside firm similar others	−0.131* (0.067) [−0.057]	10.91
10	Median wage of within firm similar others	0.087 (0.075) [0.045]	10.84
11	Average wage of within firm similar others	0.049 (0.070) [0.025]	10.81

Note: Robust standard errors in parentheses.
The third figure displayed into brackets is the standardized coefficient; it results from the division of all variables by their standard deviation. For instance, in row 1, it reads in the following way: a variation of the log firm average wage by one standard deviation is associated with an increase in wage satisfaction by 0.019 standard deviation.
Each line corresponds to a separate regression.
  [a] Similar others are coworkers working in the same region (French *département*), in the same occupation (4 categories: blue collars, clerks, intermediate and managers), in the same age category (defined as such: 18–35, 36–45, 46–55, 56–65).
Other controls (as in Table A5): gender, nationality, age, age-squared, education, tenure, tenure squared, public/private sector, log of firm size, log of hourly wage rate as declared by employer in DADS.
Number of observations: 2842.
  * $p < 0.1$.
 ** $p < 0.01$.
*** $p < 0.001$.

This positive association does not depend on whether one's wage is below or above the median wage in one's firm. To be more precise, Table 2 shows that it holds independently of the position of a worker in the firm's wage-grid, i.e. whether it belongs to the first, second, third or fourth quartile in the wage distribution; moreover, none of the interaction terms between the two variables is statistically significant (rows 5–7).

5.1.2. Top wages within my firm

As shown by row 6 in Table 1, there is a limit to the positive effect of other co-workers' wage: the satisfaction of employees is negatively associated with the wage level of the 1% best paid coworkers in their firm. This talks to the attention that "top incomes" have attracted over the last years, and in particular the top 1% richest households within a society (Atkinson and

Table 2
Wage satisfaction and the median wage level depending on the position of the respondent inside the firm. OLS estimates of wage satisfaction.

	Wage satisfaction	
1	Median wage level inside the firm (log)	0.231** (0.088)
2	Respondent belongs to Q1 (log)	−0.388 (0.350)
3	Respondent belongs to Q2 (log)	−0.534* (0.277)
4	Respondent belongs to Q3 (log)	−0.345 (0.272)
5	Respondent belongs to Q1 × Median (log)	0.105 (0.146)
6	Respondent belongs to Q2 × Median (log)	0.163 (0.115)
7	Respondent belongs to Q3 × Median (log)	0.132 (0.112)
	Adj. R^2	11.54

Note: Robust standard errors in parenthesis.
Other controls: all controls of Table A5.
  * $p < 0.1$.
  ** $p < 0.01$.
*** $p < 0.001$.

Piketty, 2010). This thin elite was also a target of the 2011 *Occupy* social movement that claimed to speak in the name of the 99% ("*We are the 99%!*") against the top 1% (Calhoun, 2013).

Within one's firm, is it really the top 1% wage that matters? To address this question, Table 3 displays "reversal thresholds". Each cell represents a separate estimate of wage satisfaction that includes the usual controls. The first cell presents the coefficient on the lowest wage in the firm, which turns out not to be statistically significant. The second cell displays the coefficient on the lowest 10% wages in the firm, etc. It is only starting with the lowest quartile (P25) and until the level of the highest quartile (P75) that the coefficients are statistically significantly positive. Then, the association between the level of the top wages and employees' satisfaction turns negative starting beyond the level of the top 5% (P95) and becomes statistically significantly so with the top 1% (P99).

5.1.3. My rank in my firm

Row 7 in Table 1 displays the association between an employee's rank in her firm's wage distribution and her wage satisfaction. This measure is calculated for each employee within her firm, and transformed hereafter into percentiles. The coefficient is not statistically significant, but this could be due to the interplay between absolute and relative wage concerns: being amongst the top best-paid employees of a low-wage firm may be a source of enjoyable status effect, but in terms of purchasing power and career prospects, it may be preferable to earn the average wage in a high-wage firm. De facto, once the median level of wage is introduced in the estimate, people's rank is positively associated with wage satisfaction (0.335***[0.082], see also Table 4).

Table 3
Reversal threshold. OLS estimates of wage satisfaction over alternative measures of wage distribution inside each firm.

Wage satisfaction	
Smallest wage in the firm (log)	−0.006
	(0.010)
P1 in the firm (log)	0.002
	(0.019)
P5 in the firm (log)	0.023
	(0.024)
P10 in the firm (log)	0.023
	(0.037)
P25 in the firm (log)	0.176**
	(0.067)
P50 in the firm (log)	0.178**
	(0.061)
P75 in the firm (log)	0.113*
	(0.049)
P90 in the firm (log)	0.032
	(0.039)
P95 in the firm (log)	0.006
	(0.034)
P99 in the firm (log)	−0.046*
	(0.027)
Highest wage in the firm (log)	−0.015
	(0.015)

Note: Robust standard errors in parenthesis.
Each cell corresponds to a separate regression of wage satisfaction over the indicated measure.
Other controls: all controls of Table A5.
  * $p < 0.1$.
  ** $p < 0.01$.
*** $p < 0.001$.

5.1.4. People like me in other firms

Rows 8 and 9 in Table 1 display the coefficient on the wage of similar workers of the same age category, employed in the same occupation, in the same region, but in other firms. It is calculated on the entire population of the DADS. The coefficients are negative and statistically significant (at the 10% level). We have tested, but failed to detect a (statistically significant) asymmetry in this relationship, depending on whether a person stands above or below this notion of regional reference wage.

5.1.5. People like me in my own firm

Finally, the two last rows at the bottom of Table 1 show that the median or average wage of other people sharing the same productive characteristics (occupation, age category) within one's firm is not statistically significantly correlated with wage satisfaction.

5.1.6. Interpretation and robustness: status and signal effects

We interpret the different effects displayed in Table 1 as evidence that both signal and status concerns are at play inside the firm.

Firstly, the positive association between a person's wage satisfaction and the level of wages within her firm (from P25 to P75) is likely to reflect a signal effect, whereby a high level of wages is interpreted as a positive outlook for the firm and good career prospects within that firm, hence positive expectations about the evolution of one's own pay.

Secondly, Table 1 also offers evidence of relative wage concerns. The positive coefficient on one's wage rank is a sign of status concern. The same is true of the negative coefficient on the top 1% level of wage within one's firm. The fact that the typical level of wage of "people like me employed in other firms" attracts a negative coefficient confirms the difference between within-firm and between-firms wage comparisons. It suggests that as far as employees in other firms are concerned, relative income concerns are stronger than signal effects. Finally, the wage of similar co-workers in the same firm as a person is uncorrelated with her wage satisfaction, which probably reflects the opposing impact of status and signal effects.

Table 4 summarizes all of these effects: it displays the result of an estimate that includes all of these potential wage benchmarks. Workers' satisfaction raises with the median wage level within their firm and with their own rank in the wage distribution within their firm, but decreases with the top 1% wage level within their firm, as well as with the wage of other similar workers in the region. Admittedly, the size of the coefficient on the top P99 wage is very small, as compared to that of the median wage: it is smaller by about one sixth. On the job place, the information effect of higher wages seems to be more powerful than the desire for wage equality.

The following robustness checks strengthen this interpretation.

Table 4
A synthetic view of within-firm wage-based social interactions. OLS estimates of wage satisfaction.

		Wage satisfaction
1	Median wage level (log)	0.446*** (0.087) [0.156]
2	P99 wage level (log)	−0.074* (0.032) [−0.060]
3	Regional reference wage	−0.124* (0.068) [−0.053]
4	Rank in the firm	0.268** (0.091) [0.101]
	N	2842
	Adj. R^2	11.73

Robust standard errors in parenthesis. Standardized coefficients in square brackets.
Other controls: all controls of Table A5.
Row 1: median level of wage in the firm.
Row 2: upper bound of the 99th wage centile in the firm.
Row 3: average wage of employees in other firms in the same region, occupation, age category.
Row 4: rank of the employee in her firm, transformed into percentiles.
* $p < 0.1$.
** $p < 0.01$.
*** $p < 0.001$.

5.1.7. A stronger signal effect for young workers

Consistently with the interpretation in terms of signal, Table 5 shows that the positive effect of the median wage within one's firm is stronger for younger workers, under 35. This classical finding (see Senik, 2004, 2008; Akay and Martinsson, 2012) is certainly due to the longer career that lies ahead of them, as well as to the greater uncertainty of their future prospects.

Table 5
Heterogeneity. OLS estimates of wage satisfaction.

		Main effect	$y^* =$ median wage in i's firm	$y^* =$ P99 (median controlled)	$y^* =$ estimated regional reference wage (median controlled)
1	$\ln(y_i)$	0.665*** (0.047)	0.614*** (0.056)	0.593*** (0.054)	0.669*** (0.074)
2	$\ln(y^*)$		0.105 (0.071)	−0.102** (0.037)	−0.162* (0.076)
3	Age <35	−0.038 (0.058)	−0.668* (0.306)	−0.267 (0.267)	−0.425 (0.331)
4	$\ln(y_i) \times$ age <35		0.001 (0.111)	0.094 (0.102)	0.020 (0.126)
5	$\ln(y^*) \times$ age<35		0.263* (0.134)	0.000 (0.052)	0.139 (0.175)
	Adj R^2	10.81	11.10	11.32	11.10

Robust standard errors in parentheses.
One regression per column.
Other controls: all controls of Table A5.
Respondents under 35 years old represent 30.3% of the sample.

   * $p < 0.1$.
  ** $p < 0.01$.
 *** $p < 0.001$.

5.1.8. Other measures of wage satisfaction

Table 6 presents estimates of alternative measures of satisfaction. Each column corresponds to a separate regression. (The first column is similar to that of Table 4). The second column presents the estimate of the self-declared "*level of wage that would be normal for this type of job*"; column 3 displays the degree to which respondents agrees that "*my firm pays better than other firms*", etc. The first row displays the coefficient on the median level of wage in the firm; the second row shows the coefficient on the top 1% wage, the third row the coefficient on the regional reference wage, and the last one the wage rank in the firm. The three measures are included in each regression.

Column 2 in Table 6 shows that, controlling for the actual wage of an employee, the higher the level of her firm's median wage, the lower the level of wage that he deems "normal", i.e. the lower the additional wage that he aspires to. Conversely, the higher the reference wage of a respondent, or the level of pay of the top 1% best-paid employees in the firm, the higher the wage he aspires to. This is consistent with the relative deprivation effects mentioned above.

Column 3 displays estimates of explicit inter-firm wage comparisons. As expected, the higher the level of the median wage in one's firm, the more likely a person is to declare that "her firm pays better than other firms". Logically, the opposite holds for the level of wages found in other firms, in the same region, for the same occupation category.

In the same spirit, employees who work in firms with high median wages are less subject to "exit" intentions (Hirschman, 1970; Godechot and Salibekyan, 2013). They are less likely to consider quitting their job (column 4), in order to find a better paid job (column 5) or to ask for a pay rise (column 6).

Columns 7–9 display the estimate of other measures of wage satisfaction, which exhibit the same patterns ("*my wage corresponds to my productivity*"; "*. . . to my experience*"; "*. . .to my diploma*").

Finally columns 10 and 11 play the role of placebo regressions in the sense that there is no reason to expect that either of the three reference categories (median wage, reference wage and top 1% wage) should be correlated with attitudes such as "*I like what I do during my work*", or "*my wage is enough to cover my needs*", as the latter, in principle, do not capture any sense of wage comparison in the firm. *De facto*, no statistically significant relationship was found in these estimates. If the association between other people's wage and individual satisfaction were due to some unobserved omitted variable that would jointly influence them, the latter would also influence other dimensions of job satisfaction – which obviously is not the case.

5.1.9. Interactions between constructed reference wage and knowledge of other people's pay

If the results displayed so far are to be interpreted as revealing some underlying social interactions, then the various benchmark wages considered so far should be all the more strongly associated with wage satisfaction as employees are aware of the income of their peers and attach importance to comparisons. To enquire, we interact reference wage variables with subjective perceptions of other people's wage.

Table 7 displays the results of these tests. Each panel corresponds to a separate regression of wage satisfaction, controlling for within-firm median wage and the other usual controls. Column 1 presents the main effects. It shows that wage satisfaction is lower for people who are aware about the wage of their co-workers and do compare with it, but not for those who know the wage of their top-manager or workers in the same profession in other firms, where the coefficients are not statistically significant.

Column 2 of Table 7 presents the interactions of subjective comparisons (in rows) with the median wage level in one's firm. The positive effect of the median wage is enhanced for those who know and do compare to the wage of their co-workers

Table 6
OLS estimates of other work attitudes.

	1 Wage satisfaction	2 Level of wage considered "normal" for this type of job	3 My firm pays better than other firms	4 I consider quitting my firm	5 I want to quit for a better wage	6 Asked supervisor for a pay rise	7 My wage corresponds to my productivity	8 My wage corresponds to my experience	9 My wage corresponds to my diploma	10 I like what I do during my work	11 My wage is sufficient to cover my needs
Median wage	0.446*** (0.087) [0.156]	−0.047 (0.054) [−0.024]	0.207*** (0.060) [0.176]	−0.056 (0.050) [−0.038]	−0.045 (0.031) [−0.041]	−0.007 (0.06) [−0.004]	0.138* (0.073) [0.060]	0.124* (0.071) [0.059]	0.244** (0.079) [0.097]	0.007 (0.085) [0.002]	−0.002 (0.105) [−0.001]
P99 wage	−0.074* (0.032) [−0.060]	0.073*** (0.015) [0.088]	−0.060*** (0.022) [−0.080]	0.013 (0.018) [0.021]	0.027* (0.015) [0.057]	0.046* (0.022) [0.054]	−0.024 (0.026) [−0.025]	−0.015 (0.024) [−0.017]	−0.012 (0.029) [−0.011]	0.009 (0.031) [0.007]	0.058 (0.038) [0.037]
Regional reference wage	−0.124* (0.068) [−0.053]	0.181*** (0.042) [0.114]	−0.109* (0.047) [−0.077]	0.108** (0.036) [0.089]	0.027 (0.025) [0.030]	0.044 (0.049) [0.027]	0.030 (0.060) [0.016]	0.035 (0.054) [0.020]	0.151* (0.064) [0.073]	0.118 (0.072) [0.048]	0.012 (0.082) [0.004]
Rank in the firm	0.268** (0.091) [0.101]	0.018 (0.052) [0.010]	0.081 (0.059) [0.051]	0.007 (0.048) [0.005]	0.041 (0.036) [0.040]	0.040 (0.062) [0.022]	−0.010 (0.072) [−0.005]	0.035 (0.064) [0.018]	0.140* (0.079) [0.060]	0.093 (0.091) [0.033]	0.170 (0.107) [0.051]
N	2842	2638	2580	2781	2760	2802	2733	2777	2586	2839	2815
Adj. R^2	11.73	55.39	7.17	4.32	3.69	5.29	3.49	10.39	20.06	3.28	20.84

Note: Robust standard errors in parentheses. Standardized coefficients in square brackets.
One regression per column. Other controls: all controls of Table A5.
All dependent variables (except column 2) are reordered in the direction of increasing agreement with the mentioned statement.
The number of observations varies slightly due to different non-response to subjective satisfaction questions.

* $p < 0.1$.
** $p < 0.01$.
*** $p < 0.001$.

Table 7
Interactions between reference wage and subjective comparisons. OLS estimates of wage satisfaction.

		Main effect	$y^* =$ within-firm median wage	$y^* =$ P99 (median controlled)	$y^* =$ regional reference wage (median controlled)
1	$\ln(y_i)$	0.665*** (0.047)	0.611*** (0.063)	0.576*** (0.060)	0.570*** (0.080)
	$\ln(y^*)$		0.078 (0.077)	−0.093* (0.037)	−0.038 (0.085)
	Knows and compares to the wage of co-workers	−0.147*** (0.026)	−0.768** (0.238)	−0.336* (0.199)	−0.140 (0.189)
	$\ln(y_i) \times$ Knows and compares to the wage of co-workers		−0.009 (0.082)	0.082 (0.072)	0.252* (0.107)
	$\ln(y^*) \times$ Knows and compares to the wage of co-workers		0.273* (0.121)	−0.003 (0.051)	−0.264* (0.124)
	Adj R^2	11.76	12.11	12.25	12.21
2	$\ln(y_i)$	0.663*** (0.047)	0.603*** (0.061)	0.613*** (0.060)	0.697*** (0.077)
	$\ln(y^*)$		0.245*** (0.071)	−0.067* (0.033)	−0.136* (0.079)
	Knows approximately the wage of firm's top-managers	0.040 (0.032)	0.789** (0.271)	0.644** (0.217)	0.305 (0.218)
	$\ln(y_i) \times$ knows approximately the wage of firm's top-managers		−0.005 (0.085)	0.014 (0.076)	−0.107 (0.113)
	$\ln(y^*) \times$ knows approximately the wage of firm's top-managers		−0.309* (0.135)	−0.191** (0.058)	0.002 (0.138)
	Adj R^2	10.84	11.19	11.67	11.14
3	$\ln(y_i)$	0.667*** (0.047)	0.551*** (0.062)	0.533*** (0.059)	0.480*** (0.078)
	$\ln(y^*)$		0.083 (0.076)	−0.116*** (0.034)	0.018 (0.087)
	Compares to other firms	−0.015 (0.027)	−0.914*** (0.241)	−0.643* (0.198)	−0.254 (0.193)
	$\ln(y_i) \times$ compares to other firms		0.146* (0.083)	0.202** (0.073)	0.470*** (0.107)
	$\ln(y^*) \times$ compares to other firms		0.229* (0.122)	0.038 (0.051)	−0.386** (0.124)
	Adj. R^2	10.81	11.43	11.66	11.73

Note: Robust standard errors in parentheses.

One regression per column and by panel.

Other controls: all controls of Table A5.

Panel 1: "Knows and compares to the wage of co-workers": this binary (0/1) variable was constructed as the interaction between the fact that a respondent knows the wage of some of her colleagues (66.1% of respondents) and the fact that she does compare with the wages of her colleagues (49.6% of respondents). It is equal to 1 in 41.3% of the cases.

Panel 3: "Compares to other firms": this variable was constructed as equal to 1 if the respondent indicated that her firm pays either better (19.1% of respondents) or worse (23.4% of respondents) than other firms in the same branch and 0 if she chose "similarly" or "don't know". It is equal to 1 in 42.5% of the cases.

* $p < 0.1$.

** $p < 0.01$.

*** $p < 0.001$.

(first panel: 0.273*[0.121]) and to other firms (third panel: 0.229*[0.122]). It is attenuated for those who compare to their top-manager's wage (second panel: −0.309*[0.135]).

Column 3 is dedicated to the effect of the top 1% wage in one's firm. Unsurprisingly, the negative association between the top 1% wage and wage satisfaction is enhanced for those who know the wage of their top managers.

Finally, column 4 looks at the estimated regional reference wage. Its negative association with wage satisfaction is enhanced for those who know the wage of their co-workers and compare to it, as well as those who compare to workers in other firms.

Overall, these interactions confirm the existence of both relative income concerns and signal effects in the firm. These two types of income interactions are reinforced by the awareness of employees about the wage of their colleagues, and the importance they grant to this information.

5.1.10. Ruling out self-selection into best paying firms

We are inclined to interpret these results as reflecting the causal effect of wage distribution on wage satisfaction. However, it could be that workers self-select into firms in a way that creates the observed statistical associations. To enquire, we use the information available in the DADS about the tenure and mobility of workers across firms and across regions. The results are displayed in Table 8, which shows that the interaction terms between these indicators of mobility and the measures of reference wage do not attract a statistically significant coefficient. We ran a similar exercise where we distinguished workers who moved to a better/worse paying firm; a more unequal/less unequal firms, and a higher/lower wage region. It turned out that the interaction terms between these indicators of mobility and the categories of reference wage were not statistically significant.

Hence, the data does not validate the idea that the association between the notions of reference wage and wage satisfaction is driven by people's self-selection into certain firms or regions.

Table 8
Do workers sort by firm/region and levels of satisfaction? OLS estimates of wage satisfaction.

	Variables	Wage satisfaction		
		1	2	3
1	Quitted during the last five years	−0.011	−0.003	−0.162
		(0.041)	(0.041)	(0.341)
	Firm median wage		0.178**	0.168**
			(0.061)	(0.065)
	Quitted during the last five years × firm median wage			0.069
				(0.147)
2	Quitted during the last five years	−0.011	−0.015	−0.037
		(0.041)	(0.041)	(0.205)
	Firm P99		−0.046*	−0.047
			(0.027)	(0.029)
	Quitted during the last five years × firm P99 wage			0.007
				(0.061)
3	Changed firm during the last five years	−0.035	−0.033	−0.257
		(0.032)	(0.032)	(0.251)
	Firm median wage		0.177**	0.301***
			(0.061)	(0.082)
	Changed firm during the last five years × firm median wage			0.093
				(0.105)
4	Changed firm during the last five years	−0.035	−0.037	−0.055
		(0.032)	(0.032)	(0.171)
	Firm P99		−0.046*	−0.013
			(0.027)	(0.038)
	Changed firm during the last five years × firm P99 wage			0.003
				(0.049)
5	Changed region during the last five years	0.011	0.017	−0.274
		(0.039)	(0.039)	(0.254)
	Regional reference wage		−0.144*	−0.169*
			(0.069)	(0.072)
	Quitted region the last five years × regional reference wage			0.122
				(0.103)

Note: Robust standard errors in parenthesis.
Each cell corresponds to a separate regression of wage satisfaction over the indicated measure. Other controls: all controls of Table A5.
"Changed firm" is a dichotomous constructed variable based on the objective information contained in the DADS.
"Quitted voluntarily" is a dichotomous self-declared variable, available from SalSa.

  * $p < 0.1$.
 ** $p < 0.01$.
*** $p < 0.001$.

6. Conclusions

Based on a matched employer–employee dataset, this study provides evidence of the association between other people's wage and workers' satisfaction with their pay. Within firms, we uncover both signal effects and status effects. On the one hand, for a given level of their own pay, employees are more satisfied when they work in a well-paying firm. For example, their satisfaction increases with the median level of wage in their firm, no matter what their position in the wage distribution is. On the other hand, they also display relative income concerns. In particular, wage satisfaction decreases with the level of the top 1% wage in their firm. The two types of effects are magnified when people are aware of the wage of their coworkers in their firm and attach importance to wage comparisons with their colleagues.

Outside the firm, status effects are predominant, e.g. with regard to the wage of people employed in the same occupation in other firms of the region. This contrast may be due to the extent to which employees feel that they share a common destiny with their reference group of coworkers. This suggests that the sense of interdependence among members of a group may constitute a specific component of the signal effect.

These results echo some recent discussions about income gaps. During the last 15 years, France, like many developed countries (Atkinson et al., 2011) has been confronted with a sharp rise in the top 1% wage level and, even more so, among the top 0.1%, especially within the financial sector (Landais, 2009; Godechot, 2012). This paper confirms that this global trend is a source of wage dissatisfaction. However, in terms of magnitude, signal effects outweigh these relative income concerns. The size of the coefficient on the level of the 1% top wage, for instance, is six times as small as the coefficient on the median level of wage in the firm.

These findings also shed some light on the issue of transparency of pay within firms. Being aware of other people's pay may exert a negative effect on wage satisfaction and other dimensions of wellbeing at work and engagement, via the channel of relative deprivation. However, signal effects are also powerful, and working with well-paid coworkers exerts a positive motivation effect. The limit of such signal effects seems to be reached by the extreme high-end of the wage distribution: the level of the top 1% of the payroll.

Acknowledgements

Appendix. Description of the sample

A.1. Description of the surveys

We used two French datasets. The first one comes from a survey that was run in 2009 among 3000 employees in France, with a special interest in the way they perceive their wage: SalSa (*Les salaires vus par les salariés*).[2] The second one is extracted from the DADS-2008[3]. The DADS (*Déclarations Annuelles de Données Sociales)* is an administrative file devoted to the calculation of social contributions. It contains the wages of every wage-earner working in the private sector, in public hospitals and local administrations. One twelfth of the dataset (i.e. people born in October) is panelized. (National civil servants pay their social contributions via another system, hence they are not in the database). We matched each individual surveyed in SalSa with his own records in the DADS as of 2008, as well as with the DADS records of all his co-workers, i.e. employees working in the same establishment or firm, which makes a sample of 33,149,444 jobs (we count jobs rather than individuals, as one individual can occupy several jobs, hence appear several times in the DADS in a given year). The matching was made possible by fact that the SalSa sample was randomly selected (by INSEE) out of the DADS-Panel.

In order to overcome the under-representation of the public sector, the designers of the survey decided to oversample employees of public hospitals and local administrations. Therefore 20% of the initial sample was selected in these two groups. Similarly 10% of the sample was selected in the top decile of the private sector's wage distribution.

To limit the cost of the survey, the sample was drawn amongst employees living in the following regions: Alsace, Auvergne, Centre, Languedoc-Roussillon, Lorraine, Midi-Pyrénées, Basse-Normandie, Pays de Loire, Picardie and Rhône-Alpes as well as in the Essonne department (which is part of Ile-de-France (Paris) Region). The final sample is constituted of 3117 interviews.

Table A1 compares the hourly wage rate in the sub-sample of the DADS drawn for the SalSa survey (12.47€, first row of Table A1), in the entire 2008 DADS sample (12.33€, second row of Table A1), and in regions where the SalSa sample was drawn from (11.82€, third row of Table A1). It must be underlined that in the SalSa survey, the wage is declared by employees ("*what is your monthly net wage, including complements and bonuses*"), whereas in the DADS, a person's wage is declared by her employer. The former (10.74€) is lower than the latter (12.47€) for a similar sample of employees. This discrepancy owes to two reasons. First employees may slightly underestimate their wages, especially yearly premiums. Second, and more importantly, employees and employers may use different notions of working hours: employees are likely to declare the effective number of hours during an ordinary week (including non-paid extra hours), while employers provide the official number of contractual hours during the year that have been paid for.

Another caveat is that the SalSa survey has only been run in a subset of French regions, so that it could be imperfectly representative of the French labor market. In particular, SalSa does not include the region Ile-de France surrounding Paris, except Essonne, that mostly hosts public administration and higher services sectors, i.e. educated people, working in managerial positions for high wages. However, it turns out that the structure of the labor force is about the same in SalSa as in the DADS in general. This is due to the aforementioned oversampling of SalSa with civil servants working in the local

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Table A1
Wage levels in the (unweighted) regression sample of the SalSa survey.

	Mean	SD	P10	P25	P50	P75	P90	P99	N
Hourly wages									
Hourly wage in SalSa subsample (declared by employers)	12.47	6.89	7.62	8.65	10.51	13.86	19.49	37.54	2842
Hourly wage in the entire DADS Panel (declared by employers)	12.33	88.56	7.10	8.05	9.73	13.13	19.27	43.24	2,146,689
Hourly wage in the entire DADS Panel restricted to regions investigated (declared by employers)	11.82	112.48	7.10	8.02	9.54	12.56	17.71	37.40	826,323
SalSa 2009 Hourly wage (declared by employees)	10.74	6.60	6.83	7.68	9.28	12.00	15.80	30.72	2842
Monthly wages									
SalSa 2009 monthly wage (declared by employees)	1693	1062	914	1200	1472.8	2000	2700	5500	2842
SalSa 2008 monthly wage (firm declared) (calculated on the basis of yearly wage/12)	1693.5	1167	634.3	1132.4	1498.1	2007.2	2806	5916.3	2842
Yearly wages									
Yearly wage: country average	16,597	21,586	1413	5934	14,823	21,560	31,079	74,807	2,146,689
Yearly wage: average in regions of SalSa survey	15,743	17,304	1444	66,003	14,693	20,941	29,249	65,318	826,323

Table A2
Descriptive statistics of the regression sample (SalSa, 2009).

Variable	N	Mean	Standard deviation	Min	Max
Female	2842	0.49	0.50	0	1
French	2842	0.97	0.18	0	1
Diploma: CE or less	2842	0.12	0.33	0	1
Diploma: CAP, BEP, BEPC	2842	0.37	0.48	0	1
Diploma: BAC (i.e. end of high school diploma)	2842	0.18	0.38	0	1
Diploma: BAC + 2	2842	0.17	0.38	0	1
Diploma: BAC + 3 and 4	2842	0.07	0.26	0	1
Diploma: BAC + 5 and more	2842	0.08	0.27	0	1
Civil servant	2842	0.22	0.41	0	1
Age	2842	42.05	10.42	19	65
Age^2	2842	1876.57	873.10	361	4225
Tenure within the firm	2842	12.25	9.84	0	43
$Seniority^2$	2842	246.80	338.58	0	1849
Log of size of the firm	2842	4.91	2.39	0	8.52
2009 self declared hourly wage	2842	10.74	6.60	0.54	195.85
2008 DADS hourly wage	2842	12.47	6.88	3.43	115.56
Self-declared hourly wage 2009 (log)	2842	2.29	0.38	−0.62	5.28
Firm-declared hourly wage 2008 (log)	2842	2.43	0.39	1.23	4.75
Firm median hourly wage (log)	2842	2.35	0.25	1.27	4.36
Firm P99 hourly wage (log)	2842	3.40	0.58	1.79	7.20
Regional reference wage	2842	2.36	0.31	2.05	3.36
Wage Satisfaction	2842	2.48	0.72	1	4
Log of wage considered as 'normal'	2638	7.48	0.48	4.09	10.13
I like my work	2839	3.47	0.75	1	4
My wage covers my needs	2815	2.46	0.91	1	4
My wage corresponds to my contribution to the firm	2733	1.45	0.58	1	3
My firm pays well	2580	2.05	0.68	1	3
My wage corresponds to my experience	2777	1.40	0.53	1	3
My wage corresponds to my diploma	2586	1.75	0.64	1	3
Wants to quit his job	2842	0.16	0.37	0	1
Wants to quit in order to get higher wage	2842	0.08	0.27	0	1
Asked supervisor for a wage rise	2842	0.45	0.50	0	1

Table A3
The distribution of answers to subjective questions in SalSa (2009).

Concerning your wage, would you say that you are:	
Very satisfied	4.2%
Rather satisfied	49.3%
Rather unsatisfied	37.2%
Very unsatisfied	9.4%
Do you like what you do during your work?	
Yes, almost always	58.6%
Yes, most of the time	31.2%
Yes, sometimes	6.9%
In general, no	3.2%
Refuse to answer or don't know	0.1%
Is you wage sufficient to cover your needs?	
No, your wage is not sufficient	18.7%
You just have enough to pay for your house, your food and your clothes	25.6%
You can live on it and even afford some expenditure for leisure	44.7%
You are comfortable with your income	10.1%
Refuse or don't know	1.0%
In your opinion, does your wage correspond to what you bring to your employer?	
Yes	34.2%
No, it is insufficient with regards to what I contribute to my employer	57.6%
No, my contribution to my employer is lower than my wage (only if spontaneous answer)	4.4%
Refuse or don't know	3.8%
Would you say that, as compared to other firms in your industry, wages in your own firm:	
Are good	23.4%
Are is in the average	48.2%
Are rather low	19.1%
Refuse or don't know	9.2%
Do you consider that your wage:	
Is rather high, given your professional experience	2.0%
Is correct, given your professional experience	35.0%
Is rather low, your professional experience	60.7%
Refuse or don't know	2.3%
Do you consider that your wage:	
Is rather high given your level of education	10.0%
Is correct given your level of education	47.9%
Is rather low given your level of education	33.1%
Refuse or don't know	9.0%
During the last 5 years, did you take a personal action with one of your managers in order to ask for a pay rise, a promotion, or to ask him to help you to obtain one?	
Yes	44.7%
No	53.9%
Refuse or don't know	1.4%
Today, do you plan to quit your job voluntarily?	
Yes	16.4%
No	81.5%
Refuse or don't know	2.2%
If so, why? (n = 466)[#]	
Essentially to obtain a higher pay	49.4%
It is not for the wage	46.1%
Refuse or don't know	4.5%
Do people to which you compare your wage generally earn: (n = 2044)[##]	
More than you	37.9%
As much as you	29.5%
Less than you	18.8%
Refuse or don't know	13.8%

Note: n = 2842, except for # and ##.

administration and public hospitals (17% as opposed to 10.6% in the DADS); which also explains the higher proportion of intermediate occupations in SalSa.

	White collar managers	Intermediate occupations	Employees	Blue collar workers
SalSa (n = 2842)	12.3%	25.6%	33.8%	28.2%
Panel DADS 2008 (n = 2,101,101)	13.7%	22.3%	33.0%	31.0%

Table A4
Subjective questions (continued) in SalSa.

	Yes	No	Refuse or don't know or without object
Amongst the following groups of persons in your professional surrounding, are there any about whom you know, approximately, how much they earn (including premium and bonuses)?			
- Some colleagues exerting the same function as you do inside your firm? (with a margin of 5%)	66.1%	28.2%	5.8%
- Some of your own direct managers (with a margin of error of 15%)	29.6%	70.0%	0.4%
- The top managers of your firm (with a margin of 30%)	19.3%	80.3%	0.4%
- Persons doing the same job in other firms	41.4%	56.3%	2.3%
When you think about your wage, do you also compare it to what other people earn, for example:			
- Current colleagues exerting the same occupation as yourself?	49.6%	47.4%	3.0%
- Friends of yours?	44.3%	54.8%	0.9%
- Former schoolmates?	20.8%	66.9%	12.3%
- Family members?	47.8%	51.4%	0.8%
- At least one of these (Comp1)	71.9%	28.1%	
Have you recently (over the last 6 months) compared your wage to the minimum wage (SMIC)?	40.9%	56.1%	3.0%
Constructed variable: Compares to colleagues and knows the wage of some of his colleagues	41%	59%	

Note: $n = 2842$.

Table A5
Basic OLS estimate of wage satisfaction.

Variables	B	Robust standard errors	Standardized β
Female	−0.028	0.028	−0.020
French	−0.001	0.077	−0.0002
Diploma: CAP, BEP, BEPC	0.016	0.047	0.011
Diploma: BAC	0.027	0.052	0.015
Diploma: BAC + 2	0.006	0.054	0.003
Diploma: BAC + 3/4	−0.054	0.067	−0.019
Diploma: BAC + 5 & above	−0.147[*]	0.067	−0.056
Hospital or local civil servant	−0.042	0.034	−0.024
Age	−0.034[**]	0.010	−0.495
Age^2	0.00034[**]	0.00013	0.408
Tenure	−0.015[**]	0.005	0.183
Tenure^2	0.00039[**]	0.00014	−0.130
Log of firm size	−0.039[***]	0.006	−0.129
Log of 2008 hourly wage (declared by firm)	0.666[***]	0.047	0.358
Intercept	1.977[***]	0.232	.
Adj. R^2		10.83	
Number observations		2842	
AIC		−2169	

[*] $p < 0.1$.
[**] $p < 0.01$.
[***] $p < 0.001$.

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