How do the contractual position and labour income comparisons affect workers' well-being?

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Provisional version, 21st June 2013, Please do not quote

1 Introduction

Although a substantial part of theoretical and empirical literature regards the phenomena of social comparisons, only a small portion of literature is focused on the study of such comparisons in the working context. In addition, social comparisons seem to be restricted mainly to income comparisons.

The first objective of this paper is to understand which the most relevant determinants of well-being in the working context are and how workers make comparisons. The relevant literature reveals that job security and pay are the most important job domains. Hence, it is reasonable to believe that contractual arrangements and labour income are the main standards according to which workers compare themselves and evaluate their well-being.

The second objective of the paper is to provide evidence on the effect of the contractual position and labour income comparisons on workers' well-being. The impact on self-rated job satisfaction of one's own contractual position and a better (worse) economic treatment –compared to other workers in the same reference group – is investigated through an empirical analysis based on the Italian ISFOL-plus 2006-2010 panel. Several reference groups definitions will be proposed and tested in the empirical analysis so as to offer the chance to identify the strongest determinant in the comparison process in the working context.

The paper is structured as follows. Section 2 briefly discusses the importance of referent others in well-being evaluations (section 2.1). Then the focus is on the working context (section 2.2), where social comparisons related to contractual arrangements and income levels seem to matter strongly. Section 3 provides some descriptive evidence and the main hypothesis to be tested. The estimations results are presented in Section 4. Section 5 concludes.

2 Social comparisons in the working context

2.1 Inequality aversion and social comparisons within reference groups

The evaluation by individuals of their own situation is partly done by comparing with others, the so-called "reference group". Relative concerns may be *ordinal* – individuals care about their rank – or *cardinal* – individuals care about how much higher or lower they are than other people – (Brown et al., 2007). Thus, individual well-being depends not only on the material achievements in absolute terms but also on one's relative ordinal and cardinal position. A wide range of empirical evidence, ranging from laboratory experiments to econometric analysis, have provided support for the idea that people's decisions are influenced by relative concerns.

From the theoretical point of view there are at least two different and opposite mechanisms through which relative concerns may influence individual well-being. The first one, initially proposed by Runciman (1966) and then formalized by Yitzhaki (1979), is the "relative deprivation" mechanism which is based on the notion that the individual sense of deprivation can be explained by the relative position that the individual occupies in relation to the self-selected reference group. The prediction of the Runciman–Yitzhaki framework is that high income inequality increases relative deprivation and decreases subjective well-being. The second mechanism is known as the "tunnel effect" and it has been proposed by Hirschman and Rothschild (1973). According to the "tunnel effect" people may appreciate inequality if this signals social mobility. People who can observe others around them moving upwards in the income scale increase their expectations about their own social mobility and this makes them happier because it improves expectations about their own future.

Although the concept of reference group originates in sociology it is now increasingly considered and studied in economics. Recent empirical findings (e.g. Ferrer-i-Carbonell, 2005; Clark and Senik, 2010) seems to support Duesenberry's idea (1949) that income comparisons are mostly upwards.

A weakness of this field of economic literature is that it is mainly focused on income comparisons while it largely overlooks whether an inequality in rewards is justifiable in terms individual endowments (Homans, 1961; Adams, 1963). For example a person may be surrounded by others who are rewarded highly, and may still not feel deprived as long as the reasons for the inequality appears legitimate in terms of differences in effort or ability.

When analysing individual attitudes towards inequality, it is worthwhile observing that some inequalities are acceptable, whereas others cause indignation, tension, anger and sense of guilt. This means that while some inequalities do not affect individual's well-being, others may have a negative and strong impact on it. Thus, some subjects may be motivated by inequality aversion, which means that they are even willing to give up their material reward (both in presence of disadvantageous and advantageous inequality) in order to move in the direction of a more equal society (Fehr and Schmidt, 1999).

According to Adam's "equity theory", in every "exchange relation" two sides need to be taken into account in order to evaluate the equity of such relation: individual's

contributions to the exchange (*inputs*) and his receipts (*outcomes*). In a working relationship inputs are: education, intelligence, experience, training, skill, seniority, age, sex, ethnic background and effort. Outcomes include: wage, type of contract, rewards intrinsic to the job, seniority benefits, fringe benefits, job status and status symbol and a variety of formally and informally bonuses (such as the right to park the car in a privileged location). When a person finds that his outcomes are not in a balanced relationship to those of others, feelings of inequity results.

In order to better understand social comparisons it is then necessary to focus on more concrete types of inequality, given that its tolerance (or intolerance) depends on the shape it takes and on individual preferences.

2.2 Employment contracts and labour income as referent standards for social comparisons in the labour market

The labour market is an area where comparisons processes apply. Research on job satisfaction has shown that it has less to do with the work itself than with how the work is considered in relation to comparison standards, and the way these are influenced by expectations and other relevant references (Hodson, 1985).

Clark (2001) tries to establish a rank of what matters in a job in order to predict quits and he finds that different types of job satisfaction predict quitting differently. Job security seems to be the most important job domain, followed by pay. Hence, in a ranking of job characteristics, employment contracts and labour income are on the top. In this paper employment contracts and labour income are considered as the main standards according to which workers evaluate their job satisfaction. If social comparisons matter in the working contexts, then the job satisfaction should be largely determined by reference labour income levels and the type of contract. The negative effect on job satisfaction of being worse off than the referent other in terms of labour income and contractual arrangement may be interpreted as a sign that workers are averse to both income and contractual inequality.

A number of studies have looked at the effect of temporary contracts on job satisfaction (Booth et al. 2002; Bardasi and Francesconi 2003; De Witte and Naswall 2003; De Graaf-Zijl 2005). According to this empirical evidence no significant difference emerges between workers in permanent jobs and those on fixed-term contracts. However, looking at the impact of specific forms of temporary employment on specific job aspects (mainly job security and career prospects) a negative relationship emerges. Theodossiou and Vasileiou (2007) study the relationship between job satisfaction and job security (measured in terms of unemployment expectations) and they find that higher job security is linked with higher job satisfaction. On the contrary, Guest and Clinton (2006) show that in the UK job insecurity does not have a major impact on individual's well-being or work attitudes and behavior. Ferrer-i-Carbonell and Van Praag (2006) examine the effect of the type of contract on individual's job satisfaction and they show that while for Spain temporary contracts are negatively correlated with job satisfaction, for the Netherlands there is no relationship. According to the authors, this result is related to the different level of uncertainty associated with temporary contracts

in each country. Finally, Origo and Pagani (2009) disaggregate the sample of workers into different groups based on employment contracts and perceived job security and they find that "temporary but secure job" seem preferable to the combination "permanent but insecure job".

The literature on labour income and job satisfaction (e.g. Hammermesh, 1975; Cappelli and Sherer, 1988; Pfeffer and Langton, 1993; Clark and Oswald, 1996; Bygren, 2004; Ferrer-i-Carbonell, 2005; Brown et al., 2007; Clark et al., 2007; Smith, 2011) generally concludes that relative wages are important in determining worker's job satisfaction. Hammermesh (1975) argued that in the working context utility might be derived from obtaining wages greater than the average wage of an appropriate comparison group. Cappelli and Sherer (1988) find instead a higher satisfaction for the less-paid workers. This result is considered by the authors as a prove of the fact that less-paid workers use lower-paid jobs as comparisons for judging the fairness of their pay. This explanation strongly contrasts with the already mentioned Duesenberry's idea, according to which income comparisons are mostly upwards.

Finally, a number of studies have emphasized the importance of some kind of reference groups in determining job satisfaction. The reference group can include all members of a society or only a subgroup. Bygren (2004) finds that general comparisons related to others in their occupation, and to other in the labour market at large, seem to be of major importance compared to comparisons within co-workers and individual's own past pay. On the contrary, Van de Stadt et al. (1985) define the reference group according to educational level, age and employment status. Finally, Clark and Senik (2010) apply an endogenous procedure to determine reference groups and they find that comparison intensity decreases with income, both across countries and within countries. Regarding the direction of comparison they find colleagues as the most frequently cited reference group. On average those who compare to colleagues are found to be more satisfied than those who compare to friends or other groups.

3 Descriptive evidence and hypothesis

The following analysis is based on the Italian ISFOL-plus 2006-2010 (unbalanced) panel which contains a rich set of working conditions and socio-economic variables. The aim is to provide evidence on the effect of the contractual position and labour income comparisons on job satisfaction, which is taken as a proxy of workers' well-being accordingly to the literature.

Students, retired individuals, housewives and people looking for a job but currently unemployed are left out of the analysis as for them job satisfaction does not apply. The sub-sample used corresponds to 16120 individuals per year on average, and it is based on people (from 18 to 65) who report being employed either as employees or as self-employed. The majority of individuals are "typical workers" with standard contractual arrangements, which include: a) full-time, regular and open-ended contracts, b) self-employment, and c) voluntary part-time contracts. Among the "atypical workers" with non-standard contractual arrangements there are: a) temporary workers and those on short-term contracts, b) trainees

and apprentices, c) “false” self-employed, the so-called “parasubordinati” in the Italian debate, and d) involuntary part-time. The share of atypical workers in the sample shows a slight increase (from 32.83% up to 35.29%) over the years considered.

Females, young people and individuals with a high educational level are highly represented among atypical workers (Table 1). The percentage of females with non-standard contractual arrangements (68.61% per year on average) is much higher than that of males (31.39%). Among people between 25 and 34 a slight increase in the percentage of non-standard contracts can be observed (40,42% in 2006, 41,62% in 2008 and 42,16% in 2010). Similarly, the share of atypical workers among graduated people increased from 23.59% in 2006 up to 30.96% in 2010, showing an increasingly high education demand in non-standard employment apart from the strong gender and intergenerational dimension (as women and younger workers are disproportionately represented among atypical workers).

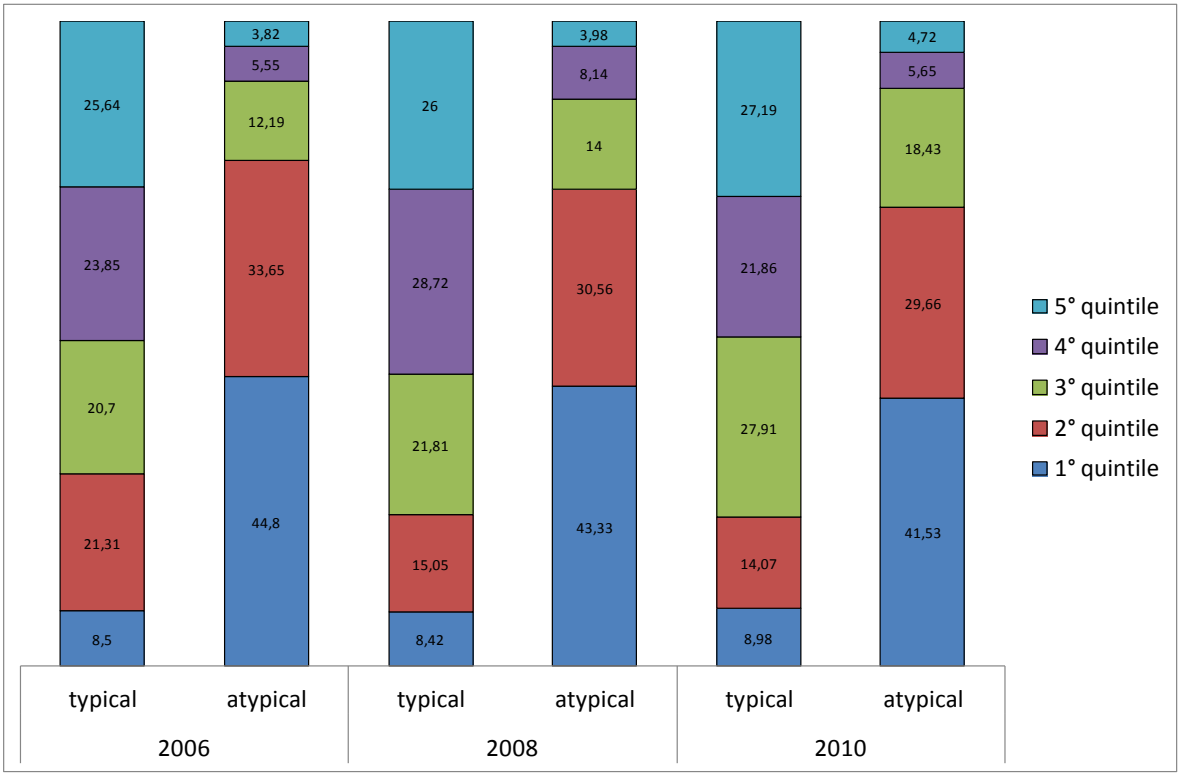
Table 1: Share (%) of atypical and typical workers by sex, age classes and educational attainments

	ATYPICAL WORKERS			TYPICAL WORKERS		
	2006	**2008**	**2010**	**2006**	**2008**	**2010**
SEX						
males	30,27	32,24	31,66	57,91	58,23	57,27
females	69,73	67,76	68,34	42,09	41,77	42,73
AGE CLASSES						
<25	22,64	22,75	19,81	6,75	6,63	5,58
25-34	40,42	41,62	42,16	23,38	23,79	24,95
35-44	21,86	18,61	21,18	19,55	16,46	17,14
45-54	10,75	10,63	10,14	29,59	28,87	24,3
>55	4,34	6,39	6,72	20,74	24,25	28,02
EDUCATION						
elementary/no educ.	2,21	2,08	1,33	2,3	1,6	1,44
middle education	17,74	16,75	13,79	17,59	17,17	15,91
high education	53,66	52,25	51,41	52,55	51,57	50,93
university degree	23,59	24,91	30,96	25,57	26,8	29,7
PhD/master	2,8	4	2,51	1,99	2,86	2,02

Source: *ISFOL-plus 2006-2010 panel data.*

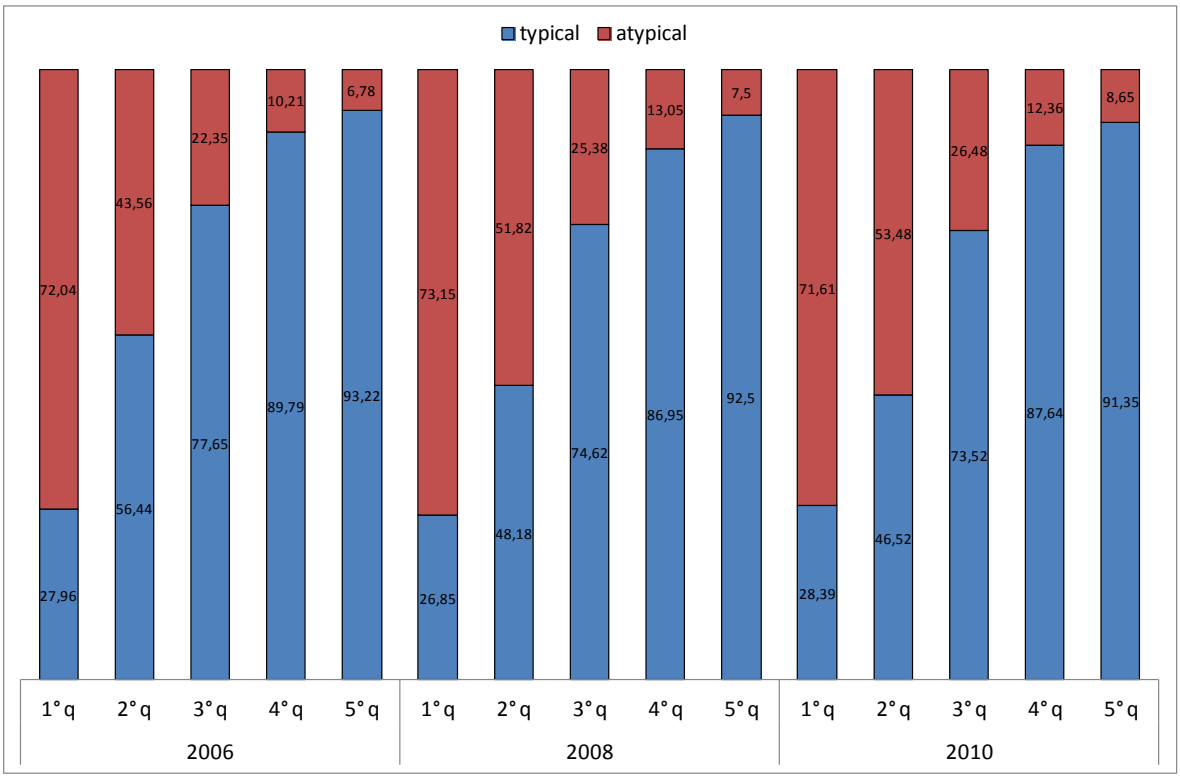
Figures 1 shows that while workers with standard contractual arrangements are approximately well distributed along the labour income distribution, atypical workers mainly belong to the first and second quintile. Hence, while the share of atypical workers (over typical) decreases moving upward along the labour income distribution, the opposite stands for typical workers (Figure 2). This means that atypical workers use to suffer from low income levels.

Figure 1: Labour income distribution for typical and atypical workers



Source: *ISFOL-plus 2006-2010 panel data.*

Figure 2: Labour income distribution by typical and atypical workers

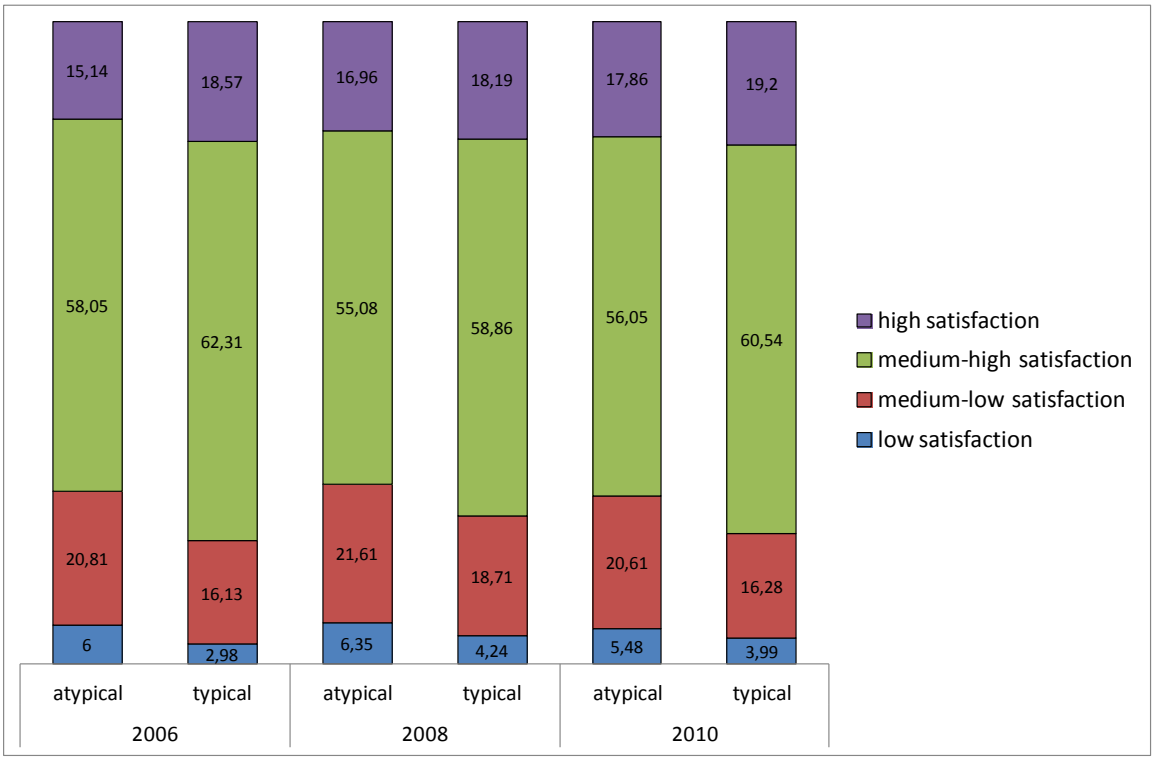


Source: *ISFOL-plus 2006-2010 panel data.*

The average job satisfaction on a scale 1 to 4 (where 1 stands for low satisfaction and 4 for high satisfaction), is 2.9 over the 3-year period considered. Coherently with the literature, this indicates that workers are fairly satisfied with their job. However there are remarkable differences in the level of self-declared job satisfaction among typical and atypical workers from one side, and along the labour income distribution from the other side. Figure 3 and Figure 4 suggest that both the contractual and the labour income position respectively may be related with job satisfaction. Figure 3 shows that job satisfaction is higher for workers with standard contracts than for those in non-standard employment. Similarly Figure 4 reveals higher satisfaction for people belonging to the richer quintiles than for those in the poorer quintiles. The income concept used through the paper is that of annual gross labour income.

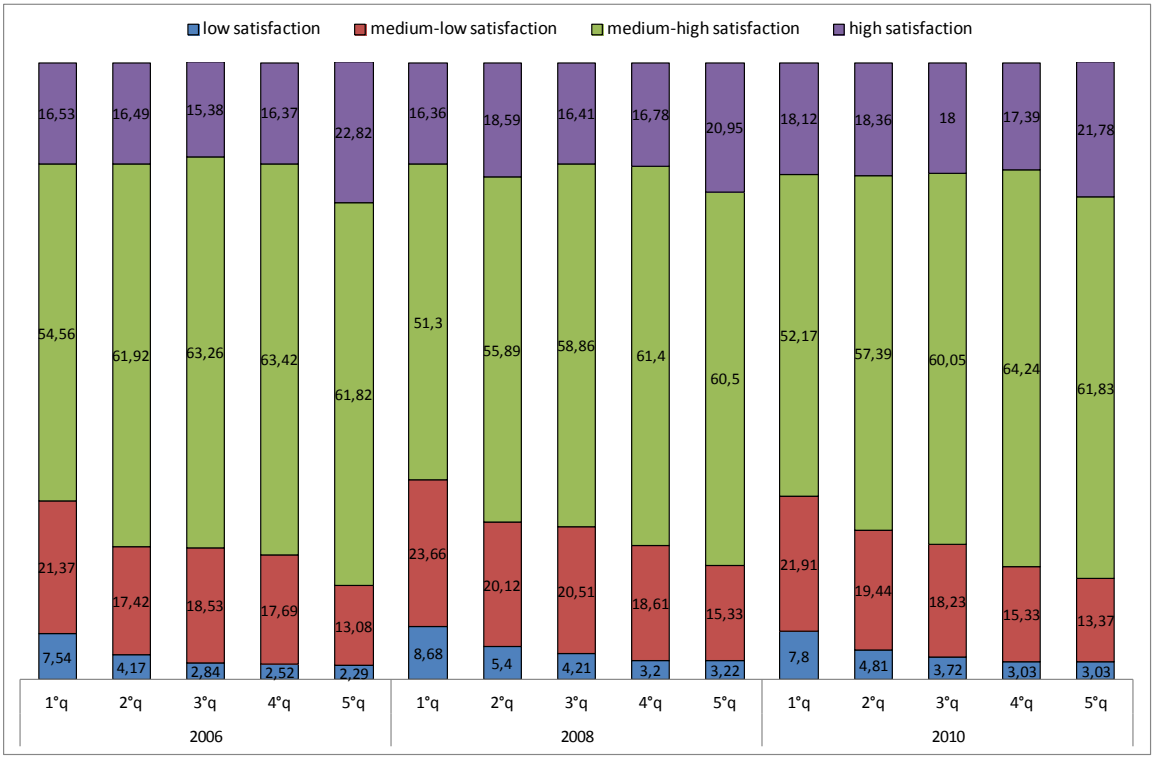
The aim of the empirical analysis is twofold. Firstly, to study the relationship between individual self-declared job satisfaction and the type of contract (non-standard arrangements versus standard arrangements). Secondly, to identify the influence of labour income on job satisfaction. To this extent the paper assumes that individuals judge their well-being by comparing their labour income with that of individuals with similar characteristics.

Figure 3: Job satisfaction levels for atypical and typical workers



Source: *ISFOL-plus 2006-2010 panel data.*

Figure 4: Job satisfaction levels along the labour income distribution



Source: *ISFOL-plus 2006-2010 panel data.*

The following equation is assumed for each individual i at time t:

$$W_i = JS(c_i, y_i, y_{ref}, X_i), \quad (1)$$

where W_i is well-being in the working context, JS is job satisfaction, y_i stands for individual labour income, y_{ref} for the labour income of the reference group and c_i indicates the type of contractual arrangement (non-standard versus standard). The vector of variables X_i includes individual socio-demographic characteristics and other job characteristics. The decision of which variables have to be included is based on the literature and data availability. In this paper among the individual socio-demographic characteristics the following have been considered: age, gender and geographical area of the respondent; the educational level attained; whether the individual has any son and whether he has to pay a rent for the house. As regards the job characteristics the analysis looks at: the type of occupation and the job sector; whether the individual does or not any unpaid overtime or involuntary part-time; whether he has always been employed during the last 12 months (which is a proxy for no career interruptions); match between educational qualifications attained and main working tasks; whether the individual has two jobs; number of working hours; whether the job is seasonal and whether the job is highly risky for the health.

The empirical analysis will be based on four different specifications of Eq. (1) so as to test for various hypothesis regarding the influence of individual labour income and the labour income of the reference group on job satisfaction. The simplest specification includes only

individual labour income besides c_i and X_i . Accordingly to the economic theory individual labour income is expected to be positively related to job satisfaction.

There are several ways to include the reference variable (e.g. Ferrer-i-Carbonell, 2005). In this paper three variants will be considered. The first variant includes the labour income of the reference group y_{ref} – defined as the average income of the reference group – as an additional variable. The hypothesis is that it should get a negative sign reflecting the human trait that workers are less satisfied when similar others are better off. In other words, the higher the labour income of the reference group is the less satisfied individuals are with their own income.

The second variant considers the gap between one's own labour income and the reference group labour income, $(y_i - y_{ref})$. This term is expected to have a positive impact on workers' well-being indicating that the richer an individual is in comparison with referent others, the more satisfied he is.

In the third variant, individual's relative income position enters in the form of "relative income advantage" and "relative income disadvantage", which, in line with the theoretical approach provided by the inequality aversion models (e.g. Fehr and Schmidt, 1999), are respectively defined as follows:

$$\begin{aligned}
&\text{If } y_i > y_{ref} \text{ then } (\text{relative income advantage})_i = y_i - y_{ref} \\
&\qquad\qquad (\text{relative income disadvantage})_i = 0 \\
&\text{If } y_i < y_{ref} \text{ then } (\text{relative income advantage})_i = 0 \\
&\qquad\qquad (\text{relative income disadvantage})_i = y_{ref} - y_i \\
&\text{If } y_i = y_{ref} \text{ then } (\text{relative income advantage})_i = 0 \\
&\qquad\qquad (\text{relative income disadvantage})_i = 0
\end{aligned} \tag{2}$$

Compared to the second variant, the distinction between the two sub mentioned terms allows to test the validity of the inequality aversion theory, which is based on the idea that income comparisons are asymmetric. Being worse off than the referent other (relative income disadvantage) is supposed to have a negative impact on job satisfaction. As regards the relative income advantage, the inequality aversion models suggest that individuals with an income above that of their reference group do not experience a positive impact on well-being. In other words, according to this theory, richer workers would not get happier from knowing their income is above that of referent workers. Whether confirmed by the empirical results this hypothesis may be given as a prove that income comparisons in the working context are asymmetric (Duesenberry, 1949; Frank, 1985). According to the hypothesis, the coefficient of the variable "relative income advantage" is expected to be of a smaller magnitude and lower significance than that of the variable "relative income disadvantage", meaning that the impact of a disadvantageous income inequality in terms of satisfaction is bigger than the impact of advantageous income inequality on job satisfaction.

Individual's reference groups are exogenously defined on the basis of 5 age classes, 3 educational categories, 3 occupations and 3 geographical areas. The simplest procedure generates 5 reference groups defined as all the individuals who belong to the same age group. The most detailed procedure identifies 135 reference groups defined as all the individuals who belong to the same age group, with the same educational level and type of occupation and leaving in the same geographical area. Eight different reference groups (R.G.) definitions are considered in the following analysis (Table 2).

Table 2: Reference groups definitions

	5 AGE CLASSES *(younger than 25, 25-34, 35-44, 45-54 and 55 or older)*	3 EDUCATIONAL CATEGORIES *(middle education, high education and university degree or more)*	3 OCCUPATIONS *(manager, white collar and blue collar)*	3 GEOGRAPHICAL AREAS *(north, centre and south)*
5 R.G.	×			
9 R.G.			×	×
15 R.G.	×	×		
15 R.G. bis	×		×	
27 R.G.		×	×	×
45 R.G.	×	×		×
45 R.G. bis	×		×	×
135 R.G.	×	×	×	×

4 Results

Estimations results are given for the eight reference groups previously defined. This is done so as to capture how relative concerns may vary according to the reference group definition.

Given the ordinal nature of the dependent variable (job satisfaction) and assuming that the error term is normally distributed, an Ordered Probit estimator is the usual candidate. However, a traditional linear model may be applied once the ordinal dependent variable has been properly transformed into a "pseudo continuous" one (Terza, 1987; Van Praag and Ferrer-i-Carbonell, 2006). This approach for ordinal variables proposed by Van Praag and Ferrer-i-Carbonell (2004) and named "Probit Ordinary Least Squares" (POLS) [1], is computationally easier than the classical Probit estimations for panel data since it allows to

[1] Van Praag and Ferrer-i-Carbonell (2004) note that the standard Ordered Logit and Probit models implicitly cardinalise subjective well-being through the cardinal continuous latent variable underlying them, and on this basis suggest a method they term "Probit OLS" or "Probit-adapted OLS". The "Probit-adapted OLS" is a simple OLS model using a "rough cardinalisation" of the ordinal subjective well-being variable: a transformation such that the new dependent variable takes the conditional mean (given the original ordinal rating) of a standardized normally-distributed continuous variable, calculated based on the frequencies of the ordinal ratings in the sample.

avoid many integrations[2]. With the POLS option, that is OLS, both individual fixed effects and random effects are feasible. However Van Praag and Ferrer-i-Carbonell advice to use the random-effects model[3].

Table 3, Table 4 and Table 5 report the results from the "Probit Ordinary Least Squares" (POLS) random-effects estimations applied to the 3-year panel (2006, 2008, 2010). The explanatory variables of interest are the income variables (namely *y*, *yref*, *y-yref*, *relative income advantage* and *relative income disadvantage*) and *atypical*.

A common assumption in economics is that the utility is concave in income and consequently income has been introduced in a logarithmic form. Moreover, for the variable income, the average value over the observation period (which enable to distinguish between level – averages over the period – and shock effects) has been considered. The first set of models (Table 3) includes individual labour income alone (first column) and the labour income of the reference group (first variant of the reference variables) according to the eight reference group's definitions. The second set of models (Table 4) considers the difference between own labour income and the reference group labour income (second variant). The third and last set of POLS estimations (Table 5) includes the relative income position (third variant).

The results for the simplest specification (Table 3, first column) – in which only own labour income has been included – show that the coefficient of own income is significant and positively related to workers' well-being. This result confirms the expectations: richer workers are, *ceteris paribus*, happier than poorer workers. The average income of the reference group (Table 3, from the second column onwards) is found to have a significant and negative impact on workers' well-being when using five different reference group definitions (15 R.G., 15 R.G. bis, 45 R.G., 45 R.G. bis and 135 R.G.) over the eight proposed. The inclusion of the average income of the reference group does not change the significance and the magnitude of the own income coefficient.

Table 3: Determinants of job satisfaction (2006, 2008 and 2010 data), first variant

Probit OLS models, Random Effects (beta coefficients), ISFOL-plus 2006-2010 panel									
	no R.G.	**5 R.G.**	**9 R.G.**	**15 R.G.**	**15 R.G. bis**	**27 R.G.**	**45 R.G.**	**45 R.G. bis**	**135 R.G.**
constant	7.209***	7.307***	6.373	10.742***	10.528***	7.743***	9.948***	10.383***	11.340***
dummy 2006	0.031	0.031	0.031	0.034	0.031	0.031	0.033	0.031	0.033
dummy 2008	-0.033	-0.033	-0.033	-0.032	-0.034	-0.033	-0.032	-0.033	-0.032
ln(age)	-4.876***	-4.886***	-4.876***	-5.501***	-5.306***	-4.879***	-5.387***	-5.321***	-5.642***

[2] Note that Ordered Probit estimations are coherent (in terms of signs and standard errors) with the results of the POLS estimations.

[3] There are two reasons why Van Praag and Ferrer-i-Carbonell (2004) advice to use the random-effects model. The first one regards the major parsimony of the random-effect model compared to the fixed-effect, which requires to estimate one extra parameter per individual. The second objection deals with the model structure. Indeed, replacing the random effect by N individual fixed effects to be estimated, there is no place for the "level effect" and only "shock effects" can be estimated.

ln(age)^2	0.611***	0.614***	0.611***	0.722***	0.696***	0.612***	0.701***	0.696***	0.744***
age reaches minimum at	*54.06*	*53.46*	*54.06*	*45.13*	*45.23*	*53.84*	*46.63*	*45.72*	*44.33*
woman	0.001	0.001	0.001	-0.000	-0.002	0.001	-0.000	-0.002	-0.001
sons	0.046**	0.046**	0.046**	0.048***	0.046**	0.046**	0.048***	0.046**	0.048***
centre	0.019	0.019	0.023	0.020	0.020	0.016	0.004	0.003	-0.002
south	-0.020	-0.020	-0.017	-0.019	-0.019	-0.022	-0.036**	-0.036**	-0.042***
middle educ.	0.197***	0.197***	0.197***	0.107***	0.193***	0.182***	0.128***	0.192***	0.091***
high educ.	0.098***	0.098***	0.098***	0.049**	0.099***	0.087*	0.061***	0.099***	0.042**
white collar	-0.160***	-0.160***	-0.124	-0.162***	-0.259***	-0.183*	-0.161***	-0.251***	-0.266***
blue collar	-0.185***	-0.185***	-0.142	-0.186***	-0.304***	-0.207*	-0.186***	-0.295***	-0.273***
production services	0.075***	0.075***	0.075***	0.071***	0.071***	0.075***	0.073***	0.072***	0.071***
distribution services	0.069***	0.069***	0.069***	0.067***	0.065***	0.069***	0.067***	0.065***	0.064***
services to people	0.079***	0.079***	0.079***	0.077***	0.076***	0.079***	0.078***	0.076***	0.076***
social services	0.092***	0.092***	0.092***	0.092***	0.091***	0.092***	0.092***	0.091***	0.091***
public sector	0.041**	0.041**	0.041**	0.043**	0.044**	0.041**	0.042**	0.045**	0.044**
educational match	0.137***	0.137***	0.137***	0.136***	0.136***	0.137***	0.137***	0.136***	0.137***
no career interruptions	0.076***	0.076***	0.076***	0.078***	0.079***	0.076***	0.078***	0.079***	0.079***
second job	-0.112***	-0.112***	-0.112***	-0.111***	-0.112***	-0.112***	-0.111***	-0.112***	-0.111***
seasonal job	-0.040	-0.040	-0.040	-0.038	-0.038	-0.041	-0.038	-0.039	-0.037
health risk	-0.245***	-0.245***	-0.245***	-0.246***	-0.245***	-0.245***	-0.246***	-0.245***	-0.246***
unpaid overtime	-0.139***	-0.139***	-0.138***	-0.138***	-0.138***	-0.139***	-0.138***	-0.139***	-0.139***
no overtime	-0.051***	-0.051***	-0.051***	-0.050***	-0.051***	-0.051***	-0.050***	-0.051***	-0.050***
no part-time	-0.157***	-0.157***	-0.157***	-0.159***	-0.152***	-0.157***	-0.157***	-0.151**	-0.156***
involuntary part-time	-0.120*	-0.120*	-0.120*	-0.123*	-0.121*	-0.120*	-0.123*	-0.121*	-0.123*
ln(working hours)	0.047**	0.047**	0.047**	0.043*	0.046**	0.046**	0.043*	0.046**	0.042*
atypical	-0.116***	-0.116***	-0.116***	-0.121***	-0.119***	-0.116***	-0.120***	-0.119***	-0.122***
house rent	-0.068***	-0.068***	-0.068***	-0.069***	-0.069***	-0.068***	-0.068***	-0.069***	-0.069***
ln(y)	0.232***	0.232***	0.232***	0.236***	0.234***	0.232***	0.235***	0.234***	0.238***
mean(ln(y))	0.004	0.004	0.004	0.005	0.004	0.004	0.005	0.004	0.005
ln(yref)		-0.009	0.080	-0.273***	-0.280***	-0.050	-0.206***	-0.261***	-0.301***
N.	15172	15172	15172	15172	15172	15172	15172	15172	15172
R-squares:									
within	0.0120	0.0120	0.0120	0.0115	0.0122	0.0120	0.0117	0.0123	0.0120
between	0.0637	0.0637	0.0637	0.0645	0.0642	0.0637	0.0642	0.0642	0.0647
overall	0.0594	0.0594	0.0594	0.0601	0.0600	0.0594	0.0598	0.0601	0.0605

Source: *Author's estimates from ISFOL PLUS 2006-2010 panel data.*

Note: *Reference modalities are the following: 2010 for year; north for area; university degree (or higher educational level) for educational attainment; manager for type of job; production of goods for sector; paid overtime for overtime; voluntary part-time for part-time.*

*Significance level: *95%; ** 99%; *** 99.9%.*

The difference between individual's own income and reference income (Table 4) – expressed as a percentage – is statistically significant for five reference groups, the same for which the average income of the referent other resulted significant too. As expected, the coefficient of the difference is positive meaning that the larger an individual's own income is in comparison to the reference group income, the more satisfied the worker is.

Table 4: Determinants of job satisfaction (2006, 2008 and 2010 data), second variant

Probit OLS models, Random Effects (beta coefficients), ISFOL plus 2006-2010 panel								
	5 R.G.	**9 R.G.**	**15 R.G.**	**15 R.G. bis**	**27 R.G.**	**45 R.G.**	**45 R.G. bis**	**135 R.G.**
constant	6.841***	12.624**	10.257***	10.329***	8.743***	9.546***	10.226***	11.056***
dummy 2006	0.031	0.031	0.033	0.030	0.031	0.033	0.031	0.033
dummy 2008	-0.033	-0.033	-0.032	-0.034	-0.033	-0.032	-0.033	-0.032
ln(age)	-4.836***	-4.885***	-5.411***	-5.282***	-4.895***	-5.310***	-5.301***	-5.589***
ln(age)^2	0.603***	0.613***	0.706***	0.691***	0.614***	0.687***	0.692***	0.734***
age reaches minimum at	*55.13*	*53.76*	*46.15*	*45.69*	*53.85*	*47.69*	*46.06*	*45.02*
woman	0.001	0.001	-0.000	-0.002	0.002	0.000	-0.002	-0.001
sons	0.046**	0.046**	0.048***	0.046**	0.046**	0.047***	0.046**	0.048***
centre	0.019	-0.006	0.020	0.020	0.011	0.006	0.004	-0.001
south	-0.020	-0.038*	-0.019	-0.019	-0.026	-0.034**	-0.035**	-0.041**
middle educ.	0.197***	0.197***	0.120***	0.192***	0.155**	0.139***	0.191***	0.099***
high educ.	0.099***	0.098***	0.056**	0.099***	0.067	0.067***	0.098***	0.047**
white collar	-0.160***	-0.389*	-0.163***	-0.252***	-0.225**	-0.162***	-0.245***	-0.257***
blue collar	-0.185***	-0.458*	-0.188***	-0.295***	-0.247**	-0.187***	-0.287***	-0.266***
production serv.	0.075***	0.074***	0.072***	0.072***	0.075***	0.073***	0.072***	0.071***
distribution serv.	0.069***	0.068***	0.067***	0.065***	0.068***	0.068***	0.065***	0.065***
serv. to people	0.079***	0.079***	0.078***	0.076***	0.078***	0.078***	0.077***	0.076***
social services	0.092***	0.092***	0.092***	0.091***	0.092***	0.092***	0.091***	0.091***
public sector	0.041**	0.041**	0.042**	0.044**	0.040**	0.042**	0.044**	0.044**
educational match	0.137***	0.137***	0.136***	0.136***	0.137***	0.137***	0.136***	0.137***
no career interruptions	0.076***	0.076***	0.078***	0.079***	0.076***	0.078***	0.079***	0.079***
second job	-0.112***	-0.112***	-0.111***	-0.112***	-0.112***	-0.111***	-0.112***	-0.111***
seasonal job	-0.041	-0.042	-0.038	-0.038	-0.041	-0.038	-0.039	-0.037
health risk	-0.245***	-0.245***	-0.246***	-0.245***	-0.245***	-0.246***	-0.245***	-0.246***
unpaid overtime	-0.139***	-0.139***	-0.138***	-0.138***	-0.138***	-0.138***	-0.139***	-0.138***
no overtime	-0.051***	-0.051***	-0.050***	-0.051***	-0.051***	-0.050***	-0.051***	-0.050***
no part-time	-0.157***	-0.158***	-0.161***	-0.155***	-0.157***	-0.159***	-0.153***	-0.159***
involuntary part-time	-0.120*	-0.120*	-0.123*	-0.121*	-0.120*	-0.123*	-0.121*	-0.124*
ln(working hours)	0.046**	0.046**	0.043*	0.046**	0.046**	0.044**	0.046**	0.043*
atypical	-0.116***	-0.116***	-0.120***	-0.119***	-0.116***	-0.119***	-0.119***	-0.121***
house rent	-0.067***	-0.068***	-0.069***	-0.069***	-0.068***	-0.068***	-0.069***	-0.069***

ln(y)	0.266**	-0.283	-0.000	-0.029	0.091	0.059	-0.013	-0.042
mean(ln(y))	0.004	0.004	0.005	0.004	0.004	0.005	0.004	0.005
ln(y)-ln(yref) (%)	-0.003	0.052	0.024***	0.026***	0.014	0.018**	0.025***	0.028***
N.	15172	15172	15172	15172	15172	15172	15172	15172
R-squares:								
within	0.0121	0.0121	0.0116	0.0123	0.0120	0.0117	0.0123	0.0120
between	0.0636	0.0637	0.0643	0.0641	0.0637	0.0640	0.0641	0.0646
overall	0.0594	0.0594	0.0599	0.0600	0.0594	0.0597	0.0600	0.0603

Source: *Author's estimates from ISFOL PLUS 2006-2010 panel data.*
Note (a): *Reference modalities are the following: 2010 for year; north for area; university degree (or higher educational level) for educational attainment; manager for type of job; production of goods for sector; paid overtime for overtime; voluntary part-time for part-time.*
*Significance level: *95%; ** 99%; *** 99.9%.*
Note (b): *The term,* $\left[ln(y) - ln\left(y_{ref}\right)\right]$*, is expressed as a percentage* $\left[\frac{ln(y) - ln(y_{ref})}{ln(y_{ref})} * 100\right]$*, meaning the percentage distance (indifferently below or above) from the average income of the reference group.*

The variables "relative income advantage" and "relative income disadvantage" (Table 5) – expressed as percentages– are significant for the same five reference groups for which both the average income and the difference between own and referent other income have been shown to be highly significant. The income gap has a negative effect on job satisfaction if the individual is poorer than average, while being richer than the own referent has a positive effect on workers' well-being. Contrary to the expectations of the inequality aversion theory, the coefficient of the variable "relative income advantage" is of a bigger magnitude and more significant than that of the variable "relative income disadvantage". This means that the advantageous inequality aversion hypothesis is not verified empirically.

Table 5: Determinants of job satisfaction (2006, 2008 and 2010 data), third variant

Probit OLS models, Random Effects (beta coefficients), ISFOL plus 2006-2010 panel								
	5 R.G.	**9 R.G.**	**15 R.G.**	**15 R.G. bi s**	**27 R.G.**	**45 R.G.**	**45 R.G. bis**	**135 R.G.**
constant	6.733***	12.334**	10.225***	10.111***	8.427***	9.498***	10.011***	10.930***
dummy 2006	0.033	0.033	0.035	0.034	0.033	0.034	0.034	0.035
dummy 2008	-0.031	-0.031	-0.030	-0.030	-0.031	-0.030	-0.030	-0.030
ln(age)	-4.771***	-4.641***	-5.372***	-5.195***	-4.717***	-5.273***	-5.223***	-5.538***
ln(age)^2	0.594***	0.579***	0.702***	0.678***	0.589***	0.683***	0.681***	0.727***
age reaches minimum at	*55.48*	*55.03*	*45.89*	*46.11*	*54.82*	*47.46*	*46.27*	*45.1*
woman	0.003	0.003	0.001	0.000	0.005	0.002	-0.000	0.001
sons	0.046**	0.044**	0.047***	0.045**	0.044**	0.047***	0.046**	0.047***
centre	0.020	-0.008	0.020	0.020	0.011	0.005	0.004	-0.001
south	-0.020	-0.039*	-0.019	-0.019	-0.027	-0.035**	-0.036**	-0.042***

middle educ.	0.197***	0.204***	0.121***	0.193***	0.159**	0.141***	0.193***	0.102***
high educ.	0.101***	0.104***	0.058**	0.102***	0.070	0.069***	0.101***	0.050**
white collar	-0.149***	-0.392*	-0.155***	-0.245***	-0.223**	-0.154***	-0.237***	-0.253***
blue collar	-0.176***	-0.461*	-0.180***	-0.286***	-0.242**	-0.180***	-0.278***	-0.261***
production serv.	0.072***	0.072***	0.070***	0.069***	0.072***	0.071***	0.070***	0.069***
distribution serv.	0.069***	0.067***	0.067***	0.065***	0.067***	0.067***	0.064***	0.064***
serv. to people	0.077***	0.077***	0.077***	0.075***	0.077***	0.077***	0.075***	0.075***
social serv.	0.092***	0.092***	0.092***	0.091***	0.093***	0.091***	0.091***	0.091***
public sector	0.043**	0.045**	0.044**	0.046**	0.045**	0.044**	0.047**	0.046**
educational match	0.136***	0.137***	0.136***	0.136***	0.137***	0.136***	0.136***	0.136***
no career interruptions	0.078***	0.079***	0.079***	0.081***	0.080***	0.079***	0.082***	0.081***
second job	-0.112***	-0.113***	-0.111***	-0.112***	-0.113***	-0.111***	-0.112***	-0.111***
seasonal job	-0.043	-0.045	-0.040	-0.041	-0.043	-0.040	-0.041	-0.040
health risk	-0.246***	-0.246***	-0.246***	-0.246***	-0.246***	-0.246***	-0.246***	-0.247***
unpaid overtime	-0.142***	-0.144***	-0.140***	-0.142***	-0.144***	-0.140***	-0.143***	-0.141***
no overtime	-0.053***	-0.053***	-0.050***	-0.053***	-0.053***	-0.051***	-0.053***	-0.050***
no part-time	-0.140**	-0.129**	-0.147**	-0.135**	-0.127**	-0.146**	-0.135**	-0.144**
involuntary part-time	-0.115*	-0.114	-0.119*	-0.114	-0.115*	-0.118*	-0.114	-0.118*
ln(working hours)	0.047**	0.049**	0.046**	0.047**	0.050**	0.047**	0.047**	0.046**
atypical	-0.117***	-0.117***	-0.120***	-0.119***	-0.118***	-0.119***	-0.119***	-0.121***
house rent	-0.068***	-0.068***	-0.068***	-0.069***	-0.068***	-0.068***	-0.069***	-0.068***
ln(y)	0.260**	-0.304	-0.010	-0.028	0.084	0.052	-0.010	-0.045
mean(ln(y))	0.004	0.004	0.005	0.004	0.004	0.005	0.004	0.005
rel. income disadvantage (%)	0.008	-0.047	-0.020**	-0.019**	-0.007	-0.014*	-0.018**	-0.022***
rel. income advantage (%)	0.004	0.061	0.031***	0.035***	0.024	0.025***	0.033***	0.036***
N.	15172	15172	15172	15172	15172	15172	15172	15172
R squares:								
within	0.0120	0.0121	0.0116	0.0125	0.0118	0.0117	0.0124	0.0121
between	0.0641	0.0644	0.0646	0.0647	0.0646	0.0644	0.0647	0.0650
overall	0.0598	0.0602	0.0603	0.0606	0.0603	0.0601	0.0606	0.0608

Source: *Author's estimates from ISFOL PLUS 2006-2010 panel data.*

Note: *Reference modalities are the following: 2010 for year; north for area; university degree (or higher educational level) for educational attainment; manager for type of job; production of goods for sector; paid overtime for overtime; voluntary part-time for part-time.*

*Significance level: *95%; ** 99%; *** 99.9%.*

Note (b): *The two terms "relative income disadvantage" and "relative income advantage" are expressed as percentages, meaning the percentage distance (below and above) from the average income of the reference group. They are respectively defined as:* $\left[\frac{ln(y_{ref})-ln(y)}{ln(y_{ref})} * 100\right]$ *and* $\left[\frac{ln(y)-ln(y_{ref})}{ln(y_{ref})} * 100\right]$.

Table 3, Table 4 and Table 5, present the results for the other variable of interest besides the income variables: the type of contract. As already mentioned, the present analysis divides the labour contracts in two types: standard arrangements (which means being a typical worker) and non-standard arrangements (which means being an atypical worker). For all the estimations presented, having a non-standard employment (instead of a standard one) has a clear negative effect on job satisfaction. The significance and magnitude of the negative effect is comparable to that of doing any unpaid overtime or having a second job.

The coefficients of the socio-demographic and job characteristics variables do no present surprises. As usual in the literature, a clear *U*-shape relationship between age and job satisfaction is found. The minimum age varies between 44 and 55 among the various estimations. Comparing this result to those available in the literature, it may be noticed that the minimum age for Italy is generally higher than for other European countries. Among the socio-demographic characteristics having sons is positively correlated with job satisfaction. Similarly, having a middle or high educational level compared to workers with higher qualifications (university degree/Master/Ph.D.) has a positive effect on workers' well-being. This may indicate a strong relationship between the aspirations of workers with university degrees (or even higher qualifications) and their final realization. Leaving in the south (compared to others leaving in the north of Italy) is found to have a negative effect on job satisfaction, though not always significant. Having a house rent to pay is negatively correlated with workers' satisfaction. The gender coefficient is statistically non-significant, hence the so called *gender paradox* (Clark, 1997), which states that women are more satisfied with their job than men, is not found.

As regards the job characteristics, working in the sectors of production services, distribution services and social services compared to others working in the production of goods has positive effect on job satisfaction. Similarly, individuals who work in the public sector are more satisfied with their job than workers in the private sector. The match between the educational qualifications attained and the main working tasks has a positive effect on workers' well-being. A positive relationship is also found between the lack of career interruptions and job satisfaction. Having a second job, doing a job which is highly risky for the health, doing any unpaid overtime or not overtime at all (compared to those who are paid for the extra-hours) and doing involuntary part-time or having full-time contracts (compared to those who are on voluntary part-time) are negatively correlated with job satisfaction. Finally the effect of working hours seem to be positive.

The Probit Ordinary Least Squares estimations on job satisfaction for the 2006-2010 panel confirm all the hypothesis on the reference income variables except the last one. The comparison income effect is found to be symmetric: poor workers are negatively influenced by the income of the referent others and simultaneously richer workers get more satisfied from knowing their income is above that of the reference group.

However, the advantageous inequality aversion hypothesis finds some support on a cross-section analysis for 2010. To this extent, an Ordered Logit estimation has been carried out. The results (Table 6) of the impact of non-standard contractual arrangements (as well as those of all the control variables included in the regression) confirm the findings of the Probit

Ordinary Least Squares estimations for the 2006-2010 panel. The only difference between the results of the panel analysis with those of the cross-section estimation, regards the two terms "relative income advantage" and "relative income disadvantage". The odd ratio for "relative income advantage" is generally less significant (and negatively correlated with the probability of being satisfied) than the odd ratio for "relative income disadvantage". This result may lead to the conclusion that for 2010 income comparisons are somehow asymmetric and upwards.

Table 6: Determinants of job satisfaction (2010 data), third variant

Ordered Logit models (estimated Odd Ratios), ISFOL-plus 2010								
	5 R.G.	**9 R.G.**	**15 R.G.**	**15 R.G. bis**	**27 R.G.**	**45 R.G.**	**45 R.G. bis**	**135 R.G.**
age	0.872***	0.868***	0.872***	0.872***	0.870***	0.872***	0.872***	0.872***
age^2	1.001***	1.001***	1.001***	1.001***	1.001***	1.001***	1.001***	1.001***
woman	0.998	0.990	0.995	0.996	0.988	0.996	0.996	0.993
sons	1.160***	1.166***	1.163***	1.160***	1.165***	1.162***	1.161***	1.162***
centre	0.983	0.989	0.983	0.984	0.984	0.977	0.975	0.973
south	0.837***	0.838***	0.835***	0.837***	0.835***	0.829***	0.830***	0.827***
middle educ.	1.448***	1.408***	1.372***	1.445***	1.421***	1.377***	1.446***	1.361***
high educ.	1.172***	1.164***	1.149***	1.178***	1.178***	1.150***	1.176***	1.144***
white collar	0.649***	0.698***	0.656***	0.615***	0.675***	0.658***	0.620***	0.630***
blue collar	0.610***	0.653***	0.616***	0.567***	0.626***	0.618***	0.571***	0.594***
production services	1.257***	1.252***	1.251***	1.254***	1.252***	1.252***	1.255***	1.250***
distribution services	1.139**	1.143**	1.138**	1.137**	1.140**	1.139**	1.138**	1.138**
services to people	1.034	1.030	1.031	1.032	1.028	1.032	1.033	1.030
social services	1.368***	1.365***	1.367***	1.369***	1.364***	1.368***	1.369***	1.367***
public sector	1.057	1.061	1.062	1.061	1.060	1.061	1.062	1.063
educational match	1.428***	1.433***	1.428***	1.430***	1.431***	1.428***	1.431***	1.429***
no career interruptions	1.192**	1.199***	1.199***	1.196***	1.196***	1.199***	1.196***	1.199***
second job	0.929	0.924	0.926	0.928	0.922	0.927	0.928	0.925
health risk	0.542***	0.542***	0.542***	0.542***	0.541***	0.542***	0.542***	0.542***
unpaid overtime	0.616***	0.615***	0.613***	0.616***	0.614***	0.613***	0.615***	0.614***
no overtime	0.805***	0.804***	0.803***	0.804***	0.802***	0.803***	0.804***	0.803***
no part-time	0.530***	0.542***	0.535***	0.532***	0.548***	0.534***	0.532***	0.538***
involuntary part-time	0.578***	0.581***	0.576***	0.577***	0.581***	0.575***	0.576***	0.574***
working hours	1.006***	1.006***	1.006***	1.006***	1.006***	1.006***	1.006***	1.006***
atypical	0.697***	0.691***	0.692***	0.696***	0.694***	0.693***	0.696***	0.692***
house rent	0.958	0.954	0.957	0.957	0.955	0.957	0.958	0.957
y/1000	1.006*	1.016*	1.007**	1.005*	1.012**	1.008**	1.006*	1.006*
rel. income disadvant.(%)	0.995***	0.998	0.995***	0.994***	0.997	0.995***	0.995***	0.995***

rel. income advantage (%)	0.999	0.997*	0.999*	0.999	0.998*	0.999*	0.999	0.999
N.	12206	12206	12206	12206	12206	12206	12206	12206

Source: *Author's estimates from ISFOL PLUS 2006-2010 panel data.*
Note (a): *Reference modalities are the following: 2010 for year; north for area; university degree (or higher educational level) for educational attainment; manager for type of job; production of goods for sector; paid overtime for overtime; voluntary part-time for part-time.*
*Significance level: *95%; ** 99%; *** 99.9%.*
Note (b): *Individual own labour income (y) has been divided by 1000. A positive correlation between income and job satisfaction means that an increase in own labour income of 1000 euro has a positive effect on the probability of being satisfied with the job. The two terms "relative income disadvantage" and "relative income advantage" are expressed as percentages, meaning the percentage distance (below and above) from the average income of the reference group. They are respectively defined as:* $\left[\frac{y_{ref}-y}{y_{ref}} * 100\right]$ *and* $\left[\frac{y-y_{ref}}{y_{ref}} * 100\right]$.

5 Conclusions

This paper has analysed the impact of the contractual position and labour income comparisons on workers' well-being using the Italian ISFOL-plus 2006-2010 panel. The results have been controlled for other socio-demographic and job characteristics variables and have been compared using different reference groups definitions.

The empirical results can be summarized as follows. First of all, having a non-standard contractual arrangements has a considerable negative impact on job satisfaction compared to workers with standard employment. This may indicate that in Italy non-standard arrangements are considered as low quality type of contracts associated to a very little probability of phasing in into permanent jobs. Secondly, the labour income of the reference group is as important as the own income for workers' well-being. Thirdly, workers are more satisfied with their job the larger their income is in comparison with the income of the reference group. Finally, both disadvantaged and advantaged workers (in terms of relative income) get happier from having a labour income above the average of the reference group. Hence, according to the panel analysis (based on POLS estimations) the advantageous inequality aversion hypothesis is not confirmed. However, a cross-section analysis on 2010 data (based on an Ordered Logit estimation) has given support to the idea that comparisons may be asymmetric (and upwards) as emphasized by the inequality aversion theory.

The high statistical significance of the reference income variables shows that no workers evaluate their well-being in isolation. As regards the reference group definitions there is a strong evidence that age is an important determinant in the social comparison process in the working context, given that all the reference group definitions for which the reference income variables are significant include age. Income comparisons seem to be prevalent in the

Italian labour market and, *ceteris paribus*, are significantly determined by comparing to other workers in the same age group.

Further empirical evidence on the social comparison process in the working context is necessary since it may contribute to the shaping of labour market policies. Indeed, if increasing workers' well-being becomes a public goal, influencing the social comparison process in the labour market may be seen as a potential policy instrument.

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