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**Perceived Social Position and Income Inequality:
Do They Move Together?
Evidence from Europe and the United States**

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Abstract

The match between perception and reality can depend on many different elements across societies over time, but subjective and objective dimensions are both relevant particularly in social class analysis. The aim of this paper is to investigate perceived social position and income inequality in six different countries between the 1990's and 2000's in order to establish whether these dimensions move together or are independent from each other. Results suggest that people perceive themselves as more similar\dissimilar to other members of society than what income-based aspects show. In particular, considering the whole sample, evidence of an increasing income distance between social groups is found, while no increase concerns inequality in perceptions. Consequently, the dynamics of perceptions can help explain, for example, the empirical evidence regarding the lack of reaction to the rise of economic disparities and the general emulative consumption behaviours associated with increasing inequality detected in some countries.

1. Introduction

In the sociological literature it is widely accepted that the analysis of social classes should take into account multiple dimensions: income and wealth, the relations of production and lifestyle, educational level and profession. Furthermore, a huge number of authors (Hodge and Treiman 1968; Jackman and Jackman 1973; Wright and Singelmann 1982; Savage 2015) emphasise the role of individuals' perceptions of their position in society in their analysis of social classes. These sociologists argue that no study of social class is comprehensive without taking into account a person's sense of self, as it may not coincide completely with objective reality has and may influence individuals' behaviours and choices.

By contrast, the economic literature often ignores many of these factors and opts for analyses based on statistically measurable characteristics, such as income and consumption. Despite the wide acceptance of the sociological conceptualisations of class, economists tend to consider only relative definitions and use the term "class" to refer to specific strata of the income distribution.

In particular, this path has been followed in the empirical approaches which attempt to identify and measure the middle class, since most of the economic literature considers this group strictly on the basis of relative definitions through a specific stratum of the income distribution. This is done without basing such identification on sound theoretical assumptions and on an agreed criterion on how to define the middle class.

The choice between these different approaches depends on the purpose at hand, but what emerges from empirical analysis is that much of the evidence presented in these studies depends on the way groups are defined.

However, the increase or decrease in the dimension of a social group is not only related to the changing weight of its members over total population and total income. Other key elements in the evolution of living standards of different groups across society (Nolan et al. 2015) are real income growth over time, wealth and debts to finance consumption (Atkinson and Brandolini 2013), insecurity and vulnerability in income due to greater risks of unemployment and volatility in earnings (Torche and López-Calva 2013; Krugman 2014; Ricci 2016)

The channels through which these aspects may have effects on individuals choices are complex and it is not the purpose of this paper to go into this issue. The starting point of this study is the consideration that social class can be understood as both a subjective and an objective (at least in economic terms) phenomenon and it is interesting to analyze how these two dimensions evolve, in particular if they move together or are independent from each other. More precisely, we are interested in analyzing whether changes in the degree of inequality within specific groups in terms of objective data are associated with similar changes in the perceptions of the members of the various groups. One possibility is that people do perceive to be similar to/different from other members of the group they belong to while objective data signal an increasing (decreasing) distance among them.

Our empirical analysis refers to the changes that occurred in income distribution and subjective perception of position within society in six different countries: Germany, Italy, Poland, Norway, United Kingdom and United States.

We start analyzing how the income distribution has evolved on the basis of objective reality by exploring income inequalities across the whole population and considering different population subgroups during the period 1994-2010. To this aim we use the key comparative distributional data sources available in the Luxemburg Income Study.

Then we introduce self perceptions, analysing the changes occurred in subjective perceptions of social position.

The reported values of people's perception of where they fit in social hierarchy from the International Social Survey Program (ISSP) are considered to investigate what the main drivers of the inequality observed within this variable across communities are for the years 1992 and 2009. The purpose of the analysis is to evaluate the different impact of covariates on people's judgment of their relative social condition, testing answers' heterogeneity and to what extent the shape of the distribution of people across the scale depends on specific individual features. In this way, letting subjective perceptions of personal position within society interact with the income distribution, it is possible to make some considerations on people's perception of social structure and the possible effects on behaviour and choices.

The paper is organised as follows. In the next section a review of the literature on the determinants of self-perceived social position is provided, in order to point out the huge number of factors that may influence subjective social location. In Section 3, data and methodological choices are briefly presented. Then, empirical results are discussed (Section 4).

Finally, Section 5 draws some conclusions on the relationship between the evolution of subjective perceptions of personal position across societies and income inequality.

2. Perceived social position: a review of the literature

The importance of the perceptions of individuals of their position in society has been emphasised by different studies in particular in social classes' analysis. According to sociologists Hodge and Treiman (1968), Jackman and Jackman (1973), Wright and Singelmann (1982), Savage (2015) a comprehensive analysis of social class has to include the consideration of the person's sense of self, as it affects behaviour and choices. Similarly, Akerlof and Kranton (2000) considered how identity affects economic outcomes and incorporated the psychology and sociology of identity into an economic model of behaviour. Furthermore, Rizzello (2000), following Hayek's intuitions, took the view that knowledge is the fruit of an "endogenous construction" and that perception represents the source of the unpredictability of behaviour, and the cornerstone of economic change.

The match between perception and reality can depend on many different elements across societies over time.

Self perceived social position indicates people's own opinions of their location in society. Many authors investigate what the main drivers are of the declared position in society and the consequences on people's values and attitudes.

From a theoretical point of view, Marx identified the relations of production as the most influential factor of the individuals' perception of the exterior world. So, as pointed out by Evans and Kelley (2004), there is a clear connection between the objective conditions of production in capitalist society and the workers' consciousness of their position across the social scale (e.g. Marx 1844; Marx and Engels 1968, p. 37). Similarly, objective circumstances are relevant into subjective perceptions in the Durkheim's approach to the study of society (1933, p. 187-190, 256-263).

However, Marx and Durkheim had different theories about the possible evolution of objective circumstances over time and, consequentially, of reflection on individuals' self perception.

Some empirical analyses examined the relations between a number of factors, at both a micro and macro level, and people's own opinions of their location in society.

One of the first studies was conducted by Hodge and Treiman (1968) who investigated the impact of different socioeconomic characteristics on the subjective social position declared. Their results suggested that education, main earner's occupation, and family income are very influential on class identification but they also demonstrated that patterns of acquaintance and kinship between various status groups influence the position declared. According to this evidence, the two authors criticised the interest theory of classes in sociology because this latter neglects the great range of between-class contacts and exaggerates the role of economic position in the formation of class consciousness.

Vanneman and Pampel (1977) observed the relationship between occupation and class self-identification. Their study concluded that people perceive themselves as "working class" or "middle class" according to a manual-non manual working dichotomy more than to a continuous prestige scale. This result contributed to reorient the sociological debate between continuous and discontinuous models of the stratification system in favor of the latter.

More recently, Yamaguchi and Wang (2002) considered the interplay between class identification and family/gender, testing the relationship between married women's class identifications and their objective class situations in the United States. What emerges is that class identification depends equally on the spouses' income but only the husband's occupational prestige affects subjective social class. Furthermore, men and women assign a different role to education when they assess the subjectively identified class.

The work of Evans and Kelley (2004) investigated subjective social status using data from surveys collected from representative national samples in 21 countries. The authors found that in all societies there is a pronounced tendency to see oneself as being in the middle, and this tendency holds in rich nations as well as in poor ones. The economic condition of individuals, the wealth of nations, and the national level of unemployment all have substantial effects on subjective status, but their effects are muted by the tendency to see oneself as being in the middle of the hierarchy with important implications for class identity and democracy.

Similarly, Paul Krugman in a recent article claimed that:

> "One of the odd things about the United States has long been the immense range of people who consider themselves to be middle class - and are deluding themselves. Low-paid workers who would be considered poor by international standards, say with incomes below half the median, nonetheless consider themselves lower-middle-class; people with incomes four or five times the median consider themselves, at most, upper-middle-class" (Krugman, 2014).

In order to explain this evidence, Kelley and Evans (1995) developed the "Reference group and Reality (R&R) – blend" hypothesis, according to which individuals develop perceptions and self-images looking at their reference group, fairly homogeneous with respect to themselves. This homogeneity means that most people are encouraged to declare middle categories, overestimating the number of person with the same features (Kelley 1967; Kahneman, Slovic and Tversky 1982).

Lindemann's empirical study (2007) is focused on Estonian society to find out what kinds of assets and resources affect people's opinion of their position in society.

Coherently with some of the studies already mentioned, the analysis shows that, also in Estonia, income is the most important determinant in shaping people's opinion of their social position. More interesting evidence is that in Estonia the significant impact of age on subjective social status is confirmed, but, contrary to what is observable in the Western countries (Yamaguchi and Wang 2002), being younger increases the probability of identifying with the higher positions.

Furthermore, Andersen and Curtis (2012) using cumulative logit mixed models fitted to World Values Survey data from 44 countries explored the impact of economic conditions, both at the individual-level and the national-level, on social class identification. Consistent with previous research, they found a positive relationship between household income and class identification in all countries explored, though this relationship varies substantially. They also found that income inequality has an important polarising effect on class identification and, specifically, the relationship between household income and class identity tends to be strongest in countries with a high level of income inequality.

Another significant analysis was conducted by Lora and Fajardo (2011, 2015) who provided a set of comparisons between objective (based on statistically measurable characteristics such as income and consumption) and subjective definitions of middle-class using data from the 2007 World Gallup Poll. Seven objective income-based definitions of social class were contrasted with a self-perceived social status measure. One of the conclusions is that mismatches between the objective and the subjective classification of social class result from the fact that self-perceived social

status is associated not just with income, but also with personal capabilities, interpersonal relations, financial and material assets, and perceptions of economic insecurity.

3. Data and methodological choices

We consider the evolution of incomes distribution in six different countries (Germany, Italy, Norway, Poland, United Kingdom and United States) using the comparable cross-country data provided by LIS via the *Luxembourg Income Study (LIS)*. European countries are selected in order to give an assessment across a range of welfare and labour market regimes in Europe. In order to analyse income dynamics from the beginning of the nineties to the 2000s, we selected observation of the waves between 1994 and 2010. Using the definition that is standard in the LIS literature (Gornick and Jäntti 2013), we consider the sum of all total monetary and non monetary (goods and services) payments received by the household or its individual members at annual or more frequent intervals, that are available for current consumption and that do not reduce the net worth of the household net of income taxes and social security contributions. Some sources of income that may be important are omitted, including imputed rents, non-cash public transfers (in essence, the value of public services), non-cash private income (such as the value of in- kind employer-provided benefits), and unrealized capital gains.

Not being able to know how income is divided between household members, family income rather than an individual measure is used.

To control for the fact that the same yearly income provides a higher standard of living for a single-person family than it does for individuals belonging to larger families, family income is adjusted by family size using the square root of household size. Disposable incomes have been inflated to within-country 2010 prices using national consumer price indices for all items (IXOB) from OECD and have been converted to international dollars using the PPPs for Actual Individual Consumption (A01) in 2010 from OECD.

Furthermore, following Atkinson and Brandolini (2013), to minimize the impact of outliers all records with zero income are dropped, the bottom cut-off is 1 percent of the mean of equivalent disposable income while top cut-off is 10 times the median of unadjusted disposable income.

To investigate perception, data are drawn from the International Social Survey Programme (ISSP), a continuing annual programme of cross-national collaboration on surveys covering topics important for social science research. The ISSP Social Inequality module deals with different attitudes towards income inequality, views on earnings and incomes, legitimation of inequality, career advancement by means of family background and networks, social cleavages and conflict among groups, and the current and past social position.

For the aims of this research we selected observations from the second and the fourth survey, referred to 1992 and 2009 respectively, from which we can draw a question on the subjective position on the social scale and socioeconomic characteristics of the respondents. Unfortunately, if ISSP also includes questions for income, this variable was not considered in this research given the difficulty to obtain comparable data[1].

Selecting individuals of our six countries (for which the data are comparable across all variables) and excluding the individuals for which at least one variable of the analysis is missing, the observations in our sample are 7,601 for the first period and 6,603 for the second period. Internal weights, supplied by the ISSP to achieve distributions on key variables that are consistent with those found in the populations, are used in analysing the survey data.

The main variable of interest, Subjective Social Position, is the reported answer to the question:

In our society there are groups which tend to be towards the top and groups which tend to be towards the bottom. Below is a scale that runs from bottom to top. Where would you put yourself now on this scale?

In all countries, social strata were labeled consecutively from 1 to 10 with 1 at the bottom and 10 at the top, as a categorical ordered variable.

Our approach to investigate incomes and perceptions and their changes over time is composed of three steps.

The first step observes individual income distributions in different periods observing the Gini indices across the whole population and different subgroups from 1994 to 2010. Then, we carry out the analysis of perception in two different steps, identifying and quantifying the contribution of a set of covariates in levels and over time change of perception inequality. First, we investigate using the Recentered Influence Function (RIF) regressions for two time periods (1992 and 2009) how age, gender, education, status and profession increase or decrease the variance and the Gini index of the

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[1] The ISSP asks for income classes but classes are not equal across countries.

variable "declared position on social scale". Then, we identify and quantify the role of the covariates in shaping the evolution over time of subjective social position inequality, by means of the decomposition method proposed by Fortin, Lemieux and Firpo (2011) which is a generalisation of the Oaxaca-Blinder procedure and can be applied to any distributional parameter other than the mean. The procedures applied are described in the following sections.

3.1 Self perceived social position inequality. The decomposition approach

In this section it is shown how to formally break down changes in the distribution of the variable subjective social position into the contribution of each group of covariates using the recentered influence function (RIF) regression approach introduced by Firpo, Fortin, and Lemieux (2009).

This method is adopted since we aim to extend the analysis from the level of people's self-declared position in society to the inequality observed within this variable for two different years 1992 and 2009.

The procedure is similar to the Oaxaca-Blinder decomposition for the mean of a distribution (Oaxaca 1973; Blinder 1973) but, instead of recurring to a standard regression, the RIF-regressions allow us to perform the same kind of decomposition for any distributional parameter for which an influence function can be computed, including the variance and the Gini index.

Let be Y_{i1} be the declared position of an individual i observed in the period 1, and Y_{i0} the corresponding value in period 0. For each individual i the category declared across the social scale is given by $Y_i = Y_{i1} \cdot T_i + Y_{i0} \cdot (1 - T_i)$, where $T_i = 1$ if individual i is observed in period 1 and $T_i = 0$ otherwise.

In a standard Oaxaca-Blinder decomposition, the overall differences in means over time $\Delta_o^{\mu} = \mu_1 - \mu_2$ is broken down in two different components, the first related to the change in the returns of the set of covariates, defined the coefficient or structure effect Δ_S^{μ} and usually called the "unexplained" effect in Oaxaca decompositions, and the second determined by the different distribution of the covariates, the composition effect Δ_X^{μ}. The detailed decomposition allows to subdivide the contribution of each covariate to these two effects into the respective contributions of each covariate, $\Delta_{S,K}^{\mu}$ and $\Delta_{X,K}^{\mu}$.

Fortin, Lemieux and Firpo (2011) proposed the RIF-regression method that allows us to perform a detailed decomposition for any distributional statistics for which an influence function can be computed. A RIF-regression is similar to a standard regression but the dependent variable Y, is replaced by the (re-centered) influence function of the statistic of interest. The RIF is the sum of the distributional parameter of interest and the influence function $IF(y; v)$. This latter measures the relative effect of a small perturbation in the underlying outcome distribution on the statistic considered, detecting the contribution of each observation to the distributional parameter of interest (Hampel, 1974).

Because the expected value of the RIF(y;v) coincides with the statistic of interest, the law of iterated expectations permits to express the distributional parameter v in terms of the conditional expectations of the RIF on the covariates X:

$$v = E[RIF(Y; v)] = E_X\{E[RIF(Y; v)|X]\} \tag{1}$$

$$E[RIF(Y; v)|X] = X\gamma^v \tag{2}$$

Where the parameter γ^v can be estimated by the OLS regression.

In this way, it is possible to decompose the overall difference over time of v, $\Delta_O^v = v_1 - v_0$ into a coefficient (Δ_S^v) and composition effect (Δ_X^v), $\Delta_O^v = \Delta_S^v + \Delta_X^v$ where:

$$\Delta_S^v = E[X|T = 1]'(\gamma_1^v - \gamma_0^v) \tag{3}$$

$$\Delta_X^v = (E[X|T = 1] - E[X|T = 0])'\gamma_0^v$$

However, a limitation of this decomposition, as discussed in Barsky *et al*. (2002), is that it provides consistent estimate only in the case of a linear specification of the conditional expectation, like it is expressed in equation 2. The solution to this problem has been proposed by Fortin and al. (2011) that suggested to use a (non-parametric) reweighted approach as in DiNardo, Fortin and Lemieux (1996) to decompose the different effects. Indeed, by reweighting it is possible to construct a counterfactual distribution $F_{Y_A^C}(\cdot)$ that replaces the marginal distribution of X for group A with the marginal distribution of X for group B using a reweighting factor $\Psi(X) = \frac{\Pr(T=1|X)/\Pr(T=1)}{\Pr(T=0|X)/\Pr(T=0)}$.

In the case of two different periods, we may be interested to what would be the distribution of the variable investigated at time 0 if individuals had the same X's as time 1: applying this procedure we can obtain a distribution of X's in the

first period equal to the distribution in the second period, so that observations that were relatively more likely in the first year than in the last are weighted up and observations that are relatively less likely are weighted down.

Than it is possible to estimate the counterfactual mean $\bar{X}_{01}$ and the counterfactual coefficients $\hat{\gamma}_{01}^{\nu}$ from the regression of the RIF (y;v) on the reweighted sample. Consequently, the difference $\hat{\gamma}_1^{\nu} - \hat{\gamma}_{01}^{\nu}$ reflects a true change in the relationship that links the covariates to the outcome.

In practice, they are estimated by constructing a third sample, which in this case will be the sample of individuals at time 1 with the weights of individuals at time 0, sample 01.

The detailed reweighted decomposition is thus obtained by running two Oaxaca-Blinder decompositions (Fortin *et al.*, 2011):

1) a decomposition with sample 0 and sample 01 to get the pure composition effect,

2) a decomposition with sample 1 and sample 01 to get the pure coefficient effect.

So, the first effect can be divided into a pure composition effect ($\Delta_{X,p}^{\nu}$) and a component measuring the specification error ($\Delta_{X,e}^{\nu}$):

$$\Delta_{X,R}^{\nu} = (\bar{X}_{01} - \bar{X}_0)\hat{\gamma}_0^{\nu} + \bar{X}_{01}(\hat{\gamma}_{01}^{\nu} - \hat{\gamma}_0^{\nu}) \tag{4}$$

$$\Delta_{X,R}^{\nu} = \Delta_{X,p}^{\nu} + \Delta_{X,e}^{\nu}$$

While the second effect can be expressed as:

$$\Delta_{S,R}^{\nu} = \bar{X}_1(\hat{\gamma}_1^{\nu} - \hat{\gamma}_{01}^{\nu}) + (\bar{X}_1 - \bar{X}_{01})\hat{\gamma}_{01}^{\nu} \tag{5}$$

$$\Delta_{S,R}^{\nu} = \Delta_{S,p}^{\nu} + \Delta_{S,e}^{\nu}$$

So, the overall change is given by:

$$\Delta_O^{\nu} = \Delta_{X,p}^{\nu} + \Delta_{S,p}^{\nu} \tag{6}$$

In the final stage, the two components are further divided into the contribution of each explanatory variable using novel recentered influence function (RIF) regressions. These regressions estimate directly the impact of the explanatory variables on the distributional statistic of interest.

4. Empirical results

4.1 Disposable income inequality

The first step forward to assess the evolution of objective conditions is to detect incomes inequality in our six countries in the years from 1994 to 2010 calculating the Gini indices on disposable household incomes whose values are reported in table 1.

What emerges is that, on the one hand, different values of these indices are observable across countries reflecting different shapes of the income distributions that can be imputed to quite different social regulations and provisions and different approaches towards social policy. In every wave, United States and United Kingdom show the highest values of the indices, followed by Italy, Poland. Germany and Norway.

On the other hand, a general tendency towards an increasing inequality is observable during the period from 1994 to 2012 for Germany, Norway, Poland and United States while Italy and United Kingdom show a modest decline of the values of the indices.

Table 1. Gini index for disposable household incomes

	1994/95	1999/2000	2004	2007/08	2010
Germany	0.284	0.279	0.289	0.301	0.299
Italy	0.339	0.341	0.341	0.326	0.327
Norway	0.262	0.269	0.273	0.271	0.271
Poland	0.310	0.285	0.312	0.311	0.315
United Kingdom	0.348	0.357	0.355	0.346	0.342

	United States		0.371	0.369	0.380	0.380	0.384

Notes: own calculation on weighted household income data from LIS

To look more in depth how incomes have evolved during the period considered and to account for individual characteristics, we provide a focus on the first and the last year of the waves considering the whole population of the sample and attributing to each person the equivalent income of the household to which he or she belongs. Table 2 reports Gini indices calculated across different population subgroups. Groups are identified according to sex, the education attainment, age, marital status, occupational status and type of profession. Due to data limitation some information are missing.

Mean and median incomes are reported in the last two rows of the table.

Table 2. Gini index by population subgroups

	1994/95						2010					
	DE	IT	NO	PL	UK	USA	DE	IT	NO	PL	UK	USA
Male	0.264	0.34	0.231	0.322	0.343	0.355	0.283	0.329	0.242	0.313	0.337	0.366
Female	0.278	0.339	0.244	0.313	0.343	0.364	0.287	0.332	0.245	0.307	0.333	0.372
Education												
Low educated	0.256	0.311	0.238	0.307	n.a	0.356	0.273	0.308	0.23	0.294	0.269	0.374
Middle educated	0.258	0.322	0.227	0.292	n.a	0.322	0.266	0.301	0.231	0.277	0.312	0.338
High educated	0.275	0.302	0.236	0.278	n.a	0.322	0.282	0.308	0.242	0.289	0.345	0.335
Age												
Age 16-24	0.265	0.337	0.231	0.327	0.343	0.36	0.278	0.337	0.251	0.313	0.335	0.368
Age25-34	0.253	0.35	0.232	0.324	0.343	0.337	0.276	0.325	0.256	0.313	0.324	0.345
Age 35-44	0.263	0.325	0.209	0.324	0.334	0.339	0.269	0.331	0.218	0.32	0.336	0.349
Age 45-54	0.274	0.336	0.212	0.322	0.331	0.338	0.273	0.325	0.229	0.315	0.336	0.361
Age 55-64	0.273	0.344	0.233	0.287	0.32	0.374	0.304	0.333	0.231	0.305	0.352	0.377
Age over 65	0.254	0.317	0.23	0.277	0.293	0.366	0.283	0.302	0.214	0.259	0.277	0.376
Marital status												
Married	0.257	0.338	0.221	0.311	0.331	0.338	0.274	0.327	0.219	0.303	0.33	0.344
Single	0.264	0.34	0.257	0.316	0.332	0.365	0.303	0.338	0.251	0.31	0.343	0.371
No longer married	0.309	0.321	0.259	0.29	0.312	0.376	0.288	0.307	0.246	0.29	0.314	0.387
Employment status												
Employed	0.243	0.317	0.198	0.329	0.305	0.284	0.27	0.303	0.206	0.306	0.306	0.311
Unemployed	0.279	0.384	0.318	0.284	0.25	0.325	0.306	0.386	0.286	0.303	0.345	0.313
Not in labour force				0.294	0.358	0.417	0.272				0.497	0.422
Retired, pensioner or rentie	0.258	0.309	0.222	0.265	0.283	0.361	0.271	0.293	0.192	0.255	0.281	0.373
Profession												
Profession low skill	0.222	n.a	n.a	n.a	n.a	0.317	0.245	0.268	n.a	0.261	0.252	0.32
Profession med. skill	0.232	n.a	n.a	n.a	n.a	0.302	0.244	0.228	n.a	0.286	0.276	0.308
Profession high skill	0.25	n.a	n.a	n.a	n.a	0.302	0.274	0.252	n.a	0.281	0.313	0.312
Observations	**17,812**	**23,924**	**26,305**	**103,530**	**16,586**	**149,642**	**26,941**	**19,836**	**489,750**	**107,967**	**57,928**	**204,983**
Mean household income	21,168	19,211	22,777	13,120	21,274	32,186	27,371	22,100	31,888	14,341	27,024	35,882
Median household income	18,609	16,295	21,410	11,395	17,460	26,697	23,906	18,953	29,806	12,115	22,125	29,340

Notes: own calculation on weighted household income data from LIS

What emerges is that the Gini coefficients significantly increased for most subgroups in every country, with the exception of Italy and Poland, which suggests a rising inequality within different groups.

It is important to notice that a significant increase in inequality (more than 4% within each group) between 1994/95 and 2010 is observable in particular in two cases. First, in Germany when groups are formed according to their professionals skill levels Second, in the United States when groups are formed on the basis of their education attainments. This means that educational attainment and professional skill levels represent factors that are less likely to create homogenous groups in terms of incomes.

Finally, numbers reveal that incomes distributions are significantly different in terms of median and average income across countries. However, some common evidences can be detected coherently with what emerged from the synthetic measures of inequality. In particular, average and median incomes significantly increase both in European countries and the USA but a further investigation (not reported here for short) reveals that rising income gaps can be detected between groups especially in the United Kingdom and the United States.

4.2 Self perceived social position inequality: descriptive findings

The analysis of how people tend to locate themselves across a social scale reveals that, coherently with some of the previously overviewed literature, most people tend to locate themselves in the middle categories and the highest share of people answers category 5 or 6 in every country (figure 1). On average, after a time span of 17 years, the subjective social position declared has slightly increased, passing from a mean of 5.10 observed in 1992 to a mean of 5.30 in 2009. Some differences emerge across countries: for example it is interesting to consider how in 1992 in Poland a significant percentage of people answer the low values of the scale and how the judgment of personal social condition has evolved in this country after less than 20 years. In Italy, individual perception of their position across society has deteriorated significantly since an increasing number of people in 2009 declared to be located at the bottom of the social scale. Furthermore, in the United States more than 45% of the population believe to be located after the middle of the social scale declaring the same value 6.

All these evidences can be resumed looking at two different measures of dispersion, the variance and the Gini index, which values are reported in table 3 for 1992 and 2009.

The variance and the Gini index of the variable "declared position" are calculated across countries and the whole population to explore the inequalities between people's perception that is an ordinal variable. Both these distributional parameters decreased in the period considered in every country (table 3): on average the variance diminished by around 15%, from 3.19 to 2.71, while the Gini index reduced from 0.18 to 0.162 (with a reduction of 10%). In particular, also countries where income polarization increases during nearly the same period like Germany, Norway, Poland and the USA show a significant decrease of the variance and the Gini index for the answers on social position perceived. In Italy, the variance and the Gini calculated on this variable increase in 2009 despite the decrease of income polarization previously observed.

Figure 1. Distribution of self perceived social position by year and country
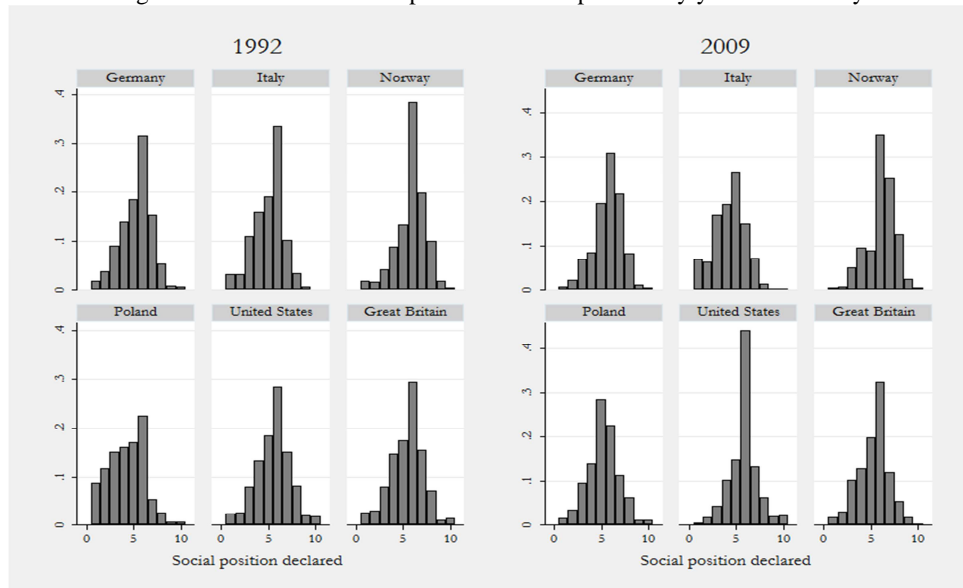
Table 3. Gini and variance by year and country

	Gini 1992	Gini 2009	Variance 1992	Variance 2009
Germany	0.168	0.144	2.65	2.3
Italy	0.172	0.213	2.54	2.79
Norway	0.138	0.129	2.36	2.15
Poland	0.25	0.175	3.69	2.8
United Kingdom	0.178	0.169	3.08	2.7
United States	0.179	0.135	3.22	2.27
Population	**0.188**	**0.162**	**3.19**	**2.71**

Furthermore, we can observe that answers' dispersion is the highest in Poland both in 1992 and 2009 followed by USA, UK, Germany and Italy in 1992 and Italy, UK, Germany and USA in 2009. Norway shows the lowest dispersion in both years.

Table 4 reports the distribution of the selected covariates across our sample in the two periods and the mean of subjective social position declared within each category.

Table 4. Composition of the sample and mean of subjective social position declared

	Composition 1992	Mean of subjective social position declared 1992	Composition 2009	Mean of subjective social position declared 2009
Female	0.520	5.179	0.514	5.482
Education				
Low educated	0.372	4.787	0.158	4.675
Middle educated	0.438	5.273	0.471	5.392
High educated	0.188	6.086	0.371	6.106
Age				
Age 16-24	0.076	5.304	0.071	5.506
Age25-34	0.229	5.384	0.158	5.524
Age 35-44	0.225	5.294	0.199	5.654
Age 45-54	0.170	5.285	0.203	5.608
Age 55-64	0.139	5.048	0.182	5.588
Age over 65	0.133	5.015	0.173	5.343
Marital status				
Married	0.676	5.281	0.570	5.685
Single	0.255	5.207	0.319	5.395
No longer married	0.069	5.040	0.110	5.250
Employment status				
Full time worker	0.523	5.414	0.524	5.829
Part time worker	0.087	5.361	0.108	5.419
Unemployed	0.055	4.594	0.046	4.695
Student	0.027	5.849	0.024	5.705
Retired	0.202	4.869	0.208	5.253
Housewife,-man	0.083	5.313	0.054	5.347
Disable	0.005	4.668	0.015	4.309

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Other inactive	0.018	4.993	0.020	5.031
Profession				
Profession low skill	0.099	4.703	0.088	4.903
Profession medium skill	0.739	5.140	0.640	5.365
Profession high skill	0.163	6.055	0.272	6.172
Observations	**7601**		**6603**	

Source: own calculation on weighted data from ISSP.

As can be easily predicted and coherently with what emerged from other empirical analysis, on average the highest values are declared by high skill professionals and high educated while the lowest values by unemployed, disables and low educated. In general, comparing the two years, a small increase of the mean values can be detected for all the groups of people considered.

Considering the differences in observable covariates across groups in the two different years, it is possible to observe that: i) the percentage of postsecondary educated has grown to 37% in 2009 compared to the 18.8% of 1992 increasing the average level of education; ii) the proportion of the total population in different age groups has significantly changed, since the percentage of people over 45 increased and the proportion of youth has fallen; iii) the shares of the widowed, the separated, the divorced (included in the variable "no longer married") and of those single increased, while the percentage of married fell from 67.6% to 57%; iv) regarding the employment status, there is a lower percentage of unemployed that passed from 5.5% in the year 1992 to 4.6% in 2009.

4.3 Determinants of self perceived social position inequality

The distribution of people among the hierarchical scale depends on some individual features: society can be conceived as an amalgamation of groups, where certain individuals are similar and others differ relative to some given set of attributes or observable characteristics which have an influence on self perceived social position. This part of the paper explores which the main drivers are of the inequalities of people's perceptions of their position in society comparing 1992 and 2009.

As we can observe from our data considering the variance for the two periods across some groups (figures are reported in the Appendix), there is an increasing homogeneity of people's answers according to age, educational levels, employment status and profession. In particular, the variance of self perceived social position by age classes is significantly lower in 2009 than in 1992: for the age class between 55 and 64 years old the variance passed from 3.46 to 2.63. Similarly, the categories of self perceived social position declared by the employed in 2009 are closer to the mean, since the variance decreased by 27%, from 3.88 to 2.82.

Table 5 reports the results of the RIF regressions for both period considered, for the Gini index and the variance. The covariates included in the regressions reflect the different individual characteristics that have been suggested by the literature previously reported. The key set of variables on which we focus are gender, age (six groups), education (three education groups), marital status (three groups), occupational status (six categories) and three hierarchical categories of profession (carried out in the present or in the past) constructed by the International Standard Classification of Occupation code, ISCO-88. Note that the base group used in the RIF-regression models consists of male, aged over 65, highly educated, married, in full time employment and profession highly skilled.

Table 5. RIF Regressions for the two periods, for Gini index and variance

| | Gini | | | | | | Variance | | | | | |
| | 1992 | | | 2009 | | | 1992 | | | 2009 | | |
	coeff	t		coeff	t		coeff	t		coeff	T	
Female	0.003	0.66		0.003	0.93		0	-0.11		0.003	0.89	
Age 16-24	0.012	1.14		0.008	0.74		0	0		-0.006	-0.67	
Age25-34	0.021	2.49	**	0.013	1.47		0.009	1.11		-0.007	-0.92	
Age 35-44	0.028	3.25	***	0.017	2.08	**	0.014	1.72	*	-0.001	-0.16	
Age 45-54	0.021	2.37	**	0.014	1.67	*	0.011	1.35		-0.002	-0.33	
Age 55-64	0.015	1.92	*	0.003	0.42		0.008	1.07		-0.008	-1.18	
Low educated	0.046	7.05	***	0.077	12.42	***	0.012	1.93	*	0.042	7.53	***
Middle educated	0.018	3.08	***	0.017	4	***	-0.006	-1.02		0.003	0.71	
Single	0.02	3.98	***	0.019	4.35	***	0.02	4.11	***	0.013	3.32	***
No longer married	0.033	4.19	***	0.038	6.28	***	0.026	3.52	***	0.029	5.35	***
Part time worker	-0.011	-1.45		0.014	2.33	**	-0.01	-1.37		0.006	1.14	
Unemployed	0.062	7.01	***	0.071	7.93	***	0.044	5.3	***	0.044	5.52	***
Student	0.004	0.28		0.017	1.39		0.018	1.48		0.016	1.42	
Retired	0.049	6.62	***	0.028	3.69	***	0.037	5.22	***	0.008	1.26	
Housewife,-man	0.004	0.45		0.005	0.6		0.009	1.24		-0.003	-0.4	
Disable	0.082	3.06	***	0.116	7.76	***	0.07	2.76	***	0.075	5.59	***
Other inactive	0.017	1.12		0.019	1.41		0.007	0.49		0.002	0.15	
Profession low skill	0.05	5.87	***	0.016	2.08	**	0.021	2.59	***	-0.002	-0.32	
Profession medium skill	0.01	1.62		0.004	0.95		-0.012	-2.17	**	-0.008	-2.08	**
Constant	0.111	11.48	***	0.103	12.43	***	0.095	10.46	***	0.075	10.14	***
Obs.	7,601			6,603			7,601			6,603		
R2	0.044			0.066			0.02			0.03		

Notes: * stands for statistically different from zero at 10%, **at 5%, *** at 1%.
Source: own calculation on weighted data from ISSP.

What emerges looking at the values and the relevance of the coefficients is that the main determinants of self perceived social position inequality are connected with occupational status, disability and educational level.

Considering the Gini coefficient, the effect of low education increased with time since the association between this covariate, which increases the dispersion of the variance, and our measure of inequality is higher in 2009 than in 1992.

Looking at the occupational status, it is well worth noting that having a part-time job is related to a lower values of the indices in 1992 but an inverse relationship is observable in the second year. Unemployment has a positive and significant impact that becomes more evident in 2009: the mean values of the declared categories by unemployed are very low (4.59 in 1992 and 4.69 in 2009) but the results of the regressions show a great dispersion from these scores and a strong influence on the total variance registered. Similarly, the disability status significantly increases the subjective social position inequality, while the effects of being a student, housewife and other inactive are never significant. Furthermore, the effect of being retired is positive and decreases over time. Being single and no longer married (widowed, separated or divorced) has a significant and positive effect regardless the period considered. Finally, the estimated RIF-coefficients associated with professional skills are not always statistically different from zero and their impact decreases over time.

Looking at the results considering the variance the majority of the evidences emerged from the analysis of the Gini index are confirmed since the coefficient that are significant in both analysis have always the same sign and similar magnitude, given the different scale between the two inequality indices. The differences between the two models regard the statistical significance of some coefficients. In some of these cases, where just one of the two coefficients is statistically different from zero, opposite signs of the value are observable.

4.4 Decomposition results

The observed changes in the distribution of the subjective social position inequality over the last 17 years are decomposed in a composition effect due to differences in observable covariates across population, and a structure effect due to differences in the relationship that links the covariates to the outcome.
The results of decomposition analysis of the Gini index and the variance are presented in table 6.

Table 6. Subjective social position inequality changes: FFL decomposition results, composition and coefficient effect for Gini index and variance

Inequality measure	Gini			Variance		
Unadjusted change	-0.025	(0.0027)	***	-0.0278	(0.002)	***
Composition effect attributable to						
Gender	0.000	(0.000)		0.0000	(0.0000)	
Age	-0.001	(0.001)	*	-0.0003	(0.0005)	
Education	-0.009	(0.001)	***	-0.0027	(0.0012)	**
Occupational status	0.003	(0.001)	***	0.0024	(0.0007)	***
Profession	-0.002	(0.001)	**	0.0010	(0.0006)	
Total explained	-0.009	(0.002)	***	0.0003	(0.0014)	
Coefficient effect attibutable to						
Gender	0.006	(0.003)	**	0.0108	(0.0027)	***
Age	-0.007	(0.008)		-0.0088	(0.0075)	
Education	-0.001	(0.004)		0.0019	(0.0036)	
Occupational status	-0.005	(0.004)		-0.0144	(0.0037)	***
Profession	-0.006	(0.005)		-0.0035	(0.0045)	
Constant	-0.003	(0.011)		-0.0143	(0.0106)	
Total unexplained	-0.016	(0.003)	***	-0.0284	(0.0025)	***

Notes: * stands for statistically different from zero at 10%, **at 5%, *** at 1%.
Standard errors are in parentheses.
Source: own calculation on weighted data from ISSP.

To simplify the presentation of the results, the table reports the composition effect for five sets of explanatory factors: gender, age, education, occupational status and profession. Both composition effect and coefficient effect have contributed to the change in the distribution of the categories declared by people concerning their location across a social scale between 1992 and 2009, but with a different strength.
Considering the impact on the change of the Gini index, the composition effect negatively influences the variation of the inequality, while the coefficient effect has a much stronger and negative impact.
This means that if the distribution of the covariates across population had remained constant over time, the Gini would have decreased anyway.
Looking at the composition effect, the decreased percentage of people with a low education in 2009 (from 37.2% in 1992 to 15.8% in 2009) significantly reduced the total variation of the Gini. On the contrary, the composition effect is positive in the case of occupational status, but the effect is low.
Interesting evidences emerge from the analysis of the coefficient effect: as previously noticed the total impact is negative and the results indicate that -0.016 of the -0.025 decline in the Gini variation due to this effect remains unexplained since it is given by the effect of the "constant" in table 5. As defined in Fortin, Lemieux and Firpo (2011), in fact, the change in intercepts represents the change in the distribution for the base group used in the RIF-regression analysis. Then that component of the decomposition can be interpreted as the residual (or within-group) change for the base group. Also the effects of age, profession and occupational status contribute in the same direction to reduce within-group inequality but coefficient are smaller and not significant in the case of this index. On the contrary, gender have a positive impact in the change of the Gini index over this period (0.006).

Looking at the FFL decomposition results for the variance[2], the composition effect is positive but very little and not significant overall. The sings of the coefficient effects are confirmed and the occupational status variables have in this case a significant effect.

5. Conclusion

The literature suggests that social class analysis should consider objective and subjective factors since different elements determine people's aspirations and behaviours. Nonetheless, in the last few years, the economic approach to social class analysis has been mainly based on statistically measurable characteristics of individuals, such as income and consumption, while it should also consider other key elements in the evolution of living standards, such as wealth and debts, earnings' insecurity and vulnerability, and subjective dimensions such as individuals' perception of their social position.

The aim of this paper was to analyse whether changes in the degree of inequality within specific groups in terms of objective data are associated with similar changes in the perceptions of the members of the various groups. More precisely, the focus was on inequality in people's self-declared position in society and its comparison with evidence in terms of income distributions.

The different steps of this research have outlined an interesting pattern.

On the one hand, during the time period considered, an increasing distance between income groups is observable. On the other hand, subjective social position inequality has fallen between 1992 and 2009. Looking at decomposition results evidence is found that this decline does not only depend on the changes of the distribution of the covariates across population. Indeed, a significant decrease of subjective social position inequality between groups and within groups with different characteristics can be imputed to changes in the relationship between the covariates to the outcome.

Looking at the whole picture this means that individual characteristics such as family disposable income, age, education, employment status and occupation play a weaker role in explaining the heterogeneity of people's answers on their location across society. The case of the United States is emblematic: it is a high-inequality country with relatively low values of subjective social position inequality.

These results can be explained in different ways.

First, individuals can have false perceptions of their incomes and their economic advantage or disadvantage compared to others.

Second, the perceived distances between members of society can depend on different undetectable factors (objective or subjective) that influence the sense of identity or alienation observable within a community and it can be distributed very differently from income.

This latter explanation, when evidence of an increasing income distance between social groups is found, while no increase concerns inequality in perceptions, is coherent with the "reference-groups hypothesis" according to which there is an increasing tendency for people to perceive themselves as being in the middle. Authors such as Frank (2007), Layard (2005), and Graham (2007) connected this attitude to the increasing role played by the relative social context in shaping people's aspirations and their consciousness of quality of life.

Thus, results are consistent with what Evans and Kelley (2004) pointed out: reference group forces "mitigate rather than obliterate the subjective impact of social inequalities" (Evans and Kelley, 2004, p. 29). On the contrary, an opposite evidence was provided for the case of Italy. In this country, an empirical evidence of stability in the income inequality is accompanied by the worsening of confidence and expectations experienced by Italian households that shows how results can also be affected by individual trajectory in terms of social mobility as pointed out in other studies (Boeri and Brandolini 2004, Ricci 2016).

Indeed, according to this evidence there are some potential effects.

In particular, these findings may describe a society within which trust and expectations about one's personal situation and those about the country situation do not differ across the different income classes, leading to general emulative behaviours despite increasing inequality (Golinelli and Parigi, 2004; Levine, Frank and Dijk, 2010). For instance, such reasoning could explain the observed decline in aggregate saving rates in the USA.

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[2] The unadjusted change is -0.0278 and not -0.48 because the means in both distribution are imposed to be equal to 1 to avoid problems connected with the dependency of the variance on the mean.

Moreover, these dynamics of perceptions may also explain the lack of reaction to the rise of economic disparities which many authors are actually debating.

Consequently, the consideration of this variable can help understand different economic phenomena.

In addition, the insights derived from the integrated approach followed in this paper point out that economic analysis should take into account various dimensions. Hence, future research in this direction should be encouraged.

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Appendix

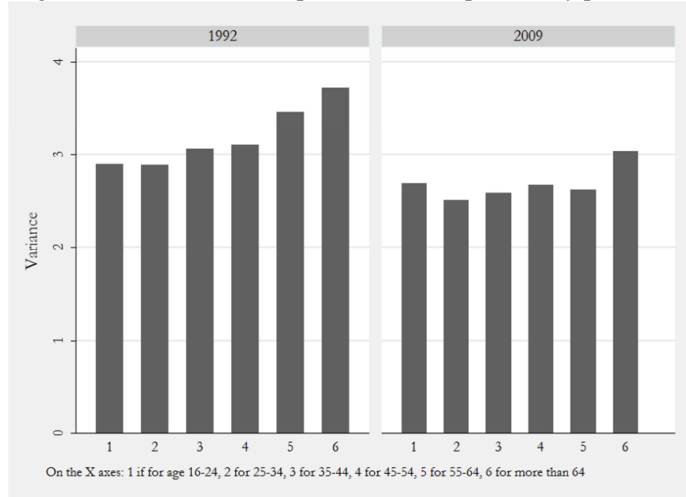Figure A1. Variance of self perceived social position by profession

On the X axes: 1 if for age 16-24, 2 for 25-34, 3 for 35-44, 4 for 45-54, 5 for 55-64, 6 for more than 64

Figure A2. Variance of self perceived social position by educational level

On the X axes: 1 is for low education, 2 for medium, 3 for high
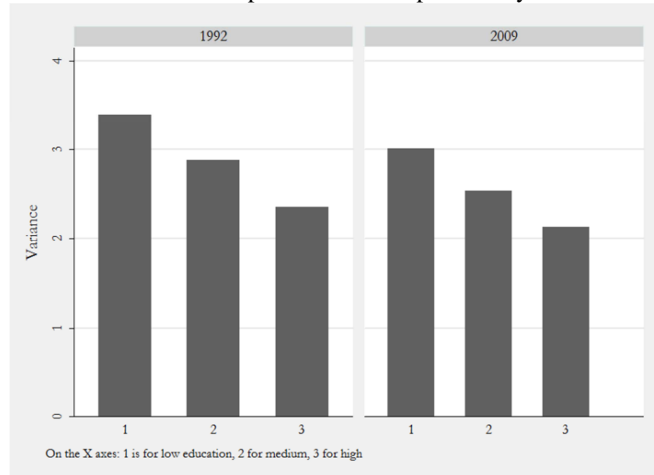
Figure A3. Variance of self perceived social position by occupational status

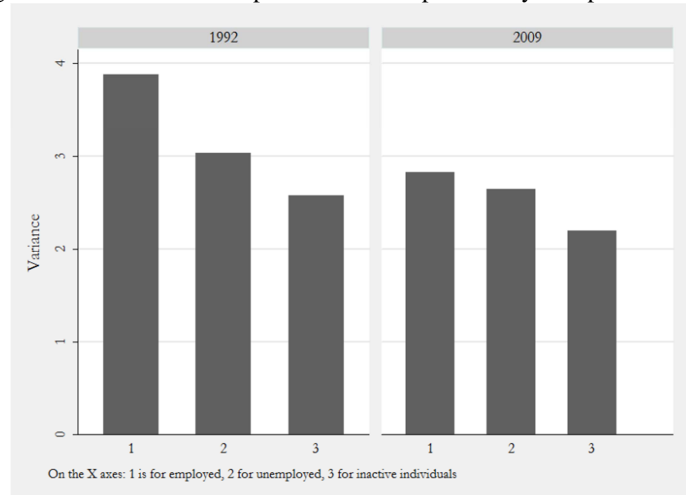On the X axes: 1 is for employed, 2 for unemployed, 3 for inactive individuals

Figure A4. Variance of self perceived social position by profession

On the X axes: 1 is for low skill profession, 2 for medium, 3 for high