DOES SELF-PERCEPTIONS AND INCOME INEQUALITY MATCH?

The case of subjective social status

July 12, 2016

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ABSTRACT

This paper uses subjective social status to test whether individual comparisons are driven by income and wealth, or other dimensions of inequality including education and prestige. Using a cross-sectional data set of 18 European countries and a mixed model with an MCMC estimation method, this work reveals that material factors are just as important as non-material factors. Besides income and wealth, social and cultural capital are important factors to explain the gap between income inequality and the perception of inequality. The most relevant institutions to explain the cross-country differences within Europe are the GDP level, average health and the education system, which also moderates the relevance of wealth on subjective social status.

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This paper uses subjective social status to test whether individual comparisons are driven by income and wealth, or other dimensions of inequality including education and prestige. Using a cross-sectional data set of 18 European countries and a mixed model with an MCMC estimation method, this work reveals that material factors are just as important as non-material factors. Besides income and wealth, social and cultural capital are important factors to explain the gap between income inequality and the perception of inequality. The most relevant institutions to explain the cross-country differences within Europe are the GDP level, average health and the education system, which also moderates the relevance of wealth on subjective social status.

Keywords: Inequality, Perception, Social Status, Bourdieu, Education
JEL classification: D31, C21, I24, Z13

1 Introduction

The assumption of relative concerns influencing economic behavior has a long history and goes back to Veblen (1899) and Duesenberry (1949). With rising inequality, relative consumption decisions can result in endogenous macroeconomic risks. Income inequality can lead to overindebtedness when households compare themselves to households of higher income and wealth in order to match their consumption patterns while they lack the resources to cover their expenses (Rajan, 2010; Fitoussi and Saraceno, 2010). However, the comparison mechanism behind relative consumption is a complex social process. Relative consumption can be driven by comparisons of income and wealth but also by non-monetary factors or institutions, which define the scope of the comparison and the size of the consumption copying mechanism (Frank, 2014). Therefore, it is arbitrary to look only at the material distribution when discussing the behavioral consequences of inequality. A more comprehensive approach would be able to address, how individuals compare themselves with others in a socioeconomic context and which monetary and non-monetary factors shape their perception of inequality and social status.

Whether income and wealth or other socioeconomic dimensions contribute to the perception of inequality is a highly relevant question. If for example, relative consumption would be driven not only by material inequality, the effect of tax based redistribution measures to lower inequality could be limited whereas allocating resources to reduce other dimensions of inequality might proof more efficient.

In sociology, the focus on the non-monetary aspects of inequality has a long tradition. Based on sociological theories about social status and class (Bourdieu, 1979; Goldthorpe, 2010) this paper identifies the relative impact of monetary, non-monetary and institutional factors on subjective social status. A comprehensive measure of inequality is characterized by distribution of different dimensions of inequality as perceived by individuals and their relevance for the overall assessment of inequality. This paper uses subjective social status as the proxy for the extent of inequality.[1] In addition to previous empirical work that explains subjective social status (e.g. Kelley and Evans, 1995), monetary factors are included to test their relevance compared to non-material factors. To determine which dimensions matter for subjective social status, I exploit data from the International Social Survey Program (ISSP, 2012), a cross-sectional household survey of 17 European countries. I test to what extent subjective social status can be explained by household income and wealth or other non-monetary attributes including education, occupational prestige, unemployment and family background. Thereby, the present paper also contributes to the theoretical and empirical debate as to whether income and wealth are sufficient measures of perceived inequality. Moreover, I investigate the role of country-specific institutional settings via a mixed-effects model. The institutions used to explain the

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[1]In social science subjective social status is also known as self-rated social position, self-perceived social status or self-placement in society (Eurobarometer).

cross-country variation of social status include recent economic development, the educational system, government expenditures in different sectors and the overall income distribution.

The empirical results show that income and wealth play an important role as they can explain a significant part of status perceptions. Besides material factors, the prestige of occupation, education and the current employment status are also important. In addition, the subjective social status is highly correlated with the parental background, but it is not clear whether this effect is attributed to wealth or social capital transmitted by the family. Differences in average subjective social status between countries are mainly driven by the country GDP per capita level. This indicates that within Europe reference groups of individuals span across borders leading to a lower subjective social status when economic performance is relatively lower than in other European countries and context and vice versa. In addition, the paper reveals an interaction effect between income and the education system. The positive interaction between educational immobility and wealth shows how an education system that cannot provide equal opportunities can amplify existing monetary inequalities.

The paper is organized as follows: the next section will introduce economic and sociological theories to emphasize the relevance of relational concerns for economic decision making and to motivate the analysis of subjective social status. Section three then moves on to present the data set, descriptive statistics and discusses the estimation results on the individual level. Section four goes on to assess the relevant institution in a cross-country context. Finally, the paper concludes with a short summary and political implications for the inequality debate.

2 Theory

According to Veblen (1899) and Duesenberry (1948), humans emulate consumption patterns of others in order to increase their social status and their well-being. Therefore, relative concerns of individuals are important for their economic decisions. Although this paper will not try to explain consumption patterns, I will review this literature briefly to motivate the following analysis of subjective social status.

The motivation of individuals to compare themselves to members of those classes to which they want to belong, is to gain reputation and to show pecuniary strength. In order to outdo others of the same class, individuals compare themselves with "higher" classes and imitate their consumption patterns. The means by which individuals compare themselves to others are based on the concept of class, according to Veblen. But the definition of class remains vague.[2] Wealth and indirectly income might play a significant role, but the elements defining the social

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[2]As Veblen writes: "[...] our standard of decency in expenditure, as in other ends of emulation, is set by the usage of those next above us in reputability; until, in this way, especially in any community where class distinctions are somewhat vague, all canons of reputability and decency, and all standards of consumption, are traced back by insensible gradations to the usages and habits of thought of the highest social and pecuniary class — the wealthy leisure class." (Veblen, 1899, 72).

strata for conspicuous consumption in terms of class, comprise more than monetary criteria (Veblen, 1899, 63 & 76).

About 50 years later, Duesenberry picks up the idea of relative consumption theory with a slightly different focus: the increase in standard of living through consumption is an incentive in order to match the consumption of households with a comparable social status (Duesenberry, 1949, 32). According to Duesenberry the main criteria for social status are occupational success as well as family connections and the achievement of behavioral standards. However, Duesenberry thinks of a more mobile society with less stratification, were consumption and ranking norms can easily spread across the society to fuel the incentive to increase the social status by the emulation of consumption habits. Therefore, he concludes that "income is one of the principal status criteria" (Duesenberry, 1949, 29f.).

The idea of individuals including relative concerns in their economic decision process is closely connected to the idea of framing as described in prospect theory (Kahneman and Tversky, 1979). According to prospect theory, individuals do not measure utility in absolute terms but in gains and losses. To measure utility, it is essential define a reference point for the value function (Kahneman and Tversky, 1979, 286).

Despite the contradicting theoretical approaches of Veblen and Duesenberry, both have led to various theoretical and empirical applications (for surveys see Frank, 2005 and van Treeck, 2013). The majority of works have adopted Duesenberry's focus on monetary indicators while ignoring the reference to a broader socioeconomic focus of Veblen. Empirical works based on household surveys find a positive correlation between consumption or savings decisions and the behavior of households with higher income (Alvarez-Cuadrado and El-Attar Vilalta, 2012; Bertrand and Morse, 2013). Drechsel-Grau and Schmid (2014) confirm the same relationship by using the consumption distribution to define the reference household, but find no group-specific relative consumption patterns with respect to education or religion. The existing analytical works use income exclusively as the criterion for stratification, for example in a DSGE (Kumhof and Rancière, 2010), Stock-Flow-Consistent (Kinsella et al., 2011; Kapeller and Schütz, 2012) and Agent Based Model framework (König and Größl, 2014; Carvalho and Guilmi, 2014). The SFC Model of Belabed et al. (2013) and the DSGE model of Grüning et al. (2015) use heterogeneous relative consumption elasticities based on country-specific institutions, but the stratification is still defined only by income.

Ignoring the rich theoretical discussion about the stratification of society by using a rather simplifying model to predict behavioral changes due to inequality comes at a high price. The key problem with this approach is that behavioral reactions cannot be understood adequately if other than monetary factors are disregarded. Even worse, the focus on income inequality can lead to spurious causality when other forms of inequality, which might trigger certain behavior, are left out. Therefore, I will now examine which theoretical concept seems capable to capture a comprehensive form of inequality and subsequently analyze which dimensions of inequality are most important for relative concerns of individuals.

2.1 Social status and the perception thereof

To generalize the relative consumption theory and the idea of relative concerns, I suggest using a sociological concept of social status as a measure of stratification. According to Weber, social status describes a hierarchy that is not determined by the absolute economic position within the production environment or the labor market as in the class concept of Marx. It is based on social relations of superiority, equality and inferiority between individuals, which depend on characteristics ascribed to them as for example by occupations (Goldthorpe, 2010, 733). An occupation with administrative or management tasks gives authority over other people. This yields a higher status than jobs involving routine or personal service tasks. Such differences manifest themselves in corresponding friendships, marriage or economic decisions. Hence, the status position within society is defined relatively and not absolutely as in the concept of class. Empirical observations confirm a "substantial agreement among different members of society about the relative position of a given individual" (Weiss and Fershtman, 1998, 802). Inequality in social status is therefore determined by "'actors' implicit valuations of themselves and one another according to some shared standard of value" (Ridgeway and Walker, 1995, 281). The original concept of Weber distinguishes between distinct status groups. Recent authors however, use social status as a continuous concept without the need to demarcate status classes from one another (Weininger, 2005, 85).

From a Weberian perspective, the empirical correlation between social status and the absolute economic distribution can vary between time and place (Chan, 2010, 11). Bourdieu, who seeks to rethink Weber's opposition of class and status, describes the distribution of absolute and relative achievements as two aspects, which "always coexist in the same reality" (Bourdieu, 1984, XII). This joint treatment of absolute and relative aspects is different from other economic approaches to social status. In this work, social status is not understood as an intermediate good or non-monetary currency based on the esteem of others, whose value is defined by the possible transformation into absolute rewards (Heffetz and Frank, 2010, 73-74). More generally, the concept of social status complements the stratification in absolute terms by a relational perspective and provides a framework for analyzing absolute and relative effects of inequality jointly. Thereby, social status introduces the idea that inequality is not uni-dimensional.

Along the lines of Bourdieu, multidimensionality of social status is based on the distribution of different types of capital, which "cannot be subsumed under a single generic concept" (Weininger, 2005, 87). The stratification of society and the individual position within the distribution are determined by "the overall volume of capital, understood as the set of actually usable resources and powers – economic capital, cultural capital and also social capital." (Bourdieu, 1984, 114). According to Bourdieu, all forms of capital are based on economic capital, but the transformation process from economic to cultural and social capital is extensive and time-consuming. Once capital is transformed, its specific effect and importance is different

from the original capital. In turn, not every form of capital can be traced back to economic capital in a linear manner (Bourdieu, 1983, 198). In addition, the original distinction between absolute and relative values is applicable for all three forms of capital (Bourdieu, 1983, 187).

This paper suggests to use subjective social status to assess which dimensions are most influential for relative concerns of individuals based on Bourdieu's distinction between economic, cultural and social capital. To asses their subjective social status, individuals will have to form an opinion about the overall stratification, before they can locate their position within this distribution. Subjective social status thereby links objective criteria with relative evaluations of individuals (Lindemann and Saar, 2014). This makes subjective social status a suitable benchmark to asses which dimensions could be influential for economic decisions that might depend on inequality and the perception thereof. Therefore, subjective social status is used to test if cultural and social capital are only partial substitutes of income and wealth and unfold their own effects different from economic capital.

2.2 Economic capital

Since economic capital is one important part or relative concerns, social status should be highly correlated with income and wealth. If other factors can be implicitly summarized by the actual income or wealth distribution they should not contribute to the explanation of social status.

Most empirical works however, find a disparity between the distribution of perceptions of social status and disposable income. Niehues (2014, 2016) used answers based on graphical displays of stratification, which were compared to the actual income distribution. According to this comparison, in Germany, France and Hungary the level of inequality is overrated while in the U.S and in Switzerland individuals underestimate the extent of income inequality. Based on the same ISSP data using a different approach to assess the perception of inequality Gimpelson and Treisman (2015) come to a similar conclusion: "Widespread ignorance and misperceptions of inequality emerge robustly, regardless of the data source, operationalization, and method of measurement." (Gimpelson and Treisman, 2015). In contrast, individuals underestimate the extend of inequality in many western countries when individuals are asked for subjective estimates of CEO's and workers' earnings (Osberg and Smeeding, 2006). Engelhardt and Wagener (2014) compare median-to-mean ratios between subjective social status (ISSP) and disposable income (OECD). Similar to Osberg and Smeeding (2006), they find that income inequality is underestimated in each country and wave of the OECD country sample.

One prominent explanation for the mismatch between perception of and actual income inequality is the "reference group theory" (Hyman, 1942). Because of framing effects, individuals will compare themselves to other groups or individuals when evaluating their own positions. Reference groups usually refer to relatively small groups such as family, neighborhoods or regions where individuals are more alike (Clark and Senik, 2010). Within groups of similar individuals the majority of individuals tend to perceive themselves in the middle of society

([Kelley and Evans, 1995](); [Evans and Kelley, 2004]()) leading to a concentration around the mean in many survey questions. Because measures of economic inequality usually refer to the country level, the mismatch between the distribution of subjective social status and economic inequality is not surprising. On the individual level however, I expect the relation between monetary factors and subjective social status to hold. Therefore, the benchmark hypothesis reads as follows:

H1: Subjective social status is positively associated with income and wealth, even when controlling for individuals' attributes such as sex or age.

2.3   Cultural and social capital

Since this work identified social status as a multidimensional phenomenon, the next step is to consider the contribution of cultural and social capital, which will be discussed successively because the modes of accumulation and transformation differ from economic capital and between both types. The most common examples for cultural capital are education and prestige. They can be obtained by transforming economic capital, but their accumulation takes time and transformation across individuals is limited ([Bourdieu, 1983](), 195). Education can be related to subjective social status because of two reasons: First, higher education will not only lead to better labor market outcomes and higher wages ([Machin, 2009](), 415). Higher education can also increase prospective earnings of individuals and therefore might correlate with higher subjective social status today. Second, education is not only valuable because it can be transformed into economic capital ([Bourdieu, 1983]()). Education in form of degrees and credentials is institutionalized as a social code. These educational codes allow categorizing individuals, to draw borders among groups and even to constitute a hierarchy in society ([Weininger, 2005](), 87 & 104). However, education is not only related to social status as a resource of cultural capital. Education might also be associated with a more precise knowledge about the own relative social status and thereby counteract reference groups effects.

Occupational prestige, the second form of cultural capital, can be a distinct source of social status because recognition and authority of an occupation are not necessarily reflected by earnings. This leads to the second hypothesis:

H2: Subjective social status is positively correlated with education and occupational prestige.

The second type of non-monetary factors is social capital. According to Bourdieu, social capital can be defined as the affiliation to a certain group and the networks that result of this membership ([Bourdieu, 1983](), 190). The critical feature of social capital, compared to other forms of capital, is the difficulty to obtain it and to preserve its value ([Bourdieu, 1983](), 193). Although social capital extends to all kinds of groups and networks, family and origin are important components as they determine a certain level of social capital. Therefore, one can hypothesize that the social status of the family is highly influential for the own social status.

One should note however, that the parental social status can also encompass other types of capital which are transmitted between generations such as wealth and education.

The relevance of cultural and social capital could also be approximated by unemployment, if the negative effect of being unemployed might exceed the monetary loss in earnings. Since unemployment is often accompanied by a loss of skills, human relations, motivation and social inclusion this will impact the level of cultural and social capital (Sen, 1997, 160).

H3: Subjective social status is positively correlated with the social status of the parental household while unemployment is related to lower subjective social status.

2.4   Institutional factors

The determination and distribution of social status is relatively stable because institutions and dispositions reproduce the structure and distribution of economic, cultural and social capital (Bourdieu, 1983, 183). Although stable, the institutions which determine the accumulation and transformation of capital differ between countries and can change over time. As a result, country-specific institutional environments might also explain differences in social status. But what are institutions?

Institutions can be understood as "systems of established and prevalent social rules that structure social interactions" (Hodgson, 2006, 2). Because institutions consist of prevalent rules, they can be either explicit rules or "immanently normative dispositions, that in circumstances X do Y" (Hodgson, 2006, 18). The execution of a rule is not a necessary condition of an institution. What makes a rule an institution is that the disposition to act in a certain manner is shared by a larger group of individuals. The education system is one example of such an institution. Academic titles for example, are a source of cultural capital and serve as formal entry barriers to certain professions whereas informal institutions influence the decision to pursue a professional career. In this case institutions not only influence the level of subjective social status at the country level. In addition, they also might impact the transformation between different forms of capital. In summary, country-specific institutions can affect the distribution of different forms of capital and the transformation between them, the aggregate distribution of social status and thereby inequality. This makes institutions an important research issue of this paper.

A very general institutional setting is the openness towards other countries. When individuals compare their social status with households of other countries, this is described as the extended reference group thesis (Whelan and Maître, 2009). Such a cross-country comparison could lead to a positive correlation between economic performance and aggregate subjective social status. If individuals would only compare themselves within countries, cross-country differences in social status should not be correlated with country average incomes or GDP per capita.

Another general approach to assess the relevance of institutions is to distinguish between different welfare state regimes. Based on the relationship between the market and the state,

[Hall and Soskice](2001) distinguish between liberal market economies and coordinated market economies. Such institutional arrangements can provide substitutes for different forms of capital or influence the mode of transformation between forms of capital. A more precise alternative to assess the role of the state is the level of government spending in different areas, which might substitute economic capital or ease the accumulation of cultural capital.

As mentioned above, the education system is a critical institution because it determines the accumulation of economic, social and cultural capital as well as the transformation between the three types. If the process of transformation from economic to cultural capital is disguised by an immobile education system, the costs of transformation is increasing ([Bourdieu, 1983](), 198). Higher transformation costs may lead to scarce social and cultural capital because the transformation becomes more difficult. In turn, the relative value of both capital types increase, compared to economic capital. Previous empirical works have found that institutional settings such as the tracking system or the level of standardization have a great influence on the persistence on educational inequality ([Van de Werfhorst and Mijs, 2010](); [Machin, 2009]()) and that in general educational inequality is increasing with income inequality ([Corak, 2013]()). This leads to the final hypothesis about the relevance of country-specific institutions.

H4: Cross-country differences in subjective social status are correlated with the level of economic development, the welfare state and the education system.

To identify the relevant institutions by a cross-country method, the sample of countries needs to be comparable and at the same time allow for a significant variation in the institutional setting. To ensure comparability the sample is restricted to European countries, where individuals share a set of cultural beliefs. Variation is provided by including central, southern and eastern European countries, as the differences in the organization of society between individuals, markets and the state are substantial. The following section will present the dataset in detail.

3 Data and descriptive statistics

To answer the formulated hypotheses, the International Social Survey Program (ISSP) will be used. The ISSP consists of annual household surveys of similar range and methodology which are performed by national institutions and include an appendix of similar questions covering a specific topic each year.[3] Because the ISSP consists of harmonized and merged national surveys, each country takes care about the validity and representativity of the survey, which is generally high.[4] In 1987, 1992, 1999 and 2009 inequality was the major topic, but only the 2009 wave covered income and wealth data.[5] Therefore, only a cross-sectional analysis is

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[3]Other datasets commonly used by economists as LIS, EUROSTAT or WIID as well as political or sociological surveys as the WVS or the EUROBAROMETER do not cover the variable of interest, subjective social status.

[4]For details, see the ISSP 2009 study monitory report (https://dbk.gesis.org/dbksearch/file.asp?file=ZA5400_mr.pdf).

[5]The heterogeneous development during the European recession is taken into consideration in subsequent models by adding controls for GDP and unemployment growth rates.

feasible. The data set is further reduced, as for some countries only gross incomes are available.[6] After list-wise deletion of missing observations, the empirical analysis rests on a sample of 18 European countries with 11,982 observations in total and a range of 268 to 2,024 by country.

Measuring individuals' perception of their social status is not straightforward. From a psychological point of view one has to distinguish between perception, valuation and judgment of inequality (Han et al., 2012, 11 ff.). While judgment and valuation include a moral perspective, individuals' perceptions of social status should rely on a merely cognitive process. To omit the moral perspective, a neutral question was chosen as a proxy for the individuals' perception of their social status. The ISSP questionnaire runs as follows: "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 top to bottom. Where would you put yourself now on this scale?" (ISSP, 2012). The answering scale ranges from one (bottom) to ten (top). The question is framed by various other questions about income distribution, tax fairness and conflicts between different groups of society, ensuring that the question is understood in a general socioeconomic context without a focus on any specific dimension of status or inequality.

Table 1: Descriptive statistics for subjective social status

country	N	mean	sd	skewness	kurtosis	p(JB-test)
Austria	588	5.990	1.37	-0.44	3.28	0.000
Belgium	698	5.862	1.50	-0.59	3.40	0.000
Bulgaria	274	3.854	1.70	0.03	2.33	0.074
Croatia	302	4.417	1.65	0.04	3.06	0.947
Czech Republic	733	4.722	1.58	-0.18	2.94	0.119
Estonia	645	4.878	1.68	-0.20	2.79	0.071
France	2024	4.945	1.60	-0.15	2.74	0.001
Germany	947	5.603	1.51	-0.54	3.12	0.000
Hungary	509	3.892	1.45	0.08	2.68	0.249
Italy	584	4.659	1.61	-0.16	2.63	0.059
Latvia	625	4.363	1.75	0.25	2.63	0.007
Poland	969	5.124	1.62	-0.19	2.88	0.034
Portugal	268	4.619	1.98	0.07	2.28	0.051
Slovak Republic	745	4.813	1.49	-0.13	3.26	0.124
Slovenia	352	4.915	1.53	-0.25	3.30	0.083
Spain	435	5.172	1.40	-0.37	3.51	0.001
Switzerland	733	5.677	1.58	-0.34	3.10	0.001
Great Britain	551	5.559	1.57	-0.25	2.95	0.060
total	11982	5.037	1.67	-0.22	2.75	0.000

Note: JB-test: Test for normality based on Jarque and Bera (1987). Source: ISSP 2009.

Average subjective social status ranges from 3.8 in Hungary to 5.9 in Austria. As table 1 shows, subjective social status is on average lower in southern and eastern Europe than in central and northern Europe. Figure 1 reveals that the distribution of subjective social status is centered around the mean in most countries while especially in Bulgaria, Hungary, Italy, Latvia and Portugal the distribution is skewed to the bottom and flat. Only for 7 out of 18 countries the null hypothesis for normal distribution of the Jarque-Bera cannot be rejected ($\alpha = .05$) while in 7 more countries the distribution is close to normal ($\alpha < .1$). On one hand, the normal distribution found for many countries stresses the bias to the mean of subjective social status induced by reference groups processes. On the other hand, the distinct skewness

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[6]The countries which had to be excluded because of missing information on net incomes are Cyprus, Denmark, Finland, Croatia, Norway and Sweden.

of the distribution to the lower end in various countries indicates, that the distribution of subjective social status cannot be explained by reference groups processes solely.

Figure 1: Subjective social status and income distribution in 18 European countries
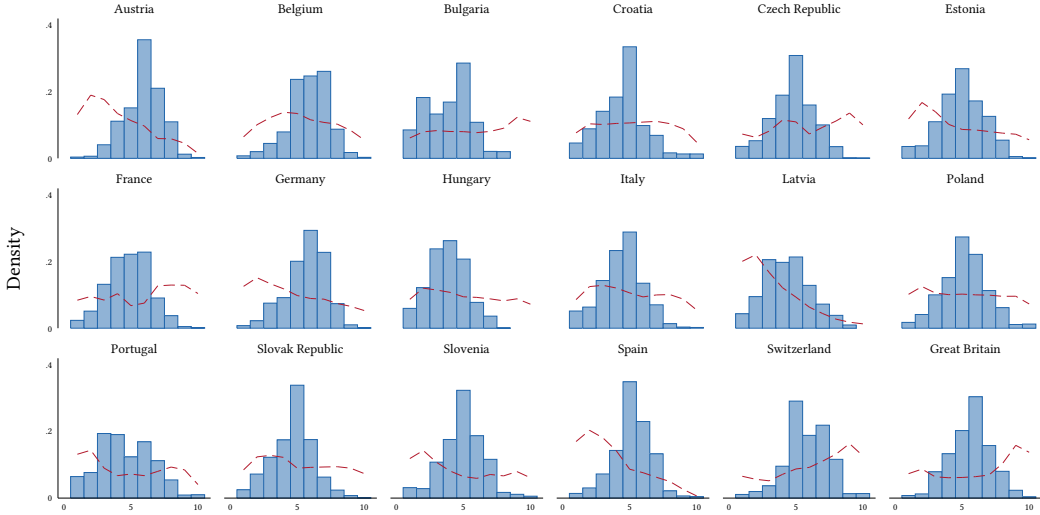
Note: Histogram of subjective social status (blue) and income deciles (dashed red). Source: ISSP 2009.

Following hypothesis H1, I will next analyze the relation of subjective social status to income and wealth. Disposable household income is made comparable by equalizing the total income following the OECD scale. Limited by the survey questions, wealth is defined as the sum of current cash value of housing and financial assets, which are both censored to above zero. To make income and wealth comparable both variables have been transformed into purchasing power standards (European Commission, 2014).

Figure 2: Subjective social status and disposable household income (pooled sample)

(a) Compared to income deciles

(b) Compared to hh income
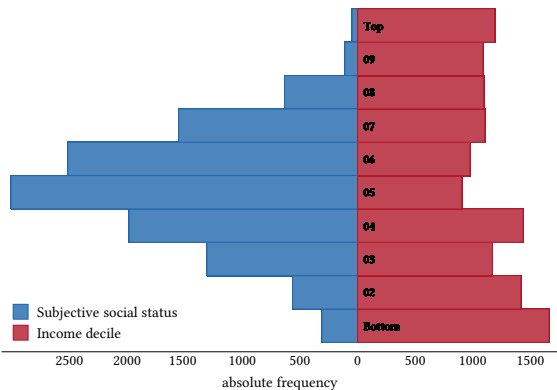
Note: The two frequency histograms show households subjective social status (blue bars) and their income decile (red bars), based on the equalized disposable household income from ISSP and decile ranges from EU-SILC.
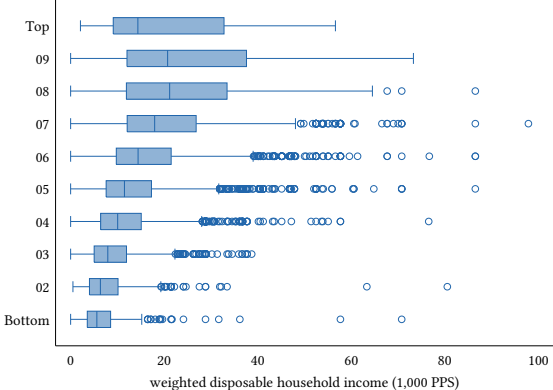
Note: The boxplot shows the distribution of the equalized disposable household income within each category of subjective social status (bar: interquartile range, line: mean, circle: outside values). Source: ISSP 2009 and EUROSTAT

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The dashed red line in figure 1 presents the income decile distribution for each country and figure 2a compares the total distribution subjective social status with the decile affiliation according to household's income.[7] Both figures highlight the mismatch between subjective social status and household income. Even though the majority of perceptions cluster around the sixth class (blue bars) the majority of households would belong to the lowest income deciles according to their income (red). As previously mentioned, one explanation for the different distributions of income and subjective social status suggests that reference groups usually refer to smaller entities and not to the national level as implied by the income deciles.

Despite those differences, figure 2b indicates a positive correlation between equalized disposable income and subjective social status on the individual level. Average and distribution of household incomes are increasing within every item of subjective social status. The higher equalized disposable income, the higher is average subjective social status. Only for the highest status group this correlation does not hold. Because there are only very few observations in the top group ($N = 50$), these observations are considered as outliers and omitted from further analyses.[8]

4   Individual factors of subjective social status

This section presents a multivariate econometric model to assess the relevance of income and wealth in explaining subjective social status. To model the decreasing utility of additional income and wealth, quadratic terms are included to control for a non-linear relationship. Since a concave function is assumed, the estimated coefficients should be negative. In addition, there might be a country-specific correlation between income and subjective social status, which would result in biased standard errors. Instead of adding country dummies, a multi-level mixed-effects linear regression model is used to allow not only for fixed effects within countries, but also for random effects between countries (Snijders and Bosker, 2012, 49-59). In contrast to a fixed-effects model, this will allow estimating the impact of country specific institutions on subjective social status and interaction effects between the individual and the country level jointly.

$$p_{ij} = \gamma_0 + u_j + \varepsilon_{ij} \tag{1}$$

$$p_{ij} = \gamma_0 + \gamma_1 y_{ij} + \gamma_2 y_{ij}^2 + \gamma_3 w_{ij} + \gamma_4 w_{ij}^2 + u_j + \varepsilon_{ij} \tag{2}$$

$$p_{ij} = \gamma_0 + \gamma_1 y_{ij} + \gamma_2 y_{ij}^2 + \gamma_3 w_{ij} + \gamma_4 w_{ij}^2 + \Gamma_5' X_{ij}^{ind} + \Gamma_6' Z_{ij} + u_j + \varepsilon_{ij} \tag{3}$$

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[7]The ISSP is a survey aimed at sociologists and therefore not representative in terms of income for most of the countries because top income recipients are underrepresented compared to classical household panel surveys such as the SOEP (Germany) or the BHPS (UK). To assess the relative income position of a household, the decile ranges of the EU-SILC are used to determine the appropriate income class the household belongs to (European Commission, 2014).

[8]The following estimation results are robust to this exclusion. Results are available upon request.

All model specifications used to explain subjective social status (p) for individual i in country j include a fixed constant (γ_0), the individual (ε_{ij}) and country-level variance (u_j). In addition to the first model, the second includes income (y), wealth (w) and the respective quadratic terms to test the hypothesis H1. Since hypotheses H2 and H3 assumed that education, prestige, family background and unemployment are correlated with subjective social status, the third model adds a vector of these individual attributes (X_{ij}^{ind}) and individual control variables (Z_{ij}).

Although the dependent variable is of ordered scale, a cardinal interpretation is feasible because of a sufficient number of realizations (nine).[9] Following Snijders and Bosker (2012, 58), all independent variables are centered at their country-specific mean to ensure that the estimated effects of all γ_{ij} are corrected for between-country differences (Schunck, 2013, 66). In order to compare the relative relevance of estimation coefficients, all continuous independent variables are z-standardized.

In the following I will motivate the choice and application of the estimation method before discussing the econometric results. For a small sample of countries ($N = 17$), the assumptions about the normal distribution of the country level standard errors might not hold. The results of previous Monte-Carlo simulation studies show that estimates at the individual level remain unbiased, while the estimation and the standard errors of the country effects are unreliable when the number of countries is lower than 30 (Bryan and Jenkins, 2015, 12).

To circumvent the small N problem at country level this paper follows a Bayesian approach, where the distribution of the variables is estimated by a Markov Chain Monte-Carlo (MCMC) method (Browne and Draper, 2006; Austin, 2010; Stegmueller, 2013). In contrast to other methods, the complete multilevel model can be estimated at once, while obtaining unbiased estimates and standard errors for country variables.[10] All models were estimated using the MLwinN software and the Stata ado runmlwin (Rasbash et al., 2015; Leckie and Charlton, 2013). Because of the small N problem, the effective sample size (ESS) is relatively low compared to the number of iterations. Following Browne (2012, 401), the model is reparametrized using hierarchical centering at the country level to increase the number of independent estimates. After a burn-in phase of 500 and 10,000 iterations there are at least 8,000 effective observations for each variable.

Table 2 presents the estimation results for all variables at the individual level. The first model only includes a constant to compare the within- and the between-country variation of subjective

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[9] Besides the number of realizations, the distribution of the dependent variable is close to normal. In this case hybrid choice models do not outperform a continuous specification (Bahamonde-Birke and de Dios Ortúzar, 2015).

[10] The problem of underestimated standard error is amplified when including random slope parameters to the estimation model. Having less than 25 countries, estimates and standard errors for random slopes are shown most certainly biased (Bryan and Jenkins, 2015, 12). Therefore, random slopes are not estimated in this paper. An alternative strategy to deal with the small N problem is the two-step estimation procedure including a fixed effects estimation with all individual variables whereas country level effects are separately estimated using the fitted values of first stage regression. The drawback is however, a complicated comparison between both estimations (Bryan and Jenkins, 2013, 9).

Table 2: Random only and random intercept models with individual attributes

	(1)	(2)	(3)	(4)	(5)
dependent variable		subjective social status			
income		0.669***	0.438***	0.439***	0.403***
		(0.017)	(0.017)	(0.017)	(0.017)
income^2		-0.085***	-0.057***	-0.057***	-0.053***
		(0.005)	(0.005)	(0.005)	(0.004)
wealth		0.434***	0.303***	0.304***	0.285***
		(0.021)	(0.019)	(0.019)	(0.019)
wealth^2		-0.053***	-0.040***	-0.040***	-0.036***
		(0.005)	(0.005)	(0.005)	(0.005)
age		-0.390***	-0.152**	-0.153**	-0.092*
		(0.079)	(0.069)	(0.070)	(0.069)
age^2		0.254***	0.117**	0.117**	0.041
		(0.079)	(0.069)	(0.070)	(0.069)
sex		-0.007	-0.046**	-0.046**	-0.034*
		(0.026)	(0.023)	(0.023)	(0.023)
education (years)			0.126***	0.126***	0.129***
			(0.014)	(0.014)	(0.014)
occupational prestige			0.156***	0.156***	0.147***
			(0.014)	(0.014)	(0.014)
family background			0.594***	0.594***	0.586***
			(0.012)	(0.012)	(0.012)
unemployed			-0.486***	-0.483***	-0.478***
			(0.049)	(0.049)	(0.048)
cons	4.948***	5.093***	5.105***	5.848*	6.010*
	(0.155)	(0.158)	(0.152)	(4.457)	(4.195)
var(u)	0.432***	0.429***	0.419***	0.175***	0.151***
	(0.171)	(0.169)	(0.163)	(0.096)	(0.080)
var(ε)	2.500***	1.964***	1.535***	1.534***	1.502***
	(0.032)	(0.026)	(0.020)	(0.020)	(0.019)
country means	–	–	–	Yes	Yes
controls	–	–	–	–	Yes
N	11982	11982	11982	11982	11982
ICC	0.147	0.179	0.215	0.102	0.092
DIC	44998.4	42116.1	39163.2	39163.1	38912.7

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and wealth in thousand pps. Based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. All continuous variables are country-demeaned and standardized.

social status. The intra-correlation coefficient (ICC) suggests, that 14.7% of the total variance is explained by the between-country differences. Model 2 shows that equalized disposable household income is significantly and positively correlated with higher subjective social status. The negative and significant quadratic term suggests a declining effect of higher income. In the same manner as income, wealth is positively correlated with subjective social status and the effect is decreasing with higher wealth. In addition, subjective social status decreases with age and female respondents have on average a lower subjective social status than men. One concern with this model is that the relative variable subjective social status is explained by the absolute variables income and wealth. An alternative specification where absolute income is replaced by the income decile was tested and confirmed the positive correlation. It was rejected however, because of a slightly lower model fit (see model 6, table A.1). Because the explanatory variables are country-demeaned, the ratio of variance explained by the between-country differences increases to 17.9% in model 2.

Hypothesis H2 stated that subjective social status is positively correlated with social and cultural capital. Proxies for both capital forms are included in model 3. Education, measured

by the number of years, is positively related to subjective social status. As income is already included in the model, the education variable should capture the positive effects of higher education not related to income. The prestige of the current occupation is measured by the Standard International Socioeconomic Occupational Status (SIOPS).[11] As with education, the occupational status is positively correlated with a significantly higher subjective social status. The results suggest that cultural capital is an important component of subjective social status, although we can only reject the null hypothesis, that education and prestige are not correlated with subjective social status.

Besides economic and cultural capital, H3 hypothesized that social capital is also correlated with subjective social status. Due to the lack of information about the social networks of respondents, unemployment and the subjective social status of the parental household are used. This comes at the drawback however, that we cannot distinguish between social capital and other forms of inheritance such as wealth, language or education. For this reason, the positive and significant estimate for the social status of the parental household only proves the persistence of subjective social status and the endurance of their underlying forms of capital over generations.[12] Similar to the parental background, the negative and significant estimate for unemployment of the respondent or her/his partner proves a strong correlation with subjective social status.[13] Because the model already controls for income, the high correlation could be related to non-material consequence of unemployment such as the loss of networks, practical knowledge and prestige (Sen, 1997). Despite the imprecise approximation of social capital, both proxies suggest a notable positive correlation between subjective social status and social capital.

Various complications might limit the validity of the above presented conclusions. Therefore, a set of robustness checks have been conducted to validate the results. First, coefficients could be biased as the random effects model rests on the assumption of orthogonal country specific error terms. However, the results of fixed and random effects estimations are quite similar and suggest that the results are not biased due to systematic differences in country error terms (table A.2).

Second, the country-demeaned explanatory variables cannot explain the between-country variation by definition. Therefore, the ICC in models 2 and 3 could be overestimated. Model 4

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[11]The SIOPS Index ranks occupations according to their prestige on a scale from 6 to 78 and is based on the results of prestige evaluations in more than 55 countries (Treiman, 1977). It was transformed using the conversion tables of Ganzeboom and Treiman (1996), included in the isco Stata ado.

[12]The status of the parental household is measured in the same way as the dependent variable with the question: "In our society there are groups which tend to be towards the top and groups which tend to be towards the bottom and if you think about the family that you grew up in, where did they fit in then?" (ISSP, 2012). When dropping all observation where the respondents' status matches the family status ($N = 4147$), the coefficient reduces to 0.311 (s.e.: 0.014) while the other estimates remain nearly unchanged (model 2, table A.1).

[13]Using a more disaggregated model, including more types of working status, suggests that part-time work increases subjective social status (model 3, table A.1).

includes weighted country means[14] and a joint Wald test for all country means being equal to zero can clearly be rejected ($\chi^2(6) = 26.08, p = 0.0002$). In the so-called hybrid model, the ICC drops to 10.2 % when including country-means of all explanatory variables (model 4, table 2). This confirms a level effect between countries, but the 'within-effects' coefficients remain almost unchanged. For an explanation of the between-country effects I refer to the next section.

Third, to address a possible omitted variables bias, regional patterns, religion and political affiliation have been included as control variables. Veblen for example, assumed that the relative concerns of individuals from urban and rural areas are different (Veblen, 1899, 42). However, average subjective social status does not differ significantly between urban and rural respondents (model 4, table A.1). The political affiliation on the left-right is another used control. No political orientation, whether right or left is correlated with subjective social status. Only individuals without any political affiliation show a significantly lower subjective social status (model 5, table A.1). The unreported controls for religious beliefs and the country-specific differences in the data collection methodology do not affect the results.

Fourth, one could think of various sources of endogeneity. Individuals' perception of fairness and justice or the psychological well-being could influence subjective social status and explanatory variables at the same time. Feelings of hopelessness, pessimism or unfairness might lower work motivation and impact career choices as well as the consequential subjective social status. However, a previous study concluded that subjective social status is not correlated with psychological biases (Singh-Manoux et al., 2003). The authors found that neither hopelessness, mental illness, optimism nor vigilance were significantly correlated with subjective social status while using a similar set of variables including income, wealth and education. Given that the study relied on a sample middle aged office staff from the London-area, the application to the sample of European countries is limited. Because the ISSP lacks data on psychological well-being, a control for the perception of fairness is included. The four dummy variables control whether the own income is considered as (much) less or (much) more than deserved (model 2, table A.3). Compared to the reference category of deserved earnings, the perception of (much) lower than deserved earnings is correlated with lower subjective social status. This effect is asymmetric since no correlation is found when earnings are higher than perceived deserved, confirming previous results. The asymmetric effect holds for the related question on unjust earnings (model 3, table A.3) and confirms similar findings for Germany (Goerke and Pannenberg, 2015, 97).

Model 5 of table 2 includes all of the above mentioned control variables for political preferences and deserved earnings, which proved to be significant individually. While the coefficients for income and wealth decreased slightly by adding the controls, the proxies for cultural and social capital hardly change when including controls. In addition, the small but negative effects

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[14]Weighted country means are calculated before dropping missing observations following Snijders and Bosker (2012, 56)

of age and sex (female=1) are robust and significant in all models which include social and cultural capital.

Overall, the estimation results suggest rejecting the respective null hypotheses for H1, H2 and H3. In addition to economic capital, the proxies for social and cultural capital are highly correlated with subjective social status. In the final model of table 2 the information criteria (DIC) drops by 8% and total residual variance by 23%, compared to the model including only economic capital. Furthermore, the significant drop of the income and wealth estimates between models 2 and 5 reassures the concern that the impact of economic capital on subjective social status is overestimated when ignoring the other types of capital. Compared to income, the correlation between subjective social status and education, occupational prestige and family background is less strong. But when considering the effects of social and cultural capital jointly, they seem to be as influential as income. In addition, if we assume that income and wealth might change over time more frequently than the proxies chosen for cultural and social capital (except for unemployment), subjective social status and the resulting aggregate perceived inequality of social status may be more persistent than a model would suggest where subjective social status is only explained by income and wealth. However, this hypothesis cannot be tested because of the cross-country restriction.

5 Cross-country differences and the institutional environment

We now turn to the differences in subjective social status between European countries in order to test hypothesis H4, which stressed the importance of institutions. Cross-country differences are important because the unexplained country level variance still amounts to 9.2%. To explain this considerable between-country variance, the following models includes various proxies for institutional differences captured by the vector X_j^{inst}:

$$
\begin{aligned}
p_{ij} = &\gamma_0 + \gamma_1 y_{ij} + \gamma_2 y_{ij}^2 + \gamma_3 w_{ij} + \gamma_4 w_{ij}^2 + \Gamma_5' X_{ij}^{ind} + \Gamma_6' X_j^{inst} \\
&+ \Gamma_7' X_j^{inst} * y_{ij} + \Gamma_8' Z_{ij} + u_j + \varepsilon_{ij}
\end{aligned}
\tag{4}
$$

One source of country variation, which was already mentioned in the previous section, is the level of economic development. The last model of section 4 concluded that country average of explanatory variables a significant part of between-country variation. To test the hypothesis of extended reference group thesis, the second model (table 3) include GDP p. c. while retaining the country means including income and wealth. The fit of the model improves slightly and the GDP p. c. estimate is significant while income and wealth country means become insignificant. This suggests that GDP p.c. seems to explain the between-country differences better than average household incomes or wealth. Because the survey was conducted in 2009, the different

development of the European crisis might have influenced this comparison. To control for the different economic developments, an additional model was estimated including GDP and unemployment growth rates for the previous 2 years. The Wald-test for all lagged variables being equal to zero cannot be rejected ($\chi^2(6) = 3.07, p = 0.8002$). This evidence supports the theory that reference groups of individuals have extended across borders and that this comparison between countries is robust to recent economic developments. Thereby, the result of similar works is confirmed, which find substantial between-country comparisons within Europe (Sági, 2011; Whelan and Maître, 2013; Lindemann and Saar, 2014).

Table 3: Random intercept models with institutional factors

	(1)	(2)	(3)	(4)	(5)	(6)
dependent variable			subjective social status			
income	0.403***	0.403***	0.403***	0.403***	0.403***	0.403***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
wealth	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
GDP per capita		0.485***	0.470***	0.317**	0.448**	0.492***
		(0.158)	(0.157)	(0.156)	(0.243)	(0.173)
public exp. in education			0.095			
			(0.082)			
infant mortality rate				-0.131**		
				(0.063)		
union coverage (%)					0.027	
					(0.124)	
Gini coef.						0.013
						(0.066)
var(u)	0.151***	0.077***	0.074***	0.053***	0.088***	0.088***
	(0.080)	(0.046)	(0.047)	(0.035)	(0.056)	(0.056)
var(ε)	1.502***	1.502***	1.502***	1.502***	1.502***	1.502***
	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
country means	Yes	Yes	Yes	Yes	Yes	Yes
controls	Yes	Yes	Yes	Yes	Yes	Yes
N	11982	11982	11982	11982	11982	11982
ICC	0.092	0.049	0.047	0.034	0.055	0.055
DIC	38912.7	38912.4	38912.3	38912.3	38912.4	38912.4

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and Wealth in thousand pps. Based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. All continuous variables are country-demeaned and standardized. Estimates for quadratic terms, age, sex, education, SIOPS, family background and occupation status are omitted. Model 1 refers to model 5 of table 2.

Going from general to specific, the next variable to explain the cross-country differences in subjective social status by institutions is the overall design of the welfare state. Because the UK is the only liberal market economy in the sample, a more disaggregated scheme is used to distinguish between continental/bismarkian, southern European, liberal and post-socialist welfare state regimes (Esping-Andersen, 1990; Bambra, 2007).[15] However, the general classification of welfare regimes seems incapable to explain the differences in subjective social status between countries (model 2, table A.4).

The third set of proxies are classical substitutes to household income by public services. These factors consist of government expenditures for social services as housing, health care

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[15]The Welfare state regimes are: continental/bismarkian = Austria, Belgium, Switzerland, Germany, France; southern Europe = Spain, Italy, Portugal; liberal = Great Britain; post-socialist = Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Poland, Slovenia, Slovak Republic (Bambra, 2007).

or pensions and expenditures in defense, education or infrastructure. The expenditure data comes from Eurostat, is converted to PPS and given in per capita term to foster comparability across countries (European Commission, 2014). None of the GDP expenditure categories are significant nor increase the overall model fit. Only public expenditures in education, as measured by the OECD Pisa study, increase the model fit (model 3, table 3). Although positive coefficient indicates that higher expenditures are correlated with higher subjective social status, the estimate is not significant at the 10% level ($p = 0.109$).

Another factor considered at the cross-country level is average health, measured by the infant mortality rate.[16] Model 4 shows a significant negative correlation (table 3). The positive relationship between higher average health and subjective social status also holds when health is measured with life expectancy at birth (model 3, table A.4). Other institutions such as the power of unions (union coverage) or overall income inequality (gini coefficient) seem to be uncorrelated with subjective social status (models 5 and 6, Table 3).

Because public education expenditures already pointed to the relevance of the education system, as described in Bourdieus' capital theory, the question is if the design of the education system and the mobility within the education system can contribute to explain cross-country differences in subjective social status. Three proxies will be evaluated to control for country-specific features of the education system.

The first proxy is a refined indicator to measure who pays for education. If private households bear the cost of education instead of the public, the value of transforming economic capital into cultural capital is priced and therefore uncovered. As a result, monetary expenditures of households in education will be comparable and may include a signaling effect to other households. Private education expenditures as a ratio of total education expenditures might indicate this shifting perspective.[17] A possible effect of higher private education expenditures could be an increasing relevance of economic capital for subjective social status. Therefore, the interaction effect between income (wealth) and the education finance ratio should be positive.

The second proxy is designed to measure the qualitative design of the education system. If inequality in education is driven by factors, which are beyond individuals' influence (socioeconomic background), this is considered as immobility. An education system that provides equal opportunities and minimizes the influence of preconditions will have an impact on the mode of capital transformation. To assess the overall mobility within the education system the second proxy relies on an ex-post indicator from the OECD (Causa and Chapuis, 2009, table 3). The proxy is based on a simple regression model, where the educational achievement (Pisa science score) is explained either by differences between the schools (between-school effect) or by differences between individual's background (within-school effect). To control for the country-specific level of educational achievement, the individual background effect is

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[16]Infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births.

[17]Because micro data on educational spending to generate country averages is not available in the ISSP, aggregate measures for spending in education from the OECD are used.

divided by the average achievement. The resulting proxy of educational immobility describes the ratio of average educational achievement that is determined by the socioeconomic background. Higher educational immobility suggests that the education system is less successful in compensating the effect of the socioeconomic background on educational outcomes.[18] In countries with higher educational immobility, the effect of additional income or wealth on subjective social status should be higher because the transformation from economic to cultural capital is more costly. Therefore, the interaction effect between educational immobility and income (wealth) should be positive.

The third proxy is based on the model fit of a regression of individual background factors on the educational achievement (Ferreira and Gignoux, 2014). A better overall fit would suggest a higher relevance of individual circumstances on educational achievements.[19] Therefore, the third proxy is defined as the r^2, which is taken from Ferreira and Gignoux (2014, table 4). If the so called inequality of opportunity (IOp) is high, the impact of income (wealth) on subjective social status should be higher than in countries with lower educational IOp. In this case, the interaction effect between income (wealth) and IOp should be positive.

Table 4: Random intercept models with interaction effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
dependent variable	subjective social status						
education system proxy		finance ratio		immobility		inequality of opp.	
income	0.403***	0.398***	0.399***	0.380***	0.383***	0.403***	0.402***
	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
wealth	0.285***	0.282***	0.283***	0.299***	0.298***	0.285***	0.292***
	(0.019)	(0.020)	(0.019)	(0.021)	(0.021)	(0.019)	(0.019)
GDP per capita	0.319**	0.301**	0.301**	0.295*	0.295*	0.321**	0.321**
	(0.155)	(0.162)	(0.161)	(0.217)	(0.217)	(0.166)	(0.166)
infant mortality rate	-0.130**	-0.135**	-0.135**	-0.201*	-0.201*	-0.131**	-0.131**
	(0.062)	(0.061)	(0.061)	(0.182)	(0.181)	(0.072)	(0.072)
educ. system proxy		0.034	0.039	0.126*	0.117*	0.000	0.022
		(0.079)	(0.079)	(0.124)	(0.124)	(0.081)	(0.081)
∗ income		0.006		-0.014		-0.018	
		(0.013)		(0.015)		(0.015)	
∗ wealth			0.021		-0.023		0.049***
			(0.019)		(0.019)		(0.017)
var(u)	0.053***	0.050***	0.050***	0.047***	0.047***	0.060***	0.060***
	(0.035)	(0.040)	(0.040)	(0.271)	(0.271)	(0.041)	(0.041)
var(ε)	1.502***	1.512***	1.512***	1.387***	1.387***	1.502***	1.501***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
country means	Yes	Yes	Yes	Yes	Yes	Yes	Yes
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11982	11473	11473	9784	9784	11982	11982
ICC	0.034	0.032	0.032	0.033	0.033	0.039	0.039
DIC	38912.3	37340.0	37339.2	30993.5	30994.8	38914.0	38907.5

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and wealth in thousand pps. Based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. All continuous variables are country-demeaned and standardized. Estimates for quadratic terms, age, sex, education, SIOPS, family background and occupation status are omitted.

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[18]Theoretically, this model rests on the assumption, that all student enter school with the same genetic predisposition in terms of intelligence/ability.

[19]While educational achievement is measured by the PISA science performance, individual circumstances include gender, father's and mother's education, father's occupation, language spoken at home, migration status, access to books at home, durables owned by the households, cultural items owned, and the location of the school attended (Ferreira and Gignoux, 2014, 231).

Table 4 presents the results for all three education proxies and the respective interactions with income and wealth. Because of missing data for the finance ratio and immobility, the number of observations is reduced in models 2 to 5. By adding interactions for the finance ratio or educational immobility, the model fit does not increase.[20] The only model where the model fit improves is when an interaction between inequality of educational opportunity and wealth is included. The significant and positive interaction term in model 7 suggests that the correlation between wealth and subjective social status increases with higher educational IOp. In other words, in countries were educational IOp is higher, the correlation between wealth and subjective status is stronger. This result is robust, when the educational IOp measure is based on science or reading achievement, but not for math achievement.[21]

In the light of Bourdieus' capital theory a tentative interpretation of the results is that the education system acts as an amplifier of existing inequalities. Economic capital seems to be a precondition for educational success. If educational IOp is low, the determination of subjective social status is less correlated with wealth indicating that the lack of favorable individual circumstances is not substituted, but amplified by economic capital.

6 Conclusion

The paper has investigated the determinants of the perception of inequality, approximated by subjective social status. Taken together, the results strongly indicate that material and non-material factors jointly determine the self-perceived social status of individuals. As hypothesis H1 suggested, perceived social status increases with income and wealth, irrespective of gender and age. Likewise, education, occupational prestige, and parents' social status contribute to higher social status, whereas unemployment significantly decreases it. The decrease in total variance and information criteria when including cultural and social capital provide substantive evidence for hypotheses H2 and H3 according to which the subjective social status is not only determined by economic but also by cultural and social capital. In the light of these results, a behavioral model which seeks to explain economic action because of inequality seem incomplete if only income inequality is considered.

Following H4, on the impact of the institutional environment, the GDP per capita level is one of the few variables, which can explain the cross-country differences, irrespective of the specified model. Similar to Lindemann and Saar (2014) and a huge body of sociological literature, this result confirms the extended reference theory. Reference groups are not restricted to national borders because individuals compare themselves across countries. Within Europe individuals care about inequality between countries when assessing their social status within

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[20]Based on model 1 of table 4, the respective DICs for models 3 and 4 is 37336.22 and for models 4 and 5 is 30922.92 when missing observation of the education proxy are excluded.

[21]Results are available upon request.

society. Besides the economic development, the differences in subjective social status between countries are as well related to average health and the quality of the education system.

Bourdieu's theory of capital states that the education system is crucial because it determines the relative value of economic, cultural and social capital. Therefore, the education system should be able to explain cross-country differences in the relevance of economic capital for social status. The results gave some indications, that higher public expenditures are related with higher subjective social status. In the same vein, higher inequality of educational opportunities increases the correlation between wealth and subjective social status. However, caution must be paid since the results are not robust when using other qualitative indicators of the education system. Nevertheless, the results provide suggestive evidence that an immobile education system amplifies the correlation between wealth and subjective social status. This correlation is consistent with the finding that public attitudes towards inequality depend on whether intergenerational mobility is perceived as structural or meritocratic (Gimpelson and Monusova, 2014, 22). The policy conclusions based on these results are modest, but so far they suggest that direct transfers could be more effective to increase subjective social status when accompanied by reforms in the education system that ensure greater educational mobility.

The paper also provides insights into the growing literature on whether the perception of inequality is biased. Gimpelson and Treisman (2015) concludes that "[w]idespread ignorance and misperceptions of inequality emerge robustly, regardless of the data source, operationalization, and method of measurement". By using a more general approach to inequality and the perception thereof, this paper contradicts their conclusion. Although a large portion of variance remains unexplained, considering other than monetary factors helped significantly to explain subjective social status. While this work suggested a comprehensive definition of inequality to explain the mismatch between perceived and income inequality Cruces et al. (2013) propose to refine survey questions in order to measure perceived income inequality more precisely. It is however, an open question if a comprehensive measure of inequality or a more precise measure of income inequality can explain economic reactions to inequality and public policy preferences more adequately. Either way, mixing both concepts results in a systematic overestimation of the information bias or the so called veil of ignorance.

The relevance of different dimensions of inequality for subjective social status also points out directions for future research. If relative concerns are driven by various dimensions of inequality, their relevance within a consumption function should be empirically tested. Relative consumption habits could be estimated based on different dimensions of inequality or composite inequality measure (Decancq et al., 2013). Further research could also seek to design a unified measure of multidimensional inequality that respects the subjective dimension of inequality. Based on country specific regressions, subjective social status could help to calculate so-called 'hedonic weights' for a multidimensional inequality index.

A Appendix

Table A.1: Random intercept models with additional individual attributes

	(1)	(2)	(3)	(4)	(5)	(6)
dependent variable			subjective social status			
income	0.404***	0.469***	0.404***	0.405***	0.403***	
	(0.017)	(0.022)	(0.017)	(0.017)	(0.017)	
income^2	-0.054***	-0.060***	-0.054***	-0.053***	-0.053***	
	(0.005)	(0.006)	(0.005)	(0.005)	(0.004)	
wealth	0.286***	0.313***	0.286***	0.292***	0.285***	0.288***
	(0.019)	(0.025)	(0.019)	(0.019)	(0.019)	(0.019)
wealth^2	-0.036***	-0.033***	-0.036***	-0.039***	-0.036***	-0.035***
	(0.005)	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)
age	-0.090*	-0.146*	-0.108*	-0.107*	-0.092*	-0.083
	(0.068)	(0.093)	(0.070)	(0.068)	(0.069)	(0.069)
age^2	0.040	0.079	0.067	0.057	0.041	0.038
	(0.068)	(0.092)	(0.073)	(0.068)	(0.069)	(0.069)
sex	-0.035*	-0.024	-0.040**	-0.042**	-0.034*	-0.034*
	(0.023)	(0.030)	(0.023)	(0.023)	(0.023)	(0.023)
education (years)	0.130***	0.150***	0.128***	0.130***	0.129***	0.127***
	(0.014)	(0.018)	(0.014)	(0.014)	(0.014)	(0.014)
occupational prestige	0.147***	0.160***	0.149***	0.146***	0.147***	0.147***
	(0.014)	(0.018)	(0.014)	(0.014)	(0.014)	(0.014)
family background	0.586***	0.311***	0.586***	0.575***	0.586***	0.588***
	(0.012)	(0.014)	(0.012)	(0.012)	(0.012)	(0.012)
unemployed	-0.481***	-0.602***		-0.520***	-0.477***	-0.489***
	(0.048)	(0.064)		(0.049)	(0.048)	(0.048)
full time			0.480***			
			(0.050)			
part-time			0.555***			
			(0.062)			
less than part-time			0.501***			
			(0.111)			
other			0.457***			
			(0.054)			
urban				0.006		
				(0.024)		
no party preference					-0.124***	
					(0.046)	
income decile						0.330***
						(0.014)
var(u)	0.161***	0.246***	0.162***	0.178***	0.151***	0.163***
	(0.086)	(0.131)	(0.088)	(0.103)	(0.080)	(0.090)
var(ε)	1.503***	1.733***	1.503***	1.485***	1.502***	1.503***
	(0.020)	(0.028)	(0.020)	(0.019)	(0.019)	(0.019)
country means	Yes	Yes	Yes	Yes	Yes	Yes
deserved earnings	Yes	Yes	Yes	Yes	Yes	Yes
N	11982	7835	11982	11680	11982	11982
ICC	0.097	0.124	0.097	0.107	0.092	0.098
DIC	38917.1	26574.4	38919.0	37799.5	38912.7	38919.3

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and wealth in thousand pps. Model 1 is the benchmark model. Model 2 excludes observation where respondants status matches family status. Models 3 to 6 include other control variables. All models are based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. All continuous variables are country-demeaned and standardized.

Table A.2: Random effects and fixed effects models

	(1)	(2)
dependent variable	subjective social status
income	0.070***	0.069***
	(0.004)	(0.004)
income^2	-0.001***	-0.001***
	(0.000)	(0.000)
wealth	0.002***	0.002***
	(0.000)	(0.000)
wealth^2	-0.000***	-0.000***
	(0.000)	(0.000)
age	-0.010**	-0.010**
	(0.004)	(0.004)
eage	0.000*	0.000*
	(0.000)	(0.000)
sex	-0.039**	-0.044**
	(0.023)	(0.023)
education (years)	0.031***	0.030***
	(0.004)	(0.004)
occupational prestige	0.012***	0.013***
	(0.001)	(0.001)
family background	0.327***	0.329***
	(0.007)	(0.007)
unemployed	-0.534***	-0.542***
	(0.049)	(0.049)
var(u)	0.144***	
	(0.057)	
var(ε)	1.517***	1.526***
	(0.020)	(0.020)
controls	Yes	Yes
N	11982	11982
DIC	39031.2	39096.0

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and wealth in thousand pps. Rancom effets model (1) and country fixed effects model (2). All models are based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. Variables are not country-demeaned nor standardized.

Table A.3: Random intercept models including fairness control variables

	(1)	(2)	(3)
dependent variable		subjective social status	
income	0.439***	0.404***	0.407***
	(0.017)	(0.017)	(0.017)
wealth	0.304***	0.286***	0.284***
	(0.019)	(0.019)	(0.019)
education (years)	0.126***	0.130***	0.129***
	(0.014)	(0.014)	(0.014)
occupational prestige	0.156***	0.147***	0.150***
	(0.014)	(0.014)	(0.014)
family background	0.594***	0.586***	0.588***
	(0.012)	(0.012)	(0.012)
unemployed	-0.483***	-0.481***	-0.488***
	(0.049)	(0.048)	(0.049)
deserved earnings		ref.	
much less		-0.532***	
		(0.034)	
less		-0.194***	
		(0.026)	
more		0.105*	
		(0.080)	
much more		-0.202	
		(0.166)	
income just			ref.
much less			-0.460***
			(0.033)
less			-0.169***
			(0.026)
more			0.088*
			(0.067)
much more			-0.137
			(0.154)
var(u)	0.175***	0.161***	0.159***
	(0.096)	(0.086)	(0.085)
var(ε)	1.534***	1.503***	1.511***
	(0.020)	(0.020)	(0.020)
country means	Yes	Yes	Yes
N	11982	11982	11936
ICC	0.102	0.097	0.095
DIC	39163.1	38917.1	38828.5

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and wealth in thousand pps. The follwing models are based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. All continuous variables are country-demeaned and standardized. Estimates for age, sex and quadratic terms are omitted.

Table A.4: Random intercept models with additional institutional factors

	(1)	(2)	(3)	(4)
dependent variable	subjective social status			
income	0.403***	0.403***	0.403***	0.403***
	(0.016)	(0.017)	(0.016)	(0.016)
wealth	0.285***	0.285***	0.285***	0.285***
	(0.019)	(0.019)	(0.019)	(0.019)
GDP per capita	0.485***	0.366*	0.092	0.448**
	(0.158)	(0.289)	(0.227)	(0.243)
continental Europe		ref.		
southern Europe		0.264		
		(0.473)		
post-socialist		-0.052		
		(0.447)		
liberal		0.068		
		(0.542)		
life exp. at birth			0.352**	
			(0.164)	
union coverage (%)				0.027
				(0.124)
var(u)	0.077***	0.105***	0.052***	0.088***
	(0.046)	(0.078)	(0.034)	(0.056)
var(ε)	1.502***	1.502***	1.502***	1.502***
	(0.020)	(0.020)	(0.020)	(0.020)
country means	Yes	Yes	Yes	Yes
controls	Yes	Yes	Yes	Yes
N	11982	11982	11982	11982
ICC	0.049	0.066	0.033	0.055
DIC	38912.4	38912.5	38912.3	38912.4

Note: * p<0.1, ** p<0.05, *** p<0.01. S.E.'s in parentheses. Income and Wealth in thousand pps. Based on MCMC estimation with hierarchical centering at level 2, a burn in of 500 and 10,000 iterations. All continuous variables are country-demeaned and standardized. Estimates for quadratic terms, age, sex, education, SIOPS, family background and occupation status are omitted.

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