INCOME DISTRIBUTION AND WELL-BEING: WHAT CAN WE LEARN FROM SUBJECTIVE DATA?

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Abstract. How does the income of others affect my own welfare? This survey of the empirical literature stresses the contribution of subjective data to the understanding of this issue, with an attempt to disentangle direct effects (preference interdependence) from indirect informational effects. It shows that perceived mobility is central to the link between other people's income and individual satisfaction, as it determines individual opportunities and risks. Agents also appreciate the egalitarian nature of mobility itself, so that individual welfare depends on dynamic inequality rather than static income distribution. These studies illustrate how subjective data can bring information on aspects of utility and social interactions that are beyond the scope of the method based on action-revealed preferences.

Keywords. Income distribution; Subjective data; Well-being

'Put generally, happiness, or subjective well-being, varies directly with one's own income, and inversely with the incomes of others. Raising the incomes of all does not increase the happiness of all [...].' (Easterlin, 1995).
'An individual's welfare depends on his present state of contentment (or, as a proxy, income), as well as on his expected future contentment (or income). Suppose that the individual has very little information about his future income...he will draw gratification from the advances of others. [...] The tunnel effect operates because advances of others supply information about more benign external environment.' (Hirschman and Rothschild, 1973).

1. Introduction

How does the income of others affect my own welfare? 'It does not' postulates the basic model of the *homo economicus* whose utility merely depends on his own consumption (hence income) and leisure. 'It reduces it' would assert many sociologists, psychologists and economists thinking about the comparison effects first described by Veblen (1999) and Duesenberry (1949). 'It increases it' would then answer some scholars, referring to altruistic feelings such as inter-generational solidarity (Becker, 1991). Beyond these direct channels, the income of 'relevant others' can also affect individual well-being indirectly, in a cognitive manner, as a

0950-0804/05/01 0043–21 JOURNAL OF ECONOMIC SURVEYS Vol. 19, No. 1

source of information useful for the formation of expectations (Hirschman and Rothschild, 1973).

The issue of the perception of other people's income, be it the income of a particular group, or the distribution of national income, bears important implications, both theoretical and practical. In particular, if only relative income matters, growth need not necessarily be a source of welfare. Public redistribution policies also depend on whether people's attitude towards inequality results from risk aversion (Ravallion and Lokshin, 2000) or to a pure preference for equality (Thurow, 1977). In this case, the question is whether this aversion relates to the inequality of positions or to the inequality of opportunities (Alesina *et al*., 2001).

As other people's income does not depend on their action, it is thus difficult to know how individuals perceive it using the classical method of revealed preferences. Analysing votes on income redistribution could help elucidate these preferences, but existing voting procedures are seldom fit for the revelation of such precise information, as people are usually asked to vote on a bundle of measures that include income distribution among other things. Hence, subjective data can be usefully mobilized to elucidate the relationship between income distribution and well-being.

The ambition of this survey is to organize the empirical findings about the social interactions related to income distribution, with an attempt to disentangle direct preference interdependence (comparison, aversion for inequality) from indirect cognitive effects (expected mobility, risk aversion). We leave aside the studies in preference interdependence in other domains such as consumption, saving and other economic behaviour (Ferrer-i-Carbonnell, 2002). Whereas empirical studies hinge on experimental and survey data, we only retain the latter so as to define a consistent set of studies and to focus on the lessons of quasi 'natural experiments' that are captured by social surveys. We mainly analyse satisfaction variables that most adequately reflect preferences and utility, even though we also sometimes analyse other variables such as opinions relative to income redistribution. We start by discussing briefly the motivation and track record of subjective data (section 2). We then turn to the empirical findings about reference income, distinguishing envy effects from informational effects (section 3). Section 4 then presents the empirical evidence on income inequality and satisfaction, with an attempt to separate self-centered from altruistic motives. Section 5 concludes.

2. Why Use Subjective Data?

Subjective data have been elicited by economists as a palliative to the failure of the traditional method of action-revealed preferences, i.e. to represent social – non-market – interactions, which are not adjusted by price movements, such as preference interdependence (norms and fads) or social learning (herd behaviour) and symbolic transactions. As such phenomena have been integrated into the field of economic theory since the 1970s, with the development of game theory, the challenge is now to complete these theoretical breakthroughs by empirical validation,

which raises delicate identification problems (Durlauf, 2002). As expressed by Manski and Straub (2000b, p. 132), 'Development of an informative, cumulative body of empirical research on social interactions will require clear thinking and adequate data. [...] Experimental and subjective data will have to play important roles in future efforts to learn about social interactions'. Eventually, theoretical and practical considerations lead to the same justification of subjective data: scholars and decision-makers can acquire information that would not be available otherwise by studying people's perceptions and not just their actions.

To be sure, individual satisfaction declarations are subject to many imperfections. Firstly, they do not measure *ex ante* utility but rather *ex post* Benthamite well-being (Kahneman *et al*., 1997). Secondly, they are flawed by attempts at controlling one's self-image, cultural biases, interactions with the surveyor, memory and lucidity failures, question formulation and order effects, answers to irrelevant questions, mood effects and difficulty of interpreting the answers (Bertrand and Mullainathan, 2001). The general problem lies in the interpretation of reported satisfaction, which is supposed to reflect unobservable utility or well-being. Interpreting subjective satisfaction data implies (i) relating discrete verbal satisfaction judgements to a latent, unobserved, continuous utility variable, and (ii) associating utility levels to observable characteristics. At each stage of this process, strong assumptions must be accepted: (a) the link between observable variables (income for instance) and latent utility is the same for all individuals, i.e. the parameters of the individual satisfaction function[1] are identical for all agents (Tinbergen, 1991), (b) the association between a verbal satisfaction label and a latent utility level is the same for everybody. If either of these two assumptions is not verified, any interpretation of reported satisfaction will be misleading because of an 'anchoring effect' (Winkelmann and Winkelmann, 1998).

This problem of unobserved heterogeneity can be particularly delicate and lead to spurious regressions if the latter is correlated with exogenous variables, e.g. if the unobserved characteristics that are individual specific and generally time invariant influence both the dependent and the independent variables. 'Personality' is the term used by psychologists to denote this set of idiosyncratic variables. Extraversion is frequently quoted as a feature associated with a more happy 'personality' (Diener *et al*., 1999) and also likely to influence economic variables such as income or employment. The problem of unobserved heterogeneity calls for the use of individual effects – ideally fixed effects. However, this is not always compatible with the statistical model at hand. Fixed effects are possible when the dependant variable is linear, which is a strong assumption concerning satisfaction scales as it implies that cardinal interpersonal comparisons of satisfaction are possible.[2] Economists are more inclined to assume ordinal comparisons of satisfaction, which calls for ordered logit or probit statistical models with no standard way, to date, of introducing fixed effects. We refer the reader to the discussion of this issue by Frijters and Ferrer-i-Carbonnel (2004). To be brief, the authors show that treating the reported satisfaction variable as cardinal or ordinal is much more neutral, in terms of statistical consequences, than controlling or not for the unobserved individual heterogeneity with individual fixed effects. This is a powerful

argument in favour of using panel data instead of cross-section data. An additional argument in favour of panel data is that it offers the possibility of introducing lags and treating the problem of endogeneity of many explanatory variables such as income. Lastly, the importance of dynamic phenomena such as adaptation and aspirations (van Praag, 1991; Di Tella and MacCulloch, 2003; Stutzer, 2003) constitute another strong argument in favour of panel micro-data.

In spite of methodological caveats (Frey and Stutzer, 2002b), subjective data have proved to be stable and useful. Diener *et al*. (1999) have shown that the stable component of satisfaction dominates mood effects. This is reflected by the consistency of welfare functions estimated using different national surveys (Frey and Stutzer, 2002a; van Praag *et al*., 2001; Di Tella *et al*., 2001a). This identification of the 'correlates of happiness' meets one of the early interests of psychologists (Wilson, 1967). The most stable relations are, *ceteris paribus*, the age effect (a U-shaped relationship with a minimum around 40 years, where age captures cohort effects in the same time), the positive influence of marriage (as compared to divorce or widowhood), of health, of religious beliefs (Ellison, 1991; Lelkes, 2002), of income and of being unemployed (Clark and Oswald, 1994; Oswald, 1997; Winkelmann and Winkelmann, 1998; Frey and Stutzer, 2000).[3] Education generally exerts a slightly positive impact on well-being, but this relation could be mediated by income and status effects. Of course, for most of these relations, the direction of causality is uncertain; there is a risk of selection bias and omitted variables: e.g. 'married people are happier', but is marriage the cause or the consequence of happiness (Stutzer and Frey, 2003; Blanchflower and Oswald, 2003a)? Moreover, only 8% to 20% of the variation in individual welfare is explained by observable characteristics (this is the typical order of magnitude of the r^2 of these regressions). However, subjective data have a predictive power over actions (Manski and Straub, 2000a, b). Bertrand and Mullainathan (2001) show that values and beliefs have a significant explanatory power over the wage level of a sample of adult American students. Subjective data also correctly predict consumption, saving, investment and voting behaviour (Frey and Stutzer, 2002b).

De facto, economists' reluctance to use subjective data seems to diminish progressively. The use of subjective data, launched by the Leyden school under the impulsion of Bernd van Praag (e.g. 1971) in the 1970s is now developing at fast pace since the late 1990s with a large corpus of studies dedicated to agents' attitude towards inequality, public policies, unemployment and labour relations. This new wave of papers analyses the welfare consequence of the evolution of exogenous variables in time or in space, supposing that these changes affect individuals in a quasi-random way. This is tantamount to estimating a social welfare function starting from individual data. For example, subjective data are used to calculate the welfare cost of macroeconomic business cycles (Di Tella *et al*., 2003), agents' preferences in terms of the unemployment–inflation trade-off (Di Tella *et al*., 2001), the optimal generosity of the social safety net (Di Tella *et al*., 2003), the non-pecuniary effect of unemployment on welfare (Clark and Oswald, 1994; Winkelmann and Winkelmann, 1998), the structure of job satisfaction (Freeman, 1978; Blanchflower and Oswald, 1998, 1999, 2000; Clark and

Oswald, 1996), the welfare effect of democratic institutions (Frey and Stutzer, 2000), of income inequality (Alesina *et al*., 2004; Clark and Oswald, 1996; Senik, 2004b), of the German unification (Frijters *et al*., 2001), or the link between satisfaction and labour mobility (Akerlof *et al*., 1988), and the composition of an index of life quality (Frey and Stutzer, 2002b). The measure of poverty, a very controversial notion (Hagenaars and de Vos, 1987), also constitutes an important implementation field for subjective data (van Praag *et al*., 1980; Ravallion and Lokshin, 2001; Ferrer-i-Carbonnell and van Praag, 2001). We refer the reader to the extensive overview of the field offered by the paper and the book by Frey and Stutzer (2002a, b), and van Praag and Ferrer-i-Carbonell (2004). We now turn to the evidence concerning relative income, income distribution and satisfaction.

3. Relative Income and Well-being

One of the explanations of Easterlin's (1995) paradox that 'raising the incomes of all does not increase the happiness of all' points to comparison effects. If a general increase in national wealth does not make inhabitants of a country happier, it is because the latter only value the relative progress in their personal income, compared to that of some relevant other, some reference group. This notion of comparison income, relative income or relative deprivation constitutes a specific case of the psychological discrepancy theory (Michalos, 1985) which postulates that satisfaction judgements depend on the gap between a person's situation and her comparison benchmarks (which in turn can be constituted by other persons, past situations, aspirations, needs and objectives).[4] It is surprising that in spite of the large theoretical literature on relative income and comparison effects (Frank, 1997; Cooper *et al*., 2001), empirical validation of this conjecture is still scarce. We present in section 3.1 empirical tests of the 'comparison income' conjecture based on subjective data.

3.1 *Comparison Income: A Case of Preferences Interdependence*

A famous study is that by Neumark and Postelwaite (1998) who use empirical evidence, although not based on subjective data, to analyse young women's decision to be in the workforce. The authors use the national longitudinal survey of youth and observe the early employment status of female school dropouts. They show that the probability that a woman is employed depends positively and significantly on her sister-in-law being employed. Their most spectacular result is that currently married women with non-employed sisters tend to participate significantly more in the labour market when the income of their sister's husband is larger than their own husband's. The authors interpret these results as reflecting relative income concern among siblings. In a way, the empirical literature on efficiency wages is also evidence of income comparison motives (Cappelli and Chauvin, 1991). These examples illustrate the possibility of direct preference interdependence.

We now turn to the evidence based on subjective data. In order to test the income comparison conjecture, economists have used national surveys of industrialized countries. They have produced empirical evidence that relative comparisons are important in determining people's satisfaction in the Netherlands, Germany, the UK, and the USA.

The Netherlands and Belgium

Following the Leyden school methodology, van de Stadt *et al*. (1985) use the Netherland's panel data (1980 and 1981 waves) containing 775 households and consider the influence of the reference group (51 groups defined by education, age and employment status) on parameter μ_i which is a comparison benchmark.[5] Their estimates lead to the conclusion that income satisfaction is at least partly relative. A similar result is found by Kapteyn *et al*. (1978) using Belgian data.

Germany

Ferrer-i-Carbonnell (2004) tests the relative utility conjecture on the GSOEP (German Socio-economic Panel) 1992–97 waves (16,000 individuals). She computes the average household income of 50 groups defined by age category, education category and region (whether East or West Germany) as well as gender in some specifications. Using an ordered probit with individual random effects, she shows that a person's satisfaction with life decreases with the income of her reference group. This effect is significant in West Germany, but unstable in East Germany. In West Germany, the effect is asymmetric: the coefficient on reference income is only significantly negative for individuals whose own income is smaller than their reference group's income, conforming to Duesenberry's (1949) intuition that only upward comparisons matter.

UK

Clark and Oswald (1996) analyse job satisfaction ('all things considered, how satisfied or dissatisfied are you with your present job overall?') of the 5195 workers of the first wave of the BHPS (British Household Panel Survey, 1991). They define the comparison income of a worker as the income of employees of the same age and same level of qualification who occupy the same kind of job. The authors then estimate a job satisfaction equation using an ordered probit and find that individual income and comparison income attract about the same coefficient, but with an opposite sign: comparison income has a negative coefficient. This suggests that job satisfaction is entirely relative. Similar regressions using the 'satisfaction with pay' variable lead to the same result. In a subsequent paper, Clark (2003a) uses 11 waves of the BHPS (1991–2001) and verifies the negative and significant influence of reference income on life satisfaction. More precisely, he finds that the mean income of one's reference group defined by sex, region and wave has a negative influence on the life satisfaction of full-time employed workers. Referring to a larger concept of comparison, Clark (2003a) uses seven waves

of the BHPS including 10,000 individuals (1991–1997) and regresses the Likert index of mental well-being (constructed with the General Health Questionnaire included in the survey) on individual characteristics and regional unemployment. He finds that the utility of the unemployed rises with the unemployment rate of their reference group, be it the region, the partner or the household. This can be interpreted as a comparison effect affecting unemployed people. Lastly, Clark (1996) brings evidence of income comparison inside the household. Using the first wave of the BHPS (1991), he shows that job satisfaction is negatively correlated with the average hourly wage rate of the partner or the household. This effect is asymmetric: catching up brings more welfare than surpassing the wage rate of relevant others.

USA

McBride (2001) uses 324 observations of the 1994 wave of the General Social Survey and studies how a person's satisfaction depends on the income of her cohort (persons born 5 years before and after her) as well as on her parents' living conditions at the same age (whether their standard of living was better or worse than hers). An ordered probit model shows that, controlling for the agent's own income, her satisfaction decreases with these variables. These relative income effects are stronger the higher the income of the individual, whereas the influence of the agent's own income is higher for low-income groups. Blanchflower and Oswald (2003b) use the General Social Survey of USA, which contains about 1500 randomly sampled individuals per annum from 1972 to 1998 (not panel). Estimating a satisfaction equation with an ordered logit model, they obtain a negative – although not well-determined – coefficient for the average income of an individual's state. In addition, the log difference between individual income and the state income per capita enters with a positive and significant sign in the equation, even when controlling for the regional house price index which proxies the cost of living. Lastly, the ratios of individual income to the various income quintiles within the person's state also enter positively in the equation, especially the ratio of individual income to the upper quintile. This attests the presence of comparisons, in particular of upward comparisons: 'people compare themselves with the well-off families'.

Note that Di Tella and MacCulloch (2003) reach a different conclusion with 18 waves of the US General Social Survey (1972–2000) and 23 waves of the Euro-Barometer Survey Series (1975–1997), totalling over 380,000 observations. Regressing a satisfaction equation with an ordered logit model, they find that both relative income (individual income divided by average GDP) and GDP per capita attract a positive and significant coefficient of about 0.5, which implies that one can reject the assumption that only relative income matters. Of course, relative income is defined by reference to the average national income, which may not be the relevant reference income for individuals.

Cappelli and Sherer (1988) study job satisfaction in a major American airline company, based on a stratified sample of 579 employees. They find that the

equivalent outside market wage, calculated for each of the 19 different jobs and seniority levels at the carrier, has a significantly negative effect on pay satisfaction (ordinary least squares regression), controlling for individual wage and other job characteristics. The extent to which workers make outside comparisons is also a factor of lesser pay satisfaction. However, this result is reversed in the estimation of work satisfaction rather than pay satisfaction, which is interpreted by the authors as an information effect, with the market wage containing information about the relative quality of the job in general.

Lastly, Corneo and Grüner (2001) find concerns for relative status rather than relative income, using the ISSP, Social Inequality II module (1992, 1273 individuals) and the International Prestige Scores contained in the 1989 National Opinion Research Center of the GSS (General Social Survey) programme. They show that individuals' demand for redistribution depends on how it is likely to modify their relative position in terms of prestige.

In summary, the conjecture of relative income has mainly been verified with data from industrialized stable countries, and the tests tend to validate the idea that income satisfaction is at least partly relative. Senik (2004b) generalizes this result to the 15 countries of the European Community Household Panel (over one million observations) using conditional fixed effect logits. The next section shows that studies in more unstable countries lead to a different interpretation of the reference income.

3.2 *Reference Income as a Cognitive Category*

Transition countries offer a good opportunity to test the impact of relative income and income inequality in a different environment characterized by high-income inequality, volatility and uncertainty (Brainard, 1998). What can we learn from this quasi-natural experiment?

Russia

Senik (2004a) uses the 1994–2000 waves of the Russian Longitudinal Monitoring Survey, a panel data set containing about 4000 individuals present at each round. Following the same methodology as Clark and Oswald (1996), she estimates, in a first stage regression, a person's reference income as the typical income of people with the same productive characteristics (experience, diploma, profession, branch and region). In a second stage, she regresses individual life satisfaction on socio-demographic characteristics, including the reference income estimated in the first stage. She shows that the reference income exerts a positive impact on individual satisfaction. This result is robust to a variety of statistical models (ordered probit, dynamic panel fixed effect model and conditional fixed effect logit); it also holds in cross section, as in Clark and Oswald (1996).

Regressions show that the positive influence of the reference income is stronger the more uncertain agents are about their professional and material future ('are you concerned that you might lose your job?', 'are you concerned about getting the bare essentials?') and the higher their income volatility. It is also stronger for younger

individuals (under 40 years of age), whose professional future is longer. The positive influence of reference income on individual satisfaction does not depend on whether her personal income has increased or decreased nor on whether her personal income has moved in the same direction as her reference income.

This unusual result is certainly linked to the context of uncertainty of the Russian transition which confers a particular importance to the informational content carried in the income of one's professional peers. As with the 'tunnel effect' suggested by Hirschman and Rothschild (1973), individuals can derive positive flows of utility from observing other people's faster progression if they interpret this evolution as a sign that their turn will come soon, for instance if the other lane of cars starts progressing towards the exit while their lane is still immobile during a traffic jam inside a tunnel.[6] In the Russian context of economic transformation, other people's income can be interpreted in a cognitive manner, as a source of information rather than a norm. Income comparisons indeed have little value in a situation where relative positions change fast. Conversely, any information that can nourish agents' expectations becomes highly valuable. The cognitive effect of other people's income thus dominates the comparison effect which has more importance in more stable contexts.

Hungary, Poland and the Baltic countries

In order to explore further this conjecture, Senik (2004b) uses the Hungarian TARKI panel database that runs from 1992 to 1997 and contains about 8000 individuals at each round. She finds that, again, the reference income, calculated as indicated above, exerts a positive influence on individual satisfaction, i.e. on satisfaction with income and satisfaction with future perspectives. This result holds in ordered probit and linear fixed-effects regressions, as well as in cross section. Again, the effect is stronger for individuals under 40 years of age and especially for risk-averse people who agree that they 'prefer a secure job to a well-paid job'. The same result is obtained with the Polish Household Survey (1994–2000) and the household surveys of Estonia, Latvia and Lithuania (Senik, 2004b). Hence, it seems that more unstable environments such as those of transition countries tend to change the perception of other people's income, which is used as a source of information rather than as a benchmark for comparison. However, even in a more stable environment, it seems that reference income can play an informational role for categories of the population which are more uncertain about their perspectives. This is what Levy-Garboua and Montmarquette (2003) show, using a similar methodology.

Canada

Levy-Garboua and Montmarquette (2004) use a Canadian cross-section of 2600 employed workers form the General Social Survey (1986) and estimate a model of job satisfaction, using an ordered probit model. They define wage gaps as the residual of an earnings function. They show that the effect of past wage gaps on

job satisfaction are positive and decrease with work experience; the effect of past wage gaps is stronger than that of current wage gaps. Hence, reference wage is shown to be an informational category that incorporates past expectations.

In summary, empirical studies confirm the importance of the reference income category, even though the interpretation of this notion is not unequivocal. The theory of comparison income suggests that other people's income directly affect individual utility, whereas the cognitive interpretation of the reference income implies that the nature of the relation between reference income and utility is informational and indirect. Both types of results underline the importance of social interactions (social comparisons or social learning) that involve income and individual satisfaction. Note that Samuelson (2002) somewhat reconciles the two views in an evolutionary framework. His theory is that evolution has incorporated relative consumption into human preferences as a selection device because 'information-based relative consumption effects, in the form of a tendency to push consumption levels in the direction of those observed in one's contemporaries, thus makes optimal use of information in response to the uncertainty of the environment'.

Beyond the income of a reference group, how does the entire distribution of national income affect individual welfare? This is the object of the next section.

4. Income Inequality and Well-being

The empirical relation between income inequality and well-being is still little explored, even though it is often supposed *a priori* that income inequality reduces individual well-being, an argument in favour of redistribution policies. The issue is whether income inequality, i.e. income distribution, enters directly as an argument in the utility function of agents, in which case it would constitute a form of altruism. A related question is whether the attitudes towards income distribution reflect a concern for other people's outcome, or always boil down to self-interests. Certain studies confirm the existence of a pure aversion to inequality, i.e. a direct relation between income distribution and well-being. Others suggest the central role of mobility perspectives in the attitude towards inequality; the relation is then indirect and reflects agents' evaluations of their own perspectives instead of their altruism. However, a third series of studies stresses the link between the nature of mobility and the demand for income redistribution. In this perspective, agents have a pure preference not for static income equality, but for dynamic equality, i.e. equality of opportunities. Policy recommendations should obviously be different depending on which assumption is relevant.

4.1 *A Pure Aversion to Income Inequality*

Does income inequality as such reduce agents' well-being?[7] If so, the aversion for inequality enters directly in individual utility function as a pure preference, an 'aesthetic taste for equality or inequality similar in nature to a taste for paintings' (Thurow, 1977). It then constitutes a pure public good as it is non-exclusive,

non-rival and justifies a legitimate public (fiscal) intervention [see also Pauly (1973) for an interpretation of income distribution as a local public good].

One of the first attempts at verifying the existence of a hypothetical 'preference for income equality' was made by Morawetz (1977). The authors compare the reported satisfaction of the members of two small communities (Moshavims) composed of 40–50 households, located near each other in Israel, and differing only by their degree of income inequality. Regressions show that belonging to the most egalitarian community (dummy variable) has a positive and significant influence on satisfaction. However, the very fact of living in such communities certainly constitutes a selection bias that influences the result.

Schwarze and Härpfer (2002) address the same question using the German Socio-Economic Panel (waves 1985–1998). They compute Gini inequality indices for each of the 75 regions of West Germany and relate this indicator to the life satisfaction question present in the GSOEP survey, using ordered probit, ordinary least squares and linear fixed effects models. They find that Germans are averse to inequality, in the sense that the Gini index attracts a negative and significant coefficient, no matter what their position in the national or the regional income distribution, i.e. in terms of gross income quintile, or relative to the average national level of income (interaction terms).

Following a similar approach, Alesina *et al.* (2004) reach a more balanced result. They analyse the declared satisfaction of the Euro-Barometer Survey (1975–91) and the General Social Survey (1972–1994). An ordered logit regression shows that inequality measures (Gini indices) calculated at the State level (USA) or country level (Europe) do not affect the well-being of Americans, no matter whether they are right or left-wing, poorer or richer than the median (inequality has a modest negative effect, only significant at the 10% level on rich leftist Americans). By contrast, Europeans' satisfaction decreases with inequality, in particular for poor and left-wing people. Europeans thus seem to have a pure preference for income equality, independently of their personal situation. Di Tella and MacCulloch (2003) reach a similar conclusion with longer series of the same data (380,000 useful observations).[8] However, Blanchflower and Oswald (2003b) estimate a happiness equation with ordered logits on the General Social Survey (1976–1996) and find that the measure of the inter-quintile range of income per state of the US per year (the ratio of the mean of the fifth quintile earnings to the first quintile earnings) has a negative effect on happiness, especially for workers.

Can these differences be interpreted as cultural traits? In the same order of ideas, Suhrcke (2001), using the Social Inequality module of the 1999 ISSP survey, reports that 63% of the individuals of formerly socialist countries declare they 'totally agree' that income differences are too large in their country, whereas this figure is only 35% in capitalist countries. This result for former socialist countries[9] is confirmed by an ordered logit regression, even though the effect is reduced by half when Gini indices are introduced in the regression. Corneo and Grüner (2001) also report that the motives of the attitudes towards redistribution vary across countries.

4.2 *The Role of Perceived Mobility: Returning to Self-centred Preferences*

Should we conclude that inequality aversion differs among national cultures? Alesina *et al.* (2004) interpret their result differently. They attribute it to the effect of perceived mobility: '... in the US, the poor see inequality as a ladder that, although steep, may be climbed, while in Europe the poor see that ladder as more difficult to ascend'. In this view, individuals appreciate income inequality depending on their personal perspectives. As income mobility is perceived to be higher in the USA than in Europe (rightly so or not), static income distribution affects Europeans more than Americans, because it conveys more predictive power about their future incomes. This view is close to Hirschman and Rothschild's (1973) intuition: when society is transforming, it can tolerate and even appreciate important inequalities conditionally on the prospect for rapid progress for all categories. It is clear that this 'tunnel effect' crucially depends on the perception of social mobility. Indeed, for other people's income to carry an informational value, it is necessary that the circulation of individuals into the various social positions be as fluid as possible. In this view, Americans tolerate or even appreciate income inequality as a measure of the scope of opportunities offered to each of them.

Alesina and La Ferrara (2001) provide evidence that indeed, individuals with greater expected income growth are more likely to oppose redistribution. Using the GSS and the Panel Study of Income Dynamics (1978–1991), they use an ordered logit model to analyse the answers to the question whether 'the government should reduce the income gap between poor and rich people'. They show that the answer depends on their actual mobility, i.e. the individual's position as compared to her parents' position and her objective mobility probability calculated with the American mobility matrix (more precisely, this matrix contains the probability that individuals in different income brackets will reach levels of income in the future that make them net losers from redistribution). The prospect of upward mobility is a strong predictor of lesser individual support for redistribution. In the same vein, Alesina *et al.* (2001) use the GSS and define mobility as the difference in the occupational prestige of the respondent and her father. They show that there is a significant negative effect of mobility on the support for more spending on welfare.

If attitudes towards redistribution depend on individuals' prospects for mobility, it should then vary depending on the direction of mobility. One thus needs to distinguish the prospects for upward mobility which would be associated with anti-redistributive sentiments, from prospects for downward mobility which could be associated with a demand for insurance, hence for more redistribution, motivated by risk aversion.

Clark's (2003a) results can be interpreted likewise. Considering the full-time employees in 11 waves of the British Household Panel Survey (1991–2001, 10,000 individuals), he shows that life satisfaction is positively correlated with the Gini index of income inequality calculated inside one's reference group (defined by gender, region and wave). This inequality-loving is stronger for the young and those with below average income, as well as those whose own incomes have shown the most variability over the past 3 years and those who are on the steepest income

path. These results can be interpreted as a proof that only risk averse persons dislike inequality; hence, inequality aversion would merely be a form of risk aversion.

In the same line, Ravallion and Lokshin (2000) report that in 1996, in Russia (sixth round of the RLMS [Russian Longitudinal Monitoring Survey] survey), 63% of the individuals who belonged to the richest consumption decile were in favour of 'restricting the income of the rich': those were essentially individuals who expected their personal material situation to deteriorate in the coming year (84.5% of the latter category were favourable to income redistribution). Estimating a probit model with random effects, they show that the demand for income redistribution decreases with individual wealth only for people who expect their standard of living to improve in the future. Variables reflecting uncertainty and worry about the future also attract a positive coefficient in the estimation of the demand for redistribution. In summary, people who are favourable to income redistribution are those whose material future perspectives are bleak. The demand for redistribution is a demand for insurance protection. In the same order of ideas, if more inequality goes together with increased poverty and violence, individuals can express an aversion for inequality which reflects their purely self-minded worry about criminality (Alesina *et al.*, 2001).

Using RLMS data (1994–2000, 11,000 individuals), Senik (2004a)) introduces inequality indices in the estimation of an individual satisfaction equation. In spite of the rapid and impressing widening of income inequality in Russia (Brainard, 1998), she finds that Gini or Stark[10] inequality indices calculated at the level of the country, the regions or the Primary Sample Units do not significantly influence individual well-being, even though agents do seem to have a correct perception of their place in the distribution of income. This is again in line with Hirschman's conjecture that other people's income affects my utility through the information that it conveys: the informational value of the static distribution of income is weak when the latter is perceived to be rapidly changing, which is the case in Russia. Static inequality is then dominated by the perspective of mobility.

Boeri *et al.* (2001) surveyed 5500 Europeans, asking questions about their desired extent and structure of the welfare state. An ordered probit regression shows that those who want to increase the amount of contributions and transfers to households are rather older, poorer, unionised, employed (rather than self-employed), women. Even though 'left' is statistically significant, introducing political dummies does not alter the rest of the estimation. These results suggest that economic self-interest is a leading motive, if not the only one, of the demand for redistribution. The same kind of finding is observed when one analyses the desired structure of transfers between pensions and unemployment insurance: older, less educated individuals on a permanent contract oppose unemployed people.

At this point, the demand for redistribution seems to be motivated by self-centred motives. The central role of perceived mobility is uniquely explained by individuals' purely selfish calculation about their own chances and possible direction of mobility: it could reflect a demand for risk-insurance by the rich and a demand for mobility by the poor. This view does not entail any preference interdependence, nor pure aversion for inequality, at least for static inequality. The next two sections contain evidence of some forms of altruism.

4.3 *Reduced Altruism or Mutual Insurance*

Between purely self-centred preferences and pure concern for other people's income, some authors have suggested a form of reduced altruism, say 'ethnic altruism'. Ethnic altruism means that the demand for redistribution depends on the identity of the potential beneficiaries. In particular, agents are more reluctant to redistribute income if they expect that the transfers will be directed to a different ethnic group.

Luttmer (2001) matches 20 waves of the GSS with information from the American decennial censuses including the level and composition of local welfare recipients (black versus white recipients). He finds that the self-reported support of white people for welfare spending is decreasing with the proportion of black recipients in the local population and vice versa. Moreover, the respondent's race is among the strongest predictors for welfare support. A related prediction is that if people prefer to redistribute to their own racial group, they prefer less redistribution when members of their group constitute a smaller share of beneficiaries. Luttmer tests this theory of racial fragmentation by showing that the actual state level welfare benefits do depend on a predictor of welfare support based on the individual characteristics of the state population. This predictor explains 33% of the variation across states in the Aid for Family with Dependent Children benefits per household. This paper is one of a series that attempts at explaining the difference between the USA and Europe in terms of the level of redistribution.

In the same vein, Alesina *et al.* (1999, 2001) claim that racial animosity makes redistribution to the poor, who are disproportionately black, unappealing to many voters; this limits the political power of the poor and the actual extent of redistribution. They use the GSS (1972–2000) and analyse the question 'do you think that the state should spend more on welfare?'. As Luttmer, they find that the single biggest coefficient in the regression is race (controlling for income, age, education, etc.). People who declare that 'they had black people over to dinner in the last few years' are more likely to support increased welfare. Eventually, there is a strong negative relationship between the generosity of the program and the share of the state that is black ($R2 = 0.49$). This relation holds in a regression where the maximum AFDC payments per household are explained by the average state income and the share of black people. The last variable attracts a negative and significant coefficient. Lee and Roemer (2002) make exactly the same argument that racism among American voters reduces the degree of redistribution that would otherwise obtain, because of a policy bundle effect. They use a model of political competition between parties that they estimate with micro-data from the Panel Study of Income Dynamics and the National Election Studies. Their spectacular result is that racism has reduced the marginal tax rate by 10–20% points between 1972 and 1992.

These studies attest the existence of some preference interdependence, limited within a religious or ethnic group. An alternative explanation is based on the 'moral of reciprocity' (Fong, 2003), i.e. people are willing to transfer income to others conditionally on the guarantee that the latter are not free-riding on the

system. Whether this is a form of altruism or an implicit contract of risk mutualization is not clear. Beyond this vision of reduced altruism, other studies suggest a stronger form of concern for other people, whereby individuals have a pure preference for dynamic equality, i.e. the equality of opportunities.

4.4 *Pure Preferences for Equal Opportunities*

Fong (2001) analyses the 1998 Gallup Poll Social Audit Survey, 'haves and have-not: perceptions of fairness and opportunities', a sample of 5000 Americans with an ordered probit model. To be sure, purely selfish considerations (own prospects for mobility for instance) do exert an important influence on individuals' opinion concerning income redistribution. However, these motives are not exclusive. In particular, the existence of job and progression opportunities for everybody, the respective importance of individual responsibility versus social determinants, of effort versus chance, and the idea that American society is a society of 'haves and have-not' exert a significant influence on reported opinions. It is remarkable that these 'altruistic' motives are relevant even in the sub-sample of wealthy individuals who expect their position to improve in the coming 5 years and are confident about their financial perspectives. Moreover, the interaction between believing that race determines the chance of success and being white attracts a positive and significant coefficient in the regression of the demand for redistribution, which is the opposite sign of what would reflect a self-centred attitude. The author concludes that the demand for redistribution cannot be exclusively attributed to selfish motives. It does depend on preferences concerning other people's income and opportunities.[11] Dynamic income distribution and, in particular, the equality of opportunities thus seem to enter directly in the individual utility function. Fong (2003) again tests the view that demand for redistribution is motivated by purely self-centred motives. She uses data from a Gallup Organization Social Audit, a national sample with 5000 adult respondents, and the National Survey of Midlife Development in the US 1995–1996 (4242 individuals). She shows that subjective expected mobility does not robustly predict a lower support for redistribution.

In the same line of reasoning, Alesina and La Ferrara (2001), using the GSS and the Panel Study of Income Dynamics (1978–1991), show that a person's attitude towards redistribution depends on her opinion concerning the determinants of income. Individuals who think that income is determined by luck, social acquaintances, family history, etc. rather than individual effort, education and ability are more favourable to government redistribution, even after controlling for their income, gender, marital status, race, age, living area, employment status and personal experience of social mobility. In the words of the authors, 'people who are the most opposed to redistribution are those who believe that the social rat race is fair, that is, everyone has the same opportunities to move up in life'. Similarly, Alesina and Angeletos (2002) show that the actual state total spending depends positively on the mean state belief that luck determines income. The principal proposition of these authors is that equal opportunities and equal

positions are substitutes in the eyes of the American population. In other words, agents only dislike static inequality when they interpret it as the fruit of dynamic inequality, i.e. of inequality in opportunities.

This fairness motive can also be reformulated as a kind of risk aversion extended to other people, i.e. a dislike of risk not only for me but also for other members of the society. Indeed, if Americans, who believe that poverty is the result of insufficient effort, are less favourable to redistribution than Europeans, who believe that poverty is the outcome of bad luck, then the desire to correct the spontaneous distribution of income can be seen as a desire to limit the effect of exogenous accidents, i.e. a demand for social insurance which is indeed the main motivation of the welfare state as underlined by Alesina and Angeletos (2002). A piece of evidence that goes in this direction is provided by Alesina and La Ferrara (2001) who show that self-employed people, who are certainly less risk-averse than the average, are much less prone to favour redistribution, even after controlling for income and other individual characteristics.

It remains that attitudes towards inequality partly seem to depend on the process that generates income distribution and income mobility. Inequality seems more acceptable when it is perceived to result from individual effort, 'merit', than from family transmission. This sheds additional light on the difference between Europe and the USA: the Americans believe not only in a potentially higher mobility but also in a more equitable mobility, which makes them less favourable to income redistribution than Europeans. According to the World Values Survey, 71% of Americans believe that the poor have a chance of going out of poverty, whereas this proportion is only 40% in Europe[12]; 70% of West Germans believe that poverty is due to society and not idleness, whereas the ratio is inversed in the USA: 60% of Americans think that poor people are lazy (Alesina *et al*., 2001a).

5. Conclusion

The set of articles surveyed in this paper reveals an important and multi-faceted link between well-being and income distribution. Other people's income does seem to affect individual well-being. The link is direct in the case of relative comparisons and pure aversion for inequality, which involve preference interdependence. It can also act in an indirect way, via perceived mobility. The latter indeed determines individuals' prospects and risks; the channel from inequality to satisfaction is then informational and involves the formation of expectations. Lastly, agents can also be affected by the nature of the mobility process itself, with a possible pure preference for equality of opportunities, which is again a case of preference interdependence.

This non-exhaustive survey hopefully illustrates the role that subjective data could increasingly fulfil in economic research: to investigate the formation of utility and social interactions that are beyond the scope of the method of revealed preference, and to guide economic policy in the light of citizens' preferences.

Acknowledgements

I am grateful for a CNRS' ATIP funding and support from the 5th PCRD of the European Union. This paper has benefited from useful discussions with Jean-Olivier Hairault and Andrew Clark. The usual disclaimer applies.

Notes

1. One question is the functional form of the utility function. Authors of the Leyden school use a bounded log-normal function so as to reproduce the mental process along which individuals evaluate their situation by comparison with a maximum attainable ideal. This is not the only route, and statistical models of discrete variables, adapted to the treatment of satisfaction scales (ordered probit or logit), do not require this assumption.
2. Cardinality, i.e. preference intensity, was initially considered by utilitarian economists and abandoned in the 1930's; it now has partisans such as Ng (1997) who advocates that it is possible for him to estimate how much exactly he prefers bundle A to bundle B. See also Kahneman *et al*. (1997).
3. Blanchflower and Oswald (2004) provide some interesting illustrations on the basis of American (GSS) and English (Eurobarometer) data spanning from the end of the 1970's to the end of the 1990's: in constant 1990 dollars terms, it would take $60,000 per year to compensate men for being unemployed, $30,000 per year to compensate them for being black instead of white and $100,000 per year to compensate divorce or widowhood.
4. Many studies have qualified this theory. The choice of the reference group and the direction of comparison effects have been shown to depend on individuals, and to be the object of selection strategies (Diener and Fujita, 1997; Falk and Knell, 2000). Tellic theories underline the fact that the pursuit of objectives can constitute factors of well-being as such (Michalos, 1985; Csikszentmihalyi, 1990; Diener and Lucas, 2000). The direction of causality is not univocal: well-being itself is likely to affect the definition of objectives. Some authors (Diener and Fujita, 1997) also stress the importance of the congruence between the level and nature of individual aspirations and the latter's resources.
5. Assuming that the Welfare Function of Income is log-normal: $W_i = N(\log y_i, \mu_i, \sigma_i)$, where y_i stands for the income of individual i and parameter μ_i represents the median value of the income distribution imagined by individual i.
6. The metaphor of the tunnel (lack of visibility) is important, as the information carried by other people's income is only valuable in a situation of uncertainty concerning the future.
7. Let us recall that most individuals only have a partial knowledge of the distribution of income in their country. Falk and Knell (2000), using 1992 ISSP data on 18 countries, show that the subjective self-ranking of individuals on a 10 ladders scale is biased compared to their real situation. Most people believe that they belong to the average range of income. Individuals of the lower income decile rank themselves at 4.5 on a 10-graduations scale, and those of the upper income decile at 6.5. This observation suggests that most people have a biased representation of the distribution of income; as they only know the small portion to which they belong, they give subjective high weights to individuals in their decile and low weights to the extremes that are far away from their own position.
8. Helliwell (2002) using three waves of the World Value Survey (1982, 1990, 1996) that covers 46 countries (87,800 observations) also finds that adding a Gini coefficient for each national economy adds no explanatory power to the well-being equation that he estimates with ordinary least squares or ordered probit models.
9. Controlling for a series of individual characteristics, as well as for national Gini indices, dummy variables standing for socialist countries are significant.

10. Stark indices measure the average gap between my income and those of richer (resp. poorer) households.
11. This is not the only possible interpretation though. The 'haves and have not' variable can be seen as a proxy for criminality, which the author herself verifies using the GSS. The perception of a segmented society can also feed fears of social unrest.
12. Fields and Ok (1999) show that this impression is not necessarily based on an objective reality. See also Burkhauser and Poupore (1997) who show that permanent inequality is higher in the USA than in Germany, Maasoumi and Trede (2001) who show that post-government income mobility is higher in Germany and Gottschalk and Spolaore (2002) for a different result.

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