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Inequality and happiness: When perceived social mobility and economic reality do not match

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ABSTRACT

We argue that perceived fairness of the income generation process affects the association between income inequality and subjective well-being, and that there are systematic differences in this regard between countries that are characterized by a high or, respectively, low level of actual fairness. Using a simple model of individual labor market participation under uncertainty, we predict that high levels of perceived fairness cause higher levels of individual welfare, and lower support for income redistribution. Income inequality is predicted to have a more favorable impact on subjective well-being for individuals with high fairness perceptions. This relationship is predicted to be stronger in societies that are characterized by low actual fairness. Using data on subjective well-being and a broad set of fairness measures from a pseudo micro-panel from the WVS over the 1990–2008 period, we find strong support for the negative (positive) association between fairness perceptions and the demand for more equal incomes (subjective well-being). We also find strong empirical support for the predicted differences in individual tolerance for income inequality, and the predicted influence of actual fairness.

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> Inequality is undoubtedly more readily borne, and affects the dignity of the person much less, if it is determined by impersonal forces than when it is due to design.
>
> Friedrich Hayek (1944: 117)

1. Introduction

Since Abba Lerner's classic contributions from the 1930s, welfare economics has argued that income redistribution can increase overall welfare in a society with an unequal distribution of incomes, due to the decreasing returns to income caused by an assumed strict concavity of individual utility functions (Lerner, 1944). This view implies that most people in societies characterized by a highly skewed income distribution should, all other things being equal, experience lower levels of utility than those living in more equal societies. With the advent of the economics of happiness, it has become possible – and fashionable – to test this implication on individuals' self-reported life satisfaction, which arguably proxies for the economic concept of 'utility'.[1] If Lerner's implication – and indeed standard economic theory – holds, we would expect to see a clear negative association between income inequality and life satisfaction of the average person. Such empirical results would also be in line with the more recent theoretical model by Fehr and Schmidt (1999), that takes account of social (other-regarding) preferences in individuals' utility functions, equally predicting a negative relationship between inequality and happiness.

Even though this straightforward microeconomic approach predicts that overall and average welfare in an economy decrease with income inequality, the empirical literature on the association between income inequality and happiness[2] has yielded ambiguous findings.[3] One of the first empirical contributions, Alesina et al. (2004), identify a negative association between income inequality and happiness for 12 European countries that remains statistically insignificant for most U.S. states, however. The authors hypothesize that differences in perceived and actual social mobility exist between these two subsamples. Extending the sample to 30 OECD countries, Fischer (2009b) reports a negative association between individual life satisfaction and inequality in final income, but not for market-generated income inequality – potentially indicating that it is actual consumption on which social comparisons are based.[4] In a world sample, however, the large-scale robustness analysis in Bjørnskov et al. (2008) suggests that the skewedness of the income distribution does not, in general, directly affect individual happiness.

In this paper, we investigate the relationship between inequality and happiness, extending previous research in two dimensions: First, we allow individuals' subjective perceptions of 'fairness' attributed to the income-generating process to affect the association between life satisfaction and income inequality. Second, we allow for differences in the actual fairness of the income generation process across countries, expecting that these affect how fairness perceptions influence the inequality-happiness-relation. Indeed, Grosfeld and Senik (2009) show that in the transition country Poland, income inequality at first contributed positively to people's happiness from 1992 to 1996, possibly because it was associated with given and perceived good economic opportunities (see also Hirschman and Rothschild, 1973). In contrast, in the later period from 1997 onwards, it affected people's happiness negatively, possibly because lower actual social mobility mismatched with the high perceptions people still had. Alesina et al. (2004) already conjectured that inequality might affect people's happiness with specific values and specific views on social mobility within the same societies differently, even if inequality *in general* is not associated with happiness.

We present a stylized theoretical model, which serves to illustrate our main arguments and allows us to derive testable hypotheses. The model analyzes individual labor-market participation on the extensive and the intensive margin, depending on expected (i.e., perceived) fairness of the income-generating process. In the model, a society is considered the fairer the closer the relationship between individual effort and market outcome is. Actual fairness can therefore also be interpreted as a measure of social mobility, because with increasing objective fairness, inherited social status loses relevance. Our model allows systematic and persisting incongruences between actual and perceived fairness. The model predicts that persons with higher *perceived fairness* will, on average, experience higher levels of utility and be less in favor of income redistribution.

We argue that in a society where the distribution of individuals' inherited starting positions is sufficiently skewed to the right (i.e., where relatively few individuals "are born with a silver spoon"), subjective fairness perceptions are the main driver of investments into effort on the labor market. Using a standard notion of status utility, we then show that individuals with high subjective fairness perceptions react more favorably to income inequality than those with low fairness perceptions. Finally, we demonstrate that the composition of the pool of individuals with high subjective fairness perceptions systematically differs between countries with high and low actual social mobility. In countries with high actual mobility, more individuals with low *ex ante* fairness perceptions who invest little into effort are surprised by higher than expected

[1] For an overview of the economic, sociological and psychological concepts of subjective well-being and validity studies on its alternative measures, see Diener et al. (2008), Fischer (2009a), and Veenhoven (2000).

[2] In this paper, we use the terms 'happiness', 'subjective well-being', and 'well-being' interchangeably.

[3] In a related field of research Clark et al. (2008), Layard et al. (2010), and Fischer and Torgler (2013) among others, use micro data to analyze income inequality effects through social comparisons where persons compare their income with a reference level. In our study, inequality rather refers to differences in absolute income across persons and the presence of redistributive government activities.

[4] This is in line with Hopkins' (2008) 'rivalry model in conspicuous consumption' according to which income inequality increases individual utility under certain conditions (high income and consumption levels, and a dense income distribution), as greater incentives to compete in consumption are generated.

incomes, and thus correct their *ex post* fairness perceptions upward. In countries with low actual mobility, these positive surprises are fewer, and thus the pool of high fairness individuals is composed of individuals with, on average, higher incomes and higher subjective well-being. Somewhat paradoxically, via this mechanism high actual social mobility thus reduces the positive mediating effect that high subjective fairness perceptions have on the impact of inequality on life satisfaction.

To explore the link between perceptions of fairness, social mobility, inequality, and happiness empirically we use data from the World Values Survey over the 1990–2008 period and estimate a happiness function. We employ standardized Gini coefficients to measure income inequality, different proxies for individuals' perceived fairness of the income generating process, and the interactions of inequality with these proxies. The empirical analysis explores whether and to what extent perceived fairness mediates the potential effects of inequality, differentiating between countries with low and high actual social mobility. We also investigate the relation between fairness perceptions and the demand for redistribution, mediating the impact of fairness on life satisfaction.

We find that persons who believe the income generating process in their society to be fair appear to be happier and demand less income equalization by (and redistribution from) the government. As predicted by the model, we also find strong empirical support for the more positive effect of inequality for individuals with high fairness perceptions in countries with unfavorable institutions that hamper social mobility. Consistent with our model, for countries with high levels of actual intergenerational social mobility in terms of earnings – those with a close relationship between individual effort and market outcomes – the interactions between income inequality and fairness perceptions appear rather weak or disentangled. When social mobility is low, however, those with high fairness perceptions are significatly less negatively affected by high income inequality than those who perceive their society as unfair. The interaction results are corroborated in samples based on measures of actual mobility through the education system.

Section 2 presents a literature review, and our stylized theoretical model motivating the empirical analysis. From the model we then derive testable hypotheses. We describe our data and methods in Section 3, while Section 4 presents the results. The final section concludes and discusses the implications of our findings.

2. Happiness, inequality and fairness: theory

2.1. Preliminary considerations

In 1944, Austrian economist and social philosopher Friedrich Hayek (1944: 88) argued "To produce the same results for different people, it is necessary to treat them differently. To give different people the same objective opportunities is not to give them the same subjective chances." From this follows, as Hayek suggested, that forcing individuals' outcomes to be identical and 'fair' implies treating people unequally, and, thus, 'unfairly'. The relation between what could be termed 'fairness' or other moral judgments of processes and outcomes and social inequality is therefore far from simple and straightforward.

The treatment of 'utility' in the economics literature, both by the empirical research on happiness as well as standard economic theory, has usually focused on pure outcomes and neglected social comparisons. Yet, individuals do not only derive satisfaction from outcomes, but probably compare themselves to others, and also enjoy 'procedural utility' (Veblen, 1899; Fehr and Schmidt, 1999; Frey and Stutzer, 2005). If people gain the impression that processes affecting their own situation are 'fair', they are not only likely to directly derive procedural utility from that fact, but also tend to evaluate the outcomes of these processes differently than if their subjective perception of the process is that it is 'unfair'. For example, most people strongly dislike losing games or sports matches, but the impact of a loss is much stronger if they have the – reasonable or unreasonable – impression that their opponent has not played by the rules. Gehring (2013) shows that the positive effect of Economic Freedom on happiness is larger if people believe that hard work really brings success and that competition is good for the economy. Similarly, Stutzer and Frey (2003) show that two-thirds of the beneficial effects of people's influence in the political decision-making process is not through their impact on resulting policy outcomes, but through the procedural utility gained from participation and civic engagement. Experimental evidence tends to support Hayek's broad argument: recent economic experiments reveal that inequality in profits is the more tolerated (by otherwise generally inequity-averse individuals) the more the process leading to its generation was perceived as 'fair'. Experimental research has even identified the corresponding neurological process in the reward center of the human brain (see Hopkins, 2008, for a summary).

To sum up, economic experiments show that if the *process* of reaching an outcome has been fair, then subjects in general bear an adverse outcome more easily. In contrast to our study, the set-up of these experiments is fairly simple, allowing actual fairness of the process and perceived fairness of the distribution process to coincide. However, one decisive contribution of our paper is to draw conclusions differentiating between actual and perceived fairness, which may or may not overlap, reflecting more complex real-world characteristics, which do not allow individuals to objectively observe actual social mobility in their societies.[5]

These theoretical and experimental arguments can be applied to individuals' evaluations of the *distribution of income* in society. Their subjective evaluation of the outcome – the inequality of incomes – is likely to depend on their perceptions of the processes creating the distribution and their evaluations of the fairness of those processes. Such a conjecture has

[5] Indeed, our model suggests that if perceived fairness is high and actual fairness has a corresponding level, the positive effect of inequality on subjective well-being rises with perceived fairness.

already been made by Alesina et al. (2004) to explain the differential effect of income inequality on happiness of survey respondents in the United States compared to those in Western Europe. For a sample of 30 OECD countries in the WVS, Fischer (2009b) finds that in a socially mobile society (from the interviewees' points of view) the negative effect of income inequality on well-being is mitigated, if not overcompensated for. Likewise, in economic laboratory experiments, Mitchell et al. (1993: 636) find that "inequality becomes more acceptable as people are better rewarded for their efforts," which can be interpreted as an indication for a mediating effect of the fairness of the distribution process of 'rewards', i.e., wage incomes, on the relationship between inequality and happiness.

In this paper, we define an income generating process as 'fair' if there is a direct link between own investment in human capital, on-the-job effort and individual economic outcome. The weaker this link becomes, i.e., the more the individual outcome depends on chance and at the same time is related to inherited starting positions, the less fair the income generating process is. This would also be the case if income differences were caused mainly by individual differences in innate talent or ability that cannot be compensated for by effort. Such initial endowments could also include inherited wealth. On the other hand, if individuals' perceptions of society indicate that 'someone' – either individually or collectively (e.g., through political decision-making) – is responsible for the shape of the income distribution, moral judgments on fairness will arguably come to rest on a different foundation.

The difference between actual (objective) and perceived (subjective) fairness in the income generation process is often not clearly recognized by the early theoretical and empirical literature on happiness or preferences for redistribution. Most studies implicitly – and in the case of Alesina et al. (2004) explicitly – assume that subjectively perceived and objectively existing fairness in society correspond perfectly. However, the empirical happiness analysis for 30 OECD countries by Fischer (2009b) suggests that perceived and actual social mobility in society are not necessarily strongly correlated. For this reason, we explicitly differentiate between actual and perceived fairness and put them in a systematic relation. In particular, we hypothesize that whether the happiness effects of income inequality are aggravated or reduced by fairness perceptions for most of the population hinges on whether perceived and actual fairness coincide or diverge.

Fairness perceptions can also be argued to diverge according to political convictions. Typically, left-wing parties place more weight on equity of outcomes (so-called 'social justice'), while right-wing governments place more weight on efficiency and equality in opportunities. This is observed as voters' definitions of fairness differ systematically between parties (Scott et al., 2001). Fundamental differences in fairness perceptions would thus suggest that left-wing voters are sensitive mainly to income inequality, but less to procedural fairness as a determinant of market income (see also the empirical test in Fischer, 2009b). In contrast, right-wing voters have offsetting efficiency concerns, which lead them to focus more on equality of opportunities, and to accept the resulting income inequality more easily. From a conservative perspective, relatively large income differences might be seen as an indication that individuals who work hard receive their just deserts. Indeed, Alesina et al. (2004) find that left-wing voters are more concerned about income inequality than right-wing or centrist voters, both in Europe and the United States. We therefore employ the respondent's political ideology as one proxy of her fairness perception.

In the course of this analysis, we predict a negative relationship between fairness perceptions and the demand for income redistribution, which we also test against our data. The relation between social mobility (perceptions) and the preference for equal incomes has been analyzed in a few previous studies. Ravallion and Lokshin (2000), using Russian micro data, were the first to show that self-assessed *expected own social mobility*, or the belief of being on a rising income trajectory, leads to lower demand for redistribution. Corneo and Gruener (2002) present a 'public values effect' model concluding that "an individual who believes in the importance of personal hard work [for income] is expected to oppose redistribution" (p. 86), preceding the similar arguments in Alesina et al. (2004). In Corneo and Gruener's (2002) logit regressions, run with about 30 countries in various International Social Survey Programme (ISSP) waves on the question 'Government should reduce inequality', both generalized fairness perceptions and perceived *past social mobility* reduce the demand for equalizing incomes.[6] In contrast, persons reporting that 'they would gain [from redistribution]' are in favor of such government policy. Population preferences for and against redistribution are captured by country-fixed effects, an approach that we will follow below.

A negative relationship between personal income and preferences for redistribution is not only shown in Corneo and Gruener (2002), but also by Alesina and La Ferrara (2005). Using U.S. General Social Survey (GSS) data, the latter corroborate the negative relation between perceived equal opportunities, subjective income prospects, income, and a history of past social mobility, with a preference for income redistribution.[7] Exploiting the longitudinal nature of their panel data, Alesina and La Ferrara (2005) construct two objective measures of *actual* income prospects, at the individual and state level. They find both to be strongly negatively related to individual demand for more equal incomes. Contrasting results are reported in Clark and D'Angelo (2008) for the British Household Panel Survey (BHPS) who identify a positive association between

[6] Fairness perceptions are measured by the question 'hard work is the key [to success]'; while social mobility experience is captured by the variable 'better off than father'.

[7] Preference for redistribution is measured by the question 'Should government reduce income difference between rich and poor?'. Past history of social mobility is measured by 'having a job prestige higher than father's', and subjective income prospects are proxied by 'expect a better life'. Equal opportunities as source of economic success are approximated by the question 'Get ahead: hard work', while unequal opportunities are approximated with the statement 'Get ahead: luck/help'.

own experienced social mobility ('having higher socio-economic status than parents') and being in favor of having capped incomes, or state-ownership, and being left-wing.[8]

In the following, we develop a simple workhorse model, illustrating the potential impact of income inequality and fairness perceptions on individual well-being.

2.2. The basic set-up of the model

Following, among others, Blanchflower and Oswald (2004), we assume that reported subjective well-being or 'happiness' of an individual i is an increasing function of her directly unobservable utility where ε_i is an error-term:

$$W_i = w(u_i) + \varepsilon_i \tag{1}$$

The error term reflects unobservable differences across individuals, such as different subjective interpretations of the ordinal scale on which individual well-being is reported. This assumption allows us to focus on standard economic utility considerations in the theoretical analysis, i.e., on the underlying economic forces that influence individual welfare.

We assume that utility is concave in income y_i and that effort invested to earn income has a negative and quadratic direct effect on utility.

$$u_i = v(y_i) - \frac{1}{2}e_i^2 + \Phi \tag{2}$$

where

$$y_i = g(e_i)[1 - (1-\pi)(1-\theta_i)] \tag{3}$$

and Φ is a status and identity utility which is explained in detail below.

Income increases with effort according to the strictly concave function g. The parameter $\pi \in [0,1]$ is a society-wide fairness parameter. The closer its value is to one, the more reliable is the impact of individual effort on individual income. The value of this parameter is identical for all individuals. On the other hand, $\theta_i \in [0,1]$ is an idiosyncratic parameter reflecting, for example, the family background, or the place of birth of an individual, or access to personal networks that may be instrumental in generating incomes. In general, θ_i captures anything in the personal background of an individual that may make it more difficult for her to earn an income based upon her own effort.

We assume that the true value of π is unknown to the individual decision-makers. They can certainly observe the institutional framework of their society, but the web of formal and informal institutions that characterizes any modern society is generally complex enough to make any exact *ex ante* knowledge of the true value of π unlikely. Every individual therefore bases her decisions on her own estimate $\tilde{\pi}_i$, which denotes her perceived fairness.[9] The idiosyncratic parameter θ_i is assumed to be drawn randomly from an individual-specific distribution characterized by the continuous and unimodal pdf $f_i(\theta_i)$ with support [0,1]. Let $\hat{\theta}_i$ denote the expected value of the idiosyncratic parameter for individual i. We assume that the distribution of $\hat{\theta}_i$ over the population is skewed to the right, and also unimodal. We further assume that all individuals know their own $\hat{\theta}_i$. They do, however, not observe the value of θ_i that is eventually drawn. They only observe income and effort, but have no definitive knowledge about how much of the result is due to bad (good) institutions, or an (un-)lucky draw of the idiosyncratic parameter. Furthermore, we assume that $\hat{\theta}_i$ is inherited: Individuals from poorer families or worse neighborhoods are characterized by lower values of $\hat{\theta}_i$.[10] However, even individuals from unfavorable backgrounds have a chance to draw a favorably high θ_i from the distribution.

The status and identity utility consists of two components

$$\Phi = \bar{\Phi} - \left(y_i - y^*(\hat{\theta}_i, \tilde{\pi}_i)\right)^2 + \Psi(y_i - \bar{y}) \tag{4}$$

where Ψ straightforwardly signifies a status utility, as a concave and strictly increasing function of the difference between individually realized and average income. We assume that $\Psi(0) = 0$. This follows a standard approach of assuming that individuals use some reference income to evaluate their own status (e.g., Ederer and Patacconi, 2010; Luttmer, 2005). The first term $\bar{\Phi}$ is the highest identity utility attainable by the individual. It is reduced according to a quadratic loss function, which has a simple economic interpretation. Benchmark income y^* is the income that the individual would expect to be earned by an individual of her type $\hat{\theta}$ and given her fairness estimate $\tilde{\pi}_i$, if she invests the optimal level of effort e^*. In other words, it is the income expected from an individual of her type, given the perceived circumstances. If her realized income y_i is less than this expectation, a disutility arises from the feeling of being an underachiever. If, on the other hand, it is

[8] This study employs the measure 'The government should place an upper limit on the amount of money that any one person can make', which is not fully comparable to that used in previous empirical analyses.

[9] Piketty (1995) has shown in a model where individual income is also determined by societal fairness and individual influences that differences in fairness estimations may prevail in an equilibrium with full Bayesian rationality.

[10] Note that we assume the absence of genetic inheritance. This captures the empirical regularity that individuals from low-income families often find it more difficult to rise into high-paying positions than those who already have a high-income background. In a utopian situation with completely fair institutions ($\pi = 1$), the impact of the idiosyncratic parameter $\hat{\theta}_i$ would be cancelled out completely.

higher, then a disutility arises out of the feeling of having an unfair advantage from having drawn a favorable value of θ_i. Thus, the quadratic loss function measures if and how far the individual deviates from her peer group, given the perceived circumstances. In this respect, we follow a standard approach of integrating identity utility (e.g., Akerlof and Kranton, 2000; Georgiadis and Manning, forthcoming; Casey and Dustmann, 2010).

We assume the following sequence of events: (1) individuals decide on their level of effort by maximizing (2); (2) their own income levels and the average income level of the population are revealed to the individuals; (3) individuals may revise their *ex ante* fairness perceptions.

Individuals choose effort in order to maximize their expected utility. We assume Nash behavior, i.e., individuals neglect the impact of their own choices on y^* and $\bar{y}$.

$$\max_{e\geq 0} \int_0^1 f_i(\theta_i) \left\{ v(e_i, \hat{\theta}_i, \tilde{\pi}_i) - \frac{1}{2} e_i^2 + \Phi(e_i, \hat{\theta}_i, \tilde{\pi}_i) \right\} d\theta_i \tag{5}$$

This directly leads to the first order condition

$$E[v'(e_i, \hat{\theta}_i, \tilde{\pi}_i) + \Phi'(e_i, \hat{\theta}_i, \tilde{\pi}_i)] = e_i \tag{6}$$

2.3. Expected and actual utility, effort and reported happiness

From (6), we can infer individually optimal effort levels as functions of the other model parameters:

$$e_i^* = e_i^*(\tilde{\pi}_i, \hat{\theta}_i) \quad \text{with} \quad e^*_{i\tilde{\pi}} > 0 \,\text{and}\, e^*_{i\hat{\theta}} > 0. \tag{7}$$

Status utility leads individuals to increase their effort over the level they would choose without status competition, but this effect is tempered by the prospect to enjoy identity utility by conforming to one's peer group. Since both the individual expected marginal productivity of effort and the peer group's expected income strictly increase with $\hat{\theta}_i$, optimal individual effort is strictly increasing in this parameter.

Deriving an indirect utility function V from (2) and using the envelope theorem reveals that $V_{\tilde{\pi}_i} > 0$, i.e., expected utility is increasing in $\tilde{\pi}_i$. However, a range of actually realized individual utility levels in the population corresponds to any value of $\tilde{\pi}_i$, each depending on the individually drawn value θ_i. How will i respond if $\Delta_i \equiv u_i(\pi, \theta_i) - V_i(\tilde{\pi}_i, \hat{\theta}_i) \neq 0$? The key to the answer is the identity utility term. At this point in time incomes are revealed and effort cannot be changed. But in order to reduce the value of the loss function in (4), the individual has a strong incentive to adjust her fairness perception. If $\Delta_i > 0$, the individual will want to avoid the explanation of a lucky draw of θ_i, which would imply free-riding to a higher than expected income, using, for example, good looks and personal networks. This unfavorable explanation can be avoided by increasing the assumed value of $\tilde{\pi}_i$. Note that given (3), any higher than expected income can be individually explained by claiming $\theta_i = \hat{\theta}_i$ and adjusting the fairness perception upwards. This can even be rationalized by the individual, since she will be able to find individuals from her peer group who had a higher *ex ante* fairness perception, thus invested more effort, and realized a similar income without being surprised. As long as incomes are observable, but effort is not, the update of the fairness perception is not only a matter of self-justification, but also plausible.

If $\Delta_i < 0$, the opposite reaction is likely: $\tilde{\pi}_i$ will be revised downward in an attempt to explain lower than expected individual incomes with unfavorable institutional circumstances. Note, however, that given (3), this may not in every case be entirely possible. The reason is an asymmetry: completely fair institutions cancel out the impact of the idiosyncratic parameter. Thus, it is possible to explain any positive surprise with a sufficiently high fairness parameter. A value close to zero of the fairness parameter, on the other hand, implies that the idiosyncratic parameter has full impact. Thus, an individual with a realized value of θ_i very much below its expected value may not be able to completely cancel out the term of the loss function by assuming a low fairness parameter. Put differently, individuals who experience negative income surprises reduce the impact of the loss function to some extent by assuming an unfair institutional framework, but they may even then be left with a residual loss of identity utility.

In any event, the tendency to reduce a loss of identity utility by suitably adjusting one's fairness perception implies an unambiguous relationship between fairness perception and individual welfare. This leads us to our first proposition:

Proposition 1. *We expect the relationship between subjective individual perceptions about the fairness of the market income generation process and individual welfare to be positive.*

2.4. Preferences for income redistribution and individual welfare

Let there be a simple, redistributive tax and transfer system, which consists of a proportional income tax with rate t levied on labor income, and of a guaranteed transfer income $y_T(t)$ paid to those individuals who do not earn a market income.[11] To keep matters simple, we assume that the government commands no screening technology that would allow it to distinguish

[11] See, e.g., Harms and Zink (2003) for a survey of the political economy of income redistribution.

between voluntary and involuntary unemployment. Individuals therefore compare expected utilities inside and outside the labor market, and participate only if the former exceeds the latter. Thus, for any given tax and transfer system $\{t, y_T(t)\}$ there exists a combination of low levels of $\tilde{\pi}_i$ and $\hat{\theta}_i$ where the individually expected marginal productivity of effort is so small that the individual decides against labor market participation. In general, higher perceived fairness yields higher labor market participation rates even in groups who expect relatively lower values of θ_i. Redistribution is *ex ante* only in the interest of individuals who plan not to participate in the labor market.

The relationship between fairness perceptions and preferences for redistribution is reinforced if we also allow for *ex post* adjustments of fairness perceptions as discussed above. Suppose the redistribution scheme is extended such that individuals who participate, but earn a surprisingly low income, are paid a transfer until they reach a net income of y_T. Those benefiting from such a scheme would all be individuals with $\Delta_i < 0$, who revise their fairness perceptions downward *ex post*. In other words, all transfer-recipients are characterized by low fairness perceptions: either because they already had them *ex ante*, and decided not to participate in the labor market, or because they were disappointed by their individual market outcome and accordingly revised their fairness perception downwards *ex post*. This revision leads to an *ex post* fairness perception which lies below the *ex ante* threshold for labor market participation. However, any investments into effort are obviously sunk and cannot be retrieved. This leads us to introduce our second proposition:

Proposition 2. *The likelihood that a randomly drawn individual will have a preference for increased redistribution increases with a decreasing individual fairness perception. Therefore, a stronger preference for redistribution is also expected to be negatively correlated with individual welfare.*

2.5. Fairness, inequality and self-reported happiness

Our model contains different mechanisms that yield income inequality. The *ex post* market income of individual *i* is

$$y_i^* = g(e_i^*(\tilde{\pi}_i, \hat{\theta}_i))[1 - (1 - \pi)(1 - \theta_i)]. \tag{8}$$

First of all, income inequality generally stems from the idiosyncratic parameter. The larger the variance of θ_i in the population, the larger the inequality of incomes ceteris paribus will be. This will normally also imply a large variance of $\hat{\theta}_i$, and thus of individually chosen effort levels. Similarly, a larger variance of individual beliefs $\tilde{\pi}_i$ also eventually results in larger income inequality, through the establishment of a larger variety in the individual choices of effort levels, with any given distribution of idiosyncratic parameters.

We have seen in the discussion leading to Proposition 1 that higher income levels are associated with higher fairness perceptions, both *ex ante* due to increased effort, and *ex post* due to revised fairness perceptions. In combination with the status utility term in (4), we immediately observe that individuals who benefit from increasing income inequality via a positive status utility are characterized by above-average incomes and thus relatively high fairness perceptions. There may be individuals with a high value of $\hat{\theta}_i$ and a low fairness perception, whose high expected idiosyncratic parameter leads to a high effort and income level. However, if the distribution of $\hat{\theta}_i$ in the population is sufficiently skewed to the right, the number of these types of individuals will be small and dominated by those who are characterized by high incomes and high fairness perceptions.

Proposition 3. *If the fraction of individuals who are characterized by high expected values of the idiosyncratic parameter is sufficiently small, then those individuals who have high fairness perceptions will, on average, react more favorably to income inequality than individuals with low fairness perceptions.*

Finally, we look beyond fairness perceptions and consider the impact of actual fairness and income inequality on subjective well-being in different groups of the population. A higher value of the actual fairness parameter π reduces the impact of the idiosyncratic parameter on individual incomes. In the limiting case of perfect fairness, the impact of the latter parameter disappears completely, and there is a deterministic link between (differences in) individual effort and income (inequality). According to (3), this implies that *all* individuals with $\tilde{\pi}_i < 1$ and a $\hat{\theta}_i < 1$ will earn a higher than expected income, and accordingly increase their fairness perception *ex post*. This implies that all individuals who invest relatively little effort due to unfavorable *ex ante* expectations revise their fairness perceptions upward. These, however, are individuals who earn higher than expected but still relatively low absolute incomes, due to their low effort levels.

Suppose, on the other hand, that actual fairness is very low. Then the only individuals who benefit from higher than expected incomes, and who update their fairness perception accordingly (and mistakenly), are those who draw a higher than expected value $\theta_i > \hat{\theta}_i$. This implies that fewer individuals with low effort levels, and thus low absolute incomes, will increase their fairness perceptions than in the case of high actual fairness.

At the other end of the effort scale, we know that individuals who decide to invest high levels of effort must from the outset be characterized by a high value of $\hat{\theta}_i$ and/or $\tilde{\pi}_i$. Given our assumption that the distribution of $\hat{\theta}_i$ is skewed to the right, most individuals who decide to invest high effort are characterized by high initial fairness perceptions. Hence, if we compare the pool of individuals with high fairness perceptions under high and low actual fairness, we expect its composition to differ under both regimes. With low actual fairness, relatively few positively surprised low-effort (and thus low-income) individuals enter the pool of high-fairness perception individuals. Thus, the average high-fairness individual benefits to a large extent from status utility and income inequality. With high actual fairness, more low-effort and low-income individuals

ex post enter the group of high-fairness individuals. With on average more low-income individuals in this group, the average positive effect of status utility (and income inequality) must decline. This leads us to

Proposition 4. *We expect the relatively positive effect of income inequality on individual welfare for individuals with high fairness perceptions to be smaller in economies that are characterized by high actual fairness compared to those that are characterized by low actual fairness.*

3. Data and method

3.1. Data

In order to empirically test Propositions 1–4, we employ data from the pooled second, third, fourth, and fifth waves of the World Values Survey, covering the years 1990–2008 (Inglehart et al., 2004). We follow the standard approach in the literature by using individuals' responses to the question "All things considered, how satisfied are you with your life as a whole these days?" as a proxy for (remembered) utility and the dependent variable for Propositions 1 and 4. The responses are distributed on a ten-point scale ranging from 1 (completely dissatisfied) to 10 (completely satisfied), with a sample mean of about 6.3.[12] In order to estimate a set of relevant personal characteristics forming the core of individuals' happiness functions, we rely on the robust baseline model in Bjørnskov et al. (2008) and Fischer (2009c). We include country-fixed effects, wave-fixed effects, and their interactions, to control for any variables that do not vary within a country, over time, or are constant within a certain country and wave, and that might be correlated with our variables of interest. This extensive set of fixed effects minimizes the possible influences of omitted variables bias, given that we identify the effects of our variables of interest using variation at the individual level holding country-, period-, and country-period fixed effects constant. At the individual level, we include measures of age, gender, family type, religion, religiosity and spirituality, and age cohort effects.[13] We also include measures of education, income and occupational status that, according to the theoretical model, mediate an individual's subjective success probability (fairness perception). Table 2 excludes these variables so that we can assess the importance of this transmission channel.

Measures of vertical and horizontal trust (such as confidence in political institutions and trust in other people) are not part of the baseline model as they may be strongly correlated with perceived fairness and could thus be transmission channels for our variable of main interest.[14] The baseline sample includes about 300,000 persons in more than 80 countries but, due to data availability, it is much smaller in most regressions, depending on the employed fairness measure. The baseline results for the micro-level determinants of subjective well-being (SWB) in the present sample are similar to those in Bjørnskov et al. (2008).[15]

3.1.1. Measures of self-reported procedural fairness and demand for income redistribution

Individuals' fairness evaluations of income inequality are approximated using definitions of fairness in the income generation process in the labor market. They include measures of social mobility in the labor market such as whether hard work determines economic success. All fairness perception proxies are constructed as dichotomous variables, taking on the value '1' if the respondent believes that procedural fairness is present in society, and '0' if otherwise. These definitions of fairness perceptions have also been employed in previous studies such as Corneo and Gruener (2002) and Alesina and La Ferrara (2005). In addition, we approximate fairness perceptions by employing information on individual political self-positioning on a leftist-conservative scale, arguing that conservative persons favor fairness in the income generation process, while leftist-oriented persons are more outcome-oriented. Table 1 provides an overview of the fairness perception measures included in this study.

The demand for income redistribution is measured using three proxies derived from the World Values Survey. These variables resemble the measures of income redistribution through governments employed in Corneo and Gruener (2002) and Alesina and La Ferrara (2005) and are originally measured on a 10-point or, respectively, a 5-point scale. To facilitate

[12] The WVS includes questions on both life satisfaction and happiness, but the correlation between happiness and satisfaction is surprisingly low (rho = 0.44). We opt for using the life satisfaction question since: (1) translation problems seem to yield cross-country comparisons of answers to the other question less comparable and (2) the happiness question is more likely to capture the affective component of subjective well-being rather than its cognitive component (for a discussion, see Fischer, 2009a).

[13] Arguably, more optimistic people could be more likely to be happier and at the same time perceive fairness to be more prevalent. The 1990-wave of the World Value Survey contains two questions that relate to optimism, which we use to test for this possibility: (1) "I am good at getting what I want" and (2) "I usually count on being successful in everything I do." When we re-estimate all regressions using one of these two variables, respectively, our main results are not affected. We report these results in Appendix B of Bjørnskov et al. (2013). While we are thus confident that our results are not due to the omission of optimism, other omitted individual-specific variables could bias our results, as in any comparable study. While we control for many individual-specific variables and address omitted variable bias at the country-level by our extensive set of fixed effects, a bullet-proof test of our theory would require an exogenous instrumental variable or "true" panel data. We unfortunately have neither of those.

[14] Note that the inclusion of a measure of horizontal trust does not alter the main results of our analysis however (e.g., in Tables 6 and 7), but does reduce the size of the regression samples.

[15] We report them in Table A1 of the working paper version of this paper, where Appendix C presents descriptive statistics (see Bjørnskov et al., 2013). For a detailed discussion of these results, see Bjørnskov et al. (2008).

Table 1
Measures of fairness perceptions and income redistribution.

Variable name	Definition
Perceived fairness of the market income generation process	
Hard work brings success in the long run	Dummy that is '1' for values below 5 on the question 'In the long run, hard work usually brings success' (which has a 10-point scale)
People are poor due to laziness, not injustice	Dummy that is '1' for individuals claiming 'People are living in need because of laziness or lack of willpower' and '0' when answering 'People are living in need because of injustice in society'
People have a chance to escape poverty	Dummy that is '1' for individuals claiming that 'people have a chance to escape poverty' (alternative: 'they have little chance')
General meritocratic worldview	
Conservative ideology	Dummy that is '1' for values above or equal to 7 on a 10-point scale measuring conservative political ideology
Demand for income redistribution	
More equal incomes	Measures on a 10-point scale the redistribution preference according to the question 'Incomes should be more equal'
Elimination	Measures the 'importance of eliminating big income inequalities' on a 5-point scale (ranging from 'not at all important' to 'very important')
Basic needs	Measures the 'importance to guaranteeing basic needs' on a 5-point scale (ranging from 'not at all important' to 'very important')

the interpretation of the results, we recoded them so that higher values indicate a stronger preference for redistribution. An overview of the variables employed and their exact codings is also included in Table 1.

3.1.2. Measures of actual social mobility

To test Proposition 4, we need a measure of actual social mobility. Researchers have applied different concepts to capture social mobility, which is a construct that is hard to grasp with a single number. Blanden (2013) provides an overview of the research that has been conducted within economics and sociology and the strengths and weaknesses of the individual approaches. Broadly, the existing indicators can be grouped into two categories.

Indicators in the first category measure intergenerational mobility in educational attainment. Causa et al. (2009) provide summary measures of persistence in both secondary and tertiary education for men and women in OECD countries based on the EU-Statistics on Income and Living Conditions (SILC) database. Hertz et al. (2007) rank 42 countries with regard to the relationship between years of education of parents and their children. Chevalier et al. (2009) also classify and rank countries based on the UNESCO-designed International Standard Classification of Education (ISCED), though for a smaller sample of European countries and the USA. All of these measures are somehow comparable, and we employ all of them in our regressions.

The second category contains measures that focus on the elasticity and persistence of income and wages across generations. Blanden (2013) provides estimates of income elasticity for 12 countries. Causa et al. (2009) also present estimates of intergenerational earnings elasticity, partly based on data from D'Addio (2007) and Corak (2006). In addition, they estimate wage persistence for men and women as the gap between an estimated wage if the individual's father achieved tertiary education and when he only completed below upper secondary education. Again, these are based on the EU-SILC database. As above, we choose to employ all four measures to obtain a complete picture.[16]

A third option would have been to employ one of the several composite indices intended to measure barriers to mobility, status persistence and social justice, such as the Fraser index of economic freedom or the Human Development Index. However, these all tend to suffer from the same kitchen-sink nature, namely that they de facto include more information on the level of economic development than what they are intended to measure (e.g., Cahill, 2005). We thus refrain from using this type of measure.

3.1.3. Measure of income inequality

The Gini coefficients for testing Proposition 4 are obtained from the most recent version of the Standardized World Income Inequality Database developed by Solt (2009), as described above.[17] We have chosen to obtain the Gini values from this specific database because the author undertook special care to use reliable, high-quality income information with the Luxembourg Income Study employed as the standard. Non-comparability of Gini coefficients across countries constituted a

[16] The measures we use all measure economic outcomes of the social process within societies; other measures are more based on what we would like to call 'potential social mobility'. Fischer (2009b) employs a measure of educational mobility based on the PISA 2003 Mathematics results and Causa and Chapuis (2009) calculate the influence of parental background on the overall performance in the 2006 PISA results. An earlier version of this paper (Bjørnskov et al., 2010) employed these measures yielding differing results. Possibly, countries fail to convert this mobility potential into real social mobility.

[17] One could argue that the difference between Gini measures based on market and net disposable income could serve as a de facto measure of government redistribution. However, Bergh (2005) shows for 11 OECD countries with high quality national statistics systems that the difference between pre-transfer and post-transfer Gini coefficients is not a reliable measure of actual government redistribution. In particular, redistributive policy affects not only post-redistribution Ginis, but also market-income measures due to policy effects on the effort-incentive central to our model.

severe problem with alternative income inequality information, as stressed by Deininger and Squire (1996).[18] The Solt data is available for 173 countries for a wide range of years between 1960 and 2010. As the Gini measure refers to the country level, its true effect obviously cannot be identified in our model due to its multicollinearity with the country-wave fixed effects. However, Proposition 4 can be tested by interacting our fairness measures with the Gini coefficient.

3.2. Method

Proposition 1 predicts a positive association of individual fairness perceptions (i.e., *perceived fairness of individual i*) with individual life satisfaction. To test Proposition 1, we add the four fairness perception measures to the baseline happiness model and observe their relationship with subjective well-being ($SWB_i = f(fairness_i, M_i, \ldots)$). Vector M_i includes the individual-level control variables, cohort effects, and the set of fixed effects as described above; u_i is the error term. Standard errors are clustered at the country-wave level. According to the theoretical model, in equilibrium, the effects of fairness perceptions should entirely run through own income, education and occupational status, which we therefore exclude from the vector M_i of the baseline specification. We test whether these variables are transmission channels for our main variables of interest and therefore also report specifications including them.

$$SWB_i = \alpha' fairness_i + \beta' M_i + u_i. \tag{9}$$

Proposition 2 predicts that perceiving the income generation process as fair reduces the demand for income redistribution, while demanding more redistribution itself is predicted to be negatively associated with subjective well-being. In other words, Proposition 2 views Eq. (9) as a reduced function of the chained function ($SWB_i = f(RED_i(fairness_i, \ldots), \ldots)$). We test this hypothesis at first by estimating a model of demand for income redistribution, with the identical variable of interest and the same set of control variables as in Eq. (9). The estimated coefficient γ' indicates the effect of fairness perceptions on the probability to be in favor of redistribution:

$$Pr(RED)_i = \gamma' fairness + \beta' M_i + u_i. \tag{10}$$

In a second step, we relate subjective well-being to the demand for redistribution, expecting a negative relationship:

$$SWB_i = RED_i + \beta' M_i + u_i. \tag{11}$$

To test Proposition 4, we add the interactions of those fairness perception questions with income inequality in their home country as measured by the Gini coefficient to Eq. (9), differentiating between countries with low and high actual social mobility.[19]

$$SWB_i = fairness_i + fairness_i * GINI + \beta' M_i + u_i. \tag{12}$$

In estimating the model of subjective well-being we follow the previous literature (see, e.g., Bjørnskov et al. (2008)), but employ OLS in which coefficient estimates also represent marginal effects, facilitating the interpretation of the interaction terms. This approach follows Ferrer-i-Carbonell and Frijters (2004), who show that OLS is a feasible estimation procedure for a 10-point categorical happiness variable by employing the 10-category life satisfaction question in the German Socio-Economic Panel, the analog of which we have obtained from the WVS.

For Eq. (10), we estimate the model with OLS in order to facilitate the interpretation of the results, despite the categorical nature of the indices of preference for income redistribution (measured on a 5- or 10-point scale). Even though the analysis focuses on the direction of (significant) influences of the fairness perceptions estimates, we also discuss their relative quantitative effects.

The next section reports the results.

4. Results

4.1. Some basic correlations

Prior to turning to the multivariate analysis it may be worthwhile to investigate a couple of simple correlations between individual life satisfaction and perceived and objective fairness, or, respectively, social mobility.

Simple correlations between measures of fairness perceptions and individual life satisfaction are rather low or moderate, with coefficient values ranging between roughly 0.05 (hard work) and 0.2 (chance to escape poverty). Correlations with

[18] A separate problem, which a referee kindly pointed us to, is that income inequality does not translate directly into support for redistribution. As the WVS, which measures personal income in 10 categories, does not permit the construction of a measure of *relative* income distance, we cannot directly combine inequality aversion, perceptions and income status at the individual level. Recent indices such as that developed by Graham and Felton (2006) cannot be constructed from the WVS. In addition, for our purpose it would be a problem that a measure such as that proposed by Graham and Felton directly includes a component of inequality aversion, which is exactly what we want to test in the inequality-utility-regressions.

[19] A potential problem with these data would arise if they simply proxied for individuals' income positions. However, the responses are only weakly associated with individual incomes.

Table 2
Relations between happiness and fairness perceptions.

Dependent variable: life satisfaction	(1)	(2)	(3)	(4)
Hard work brings success in the long run	0.248*** [0.017]			
People are poor due to laziness, not injustice		0.418*** [0.031]		
People have chance to escape poverty			0.510*** [0.056]	
Conservative ideology				0.351*** [0.022]
Observations	180,985	136,683	63,880	291,305
R-squared	0.21	0.24	0.26	0.22

Notes: OLS estimations. Dependent variable is life satisfaction measured on a 10-point scale. Cluster adjusted standard errors in parentheses. All models include the baseline micro-variables, and interacted country- and wave-fixed effects (not reported). Income, education and occupational status are excluded from the model.

*** Significances at the 1 percent level.

The countries included in each regression sample are presented in Appendix D in Bjørnskov et al. (2013).

measures of real social mobility are also small. For measures of wage and income persistence across generations they range from 0.04 for the income elasticity measure by Blanden (2013) to 0.13 for the measure of female wage persistence across generations in Causa et al. (2009). For measures that relate educational outcomes across generations, the correlation ranges from −0.07 for the intergenerational correlation of education from Hertz et al. (2007) to 0.1 for a measure of persistence in below upper secondary education from Causa et al. (2009). Finally, the correlation between gross income inequality and life satisfaction is positive, but fairly small (0.15).

In general, correlations of roughly 0.2–0.6 are achieved when an aggregate measure of happiness is employed in place of individual subjective well-being. Using the mean of life satisfaction in a country, the strength of the link between individual and parental earnings from D'Addio (2007) shows a correlation of about 0.5, and persistence in wages between 0.32 and 0.59. Measures of educational persistence are correlated with the aggregated measure between 0.17 and 0.44. The gross Gini coefficients still show a correlation of 0.4 with country means in life satisfaction. Employing aggregated individual data on the four fairness perception measures, correlations with country means in life satisfaction range from −0.08 to 0.37 and are, for at least two measures (chance to escape poverty and being politically conservative), quite large.

4.2. Testing Proposition 1: fairness perceptions and subjective well-being

Table 2 tests Proposition 1 by including the proxies for perceived fairness to the baseline specification of the well-being model, one-by-one. Overall, Table 2 tests four fairness measures, yielding four model variants. The table displays only the estimation results for the fairness measure and the number of individual observations in the corresponding regression samples; the full model estimations are displayed in the working paper version of this paper (see Table A.1. in Bjørnskov et al., 2013). The constant in the regressions is in most cases around 8 SWB points (not reported), and the adjusted R^2 ranges between 0.2 and 0.25, depending on the model specification.[20]

First, note the positive coefficients of the perceived-fairness estimates, which indicate that persons with high fairness perceptions are indeed happier on average. As all four fairness estimates are significant at the 1 percent level, the results are clearly in line with Proposition 1. The quantitative impact of these variables is considerable, with coefficients ranging between 0.25 (hard work) and 0.51 (laziness). Comparing these effects with those of other determinants of subjective well-being shows that these effects are comparable with, for example, taking part in religious service once a month as compared to never (0.18) or being married as compared to being divorced or separated (0.67). The largest associations of about half a life satisfaction category are observable for labor market mobility perceptions ('people are poor due to laziness' and 'people have a chance to escape poverty') and 'conservative ideology'.[21] Further investigation shows that these relative differences across fairness perception coefficients are not caused by changes in sample sizes across regressions (not reported). In summary, our empirical results are in line with Proposition 1, suggesting that persons who perceive the income generation process as fair experience higher levels of subjective well-being.

According to our model, perceived social mobility should have a positive impact on individual human capital investments, expected life-time earnings and occupational status in equilibrium, with perceived social mobility affecting subjective well-being through these transmission channels. As our next step, we therefore test the same empirical model specification, but include measures of education, income, and occupational status. Table 3 reports the results and shows in analogy to Table 2 that persons who perceive themselves as living in a fair society experience higher levels of subjective well-being. In line with our model, persons with higher income or better education are happier (for full estimation results, again see the Appendix of Bjørnskov et al. (2013)). Comparing the fairness perception estimates across models (Tables 2 and 3), we observe for all four fairness perception measures smaller coefficient sizes in Table 3, with all differences being statistically significant at

[20] The constant can be interpreted as the baseline SWB level of the reference group, which, in this specification, has low fairness perceptions, is male, has no children, is religious but not affiliated to a major religion, is divorced or separated from his partner, does not believe in a superior being, and never attends religious service.

[21] For these results see Tables A.1. and A.2. in Bjørnskov et al. (2013).

Table 3
Relations between happiness and fairness perceptions – testing the transmission channels income, occupation and education.

Dependent variable: life satisfaction	(1)	(2)	(3)	(4)
Hard work brings success in the long run	0.224*** [0.016]			
People are poor due to laziness, not injustice		0.374*** [0.028]		
People have chance to escape poverty			0.460*** [0.058]	
Conservative ideology				0.305*** [0.021]
Observations	180,985	136,683	63,880	291,305
R-squared	0.24	0.26	0.29	0.25

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. Cluster adjusted standard errors in parentheses. All models include the baseline micro-variables, income, education and occupational status, and interacted country- and wave-fixed effects (not reported).
*** Significances at the 1 percent level.
The countries included in each regression sample are presented in Appendix D in Bjørnskov et al. (2013).

the 1 percent level. Thus, while the fairness measures remain significant and sizable, the SWB effects of fairness and social mobility perceptions are partly mediated through own human capital investment. This finding is again in line with our model predictions.

4.3. Testing Proposition 2: fairness perception, demand for redistribution, and subjective well-being

Table 4 tests the prediction of Proposition 2 that persons who perceive the income generating process as fair have a lower demand for equalizing the income distribution through redistribution from the rich to the poor. We estimate OLS models for the four fairness perception variables employed in the happiness models (Proposition 1) with three categorical proxies of preference for income redistribution as dependent variables, as described in Table 1 (preference for 'a more equal income distribution', for 'eliminating income inequality', and for 'guaranteeing basic needs', respectively). Due to missing observations in the regressors and regressands, not all 3×4 possible combinations could be estimated. Table 4 reports the coefficient estimates, their level of significance and the number of observations in the regression samples.

Almost all regressions (but one) in Table 4 suggest that people who perceive the income generating process as fair favor less redistribution through the government. This is observable for the measures 'poverty due to laziness', 'chance to escape poverty' and 'conservative ideology'. Notably, these individual ideology and perceived fairness effects are, given that we employ country fixed effects, independent of 'national' beliefs and political cultures and thus relative to countries' potentially time-invariant average perceptions. The coefficients suggest that having high fairness perceptions decreases the demand for government activities by up to two thirds of a category (out of possible 10 in column 1) or a third of a category

Table 4
Fairness perceptions and the demand for income redistribution.

	(1)		(2)		(3)	
	Incomes should be more equal		It is important to eliminate income inequality		It is important to guarantee basic needs	
	Coef.	Std. err.	Coef.	Std. err.	Coef	Std. err.
Hard work brings success in the long run	0.08**	[0.04]	–	–	–	–
Adj. *R*-squared	0.09		–		–	
Number of observations	188,420		–		–	
People are poor due to laziness, not injustice	−0.57***	[0.05]	−0.29***	[0.03]	−0.03***	[0.01]
Adj. *R*-squared	0.1		0.12		0.96	
Number of observations	130,031		31,811		143,516	
People have chance to escape poverty	−0.40***	[0.06]	–	–	–	–
Adj. *R*-squared	0.08		–		–	
Number of observations	63,111		–		–	
Conservative ideology	−0.66***	[0.04]	−0.35***	[0.06]	−0.01***	[0.01]
Adj. *R*-squared	0.11		0.12		0.90	
Number of observations	278,134		37,581		306,828	

Notes: OLS estimations. Dependent variable is a 5- or 10-point scale measure of preference for income redistribution. Cluster adjusted standard errors in parentheses. All models include the baseline micro-variables, income, education and occupational status, and interacted country- and wave-fixed effects (not reported). Missing regressions are due to insufficient sample sizes.
** Significances at the 5 percent level.
*** Significances at the 1 percent level.
The countries included in each regression sample are presented in Appendix D in Bjørnskov et al. (2013).

Table 5
Subjective well-being and the demand for redistribution.

Dependent variable: life satisfaction	(1)	(2)	(3)
Incomes should be more equal	−0.218*** [0.021]		
It is important to eliminate income inequality		−0.239*** [0.041]	
It is important to guarantee basic needs			−0.142* (0.079)
Observations	255,449	38,257	38,782
R-squared	0.24	0.28	0.28

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. Cluster adjusted standard errors in parentheses. All models include the baseline micro-variables, income, education and occupational status, and interacted country- and wave-fixed effects (not reported).
* Significances at the 10 percent level.
*** Significances at the 1 percent level.
The countries included in each regression sample are presented in Appendix D in Bjørnskov et al. (2013).

(out of possible 5 in column 2). Thus, the results are in line with Proposition 2, suggesting that persons who believe in procedural fairness oppose government redistribution.[22]

Somewhat astonishing is the increase in the probability of favoring a more equal income distribution expressed by persons, e.g., who also believe that 'hard work brings success in the long run', possibly reflecting a modern version of Weber's hypothesis of a Protestant work ethic, combined with a charitable attitude towards the poor.[23] Arguably, 'having success' is multidimensional, whereas 'escaping poverty' is one-dimensionally related to gaining income only. However, as this variable can only be included in model 1, we cannot draw a clear conclusion on whether the positive sign is a statistical artifact or indicates a generic relation.

Overall, the results in Table 4 support the prediction of Proposition 2 that perceived social mobility reduces the demand for income redistribution from the rich to the poor. This result is required as a basis upon which the interpretation of the following results rests.

Table 5 tests the second part of Proposition 2, which predicts a negative relationship between a preference for redistribution and individual welfare. This prediction translates into our empirical model based on the WVS that persons with a preference for 'a more equal income distribution', for 'eliminating income inequality', or for 'guaranteeing basic needs' (see Table 4) should report lower levels of subjective well-being. All three columns of Table 5 indeed show that persons who demand a more equal income distribution (potentially through government intervention) and guaranteed basic needs for everybody are less satisfied with their lives compared to those with no such preferences. With coefficient estimates between −0.14 and −0.24, the quantitative effect on subjective well-being is of medium size, comparable to that of, for example, 'cohabiting' as opposed to being 'divorced or separated'.

Overall, Tables 4 and 5 present evidence in line with Proposition 2: we find that those who perceive their society as fair are less likely to demand a more equal (post-tax and -transfer) income distribution. Furthermore, we also find that those who do demand more equal incomes report lower levels of life satisfaction.

4.4. *Propositions 3 and 4: inequality and fairness perceptions in low and high actual mobility countries*

While Proposition 3 predicts a positive interaction between fairness perceptions and income inequality on subjective well-being, Proposition 4 makes the seemingly counter-intuitive prediction that this pattern is stronger in countries with low actual social mobility. We test these propositions by interacting the individual fairness perception variables with the Gini coefficient, and subsequently splitting the regression samples by actual social mobility at the country level. As described above, we employ two sets of social mobility measures: one for intergenerational income/wage persistence; and one for educational mobility across generations.

Our theoretical model predicts that in the sample with low actual social mobility, we should observe a positive interaction between perceived fairness and income inequality. For countries with high upward mobility, our model theoretically predicts the positive interaction to become smaller and weaker. We test these predictions in Tables 6 and 7.

Table 6 tests Proposition 4 by employing measures of mobility in wages and income while Table 7 employs measures of mobility in education instead. The model in Tables 6 and 7 and the empirical corroboration of Proposition 4 hinge on the assumption that social mobility, educational mobility, and wage mobility are sufficiently correlated. For all fairness perception measures in Table 6, in low wage or income mobility countries the effect of income inequality on subjective well-being is the more positive the higher the individuals' fairness perceptions are. In these countries our theory predicts that the pool of high fairness perception individuals comprises a larger share of high-income people who profit from higher inequality via higher status utility. Equally in line with Proposition 4, in high actual mobility country samples we observe only insignificant or weakly significant interactions with inequality. In general, the regressions that employ measures of

[22] These results hold when we use an ordered probit model instead.
[23] In the traditional Calvinist view and according to their predestination theory, only the efforts of the 'blessed' would yield economic success, in contrast to that by the 'lost souls'. Thus, economic success in 'this world' is perceived by Calvinists as a signal for being chosen to have a good afterlife.

Table 6
Fairness perception and income inequality – low and high intergenerational mobility in income and wages.

	(1) Low		(2) High		(3) Low		(4) High		(5) Low		(6) High	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
Intergenerational earnings elasticity (D'Addio, 2007)												
Conservative ideology	−0.13	[0.32]	−0.24	[0.29]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	0.73	[0.72]	0.91	[0.67]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	−0.46	[0.37]	0.96*	[0.50]	–	–	–	–
Hard work × Income inequality	–	–	–	–	1.57*	[0.79]	−1.70	[1.15]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	−0.12	[0.34]	0.1	[0.36]
Laziness × Income inequality	–	–	–	–	–	–	–	–	0.65	[0.77]	0.34	[0.79]
Adj. *R*-squared	0.09		0.09		0.10		0.08		0.08		0.08	
Number of observations	35,928		23,159		25,084		16,917		22,121		10,949	
Summary measure of wage persistence, male (Causa et al., 2009)												
Conservative ideology	−0.18	[0.15]	−0.10	[0.45]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	0.78*	[0.37]	0.52	[0.98]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	0.02	[0.26]	0.73	[0.50]	–	–	–	–
Hard work × Income inequality	–	–	–	–	0.53	[0.60]	−1.06	[1.01]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	0.06	[0.22]	−0.26	[0.34]
Laziness × Income inequality	–	–	–	–	–	–	–	–	0.37	[0.55]	1.02	[0.72]
Adj. *R*-squared	0.07		0.11		0.08		0.11		0.07		0.11	
Number of observations	26,991		21,365		17,239		10,800		18,401		13,900	
Summary measure of wage persistence, female (Causa et al., 2009)												
Conservative ideology	−0.25	[0.15]	−0.22	[0.41]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	1.01**	[0.41]	0.75	[0.91]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	−0.11	[0.33]	0.53	[0.40]	–	–	–	–
Hard work × Income inequality	–	–	–	–	0.89	[0.81]	−0.63	[0.83]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	0.00	[0.24]	0.03	[0.32]
Laziness × Income inequality	–	–	–	–	–	–	–	–	0.51	[0.61]	0.40	[0.66]
Adj. *R*-squared	0.08		0.10		0.08		0.10		0.08		0.10	
Number of observations	24,768		23,588		13,797		14,242		18,336		13,965	
Intergenerational income elasticity (Blanden, 2013)												
Conservative ideology	−0.96***	[0.24]	0.02	[0.23]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	2.55***	[0.48]	0.30	[0.53]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	−0.31	[0.26]	0.16	[0.59]	–	–	–	–
Hard work × Income inequality	–	–	–	–	1.23**	[0.56]	0.11	[1.31]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	−0.59	[0.50]	0.33	[0.31]
Laziness × Income inequality	–	–	–	–	–	–	–	–	1.81	[1.10]	−0.32	[0.68]
Adj. *R*-squared	0.08		0.12		0.08		0.13		0.07		0.13	
Number of observations	28,882		25,785		22,768		17,397		17,001		13,143	

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. Cluster adjusted standard errors in parentheses. All models include the baseline micro-variables, income, education and occupational status, and interacted country- and wave-fixed effects (not reported).

* Significances at the 10 percent level.

** Significances at the 5 percent level.

*** Significances at the 1 percent level.

The countries included in each regression sample are presented in Appendix D in Bjørnskov et al. (2013).

Table 7
Fairness perception and income inequality – low and high intergenerational mobility in educational achievements.

Measure of social mobility	Level of mobility											
	(1) Low		(2) High		(3) Low		(4) High		(5) Low		(6) High	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
Summary measure of persistence in below upper secondary education (Causa et al., 2009)												
Conservative ideology	−0.25	[0.15]	−0.22	[0.41]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	1.01**	[0.41]	0.75	[0.91]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	−0.11	[0.33]	0.53	[0.40]	–	–	–	–
Hard work × Income inequality	–	–	–	–	0.89	[0.81]	−0.63	[0.83]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	0.00	[0.24]	0.03	[0.32]
Laziness × Income inequality	–	–	–	–	–	–	–	–	0.51	[0.61]	0.40	[0.66]
Adj. *R*-squared	0.08		0.10		0.08		0.10		0.08		0.10	
Number of observations	24,768		23,588		13,797		14,242		18,336		13,965	
Summary measure of persistence in tertiary education (Causa et al., 2009)												
Conservative ideology	−0.20	[0.19]	−0.31	[0.37]	–	–	–	–	–	–	–	–
Conservative ideology × Income Inequality	0.86*	[0.46]	0.96	[0.82]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	−0.01	[0.28]	0.59	[0.41]	–	–	–	–
Hard work × Income inequality	–	–	–	–	0.58	[0.67]	−0.75	[0.85]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	−0.14	[0.22]	0.19	[0.33]
Laziness × Income inequality	–	–	–	–	–	–	–	–	0.84	[0.52]	0.05	[0.70]
Adj. *R*-squared	0.09		0.11		0.09		0.10		0.09		0.10	
Number of observations	27,610		20,746		15,588		12,451		18,763		13,538	
Intergenerational correlation in educational attainment (Hertz et al., 2007)												
Conservative ideology	−0.15	[0.24]	0.60**	[0.23]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	0.81	[0.49]	−0.73	[0.54]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	0.59***	[0.13]	0.48***	[0.11]	–	–	–	–
Hard work × Income Inequality	–	–	–	–	−0.78**	[0.30]	−0.58*	[0.29]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	−0.01	[0.22]	0.66***	[0.21]
Laziness × Income inequality	–	–	–	–	–	–	–	–	0.75*	[0.42]	−0.74	[0.46]
Adj. *R*-squared	0.19		0.27		0.15		0.28		0.17		0.28	
Number of observations	64,521		57,374		39,071		38,370		24,255		35,272	
Mobility in educational level (Chevalier et al., 2009)												
Conservative ideology	0.18	[0.32]	0.52*	[0.26]	–	–	–	–	–	–	–	–
Conservative ideology × Income inequality	0.09	[0.71]	−0.75	[0.58]	–	–	–	–	–	–	–	–
Hard work brings success in the long run	–	–	–	–	0.12	[0.24]	0.56***	[0.10]	–	–	–	–
Hard work × Income inequality	–	–	–	–	0.31	[0.55]	−0.72***	[0.24]	–	–	–	–
People are poor due to laziness, not injustice	–	–	–	–	–	–	–	–	0.63*	[0.32]	0.70**	[0.31]
Laziness × Income inequality	–	–	–	–	–	–	–	–	−0.90	[0.68]	−0.90	[0.70]
Adj. *R*-squared	0.16		0.12		0.15		0.12		0.16		0.12	
Number of observations	42,041		37,921		30,929		24,333		21,818		24,913	

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. Cluster adjusted standard errors in parentheses. All models include the baseline micro-variables, income, education and occupational status, and interacted country- and wave-fixed effects (not reported).

* Significances at the 10 percent level.

** Significances at the 5 percent level.

*** Significances at the 1 percent level.

The countries included in each regression sample are presented in Appendix D in Bjørnskov et al. (2013).

educational mobility are also in line with our predictions, particularly those that employ large regression samples based on 'conservative ideology' and 'hard work brings success' as measures of fairness perceptions. The interaction in high actual mobility countries is again in most cases smaller than in countries with low mobility. A positive sign of the interaction term can be interpreted as an indication that individuals who have experienced upward social mobility in their family – and believe this to be the result of fair institutions – would experience an adverse impact of income redistribution on their well-being. Again, we find support for Proposition 4 for fairness perception measures that are similar to those employed in previous empirical studies (e.g., Corneo and Gruener, 2002; Alesina and La Ferrara, 2005).

To summarize, the empirical results are in line with our propositions. Individuals who perceive their society as unfair are less likely to be satisfied with their lives (Proposition 1), and are more likely to oppose redistributive government activities (Proposition 2). In countries with low actual mobility, people with high fairness perceptions are better off, the less redistribution takes place: the higher income inequality is, the more positive are the effects of high fairness perceptions (Proposition 3). In contrast, in high actual mobility countries, we observe that the pool of people with high fairness perceptions is less likely to experience a more positive effect of income inequality (Proposition 4). As these findings provide an important qualification to some standard results of elementary welfare economics, we proceed with a short discussion in the concluding section.

5. Conclusions

The empirical literature on the relationship between income inequality and happiness has yielded ambiguous results. The point of departure of our analysis is the conjecture that one of the potential reasons for this confusion might be that people evaluate the fairness of the income distribution (i.e., the distribution generation process) differently, and that these subjective evaluations eventually affect their subjective well-being. Extending the previous literature, we also make the case that inequality assessments hinge on whether or not social mobility expectations meet actual social mobility.

We illustrate the relationship between inequality and subjective well-being in a small formal model where individual effort and labor market participation depend on subjectively perceived probabilities of success that, in turn, reflect fairness perceptions: the higher the perceived fairness of a society, the closer the individually perceived connection between individual effort and economic outcomes. We therefore in general expect a positive relationship between perceived fairness and overall well-being, and a negative effect on the preference for government redistribution. If *ex ante* fairness perceptions are sufficiently low, the individual will choose an investment level of zero, and benefit from a reduction of income inequality through taxes and transfers. We also distinguish between the effects of perceived and actual fairness. Low or high actual fairness is associated with low or high upward mobility, respectively. We argue that status utility implies that in general, individuals with high fairness perceptions have a more favorable attitude towards income inequality than individuals with low fairness perceptions. Furthermore, we argue somewhat paradoxically, that this effect is smaller in countries that are characterized by higher objective mobility, as measured by low levels of observed income inequality. The reason for this is the difference in the composition of the pool of high fairness individuals: differences between low fairness perceptions and high actual fairness (mobility) lead to positive surprises for individuals who have invested relatively little effort. Thus, in actually fair (mobile) societies the pool of individuals with high *ex post* fairness perceptions comprises a larger share of people with relatively low incomes, who do not profit from status utility. In low fairness (mobility) countries, the pool comprises a larger share of high-income people who profit to a larger extent from status utility when income inequality is higher.

We test this model using combined individual-level data of the pooled second to fifth waves of the World Values Survey (1990–2008), containing about 300,000 interviewed individuals in 80 countries. According to the results, the respondents' belief that income inequality in their society is the result of a comparably fair market process makes them considerably more satisfied with their lives, while a demand for more government redistribution for correcting the market-income distribution is negatively associated with happiness. However, differentiating by level of actual social mobility in a country, in countries with lower upward-mobility we find evidence for a positive effect of inequality for individuals with high fairness perceptions, in line with our theoretical prediction. In contrast, in countries with plenty of economic opportunities and equal chances to success, this positive interaction effect is either smaller or disappears, depending on the mobility measure used.

The findings challenge the standard Lerner argument that more redistribution and less income inequality unambiguously leads to an increase in welfare of the average person, and thus, in average welfare. Instead, the model and the empirical analysis suggest that for broad groups of countries the potential effects of inequality depend on the interplay between perceived and actual fairness of the institutional framework. The overall effect of reductions of inequality on subjective well-being is thus much more ambiguous at the aggregate level of society than predicted by many standard models. As such, our findings may hold implications for both policy making and future theorizing on the subject.

By keeping our framework relatively simple, we implicitly leave several questions for future research. A possible extension of our framework would be to look at updating fairness perceptions in the long run, possibly across generations. If there is long-term convergence of beliefs to objective fairness, then the disappointment of erring individuals underlying Proposition 4 would disappear in the long run, as low-fairness individuals subsequently realize that they actually live in a high-fairness society.

It seems beneficial to overall welfare that governments should not only provide policies and institutions that guarantee social mobility, but also communicate these policies convincingly, so that individuals can choose their effort levels

accordingly. Individuals who believe in the fairness of the market-income-generation-process experience a higher subjective well-being. Thus, policies should aim at fostering competition, reducing privileges of interest groups and closing the gap between individual effort and success. Inequality is easier to accept if it is the result of unequally distributed skills and chosen effort levels than if it is due to institutional design and low social mobility.

Our results suggest that with regard to fostering subjective well-being a society that offers such equal opportunities would be superior to a paternalistic and overly redistributive welfare state.

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