Inequality and Happiness: When Perceived Social Mobility and Economic Reality do not Match

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Abstract

In this paper, we revisit the association between happiness and inequality. We argue that the interaction between the perceived and the actual fairness of the income generation process affects this association. Building on a simple model of individual labor-market participation under uncertainty, we predict that higher levels of perceived fairness cause higher levels of utility, and lower preferred levels of income redistribution. In societies with a low level of actual social mobility, income inequality is perceived more negatively with increased perceived fairness, due to the need for unexpected policy changes as a response to many unsuccessful investments of overly optimistic individuals. This effect becomes smaller as actual social mobility increases. Using data on happiness and a broad set of fairness measures from the World Values Survey, we find strong support for the negative (positive) association between fairness perceptions and the demand for more equal incomes (subjective wellbeing). We also find strong empirical support for the disappointment effect in countries with low social mobility. Consistent with our theoretical model, the results for high-mobility countries turn out to be ambiguous.

JEL-Code: I31, H40, D31, J62, Z13.

Keywords: happiness, life satisfaction, subjective well-being, inequality, income distribution, redistribution, political ideology, justice, fairness, World Values Survey.

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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, be observed to experience lower levels of utility. 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 is arguably a reliable proxy for the economic concept of 'utility'.[1] If Lerner's implication – and indeed standard economic theory – is correct, we would expect to see a clear negative association between income inequality and life satisfaction of the average person. Such empirical results would be in line with the more recent theoretical model by Fehr and Schmidt (1999), taking account of social (other-regarding) preferences in individuals' utility functions, equally predicting a negative relation between inequality and happiness.

Even though this traditional, simple 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]

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[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, Frijters and Shields (2008) and Layard, Mayraz and Nickell (2009), among others, use micro data to analyze income inequality effects through social comparisons where persons compare

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One of the first empirical contributions, Alesina et al. (2004), identify a negative association between income inequality and happiness for 12 European countries, but an association that is not statistically significant for most U.S. states. Explaining their results, the authors hypothesize that differences in perceived and actual social mobility exist between these two continents. 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, Dreher and Fischer (2008) suggests that the skewness of the income distribution does not, in general, 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. In the words of Hopkins (2008), we aim at differentiating between reward inequality (possibly caused by an unfair income generating process even when endowments (skills) have been equal) and endowment inequality (which exists prior to any market transaction, and is shown to persist even when the income generating process is fair). 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, at first, income inequality contributed positively to people's happiness from 1992 to 1996, possibly because it was associated with given and perceived good economic opportunities. In contrast, in the later period from 1997 onwards, it affected people's happiness negatively, possibly because lower actual social mobility mismatched with what people still expected it to be. Alesina et al. (2004) already conjectured

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 quite dense income distribution), as greater incentives to compete in consumption are generated.

that inequality may affect people with specific values and specific views on social mobility in their 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 some testable hypotheses. This 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 fairer the closer the relationship between individual effort and market outcome is. It can therefore also be interpreted as a measure of social mobility, because with increasing fairness, inherited social status loses relevance. Our model allows systematic incongruences between actual and perceived fairness. The model predicts that persons with higher *perceived fairness* will – on average, but not in every single case – experience higher levels of utility and be less in favor of income redistribution.

According to the model, it is the congruence of actual social mobility and individual fairness perceptions that determines how income inequality affects utility. In a country with high actual *and* perceived social mobility, individuals will invest more in human capital and thus, on average, realize more favorable economic outcomes – in terms of own income, but also concerning general economic growth. For a country that is a utopian, limiting case of perfect fairness, we expect that individuals with high fairness perceptions are not negatively affected by increased income inequality. The reason is that in this case, individuals can not overinvest into effort and there are no unexpected policy changes conditional on differences between the actual and the expected income distribution.

In contrast, a low-mobility country, characterized by institutions impeding social mobility, may suffer from the following problem: With actual social mobility being low, the group of individuals who overestimate actual fairness tends to be larger relative to high mobility countries. This leads to a need for (*ex ante*) unexpected adjustments in fiscal policy, which in turn reduce utility for individuals who have invested and participate in the labor market and pay taxes. *Ex post*, higher *perceived* fairness in countries with low actual upward mobility will be negatively associated with income inequality, as inequality is increased through increasing the number of transfer recipients and decreasing the number of taxpayers.

To explore the link between perceptions of fairness, social mobility, inequality, and happiness empirically we use data from the World Values Survey 1997-2001 and estimate a happiness function. We employ Gini coefficients to measure income inequality, four different proxies for individuals' perceived fairness of the income generating process, and the interaction of inequality with these proxies. We employ measures of institutional quality to approximate actual social mobility. The empirical analysis aims to explore 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 (and redistribution) by the government. As predicted by the model, we also find strong empirical support for the negative effect of inequality for individuals with high fairness perceptions in countries with unfavorable institutions hampering social mobility. Consistent with our model, for countries where institutions facilitate equal investment opportunities and access to markets – thus triggering a close relationship between individual effort and market outcomes – the effects of income inequality and fairness perceptions appear rather disentangled in their interactions. The interaction results are corroborated in smaller 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. Data and methods are described 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 and the literature

In 1944, Austrian economist and social philosopher Friedrich Hayek (1944: 88) argued that "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. 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 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. 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 looser this link becomes, i.e., the more the individual outcome depends on chance, 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 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

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[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.

shape of the income distribution, moral judgments on fairness will arguably come to rest on a different foundation.

Actual (objective) and perceived (subjective) fairness in the income generation process is often not clearly distinguished by the early theoretical and empirical literature on happiness or preferences for redistribution. Most studies implicitly – Alesina et al. (2004) even 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 their perceived and the actual fairness coincide or diverge.

Fairness perceptions can also be argued to diverge according to political convictions: 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, as voters' definitions of fairness differ systematically across 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. In 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 relation 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 couple of 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" (ibidem: 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 relation 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 own experienced social mobility ('having higher

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[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'.

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 instantaneous, directly unobservable utility where ε_i is an error-term:

(1) $\qquad W_i = w(u_i) + \varepsilon_i$

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, without loss of generality, that utility is linear in income y_i and that effort invested to earn income has a negative and quadratic direct effect on utility.

(2) $\qquad u_i = y_i(e_i) - \dfrac{1}{2} e_i^2$

where

(3) $\qquad y_i = g(e_i)\left[1 - (1 - \pi)(1 - \theta_i)\right].$

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[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.

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. 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 extremely unlikely. Every individual therefore bases her decisions on her own estimate $\tilde{\pi}_i$.[9] The idiosyncratic parameter θ_i is assumed to be determined randomly. It is drawn 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 their own $\hat{\theta}_i$ is known to all individuals. 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 favorable high θ_i from the distribution.

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[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 there is emphatically no genetic inheritance assumed to be at work here. This approach simply 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 would be cancelled out completely.

We assume that individuals choose effort in order to maximize their expected instantaneous utility

$$(4) \qquad \max_{e \geq 0} \int_0^1 f_i(\theta_i) \left\{ g(e_i)\left[1 - (1 - \tilde{\pi}_i)(1 - \theta_i)\right] - \frac{1}{2}e_i^2 \right\} d\theta_i$$

which straightforwardly leads to the simple first order condition

$$(5) \qquad g'(e_i)\left[1 - (1 - \tilde{\pi}_i)\left(1 - \hat{\theta}_i\right)\right] = e_i.$$

2.3. Expected and actual utility, effort and reported happiness

From (5), we can infer individually optimal effort levels as functions of the other model parameters:

$$(6) \qquad e_i^* = e_i^*\left(\tilde{\pi}_i, \hat{\theta}_i\right) \quad \text{with} \quad e_{i\tilde{\pi}}^* > 0 \quad \text{and} \quad e_{i\hat{\theta}}^* > 0.$$

Clearly, for all individuals who believe initially that $\tilde{\pi}_i < \pi$, a marginal increase of $\tilde{\pi}_i$ is associated with an increase in expected, as well as realized utility. If (1) is stable in time, an increase in perceived fairness in time is associated with an unambiguous increase in reported happiness. Similarly, if (1) is sufficiently similar for all persons, then among individuals with $\tilde{\pi}_i < \pi$, persons with a higher perceived fairness will unambiguously report higher levels of happiness. For individuals with $\tilde{\pi}_i \geq \pi$, things are more complicated. While subjectively expected utility increases with $\tilde{\pi}_i$, realized utility does not. *Ex post*, individuals tend to find out that they have overinvested into effort, and the magnitude of overinvestment (and the associated loss of utility) increases with $\tilde{\pi}_i$. The overall effect of *ex ante* fairness perceptions on instantaneous utility is therefore ambiguous. It is also likely to be non-linear, i.e., a positive effect can be expected for relatively low starting levels of perceived fairness, while a

negative marginal effect is more likely to prevail with starting levels of perceived fairness that already are very high.

With effort determined and income revealed, it is easy for any individual to calculate her value of $(1-\pi_i)(1-\theta_i)$ *ex post*, but individual knowledge is not sufficient to disentangle these two effects. Deriving an indirect utility function V from (2) and using the envelope theorem reveals that $V_{\tilde{\pi}_i} = g(e_i^*)(1-\hat{\theta}_i)$, i.e., expected utility is linear and increasing in $\tilde{\pi}_i$. However, to any value of $\tilde{\pi}_i$ corresponds a range of actually realized individual utility levels in the population, each depending on the individually drawn values, θ_i. How will i respond if $\Delta_i \equiv u_i(\pi,\theta_i) - V_i(\tilde{\pi}_i,\hat{\theta}_i) \neq 0$? If $\Delta_i > 0$, it is reasonable (although not necessary for our argument) to assume that the individual will claim the laurels for herself, believe in having drawn $\theta_i > \hat{\theta}_i$ and leave her $\tilde{\pi}_i$ unchanged. If $\Delta_i < 0$, the opposite reaction is likely: $\tilde{\pi}_i$ will be revised downward towards $\hat{\pi}_i < \tilde{\pi}_i$ for which $u_i(\pi,\theta_i) = V_i(\hat{\pi}_i,\hat{\theta}_i)$. For all observations that initially lie below the V_i-line, individuals adjust their fairness perceptions such that these observations eventually lie exactly on this upward-sloping line. This leads us to

Proposition 1. *If individuals shift the responsibility for a negative difference between actual and expected utility to the institutional framework by revising their fairness perceptions downward, then an overall positive relationship between perceived fairness and self-reported well-being is expected in populations of individuals that are heterogeneous with respect to their marginal ability to earn incomes.*

2.4. Preferences for income redistribution and reported happiness

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. To keep matters simple, we assume that government commands no screening technology that would allow it to distinguish

between voluntary and involuntary unemployment. Individuals therefore compare expected utilities on and off the labor market, and participate only if

$$(7) \qquad (1-t)\left[g(e_i^*)\left[1-(1-\tilde{\pi}_i)(1-\hat{\theta}_i)\right]\right]-\frac{1}{2}e_i^* > y_T(t).$$

Thus, for any given tax and transfer system $\{t, y_T(t)\}$ in combination with an individual belief $\tilde{\pi}_i$, there exists some threshold value θ_i^T where (7) holds with equality and where for any $\hat{\theta}_i > \theta_i^T$ the individual decides in favor of labor market participation. Since procedural fairness compensates for an unfavorable idiosyncratic parameter value, the value of the threshold θ_i^T is strictly declining in perceived fairness. In other words, higher perceived fairness yields higher planned (*ex ante*) labor market participation rates even in groups who expect relatively lower values of θ_i. With utility being linear in income, the insurance motive for redistribution does not play a role. Redistribution is *ex ante* only in the interest of individuals who plan not to participate in the labor market.

The relationship between preferences for redistribution and fairness perceptions 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. Thus follows

Proposition 2. *An individual randomly drawn from the population is the more likely to report a preference for increased redistribution the lower her individual fairness perception is. Therefore, a stronger preference for redistribution is also expected to be positively correlated with less self-reported happiness.*

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

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

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.

Without developing a fully-fledged political economy model, and treating the political process as a black box, suppose government announces a tax and transfer system $\{t, y_T(t)\}$ *ex ante*. Suppose further that the transfer is fixed after being announced and that, if *ex post* more or less individuals than expected have a right to receive transfers, the tax rate will be adjusted to balance the budget. The government is fully informed about all $\hat{\theta}_i$, but not about other moments of $f_i(\theta_i)$, and neither are the individuals themselves. The government is informed about the distribution of $\tilde{\pi}_i$ in the population. Given this distribution of information, individuals are therefore not able to calculate a more precise estimate of the budget-balancing tax rate than their government.

Suppose at first that we are analyzing a high-fairness economy, i.e., one characterized by a high value of the actual fairness parameter, ideally by a value close to unity. With $\pi \rightarrow 1$ the influence of the idiosyncratic parameter diminishes and eventually disappears. Inequality in incomes and utility exists and may be large, depending on the shape of the distribution of $\tilde{\pi}_i$, but it follows from variance in *ex ante* fairness perceptions, and thus differing individually chosen effort levels. More importantly, the number of individuals who participate in the labor market and unexpectedly earn an income $y_i^* < y_T$ also tends towards zero with $\pi \rightarrow 1$. The reason is again that the impact of the idiosyncratic parameter disappears. The government's initial estimate of the budget-balancing tax rate becomes more precise, and *ex post* tax increases become more unlikely, and smaller if they occur.

Suppose now that, under the same set of assumptions, a low-fairness economy is analyzed. With $\pi \rightarrow 0$, the impact of the idiosyncratic parameter becomes less mediated by fairness of institutions. Even individuals with high values of $\hat{\theta}_i$ are at risk to become transfer recipients if they draw a low actual θ_i. The estimate of the budget-balancing tax rate becomes less precise; *ex post* tax increases become more likely and, if they occur, larger with a decline in the value of the actual fairness parameter. Individuals adjust their fairness perception in the same fashion as discussed in *Section 2.4.*, taking account of their market incomes. Thus, *Proposition 1* still holds. However, the unexpected tax increase is a disutility to all individuals who (i) decided to participate in the labor market, and (ii) earned an income $y_i^* > y_T$. On the other hand, individuals who (i) participate in the labor market and (ii) unexpectedly earn an income $y_i^* < y_T$ due to a low value of θ_i earn a lower income with the same effort level, relative to the high-fairness economy. In the low-fairness economy, individuals with a fairness perception high enough to induce labor market participation thus suffer from lower utility levels than in a high-fairness economy, either due to a lower market income, or due to the impact of unexpected taxes.

Finally, it is easy to see that increases in income inequality are associated with increases in unexpected taxes. The more individuals unexpectedly fall to incomes $y_i^* < y_T$, the higher the tax increase is for those who remain above the y_T. The effect described above thus increases in magnitude with increasing inequality.

Proposition 3. *For individuals with fairness perceptions and mobility expectations $\tilde{\pi}_i$ sufficiently high to induce labor market participation and living in economies with low levels of actual social mobility π, a negative effect of income inequality on instantaneous utility and self-reported well-being is expected. With actual social mobility approaching its maximum, $\pi \to 1$, the effect disappears for the same individuals.*

3. Data and Method

3.1. Data

In order to empirically test *Propositions* 1 to 3, we employ data from the pooled third and fourth waves of the World Values Survey, covering the years 1994-2001 (Inglehart et al., 2004). The availability of reliable and internationally comparable Gini data restricts our choice of WVS data to around the year 1995. 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 proxy for (remembered) utility and the dependent variable for Propositions 1 and 3. 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.[11] 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, Dreher and Fischer (2008) and Fischer (2009c). The country-level control variables include only country fixed effects, to avoid biasing the impact of the inequality measure through the choice of macro-controls. At the individual level, we include measures of age, gender, family type, religion, religiosity and spirituality. The baseline model is complemented with a wave dummy

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[11] 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).

and age cohort effects. The empirical models exclude measures of education, income and occupational status that, according to the theoretical model, should fully mediate an individual's subjective success probability $\tilde{\pi}_i$ (fairness perception). They are, however, included in additional tests further below.

Measures of vertical and horizontal trust (such as confidence in political institutions and trust in other people) do not form 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.[12] Due to data availability, the baseline sample is reduced to approximately 146,000 respondents from 68 countries; depending on the employed fairness measure, it may even be reduced further. The baseline results for the micro-level determinants of subjective well-being (SWB) in the present sample are similar to those in Bjørnskov, Dreher and Fischer (2008) – they are reported in Column 1 of Table A1 in Appendix A, while Appendix B presents descriptive statistics.[13]

Measures of self-report 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, e.g., 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.

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[12] Note that the inclusion of a measure of horizontal trust does not alter the main results of our analysis (e.g., in Tables 6 and 7), but does reduce the size of the regression samples by between 3000 and 6000 observations.

[13] For a detailed discussion of these results see Bjørnskov, Dreher and Fischer (2008).

Table 1: Measures of fairness perceptions and income redistribution

Variable name	Definition
Fairness in the education system and the labor market	
Hard work	Dummy that is 'one' for values below 5 on the question 'In the long run, hard work usually brings success' (which has a 10-point scale)
Laziness	Dummy that is 'one' for individuals claiming 'People are living in need because of laziness or lack of willpower' and 'zero' when answering 'People are living in need because of injustice in society'
Chance	Dummy that is 'one' for individuals claiming that 'people have a chance to escape poverty'. (alternative: 'they have little chance')
General meritocratic worldview	
Conservative	Dummy that is 'one' for values above or equal to 7 on a 10-point scale measuring conservative political ideology
Demand for income redistribution	
More equal incomes	Dummy that is 'one' for values below 5 on the question "Incomes should be more equal" (which has a 10-point scale)
Elimination	Dummy that is 'one' for values 1 and 2 on a 5-point scale measuring the 'importance of eliminating big income inequalities' (ranging from 'very important' to 'not at all important').
Basic needs	Dummy that is 'one' for values 1 and 2 on a 5-point scale measuring the 'importance to guaranteeing basic needs' (ranging from 'very important' to 'not at all important').

The demand for income redistribution is measured using three proxies derived from the World Values Survey. These variables, originally recorded on a 10-point or, respectively, a 5-point scale, were aggregated into dichotomous indicators ('1' = pro redistribution) in order to facilitate the empirical analysis in the probit models and, particularly, the interpretation of the results. They resemble the measures of income redistribution through governments employed

in Corneo and Gruener (2002) and Alesina and La Ferrara (2005). Table 1 provides on overview of the variables employed and their exact codings.

Measures of actual social mobility

To test *Proposition 3*, perceived social mobility (perceived fairness/equal opportunities) needs to be distinguished from actual social mobility. Unfortunately, cross-nationally comparable social mobility measures are hardly available on a large scale. To exploit the large sample size of up to 68 countries, we suggest using several proxies of actual social mobility. First, we employ the Gastil index of civil liberties (Freedom House 2007) and the Fraser Index of Economic Freedom (Gwartney and Lawson 2008). Second, following Fischer (2009b), we employ measures of intergenerational mobility in terms of educational attainment, in particular whether student performance depends on parental background. These direct measures of social mobility are, however, only available for a small subsample of OECD countries.

The rationale for using indices of economic freedom is that social mobility is only possible in an institutional framework that allows for free choice of occupation in a liberalized labor market, easy access to the national credit market (all measured by *area 5* of the Fraser index, ranging from 1 (lowest) to 10 (highest)), a government size not too large, triggering modest taxation of capital and income (captured by *area 1*), and a sound monetary policy that does not hamper investment (*area 3*). In addition, legal quality and the protection of property rights (*area 2*) as well as openness to the international goods markets and access to foreign capital (*area 4*) may equally be prerequisites for a socially mobile society and actual procedural fairness in the income generation process. Similarly, the Gastil index of civil liberties (range: 1 (highest) to 7 (lowest)) captures not only freedoms of expression and religion, but also the economically important dimensions of freedom of assembly, association (such as unions and firm cartels), and equal opportunities in education.

To test for the robustness of our results, we employ measures of actual social mobility. We use a measure of educational mobility based on the PISA 2003 Mathematics results, obtained from Fischer (2009b) and available for 27 countries in our baseline sample.

Educational mobility is the average advantage of having a high-education family background, expressed in test score points. More specifically, it is the average difference between the performance of students with such an advantageous family background compared to average student performance. The closer this difference is to zero, the more independent is student performance from parental background, and the more socially mobile is a country's education system. Appendix C presents the values of these actual social mobility measures for OECD countries.

Measure of income inequality

The Gini coefficients for testing *Proposition 3* are obtained from UNU (2006) and relate roughly to the year 1995.[14] We have chosen to obtain the Gini values from this specific database because the authors undertook special care to use reliable, high-quality income information to calculate the Gini coefficients to ensure its cross-country comparability; non-comparability of Gini coefficients across countries constitutes a severe problem with alternative income inequality information (e.g., from the World Development Indicators database). As the Gini measure refers to a cross-section of countries only, its true effect cannot be identified due to its multicollinearity with the country fixed effects. However, *Proposition 3* can be tested by interacting our fairness measures with the Gini coefficient. Appendix C displays the values for the 68 countries in the baseline sample.

3.2. Method

Proposition 1 predicts a positive association of individual fairness perceptions ($\tilde{\pi}_i =$ *perceived fairness of individual i*) with individual life satisfaction. For testing *Proposition 1*, we simply add the four fairness perception measures to the baseline happiness model and observe their relations with subjective well-being ($SWB_i = f(fairness_i, M_t ...)$). Vector

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[14] Gini coefficients all are calculated on the basis of gross income or earnings and are thus prior to any 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.

M_t includes the individual-level control variables, country fixed effects, a wave dummy and cohort effects, as described above. 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_t 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.

(9) $\qquad SWB_i = \alpha'\,fairness_i + \beta'M_t + u_i$.

Proposition 2 predicts that perceiving the income generation process as fair lowers 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 equation (9) as a reduced function of the chained function ($SWB_i = f\,(RED_i\,(fairness_i\,...)\,...)$. We test this hypothesis by, first, estimating a model of demand for income redistribution, with the identical variable of interest and the same set of control variables as in equation (9). The estimated coefficient γ' indicates the effect of fairness perceptions on the probability to be in favor of redistribution:

(10) $\qquad Pr(RED)_i = \gamma'fairness_i + \beta'M_t + u_i$.

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

(11) $\qquad SWB_i = RED_i + \beta'M_t + u_i$.

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To test *Proposition 3*, we add the interactions of the responses to one of those fairness perception questions with income inequality in their home country as measured by the Gini coefficient to equation (9).[15]

(12) $SWB_i = fairness_i + fairness_i * GINI + \beta'M_t + u$.

In estimating the model of subjective well-being we follow the previous literature (see, e.g., Bjørnskov, Dreher and Fischer 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 analogue of which we have obtained from the WVS.

Given the dichotomous nature of the measures of preference for income redistribution, the model of redistributive preferences is estimated as probit model, which greatly facilitates the calculation of the marginal effects (for the probability of reporting a pro-redistributive political statement). 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.

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

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 measures of actual social mobility are somewhat larger, for civil liberties (Gastil) and economic freedom (full Fraser index), between 0.23 and 0.26 (in absolute terms). For the subsample of OECD countries, measures of social mobility in terms of educational attainment show correlations similar in size to that of economic freedom, with coefficients for maternal and paternal educational dependence of 0.20 and 0.22, respectively. Finally, the correlation between income inequality and life satisfaction is positive, but fairly small (0.06).

In general, correlations of roughly 0.4 to 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, economic freedom shows a correlation of about 0.5 to 0.6, and social mobility in education of about 0.6 – 0.7. Only the Gini coefficients still show a small correlation of 0.14 with country means in life satisfaction, possibly indicating their subsample-specific heterogeneous effect. Employing aggregated individual data on the four fairness perceptions measures, correlations with country means in life satisfaction range from 0.06 to 0.4 and are, for at least two measures (poverty due to laziness and chance to escape poverty), 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 Appendix (Table A1, columns 2 – 5). 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.[16]

Table 2: Relations between happiness and fairness perceptions

	(1)	(2)	(3)	(4)
Hard work brings success in the long run	0.224***			
number of observations	60730			
People are poor due to laziness		0.570***		
number of observations		62920		
People have chance to escape poverty			0.483***	
number of observations			59383	
Conservative ideology				0.411***
number of observations				146752
Income, education, occupational status	no	no	no	No
Other micro controls included	yes	yes	yes	Yes
Country fixed effects included	yes	yes	yes	Yes

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. All models include the baseline micro-variables, wave, cohort and country effects (not reported). Income, education and occupational status are excluded from the model. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively.

First, note the positive signs of the perceived-fairness estimates, indicating that persons with strong fairness perceptions (a high $\tilde{\pi}_i$) are indeed happier compared to those who have a different view. 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 0.22 (hard work) and 0.57 (laziness).

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[16] 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 her partner, does not believe in a superior being, and never attends religious service.

Comparing these effects with those of other determinants of subjective well-being as reported in the Appendix (Tables A1 and A2) shows that these effects are comparable with, e.g., taking part in religious service once a month as compared to never (0.22) or being married as compared to being divorced or separated (0.53). According to Table A2 in the Appendix, 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'. 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.

Table 3: Relations between happiness and fairness perceptions – testing the transmission channels

	(1)	(2)	(3)	(4)
hard work brings success in the long run	0.212***			
number of observations	60730			
people are poor due to laziness		0.501***		
number of observations		62920		
people have chance to escape poverty			0.433***	
number of observations			59383	
conservative ideology				0.363***
number of observations				146752
Income, education, occupational status	yes	yes	yes	yes
Baseline micro controls included	yes	yes	yes	yes
Country fixed effects included	yes	yes	yes	yes

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. All models include the baseline micro-variables, wave, cohort and country effects (not reported). Income, education and occupational status are included. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively.

According to the theoretical model above, 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 including measures of education, income, and occupational status. Table 3 reports the results and shows analogously 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 Appendix Table A2). 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 statistically significant at the 1 percent level. For example, the coefficient on 'people have the chance to escape poverty' is 0.483 in Table 2, but only 0.433 in Table 3. Thus, the SWB effects of fairness and social mobility perceptions are partly mediated through own human capital investment. This finding is again in line with the theoretical model.

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 are less favorable towards equalizing the income distribution, most probably through redistribution from the rich to the poor. We estimate probit models for the four fairness perception variables employed in the happiness models (*Proposition 1*) with three dichotomous proxies of preference for income redistribution as dependent variables (preference for 'a more equal income distribution', for 'eliminating income inequality', and for 'guaranteeing basic needs', respectively). Due to missing observations in regressors and regressants, not all 12 possible models could be estimated. For the larger samples, we observe values of Pseudo R^2 between 0.05 and 0.08, a reasonable size for comparable probit

estimations. Table 4 reports the coefficient estimates, its level of significance and the number of observations in the regression sample.

Table 4: Fairness perceptions and the demand for income redistribution

	(1) Incomes should be more equal	(2) importance to eliminate income inequality	(3) importance of guaranteeing basic needs
hard work brings success in the long run	0.097***		
	[8.44]		
marginal effect	0.035		
number of observations	59325		
Pseudo R2	0.0521		
people are poor due to laziness, not injustice	-0.230***	-0.311***	-0.249***
	[20.79]	[18.83]	[10.92]
marginal effect	-0.082	-0.110	-0.034
number of observations	74588	28814	29114
Pseudo R2	0.0574	0.0792	0.063
people have chance to escape poverty	-0.147***		
	[11.95]		
marginal effect	-0.052		
number of observations	57822		
Pseudo R2	0.0505		
conservative ideology	-0.217***	-0.360***	-0.224***
	[23.68]	[19.69]	[9.43]
marginal effect	-0.075	-0.134	-0.034
number of observations	128917	34193	34610
Pseudo R2	0.07	0.0847	0.0633
Country fixed effects included	yes	yes	yes
Income, education, occupational status	no	no	no
Baseline micro controls included	yes	yes	yes

Notes: Probit estimations. Dependent variable is a dichotomous measure of preference for income redistribution. All models include other micro controls such as gender, age, family type, marital status, religion, religiosity, spirituality, cohort effects, country fixed effects and a wave dummy. Excluded from the model are measures of education, income, and occupational status. Missing regressions are due to insufficient sample sizes. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively.

Almost all regressions in Table 4 suggest that people who perceive the income generating process as fair are less in favor of 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. The marginal effects suggest that the effect of fairness perceptions decreases the probability of demanding government activities by between 3 and 13 percent. Thus, the results are in line with *Proposition 2*, suggesting that persons who believe in procedural fairness oppose government redistribution.

Somewhat astonishing is the increase in the probability of favoring a more equal income distribution expressed by persons who believe that 'hard work brings success in the long run', possibly reflecting a modern version of Weber's hypothesis of a Protestant work ethic.[17] 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 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.

Table 5 tests the second part of *Proposition 2*, which predicts a negative relation 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 show that, indeed, 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

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[17] 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.

-0.2 and -0.38, the quantitative effect on subjective well-being is of medium size, comparable to that of 'cohabiting' as opposed to being 'divorced or separated'.

Overall, Tables 4 and 5 present evidence in line with *Proposition 2*: We find that those persons who perceive the society they live in 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.

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

	(1)	(2)	(3)
Importance to eliminate income inequality	-0.338***		
	[6.40]		
Incomes should be more equal		-0.380***	
		[26.86]	
Importance to guaranteeing basic needs			-0.177***
			[4.19]
baseline micro controls included	yes	yes	yes
income, education, occupational status	no	no	no
country fixed effects included	yes	yes	yes
number of observations	34193	128917	34610
Adjusted R-squared	0.24	0.22	0.24

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. All models include the baseline micro-variables, wave, cohort and country effects (not reported). Excluded from the model are measures of education, income, and occupational status. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively.

4.4. Proposition 3: Inequality and fairness perceptions

Proposition 3 relates fairness perceptions, actual fairness in society and income inequality to well-being. We test *Proposition 3* by interacting the individual fairness perception variables with the Gini coefficient, and splitting the regression samples by actual social mobility at the country level, as reflected by a country's economic and political institutions that govern people's economic activities. Our theoretical model predicts that in the low social mobility sample, we should observe a negative interaction between perceived fairness and income inequality. For countries with high upward mobility, we theoretically predict the negative

interaction to become weaker and ultimately, to disappear: With actual fairness (π) tending towards unity, negative surprises with regard to income, and thus unexpected tax increases, become smaller and ultimately disappear.

Table 6: Analysis by low social mobility through little economic opportunities

	(1) Civil liberties low	(2) Fraser full index < 6.3	(3) government size large area 1	(4) legal quality low area 2	(5) inflation high area 3	(6) openness low area 4	(7) new business difficult area 5
Hard work * GINI	-0.001	-0.005**	-0.007	-0.002	-0.004*	-0.004	-0.003
	[0.33]	[2.03]	[0.88]	[0.70]	[1.73]	[1.46]	[0.79]
Hardwork	0.221*	0.424***	0.493**	0.290***	0.403***	0.361***	0.348***
	[1.72]	[4.26]	[2.18]	[2.61]	[4.26]	[3.49]	[2.98]
Observations	28613	28037	20722	29630	33111	27768	22566
Chance * GINI	-0.004	-0.016***	0.015*	-0.017***	-0.015***	-0.015***	-0.014***
	[1.44]	[7.13]	[1.77]	[6.66]	[6.83]	[6.23]	[4.71]
Chance	0.718***	1.114***	0.142	1.144***	1.090***	1.025***	1.013***
	[5.73]	[11.61]	[0.56]	[10.27]	[11.58]	[9.97]	[9.14]
Observations	30488	29914	20127	30373	34941	28540	23551
Laziness * GINI	-0.009***	-0.008***	-0.007	-0.013***	-0.009***	-0.008***	-0.015***
	[2.91]	[3.36]	[1.08]	[5.29]	[4.01]	[3.26]	[5.46]
Laziness	0.938***	0.900***	0.683***	1.085***	0.968***	0.839***	1.075***
	[7.57]	[9.66]	[3.51]	[10.80]	[10.37]	[8.78]	[10.94]
Observations	35191	35810	36686	38145	37779	35407	36027
Conservative * GINI	-0.008***	-0.010***	-0.012***	-0.010***	-0.011***	-0.010***	-0.016***
	[2.99]	[4.77]	[2.87]	[4.75]	[4.98]	[5.04]	[7.45]
Conservative	0.732***	0.871***	0.792***	0.867***	0.911***	0.840***	1.033***
	[6.83]	[10.15]	[6.12]	[9.55]	[10.01]	[9.94]	[12.09]
Observations	67018	62055	47160	73857	57237	70405	65921

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. All models include the baseline micro-variables, wave, cohort and country effects (not reported). Excluded from the models are measures of education, income, and occupational status. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively.

Tables 6 and 7 present the estimates for perceived fairness and its interaction with income inequality, the two main variables of interest, in subsamples split by measures of civil liberties and economic opportunities.[18] The measures we use to proxy for actual social mobility are the Gastil index of civil liberties and the Fraser index of economic freedom. Subindices of the full Fraser index cover aspects of government size, legal quality and protection of property rights, inflation and the domestic financial market, trade openness and access to foreign capital, and labor market regulation and other market rigidities that might hamper entrepreneurial activities. In particular, column 1 employs the Gastil index of civil liberties, while column 2 reports the results for the Full Fraser index. The remaining columns employ subindices of the Fraser index that relate to the five specific areas described above.[19]

In the focus of our analysis are the interaction terms between income inequality and perceived fairness. In line with *Proposition 3*, in the sample of countries with low economic opportunities and rigid institutions (Table 6) we observe the expected negative effect, as indicated by the negative interaction between GINI and the four fairness perception measures (in most cases significant at the ten percent level at least). Given that the GINI coefficient varies between 20 and 60 in the sample, the overall effect of fairness perception remains positive, but is reduced in size as income inequality increases.

In Table 7, we report the results for the high social mobility countries. It turns out that most coefficients are either statistically insignificant or negatively signed. The former would be in line with our prediction for countries with near-utopian levels of actual fairness, while the latter suggests that even countries with high values in the measures of economic opportunities are still at a distance from the more utopian $\pi = 1$. However, the size of negative effects is reliably and robustly smaller in high-fairness countries, which is very strongly in line with our proposition 3, which predicted a weakening of the negative interaction. Supporting the findings of Table 2, in both Tables 6 and 7 there is a positive association between perceived fairness and the level of subjective well-being in most of the models.

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[18] The complete model also includes the other micro control variables, country fixed effects, and wave and cohort effects, with results similar to those reported in Table A1 in the Appendix.
[19] For countries with high social mobility (Table 7), there is an insufficient number of observations for the subindices areas 1 and 2, so we cannot estimate these models.

Proposition 3 lets us expect a weakening of the negative interaction between fairness perceptions and income inequality as actual social mobility in the countries increases, up to an insignificant interaction in high mobility countries; the heterogeneous coefficient estimates in Table 7 are thus consistent with our prediction. This finding is in line with Alesina et al. (2004) who reported an insignificant impact of income inequality on people's happiness in socially very mobile U.S. states, but a negative one in less mobile European countries.

Table 7: Analysis by high social mobility through good economic opportunities

	(1) Civil liberties high	(2) Fraser full index > 6.2	(3) inflation low area 3	(4) openness high area 4	(5) new business easy area 5
Hard work * GINI	-0.005**	0.001	0.001	-0.001	-0.005*
	[2.03]	[0.21]	[0.33]	[0.17]	[1.74]
Hardwork	0.438***	0.253**	0.22	0.315***	0.436***
	[4.98]	[1.98]	[1.57]	[2.60]	[3.82]
Observations	31355	21319	16245	21588	26790
Chance * GINI	-0.013***	0.007**	0.005	0	-0.006**
	[5.78]	[2.03]	[1.15]	[0.07]	[2.10]
Chance	0.929***	0.097	0.165	0.486***	0.620***
	[9.77]	[0.64]	[1.00]	[3.60]	[4.90]
Observations	28161	18535	13508	19909	24898
Laziness * GINI	-0.002	-0.002	-0.007**	-0.004	0.011***
	[0.80]	[0.71]	[2.38]	[1.24]	[4.84]
Laziness	0.508***	0.407***	0.573***	0.515***	-0.03
	[7.04]	[4.37]	[5.54]	[5.31]	[0.34]
Observations	49436	38220	36251	38623	38003
Conservative * GINI	-0.004**	-0.004*	-0.004**	-0.002	0.004**
	[2.32]	[1.86]	[2.12]	[0.87]	[2.00]
Conservative	0.527***	0.454***	0.468***	0.440***	0.218***
	[8.20]	[5.84]	[6.13]	[5.21]	[2.82]
Observations	78967	68787	73605	60437	64921

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. All models include the baseline micro-variables, wave, cohort and country effects (not reported). Excluded from the model are measures of education, income, and occupational status. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively. For area 1 and 2, the number of observations was too low.

4.5 Robustness tests using actual social mobility measures

The model in Tables 6 – 7 and the empirical corroboration of *Proposition 3* hinges on the assumption that social mobility, economic opportunities and economic freedom are sufficiently correlated. As additional robustness test, we replicate the analyses using direct measures of educational mobility. These direct measures are available for some OECD countries only, implying the disadvantage that they substantially reduce the sample size.

Table 8 estimates the same model as in Tables 6 and 7 for two country samples split by the degree of intergenerational educational mobility. We employ our measure of actual educational mobility, defined as the educational advantage enjoyed by a person from a high-education family (maternal or paternal education), which is available for a maximum of 27 OECD countries in our baseline sample. The sample is split at -22 and -27 test score points, respectively. Again, we report only those regression results for which at least 10 countries remain in each of the subsamples, resulting in two fairness perception measures ('laziness' and 'conservative'). Columns 1 and 2 present the low educational mobility findings, differentiated by either paternal or maternal family background (correlation coefficient: rho = 0.94); columns 3 and 4 display analogous regressions for countries with a high degree of social mobility.

For all fairness perception measures, in low mobility countries the negative effect of inequality for individuals with high fairness perceptions is clearly observable. Equally in line with *Proposition 3,* in the high mobility country sample we observe insignificant or only weakly significant interactions of inequality for the parents' educational background. The positive sign of both coefficients can be interpreted as an indication that individuals who have experienced upward social mobility in their family experience – and believe this to be the result of fair institutions – experience an adverse impact of income redistribution on their well-being. Again, we achieve corroborating results for those fairness perception measures that are similar to those employed in previous empirical studies discussed above (e.g., Corneo and Gruener, 2002, Alesina and LaFerrara, 2005).

Overall, the robustness test using educational mobility measures in Table 8 is well in line with *Proposition 3*, with a negative interaction in low mobility countries, and heterogeneous effects in the high mobility country sample.[20]

Table 8: Educational mobility, fairness perceptions and income inequality

	(1) Low mobility father	(2) Low mobility mother	(3) High mobility father	(4) High mobility mother
Laziness	1.084***	1.131***	0.024	0.001
	[7.72]	[7.73]	[0.14]	[0.01]
Laziness * GINI	-0.022***	-0.023***	0.007	0.008*
	[5.15]	[5.21]	[1.49]	[1.75]
Number of observations	22903	19951	13248	16200
Number of countries	14	13	10	11
Conservative	0.734***	0.833***	0.083	0.008
	[5.58]	[6.08]	[0.61]	[0.07]
Conservative * GINI	-0.009**	-0.011***	0.004	0.006*
	[2.37]	[2.89]	[1.12]	[1.73]
Number of observations	34835	30812	20180	24203
Number of countries	14	13	12	13

Notes: OLS estimation. Dependent variable is life satisfaction measured on a 10-point scale. All models include the baseline micro-variables, wave, cohort and country effects (not reported). Excluded from the model are measures of education, income, and occupational status. *, **, *** denote significances at the 10, 5 and 1 percent level, respectively.

To summarize, the empirical analysis clearly is in line with our theoretical hypotheses. 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 low mobility countries, people fare the better, the more redistribution takes

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[20] In our view, it is not a coincidence that the process of industrialization and period of high growth in Europe and the United States (from 1790 on) was preceded by political reforms which abolished the competition-hindering and incentive-incompatible medieval guild system, which fixed production technology, prices for goods and wages for employees, and choice of profession. It is for this reason that we view GDP growth as a potential alternative measure of actual social mobility (correlation (GDP growth, social mobility): 0.4), in line with Hirschman and Rothschild (1973) who argue that in times of rapid economic growth income inequality is interpreted as higher opportunities. Regressions for country samples split by economic growth yield qualitatively identical findings compared to when more direct measures of social mobility are employed (see Appendix Table A3).

place, reflected in reduced income inequality. This effect is enlarged by lower mobility perceptions: The positive effect of living in a fair society on well-being decreases as income inequality rises. In contrast, in high mobility countries, we observe that people are more ready to bear existing income inequalities and disfavor redistribution. Increasing perceived fairness of the income generation process does not alter the well-being effects of income inequality any more (*Proposition 3*). Because 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 relation between income inequality and happiness has yielded ambiguous results. The starting point of this paper was 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 such subjective evaluations eventually affect their subjective well-being. Extending the previous literature, we also make the case that inequality assessments hinge on whether social mobility expectations meet actual societal mobility or not.

We illustrate the relationship between inequality and subjective well-being in a small formal model where individual effort and labor market participation depends on subjectively perceived probabilities of success that, in turn, reflect fairness perceptions: The higher the probability of success, the closer is 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 over- and underestimation of the actual fairness of the income generating process. Low or high actual fairness is associated with low or high upward mobility, respectively. We argue that in low

mobility countries, actual individual returns to effort are often lower than expected ones. This leads to an unexpected increase of the budget-balancing tax burden, and thus to a negative interaction between fairness perception and inequality for individuals who participate in the labor market. In contrast, for high mobility countries, the model predicts an insignificant coefficient for the interaction of fairness with inequality.

We test this model using combined individual-level data of the pooled third and fourth waves of the World Values Survey (1994-2001), containing about 150'000 interviewed individuals in 69 countries. According to the results, the respondents' believe that income inequality in 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 fewer economic opportunities we find evidence for a negative effect of inequality for individuals with high fairness perceptions. In contrast, in countries with plenty of economic opportunities and equal chances to success, the negative effect is either smaller or disappears, depending on the measure used.

The findings obviously qualify the standard Lerner argument that more redistribution and less income inequality 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 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 and future theorizing on the subject. Obviously, in terms of happiness there may be a substitutive effect between developing institutions permitting fair market competition and social mobility, on the one hand, and redistributive government activities, on the other: The latter are only essential if actual social mobility is low but fairness perceptions are high. As human beings tend to be overly optimistic in general, it would seem to be beneficial to overall welfare to implement policies and institutions that foster competition and allow for equal opportunities and

economic freedom. This finding is quite in line with the definition of a just society often brought forward by politically conservative persons, but also congruent with Hayek's view of a just world. Overall, our results suggest that creating a society with such equal opportunities would be preferred over a paternalistic and overly redistributive state.

References

Alesina, A., R. DiTella and R. MacCulloch, 2004, Inequality and Happiness: Are Europeans and Americans Different? *Journal of Public Economics* 88: 2009-2042.

Alesina, A. and E. La Ferrara, 2005, Preferences for redistribution in the land of opportunities, *Journal of Public Economics* 89: 897-931.

Bergh, A., 2005, On the Counterfactual Problem of Welfare State Research: How Can We Measure Redistribution? *European Sociological Review* 21, 4: 345-357.

Bjørnskov, C., A. Dreher and J.A.V. Fischer, 2008, Cross-country determinants of life satisfaction: Exploring different determinants across groups in society, *Social Choice and Welfare* 30: 119-173.

Blanchflower, D.G. and A.J. Oswald, 2004, Well-Being Over Time in Britain and the USA, *Journal of Public Economics* 88: 1359-1386.

Clark, A.E., P. Frijters and M. Shields, 2008, Relative Income, Happiness, and Utility: An Explanation for the Easterlin and Other Puzzles, *Journal of Economic Literature* 46: 95-144.

Clark, A. and E. D'Angelo, 2008, Upward Social Mobility, Wellbeing and Political Preferences: Evidence from the BHPS, working paper, Paris School of Economics, 17 October 2008.

Corneo, G. and H.P. Gruener, 2002, Individual preferences for political redistribution, *Journal of Public Economics* 83: 83-107.

Diener, E., R.E. Lucas, U. Schimmack and J. Helliwell, 2008, *Well-Being for Public Policy*, Oxford, UK: Oxford University Press.

Dohmen, Th., A. Falk, D. Huffman, F. Marklein and U. Sunde, 2009, Biased Probability Judgment: Evidence of Incidence and Relationship to Economic Outcomes from a Representative Sample, *Journal of Behavioral Organization*, forthcoming.

Fehr, E. and K.M. Schmidt, 1999, A theory of fairness, competition, and cooperation, *Quarterly Journal of Economics* 114: 817-868.

Ferrer-i-Carbonell, A. and P. Frijters, 2004, How Important is Methodology for the Estimates of the Determinants of Happiness? *The Economic Journal* 114: 641–659.

Fischer, J.A.V., 2009a. Subjective Well-Being as Welfare Measure: Concepts and Methodology, MPRA Paper 16619, University Library of Munich, Germany.

Fischer, J.A.V., 2009b, The Welfare Effects of Social Mobility, OECD Social, Employment and Migration Working Papers 93, OECD, Directorate for Employment, Labour and Social Affairs.

Fischer, J.A.V., 2009c, Happiness and Age Cycles – Return to Start...?: On the Functional Relationship between Subjective Well-being and Age, OECD Social, Employment and Migration Working Papers 99, OECD, Directorate for Employment, Labour and Social Affairs.

Freedom House, 2007, *Freedom in the World Country Ratings*.

Frey, B. and A. Stutzer, 2005, Beyond outcomes: measuring procedural utility, *Oxford Economic Papers* 57: 90-111.

Grosfeld I. and C. Senik, 2009, The emerging aversion to inequality - Evidence from long subjective data, PSE Working Papers 2008-19, PSE (Ecole normale supérieure).

Gwartney, J. and R. Lawson, 2008, *Economic Freedom of the World: 2008 Annual Report.*

Hayek, F.A., 1944, *The Road to Serfdom*, Chicago: University of Chicago Press.

Hopkins, E., 2008, Inequality, Happiness and Relative Concerns: What Actually is their Relationship? *Journal of Economic Inequality* 6: 351-372.

Hirschman, A. and M. Rothschild, 1973, The changing tolerance for income inequality in the course of economic development, *Quarterly Journal of Economics* 87: 544-566.

Inglehart, R., M. Basañez, J. Díez-Medrano, L. Halman and R. Luijkx, 2004, *Human Beliefs and Values*, Ann Arbor: University of Michigan Press.

Layard, R., G. Mayraz and S. Nickell, 2009, Does Relative Income Matter ? Are the Critics Right? CEP Discussion Paper No 918, March 2009.

Lerner, A., 1944, *The economics of control: principles of welfare economics*, New York: MacMillan.

Mitchell, G., P.E. Tetlock, B.A. Mellers and L.D. Ordóñez, 1993, Judgments of social justice: compromises between equality and efficiency, *Journal of Personality and Social Psychology* 65: 629-639.

Piketty, T., 1995, Social Mobility and Redistributive Politics, *Quarterly Journal of Economics* 110: 551-584.

Ravillion, M. and M. Lokshin, 2000, Who wants to redistribute? The tunnel effect in 1990s Russia, *Journal of Public Economics* 76: 87-104.

Roemer, J.E., 1998, *Theories of distributive justice*, Harvard University Press: 1998.

Scott, J.T., R.E. Matland, P.A. Michelbach and B.H. Bornstein, 2001, Just deserts: an experimental study of distributive justice norms, *American Journal of Political Science* 45: 74-767.

Stutzer, A., and B.S. Frey, 2003, Institutions Matter for Procedural Utility: An Economic Study of the Impact of Political Participation Possibilities, in: R. Mudambi et al. (eds.), *Economic Welfare, International Business and Global Institutional Change*, Edward Elgar, Cheltenham, 81-99.

UNU, 2006, World income inequality database v2.0. Helsinki: United Nations University-World Institute for Development Economics Research.

Veblen, T., 1899, *The Theory of the Leisure Class*, New York: MacMillan.

Veenhoven, R., 2000, The four qualities of life: Ordering concepts and measures of the good life, *Journal of Happiness Studies* 1: 1-39.

Appendix

To keep the CESifo working paper as short as possible, Appendix tables have been deleted from the manuscript. They can be found in the identical online-version version of the paper (MPRA Paper 25826) downloadable from http://ideas.repec.org or http://mpra.repec.org.

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