Autonomy Freedom, Preferences for Redistribution and the Individual's Willingness to Work

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Abstract

In this paper we study the determinants of people's attitudes toward income inequality and their economic consequences. We argue that an individual's attitudes toward inequality depend upon the extent of autonomy freedom she enjoys. We construct a two-stage model where people first choose the level of income transfers and then their optimal level of effort. We show that the individual preferences for redistribution is associated with the level of autonomy freedom they enjoy. We use individual level data to validate our theory and show that the higher the extent of an individual's autonomy freedom, the greater the probability that she supports larger income differences as incentives for individual effort. We also show that this relationship determines important consequences for the individual's willingness to work.

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1 Introduction

Income inequality is one of the crucial problems associated with the capitalist model of economic organization. Its centrality rests on the assumption that people perceive inequality negatively. Since capitalism allows for inequality – so goes the received wisdom – then it is important to put in place redistributive mechanisms to control it. However, international surveys show remarkable differences in the ways inequality is perceived across countries. These surveys cast doubt on the assumption's generality and suggest that simplistic redistributive policies are unlikely to be optimal.

In this paper we study the determinants of people's preferences for income redistribution and their economic consequences. In particular, we argue that individuals' attitudes toward redistribution depend upon the extent of freedom they enjoy. Despite the effort devoted to the analysis of individuals' preferences for redistribution, freedom has never been conceived as a potential driver in shaping these preferences. Yet, as we argue in this paper, freedom is a key causal antecedent of people's preferences toward redistribution. Recognition of the role of freedom is therefore crucial in designing optimal redistributive policies.

The sense in which freedom sheds light on individuals' preferences for redistribution can be illustrated by considering their trade-off with social mobility: the greater the perception that individuals are mobile in society, the lesser the preference for flattening income differences through redistributive schemes (Piketty, 1995). However, this trade-off is qualified by the perceived fairness of the process through which social mobility occurs, i.e., the extent to which outcomes are under a person's control rather than dependent upon privileges given by third party interventions or luck. Where individuals perceive 'unfair advantages' that unduly affect their position on the income ladder, they favor redistribution through public policy as a corrective tool. "(T)he belief on whether the mobility process is 'fair' or on whether society offers equal opportunities to its members may be an important determinant of the demand for redistribution" (Alesina and La Ferrara, 2001, p. 2).

The crucial role of freedom becomes apparent here. As Alesina and Angeletos

(2006) point out, "[e]ndogeneizing the concept of fairness, and understanding why societies consider some source of inequality justifiable and others unfair"(p. 14), is an important exercise still to be accomplished. Freedom sheds light just on the process which shapes individuals'perception of fairness. Consider the concept, central to this paper, of autonomy freedom (Sugden, 1998; Bavetta and Guala, 2003). According to this notion, a person is autonomous to the extent that she has options to choose from and she exercises control over the outcomes of her choices. People who enjoy autonomy have, to a large extent, control over their achievements so, what they perceive as fair or unfair is likely to depend upon the degree of autonomy they enjoy. Being in control of their own outcomes, people with high levels of autonomy are likely to perceive the game in life as a fair process where individual skills and abilities dominate luck and privilege. On the contrary, people with low levels of autonomy are likely to perceive economic and social outcomes as largely dependent upon elements outside their control. *Ceteris paribus*, the former group of individuals are less likely to favor the use of redistribution as a corrective tool for the unfairness of life. Autonomy freedom is then a primitive in the causal link between tolerance for inequality and preferences regarding redistribution. As such, it is a cornerstone for the analysis of redistributive policies.

In light of its centrality, it is puzzling that autonomy freedom never enters the set of explanations offered for understanding preferences for redistribution. A possible reason for neglecting autonomy freedom is that its conceptual interpretation is neither easily captured nor amenable to a simple operationalization. In this paper we solve the problem by grounding the concept of autonomy freedom on the Millian notion of individuality and on its operationalization given in social choice theory (Sugden, 1998; Bavetta and Guala, 2003 and 2005; Bavetta and Peragine, 2006). We then use our concept of autonomy freedom to explain people's attitudes toward income redistribution and assess their policy impact. We use individual level data from the World Value Survey project to assess empirically the validity of our theory. Our data set contains information about individual attitudes toward redistribution and individual perceptions about the extent of their autonomy freedom other than a variety of demographic characteristics as well as socioeconomic indicators assembled at country level.

We show that the higher is the extent of autonomy freedom perceived by an individual, the higher is the probability that she supports the view that larger income differences are needed as incentives for individual effort. Conversely, the lower is the extent of autonomy freedom perceived by an individual, the higher is the probability that he supports the view that incomes should be made more equal. Further, we demonstrate that the relationship between an individual's level of autonoy freedom and her attitudes toward income redistribution has important consequences on the her perceptions concerning the returns from effort and her willingness to work.

The paper is organized as follows. In Section 2 we lay down the motivations and the conceptual roots of our approach. In section 3 we construct our theoretical model where the extent of autonomy freedom enjoyed by individuals is central to the shape of their preferences for inequality. In Section 4 we describe the data used in the empirical investigation. In Section 5 we outline the methodology for the empirical analysis, present the econometric results and comment on the relationship between autonomy freedom and individual tastes for income inequality. In Section 6 we use aggregate level data to support the empirical findings that we obtained at the individual level in Section 5. In Section 7 we draw some concluding remarks.

2 Motivation

2.1 Explaining preferences for redistribution

Redistributive policies differ substantially across countries (Alsina, Glaeser and Sacerdote, 2001). Three sets of explanations have been offered for this observation in the literature. The first body of literature explains redistributive policies postulating that the costs and benefits of redistribution are evaluated differently in different countries. The second uses historical differences in political institutions across countries as the main determining factor. The third suggests that social groups value income inequality as a signaling mechanism so that observed redistributive policies reflect the intensity of the desire for such signaling.

Even in the context of selfish utility maximization, income inequality can be argued to have both positive and negative effects on an individual's incentive to put forth effort. The positive effects typically appear when inequality is perceived as a measure of differential rewards for differential effort. On the contrary, the negative effects often appear when income inequality is perceived to emanate from privilege or means deemed to be unjust (Benabou and Tirole, 2006). When we introduce other-regarding terms into an individual's preferences (altruism, reciprocity, etc.), inequality produces additional negative effects on well-being. Both the perceptions of inequality and the extent of other-regarding terms in preferences can differ across countries, leading to differing redistributive policies.

The second class of explanations is based on political institutions. Comparing the European and the American welfare systems, Alesina and Glaeser (2004) argue that differences with regard to redistribution can be traced back to institutions such as majoritarianism, a federal structure of government and checks and balances –and to the ideological premises that guided their historical evolution. Further, Europe is ethnically less fragmented than the US and geographically denser. These characteristics have substantially influenced the gulf in ideological structure and redistributive policy between the two shores of the Atlantic.

The third class of explanations argues that economic inequality has an informational value for socially motivated decisions (Corneo and Grüner, 2000; 2002). This is because it allows for a greater degree of separation across dfferent social groups, i.e., it increases the diversity of consumption patterns across social groups. In such models, consumption patterns are seen as signals of group identity and individuals use them to make social matching decisions (e.g., whom to marry). Individuals with a high matching value, profit from such information since it allows them to select the persons with whom to mix in society. In contrast, individuals with a low matching value suffer a cost from such information because they are more easily ostracized from the most attractive social groups. Higher redistributive taxation that evens the structure of consumption reduces the amount of information available in society. In turn, this alters the extent to which individuals of different wealth classes make successful

matching decisions. Therefore, as social structure varies across countries, the voting (or political) attitudes towards redistribution may be affected.

The most relevant class of explanations from the point of view of this paper considers differences in the extent of redistributive policies to stem from differences in individual preferences for redistribution. By and large, the literature distinguishes between two reasons as why individuals may display a preference for redistribution. The first goes back to Hirschman's (1973) seminal paper that emphasizes differences in beliefs about the costs and benefits deriving from redistribution. Hirschman noticed that, even in the pursuit of self-interest, individuals may be willing to accept a substantial degree of income inequality. This tolerance stems from the fact that, under certain circumstances, "advances of others supply information about a more benign external environment; receipt of this information produces gratification . . . a confirmation that better times are under way . . ."[pp.546-48].

Hirschman's social insurance approach to redistributive policies has given rise to a related literature analyzing the impact of the 'prospects of upward mobility'(POUM) on people's demand for redistribution (Benabou and Ok, 2001). The poor who consider themselves on a rising income trajectory are likely to oppose redistribution because they expect to be further up in the income ladder in the future and will have to pay for welfare spending. The opposite is true for the poor who consider themselves to be on falling income trajectory. However, since individuals have imperfect knowledge of the objective probability regarding their upward or downward social mobility, their personal or family history concerning income, employment and educational background may influence their expected income dynamics and therefore their attitude toward redistribution (Piketty, 1995).

A second line of research focuses on the true determinants of economic success and social mobility. Benabou and Tirole (2003) develop a theory explaining why people have a tendency to believe that individuals get what they deserve despite the fact that the world is not just. They borrow from work in psychology dealing with cognitive dissonance that stresses the possible distortions between people's perceptions and reality. In this context, they analyze the implications of their theory in terms of social

mobility and the size of redistribution (taxes and welfare payments) chosen by the polity. They argue that if enough individuals perceive that economic success is highly dependent on effort, they will ultimately represent a pivotal voting block demanding low redistribution. The opposite occurs if enough individuals do not believe that effort pays. In their model, two different equilibria emerge. The first is characterized by individuals' optimistic belief that the process of social mobility is just and leads to a demand for relatively *laissez-faire* public policies. The second is characterized by a more pessimistic view of income dynamics which, in turn, leads to a demand for a more generous welfare state.

The predictions of the theory have been subjected to empirical testing. Alesina and La Ferrara (2001) examine the effects of several individual specific factors including the personal history of income mobility, levels of altruism and beliefs in the existence of equal opportunities on preferences concerning government redistributive policies. Fong (2001) examines empirically whether individual beliefs about "self- and exogenous-determination" of achievements affect preferences with regard to government attempts to reduce income inequality. Both these papers confine themselves to analyzing US data.

Such empirical analysis adopts a rather *ad hoc* approach to the role of beliefs as determinants of preferences which leaves three problems unsolved. First, the source of individual beliefs is not made explicit, other than to correlate them with demographic characteristics. As observed by Alesina and Angeletos (2005), the concept of fairness is not endogeneized. Second, it is not clear what form of fairness underlies the preferences for inequality, whether people express a preference for actual redistribution (substantive fairness) or for a fair process of resource allocation (procedural fairness). Thirdly, the link between beliefs and preferences is not formalized through a process of individual maximizing behavior. We take up the first two problems in this section and postpone the third to the next where the model is spelled out.

2.2 Autonomy freedom: The concept and its relevance for shaping the individual's preferences for redistribution

Much of the literature uses some view of beliefs about fairness as a basis for preferences. But how is it that some people consider some source of inequality justifiable and others unfair? An answer is autonomy freedom. Autonomous individuals perceive achievements as fair since they believe that what they achieve depend to a large extent on their own choices. This is because autonomous individuals believe they retain control over the outcomes in their life. Let us now explain what we mean by autonomy freedom and, in particular, why autonomy free individuals retain control over their choices. The story that we outline in this section is important to provide the conceptual underpinnings that support the theoretical model in Section 3.

The notion of autonomy freedom is grounded on the analytical foundations laid down in a recent field of research in normative economics known as the Freedom of Choice Literature (FCL). FCL proposes different criteria for measuring the extent of choice (i.e., freedom of choice). One particular measure of freedom of choice, developed by Sugden (1999), Bavetta and Guala (2003) and Bavetta and Peragine (2006), assesses the extent of autonomy freedom. Inspired by John Stuart Mill's famous third chapter of On Liberty (Mill, 1859), these authors suggest that the act of choosing is the focal point around which the exercise of one's own individuality is shaped and even fostered, leading to the development and exercise of a person's autonomy.

In the Millian spirit, autonomy is connected with choice since to choose a decision maker has to weigh carefully the merits of alternative options or courses of action. Such a weighing takes place in the deliberative process by relying upon a large array of personal and moral qualities such as determination, firmness, discerning abilities, etc. To the extent that the decision maker relies upon her qualities, i.e., to the extent that she has alternative courses of action to choose from and is engaged in a deliberative process that requires reliance upon her qualities, choosing develops and fosters autonomous behavior, on the one hand, and tightly commits the chooser to her choice, on the other. In other words, the extent to which behavior is autonomous depends

on two pieces of information: how many options are available and the possibility of shaping one's own preferences (by relying on one's own qualities) in the deliberative process.

Autonomous behavior brings about two important implications. First, autonomy free individuals are more committed to their choices. Second, autonomy free individuals are likely to undertake a processes of conscious revisions of their choices (i.e., learning by doing) in those cases in which choosing does not deliver the outcomes that were imagined and expected during the deliberative process (Bavetta, Bottero, Maimone Ansaldo Patti and Navarra, 2009). A branch of cognitive functionalism, named attribution theory has shown that these two characteristics – commitment and learning by doing – make the individuals 'high achievers'. These individuals tend to ascribe success to themselves and are more likely to consider failures the unwelcomed consequence of a lack of effort, rather than a deficiency in ability.

The claim substantiated by attribution theory is particularly useful for our own purposes as it bridges the gap between autonomy, control, perception of one's own effort as a determinant of success and procedural fairness. If my choice is autonomous, then it is the product of the effort I made in shaping my preferences in the deliberative process. Furthermore, since I am more committed to my choice and are ready to review my decision process if it does not deliver the desired outcome, I consider my role fundamental in shaping outcomes and are more likely to perceive achievements as procedurally fair.

What does this imply as far as the relationship between autonomy freedom and preferences for redistribution? We claim that the higher the extent of an individual's autonomy and, therefore, the higher her perceived control over her economic conditions, the stronger her belief that the pre-fiscal distribution of income is determined by factors under her control such as effort and merit and the greater her opposition to income redistribution. On the contrary, the lower the extent of an individual's autonomy and control over the, the stronger her belief that the pre-fiscal distribution of income is determined by factors beyond her control such as privilege and luck and the stronger her support for income redistribution. This hypothesis will be formalized in the theoretical

model in Section 3.

Two further important considerations ought to be addressed before turning to the description of the model. Autonomy freedom casts light upon the concept of fairness individuals rely upon in shaping their preferences for redistribution. Consistently with Frey, Benz and Stutzer (2004), we argue that social mobility may be interpreted in procedural terms: if people believe that society offers equal opportunities of actual income mobility, they may be less concerned with inequality because they see social processes as fair. In this perspective, it is the non-instrumental pleasures and displeasures of the process that are valued by individuals, rather than the actual outcomes that they achieve. It follows that, if individuals perceive themselves as autonomously determining their income dynamics, they might feel that the mobility process is fair as society offers equal opportunities. In contrast, those who perceive that their income dynamic is not autonomously determined might see social mobility as a biased process in which opportunities are open to some but not to all.

Besides providing a theoretical foundation to preferences for redistribution, autonomy freedom sheds further light upon the economic analysis of redistributive policies. It has been suggested in the literature that preference for redistribution is affected by the racial composition of a society: people do not like to give their money to individuals who do not have their skin color so, where ethnic fragmentation prevails redistribution is lower (Alesina, Glaeser and Sacerdote, 2001; Alesina and Glaeser, 2004). But autonomy freedom allows a more fine-grained analysis: rather than looking at race or ethnic characteristics, it enables us to focus on whether people retain control over their lives, independently of any other distinctive features. Preferences for redistributive policies would therefore depend on individual rather than group characteristics. Recognition of such intra-group preference heterogeneity is likely to be the basis for more efficient policy design.

3   The theoretical model

In this section we analyze the relationship between the level of autonomy freedom perceived by an individual and her preferences for income transfers. It is important to recall once more time that with autonomy freedom we indicate the extent to which an individual's believes himself to be in control of her choices and actions and, therefore, over the way her life turns out.

We construct a simple labor-leisure trade-off model in which the individual sequentially expresses her optimal preference for income transfers and sets accordingly the amount of effort to unfold in her work activities. Unlike other studies where the level of the individual's effort affects her preferred level of income transfers (Alesina, Glaeser and Sacerdote, 2001), in our model we are interested in analysing the effect of transfers on the level of effort chosen by the individual. Our choice, which is in line with important theoretical and empirical contributions in the literature (Murphy, Shleifer and Vishny, 1991; La Porta, Lopez de Silanes, Shleifer and Vishny, 1999), aims at examining whether the level of transfers chosen by the individual leads her to carry out either a productive or a rent-seeking behavior.

The individual seeks to maximize the following quasi-linear utility function:

$$U = y^N + \log{(l)} \tag{1}$$

where l is the amount of leisure and y^N is the individual's net income which is given by:

$$y^N = y + S \tag{2}$$

where y is the amount of income raised by the individual and S the income transfer.

In our model, three are the sources of income: work effort, e, environmental factors, v, and past income, R. In the income generation process, work effort is the individual's choice variable since it is under her control. The relationship between work effort and income is intuitive, i.e., greater work effort leads to higher income. The environmental factors are those events that, although fall outside the individual's control, affect her ability to produce income. A large win at the lottery and/or to be born in a wealthy

family are two examples of environmental factors that affect the level of the individual's income directly and indirectly, respectively. As such, environmental factors can be considered as a random component in the individual's income generation process. Better outcomes with regard to environmental factors (for example, a win at the lottery) lead to higher levels of income.

Following a methodology similar to Alesina, Glaeser and Sacerdote (2001), the labor-leisure decision in past periods is not modelled. Therefore, the level of R enters the model exogenously.

Taking into considerations the three above mentioned sources of income, we have:

$$y = \theta \left[\alpha e + (1 - \alpha) v \right] + (1 - \theta) R \tag{3}$$

where $\theta \in [0, 1]$ parametrizes income mobility. Low values of θ indicate a high level of income persistence. Conversely, high values of θ indicate a low level of income persistence. In the former case, work efforts carried out in the past and past environmental factors have strong effects on current income, whereas in the latter case the opposite applies. The level of autonomy freedom is captured by $\alpha \in [0, 1]$ whose value measures the relative impact of effort and environmental factors on the production of income as perceived by the individual.

As mentioned above, we posit a relationship between an individual's level of autonomy freedom and her perception of the extent to which income generation is under her control. The higher the control of the individual over the determinants of her income, the greater her autonomy freedom. Therefore, greater α indicates higher levels of autonomy freedom since, in the production of the individual's income, work effort - a variable under the individual's control - is perceived as more effective than environmental factors - the random component in the income generating process. Differently, smaller α indicates low levels of autonomy freedom since environmental factors are considered more effective than work effort in generating income.

As far as the income transfer is concerned, we hypothesize that the individual's desired level of transfers S is given by her preferences for income transfers, t, and her level of income, y, as compared to the average income in society, M. Such a desired

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amount of transfers may be either positive or negative depending on whether y is either lower or higher than M. More specifically, we have:

$$S = t \left(M - y \right) \tag{4}$$

Substituting (3) and (4) into (2), we may derive the following explicit equation for the individual's net income:

$$y^N = \left(1 - t \right) \left\{ \theta \left[\alpha e + \left(1 - \alpha \right) v \right] + \left(1 - \theta \right) R \right\} + tM \tag{5}$$

The individual seeks to maximize the utility function in (1) subject to the following time constraint:

$$T = e + l \tag{6}$$

where T is the total time available.

Before proceeding with the maximization problem, it is important to note that v is uniformly distributed over the interval $[0, T]$. Such a distribution of v brings about two important effects that deserve to be noted. First, $E\left(v\right) > 0$ and $\left(T - v\right) \geq 0$, which implies that some components of the individual's environment are non-stochastic (e.g. personal connections), while others are stochastic (e.g., winning at the lottery). Second, the individual's income is always strictly lower than the average income in society $\left(M \gg R\right)$ when she does not unfold any effort in her work activities and the environmental factors are not beneficial to her.

Let us now move to the individual's maximization problem. As already pointed out in the beginnig of this section, the individual's maximization is carried out sequentially: she first chooses her optimal preference for income transfers and, secondly, the amount of effort to unfold in her work activities.

We solve the model backward and, therefore, begin by deriving the optimal level of effort, taking as fixed the individual's preference for transfers. Using the time constraint, we may rewrite the individual's income as follows:

$$y^N = \left(1 - t \right) \left\{ \theta \left[\alpha \left(T - l \right) + \left(1 - \alpha \right) v \right] + \left(1 - \theta \right) R \right\} + tM \tag{7}$$

Substituting equation (7) into the utility function, the constrained maximization problem reduces in choosing the optimal level of leisure:

$$\max_{l} U = (1 - t) \{\theta [\alpha (T - l) + (1 - \alpha) v] + (1 - \theta) R\} + tM + \log l \qquad (8)$$

Maximization yields the following values for work effort, e, and leisure, l, in terms of the individual's preference for income transfers, t, the level of perceived autonomy freedom, α, and the extent of income mobility, θ:

$$l(t, \alpha, \theta) = \frac{1}{1 - t\theta\alpha} \qquad (9)$$

$$e(t, \alpha, \theta) = \frac{T(1 - t\theta\alpha) - 1}{1 - t\theta\alpha} \qquad (10)$$

We can now move backward to calculate the individual's optimal income transfers. Substituting (10) into equation (4), which characterizes the desired level of transfers, we obtain:

$$\max_{t} S = t \left\{ M - \left[\theta \left(\alpha \frac{T(1 - t\theta\alpha) - 1}{1 - t\theta\alpha} + (1 - \alpha) v \right) + (1 - \theta) R \right] \right\} \qquad (11)$$

The equilibrium value for t is the solution to the following first order condition:

$$(1 - t\theta\alpha)^2 \{M - R(1 - \theta) - \theta [T\alpha + v(1 - \alpha)]\} + \theta\alpha = 0 \qquad (12)$$

Using the equilibrium value t^*, we may define e^* and l^* which solve the model.

3.1   The comparative statics

Although the model cannot be solved explicitly, we can evaluate how the main parameters of the model affect the optimal choices of transfers, t^*, and of work effort, e^*. For the purposes of this study, this allows us to address the following questions:

1. What is the relationship between the individual's level of autonomy freedom and her optimal preferences for income transfers?

2. What is the relationship between the individual's level of autonomy freedom and the extent of work effort in the income generation process?

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Therefore, we start our comparative statics analysis by focusing on the relationship between the individual's level of autonomy freedom and her optimal preference for transfers, t^*, and effort, e^*. Proposition 1 describes the result that we obtain:

Proposition 1 *The higher the individual' s level of autonomy freedom, the lower her preferences for income transfers and the higher the effort she unfolds in the income generation process.*

Proof. In the Model Appendix. ■

The negative relationship between the individual's level of autonomy freedom and her optimal choice of income transfers can be explained in the light of the concept of procedural utility whereby individuals value conditions and processes that lead to economic outcomes rather than economic outcomes *per se* (Frey, Benz and Stutzer, 2004). In this framework, income inequality is not evaluated *per se*, but it is judged with respect to the processes that bring it about. If for example Margherita believes that she is in control over her actions, she perceives herself as the master of her own destiny and shall henceforth be convinced that the level of income she earns depends on her own effort. In this case, in the light of her intuitive perceptions of procedural fairness, Margherita is likely to believe that whatever her economic conditions might be, they are deserved. The importance that people attaches to procedural fairness is what leads them to oppose any income transfers, no matter whether whether they are or are not the recipients of the transfer itself.

This concept of procedural fairness applied at person-level, may have relevant consequences at the aggregate level for what concerns the relationship between the level of the society's autonomy freedom and its preferences for redistributive policies. The larger the number of autonomy free individuals in society, the greater its level of aggregate autonomy freedom, the lower its support for redistribution. On the contrary, the smaller the number of autonomy free individuals in society, the lower its level of aggregate autonomy freedom, the higher its support for redistribution. These important implications that can be drawn at the aggregate level from the results of our model, will be empirically investigated in the last part of the paper.

As far as the effect of the relationship between the individual's level of autonomy freedom and effort is concerned, it is both direct and indirect. The direct effect is explained by the fact that autonomous individuals consider themselves as being masters of their own destiny. Therefore, they believe that the way their life turns out depends on the amount of effort and commitment they are willing to produce in their work activities. The indirect effect works through the negative relationship between the individual's preferences for income transfers and her level of autonomy freedom. The higher the individual's level of autonomy freedom, the lower her preferences for transfers and the higher her work effort. This is because high autonomous individuals do not support income transfers and, therefore, are aware that their economic conditions crucially depend on their hard work and commitment, rather than on environmental factors such as luck, privileges and personal connections.

Let us now move on to the analysis of the effect of the degree of income mobility perceived by the individual, θ, and the equilibrium values of income transfers, t^*, and effort, e^*. Proposition 2 describes the results that we obtain:

Proposition 2 *The higher the degree of income mobility perceived by the individual, the lower her preferences for income transfers and the higher the effort she unfolds in the income generation process.*

Proof. In the Data Appendix. ■

This finding is in line with that part of the literature that links people's preferences for transfers with future income dynamics (Hirschman, 1973; Benabou and Ok, 2001; Alesina and La Ferrara, 2005). Individuals who perceive themselves as living in a highly mobile society have greater chances to enhance their economic conditions and, therefore, led by purely self-centered motivations, are more likely to oppose income transfers. Further, highly mobile societies are also conducive toward greater effort and commitment since individuals are more likely to believe that hard work does pay (Piketty, 1995; Benabou and Tirole, 2006, Fong, 2003). This clearly implies that an individual who lives in a highly mobile society perceives that effort and commitment,

rather than luck or other environmental factors that escape from her direct control, play a crucial role in affecting her economic success.

Finally, our theoretical model allows us to examine the effect exercised by the level of the average income in society and the equilibrium values of income transfers, t^*, and effort, e^*. Proposition 3 describes the results that we obtain:

Proposition 3 *The higher the average income in the society, the higher individual's preferences for income transfers, the lower is the effort she unfolds in the income generation process.*

Proof. In the Appendix. ■

This result can be understood in the light of the fact that, given the income of the individual, the higher is the difference between her income and the average income level in society, the greater is her demand for income transfers (Ravallion and Loskin, 2000, Corneo and Gruner, 2001). Greater transfers require high tax rates to be financed. According to a large empirical labor supply literature, they discourage the level of effort that the individuals carry out in their work activities (Prescott, 2004). Thus, the negative relationship between preferences in income transfers and work effort in the income generation process.

4 Data Description

We use data from the World Value Survey (WVS) database to test the validity of model's predictions. This database is a cross-country project, coordinated by the Institute for Social Research of the University of Michigan. It provides microdata obtained from face-to-face interviews carried out to representative samples of the population across a number of countries that include almost 80% of the world's population. The WVS contains information about demographics (sex, age, education, etc.), self-reported economic characteristics (income, social class, etc.) and answers to specific questions about religion, political preferences and social attitudes. This empirical

source is designed to enable a cross-national comparison of values and norms and to monitor changes in individual beliefs across the globe.

The WVS data collection has been implemented in four different waves across more than 100 countries over a period that covers more than 20 years. On the basis of the availability of data required by our theory, we limited our analysis to OECD countries over the time span 1981-2004. The list of countries under investigation are reported in the Data Appendix. Summary statistics are shown in Table 1a and the correlation matrix in Table 1b.

[Tables 1a and 1b about here]

Let us now describe each variable adopted in the empirical analysis in more detail starting with the two dependent variables and later moving to both the other primary independent variables and the controls.

4.1 The individual's choice variables

The individual decision process is structured in two stages. We then have two dependent choice variables in our study. The first is the individual's transfer decision and reveals her preferences for redistribution. We proxy these preferences by answers to the following WVS question (*E035 - Income inequality*):

> How would you place your views on this scale? 1 means that you agree completely with the statement that *we need large income differences as incentives*; 10 means that you completely agree with the statement that *incomes should be made more equal*; if your views fall somewhere in between, you can choose any number in between.

Respondents were facing a ten-point scale in which the two extremes, 1 and 10, are those defined in the question above. From the construction of the question, each

individual's taste for income transfer is ordered in a descending fashion: high values indicate high preferences for transfers and *vice versa.*

A more careful look at the question of the WVS may lead someone to argue that, while the statement *income should be made more equal* clearly reflects a dislike for redistribution, the expression *we need larger income differences as incentives* might not always lead to the individual's support for lower transfers. This observation, if were deemed as legitimate, would clearly compromise the validity of the question to measure the individual's preferences for redistribution. However, it is clear that the two statements above do not have to be considered in isolation, but rather as different components of the same question designed to pinpoint divergent tastes of the respondents on the same issue. Since the denomination of the WVS question indicates that the issue at stake is *income inequality,* it is apparent that the two contrasting views whose survey's respondents are asked to pay attention to are *more equal incomes* and *larger income differences.* We believe that these two opposing preferences for the distribution of income reasonably lead to two opposing tastes for income redistribution. Therefore, we argue for the use of the WVS question *E035 - Income inequality,* as an appropriate variable to measure the individual tastes for income trasfer in our empirical analysis.

It is important also to note that several studies examining the determinants of individuals'attitudes toward inequality, in either single country or in cross-section of countries, have used similar survey measures for assessing individuals'tastes for income redistribution (see for example Ravallion and Loskin, 2000; Suchrcke, 2001; Fong, 2001; Corneo and Grünner, 2002; Ohtake and Tomioka, 2004).

The second choice variable is with the individual's effort decision. It reveals the amount of effort an individual is willing to carry out in her work activities. The choice of how much effort to accomplish is in our model associated to its effect on the production of income. As such, work effort is compared to the other determinants of the individual's economic conditions that she does not control (i.e., privilege, luck and personal connections). We proxy the individual's effort decision by answers to the following WVS question (*E040 - Work vs. luck*):

How would you place your views on this scale? 1 means you agree completely with the statement *in the long run hard work usually brings a better life*; 10 means you agree completely with the statement *hard work doesn't generally bring success, it is more a matter of luck and connections*, or you can choose any number in between.

Respondents were facing a ten-point scale in which the two extremes, 1 and 10, are those defined in the question above. From the construction of the question, each individual's opinion about how important is work for economic success (i.e., in the income generation process) is ordered in descending fashion. Therefore, in terms of our model high values of the variable show low preferences for effort and *vice versa*.

4.2 The Primary Independent Variables

Propositions 1 to 3 in the comparative statics section of this paper indicate that both the individual's optimal level of transfers and effort are affected by three variables: the individual's level of autonomy freedom, the individual's perception of the extent of income mobility and society's average income as calculated by survey's respondents. These are the primary independent variables that we should use in the empirical investigation.

Since the main objective of our empirical analysis is to assess the impact of autonomy freedom on people's preferences for redistribution, we need a measure of the degree of autonomy freedom enjoyed by individuals. We construct this measure through the answers given by respondents to the following question (*A173 - How much freedom of choice and control*):

Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this ten-point scale in which 1 means *none at all*, and 10 means *a great deal* to indicate *how much freedom of choice and control you feel you have over the way your life turns out*.

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In terms of our measure of autonomy freedom the variable is coded in ascending order: high values indicate a high degree of autonomy freedom and *vice versa.*

Our indicator of autonomy freedom is consistent with the axiomatic measure developed in the Freedom of Choice Literature since the WVS question embodies both the free choice and the control aspect of autonomy freedom. As Bavetta, Bottero, Maimone Ansaldo Patti and Navarra (2009) and Verme (2009) argue, within different methodological frameworks, reference to 'freedom of choice' and 'control' in the question emphasizes the link between free choice, preference formation, and achievements that characterizes autonomous behavior and the two components are kept distinct by respondents.

In line with similar variables used in other studies (Alesina and Glaeser, 2004), the individual's perception of income mobility is measured by answers to the following question (*E132 - Chance to escape from poverty*):

> In your opinion, do most poor people in this country *have a chance of escaping from poverty*, or is there *very little of chance* escaping?

The variable is a binary dummy which takes the value of 1 if the respondent believes that people have a chance to escape from poverty and the value of 2 if chances are perceived as "very little". If the individual believes that people have chances to work their way out of poverty, it is reasonable to hypothesize that she thinks of living in an income-wise mobile community. The opposite applies if she believes that the poor have little chances of escaping poverty.

Finally, our last primary independent variable is the average income level held in the society where the individual lives. This gives a proxy of the individual's net loss from redistribution (Roberts, 1977). As we work with survey data, we do not have the possibility of calculating the average societal income unless we carry out this computation using the self-reported information. However, as doubts exist on the methodology's reliability, we eliminate the average income level in the society from our empirical analysis.

4.3 The Other Independent Variables

Several other independent variables are included in the dataset employed for our empirial investigation. They range from from socio-demographic variables to individuals' opinions about politics, religion and society.

As far as the socio-economic variables are concerned, to capture the effect of income on the individuals' preference for redistribution we consider the level of self-reported income. Respondents were asked to express the level of their income on a ten-point scale with low and high values indicating low and high levels of income, respectively. A binary dummy variable is used to indicate the gender of respondents. It takes the value 1 if she is male and 2 if female. Age is expressed in years. The education level is computed on a three-point scale in ascending order going from low to high levels of education. The marital status of respondents is captured by two dummies indicating whether she is either single or married. We also construct a variable that measures the difference between the respondent's self-reported income and the median self-reported income in society calculated at the country level. Positive values indicate that the individual's self-reported income is higher than the median self-reported income in society and *vice versa*. The respondent's employment status is described by two different dummy variables according to whether she is either paid- or self-employee. Since the individual's preferences for effort might be affected by her health conditions we included a variable referring to the health status of respondents. Such a variable is ordered on a five-point scale ranging from 1 (very good health status) to 5 (very poor health status).

The variables measuring people attitudes towards politics, religion and society are the following. The respondent's political opinion is measured over a ten-point scale whose values 1 and 10 indicate extreme left and extreme right political orientation, respectively. The individual's opinion about whether to trust others is measured by a binary dummy variable whose value is 1 if she believes that people should be trusted and 2 otherwise. The respondent's religiosity is indicated by her assessment of how religion is important in life. The variable is coded in descending order over a four point

range with the two extreme values, 1 and 4, indicating that religion is very important and not at all important, respectively.

Finally, to account for the effect that living in a former communist country may have on the individual's preferences for income transfers, we include a dummy variable that takes the value 1 if the country of the respondent is a transition economy and 0 otherwise.

5   The Empirical Analysis

5.1   The Methodology

In the theoretical model of Section 3 we describ the effect of an individual's level of autonomy freedom on her optimal transfer and effort decisions in a two-stage decision process. In the first stage she makes her *transfers decision* by expressing her optimal level of income transfers, while in the second stage she makes her *effort decision* by selecting accordingly how much effort to unfold in her work activities. Our main result is that higher autonomy freedom leads to lower transfers and higher effort (Proposition 1). We also found that income mobility and average income affect both optimal income transfers and work effort (see Propositions 2 and 3). In the empirical model that follows we implement a strategy to test the theoretical predictions stated in Proposition 1 and 2 only. As already mentioned, Proposition 3 is not empirically tested due to lack of data.

It is important to note that in the empirical model we shall describe shortly both the transfer and the effort decisions are modelled according to the two dependent variables defined in the data section above. For the sake of clarity, let us describe how we organize the measurement of these variables in the empirical part of our study. In the first stage individuals choose their most preferred level of transfers on the basis of a ten point scale going from low to high transfers. Such a scale has been divided in two different parts each indicating low and high transfers, respectively. More specifically, the individual's preferences for transfers are low when the values on the scale range

between 1 and 4 and high when they range between 7 and 10. Similarly, in the second stage individuals choose their most preferred level of work effort on the basis of a ten point scale going from high to low work efforts. As before, the effort scale has been divided in two different parts each indicating low and high work effort, respectively. More specifically, the individual's preferences for effort are low when the value on the scale is between 7 and 10 and high when it is between 1 and 4.

To test empirically the theoretical predictions of our model we construct a two-stage decision tree as depicted in Figures 1a and 1b. In both figures the first stage describes the transfers decision while the second stage refers to the effort decision. However, in Figure 1a we focus on those individuals who choose high transfers in the first stage and low effort in the second (see the thick lines in the figure). Differently, in Figure 1b we concentrate on those individuals who choose low transfers in the first stage and high effort in the second (see the thick lines in the figure). In the empirical part of this paper our objective is to estimate the probability that autonomy freedom and income mobility affect the decision process as described in Figures 1a and 1b in the manner indicated by Propositions 1 and 2.

[Figures 1a and 1b about here]

We use two different econometric procedures to estimate the two models depicted in Figures 1a and 1b: the conditional logit (CL) and the nested logit model (NL). These two procedures are quite similar, with the CL being a special case of a NL. In the first stage of her decision process the individual chooses a transfer level $t \in n$, where n is the number of available transfer alternatives. Similarly, in the second stage, she chooses the level of effort $e \in m$, where m is the available number of effort alternatives. Let us now define two vectors of variables, respectively $\mathbf{x}_{te}$ and $\mathbf{z}_t$, which are specific to the transfers and effort (t, e) and only transfers (t) categories, respectively. The nested logit estimator allows us to calculate the probability that an individual chooses a precise combination of transfer (t) and effort (e) on the basis of the effects exercised

on her decision process by the vectors of variables as indicated by the theoretical model. For example, in Figure 1a (1b) we estimate the probability that an individual chooses the combination of high (low) transfers and low (high) effort on the basis of the effect carried out on her decision process by autonomy freedom and income mobility as predicted by the comparative statics of the theoretical model (Propositions 1 and 2).

More specifically, in our empirical analysis we estimate the following probability:

$$\Pr_{te} = \Pr_{e|t} \times \Pr_t \tag{13}$$

Note that the first term in equation (13), which is the conditional probability, is calculated by making use of the vector of regressors $\mathbf{x}_{te}$ only, according to the following expression:

$$\Pr_{e|t} = \frac{\exp\left(\mathbf{x}_{te}\boldsymbol{\beta}\right)}{\sum_n \exp\left(\mathbf{x}_{tn}\boldsymbol{\beta}\right)} \tag{14}$$

where $\boldsymbol{\beta}$ is a vector of parameters.

The second term in equation (13) is calculated by using the vector of regressors $\mathbf{z}_t$ as well as the inclusive values of category (e) which links the choice operated by the individual at the second stage to the choice he took in the first stage of the decision process. The inclusive values of category (t, e) are defined as follows:

$$I_t = \ln\left\{\sum_n \exp\left(\mathbf{x}_{tn}\boldsymbol{\beta}\right)\right\}$$

which can be used to obtain the following probability for the first stage of the decision process:

$$\Pr_t = \frac{\exp\left(\mathbf{z}_t\boldsymbol{\gamma} + \eta_t I_t\right)}{\sum_m \exp\left(\mathbf{z}_{tm}\boldsymbol{\gamma} + \eta_{tm} I_{tm}\right)} \tag{15}$$

It is interesting to note that if the inclusive parameters are all equal to unity the equation (13) reduces to the probability of the conditional logit (CL):

$$\Pr_{te} = \frac{U_{te}}{\sum_n \sum_m \exp U_{te}}$$

with $U_{te} = \mathbf{x}_{te}\boldsymbol{\beta} + \mathbf{z}_t\boldsymbol{\gamma}$.

Clearly, the inclusive values indicate whether a choice is nested into another. Therefore, they are crucial for checking whether the NL procedure fits the estimation of our

model better than the CL. We check whether the NL procedure is preferable to the CL procedure by running a test for the indipendence of irrelevant alternatives (Hausman and McFadden, 1984). This test is based on the idea that if a subset of the choice set is irrelevant with respect to the other alternative, then its inclusion among the regressors does not lead to inconsistency in the estimation of the parameters of the model. The NL model (13) is fitted using a full-information-maximum-likelihood estimation.

5.2   Estimation Results

As pointed out in the empirical methodology section, two econometric approaches are used: CL and NL. However, since the CL specification is rejected by the generalised Hausmann test (results are reported in the Appendix 1), we present the NL findings only. In Table 2 we show the results of our estimation. First of all, it is important to highlight that the Lagrange multiplier (LM) test in both Model (a) and Model (b) rejects the null hypothesis that the inclusive values for categories (t, e) are equal to 1. As pointed out in the empirical methodology section, this implies that CL and NL give rise to different probability estimates. Further, note that the results displayed in the table include year as well as country dummies in the estimation.

We start describing the regression results for Model (a) where the nested structure of the two-stage decision process is the one shown in Figures 1a. In the second column of the table we show the regression results for the *transfers decision* (first stage). In the third column we display our findings for the *effort decision* (second stage). The outcome of the empirical analysis allows us to evaluate whether and to what extent an individual's autonomy freedom and her perception of the degree of income mobility affect the probability that she chooses the combinaton high transfers and low effort.

As far as the effect of our primary independent variables is concerned, we can say form the outset that the theoretical model fits very well the data. Autonomy freedom determines both transfer and effort decisions as predicted by the theory. The greater the individual's level of autonomy freedom, the lower the probability that she chooses high income transfers in the first stage and the higher her optimal level of effort in

the second stage. The effect of autonomy freedom, therefore, is statistically significant and consistent across the two stages of the model. Thus Proposition 1 is empirically confirmed.

The degree of income mobility as perceived by the individual determines both the transfer and effort decisions as predicted in the theoretical model. The lower the perceived degree of income mobility, the higher the probability that the individual chooses a high level of transfers in the first stage and a low level of effort in the second stage. Again the effect of the individual's perception of the degree of income mobility is statistically significant and consistent across the two stages of the model. Proposition 2, therefore, is also empirically confirmed.

Regarding the other independent variables and controls, we note that the individual's preferences for high transfers increase if the respondent is old, if she trusts others, if she is neither paid-employee nor self-employee (i.e., she is unemployed), if she is left-wing politically oriented and if she lives in a transition country. Further, we observe that none of the control variables for the low levels of work effort appears to be statistically significant.

[Table 2 about here]

Let us now move on to the estimation of Model (b). Regression results for transfer and effort decisions are shown in the fourth and fifth columns of Table 2. In this model we evaluate empirically whether and to what extent, in the two-stage decision process described by Figure 1b, an individual's level of autonomy freedom and her perception of the degree of income mobility in society affect the probability that she chooses the combinaton low transfers and high effort. As before, in the fourth column we show the estimates concerning the determinants of the *transfers decision* (first stage). In the fifth column we show the regression results related to the determinants of the *effort decision* (second stage). Again, country and year dummies are included in the estimation.

The effect of the primary independent variables is again in line with the predictions of our theoretical model. This implies that the estimates shown in the fourth column

of Table 2 are specular to those appearing in the second column of the same table. Autonomy freedom determines both transfer and effort decisions as anticipated by the theory. The greater the individual's level of autonomy freedom, the higher the probability that she chooses low income transfers in the first stage and the higher her optimal level of effort in the second stage. The effect of autonomy freedom is statistically significant and consistent across the two stages of the model. Therefore, Proposition 1 is empirically confirmed once more.

The degree of income mobility perceived by the individual determines both the transfer and effort decisions as predicted in the theoretical model. The higher the perceived degree of income mobility, the higher the probability that the individual chooses a low level of transfer in the first stage and a high level of effort in the second stage. Again, the effect of the individual's perception of the degree of income mobility is statistically significant and consistent across the two stages of the model. Proposition 2 is therefore empirically confirmed once more.

Regarding the other independent variables and controls, we note that the individual's preferences for low transfers increase if she is young and female, if she does not trust others in society, if her self-reported income is higher than the median income, if she is either paid-employee or self-employee (i.e., if she is employed), if she is right wing politically oriented and if she does not live in transition countries. Further, we observe that individuals are more likely to unfold higher levels of work effort if male, old, more educated, married and in a good health status.

To sum up, the main result of the empirical analysis shows that high autonomy free individuals do not only ask for lower levels of income transfers, but are also willing to work and produce more. Differently, low autonomy free individuals, ask for higher transfers and are likely to work less. Therefore, while in the first case high autonomy free individuals are more likely to generate a productive society, in the second case low autonomy free individuals are more likely to generate a rent seeking society. Further, the support of low transfers by an autonomy free individual emerges out of a sense of procedural fairness whereby she believes that her economic conditions are deserved, no matter whether she is rich or poor.

5.3 Robustness Checks

In order to corroborate the results that empirically support our theory, we carry out a new set of estimations. We select a different variable to proxy the individual's preferences for income transfers by considering the respondents' answers to the following WVS question (*E037 - Government responsibility*):

> How would you place your views on this scale: 1 means you agree completely with the statement *people should take more responsibility to provide for themselves*; 10 means you agree completely with the statement *the government shoul take more responsibility to ensure that everyone is provided for*; or you can choose any number in between.

Respondents were facing a ten-point scale in which the two extremes, 1 and 10, are those defined in the question above. From the construction of the question, each individual's taste for income transfer is ordered in a descending fashion: high values indicate high preferences for transfers and *viceversa*.

Estimation results are reported in Table 3. In Model (c) the nested structure of the two-stage decision process focuses on the choice combination high transfer and low effort (Figures 1a). Again the theoretical model fits very well the data. The greater the individual's level of autonomy freedom, the lower the probability that she chooses high income transfers in the first stage and the higher her optimal level of effort in the second stage. Further, the lower the perceived degree of income mobility, the higher the probability that the individual chooses a high level of transfers in the first stage and a low level of effort in the second stage.

Table 3 about here

As far as the estimation of Model (d) is concerned, regression results for transfer and effort decisions are shown in the fourth and fifth columns of Table 3. The greater the individual's level of autonomy freedom, the higher the probability that she chooses low income transfers in the first stage and the higher her optimal level of effort in

the second stage. The higher the perceived degree of income mobility, the higher the probability that the individual chooses a low level of transfer in the first stage and a high level of effort in the second stage.

Regression results displayed in Table 3 confirm Propositions 1 and 2 of our theoretical model and therefore can be seen as a valid robustness check for the empirical findings shown in Table 2.

6 From the individual-level to aggregate results

The main claim advanced in this paper is twofold: first, autonomy freedom actually shape preferences for redistribution. Second, its impact on people's tastes for income transfers is transmitted by a sense of procedural fairness consistent with our interpretation of being autonomous. To recall, since autonomous individuals see themselves as the master of their own destinies, they consider what they achieve in life as deserved and would regard redistribution as an undeserved prize.

Procedural fairness operates in our model at the individual level. The question is whether it can be extended at the society level once we consider the effect of the extent of autonomy freedom on the preferences for income transfers as aggregated at the country level.

In order to test the aggregate effect of individuals' autonomy freedom on their preferences for income transfers we estimante the following ordinary least square (OLS) model:

$$PrfTrn_{i,t} = \alpha + \beta AF_{i,t} + \gamma X_{i,t} + \delta K_{i,t} + \lambda Z_{i,t} + \eta_i + \mu_t + \epsilon_{i,t}$$

where $PrfTrn$ are the individuals' preferences for transfers in country i in the year t, α, α, γ, δ and λ are the coefficients, AF is the average level of autonomy freedom enjoyed by individuals in country i in the year t, X is a vector of demographic characteristics of country i in time t, K is the vector of some variables drawn form the literaure on the determinants of redistribution and welfare spending for country i in time t, Z is a vector of macro-economic variables for country i in time t, ϵ is the *i.i.d.* error term and η and μ are the country and the year dummies, respectively.

In Table 4 we report our empirical results. Three different models are displayed in the table (models e, f and g). In Model (e) we estimate the effect of autonomy freedom on the individual preferences for transfers at the country level with the inclusion of some demographic variables only. We note that the effect of autonomy freedom is negative and statistically significant. This indicates that the greater the average level of autonomy freedom in the country, the higher the citizens' support for low transfer. The average age, gender and self-reported income of respondents do not seem to affect in a statistically significant way the individual preferences for redistribution at the country level. Differently from the other demographic controls, the higher the average education of respondents, the lower their support for redistribution.

[Table 4 about here]

In Model (f) we estimate the effect of autonomy freedom on individual preferences for income transfers with the inclusion of demographic controls as well as some independent variables drawn from the literature on the determinants of individual tastes for redistribution and the size of welfare spending. We note that the effect of autonomy freedom is still significant and negative. As far as the demographic controls are concerned, age and geneder and self-reported income are not significant, whereas education keeps its neative and significant effect on the individual preferences for transfers. We use trust to proxy fractionalization in society by assuming that the higher people trust others, the lower is the level of fractionalization. We note that, in line with the main literature on the effect of societal fractionalization on the individuals' preferences for redistribution, the more individuals trust others, the greater their support for income transfers. The effect of religiosity on the individual preferences for redistribution, although displays the expected sign, does not seem to have a statistically significant effect. According to the predictions supported in the literature, individuals living in transition economies (i.e., former communist countries) show greater support for income transfers. In Model (g) we add one more regressor, the GDP growth rate, that does not seem to influence significantly individual preferences for redistribution.

It is important to note that all the variables used in the empirical analysis behave consistently across the three model specifications (e) to (g).

The econometric results reported in Table 3 support at the aggregate level the effect of autonomy freedom on the individual preferences for income transfers. This implies that, according to our theory, the principle of procedural fairness operates at the individual as well as the country level. Therefore, the greater the autonomy freedom individuals enjoy, the more they believe that the actual distribution of income is just, the lower their support for redistribution. On the contrary, the lower the autonomy freedom individuals enjoy, the more they believe that the actual distribution of income is unjust, the higher their support for redistribution.

7   Concluding Remarks

In this paper we argued that individuals' control over the determinants of income distribution, either through the working of a meritocratic society or through the functioning of an extensive welfare state, inspire fairness considerations. We pointed out that such a control is voluntarily exercised by an individual when she makes autonomous choices over the way her life turns out. The greater the exercise of a person's autonomous behaviour, the more the individual is in a position of voluntarily affecting the level of her income and the lesser her support for redistribution.

The implications of our study are important with regard to the classical problem of the trade-off between freedom and income inequality in liberal democracies. The political debate over income inequality has been traditionally characterized by two opposing views. On the one hand, liberals consider economic inequality unjust and socially destructive. On the other, conservatives generally feel that riches are the best way to reward those who contribute the most to prosperity and/or that a generous welfare state encourages idleness and folly amongst the poor. These two apparently divergent views may be reconciled in the light of the results obtained in this study. Income inequality can be in fact considered as a fair outcome according to the extent of autonomy freedom people enjoy.

For the sake of more clarity, let us make an example and consider two societies, A and B, both sharing the same income distribution. However, in society A there is a widespread belief that economic success is highly dependent on effort. In this society, therefore, those born in families at the bottom of the income distribution believe that they are as likely to end up at the bottom or at the top as those born to rich parents; and so do children born to well-off families. In contrast, in society B people believe that effort does not pay since an individual's economic success is largely determined by environmental factors such as luck and/or privilege. Those born in poor families believe that they have little chance to improve their future economic conditions.

It is easy to notice that these two societies, although equally unequal in terms of income distribution, greatly differ in the perceptions regarding the nature and causes of their inequality. Unlike people in society B, those who live in society A consider income dynamics fair since effort, skills and commitment are justly rewarded. Individuals in society A are, therefore, likely to be more tolerant of existing inequalities in the distribution of income than those living in society B. The fact that these two societies are polar cases facilitates our understanding of the importance that people's attitudes toward inequality have on their preferences for redistribution. In society A, the widespread belief of living in a just world in which the process of social mobility is driven by effort would lead to a demand for low levels of income redistribution. On the contrary, in society B the view that income dynamics are unjust because they are based on luck and privilege leads individuals to demand large redistributive schemes.

Summarizing the main message of the example described above, we can say that individuals consider income inequality fair if the pre-tax distribution of income is perceived to be caused by factors under their volitional control such as effort, and they consider the pre-tax distribution of income unfair if it is perceived as caused by circumstances beyond individual control such as luck and/or privilege. The individual's control over the determinants of income distribution, either through the working of a meritocratic society or through the functioning of an extensive welfare state seems, therefore, to inspire fairness considerations about inequality.

In this context, however, one important question still remains unanswered: when are

individuals in a position of voluntarily affecting and, therefore, controlling the pre-tax distribution of income? In this chapter we argued that the development of a person's autonomy is closely connected with her ability of making choices that express volitional control over the way her life turns out. The fuller the exercise of a person's autonomous behaviour, the more the individual is in a position of voluntarily affecting the pre-tax distribution of income and the lesser her support for redistribution. Differently, in societies where individuals are not autonomous and do not voluntarily determine the source of their incomes, state intervention via redistribution schemes is instrumental in order to guarantee social justice.

These findings are better understood if social mobility is interpreted in procedural terms. It is not the degree of inequality that matters, but the process that brought it about. Two different societies may, therefore, present the same income inequality, but can be differently fair according to the extent of autonomy freedom people enjoy in each of them.

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Appendix

Proof of Proposition 1

In order to derive the relationship between the individual's optimal preference for redistribution, t^*, and her perceived level of autonomy freedom, α, we apply implicit function theorem.

We define the lhs of equation (12) as F and we calculate the first order derivative as follows:

$$\frac{\partial t^*}{\partial \alpha} = -\frac{F_\alpha}{F_t} \tag{A1}$$

where the subscript in equation (A1) indicates the variable with respect to which differentiation is carried out. Calculation yields:

$$\frac{\partial t^*}{\partial \alpha} = -\frac{-2t\theta \left(1 - t\theta\alpha\right)\left\{M - R\left(1 - \theta\right) - \theta\left[T\alpha + v\left(1 - \alpha\right)\right]\right\} - \left(1 - t\theta\alpha\right)^2 \theta \left(T - v\right) + \theta}{-2\theta\alpha \left(1 - t\theta\alpha\right)\left\{M - R\left(1 - \theta\right) - \theta\left[T\alpha + v\left(1 - \alpha\right)\right]\right\}} \tag{A2}$$

Simplification of (A2) yields:

$$\frac{\partial t^*}{\partial \alpha} = -\frac{t}{\alpha} - \frac{\left(1 - t\theta\alpha\right)^2 \theta \left(T - v\right) - \theta}{2\theta\alpha \left(1 - t\theta\alpha\right)\left\{M - R\left(1 - \theta\right) - \theta\left[T\alpha + v\left(1 - \alpha\right)\right]\right\}} < 0 \tag{A3}$$

By using equation (A3) we can prove the second part of proposition 1. Differentiating (10) with respect to α yields:

$$\frac{\partial e^*}{\partial \alpha} = \frac{-T\left(t\theta + \frac{dt}{d\alpha}\theta\alpha\right)\left(1 - t\theta\alpha\right) + \left[T\left(1 - t\theta\alpha\right) - 1\right]\left(t\theta + \frac{dt}{d\alpha}\theta\alpha\right)}{\left(1 - t\theta\alpha\right)^2} \tag{A4}$$

Using equation (A3) and simplifying yields:

$$\frac{\partial e^*}{\partial \alpha} = \frac{\theta \left[\left(1 - t\theta\alpha\right)^2 \theta \left(T - v\right) - \theta\right]}{2\theta \left(1 - t\theta\alpha\right)^3 \left\{M - R\left(1 - \theta\right) - \theta\left[T\alpha + v\left(1 - \alpha\right)\right]\right\}} > 0 \tag{A5}$$

Proof of Proposition 2

Applying implicit function theorem to equation (12) yields, after rearranging:

$$\frac{\partial t^*}{\partial \theta} = \frac{\left[R - T\alpha - v\left(1 - \alpha\right)\right]\left[1 - t\theta\alpha \left(4 - 3t\theta\alpha\right)\right] - \alpha\left\{2t\left(1 - t\theta\alpha\right)\left(M - R\right) - 1\right\}}{2\theta\alpha \left(1 - t\theta\alpha\right)\left\{M - R\left(1 - \theta\right) - \theta\left[T\alpha + v\left(1 - \alpha\right)\right]\right\}} \tag{A6}$$

The previous inequality is negative, provided that $[1 - t\theta\alpha(4 - 3t\theta\alpha)] \leq 0$. As far as the second part of proposition 2 concerns, differentiating equation (10) yields:

$$\frac{\partial e^*}{\partial \theta} = \frac{\alpha}{(1 - t\theta\alpha)^2} \left(t + \theta \frac{\partial t}{\partial \theta} \right) \tag{A7}$$

Substituting equation (A6) in the last derivative for $\frac{\partial t}{\partial \theta}$ we obtain:

$$\frac{\partial e^*}{\partial \theta} = \frac{\alpha}{(1 - t\theta\alpha)^2} \left(t + \frac{[R - T\alpha - v(1 - \alpha)][1 - t\theta\alpha(4 - 3t\theta\alpha)] - \alpha\{2t(1 - t\theta\alpha)(M - R) - 1\}}{2\alpha(1 - t\theta\alpha)\{M - R(1 - \theta) - \theta[T\alpha + v(1 - \alpha)]\}} \right)$$

After algebraic manipulation and simplification, previous equation can be rewritten as follows:

$$\frac{\partial e^*}{\partial \theta} = \frac{1}{(1 - t\theta\alpha)^2} \frac{(1 - t\theta\alpha)^2 [R - T\alpha - v(1 - \alpha)] + \alpha}{2t(1 - t\theta\alpha)\{M - R(1 - \theta) - \theta[T\alpha + v(1 - \alpha)]\}} \tag{A8}$$

The last derivative is unambiguously positive, proving the last part of proposition 2.

Proof of Proposition 3

Using the same procedure adopted for the previous propositions, it is straightforward to show the positive relation between t^* and M as the following derivative shows:

$$\frac{\partial t^*}{\partial M} = \frac{(1 - t\theta\alpha)}{2\theta\alpha\{M - R(1 - \theta) - \theta[T\alpha + v(1 - \alpha)]\}} > 0 \tag{A9}$$

Moreover, differentiating equation (10) with respect to M and using the the last equation, we obtain:

$$\frac{\partial e^*}{\partial M} = -\frac{\alpha\theta \frac{dt}{dM}}{(1 - t\theta\alpha)^2} < 0 \tag{A10}$$

FIGURE 1a
Nested structure of the individual's decision process (Model 1)

Individual

1st Stage
Transfer Decision $\longrightarrow$

Low Transfers

High Transfers

2nd Stage
Effort Decision $\longrightarrow$

High Effort

Low Effort
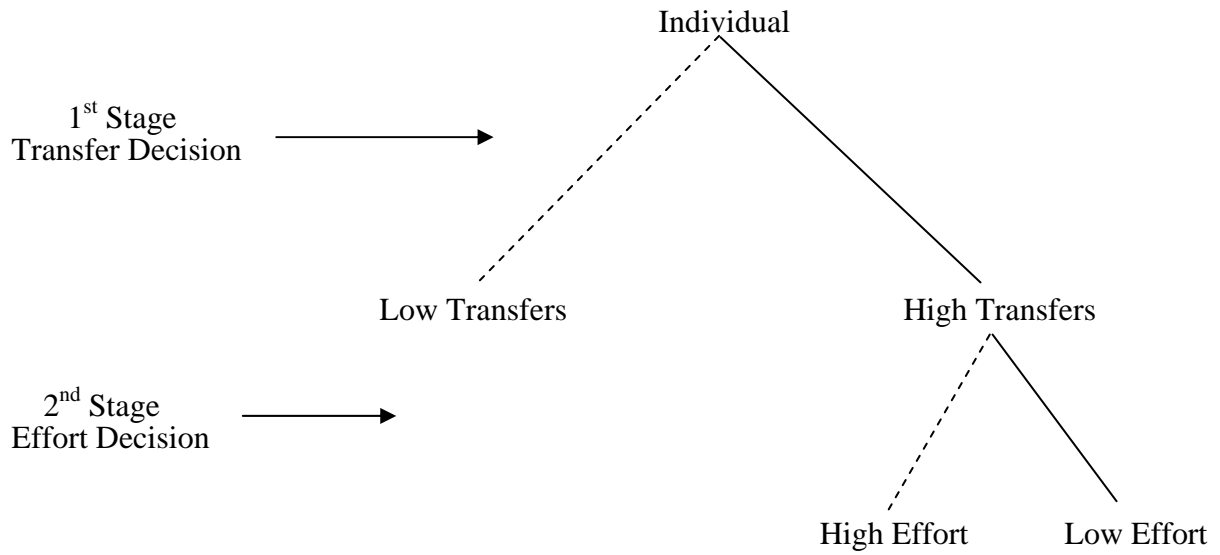
FIGURE 1b
Nested structure of the individual's decision process (Model 2)

Individual

1st Stage
Transfer Decision $\longrightarrow$

Low Transfers

High Transfers

2nd Stage
Effort Decision $\longrightarrow$

Low Effort

High Effort
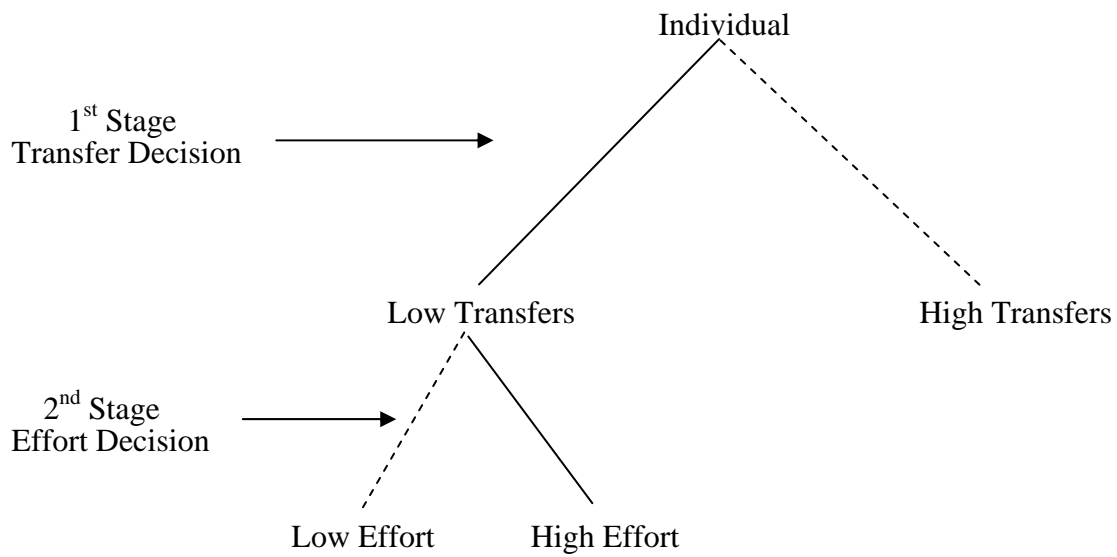
Table 1a
Summary Statistics

Variable	Obs	Mean	SD	Min	Max
Effort vs Luck	44852	4.301547	3.00728	1	10
Preferences for Income Transfers 1	44852	5.882436	3.336658	1	10
Preferences for Income Transfers 2	44508	6.406781	3.110224	1	10
Autonomy Freedom	44852	6.532975	2.591322	1	10
Gender	44810	0.4904932	0.4999152	0	1
Age	44770	40.68365	15.71278	15	94
Income Mobility (ϑ)	44852	1.595737	0.4907543	1	2
Education	43331	1.926842	0.7309404	1	3
Single	44779	0.2239443	0.4168898	0	1
Married	44779	0.6070256	0.4884167	0	1
Religiosity	44016	2.134451	1.070123	1	4
Health Status	44754	2.324999	0.9382648	1	5
Trust	43363	1.751355	0.4322326	1	2
Difference from Median Income	38985	0.2330896	2.375166	-6	8
Self-Reported Income	38985	4.438117	2.564352	1	10
Paid-Employed	42849	0.3937081	0.4885771	0	1
Self-Employed	42849	0.0884268	0.2839179	0	1
Political Orientation	36275	5.62572	2.366962	1	10
Transtition Countries	44852	0.3973959	0.4893646	0	1

Table 1b
Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Effort vs Luck	1																		
2 Preferences for Income Transfers 1	0.0064	1																	
3 Preferences for Income Transfers 2	0.0041	-0.1884*	1																
4 Autonomy Freedom	-0.0493*	0.0898*	-0.1402*	1															
5 Gender	-0.0464*	0.0217*	-0.0310*	0.0449*	1														
6 Age	-0.0351*	-0.0643*	0.0522*	-0.0661*	0.0011	1													
7 Income Mobility (ϑ)	0.1341*	-0.0406*	0.1565*	-0.1357*	-0.0524*	0.0507*	1												
8 Education	0.0073	0.1787*	-0.0860*	0.0938*	0.0272*	-0.2177*	-0.0283*	1											
9 Single	0.0119	0.0308*	-0.0170*	0.0650*	0.0581*	-0.4803*	-0.0287*	0.1364*	1										
10 Married	-0.0395*	0.0082	0.0038	-0.0427*	0.0562*	0.2417*	-0.0085	-0.0484*	-0.6676*	1									
11 Religiosity	0.1154*	-0.0228*	0.0157*	-0.0055	0.1033*	-0.0145*	0.0468*	0.0795*	-0.0025	-0.0175*	1								
12 Health Status	0.0431*	-0.0280*	0.1276*	-0.2135*	-0.0736*	0.3021*	0.1352*	-0.1495*	-0.1617*	0.0574*	-0.0109	1							
13 Trust	0.0121	0.0426*	0.0459*	-0.0440*	-0.012	-0.0298*	0.0729*	-0.0631*	0.0168*	-0.0087	-0.1104*	0.0840*	1						
14 Difference from Median Income	-0.0117	0.1367*	-0.0980*	0.1135*	0.0640*	-0.1644*	-0.0576*	0.3154*	0.0328*	0.0884*	0.0747*	-0.1687*	-0.0302*	1					
15 Self-Reported Income	0.0101	0.1056*	-0.1130*	0.1133*	0.0575*	-0.0994*	-0.0617*	0.3121*	-0.0025	0.1072*	0.1763*	-0.1668*	-0.0953*	0.8604*	1				
16 Paid-Employed	0.0252*	0.0526*	-0.0261*	0.0383*	0.1570*	-0.1202*	-0.0181*	0.1883*	-0.0694*	0.0995*	0.1562*	-0.0958*	-0.0429*	0.2056*	0.2089*	1			
17 Self-Employed	-0.0452*	0.0356*	-0.0232*	0.0342*	0.1323*	-0.0344*	-0.0398*	-0.0496*	-0.0444*	0.0604*	-0.0604*	-0.0491*	0.0173*	0.0200*	0.0213*	-0.2510*	1		
18 Political Orientation	-0.0566*	0.1323*	-0.1096*	0.0763*	0.0109	-0.0079	-0.1150*	-0.005	0.0096	0.0085	-0.1460*	-0.0561*	0.0202*	0.0267*	0.0105	-0.0347*	0.0477*	1	
19 Transtition Countries	0.0538*	0.0811*	0.1905*	-0.1735*	-0.0276*	0.0785*	0.1179*	0.0580*	-0.0717*	0.0650*	0.2153*	0.2009*	-0.0068	-0.0235*	-0.0537*	0.1071*	-0.0917*	-0.0622*	1

Table 2
Nested Logit Estimation
First Step: Transfers Decision - Second Step: Effort Decision

	Model (a)		Model (b)	
	1st Stage	2nd Stage	1st Stage	2nd Stage
	High Transfer	Low Effort	Low Transfer	High Effort
Autonomy Freedom	-0.138***	0.010***	0.040***	0.029***
	(0.040)	(0.004)	(0.012)	(0.005)
Gender	-0.071	0.003	-0.121**	0.104***
	(0.108)	(0.022)	(0.051)	(0.026)
Age	0.007*	-0.002	-0.011***	0.007***
	(0.004)	(0.003)	(0.002)	(0.001)
Income Mobility (ϑ)	1.325*	0.341***	-0.129**	-0.212***
	(0.738)	(0.092)	(0.060)	(0.032)
Education		-0.065		0.131***
		(0.068)		(0.013)
Single		-0.017		0.034
		(0.022)		(0.025)
Married		-0.011		0.036*
		(0.016)		(0.020)
Religiosity		0.002		-0.012
		(0.008)		(0.009)
Health Status		0.012		-0.028***
		(0.017)		(0.009)
Trust	-0.183***		0.173***	
	(0.035)		(0.035)	
Distance from Median Income	0.010		0.192*	
	(0.067)		(0.106)	
Self-reported Income	-0.095		-0.101	
	(0.066)		(0.107)	
Paid-Employee	-0.067**		0.073**	
	(0.034)		(0.033)	
Self-Employed	-0.213***		0.205***	
	(0.056)		(0.055)	
Political Orientation	-0.134***		0.133***	
	(0.007)		(0.007)	
Transition Countries	1.130***		-2.935***	
	(0.131)		(0.294)	
Log-Likelihood	-23,149.810		-25,808.685	
Likelihood Ratio Test	17,863.526		11,526.804	
	[0.000]		[0.000]	
LM Test for Inclusive	1,201.660		182.687	
	[0.000]		[0.000]	
Number of observations	137,220		137,220	

Country dummies, year dummies and sample weights included in the estimations.

Table 3
Nested Logit Estimation - Robustness check
First Step: Transfers Decision - Second Step: Effort Decision

	Model (c)		Model (d)	
	1st Stage	2nd Stage	1st Stage	2nd Stage
	High Transfer	Low Effort	Low Transfer	High Effort
Autonomy Freedom	-0.059***	-0.006**	0.057***	0.036***
	(0.007)	(0.003)	(0.007)	(0.008)
Gender	-0.056*	0.049***	0.045	0.370***
	(0.032)	(0.018)	(0.035)	(0.042)
Age	0.001	-0.007***	-0.003***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.002)
Income Mobility (ϑ)	0.379***	0.039**	-0.397***	-0.086**
	(0.035)	(0.018)	(0.031)	(0.040)
Education		0.027**		0.063*
		(0.012)		(0.032)
Single		-0.144***		0.047
		(0.031)		(0.066)
Married		0.051***		0.274***
		(0.019)		(0.051)
Religiosity		-0.079***		-0.324***
		(0.012)		(0.027)
Health Status		-0.068***		-0.067***
		(0.010)		(0.023)
Trust	0.083**		-0.087**	
	(0.036)		(0.035)	
Distance from Median Income	-0.043		0.122***	
	(0.033)		(0.025)	
Self-reported Income	-0.027		-0.051**	
	(0.033)		(0.024)	
Paid-Employee	0.011		0.002	
	(0.035)		(0.033)	
Self-Employed	-0.049		0.062	
	(0.056)		(0.053)	
Political Orientation	-0.095***		0.094***	
	(0.007)		(0.006)	
Transition Countries	0.792***		-0.619***	
	(0.103)		(0.148)	
Log-Likelihood	-25,015.643		-20,302.867	
Likelihood Ratio Test	18,420.814		27,729.382	
	[0.000]		[0.000]	
LM Test for Inclusive	5,685.663		2,881.266	
	[0.000]		[0.000]	
Number of observations	137,270		137,270	

Country dummies, year dummies and sample weights included in the estimations.

( ) standard errors

[ ] p-values

Table 4

Autonomy freedom and redistribution at the aggregate level

	(e)	(f)	(g)
Autonomy Freedom	-0.588***	-0.667***	-0.671***
	(-2.72)	(-3.08)	(-2.95)
Age	-5.362	1.623	1.275
	(-0.44)	(0.13)	(0.10)
Age^2	0.115	-0.058	-0.049
	-0.39	(-0.20)	(-0.17)
Age^3	-0.001	0.001	0.001
	(-0.35)	(0.24)	(0.21)
Gender	-0.742	-1.701	-1.637
	(-0.22)	(-0.45)	(-0.44)
Education	-1.203*	-1.644**	-1.616**
	(-1.80)	(-2.42)	(-2.28)
Self-reported income	-0.048	-0.118	-0.114
	(-0.45)	(-0.90)	(-0.84)
Trust		-2.342*	-2.342*
		(-1.67)	(-1.66)
Religiosity		0.155	0.15
		(0.24)	(0.23)
Transition Countries		0.692**	0.728*
		(2.00)	(1.76)
GDP growth rate			0.005
			(0.16)
Constant	93.251	5.588	11.006
	(0.55)	(0.03)	(0.07)
Number of Obs.	52	52	52
χ^2	78.103***	112.764***	109.505***
	[0.000]	[0.000]	[0.000]
R^2	0.552	0.629	0.629

Model (e) : Demographic Variables

Model (f) : Demographics plus what they think

Model (g) : Demographics plus what they think plus macro variables

( ) standard errors

[ ] p-values

Appendix 1
Conditional Logit Estimation

	Dependent variable for Transfers Decision: e034		Dependent variable for Transfers Decision: e037	
	Model (a1) High Effort	Model (a2) Low Effort	Model (a3) High Effort	Model (a4) Low Effort
Autonomy Freedom	0.066***	-0.097***	0.052***	-0.080***
	(0.005)	(0.023)	(0.006)	(0.020)
Gender	0.199***	-0.043	0.210***	-0.035
	(0.023)	(0.108)	(0.026)	(0.104)
Age	-0.002**	0.041***	-0.005***	0.036***
	(0.001)	(0.004)	(0.001)	(0.004)
Income Mobility (ϑ)	-0.206***	0.274**	-0.358***	0.325***
	(0.025)	(0.124)	(0.028)	(0.122)
Education	0.307***	-0.390***	0.150***	-0.334***
	(0.017)	(0.089)	(0.018)	(0.079)
Single	-0.101**	0.691***	-0.115**	0.744***
	(0.041)	(0.153)	(0.046)	(0.167)
Married	0.141***	-0.417***	0.147***	-0.370***
	(0.032)	(0.123)	(0.036)	(0.121)
Religiosity	-0.156***	0.215***	-0.128***	0.218***
	(0.013)	(0.059)	(0.015)	(0.052)
Health Status	-0.101***	0.231***	-0.094***	0.254***
	(0.014)	(0.060)	(0.016)	(0.057)
Log-Likelihood	-49,991.391	-48,232.332	-49,823.973	-48,093.854
Likelihood Ratio Test	12,112.835	143,210.348	4,813.891	10,644.890
	[0.000]	[0.000]	[0.000]	[0.000]
Hausman Test	11,607.16	119.15	12,324.09	168.01
	[0.000]	[0.000]	[0.000]	[0.000]
Number of observations	224,370	210,200	224,215	210,185

Country dummies, year dummies and sample weights included in the estimations.

( ) standard errors

[ ] p-values

Hausman Test - Null Hypothesis: Conditional Logit is the correct specification

Data Appendix

Variable	Description	Source
Effort vs Luck	10-point scale variable with 1 indicating high effort and 10 luck.	World Value Survey
Preferences for Income Transfers 1	Variable Indicating individual s preference for income transfers ranging from 1 (high income transfer) to 10 (low income tranfers).	World Value Survey
Preferences for Income Transfers 2	Variable Indicating individual s preference for income transfers ranging from 1 (people should provide for themselves) to 10 (government should provide for everyone).	World Value Survey
Autonomy Freedom	Self-reported variable on a ten-point scale ordered from low (= 1) high (=10) autonomy freedom.	World Value Survey
Gender	Dummy variable taking the value of 0 if respondent is female and 1 if male.	World Value Survey
Age	Individual s age expressed in years.	
Income Mobility (ϑ)	Dummy variable taking the value of 1 if respondent believes that people can escape from poverty and 2 otherwise.	World Value Survey
Education	Three-point scale variable indicating whether individual has a low (1), medium (2) or high (3) education.	World Value Survey
Single	Dummy variable taking the value of 1 if respondent is single and 0 otherwise.	World Value Survey
Married	Dummy variable taking the value of 1 if respondent is married and 0 otherwise.	World Value Survey
Religiosity	Four-point variable referring to how much important religion is in respondent s life and ordered from very important (=1) to not at all important (=4).	World Value Survey
Health Status	Five-point variable referring to subjective health status ordered from very good (=1) to very poor (=5).	World Value Survey
Trust	Dummy variable taking the value of 1 if respondent trusts other people and 2 if she does not belive other people.	World Value Survey
Difference from Median Income	Difference between individual self-reported income and her country self-reported median income.	World Value Survey
Self-Reported Income	Self-reported variable on a ten-point scale ordered from low (= 1) to high (=10) income.	World Value Survey
Paid-Employed	Dummy variable taking the value of 1 if respondent is paid-employed and 0 otherwise.	World Value Survey
Self-Employed	Dummy variable taking the value of 1 if respondent is self-employed and 0 otherwise.	World Value Survey
Political Orientation	Self positioning over a political scale going from 1 if extreme left to 10 if extreme right.	World Value Survey
Transtition Countries	Dummy variable taking the value of 1 if respondent lives in a transition country and 0 otherwise.	World Value Survey