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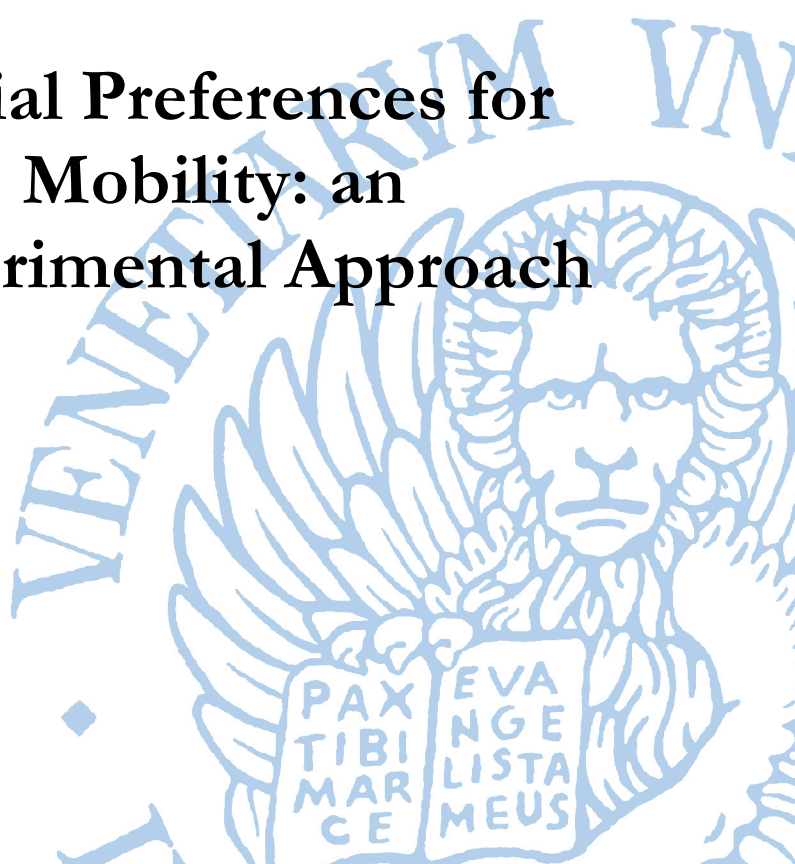
Working Paper

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Social Preferences for Mobility: an Experimental Approach

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Abstract

In this paper we develop an experimental questionnaire to analyse people's social concern for different mobility dimensions. We consider two mobility scenarios: the wealth evolution among generations and periods. Moreover, we test whether people's social preferences change conditional to different sources of wealth inequality among generations (periods). We find that equality of opportunity in the mobility process has high social value in both mobility scenarios. However, people are not willing to tolerate high wealth inequality and fluctuation among generations (periods) in order to achieve equality of opportunity. Finally, the source of wealth inequality seems to affect differently people preferences for mobility in the two mobility scenarios.

Keywords: Intergenerational Mobility, Intragenerational Mobility, Welfare Evaluation, Experimental Questionnaire.

JEL: D63, J62, C91, I30

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1 Introduction

We can define "mobility" as the evolution of individuals' economic status over time. It represents an issue of great relevance both of economic literature and public debate.

As pointed out by M. Friedman (1962): "consider two societies that have the same annual distribution of income. In one there is great mobility and change so that the position of particular families in the income hierarchy varies widely from year to year. In the other there is great rigidity so that each family stays in the same position year after year. The one kind of inequality is a sign of dynamic change, social mobility, equality of opportunity; the other, of a status society ".

A first important distinction in the mobility analysis is the period of time over which the wealth evolution is valued. On the one hand, there is the individuals' wealth evolution between one period and another during their lifetime; on the other hand there is individuals' wealth evolution between generations. The former defines the intragenerational mobility, while the latter points out the intergenerational one.

In the intergenerational mobility scenario, greater mobility in terms of low association between one generation and another is usually denoted as an important social goal. Indeed, as emphasized by Shorrocks (1978): " interest in mobility is not only concerned with movement but also predictability-the extent to which future positions are dictated by the current place in the distribution".

Following this approach, equality of opportunity is socially desirable because it does not predetermine the wealth evolution among generations. In this perspective, only individuals' ability and effort should determine their fortune rather than their parents' wealth position.

Roemer (2000) points out the normative consequences of this fair concept of the intergenerational mobility process. In his view the society should "levels the playing field" among individuals who compete for a position in order to bring out their abilities.

However, the normative implication of equality of opportunity may be controversial. Swift (2006) emphasizes the possible "radical" interpretation of equality of opportunity. In this view differences in the wealth distribution due to innate ability are view as unfair because they might be partially genetically inherited.

In the intragenerational mobility scenario, equality of opportunity among periods may be less socially significant. Indeed, considering one generation, the wealth distribution is likely to be determined by individuals' skills. Therefore, as long as these abilities persist over time the social value of low wealth association among periods may be less socially relevant.

In this perspective, the principal aim of the intragenerational mobility process is to decrease the wealth inequality in the long-run. This point was emphasized

clearly by the former chairman of President Obama Council of Economic Advisor A. Krueger (2012): "higher income inequality would be less of a concern if low-income earners became high-income earners at some point in their career, or if children of low-income parents had a good chance of climbing up the income scales when they grow up. In other words, if we had a high degree of income mobility we would be less concerned about the degree of inequality in any given year ".

However, great mobility among periods determines high people's wealth fluctuation during their lifetime. Therefore, in this scenario, high mobility may be not socially desirable as it implies unpredictability and economic insecurity.

To sum-up, a society characterized by great mobility is usually denoted as an important social aim. However, the social consequences of high levels of mobility may be controversial.

In this paper we present a questionnaire experiment about individuals' social concern for mobility. We are interesting in question like: do people value mobility? Has equality of opportunity the same social relevance in the intragenerational and intergenerational mobility scenario? Do different sources of wealth inequality affect people's preferences for mobility?

2 The different dimensions of mobility

As emphasized in the introduction, our study investigates people's social concern for mobility. However, the wealth evolution over time represents a very multifaceted concept that embodies different dimensions. Therefore, the first part of this section points out two essential mobility aspects: the mobility representations and the mobility measures.

Moreover, this section is divided in two parts. The first one focuses on intergenerational mobility, while the second one deals with the intragenerational scenario.

Consider a society characterized by two generations: parents and kids.

Let X and Y represent parents' and kids' wealth distributions respectively. We describe the intergenerational mobility of a society as the joint distribution of the random variables X and Y.

Next, assume that within each generation the wealth status can take only two values: x_l and x_h for parents and y_l and y_h for kids. The up-script l stands for low wealth while h stands for high wealth. We use wealth as the pertinent socio-economic indicator.

We can summarize the intergenerational mobility of this society by a mobility

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table (Table 1).

A 2 x 2 Mobility Table

	y_l	y_h	Parents' M. D.
x_l	p_{ll}	p_{lh}	$p_{ll} + p_{lh} = p_{l.}$
x_h	p_{hl}	p_{hh}	$p_{ll} + p_{lh} = p_{h.}$
Kids' M. D.	$p_{ll} + p_{hl} = p_{.l}$	$p_{lh} + p_{hh} = p_{.h}$	

Table 1

In Table 1, p_{ij} represents the relative frequencies of families in the society with parents belonging to wealth status i and kids belonging to wealth status j, with $i, j = h, l$. Therefore, p_{ij} determines the intergenerational transition probabilities between the two wealth groups.

The row sums, $p_{i.}$ points out parents' wealth marginal distribution, the column sums, $p_{.j}$ represents kids' wealth marginal distribution . Therefore, $p_{i.}$ denotes parents' chance to be in the *low* or *high* wealth group, while $p_{.j}$ represents kids' chance to be in the *low* or *high* wealth group. Finally, $\sum_i p_{i.} = \sum_j p_{.j} = 1$.

The mobility representation in Table 1 is particularly meaningful because it allows to disentangle two important dimensions of the mobility process: how the wealth is marginally distributed among generations as well as the individuals' chance of moving among the wealth groups.

A different way of representing mobility is provided by transition probability matrices (mobility matrices).

In our set-up (Table 1), the corresponding transition probability matrix (Table 2) is obtained dividing the value of each cell (p_{ij}) by the row sum ($p_{i.}$). The resulting value $\pi_{ij} = p_{ij}/p_{i.}$ determines the conditional probabilities of kids who belong to families i to move to wealth group j.

Therefore, in Table 2, π_{ij} represents the intergenerational transition probability between the two wealth groups.

A 2 x 2 Mobility Matrix

	y_l	y_h
x_l	π_{ll}	π_{lh}
x_h	π_{hl}	π_{hh}

Table 2

In terms of wealth marginal distributions among generations, the mobility pro-

	y_l	y_h	P. M. D.
x_l	0.25	0.25	0.5
x_h	0.25	0.25	0.5
K. M. D.	0.5	0.5	

(a) 2x2 Mobility Table

	y_l	y_h
x_l	0.5	0.5
x_h	0.5	0.5

(b) 2x2 Mobility Matrix

Table 3: Mobility representation: Mobility Table versus Mobility Matrix

cess emphasized in Table 2 does not explicitly illustrate the values of $p_{i.}$ and $p_{.j}$. However, the mobility analysis by mobility matrices usually assumes that the wealth is equally marginally distributed among generations: $p_{i.} = p_{.j} = 0.5$.

The Table 3 shows both mobility representations considering a simple example. In both societies (Tables 3(a), and 3(b)) each kid has the same chance to become rich or poor independently from their parents' wealth group. Moreover, the Table 3(a) emphasizes the transition probabilities between wealth groups ($p_{ij} = 0.25$) given the wealth marginal distribution between the two generations ($p_{i.} = p_{.j} = 0.5$). Conversely, the Table 3(b) highlights the same transition probabilities ($\pi_{ij} = 0.5$) conditional to the wealth marginal distributions between the two generations ($p_{i.} = p_{.j} = 0.5$).

The mobility tables and matrices are the most widely used ways in the literature to represent the transition probabilities among wealth groups in the mobility process. Nevertheless, both mobility representations are based on the observed relative frequencies of individuals in each cell of Table 1, and 2: p_{ij} and π_{ij} respectively. Indeed, p_{hh} (π_{hh}) represents the fraction of families with parents and kids who belong to high wealth group, while p_{ll} (π_{ll}) denotes the fraction of families with parents and kids who belong to low wealth group. The same holds for p_{lh} (π_{lh}) and p_{hl} (π_{hl}). Then, given the law of large number, these fractions are interpreted as probabilities and the associated table (matrix) as mobility table (mobility matrix).

Thereby, the probabilities of the mobility process derive from the ex-post distribution of wealth: the observed one. However, the latter does not fully provide informations about the ex-ante individuals' opportunities in the mobility process.

In order to clarify properly the relevance of this point consider the following example. There are two societies: A and B. The latter are composed by two generations: parents and kids. Moreover, in both societies parents' wealth distribution consists of one wealth group (the poor), while kids' wealth distribution consists of two wealth groups (the rich and the poor). Finally, in the societies A and B there are only two families: M and N.

Conversely from the previous points, the two societies differ in terms of (exante) kids' opportunities in the mobility process. In the society A kids who belong

to family M become rich for sure, while kids who belong to family N remain poor. Vice versa, in the society B each kid has the same chance to become rich or poor independently from his family.

In terms of ex-post analysis of the mobility process, societies A, and B are characterized by the same transition probabilities between wealth groups. Specifically, the observed frequency of families with poor parents and rich kids is exactly the same in the two societies. In the same way, the observed frequencies of families with poor parents and kids is still the same in the societies A and B. Indeed, in both societies, half of the population consists of families with poor parents and rich kids, while the remaining half consists of poor parents and kids.

Nevertheless, in the society A the fraction of families with poor parents and rich kids belongs entirely to family M, while the fraction of families with poor parents and kids belongs entirely to family N. Vice versa, in the society B the fraction of families with poor parents and rich kids as well as the fraction of families with poor parents and kids belong in equal proportion to families M and N.

Therefore, the societies A and B determine different ex-ante kids' wealth opportunities in the mobility process. However, they are characterized by the same ex-post kids' transition probabilities between wealth groups.

As shown before, the difference between the ex-ante and ex-post analysis may be relevant in terms of mobility evaluation. Indeed, the same (ex-post) transition probabilities between wealth groups may result from different (ex-ante) wealth opportunities.

Moving from mobility representations to mobility measures, Markandya (1982) emphasizes the relevance of two aspects of the mobility process: the structural mobility and the exchange one.

The structural mobility results from two different ways of wealth evolution among generations. The first one deals with changes of the available wealth groups in the mobility process (changes between x_i and y_j in Tables 1, and 2). The second one consists of variations of the individuals' proportion in the wealth groups available in each generation (changes between p_i and $p_{.j}$ in Table 1).

Vice versa, the exchange mobility emphasizes the opportunities faced by individuals' in the mobility process, p_{ij} in Table 1 (π_{ij} in Table 2), fixed both the value of the wealth groups available in each generation (x_i and y_j) and the individuals' proportion in each wealth group (p_i and $p_{.j}$).

The Table 4 reports two societies characterized by different levels of structural mobility. The Table 4(a) shows a society characterized by economic growth. Indeed, the wealth groups available in each generation are the same ($x_l = y_l$; $x_h = y_h$). However, the proportion of individuals in the high wealth group increases from 0.5 (x_h) to 0.7 (y_h) moving from parents' to kids' generation. Conversely, the Table 4(b) shows a society in which both the wealth status available and individuals'

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	y_l	y_h	P. M. D.
x_l	0.15	0.35	0.5
x_h	0.15	0.35	0.5
K. M. D.	0.3	0.7	

(a) Society A

	y_l	y_h	P. M. D.
x_l	0.25	0.25	0.5
x_h	0.25	0.25	0.5
K. M. D.	0.5	0.5	

(b) Society B

Table 4: Mobility Measurements: two societies with different levels of structural and exchange mobility

proportion in each wealth group remain constant in the mobility process.

Finally, the two levels of structural mobility determine different transition probabilities between the wealth groups (exchange mobility) in the two societies.

Moving from structural to exchange mobility there are three extreme scenarios: Perfect Immobility, Complete Reverse, and Stochastic Independence.

The first one represents a society in which the kids who belong to rich families remain rich, while kids who belong to poor families remain poor. In our framework (Table 1) it means $p_{lh} = p_{hl} = 0$.

The second one, Complete Reverse, determines a society in which the kids who belong to rich families become poor, while the kids who belong to poor families become rich. In our framework (Table 1) it implies $p_{ll} = p_{hh} = 0$.

Finally, Stochastic Independence means that each kid has the same chance to become rich or poor independently from their parents' wealth group: $\frac{p_{ij}}{p_{i.}} = p_{.j}$ for all $i, j = l, h$ (Table 1).

The Table 5 shows these three exchange mobility levels when $p_{i.} = p_{.j} = 0.5$: Perfect Immobility (Table 5(a)), Complete Reverse (Table 5(b)), and Stochastic Independence (Table 5(c)). Therefore, the societies shown in Table 5 are characterized by three different levels of exchange mobility, while the level of structural mobility is the same.

As pointed out above, the societies reported in Table 5 represent three extreme mobility levels. Nevertheless, they provide meaningful stylized mobility structures for investigating the social desirability of different mobility aspects.

Considering the intragenerational mobility scenario, the above discussion about mobility representations and measures holds exactly in the same way.

We can represent the wealth evolution of the same generation between two periods by the same mobility tables and matrices (Tables 1, and 2). In this setting X and Y represent the wealth distributions of the first and second period respectively, while p_{ij} is the relative frequency of individuals in the society who belong to wealth status i in the first period and j in the second one. Furthermore, the row sum $p_{i.}$ points out individuals' wealth marginal distribution in the first period, while $p_{.j}$ highlights individuals' wealth marginal distribution in the second one.

	y_l	y_h	P. M. D.
x_l	0.5	0	0.5
x_h	0	0.5	0.5
K. M. D.	0.5	0.5	

(a) Perfect Immobility

	y_l	y_h	P. M. D.
x_l	0	0.5	0.5
x_h	0.5	0	0.5
K. M. D.	0.5	0.5	

(b) Complete Reverse

	y_l	y_h	P. M. D.
x_l	0.25	0.25	0.5
x_h	0.25	0.25	0.5
K. M. D.	0.5	0.5	

(c) Stochastic Independence

Table 5: Mobility Measurements: three societies with different levels of exchange mobility and the same structural one

In the same way we can represent the intragenerational mobility process by mobility matrices dividing the value of each cell by the corresponding row sum: $\pi_{ij} = p_{ij}/p_{i.}$.

Finally, the two mobility measures previously presented (exchange and structural) underline the same movement issues when the object of the analysis is the wealth evolution of the same generation among periods.

The main difference between the two mobility scenarios (intergenerational and intragenerational) may be their social desirability.

In the intergenerational mobility scenario greater mobility in terms of low association between one generation and another is usually denoted as an important social goal. Following this approach, a society characterized by Stochastic Independence (Table 5(c)) is socially desirable because it does not predetermine the wealth evolution among generations. In this perspective only individuals' ability and effort should determine their fortune rather than their parents' wealth position. In fact, mobility as Stochastic Independence implies equality of opportunities in the wealth evolution among generations.

The opposite scenario to the previous one is provided by Perfect Immobility (Table 5(a)). This mobility structure implies a rigid society in which parents' wealth distribution determines the fortune of their offspring. In this scenario, kids' ability and effort do not play any economic role. Nevertheless, the social desirability of Perfect Immobility lies in the absence of wealth fluctuation among generations. Indeed, a wealth evolution among generations characterized by perfect positive association may be socially desirable as it reduces uncertainties associated with a fluctuating wealth stream among generations. However, the latter condition comes at a cost to preserve the wealth inequality among generations.

	y_l	y_h	P. M. D.
x_l	0.35	0.15	0.5
x_h	0.15	0.35	0.5
K. M. D.	0.5	0.5	

(a) Partial Immobility

	y_l	y_h	P. M. D.
x_l	0.15	0.35	0.5
x_h	0.35	0.15	0.5
K. M. D.	0.5	0.5	

(b) Partial Reverse

Table 6

Finally, Complete Reverse (Table 5(b)) determines a setting in which parents' wealth positions still define the fortune of their offspring but in the opposite way than Perfect Immobility. Indeed, the society shown in Table 5(b) implies a complete negative association between the wealth distributions of the two generations. Although this scenario has no empirical evidence, it emphasizes the possible social desirability of wealth reversal as it reduces the wealth inequality among generations. However, the latter condition comes at a cost to increase the wealth fluctuation among generations.

As emphasized earlier, Perfect Immobility, Complete Reverse, and Stochastic Independence represent three extreme exchange mobility levels. The Table 6 shows two intermediate cases of wealth association (positive and negative) between generations.

The Table 6(a) implies a mobility structure in which kids who belong to rich families have 70% chance of remaining rich, while kids who belong to poor families have 70% chance of remaining poor ($p_{ll} = p_{hh} = 0.35$ given $p_{.j} = p_{i.} = 0.5$). Conversely, the Table 6(b) shows a symmetric negative wealth association between generations ($p_{lh} = p_{hl} = 0.35$ given $p_{.j} = p_{i.} = 0.5$). Therefore, in Table 6(a) the higher wealth fluctuation than Perfect Immobility is partially compensated with lower wealth inequality between the two generations. Similarly, in Table 6(b) the higher wealth inequality than Complete Reverse is partially compensated with lower wealth fluctuation between the two generations. Finally, in both societies (Table 6(a), and 6(b)) the mobility process implies more intergenerational mobility than Perfect Immobility and Complete Reverse, but less than Stochastic Independence.

Considering the intragenerational mobility scenario, the social relevance of the mobility structures previously shown could chance substantially.

Firstly, Stochastic Independence may be less socially relevant in the intragenerational mobility scenario. Indeed, considering the wealth evolution of the same generation, the wealth distribution in the first period is likely to be determined by individuals' skills. Therefore, as long as these abilities persist over time the social value of low wealth association among periods may be less appealing.

Conversely, Complete Reverse may have greater social relevance in the intra-

generational scenario than the intergenerational one as long as the social aversion to wealth inequality is higher when considered along the same generation. In this view the primary goal of the mobility process is the reduction of the long-term wealth inequality rather that guarantee equality of opportunity among periods. However, as pointed out above, Complete Reverse implies large wealth fluctuation. Therefore, high levels of wealth reversal among periods may be not social desirable as it implies unpredictability and economic insecurity.

Thereby, the role played by Perfect Immobility may be greater in the intragenerational mobility scenario as long as it reduces uncertainties associated with a fluctuating wealth stream among periods. Indeed, mobility in terms of wealth reversal implies transitory wealth variations that correspond to great wealth risk, and great risk is undesirable for risk-adverse individuals.

The mobility welfare literature provided three principal models that summarize the mobility concepts presented above: Markandya (1982), Atkinson and Bourdignon (1982), and Gottschalk and Spolaore (2002).

The model proposed by Markandya (1982) represents the utilitarian welfare approach to mobility. In this model the social welfare function aggregates individuals' utilities. Moreover, both individual and social preferences are assumed expected utility.

The welfare function proposed by Markandya (1982) is:

$$W = \sum_i \sum_j V(x_i, y_j) p_{ij} \tag{1}$$

In the equation (1) the first sum denotes parents' (first period) generation, while the second sum represents kids' (second period) generation. Moreover, $V(.)$ points out individual utility and p_{ij} is the transitions probability between wealth groups.

There are two possible specifications of the equation (1).

First, assuming separable utility functions among generations the social value of mobility is indifferent to any variations of transition probabilities between wealth groups (p_{ij}), fixed the values of the available wealth groups in each generation (x_i and y_j) and the individuals' proportion in each wealth group ($p_{i.}$ and $p_{.j}$). Thus, societies characterized by Perfect Immobility (Table 5(a)), Complete Reverse (Table 5(b)), Stochastic Independence (Table 5(c)), Partial Immobility (Table 6(a)9, and Partial Reverse (Table 6(b)) have the same social value.

Vice versa, assuming not separable utility functions among generations, the values of p_{ij} affects the social value of mobility. Specifically:

$$\text{if } \frac{\partial V}{\partial x_i \partial y_j} < 0 \text{ any increase of } p_{lh} \text{ and } p_{hl} \text{ is welfare improving} \tag{2}$$

$$\text{if } \frac{\partial V}{\partial x_i \partial y_j} > 0 \text{ any increase of } p_{ll} \text{ and } p_{hh} \text{ is welfare improving} \qquad (3)$$

Therefore, if condition (2) holds, any increase of the negative association between parents' and kids' wealth status is welfare improving. Vice versa, if condition (3) holds, any increase of the positive association between parents' and kids' wealth status is welfare improving.

The model provided by Atkinson and Bourdignon assumes as object of the analysis the dynasty (individual) wealth evolution among generations (periods). Therefore, in this model the utility function, $V(.)$, is assumed not separable among generations (periods). Specifically, $V(.)$ is a concave transformation of the individuals' utility in each generation (period): $V(x_i, y_j) = Z[J(x_i) + J(y_j)]$. The related mobility welfare evaluation implies:

$$W = \sum_i \sum_j \{Z[J(x_i) + J(y_j)]\} p_{ij} \qquad (4)$$

In the equation (4), the function $Z(.)$ defines the social aversion to wealth inequality between generations (periods), while $J(.)$ determines the social aversion to wealth fluctuation among generations (periods).

Therefore, considering the equation (4), the conditions (2) and (3) are reinterpreted in terms of aversions to wealth inequality and fluctuations among generations (periods) respectively.

Specifically, if condition (2) holds the aversion to wealth inequality exceeds the aversion to wealth fluctuation. Therefore, societies with higher levels of wealth reversal among generations (periods) are socially preferred. This latter condition implies the following preferences relation between the mobility structures previously presented: Complete Reverse $\succ$ Partial Reverse $\succ$ Stochastic Independence $\succ$ Partial Immobility $\succ$ Perfect Immobility.

Vice versa, if the condition (3) holds the aversion to wealth fluctuation exceeds the aversion to wealth inequality. Therefore, societies with higher levels of wealth immobility among generations (periods) are socially preferred. The latter condition implies the following preferences relation between the mobility structures previously presented: Perfect Immobility $\succ$ Partial Immobility $\succ$ Stochastic Independence $\succ$ Partial Reverse $\succ$ Complete Reverse.

In any case, both the Markandya (1982), and Atkinson and Bourdignon (1982) models do not provide conditions for which Stochastic Independence has social value.

Next, the model provided by Ghottschalk and Spolaore (2002) adds to the equation (4) a specific form of inequality aversion restricted to kids' generation (second period) . The related social evaluation implies the following welfare function:

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$$W = \sum_i p_{i.} Z\{J[x_i, \sum_j H(y_j)\frac{p_{ij}}{p_{i.}}]\} \tag{5}$$

In the equation (5), the functions $Z(.)$ and $J(.)$ define the same social aversions of equation (4), while $H(.)$ represents kids' (second period) wealth inequality aversion. Furthermore, $p_{i.}$ defines parents' chance to be in the low or high wealth group, while p_{ij} represents the transition probabilities between wealth groups.

In terms of mobility evaluation, the welfare function in (5) differs from the equation (4) only if the kids' wealth aversion to wealth inequality exceeds both the aversions to wealth inequality and fluctuations. Indeed, if the latter condition holds and $Z(.) = J(.)$ Stochastic Independence has social value.

Finally, we introduce a novel intuition regards social preferences for mobility.

In the two theoretical models presented above, people's social preferences for mobility are driven by aversions to wealth inequality and fluctuations. Consequently, in the Atkinson and Bourdignon (1982) model Stochastic Independence has no social relevance, while in the model provided by Gottshalck and Spolaore (2002) equality of opportunity has social value only if the wealth inequality aversion offsets the aversion to wealth fluctuation { $Z(.) = J(.)$ }.

Our intuition starts from the social relevance of mobility as Stochastic Independence. Indeed, Stochastic Independence is the only mobility level that determines equality of opportunities in the wealth evolution among generations (periods).

In the intergenerational mobility scenario it means that kids' final wealth position is independent from their parents' wealth group. Following this perspective, Perfect Immobility and Complete Reverse may be evaluated socially equivalent. Indeed, the former determines a perfect positive association between parents' and kids' wealth positions, while the latter implies a perfect negative association between the two. However, in both cases parents' wealth positions determine the fortune of their offspring.

Therefore, our intuition implies that societies characterized by Perfect Immobility and Complete Reverse may have the same social value. Vice versa, Stochastic Independence may represent the social preferred level of mobility because it implies independence among generations' (periods') wealth distributions.

However, as emphasized above, the social relevance of equality of opportunity may be greater in the intergenerational mobility scenario than the intragenerational one. Indeed, in the intragenerational context, independence in the wealth evolution among periods may be less socially significant, while Complete Reverse and Perfect Immobility may have grater social value. Therefore, our intuition regarding social preferences for mobility may be primarily pertinent in the intergenerational mobility context.

To sum-up, the individuals' wealth evolution represents a very multifaceted

issue that embodies several important dimensions. In this section we have under-lined some of them.

First, the mobility representations typically used in the literature (mobility tables and matrices) do not fully provide informations of the ex-ante individuals' wealth opportunities in the mobility process. Therefore, a primary important issue concerns the ex-ante and ex-post mobility evaluation. In other words: are people social indifferent between two societies characterized by the same ex post mobility table but different ex-ante individuals' wealth opportunities?

Second, there are two important mobility dimensions: the exchange mobility and structural one. Thus, a relevant issue regards people social preferences toward different levels of exchange mobility. In other word, are people social indifferent between different levels of exchange mobility?

Next, the mobility welfare literature emphasized two important dimensions of the mobility evaluation: the aversions to wealth inequality and fluctuation among generations (periods). Are these aspects relevant in determining people social choices between different mobility processes? Moreover, has mobility as Stochastic independence any social role in moderating these social aversions?

Finally, an important mobility distinction regards the period of time over which the wealth evolution is analysed. Indeed, the social importance of mobility may change considering the intergenerational and intragenerational scenarios. There-fore, further relevant questions are: do social preferences for mobility change con-sidering the wealth evolution over periods and generations? Have the aversions to wealth inequality and fluctuations the same social relevance in two mobility scenarios? Has mobility as Stochastic Independence the same social importance in the two contexts?

The principal aim of our study is to highlight people's social concern toward these different mobility dimensions through a questionnaire experiment.

3 Static wealth distribution and the source of wealth inequality

Moving from mobility scenario to static wealth distribution, many scholars have emphasized how the origin of wealth inequality affects individuals' and socials' preferences for redistribution.

Individuals' social preferences express the idea that other variables rather than self-interest determine individuals' preferences for redistribution, Charness and Rabin (2002). Vice versa, the social preferences assume as object of analysis the preferences expressed by a "neutral observer" or by an hypothetical individual "behind the veil of ignorance", Harsanyi (1953, 1955).

Focusing on individuals' social preferences, both theoretical and empirical studies have emphasized the relevance of people's beliefs.

Alesina and Angeletos (2005) provide a model with two equilibria. In the America equilibria people believe that individuals' effort determines their final position in the income distribution. The related equilibria implies low redistribution and low taxes. Conversely, in the European equilibria, the society believes that factors behind individuals' control (such as luck, birth, and connections) determine individuals' income position. The associated equilibria implies high redistribution and taxes.

Benabou and Tirole (2006) develop a model in which the ideologies affect individuals' beliefs in terms of effort's return. In the European Pessimism equilibria, the poor end up with pessimistic beliefs. The latter determine a high tax rate that reinforces their beliefs and discourages individuals' high effort. Conversely, in the America Believe in a Just Word equilibria, people tend to ignore bed news about the effort's return. The latter condition implies low tax rate expectation and a high level of individuals' effort. The same equilibria hold when considering beliefs about intergenerational mobility.

Fong (2001) using the 1990 General Social Survey (GSS) points out that people's beliefs about the source of income inequality affect preferences for redistribution. In particular, people who believe that poverty status is determined by lack of effort are less prone to redistribution than who believe that lack of effort is not important.

Corneo and Gruner (2002) extend the analysis to twelve countries using the International Social Survey Program. The authors highlight that people who believe that income is very elastic to effort are less likely to agree with political redistribution. The opposite holds if people believe that families' wealth is essential in the individuals' income achievement.

Finally, Alesina and Giuliano (2011) pinpoint the same empirical evidence using several waves of the GSS and extending the analysis to the Word Value Survey.

To sum-up, many studies highlight the social relevance of two different sources of income inequality (effort and luck) in determining individuals' preferences for redistribution.

However, the empirical analysis based on survey data does not allow a proper test of the models based on social preferences (Harsany 1953, 1955). Indeed, the latter imply two specific settings in terms of social choices. In the first one (external observer) individuals' income status is not affected by their preferences. Vice versa, in the second one (behind the veil of ignorance), individuals are not aware of their position in the income distribution.

Consequently, several experimental studies point out the relevance of effort and luck when the object of the analysis are social preferences.

Krawczyk (2010) analyses the preferences for redistributions expressed by individuals "behind the veil of ignorance". The author shows that when individuals' monetary payoff are determined by performance in a task, the average income transfer is 20% lower than sessions where the monetary payoff are determined by luck.

The experimental design proposed by Durante et al. (2014) provides both types of social analysis: "external observer" and "behind the veil of ignorance". In their analysis, individuals are assigned to four treatments. In two out of four, the income is determined by completing a task (effort treatments), while the third treatment implies a random distribution of incomes (luck treatment).

When individuals express preferences from a neutral position, subjects choose a tax rate that is on average 11.6 % lower in the effort treatments than the luck one. This difference increases when subjects state preferences "behind the veil of ignorance" (17,8 %).

The studies early presented pinpoint the relevance of fairness' perception in the determination of individuals' wealth distribution. Indeed, when inequality arises because of variables that are behind individuals' control, people tend to prefer higher level of redistribution. Vice versa, when inequality is due to variables that are under individuals' control the associated level of redistribution is lower.

In terms of fairness' perception of income inequality, a further relevant variable not well investigated by the literature, is individuals' natural ability. The latter consists of people's natural endowment such as talent, attitudes, and skills.

The bearing of natural ability is due to its double nature in terms of fairness. Indeed, people's natural endowment may be perceived as something "un-earned" and thus unfair in the determination of income inequality. Vice versa, people may believe that individuals with higher talent, and skills deserve higher income compared to the others.

While several studies point out the role played by fairness' perception of the wealth inequality in determine individuals' preferences for redistribution, the economic literature on social mobility has reserved little attention to this topic.

Roemer (2000) provides a normative approach to intergenerational mobility that points out the relevance of fairness in the mobility process. The author emphasizes how the society should "levels the playing field" among individuals who compete for any position.

In the mobility scenario, it means that variables that are behind individuals' control (such as parents' income position, family background, etc.) should not matter in the determination of their wealth position. The latter should be determined only by variables that are under people's control (such as effort, commitment, etc.). Therefore, equality of opportunity represents the fair process in the terms of mobility among generations.

However, in this view a controversial issue regards people's natural ability. Indeed, equality of opportunity may be less social appealing if people's talent and skills are not randomly distributed among the population. The latter consideration holds especially if natural ability is partially genetically inherited. If this is the case, should people with higher inherited skills and talents have the same opportunities of the others in the mobility process? Or, conversely, they deserve greater opportunities to reach the high wealth positions in the wealth distribution?

In our experimental questionnaire we test whether different sources of wealth inequality affect social preferences when the object of the analysis is the mobility among generations (periods). In particular, a further aim of our study is to test whether wealth inequality among generations (periods) due to individuals' natural ability is perceived as a fair mechanism to allocate resources in the mobility process.

4 The approach

Our study is an empirical investigation of individuals' concern about two mobility dimensions: intergenerational mobility and intragenerational one. Moreover, we test whether different origins of wealth inequality affect social preferences for mobility.

The empirical analysis of both social preferences and fairness principles represent an essential aspect of the economic approach to social theory. Indeed, as emphasized by Gaertner and Schokkaert (2012), "thinking about the content of justice without the desire of making the word most just, is like pouring out a glass of water and then refusing to drink....Empirical research on the acceptance of notion of justice by different social group is therefore essential to understand the social environment in which policy decisions are taken".

Starting from the pioneering work of Amiel and Cowell (1992), many studies have used the questionnaire approach to test models regarding social choices: Harrison and Seidl (1994), Amiel et al. (2001), Bernasconi (2002), Amiel et al.(2015).

There are several reasons whereby the questionnaires represent the optimal environment to test social theory. First of all, empirical strategies based on social survey do not isolate properly preferences for ethical norms to other variables involved in the wealth distribution and evolution. Furthermore, the empirical analysis using field data involves preferences that can be inferred, but not directly tested.

On the other hand, the experimental approach does not provide an optimal empirical setting because of the object of the analysis. Indeed, when we focus on individuals preferences, the monetary consequences of the individuals' decisions represent an essential features of the empirical investigation. Vice versa, when we focus on social preferences, the main research interest is to test individuals'

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concerns about social norm for which individuals do not bear the consequences of their choices.

Most of the studies regarding empirical social choices are based on preferences expressed by students. There are several reasons whereby the university population represent a good object of investigation. First of all, they are used to reasoning about abstract questions. Furthermore, as pointed out by Gaertner and Schokkaert (2012), students represent the future social and economic elite of a country. Therefore, they have higher chance to affect the public policy debate.

However, there are two main critical issues regarding the empirical investigations using students population without financial payoff.

First, the absence of monetary incentives could lead to inaccurate responses by some individuals. The latter condition holds especially when the questionnaire is long and composed by hard questions.

Moreover, the students population are not representative of the entire population. Indeed, they are used because they are easily recruited.

In order to overcome these points, we run our questionnaire by Amazon Mechanical Turk (Mturk).

In the recent years an increased number of economic studies have used this on-line platform to conduct empirical analysis about social preferences, Saez and Stancheva (2013), Kuziemco et al. (2015).

In the field of social choice, the empirical relevance of MTurk is twofold.

First, it provides an optimal environment in terms of financial incentives. Indeed, using MTurk, individuals' return for completing the questionnaire is a fixed monetary amount (previously agreed). The latter incentives the subjects to focus on the task during the course of the questionnaire. In fact, final payment is only made to individuals who show that they understand the questionnaire. Nevertheless, individuals' final payoff does not depend on the choices involved in the questionnaire.

Therefore, the financial incentives provide by MTurk allow to encourage the individuals to do not give inaccurate response. Simultaneously, the social preferences made by subject have no monetary consequences for them.

The second advantage of MTurk is the representativity of sample population. The latter consideration holds especially when the U.S. population is considered. Indeed, as reported by Paolacci et al. (2010), MTurk workers are representative of the U.S. population at least in terms of age, gender, race, and education.

5 The experimental design

As emphasized above, our experimental questionnaire concerns the social preferences for two mobility dimensions: intergenerational mobility and intragener-

ational one. Moreover, we test whether these preferences change conditional to different sources of wealth inequality: life chance and natural ability.

The combination of these four experimental variables determines our experimental design.

The Table 7 shows the experimental treatments associated to the combination of each variable.

	Intergenerational mobility	Intragenerational mobility
Life chance	Treatment 1	Treatment 3
Natural ability	Treatment 2	Treatment 4

Table 7: The Experimental Design

The questionnaire participants express their preferences from a neutral position. It means that the subjects assume the role of an external observer that is not directly involved in both wealth distribution and evolution of the society, Harsanyi (1953).

The questionnaire is divided in three sections: the introduction, the individuals' choices and a final demographic survey.

The introduction characterizes properly each treatment. It defines the object of the preferences (intergenerational versus intragenerational mobility) and the source of wealth inequality (life chance versus natural ability).

The individuals' choices consist of five parts. Each part is composed by three comparisons between couples of hypothetical societies. Moreover, in the first part there is an additional question. Finally, there are three control questions. Thus, in total there are 19 questions.

The demographic survey includes informations about gender, age, education, marital status, and family composition.

5.1 Treatment 1: intergenerational mobility and life chance

The Treatment 1 consists of the combination of two experimental variables: intergenerational mobility and life chance.

The treatments' features are indicated in the questionnaire introduction. The latter consists of three parts.

The first one points out to the participants the meaning of social preferences in our experimental scenario by the following statement: "social preferences are defined as the preferences expressed by a neutral observer towards societies characterized by different wealth distributions. To be a "neutral observer" means to express preferences on the wealth distribution among people of a society without
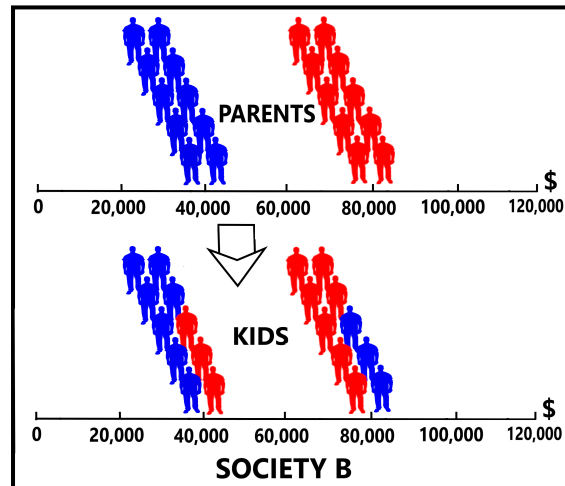
18

Figure 1

being directly involved in the wealth distribution of that society".

The second part of the introduction describes the relevance of two dimensions of the mobility process: how the wealth is distributed among generations and the way in which parents' wealth position transfers to their own offspring. Moreover, the second part describes how these features are represented in the questionnaire: Figure 1.

The informations embody in the Figure 1 are described to the participants in the following way: " the Figure (1) represents an hypothetical society composed by two generations: the parents and their offspring. The top line shows the parents' wealth distribution, while the bottom line shows the kids' wealth distribution. Moreover, kids' and parents' wealth distribution is characterized by two groups: the rich and the poor. Finally, parents and kids who belong to the same family are depicted in the same colour. Parents depicted in blue have kids depicted in blue while parents depicted in red have kids depicted in red".

Thus, the Figure 1 illustrates to the subjects the informations about the wealth distributions in each generation as well as the level of intergenerational mobility. Specifically, the Figure 1 shows a society characterized by a level of exchange mobility equal to Partial Immobility (Table 6(a)).

Finally, the third part of the introduction points out the treatments' features in terms of origin of wealth inequality. In particular, the introduction of Treatment 1 ends with the following statement to the participants: " when giving your answers you have to consider that only different life chances determined parents' wealth distribution: rich parents in red and poor in blue. This means that parents' wealth groups (rich or poor) do not depend on their own natural abilities such
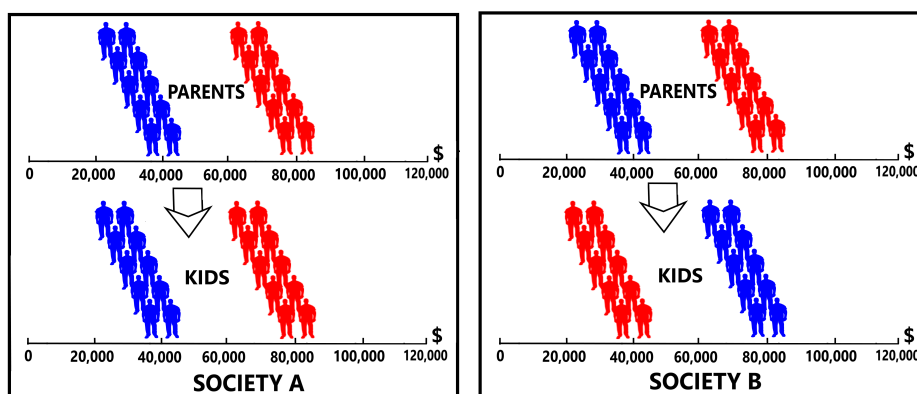
19

Figure 2

as aptitude, talent, and skills. Indeed, in the societies that you are comparing people's natural abilities are randomly distributed among both parents' and kids' generations. Finally, people's wealth points out the net wealth after taxes and social transfers".

The subjects' social choices consist of five parts. Each part is composed by three comparisons between couple of society as in Figure 2. Only in the first part there is an additional question.

For each couple, subjects have to state their preferences between SOCIETY A and SOCIETY B. The social choice is expressed by the following question: "image you are a neutral observer. Which society do you think is socially preferable between SOCIETY A and SOCIETY B ?"

We show below the description of each part of the questionnaire. Furthermore, for each one we report the associated societies' pairwise comparison and the main theoretical predictions.

The Table 8 shows the societies pairwise comparisons of the Part 1. Each couple consists of two societies characterized by the same level of structural mobility and different levels of exchange one: Perfect Immobility (Table 5(a)) versus Partial Immobility (Table 6(a)), Question 1; Stochastic Independence (Table 5(c)) versus Partial Reverse (Table 6(b)), Question 2; Stochastic Independence versus Complete Reverse (Table 5(b)), Question 3.

Moreover, in this part of the questionnaire there is an additional question: Question 4. In particular, the Part 1 ends with the following question: "consider your preferred societies in each question from 1 to 3, in which question is there your most preferred society?". Therefore, the aim of Question 4 is to identify the most preferred level of mobility among the preferences expressed in the initial three choices.

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Part 1: different levels of exchange mobility with low wealth inequality and fluctuation

Choices		
		Question 1: Perfect Immobility in A; Complete Reverse in B.
		Question 2: Partial Immobility in A; Stochastic Independence in B.
		Question 3: Partial Reverse in A; Stochastic Independence in B.

Table 8

As emphasized in section 2, a first relevant issue regards people's social value of intergenerational mobility. In other word, have people preferences for different levels of exchange mobility ? Or, conversely, what matter is only the final wealth distribution between the two generations ?

A further important topic regards people's social concern for mobility as Stochastic Independence. The latter may represent a significant social goal in the intergenerational mobility scenario. However, the social role played by aversions to wealth inequality and fluctuation may lead to a different hierarchy of social preferences.

Therefore, the aim of the questionnaire Part 1 is threefold. First, we investigate whether people are indifferent or not to various levels of exchange mobility. Second, we test the social relevance of the aversions to wealth inequality and fluctuation considering the welfare implications of the model provided by Atkinson and Bourdignon (1982). Finally, we highlight the social relevance of mobility as Stochastic Independence.

The first point is formalized by the equation (1) when the individuals' utilities are assumed separable among generations. Indeed, in this case, the value of the welfare function is invariant to different levels of exchange mobility. Therefore, in the questionnaire Part 1, the external observer should be indifferent between each couple of societies in Table 8.

Conversely, if we assume not separable utility functions among generations using the welfare specification provided by Atkinson and Bourdignon (1982), equation (4), there are two different theoretical predictions.

First, if the condition (2) holds then the social preferences should be driven primarily by the aversion to wealth inequality among generations. Thus, in each pairwise comparison of Part 1, the external observer should prefer the society characterized by a higher level of wealth reversal between the two generations. The latter condition implies: SOCIETY B in Question 1, SOCIETY B in Question 2, and SOCIETY A in Question 3. Moreover, the SOCIETY B in Question 1 should be the preferred one.

Second, if condition (3) holds, then the social preferences should be driven primarily by the aversion to wealth fluctuation among generations. Thus, in each pairwise comparison of Part 1, the external observer should prefer the society characterized by a higher level of wealth immobility between the two generations. The latter condition implies: SOCIETY A in Question 1, SOCIETY A in Question 2, and SOCIETY B in Question 3. Furthermore, the SOCIETY A in Question 1 should be the preferred one.

Finally, if equality of opportunity has social value in the intergenerational mobility process then the external observer should prefer SOCIETY B in both Questions 2, and 3. Moreover, following our intuition, Perfect Immobility and Complete Reverse should be evaluated socially equivalent. Indeed, in both cases, the kids' final wealth position is determined by their parents' wealth group. Therefore, the external observer should be indifferent between SOCIETY A and SOCIETY B in Question 1.

The second part of the questionnaire, Part 2 (Table 9), provides a setting in which the mobility process is characterized by higher levels of wealth inequality and fluctuation than Part 1. Thus, the distance between the rich and the poor increases between parents' and kids' wealth distribution.

The aim of the questionnaire Part 2 is to test whether the social preferences

Part 2: different levels of exchange mobility with high wealth inequality and fluctuation among generations

Choices		
		Question 1: Perfect Immobility in A; Complete Reverse in B. Greater inequality in kids' wealth distribution than parents' one.
		Question 2: Partial Immobility in A; Stochastic Independence in B. Greater inequality in kids' wealth distribution than parents' one.
		Question 3: Partial Reverse in A; Stochastic Independence in B. Greater inequality in kids' wealth distribution than parents' one.

Table 9

expressed in the Part 1 change when the mobility process is characterized by higher wealth inequality and fluctuation among generations. In particular we test whether the increase of the wealth inequality and fluctuation among generations affect the social relevance of Stochastic Independence as well as the aversions to wealth immobility and reversal among generations.

In terms of preferences predictions implied by equations (1) and (4), the social choices in the questionnaire Parts 1, and 2 should not chance. In fact, assuming

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separable utility functions among generations, the external observer should be still indifferent between each couple of societies of Part 2 (Table 11).

Furthermore, if the utility functions are assumed not separable between generations and the social aversion to wealth inequality exceeds the aversion to wealth fluctuation (condition (2)), then the external observer should still prefer societies characterized by higher levels of wealth reversal between the two generations. Therefore: SOCIETY B in Question 1, SOCIETY B in Question 2, and SOCIETY A in Question 3.

Vice versa, if condition (3) holds the social aversion to wealth fluctuations exceeds the aversion to wealth inequality, then the external observer should still prefer societies characterized by higher levels of wealth immobility between the two generations. Therefore: SOCIETY A in Question 1, SOCIETY A in Question 2, and SOCIETY B in Question 3.

Nevertheless, in the questionnaire Part 2, the external observer could be less prone to tolerate wealth immobility in the mobility process and therefore high wealth inequality among generations. In the same way, he could be less willing to tolerate wealth reversal among generations and thus high wealth fluctuation. Thereby, the introduction of high wealth inequality and fluctuation may determine higher preferences for equality of opportunity. Vice versa, the introduction of high wealth inequality and fluctuations may reinforce both social aversions and therefore determines higher preferences for wealth immobility or wealth reversal in the mobility process.

Conversely from Part 1 and 2, the questionnaire Part 3 (Table 10) introduces complete equality for parents' wealth distribution. Indeed, the latter consists of one wealth group. Vice versa, kids' wealth distribution is characterized by wealth inequality (the rich and the poor).

In this part of the questionnaire each social choice provides the same transition probability between wealth groups (rich and poor) but different kids' opportunities to become rich or poor. Indeed, each societies' couple of Part 3 is characterized by the same ex-post mobility process and different ex-ante kids' wealth opportunities.

As emphasized in section 2, both mobility tables and matrices do not fully provide informations about the ex-ante individuals' opportunities in the mobility process. Therefore, the aim of the questionnaire Part 3 is to highlight the relevance of the ex-ante individuals' opportunities in terms of mobility evaluation.

In other words, in this part we investigate whether the external observer is indifferent between societies characterized by the same ex-post mobility level but different ex-ante individuals' wealth opportunities.

Therefore, if the ex-ante opportunities are not socially relevant, then the external observer should be indifferent between each couple of societies in Table 10.

Next, the pairwise comparisons of Part 4 (Table 11) is characterized by dif-

Part 3: different levels of ex-ante kids' opportunities and same ex-post exchange mobility levels
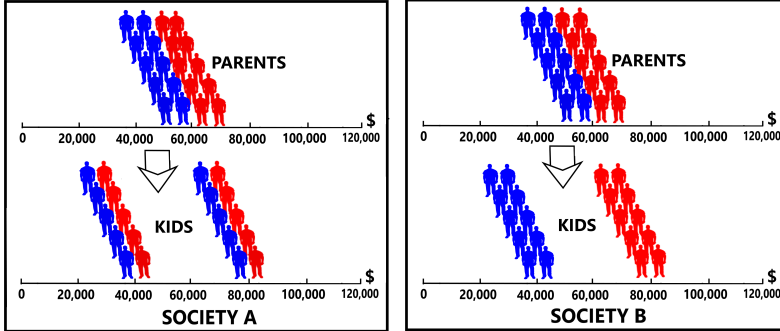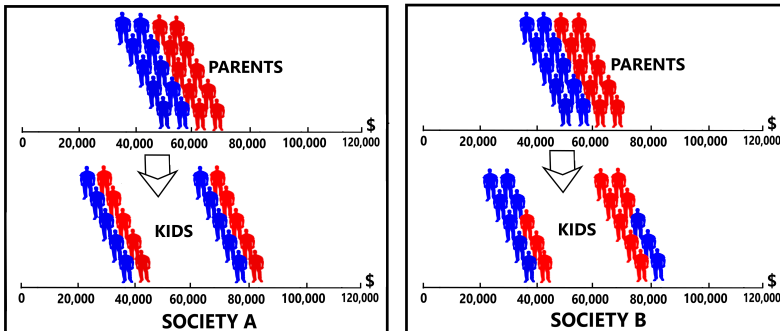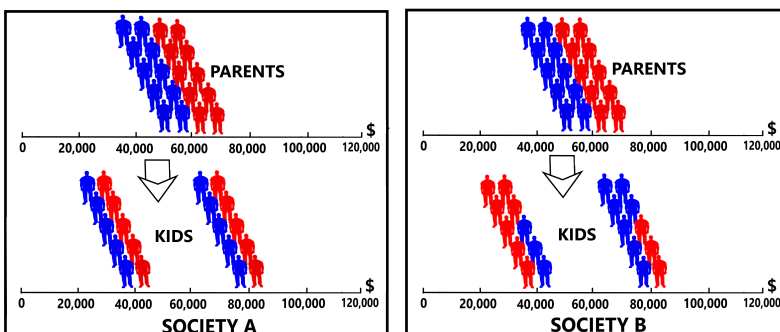
Choices		Questions
SOCIETY A	SOCIETY B	**Question 1:** *exante kids' opportunities*: Stochastic Independence in A, Perfect Immobility in B; *ex post kids' opportunities*: Stochastic Independence in A and B
SOCIETY A	SOCIETY B	**Question 2:** *exante kids' opportunities*: Stochastic Independence in A, Partial Immobility in B; *ex post kids' opportunities*: Stochastic Independence in A and B
SOCIETY A	SOCIETY B	**Question 3:** *exante kids' opportunities*: Stochastic Independence in A, Partial Reverse in B; *ex post kids' opportunities*: Stochastic Independence in A and B

Table 10

ferent levels of exchange mobility and alternative values of wealth inequality and fluctuation.

The aim of this part is to highlight the social aversion to wealth inequality

PART 4: Different mobility levels and different values of wealth inequality and fluctuation
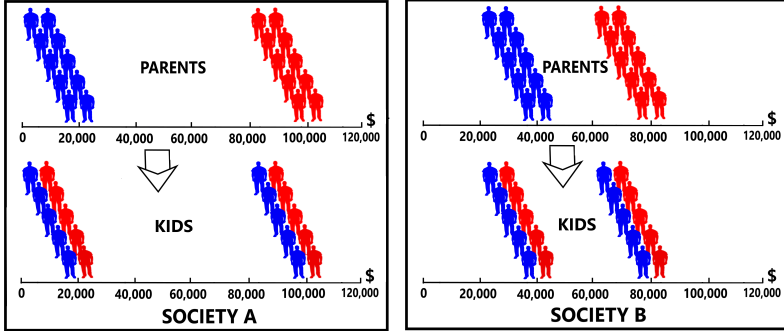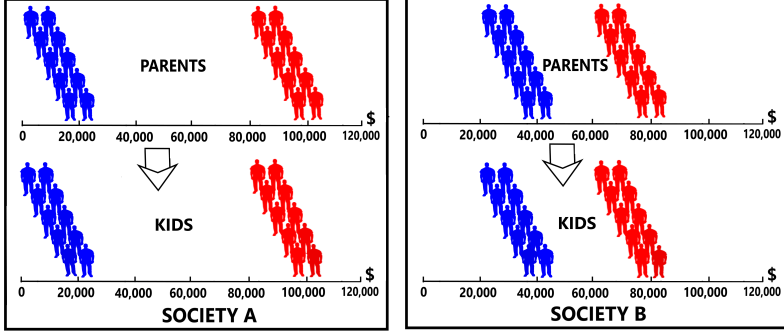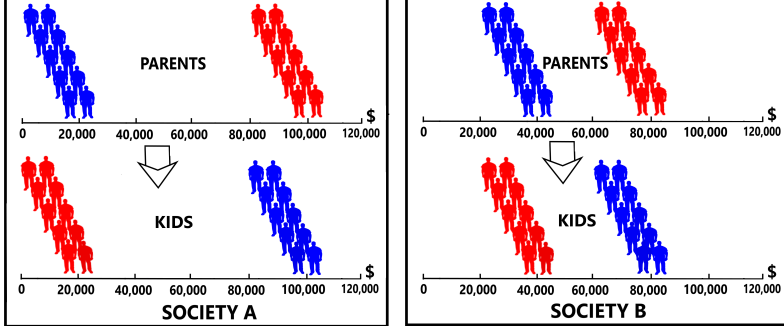
Choices		Questions
PARENTS 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **KIDS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **SOCIETY A**	**PARENTS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **KIDS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **SOCIETY B**	**Question 1:** Stochastic Independence in A and B; more wealth inequality and fluctuation between generations in A
PARENTS 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **KIDS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **SOCIETY A**	**PARENTS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **KIDS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **SOCIETY B**	**Question 2:** Perfect Immobility in A and B; higher wealth inequality in A; no wealth fluctuation between generations both in A and B
PARENTS 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **KIDS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **SOCIETY A**	**PARENTS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **KIDS** 0 20,000 40,000 60,000 80,000 100,000 120,000 $ **SOCIETY B**	**Question 3:** Complete Reverse in A and B; higher wealth fluctuation in A; no wealth inequality between generations both in A and B

Table 11

and fluctuations among generations per se. Indeed, in both societies of Question 2 there is no wealth fluctuations between the two generations, while the wealth inequality is higher in SOCIETY A than SOCIETY B. Vice versa, both societies in Question 3 are characterized by no wealth inequality between the two generations, while the wealth fluctuation in SOCIETY A is higher than SOCIETY B.

Therefore, if the external observer is adverse to both wealth fluctuation and inequality among generations, then he should prefer SOCIETY A in Questions 2,

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and 3 respectively.

A further goal of Part 4 is to highlight whether mobility as Stochastic Independence moderates the social aversions to wealth fluctuation and inequality among generations. Indeed, both societies in Question 1 are characterized by Stochastic Independence as exchange mobility level. Vice versa, both wealth inequality and fluctuation between the two generations are higher in the SOCIETY A than SOCIETY B.

Finally, the Table 12 shows the three social choices of the questionnaire Part 5. The aim of this part is twofold. First, we want to analyse the social preference between Perfect Immobility and Complete Reverse when the latter is characterized by high wealth fluctuation between generations (Question 1). Second, we investigate the social trade-off between mobility as Stochastic Independence and low wealth fluctuation (Question 2) and inequality (Question 3) between the two generations.

Therefore, Questions 2, and 3 highlight whether the external observer is willing to tolerate a high level of wealth fluctuation and inequality among generations in order to achieve Stochastic Independence. If this is the case, then the external observer should prefer SOCIETY B in Questions 2, and 3. Conversely, if aversions to wealth fluctuation and inequality among periods are more socially relevant than Stochastic Independence, then he should choose SOCIETY A in Questions 2, and 3 respectively.

5.2 Treatment 2: intergenerational mobility and natural ability

The Treatment 2 consists of three features. First, the object of the preferences is the mobility between two generations. Second, parents' wealth position is due to different levels of natural ability. Finally, the latter are transmitted genetically.

As emphasized in the previous section, in our experimental design the questionnaire introduction defines the treatments' features.

The first two parts of the introduction are exactly the same in Treatments 1 and 2: the definition of social preferences in our experimental design and the intergenerational mobility representation. Vice versa, the third part points out the difference between the two treatments. Indeed, the last part of the questionnaire introduction specifies the origin of wealth inequality.

Therefore, the Treatment 2 introduction ends with the following statement to the participants: "when giving your answers you have to consider that parents' natural abilities such as aptitude, talent, and skills determined their own wealth groups: rich parents in red and poor in blue. Indeed, parents in red are characterized by a high level of natural abilities, while parents in blue are characterized by

Part 5: low wealth fluctuation and inequality among generations versus equality of opportunity
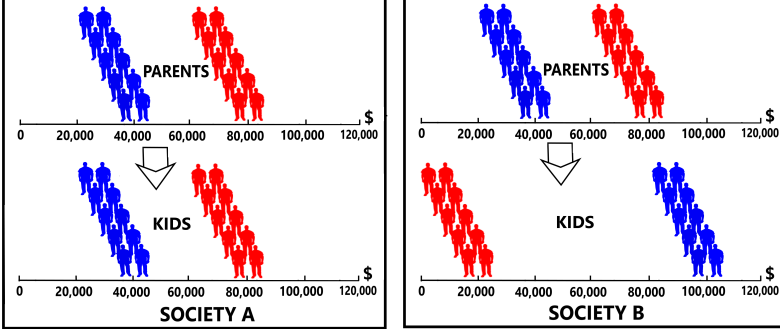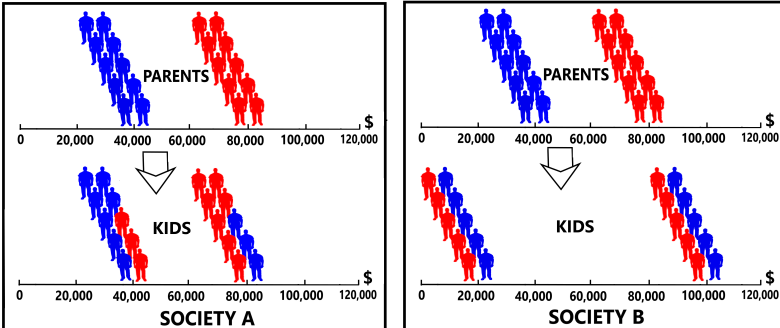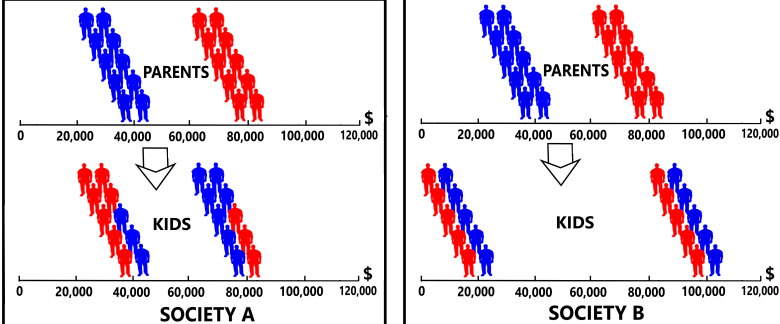
Choices		Questions
		Question 1: Perfect Immobility In A, Complete Reverse in B; more wealth fluctuation between generation in B; more wealth inequality between generations in A
		Question 2: Partial Immobility in A; Stochastic Independence in B; more wealth fluctuation and inequality between generations in B
		Question 3: Partial Reverse in A; Stochastic Independence in B; more wealth fluctuation and inequality between generations in B

Table 12

a low level of aptitude, talent, and skills. Furthermore, these natural abilities are transmitted genetically. Thus, kids who belong to red families are characterized by high aptitude, talent, and skills. Conversely, kids who belongs to blue families are characterized by a low level of natural abilities. Finally, people's wealth points out the net wealth after taxes and social transfers".

In terms of social choices the Treatment 1 and 2 are exactly the same. The questionnaire consists of the same five parts presented in the previous section: Part 1 (Table 8), Part 2 (Table 9), Part 3 (Table 10), Part 4(Table 11), and Part 5 (Table 12).

As emphasized in section 3 many scholars have underlined the relevance of different sources of wealth inequality in determining social preferences for redistribution. The aim of the second treatment of our experimental design is to highlight if the genetic transmission of natural ability among generations affects social preferences for mobility.

Therefore, if life chance and natural ability are perceived as equivalent mechanism to allocate wealth between generations then the social preferences express in Treatment 1 and 2 should be equivalent. Conversely, if wealth inequality between generations due to individuals' natural ability is perceived as fairer than life chance, then the external observer should prefer societies characterized by higher wealth immobility among generations in Treatment 2 than Treatment 1.

5.3   Treatment 3: intragenerational mobility and life chance

The Treatment 3 introduces a different scenario in terms of mobility. Indeed, in this treatment the object of social preferences is the wealth evolution between two periods of the same generation.

As in the previous two treatments, the questionnaire introduction illustrates the treatment features.

The first part of the introduction deals with the meaning of social preferences in our experimental design which is exactly the same in all treatments.

The second part of the introduction describes two important dimensions of the mobility process: how the wealth is distributed among periods and the way in which individuals' wealth position in the first period transfers to the second one. Furthermore, the second part explains how these mobility dimensions are represented in the questionnaire: Figure 3.

The informations embody in the Figure 3 are described to the participants in the following way: "the Figure (3) represents an hypothetical society composed by one generation who lives for two periods. The top line shows the people's wealth distribution in the first period, while the bottom line shows the people's wealth distribution in the second one. Moreover, people's wealth distribution in both periods is characterized by two groups: the rich and the poor. Finally, individuals who are rich in the first period are depicted in red, while individuals who are poor in the first period are depicted in blue".

Therefore, the Figure 3 illustrates to the subjects informations about the wealth distributions in each periods as well as the level of intragenerational mobility.
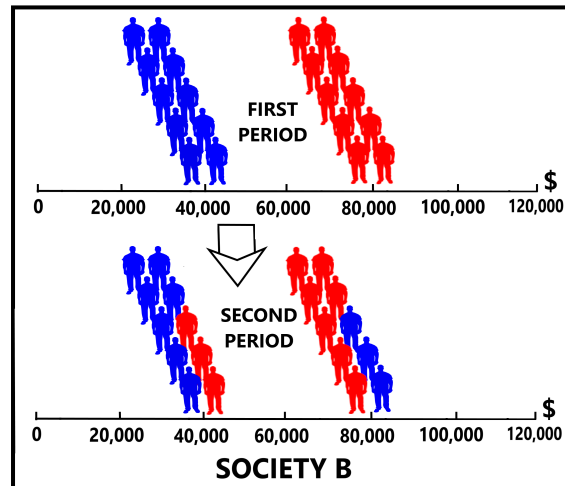
Figure 3

Indeed, the Figure 3 shows a society characterized by a level of exchange mobility between periods equal to Partial Immobility (Table 6(a)).

Finally, the third part of the introduction points out the Treatment 3 specification in term of the source of wealth inequality. Specifically, the introduction ends with the following statement to the participants: "when giving your answers you have to consider that only different life chances determined people's wealth groups in the first period: rich people in red and poor in blue. It means that people's wealth groups in the first period (rich or poor) do not depend on their natural abilities such as aptitude, talents, and skills. Indeed, in the societies that you are comparing people's natural abilities are randomly distributed among the 20 people. Finally, people's wealth points out the net wealth after taxes and social transfers".

As in the previous two treatments, subjects' social choices consist of five parts. Each part is composed by three comparisons between couple of society. Only in the first part there is an additional question.

Moreover, the Treatments 3 is composed by the five parts illustrated in Treatment 1 section: Table 8 (Part 1), Table 9 (Part 2), Table 10 (Part 3), Table 11 (Part 4), and Table 12 (Part 5).

As emphasized in section 2 the social desirability of mobility may chance moving from intergenerational to intragenerational scenario.

First, mobility as Stochastic independence may be less social appealing considering the wealth evolution of the same generation among periods. Thus, a first important purpose of this treatment is to analyse whether Stochastic Independence has the same social relevance in the two mobility scenarios.

Vice versa, the social aversion to wealth inequality among periods may be more relevant in this context than the intergenerational one. Indeed, the aversion to wealth inequality may be higher considering people lifetime than the wealth evolution among generations. In the same way, the aversion to wealth fluctuation may have a greater impact on social preferences in the intragenerational scenario than the intergenerational one. Indeed, the wealth reversal between periods may be perceived as riskier than the wealth reversal between generations.

The welfare predictions of equation (4) emphasized in Treatment 1 are equally valid in the intragenerational mobility scenario. Therefore, if the social aversion to wealth inequality among periods exceeds the aversion to wealth fluctuation then the external observer should prefer societies characterized by higher wealth reversal between the two periods. Conversely, if the social aversion to wealth fluctuation among periods exceeds the aversion to wealth inequality then the external observer should prefer societies characterized by high wealth immobility between the two periods.

Next, the aim of the Part 2 of Treatment 3 is to highlights whether the social relevance of Stochastic Independence as well the social aversions to wealth immobility and reversal among periods change when the mobility process is characterized by higher wealth inequality and fluctuation among periods.

Similarly, the Part 3 pinpoints the social value of the ex ante individuals' opportunities in the intragenerational mobility process.

In the questionnaire Part 4 we analyse the social aversions to wealth inequality and fluctuation among periods per se. Furthermore, we investigate whether mobility as Stochastic Independence mitigates both social aversions in the intragenerational mobility scenario.

Finally, the Part 5 highlights the social trade off between mobility as Stochastic Independence and low wealth inequality and fluctuation among periods.

5.4 Treatment 4: intragenerational mobility and natural ability

The Treatment 4 consists of two features. First the object of social preferences is the mobility between two periods of the same generations. Second, individuals' wealth position in the first period is due to their natural ability.

Therefore, the only experimental variable that changes between Treatment 3 and 4 is the source of wealth inequality. Thereby, the introduction of Treatment 4 ends with the following statement to the participants: "when giving your answers you have to consider that people' natural abilities such as aptitude, talent, and skills determined their wealth groups in the first period: rich people in red and poor in blue. Indeed, people in red are characterized by a high level of natural

abilities while people in blue are characterized by a low level of aptitude, talent, and skills. Finally, people's wealth points out the net wealth after taxes and social transfers".

The principal aim of Treatment 4 is to highlight whether the introduction of natural ability as source of wealth inequality affects the social preferences for intragenerational mobility.

Therefore, if life chance and natural ability are perceived as equivalent mechanism to allocate wealth between periods then the social preferences expressed in Treatment 3, and 4 should be equivalent. Conversely, if wealth inequality between periods due to individuals' natural ability is perceived as fairer than life chance, then the external observer should prefer societies characterized by higher wealth immobility among periods in Treatment 4 than Treatment 3.

6 The sample

The questionnaire was completed in January 2019 by 500 subjects. The latter were recruited by Amazon Mechanical Turk. They were from U.S. population.

The questionnaire includes three control questions. The latter were not correctly completed by 41 individuals. Thus, the final sample is composed by 459 subjects.

The 500 participants were randomly assigned to the four treatments. Table 13 summarizes the number of individuals that correctly completed each one.

	Number of Subjects
Treatment 1	128
Treatment 2	114
Treatment 3	108
Treatment 4	109

Table 13: Number of subjects that correctly completed each treatment

Subjects take on average 12 minutes to complete the questionnaire. The individuals' payment for completing the questionnaire was 1$. The latter corresponds to the minimum U.S.wage for hour. Furthermore, it represents the standard monetary reward in Amazon Mechanical Turk.

We summarize the demographic variables in three tables: Tables 14, 15, and

16.

	Mean	s.d.	Min.	Max.
Age	36.88	10.76	20	72

Table 14

The Table 14 shows the summary statistic related to the sample's age, while Table 15 specifies the demographics statistics related to gender, ethnicity and marital status. Finally, Table 16 pinpoints the sample's percentage regarding education and work status.

The second column of Table 15, and 16 shows the percentage of our sample, while the third one points out the same summary statistics of the American Life Panel (ALP) reported in Kutzmienco at al. (2015).

	MTurk Sample	American Life Panel
Gender	**Percentage**	
Female	44%	58%
Ethnicity	**Percentage**	
African American	7%	10%
Asian	7%	
Hispanic	4%	18%
White	82%	68%
Marital status	**Percentage**	
Single	49%	
Married or domestic part.	44%	60%
Divorced	7%	

Table 15

Our sample is characterized by younger individuals, with a higher proportion of male and white subjects than ALP. Moreover, our subjects have higher level of education and a lower level of unemployment. Specifically, there are no unemployed in our sample (this is because all subjects are MTurk workers), while the proportion

of unemployed in the ALP is 10 %.

	MTurk Sample	American Life Panel
Education	**Percentage**	
High School Diploma	56%	31%
Bachelor's Degree	33%	
Master's Degree	12%	
Work	**Percentage**	
Student	2%	
Employed	83%	56%
Out of Work	7%	
Other	8%	

Table 16

All in all, the sample of our study is a good proxy of the U.S population. Indeed, considering the main demographic variables, all proportion's differences are not higher than 15% compared to ALP. Furthermore, the data shown in Tables 14, 15, and 16 are in line with the sample summary statistics reported by Paolacci et al. (2014).

7 Results

7.1 Treatment 1

We show subjects' preferences in two different tables. The first one (Table 17) pinpoints the preferences expressed in the Parts 1,2,3,4, and 5 of the questionnaire. The second one (Table 18) deals with the Question 4 of the Part 1.

In the Table 17 the first column highlights the questionnaire parts and the associated questions. The second and the third one pinpoint the aggregate proportions of preferences expressed for "SOCIETY A" and "SOCIETY B" in each question. The fourth column shows the proportion of preferences for "Indifference" between the previous two choices. Finally, the fifth and sixth columns provide the value of two difference of proportion test: d and r. The d test is for the null hypothesis that preferences for SOCIETY A and SOCIETY B are equally distributed, that is $H_0 : p(A) = p(B) = \frac{1}{2}$. Vice versa, the r test is for the null hypothesis of aggregate

random answers, that is H_0: $p(A)=p(B)=p(I)=\frac{1}{3}$.

Treatment 1: Parts 1, 2, 3, 4, and 5

Part 1	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	38%	22%	40%	5.72**	7.60**
Question 2	19%	72%	9%	39.86***	87.25***
Question 3	13%	77%	10%	57.96***	111.85***
Part 2	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	27%	28%	45%	0.014	7.23**
Question 2	16%	75%	9%	49.79***	100.75***
Question 3	6%	84%	10%	85.22***	145.79***
Part 3	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	78%	11%	11%	64.00***	115.56***
Question 2	82%	9%	9%	72.96***	132.25***
Question 3	82%	11%	7%	69.58***	136.89***
Part 4	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	5%	81%	14%	83.78***	129.39***
Question 2	7%	79%	14%	76.94***	120.57***
Question 3	6%	79%	15%	79.34***	136.89***
Part 5	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	78%	15%	7%	55.13***	116.73**
Question 2	69%	30%	1%	19.84***	87.43***
Question 3	62%	31%	7%	12.78***	57.67***

Table 17: *,**,***, denote rejection at 10, 5, 1 % significance levels

Starting from the preferences expressed in the Part 1, the data seem to point out that subjects value exchange mobility. Indeed, they are not socially indifferent between the social choices presented in Part 1. In other word, the transition probabilities between wealth groups in the intergenerational mobility process are socially relevant.

Therefore, the predictions implied by equation (1) assuming not separable utility functions among generations do not seem to correspond to the preferences expressed by the subjects.

Next, assuming not separable utility functions among generations, we test the preferences predictions implied by equation (4) considering both conditions (2) and (3).

Specifically, if condition (2) holds then the aversion to wealth inequality among generations exceeds the aversion to wealth fluctuation. Accordingly, subjects should prefer societies characterized by higher levels of wealth reversal between the two generations. Thus, SOCIETY B in Question 1, SOCIETY B in Question 2, and SOCIETY A in Question 3.

Vice versa, if condition (3) holds then the aversion to wealth fluctuation among generations exceeds the aversion to wealth inequality. Thereby, the subjects should prefer societies characterized by higher wealth immobility between the two generations. Thus, SOCIETY A in Question 1, SOCIETY A in Question 2, and SOCIETY B in Question 3.

However, the data shown in Table 17 (Part 1) do not seem to confirm either of the preferences predictions implied by equation (4).

Moreover, the preferences expressed in the Part 1 point out the social appealing of mobility as Stochastic Independence. Indeed, in both Questions 2, and 3 there are higher preferences for SOCIETY B (Stochastic Independence) than SOCIETY A (Partial Immobility and Partial Reverse). The importance of mobility as Stochastic Independence is confirmed also from the analysis of preferences expressed in the Question 4 of Part 1 (Table 20) where the 48% of the subjects asses that mobility as Stochastic Independence is the preferred level of mobility.

Finally, there is a considerable number of subjects (40%) that are social indifference between Perfect Immobility and Complete Reverse. However, the value of the d test rejects the hypothesis of equal proportion of preferences between Perfect

Immobility and Complete Reverse in the Part 1.

Question 4: "Consider your preferred societies in each Question from 1 to 3, in which question is there you most preferred society?"

Question 4 (Part 1)	Preferences
Question 1	14%
Question 2	10%
Question 3	13%
Questions 1, and 2 are equally socially preferable	5%
Questions 1, and 3 are equally socially preferable	3%
Questions 2, and 3 are equally socially preferable	48%
Questions 1, 2, and 3 are equally socially preferable	7%

Table 18: Percentage of the preferences expressed in the Question 4 of Part 1

Moving from Part 1 to Part 2, subjects' preferences for Perfect Immobility (SOCIETY A in Question 1) decrease from 38% to 27%. Conversely, the preferences for Complete Reverse and Indifference increase by 5% and 6% respectively. Accordingly, the value of d test does not reject the hypothesis of equal proportion of preferences between Perfect Immobility and Complete Reverse in Question 1 of Part 2.

Moreover, the introduction of higher wealth fluctuation and inequality among generations does not seem to affect significantly the high social value of Stochastic Independence both in Questions 2, and 3. Indeed, equality of opportunity is still considerably preferred to Partial Immobility (SOCIETY B in Question 2), and Partial Rigidity (SOCIETY B in Question 3).

Therefore, in the second part of the questionnaire, subjects seem to be less prone to tolerate perfect immobility in the wealth evolution among generations when the mobility process is characterized by high wealth inequality and fluctuation. Vice versa, equality of opportunity seems to have high social value both in Parts 1, and 2.

Finally, subjects' social choices in the Questions 2, and 3 both of Part 1, and Part 2 seem to show that the aversions to wealth inequality and fluctuation among generations have not the same social relevance. In fact, subjects' preferences for Stochastic Independence are higher when compared to Partial Reverse (Question 3) than Partial Immobility (Question 2). Specifically, in the Part 1 the social preferences for Stochastic Independence increase from 72% to 77% moving from

Question 2 to Question 3. In the same way, in the Part 2 the social preferences for Stochastic Independence increase from 75% to 84% moving from Question 2 to Question 3. Therefore, it seems that subjects are less willing to tolerate wealth reversal than wealth immobility when both mobility levels are compared to Stochastic Independence.

The questionnaire Part 3 highlights the possible social relevance of the individuals' ex-ante wealth opportunities in the mobility process. Indeed, as reported in section 3, each pairwise comparison of this part consists of the same ex-post mobility structure and different ex-ante kids' wealth opportunities.

The subjects' social choices expressed in the Part 3 highlight that individuals' ex-ante wealth opportunities in the mobility process are socially relevant. In particular, the societies characterized by ex-ante equality of opportunity (SOCIETY A in Questions 1,2, and 3) are markedly preferred to the others ex-ante mobility levels presented in the Part 3: Complete Immobility (SOCIETY B in Question 1), Partial Immobility (SOCIETY B in Question 2), and Partial Rigidity (SOCIETY B in Question 3).

Therefore, the mobility analysis should always evaluate whether the mobility process consists of different ex-ante individuals' wealth opportunities within each wealth group available in the mobility structure. If this is the case, the observed frequencies of individuals in each cell of mobility tables (Table 1) and matrices (Table 2) may not pinpoint a socially relevant variable in terms of mobility evaluation: the ex-ante opportunities.

The preferences expressed in the Part 4 seem to confirm that the social aversions to wealth inequality and fluctuations among generations are socially important. Specifically, the preferences expressed in Question 2 confirm that subjects are adverse to wealth inequality among generations, while the preferences expressed in Question 3 highlight the social relevance of the aversion to wealth fluctuations among generations. Finally, the subjects' social choices in Question 1 pinpoint that mobility as Stochastic Independence does not moderate both social aversions. Indeed, the 81% of subjects prefer low wealth inequality and fluctuation (SOCIETY B) despite the mobility process is characterized by equality of opportunity in both SOCIETY A and SOCIETY B.

Finally, the preferences expressed in the Questions 2, and 3 of Part 5 point out that subjects are not willing to tolerate high wealth inequality and fluctuations among generations in order to achieve equality of opportunity as mobility level. In fact, subjects seem to prefer low wealth fluctuations (SOCIETY A in Question 2) and inequality (SOCIETY A in Question 3) among generations even if in both cases the mobility process is characterized by some form of rigidity (Partial Immobility in Question 2, and Partial Reverse in Question 3). In the same way, the preferences expressed in the Question 1 highlight that subjects are not willing to tolerate high

wealth fluctuation in order to achieve low wealth inequality among generation (SOCIETY B). Indeed, they prefer low wealth fluctuation associated with high wealth inequality among generations (SOCIETY A).

7.2 Treatment 2

The Treatment 2 introduces a different source of wealth inequality than the previous one. Indeed, in this treatment parents' wealth distribution is due to their own natural ability. Furthermore, this natural ability is transmitted genetically. Therefore, kids who belong to rich families are endowed with high talent, and skills, while kids who belong to poor families are characterized by low natural ability.

The Table 19 pinpoints subjects' preferences for the Parts 1,2,3,4, and 5 of the questionnaire, while the Table 20 shows the answers of the Question 4 of Part 1.

Firstly, the data of Part 1 (Table 19) confirm that subjects' value exchange mobility in the intergenerational mobility scenario. Furthermore, mobility as Stochastic Independence appears to be still the social preferred level of mobility (Table 20). Therefore, none of the predictions implied by equation (1), and (4) are consistent with subjects' social choices also in Treatment 2.

Moving from Part 1 to Part 2 there is still a 11% decreases of preferences for Perfect Immobility (SOCIETY A Question 1), while the preferences for "indifference" increases from 35% to 47%. Thereby, the value of d rejects the hypothesis of equal proportion of preferences between Perfect Immobility and Complete Reverse both in Part 1, and 2.

Therefore, the introduction of high wealth inequality and fluctuations decreases the social preferences for Perfect Immobility, while it does not alter the social relevance of Stochastic Independence.

The social choices in the Part 3 confirm that kids' ex-ante wealth opportunities in the mobility process are socially relevant. Indeed, the majority of subjects still prefer societies characterized by equality of opportunity as ex-ante mobility level

(SOCIETY A in Questions 1, 2, and 3).

Treatment 2: Parts 1, 2, 3, 4, and 5

Part 1	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	44%	21%	35%	9.13***	9.05**
Question 2	19%	70%	11%	32.98***	83.86***
Question 3	8%	83%	9%	71.11***	128.23***
Part 2	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	33%	20%	47%	3.26*	12.68***
Question 2	22%	65%	13%	25.00***	53.91***
Question 3	12%	77%	11%	53.68***	98.73***
Part 3	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	78%	12%	12%	60.84***	102.78***
Question 2	71%	20%	9%	32.34***	75.21***
Question 3	82%	8%	10%	70.14***	123.84***
Part 4	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	4%	83%	13%	83.64***	129.84***
Question 2	4%	84%	12%	84.64***	120.57***
Question 3	4%	84%	12%	81.99***	133.63***
Part 5	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	87%	5%	8%	82.37***	147.00***
Question 2	79%	16%	5%	40.00***	108.63***
Question 3	69%	22%	9%	28.03***	69.31***

Table 19: *,**,***, denote rejection at 10, 5, 1 % significance levels

Next, the preferences expressed in Part 4 confirm that subjects' are adverse both to wealth inequality (Question 2) and fluctuation among generations (Question 3). Moreover, mobility as Stochastic Independence does not moderate both social aversions (Question 1).

Finally, the social choices of Part 5 highlight that subjects seem to prefer

societies characterized by some form of rigidity in the mobility process associated with low wealth inequality (SOCIETY A in Question 2) and fluctuation among generations (SOCIETY A in Question 3) than societies characterized by equality of opportunity associated with high wealth inequality and fluctuation (SOCIETY B in Questions 2, and 3).

Question 4: "Consider your preferred societies in each Question from 1 to 3, in which question is there your most preferred society?"

Question 4 (Part 1)	Preferences
Question 1	15%
Question 2	9%
Question 3	15%
Questions 1, and 2 are equally socially preferable	3%
Questions 1, and 3 are equally socially preferable	2%
Questions 2, and 3 are equally socially preferable	42%
Questions 1, 2, and 3 are equally socially preferable	14%

Table 20: Percentage of the preferences expressed in the Question 4 of Part 1

In order to test properly the difference between Treatments 1, and 2, we run a chi-square test of homogeneity (χ^2) for each part of the questionnaire. The null hypothesis for this test is that answers in Treatments 1, and 2 can be viewed as if draw from the same population.

In Table 21 we report the questions and the related part for which the difference between Treatments 1, and 2 is statistically significant (the remaining parts are reported in the appendix).

The data in Table 21 seem to show that the introduction of natural ability as source of wealth inequality determines an increase of preferences for Partial Immobility as ex-ante mobility level by 11% (Question 2 in Part 3). Moreover, subjects' preferences for Perfect Immobility (Question 1 in Part 5) and Partial

Immobility (Questions 2 in Part 5) increase by 9% and 10% respectively .

Treatment 1 and 2: Questions (Parts) in which subjects' preferences are statistically different.

Question 2 (Part 3)	SOCIETY A	SOCIETY B	Indif.	χ^2
Treatment 1	82%	9%	9%	5.7*
Treatment 2	71%	20%	9%	
Question 1 (Part 5)	SOCIETY A	SOCIETY B	Indif.	χ^2
Treatment 1	78%	15%	7%	5.97**
Treatment 2	87%	5%	8%	
Question 2 (Part 5)	SOCIETY A	SOCIETY B	Indif.	χ^2
Treatment 1	69%	30%	1%	8.38**
Treatment 2	79%	16%	5%	

Table 21: *,**,***, denote rejection at 10, 5, 1 % significance levels

The direction of these effects seems to highlights that people endowed with high innate ability should have higher probability to remain in the high wealth group than people endowed with low talent, and skills. Indeed the data in Table 21 point out the higher proportion of preferences for immobility in the wealth evolution among generations (both in terms of Perfect Immobility and Partial Immobility) at least in three questions of Treatment 2 than Treatment 1.

7.3   Treatment 3

The Treatment 3 consists of two features. First the object of the social choices is the mobility between two periods of the same generation. Second, the wealth inequality is due only to life chance.

As in the previous treatments, we report subjects' preferences in two tables.

Treatment 3: Parts 1, 2, 3, 4, and 5

Part 1	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	37%	28%	35%	1.42	1.55
Question 2	24%	68%	8%	22.31***	61.05***
Question 3	12%	79%	9%	52.89***	100.16***
Part 2	**SOCIETY A**	**SOCIETY B**	**Indif.**	d	r
Question 1	27%	31%	42%	0.39	3.72
Question 2	21%	65%	14%	23.75***	49.05***
Question 3	15%	71%	14%	40.01***	70.05***
Part 3	**SOCIETY A**	**SOCIETY B**	**Indif.**	d	r
Question 1	71%	13%	16%	43.61***	70.16***
Question 2	78%	11%	11%	54.00***	96.00***
Question 3	79%	9%	12%	59.21***	100.16***
Part 4	**SOCIETY A**	**SOCIETY B**	**Indif.**	d	r
Question 1	5%	80%	15%	69.56***	105.55***
Question 2	4%	80%	16%	75.60***	110.72***
Question 3	2%	79%	19%	79.18***	105.05***
Part 5	**SOCIETY A**	**SOCIETY B**	**Indif.**	d	r
Question 1	82%	10%	8%	59.88***	112.72***
Question 2	76%	19%	4%	36.12***	91.72***
Question 3	70%	25%	5%	23.31***	79.18***

Table 22: *,**,***, denote rejection at 10, 5, 1 % significance levels

The preferences expressed in the Part 1 (Table 22) seem to show that subjects value exchange mobility also in the intragenerational mobility scenario. In other words, the transition probabilities between wealth groups are socially relevant also when considering the wealth evolution among periods.

Therefore, the predictions implied by equation (1) assuming not separable util-

ity functions among periods do not seem to correspond to subjects' preferences.

Next, considering the welfare specification in (4) none of the preferences predictions implied both by condition (2) and (3) is consistent with the subjects' social choices in Part 1. Therefore, also in the intragenerational mobility scenario, the social preferences for mobility seem to be not primarily determined by aversions to wealth inequality and fluctuation among periods.

Furthermore, subjects' preferences in the first part seem to highlight the social importance of equality of opportunity also when considering the wealth evolution among periods. Indeed, the 68% of subjects prefer Stochastic Independence than Partial Immobility in Question 2 (SOCIETY B), while the 79% of subjects still prefer Stochastic Independence than Partial Reverse (SOCIETY B) in Question 3.

Moving from Part 1 to Part 2, the introduction of high wealth inequality and fluctuation among periods determines lower preferences for Perfect Immobility (SOCIETY A in Question 1), while mobility as Stochastic Independence has still high social value (SOCIETY B in Questions 2, and 3). Moreover, in Parts 1, and 2 the value of the d test does reject the hypothesis of equal proportion of preferences between Perfect Immobility and Complete Reverse. Finally, both in Part 1, and 2 subjects' preferences for Stochastic Independence is higher when compared to Partial Reverse (SOCIETY A in Question 3) than Partial Immobility (SOCIETY A in Question 2).

Therefore, the analysis of the Parts 1, and 2 point out that the principal aim of the intragenerational mobility process seems to be guarantee equality of opportunity in the wealth evolution rather than decrease the wealth inequality among periods. The same consideration holds considering the reduction of the wealth

fluctuations among periods through the intragenerational mobility process.

Question 4: " Consider your preferred societies in each Question from 1 to 3, in which question is there you most preferred society?"

Question 4 (Part 1)	Preferences
Question 1	22%
Question 2	11%
Question 3	11%
Questions 1, and 2 are equally socially preferable	3%
Questions 1, and 3 are equally socially preferable	0%
Questions 2, and 3 are equally socially preferable	42%
Questions 1, 2, and 3 are equally socially preferable	12%

Table 23: Percentage of the preferences expressed in the Question 4 of Part 1

Next, subjects' preferences in the Part 3 pinpoint the relevance of the individuals' ex-ante wealth opportunities also in the intragenerational mobility scenario. Indeed, the societies characterized by ex-ante equality of opportunity in the mobility process (SOCIETY A in Questions 1,2, and 3) are largely preferred to the others ex-ante wealth opportunities (SOCIETY B in Questions 1, 2, and 3).

The preferences expressed in the Part 4 highlight that the aversions to wealth fluctuation (Question 2) and wealth inequality among periods (Question 3) are socially relevant also in the intragenerational mobility scenario. Furthermore, subjects' social choices in Question 1 emphasize that mobility as Stochastic Independence does not moderate both social aversions. In fact, the 81% of subjects prefer low wealth inequality and fluctuation (SOCIETY B) despite the wealth evolution among periods is characterized by equality of opportunity in both SOCIETY A, and SOCIETY B.

Finally, the social choices of Part 5 pinpoint that subjects are not willing to tolerate high wealth fluctuation (Question 2) and inequality (Question 3) among periods in order to achieve equality of opportunities in the wealth evolution. In fact, they prefer some level of rigidity in the mobility process associated with low wealth inequality and fluctuation (SOCIETY A in Questions 2, and 3) rather than equality of opportunities associated to high wealth inequality and fluctuation (SOCIETY B in Questions 2, and 3). In the same way, subjects are not willing to tolerate high wealth fluctuations in order to achieve low wealth inequality among periods (SOCIETY B in Question 1).

In order to test properly the difference between Treatments 1, and 3, we run a chi-square test of homogeneity (χ^2) for each part of the questionnaire. In the Table 24 we show the questions for which the difference between the two treatments is statistically significant (the remaining parts are reported in the appendix).

Treatments 1 and 3: Questions (Parts) in which subjects' preferences are statistically different

Question 3 **(Part 1)**	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	6%	84%	10%	6.04**
Treatment 3	15%	71%	14%	
Question 2 **(Part 5)**	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	69%	30%	1%	4.73*
Treatment 3	76%	19%	4%	

Table 24: *,**,***, denote rejection at 10, 5, 1 % significance levels

The data in Table 24 seem to point out that there is a lower proportion of preferences for Stochastic Independence (SOCIETY B in Question 3) in the intragenerational mobility scenario than the intergenerational one when equality of opportunity is compared with Partial Reverse. Moreover, the difference between Treatments 1, and 3 in the Question 2 (Part 5) seems to go in the same direction. Specifically, in the Treatment 3 there is a lower proportion of preferences for Stochastic Independence associated with high wealth inequality and fluctuation (SOCIETY B in Question 2) than Partial Immobility associated with low inequality and fluctuation (SOCIETY A in Question 2).

Therefore, the introduction of intragenerational mobility scenario seems to decrease the social value of Stochastic Independence at lest in two questions of the questionnaire.

7.4 Treatment 4

The Treatment 4 is characterized by two features. First the object of the analysis is the mobility between two periods of the same generation. Second, the wealth inequality in the first period is due to individuals' natural ability.

Treatments 4: Parts 1, 2, 3, 4, and 5

Part 1	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	40%	32%	28%	1.02	2.77
Question 2	31%	61%	8%	10.24***	44.93***
Question 3	15%	76%	9%	45.34***	90.40***
Part 2	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	27%	35%	38%	0.94	1.77
Question 2	21%	62%	17%	22.25***	41.74***
Question 3	12%	80%	8%	44.59***	70.05***
Part 3	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	76%	9%	15%	57.30***	90.40***
Question 2	68%	16%	16%	34.08***	58.58***
Question 3	73%	13%	14%	46.34***	78.73***
Part 4	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	5%	90%	5%	80.39***	105.55***
Question 2	2%	89%	9%	91.16***	110.72***
Question 3	4%	88%	8%	84.64***	105.05***
Part 5	SOCIETY A	SOCIETY B	Indif.	d	r
Question 1	81%	13%	6%	53.68***	110.88***
Question 2	72%	23%	5%	27.27***	76.64***
Question 3	73%	19%	8%	33.64***	77.13***

Table 25: *,**,***, denote rejection at 10, 5, 1 % significance levels

Firstly, the analysis of the Parts 1 (Table 25) confirms that subjects value exchange mobility in the intragenerational mobility scenario. Moreover, mobility

as Stochastic Independence (SOCIETY B in Questions 2, and 3) is still preferred to Partial Immobility (SOCIETY A in Question 2) and Partial Reverse (SOCIETY B in Question 3). Nevertheless, the Part 1 is characterized by a high proportion of preferences for Partial Immobility (31%).

Therefore, none of the preferences predictions implied by equations (1) and (4) is consistent with the subjects' social choices in the Part 1.

Moving from Part 1 to Part 2, the introduction of high wealth inequality and fluctuations among periods determines both lower preferences for Perfect Immobility and for Partial Immobility by 13% and 10% respectively. Furthermore, subjects' social choices in the Parts 1, and 2 seem to confirm the asymmetric aversion to wealth inequality and fluctuations. Specifically, the preferences for Stochastic Independence in the Part 1 increase from 61% to 76% when compared to Partial Immobility than Partial Reverse. Subjects' preferences in the Part 2 go in the same direction. Finally, the value of d test does not rejects the hypothesis that Perfect Immobility and Complete Reverse in Question 1 are equally socially preferred both in Part 1, and 2.

The analysis of the subjects' preferences in the Parts 3, 4, and 5 confirms the social choices of the previous treatments. Specifically, the ex-ante wealth opportunities in the mobility process are socially relevant (PART 3). Furthermore, subjects' are adverse to both wealth inequality and fluctuation among periods, while they still prefer low wealth inequality and fluctuations also when both mobility processes are characterized by equality of opportunity (Part 4). Finally, subjects prefer some form of rigidity in the mobility process associated with low wealth inequality and fluctuation than equality of opportunity associated to high

wealth inequality and fluctuation among periods (Part 5).

Question 4: "Consider your preferred societies in each Question from 1 to 3, in which question is there your most preferred society?"

Question 4 (Part 1)	Preferences
Question 1	16%
Question 2	18%
Question 3	17%
Questions 1, and 2 are equally socially preferable	4%
Questions 1, and 3 are equally socially preferable	2%
Questions 2, and 3 are equally socially preferable	32%
Questions 1, 2, and 3 are equally socially preferable	11%

Table 26: Percentage of the preferences expressed in the Question 4 of Part 1

In order to highlights the differences between the last treatment and the previous one, we run a chi-test of homogeneity (χ^2) between Treatments 3, and 4 (Table 27), Treatment 2, and 4 (Table 28), and Treatments 1, and 4 (Table 29).

The Table 27 shows the parts of the questionnaire for which the hypothesis of homogeneity between Treatments 3, and 4 is rejected.

Treatments 3 and 4: Questions (Parts) in which subjects' preferences are statistically different

Question 1 **(Part 4)**	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 3	5%	80%	15%	5.20*
Treatment 4	5%	90%	5%	
Question 3 **(Part 4)**	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	2%	79%	19%	6.13*
Treatment 4	4%	88%	8%	

Table 27: *,**,***, denote rejection at 10, 5, 1 % significance levels

The introduction of natural ability as source of wealth inequality in the intragenerational mobility scenario seems to increase the social aversion to wealth inequality and fluctuation among periods when both mobility process are charac-

terized by Stochastic Independence (SOCIETY B in Question 1).

Moreover, the proportion of preferences for Stochastic Independence (SOCIETY A in Question 3) increases by 9% when compared to Partial Rigidity (SOCIETY B in Question 3) between Treatment 3, and 4. The latter results seems to highlight the higher aversion for wealth fluctuation among periods when the wealth inequality is due to natural ability at lest in the Part 4 of the questionnaire.

The Table 28 shows the only question for which the hypothesis of homogeneity between Treatments 2, and 4 is rejected. The data highlight that, given the same source of wealth inequality (natural ability), the preferences for Complete Reverse (SOCIETY B) in the second part of the questionnaire increases by 15% moving to intergenerational mobility scenario to intragenerational one. At the same time, there is a decrease of preferences both for Perfect Immobility (by 6%) and Indifference (9%).

Treatments 2 and 4: Questions (Parts) in which subjects' preferences are statistically different

Question 1 **(Part 2)**	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 2	33%	20%	47%	6.80**
Treatment 4	27%	35%	38%	

Table 28: *,**,***, denote rejection at 10, 5, 1 % significance levels

Finally, the Table 29 shows the parts of the questionnaire for which the hypothesis of homogeneity between Treatments 1, and 4 is rejected. However, the difference between these two treatments results from the variation of two experimental variables. In fact, Treatment 1 consists of intergenerational mobility and life chance, while Treatment 4 consists of intragenerational mobility and natural ability. Therefore, the differences emphasized in Table 29 may be the sum of two experimental variables: the mobility scenario and the origin of wealth inequality.

Starting from the Question 1 of Part 1 (Table 29), the Treatment 4 is characterized by higher preferences for Complete Reverse (SOCIETY B in Question 1) than Treatment 1. At the same time there is a lower proportion of preferences for Indifference between the two treatments. This result seems to be due to the intragenerational mobility scenario. Indeed the proportion of preferences for Complete Reverse do not change moving from Treatment 1 to Treatment 2. Conversely, the subjects' preferences for Complete Reverse increases by 6% moving from Treatment 1 to Treatment 3, and by 11% between Treatments 2, and 4. Moreover, the data emphasized in Table 28 highlight the same result considering subjects' preferences in the Part 2.

Next, the data regarding Question 2 of Part 1 point out the higher propor-

tion of preferences for Partial Immobility (SOCIETY A) in the Treatment 4 than Treatment 1. This latter result seems to be due to the sum of two experimental variables: the intragenerational mobility scenario and natural ability as source of wealth inequality. Indeed, the data in Tables 17 show that subjects' preferences for Partial Immobility (SOCIETY A in Question 2, Part 1) do not change moving from Treatment 1 to Treatment 2. Vice versa, subjects' preferences for Partial Immobility increases by 5% between Treatment 1, and 3 (Table 19) and by a further 6% moving from Treatment 3 to Treatment 4 (Table 22).

Moving from Part 1 to Part 2, the differences in Questions 2, and 3 between Treatment 1, and 4 seem to be due to the low proportion of preferences for Partial Immobility (SOCIETY A in Question 2) and Partial Reverse (SOCIETY A in Question 3) in the Treatment 1. In fact, the proportion of preferences for Partial Immobility is 22% in Treatment 2, 21% in Treatment 3, and 21% in Treatment 4. In the same way, the proportion of preferences for Partial Immobility is 12% in Treatment 2, 15% in Treatment 3, and 12% in Treatment 4.

Moreover, the higher proportion of preferences for Partial Immobility in the Part 3 between Treatments 4 and 1 seems to be due to the origin of wealth inequality. Indeed, subjects' preferences for Partial Immobility as ex-ante mobility level increases by 9% moving from Treatment 1 to Treatment 2. Furthermore, this difference is statistically significant (Table 21). In the same way the, subjects' preferences for Partial Immobility increases by 10% between Treatments 3, and 4. Conversely, the same preferences do not change substantially between Treatments 1, and 3 as well as between Treatments 2, and 4.

Finally, the Table 29 shows the differences between Treatments 1, and 4 considering subjects' social choices in the questionnaire Part 4. Starting from the Question 1, the higher proportion of preferences for Stochastic Independence in Treatment 4 than Treatment 1 is mainly driven by natural ability as source of wealth inequality in the intragenerational mobility scenario. Indeed, subjects' preferences for equality of opportunity do not change fundamentally between Treatment 1, and 2. Vice versa, the difference between treatment 3, and 4 is statistically significant (Table 27).

The same consideration holds also for the higher proportion of preferences for Stochastic Independence in the Question 2 of Part 4. Specifically, preferences for equality of opportunity increase from 79% to 84% moving from Treatment 1 to Treatment 2. Moreover, the same preferences increase from 80% to 89% between

Treatments 3, and 4.

Treatments 1 and 4: Questions (Parts) in which subjects' preferences are statistically different

Question 1 (**Part 1**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	38%	22%	40%	5.00*
Treatment 4	40%	32%	28%	
Question 2 (**Part 1**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	19%	72%	9%	4.93*
Treatment 4	31%	61%	8%	
Question 2 (**Part 2**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	16%	75%	9%	4.69*
Treatment 4	21%	62%	17%	
Question 3 (**Part 2**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	6%	84%	10%	6.44**
Treatment 4	12%	80%	18%	
Question 2 (**Part 3**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	81%	10%	9%	5.63*
Treatment 4	68%	16%	16%	
Question 1 (**Part 4**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	6%	80%	14%	4.76*
Treatment 4	5%	90%	5%	
Question 2 (**Part 4**)	**SOCIETY A**	**SOCIETY B**	**Indif.**	χ^2
Treatment 1	7%	79%	14%	5.33**
Treatment 4	2%	89%	9%	

Table 29: *,**,***, denote rejection at 10, 5, 1 % significance levels

To sum-up, the between treatments analysis highlight three important results. First, the origin of wealth inequality seems to affect differently subjects' preferences in the two mobility scenarios. Specifically, in the intergenerational mobility

one it determines lower preferences for equality of opportunity when the latter is characterized by high wealth inequality and fluctuation. Vice versa, in the intragenerational scenario, it implies higher aversion to both inequality and fluctuation among periods when the mobility process is characterized by equality of opportunity.

However, both in the intergenerational mobility scenario and intragenerational one, there is a higher proportion of preferences for some form of rigidity in the mobility process when the latter are characterized by inequality due to individuals' natural ability both in terms of ex-ante and ex-post opportunities.

Second, the intragenerational mobility scenario is characterized by lower aversion to wealth reversal among periods (generations) than the intergenerational one. This results holds independently from the origin of wealth inequality.

Finally, the high social value of Stochastic Independence does not change substantially between the four treatments.

8   Final remarks

Subjects' preferences in our questionnaire experiment highlight several important results regarding mobility evaluation.

First of all, mobility as Stochastic Independence has high social value both in the intergenerational mobility scenario and in the intragenerational one. Therefore, equality of opportunity seems to be an important social goal both considering the wealth evolution among generations and periods.

However, subjects are not willing to tolerate high levels of wealth inequality and fluctuation among generations (periods) in order to achieve equality of opportunity in the wealth evolution among generations (periods). Indeed, they prefer some form of rigidity in the mobility process associated to low wealth inequality and fluctuation rather than equality of opportunity associated to high wealth inequality and fluctuation.

Furthermore, individuals' ex-ante wealth opportunities in the mobility process are socially important. Specifically, equality of opportunity has high social value also when considering the ex-ante individuals' wealth opportunities within each wealth group available in the mobility process. Thereby, we should be careful in the social analysis of mobility based on both mobility tables and matrices if individuals face different ex-ante wealth opportunities in the mobility process.

Finally, the introduction of natural ability as source of wealth inequality seems to affect differently subjects' preferences in the two mobility scenarios. Specifically, in the intergenerational mobility scenario it determines lower preferences for equality of opportunity when the latter is characterized by high wealth inequality and fluctuation. Vice versa, in the intragenerational one, it implies higher aver-

sion to both inequality aversion and fluctuation among periods when the mobility process is characterized by equality of opportunity.

Although our questionnaire does not involve explicitly policy issues, our results point out some interesting insights in terms of public policy debate.

Firstly, the high social value of equality of opportunity pinpoints the importance of ex-ante public policy. Specifically, the government should mitigate the role played by variables that are behind individuals' control in determining their wealth position such as parents' wealth group, and family background. In this view a primary important social goal seems to be the redistribution of the wealth opportunities in the mobility process.

However, contrary to Kruger (2012) observation, we can not forget about the ex-post wealth distribution. Indeed, even if the wealth evolution among generations (periods) is characterized by equality of opportunity, people are still socially adverse to high wealth inequality and fluctuation among generations (periods). Therefore, accordingly to our results it seems that there is room for government intervention also considering the ex-post wealth redistribution.

Finally, the questionnaire approach represents a valuable tool to empirically investigate fairness principles and ethical norms. Specifically, it defines an optimal setting to analyse people's social concern about wealth inequality and mobility. While the former has been largely investigated by the economic literature, the latter represents a more complicated issue because of its multifaceted nature.

The present work adds new pieces of evidence regarding the social relevance of the mobility process. However, it is important to further investigate other mobility dimensions such as people's mobility perception. Moreover, it may be interesting to extend the analysis to other countries in order to emphasize the possible role played by cultural dimensions in determining people's social preferences for mobility.

9 Appendix

9.1 Chi squared test of homogeneity: Treatments 1-2

Question 1(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	38%	22%	40%	0.8
Treatment 2	44%	21%	35%	
Question 2(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	19%	72%	9%	0.11
Treatment 2	19%	70%	11%	
Question 3(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	13%	77%	10%	1.9
Treatment 2	8%	83%	9%	
Question 1 (**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	27%	28%	45%	2.19
Treatment 2	33%	20%	47%	
Question 2 (**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	16%	75%	9%	2.93
Treatment 2	22%	65%	13%	
Question 3(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	84%	10%	2.72
Treatment 2	12%	77%	11%	
Question 1 (**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	78%	11%	11%	0.19
Treatment 2	78%	12%	12%	
Question 2 (**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	82%	9%	9%	5.7*
Treatment 2	71%	20%	9%	
Question 3 (**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	82%	11%	7%	1.08
Treatment 2	82%	8%	10%	

Table 30

Question 1 (**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	5%	81%	14%	0.60
Treatment 2	4%	83%	13%	
Question 2(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	7%	79%	14%	1.74
Treatment 2	4%	84%	12%	
Question 3(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	79%	15%	1.13
Treatment 2	4%	84%	12%	
Question 1 (**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	78%	15%	7%	5.97**
Treatment 2	87%	5%	8%	
Question 2 (**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	69%	30%	1%	8.38**
Treatment 2	79%	16%	5%	
Question 3 (**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	62%	31%	7%	2.7
Treatment 2	69%	22%	9%	

Table 31

9.2 Chi squared test of homogeneity: Treatments 1-3

Question 1 (**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	38%	22%	40%	1.19
Treatment 3	37%	28%	35%	
Question 2 (**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	19%	72%	9%	1.00
Treatment 3	24%	68%	8%	
Question 3 (**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	13%	77%	10%	0.08
Treatment 3	12%	79%	9%	
Question 1 (**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	27%	28%	45%	0.33
Treatment 3	27%	31%	42%	
Question 2 (**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	16%	75%	9%	2.94
Treatment 3	21%	65%	14%	
Question 3(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	84%	10%	6.04**
Treatment 3	15%	71%	14%	
Question 1(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	78%	11%	11%	1.59
Treatment 3	71%	13%	16%	
Question 2(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	82%	9%	9%	0.43
Treatment 3	78%	11%	11%	
Question 3(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	82%	11%	7%	1.81
Treatment 3	79%	9%	12%	

Table 32

Question 1(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	5%	81%	14%	0.02
Treatment 3	5%	80%	15%	
Question 2 (**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	7%	79%	14%	1.30
Treatment 3	4%	80%	16%	
Question 3(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	79%	15%	3.40
Treatment 3	2%	79%	19%	
Question 1(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	78%	15%	7%	1.21
Treatment 3	82%	10%	8%	
Question 2(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	69%	30%	1%	4.73*
Treatment 3	76%	19%	4%	
Question 3(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	62%	31%	7%	2.04
Treatment 3	70%	25%	5%	

Table 33

9.3 Chi squared test of homogeneity: Treatments 3-4

Question 1(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	37%	28%	35%	1.51
Treatment 4	40%	32%	28%	
Question 2(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	24%	68%	8%	1.41
Treatment 4	31%	61%	8%	
Question 3(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	12%	79%	9%	0.32
Treatment 4	15%	76%	9%	
Question 1(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	27%	31%	42%	0.42
Treatment 4	27%	35%	38%	
Question 2(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	21%	65%	14%	0.29
Treatment 4	21%	62%	17%	41.74***
Question 3(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	15%	71%	14%	1.02
Treatment 4	12%	80%	18%	
Question 1(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	71%	13%	16%	0.91
Treatment 4	76%	9%	15%	
Question 2(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	78%	11%	11%	2.69
Treatment 4	68%	16%	16%	
Question 3(**Part 3c**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	79%	9%	12%	0.95
Treatment 4	73%	13%	14%	

Table 34

Question 1(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	5%	80%	15%	5.20*
Treatment 4	5%	90%	5%	
Question 2(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	4%	80%	16%	3.02
Treatment 4	2%	89%	9%	
Question 3(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	2%	79%	19%	6.13**
Treatment 4	4%	88%	8%	
Question 1(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	82%	10%	8%	0.60
Treatment 4	81%	13%	6%	
Question 2 (**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	76%	19%	4%	0.53
Treatment 4	72%	23%	5%	
Question 3(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 3	70%	25%	5%	1.94
Treatment 4	73%	19%	8%	

Table 35

9.4 Chi squared test of homogeneity: Treatments 2-4

Question 1(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	44%	21%	35%	3.75
Treatment 4	40%	32%	28%	
Question 2 (**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	19%	70%	11%	4.23
Treatment 4	31%	61%	8%	
Question 3(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	8%	83%	9%	2.65
Treatment 4	15%	76%	9%	
Question 1(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	33%	20%	47%	6.8**
Treatment 4	27%	35%	38%	
Question 2(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	22%	65%	13%	0.49
Treatment 4	21%	62%	17%	
Question 3(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	12%	77%	11%	2.80
Treatment 4	12%	80%	18%	
Question 1(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	78%	12%	12%	0.27
Treatment 4	76%	9%	15%	
Question 2 (**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	71%	20%	9%	2.62
Treatment 4	68%	16%	16%	
Question 3(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	82%	8%	10%	2.7
Treatment 4	73%	13%	14%	

Table 36

Question 1(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	4%	83%	13%	4.16
Treatment 4	5%	90%	5%	
Question 2 (**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	4%	84%	12%	1.22
Treatment 4	2%	89%	9%	
Question 3(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	4%	84%	12%	0.72
Treatment 4	4%	88%	8%	
Question 1(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	87%	5%	8%	3.98
Treatment 4	81%	13%	6%	
Question 2 (**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	79%	16%	5%	1.88
Treatment 4	72%	23%	5%	
Question 3(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 2	69%	22%	9%	0.28
Treatment 4	73%	19%	8%	

Table 37

9.5   Chi squared test of homogeneity: Treatments 1-4

Question 1(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	38%	22%	40%	5.00*
Treatment 4	40%	32%	28%	
Question 2(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	19%	72%	9%	4.93*
Treatment 4	31%	61%	8%	
Question 3(**Part 1**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	13%	77%	10%	0.096
Treatment 4	15%	76%	9%	
Question 1(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	27%	28%	45%	1.53
Treatment 4	27%	35%	38%	
Question 2 (**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	16%	75%	9%	4.69*
Treatment 4	21%	62%	17%	
Question 3(**Part 2**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	84%	10%	6.44**
Treatment 4	12%	80%	18%	
Question 1(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	78%	11%	11%	0.86
Treatment 4	76%	9%	15%	
Question 2(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	81%	10%	9%	5.63*
Treatment 4	68%	16%	16%	
Question 3(**Part 3**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	82%	11%	7%	3.376
Treatment 4	73%	13%	14%	

Table 38

Question 1(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	80%	14%	4.76*
Treatment 4	5%	90%	5%	
Question 2(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	7%	79%	14%	5.33*
Treatment 4	2%	89%	9%	
Question 3(**Part 4**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	6%	79%	15%	3.53
Treatment 4	4%	88%	8%	
Question 1(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	78%	15%	7%	0.25
Treatment 4	81%	13%	6%	
Question 2 (**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	69%	29%	2%	3.78
Treatment 4	72%	23%	5%	
Question 3(**Part 5**)	SOCIETY A	SOCIETY B	Indifference	χ^2
Treatment 1	62%	31%	7%	4.42
Treatment 4	73%	19%	8%	

Table 39

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