Siep
XIII CONFERENZA

STATO O MERCATO?
Intervento pubblico e architettura dei mercati
Pavia, Università, 5 - 6 ottobre 2001

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MEASURING ORDINAL MOBILITY: THEORY AND AN APPLICATION TO ITALY

pubblicazione internet realizzata con contributo della COMPAGNIA di San Paolo

Società italiana di economia pubblica

Dipartimento di economia pubblica e territoriale – Università di Pavia

Measuring ordinal mobility: Theory and an application to Italy

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March 2001

EXTENDED ABSTRACT, PRELIMINARY

1 Introduction

When discussing social mobility issues, a basic distinction is usually made between *intergenerational mobility* (how the distribution of some relevant measure of individual status changes between different generations in a given society) and *intragenerational mobility* (how the distribution of individual status changes among a group of individuals over a given period of their lifetime).

As a vehicle of discussion, we will concentrate on the intergenerational social mobility problem. All information about a *social mobility context* is then contained in a a bivariate cumulative distribution function, which describes the distribution of two random variables X and Y which capture, respectively, fathers' and sons' *social status*.

In this paper, we will consider mobility comparisons resulting from samples from X and Y. In particular, suppose (X_1, Y_1), (X_2, Y_2), ...,(X_n, Y_n) is a random sample from a continuous bivariate distribution H. X_i, Y_i thus denote respectively the social status of the father and of the son in the ith family. A social mobility context can then be represented by the *empirical distribution* $\hat{H}$ which places mass n^{-1} at these points. In other words, the empirical counterpart of a social mobility context is a triple $(\Pi, \tilde{X}, \tilde{Y})$ where Π is a $n \times n$ *permutation matrix* and $\tilde{X}, \tilde{Y}$ are obtained after ordering in a strictly increasing order the X's and the Y's. On the other hand, the social mobility context $(\Pi, \tilde{X}, \tilde{Y})$ could alternatively describe the *population* distribution of fathers' and sons' status in a finite society with no ties in the marginal distributions.

A social mobility context $(\Pi, \tilde{X}, \tilde{Y})$ contains information on different aspects of the social mobility context. The fathers' marginal distribution $\tilde{X}$ determines both the average level of social status (the "size of the pie" for the fathers' generation) and its dispersion (how the pie is divided), and simililarly for $\tilde{Y}$. Thus, while the marginal distributions contain information of a *static nature*, the permutation matrix Π indicates how the social status of a given father is

coupled with the social status of a son, and gives information of a *dynamic* nature.

It is often suggested (see e.g. Bartholomew, 199x) that, when analyzing a mobility context, there are at least two different aspects of social mobility which are interesting to evaluate. For example, in a society which has undergone a substantial economic growth there will be a greater number of *higher status* positions available to the sons than there were for the fathers, and this determines some kind of social change even when the ranking among sons is the same as the ranking among fathers. *Structural mobility* refers to how different the two marginal distributions are. However, marginal distributions not only do not determine the joint distribution, but there are many (in fact $n!$) ways by which to *couple* them into a joint distribution (a permutation matrix in this context). In this light, the question of interest is: *when does a society offer individuals better chances of determining their status irrespective of the status of their fathers?* It is this feature of social mobility that is called *relative mobility* by sociologists, and will be the focus of this paper.

In this paper we will present an approach to relative mobility measurement put forward by D'Agostino and Dardanoni (2001), and will apply it to the empirical study of mobility in Italy. In the first section we will define formally the concept of an ordinal mobility ordering. We will then impose some axioms on these orderings and axiomatically characterize a partial ordering of mobility which we believe should lie at the foundations of ordinal mobility measurement. This ordering is related to an ordering of positive dependence much studied in mathematical statistics, and has been applied to mobility measurement by Dardanoni (1993). We will then add some axioms which will characterize an ordinal mobility index, which turns out to be Spearman's ρ. In the last section we will show how Spearman's ρ can be used to shed some light on some aspects of social mobility in Italy.

2 Ordinal mobility comparisons

To capture the essence of *relative* mobility comparisons, the researcher should theoretically compare social mobility contexts which share exactly the same amount of structural mobility. In practice, it is extremely unlikely that two empirical social mobility contexts $(\Pi_1, \tilde{X}_1, \tilde{Y}_1)$ and $(\Pi_2, \tilde{X}_2, \tilde{Y}_2)$ are such that $\tilde{X}_1 = \tilde{X}_2$ and $\tilde{Y}_1 = \tilde{Y}_2$, that is, have identical marginal distributions.

One possible solution to this problem is to further restrict the notion of social mobility that the researcher wants to isolate and compare. Suppose we are willing to assume that social mobility is not changed if we apply any pair of strictly increasing transformations $U = u(X)$ and $V = v(Y)$ to fathers' and sons' social status. One possible justification for this assumption is that social status is not easily observable, and the researcher is typically forced to use some proxies (such as income, occupation, education etc.) which are only monotonically linked to the true unobservable variables X and Y. Note that applying any pair of strictly increasing transformations $u(X)$ and $v(Y)$ does not change the

relative positions (ranks) of social status among fathers and sons. Hence the degree of *ordinal mobility* is not affected by such transformations.

Definition 1 *An* ordinal mobility ordering $\preceq_M$ *is a reflexive and transitive relation defined on social mobility contexts which has the following property: For all strictly increasing functions* $u(X)$ *and* $v(Y)$, $(\Pi, \tilde{X}, \tilde{Y}) \sim_M (\Pi, u(\tilde{X}), v(\tilde{Y}))$.

Ordinal mobility comparisons use only the information on the *order* of $\tilde{X}$ and $\tilde{Y}$ in a social mobility context. An immediate consequence of this Axiom is that, for the purposes of mobility comparisons, a social mobility structure $(\Pi, \tilde{X}, \tilde{Y})$ is entirely defined by its permutation matrix Π. The typical element $\Pi(i,j)$ of a mobility context Π will equal to 1 if there is a family in this society whose father has rank i (with $i = 1, \cdots, n$) and son has rank j (with $j = 1, \cdots, n$), and 0 otherwise.[1]

Consider now a subset of the n families in this society. Examples of families' subsets are the families which live in a given geographical location, or which belong to a given race, or whose fathers have a given education level etc. The mobility context of a particular subset of Π will then be described by a $n \times n$ matrix which differs from a permutation matrix because it can have rows and columns with only zeros. We call such matrices *partial (permutation) matrices*. When it is not clear from the context, the standard permutation matrices will be called *global (permutation) matrices*. Note that if we partition a mobility context Π into m mutually exclusive and exhaustive sub-contexts, each described by a partial permutation matrix Π_i, $i = 1, \cdots, m$, we have $\Pi = \Pi_1 + \Pi_2 + \cdots + \Pi_m$, where "+" is the usual sum of matrices.

Let $\mathcal{P}_n$ be the set of all permutation matrices (partial and global). Formally, a matrix Π belongs to $\mathcal{P}_n$ if and only if, for all $i = 1, \cdots, n$ and $j = 1, \cdots, n$, we have: (i) $\Pi(i,j) \in \{0,1\}$; (ii) $\sum_i \Pi(i,j) \leq 1$; (iii) $\sum_j \Pi(i,j) \leq 1$.

We need now the following:

Definition 2 *Two matrices* $\Pi_1, \Pi_2 \in \mathcal{P}_n$ *are*

- Disjoint *if* $\{(i,j) \mid \Pi_1(i,j) = 1\} \cap \{(i,j) \mid \Pi_2(i,j) = 1\} = \emptyset$.
- Similar *if* $\{(i,j) \mid \Pi_1(i,j) = 1\} = \{(i,j) \mid \Pi_2(i,j) = 1\}$.

Note that the similarity definition induces an equivalence relation on $\mathcal{P}_n$ and, for a given matrix $\Pi^* \in \mathcal{P}_n$, we can define the set $S(\Pi^*)$ of matrices similar to Π^*. Note also that for any two matrices $\Pi_1, \Pi_2 \in \mathcal{P}_n$, their sum $\Pi_1 + \Pi_2$ will belong to $\mathcal{P}_n$ if and only if they are disjoint.

[1] Mobility comparisons which use *cardinal* information on $\tilde{X}$ and $\tilde{Y}$ are axiomatized by Cowell, (1985), Fields and Ok (1996,1999), and capture different aspects of social mobility than the present paper. These contributions may be considered more complementary than alternative to our approach.

3 The axiomatization of mobility orderings

3.1 Preliminaries

In this section we will study in greater detail the mobility ordering $\preceq_M$. Following the discussion of the preceding section, we will let $\preceq_M$ be a transitive and reflexive relation defined on the set $\mathcal{P}_n$ of all (partial and global) $n \times n$ permutation matrices.

Now, given two matrices Π_1 and Π_2 in $\mathcal{P}_n$, when can we say that Π_1 displays more social mobility than Π_2? In general, there are many intuitive notions of "greater mobility", and there are also many orderings in the literature that correspond to these intuitive notions. In particular, in the literature there are both many quasi orderings of bivariate distributions and many mobility and positive dependence indices which have properties that agree with the concept of greater mobility.

Given the presence of many alternative ways of ordering the mobility structures of interest, the axiomatic approach helps in narrowing down this choice, depending on the properties that the researcher deems appropriate. Let $\mathcal{F}_A$ denote the family of (transitive and reflexive) orderings which satisfy a given set of axioms $\mathcal{A}$. Then, after specifying a set of axioms which conform with some properties that we want to be satisfied by a mobility ordering, the researcher can concentrate her attention only on the members of $\mathcal{F}_A$. The problem is then that typically $\mathcal{F}_A$ contains more than one element.

Suppose for example that we have two orderings, say $\preceq_{M'}, \preceq_{M''} \in \mathcal{F}_A$, such that $\Pi_1 \preceq_{M'} \Pi_2$ implies $\Pi_1 \preceq_{M''} \Pi_2$ for all $\Pi_1, \Pi_2 \in \mathcal{P}_n$ (that is, $\preceq_{M'} \subset \preceq_{M''}$). In this case, we can safely exclude $\preceq_{M''}$ from further consideration (of course for the chosen set of axioms $\mathcal{A}$). In other words, for a given set of axioms $\mathcal{A}$, we are typically interested in the "minimal elements" (if they exist) of $\mathcal{F}_A$:

Definition 3 *An ordering $\preceq_M \in \mathcal{F}_A$ is* minimal *under $\mathcal{A}$ if there is no $\preceq_{M'} \in \mathcal{F}_A$ such that $\preceq_{M'} \subset \preceq_M$.*

Suppose then that for a certain set of axioms there exists exactly *one* ordering $\preceq_M$ which is minimal. We can then consider the axioms as a way of characterizing $\preceq_M$. On the other hand, one possible complication arises if there is more than one minimal ordering for the chosen set $\mathcal{A}$. In particular, if there is a set of minimal orderings which satisfy $\mathcal{A}$, since there is no a priori reason to prefer one ordering to another, a simple solution consists in defining a *standard ordering* $\preceq_M \in \mathcal{F}_A$ with the following property:

$$\Pi_1 \preceq_M \Pi_2 \text{ } \textit{if and only if} \text{ } \Pi_1 \preceq_{M'} \Pi_2 \text{ } \textit{in all minimal orderings} \preceq_{M'} \in \mathcal{F}_A.$$

Formally, the standard ordering $\preceq_M$ is nothing but the *union* of all the minimal orderings under $\mathcal{A}$. This solution implies that if two matrices $\Pi_1, \Pi_2 \in \mathcal{P}_n$ are such that $\Pi_1 \preceq_{M'} \Pi_2$ for some minimal ordering $\preceq_{M'} \in \mathcal{F}_A$ and $\Pi_2 \preceq_{M''} \Pi_1$ for some other minimal ordering $\preceq_{M''} \in \mathcal{F}_A$, then $\Pi_1 \sim_M \Pi_2$, i.e. under the chosen set of axioms the two matrices are equivalent under the standard ordering $\preceq_M$.

In general, every set of axioms $\mathcal{A}$ that has minimal orderings has a unique standard ordering, which will be the ordering of interest under $\mathcal{A}$:

Definition 4 *We say that a given set of axioms* $\mathcal{A}$ minimally characterizes *a mobility ordering* $\preceq_M$ *if* $\mathcal{A}$ *has a non empty set of minimal orderings and* $\preceq_M$ *is their union.*

3.2 The concordance ordering

In this section we introduce and discuss some plausible axioms to impose on a mobility ordering. For a given set of axioms, we will then derive characterization theorems according to the methodology discussed above. We will follow an incremental approach: after deriving in Theorem 1 what we propose as the basic ordinal mobility ordering, in the next section we will add further axioms, which will allow us to characterize a sharper ordering in Theorem 2.

Before stating the first axiom we need the following:

Definition 5 *A matrix* $\Pi \in \mathcal{P}_n$ *is* monotone *if, whenever* $\Pi(i,j) = 1$ *we have* $\Pi(s,t) = 0$ *for all* $s > i, t < j$ *and* $s < i, t > j$.

Note that within each similarity set S there is a unique monotone matrix. It is intuitive that within each set of similar matrices, the monotone matrix can be considered as displaying the least amount of mobility:

Axiom 1 *For each set of similar matrices* S *we have* $\Pi_S^{\downarrow} \preceq_M \Pi$ *for all* $\Pi \in S$, *where* $\Pi_S^{\downarrow}$ *denotes the monotone matrix in* S.

The second axiom imposes some composition properties:

Axiom 2 *For every* $\Pi_1, \Pi_2, \Pi_3, \Pi_4 \in \mathcal{P}_n$, *such that* $\Pi_1 + \Pi_3, \Pi_2 + \Pi_4 \in \mathcal{P}_n$,

$$\Pi_1 \preceq_M \Pi_2, \Pi_3 \preceq_M \Pi_4 \Longrightarrow \Pi_1 + \Pi_3 \preceq_M \Pi_2 + \Pi_4.$$

Suppose now we have a matrix Π_1 such that, for the indices $k < m$ and $l < n$ we have $\Pi_1(k,l) = \Pi_1(m,n) = 1$, and consider another matrix Π_2 such that $\Pi_2(i,j) = \Pi_1(i,j)$ for all $i \neq k, m$ and $j \neq l, n$, and $\Pi_2(m,l) = \Pi_2(k,n) = 1$. In words, Π_2 differs from Π_1 because there has been an inversion of social status between two families, such that before the inversion the higher status father had the higher status son, while after the inversion the lower status father has the higher status son. Intuitively, this inversion has increased the level of social mobility. Under these circumstances we say that Π_2 has been obtained from Π_1 by inverting (m,k) and (l,n), and we write $\Pi_1 \rightarrow^{(m,k),(l,n)} \Pi_2$ for short. We also say that the pair (m,k),(l,n) is an *inversion*. Suppose, then, that a given matrix Π_t can be derived from Π_1 by a *sequence* of such inversions. Intuitively we can conclude that Π_t displays more social mobility than Π_1, and write $\Pi_1 \preceq_C \Pi_t$. Formally:

Definition 6 $\Pi \preceq_C \Pi'$ *if and only if there are a finite sequence of inversions* $e_1, \ldots, e_k$, *and a sequence of matrices* $\Pi_0, \ldots, \Pi_n$, *such that (i)* $\Pi_0 = \Pi$, *(ii)* $\Pi_n = \Pi'$ *and (iii)* $\Pi_{i-1} \rightarrow^{e_i} \Pi_i$ *with* $i = 1, \ldots, k$.

It can be easily checked that $\preceq_C$ is a partial order defined on each set of similar matrices. The reason for the choice of the subscript "C" is that, when the matrices ordered are global, $\preceq_C$ is called the *concordance ordering* in the mathematical statistics literature.

Theorem 1 *Axiom 2 and Axiom 1 minimally characterize an ordering which, when restricted to any set of similar matrices, is equivalent to* $\preceq_C$.

The proof of this Theorem is contained in D'Agostino and Dardanoni (2001). The concordance ordering is a very well established and much studied ordering of bivariate distributions. Dardanoni (1993) applies it to a Markov chain model of social mobility, and shows the equivalence of a version of this order to some very intuitive concepts of greater social mobility. In particular, consider the following partial orderings between mobility contexts which seem to be implicit in the intuitive notion of *greater mobility*:

1. Given two mobility contexts Π_1 and Π_2, let x and y be any pair of cut points between *poor* and *rich* for X and Y respectively, and let $\#(X \leq x, Y \leq y \mid i)$ denote the number of families where both father and son is poor in the mobility context $i = 1, 2$. Suppose then that

$$\#(X \leq x, Y \leq y \mid 1) \geq \#(X \leq x, Y \leq y \mid 2) \tag{1}$$

   It easy to see that, because the marginal distributions are the same, (1) implies that the number of poor (rich) sons coming from poor fathers is greater (lower) in 1 than in 2, and the number of poor (rich) sons coming from rich fathers is lower (greater) in 1 than in 2. Now assume that (1) holds *for any possible choice of* x *and* y. Then there must be greater mobility in 1 relative to 2, and this will define a partial ordering of mobility structures.

2. A well-understood notion of positive association between two random variables is their covariance and a naive notion of greater mobility could state that K is more mobile than H if $\mathrm{Cov}(X, Y \mid K) \leq \mathrm{Cov}(X, Y \mid H)$. However, as a measure of positive association, the covariance is extremely sensitive to departures from linearity. Moreover, in most cases, the actual variables X and Y represent indirect measurements of the corresponding true (unobservable) *social and economic status* denoted respectively by $U = u(X)$ and $V = v(Y)$. The only assumption about the functions u and v which does non impose unreasonable restrictions is that they are non decreasing; if we accept this assumption, we must agree that there is greater mobility in 1 relative to 2 if

$$\mathrm{Cov}(u(X), v(Y) \mid K) \leq \mathrm{Cov}(u(X), v(Y) \mid H)$$

   for all increasing functions u and v. Note that this requirement will define another partial ordering of mobility structures.

3. Suppose we consider the *concentration curve* of the son's social statuses $v(Y)$. If the concentration curve for 1 is everywhere higher than the concentration curve for 2 *for all increasing functions* v, we can conclude that 1 has a higher level of social mobility than 2, and this will define another possible partial ordering of similar mobility structures.

The following Theorem, which can be easily derived from Dardanoni (1993), gives a strong justification for using the concordance ordering to compare social mobility structures:

Theorem 2 *Within the set of similar matrices,* $\preceq_C$ *is equivalent to all the partial orderings defined above.*

3.3 An ordinal mobility index

Theorem 1 gives a strong justification to the use of the concordance ordering for comparing social mobility structures. On the other hand, $\preceq_C$ is only a partial order, and thus does not allow comparison of all matrices within its domain. It is then natural to add the following completeness axiom:

Axiom 3 *For all global matrices* $\Pi_1, \Pi_2 \in \mathcal{P}_n$, *either* $\Pi_1 \preceq_M \Pi_2$ *or* $\Pi_2 \preceq_M \Pi_1$.

To understand the effects of this "completion" axiom, it is interesting to note that the ordering which is characterized in Theorem 1 is the *unique* minimal order which satisfies the axioms.[2] Adding Axiom 4 has the immediate effect that any two matrices which are not comparable under this ordering must be ordered. Of course, at the level of generality of Axiom 4 there are many ways in which non comparable matrices can be ordered. In other words, contrary to what happened in Theorem 1, there are now *many* minimal orderings satisfying Axioms 2,3 and 4. However, as explained above, there still is a unique standard ordering that is the union of all the minimal orderings.

An immediate consequence of Axiom 3 is that any mobility ordering $\succeq_M$ which satisfies it can be represented by a real valued index. Consider now a well known nonparametric index of positive association, namely Spearman's ρ. Note that ρ is defined in the literature only for global matrices. We will now propose a natural extension of this index for any matrix $\Pi \in \mathcal{P}_n$, which we will then use for defining the *Spearman ordering* $\preceq_S$ over $\mathcal{P}_n$: $\rho(\Pi) = c \sum_i \sum_j \Pi(i,j)(i-j)^2$, where c is a normalizing costant. It is easy to show that this definition agrees with the standard defintion of Spearman's ρ when restricted to global matrices.

We can now define $\preceq_S$ over $\mathcal{P}_n$ as follows:

Definition 7 *For any matrices* $\Pi_1, \Pi_2 \in \mathcal{P}_n$,

$$\Pi_1 \preceq_S \Pi_2 \Longleftrightarrow \rho(\Pi_1) \geq \rho(\Pi_2)$$

We need also the following:

[2] This can be clearly appreciated from the prrof of the Theorem

Definition 8 *We say that a global matrix* Π^* *is the* minimal completion *of a matrix* Π *if and only if* $\Pi^* = \Pi + \Pi'$ *where* Π' *is monotone.*

We can now state our last axiom:

Axiom 4 *For every* $\Pi_1, \Pi_2 \in \mathcal{P}_n$, $\Pi_1 \preceq_M \Pi_2$ *if and only if* $\Pi_1^* \preceq_M \Pi_2^*$ *where* Π_1^* *and* Π_2^* *are the minimal completions of* Π_1 *and* Π_2 *respectively.*

Note that for any matrix For every $\Pi \in \mathcal{P}_n$ there is a unique minimal completion. We have then the following:

Theorem 3 *Axioms 2–4 minimally characterize an ordering which, when restricted to any set of similar matrices, is equivalent to* $\preceq_S$.

The proof of this Theorem is contained in D'Agostino and Dardanoni (2001).

Empirical analysis

Traditionally economists have analysed mobility in terms of intergenerational changes in incomes earned in a specific instant of time.[1] On the contrary, sociologists have criticised this approach because of temporary fluctuations in individual income and/or unreliability of self-reported incomes; they stress that mobility measured on incomes is an upward biased measure of mobility in long run status. For these reasons, they prefer measuring mobility using social prestige associated to occupations; alternatively they study class mobility, where classes are subjectively defined.[2] More recently, on the economist side, Solon (1992) and Zimmerman (1992) have made use of multi-year averages of earned incomes to get a better proxy of permanent incomes, and they have found evidence that when using long run measures for incomes the estimate of the degree of mobility (defined as regression to the mean) reduces significantly.

The Italian case suffers for lack of information. The only existing data set originates from a national survey conducted in 1985 by a group of sociologists from different Italian universities.[3] A representative sample of 5016 individuals aged between 18 and 65 was interviewed about their working life and their social attitudes; additional questions were asked about family background. From this file it is possible to extract information concerning the interviewed person referred to 1985 and concerning to his/her family when he/she was 14 years old. As a consequence, the generation of sons is observed at the same time, whereas their parents are observed in different years, ranging in principle from 1934 to 1981.[4] This data set has been widely analysed.[5] International comparison indicates that Italy exhibits a lower degree of intergenerational mobility, both in terms of occupational characteristics (prestige or incomes) and educational achievements.

Another source of information on intergenerational persistence is provided by the Bank of Italy Survey on Household Incomes and Wealth (SHIW), conducted biannually since 1977.[6] Since the panel component of this survey is rather limited, we have to rely on recall information about the parent status. From sociological literature we accept the idea that occupations represent a better indicator of the long run status achieved by a person. However, the SHIW data set does not provide a detailed classification of occupation, and therefore we cannot resort to an indicator of prestige.[7] In addition, we prefer to stick to the economists' viewpoint that incomes are the best summary statistics available on the relative desirability of a social position. However we know that educational achievement represents a rough measure of the human capital accumulated by an individual.

In conclusion, we propose to rank individuals according to their earned income and their educational achievement.[8] This implies that we assume that social ordering is substantially based on spending

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[1] See for example Becker-Tomes 1986 and the review reported there.

[2] One of the most accepted class classification schemes has been produced by the CASMIN project (Comparative Analysis of Social Mobility in Industrial Nations), which underlies Erickson-Goldthorpe 1992 and Cobalti-Schizzerotto 1994.

[3] See Barbagli and oth. 1986.

[4] A 65-year-old interviewee was 14 in 1934, while an 18-year-old interviewee was 14 in 1981.

[5] The original group of scholars used the occupational structure to construct a class structure, and analysed intergenerational mobility in terms of class mobility (Cobalti 1988, DeLillo 1988, Schizzerotto 1988, Barbagli 1988, Cobalti-Schizzerotto 1994, Schizzerotto-Bison 1994). Mobility measure based on individual information (from the same data-set) can be found in Checchi 1997 and Checchi-Ichino-Rustichini 1999.

[6] For more detailed information see Brandolini 1999.

[7] Either of the reputational sort, as in the case of DeLillo-Schizzerotto 1985, or of the composite type, as in the case of Duncan 1961.

[8] Duncan 1961 was the first one to propose an index of occupational prestige obtained as linear combination of these two variables. In general we must recall that reputational indices and incomes are not independently distributed (see Treiman 1977). The Duncan index is constructed by giving half-weight to earnings; when constructing the Italian DeLillo-

ability, which in turn derive from earned income and human wealth. In order to eliminate the erratic component based on individual fortunes, we consider the median income associated to any combination of job position and educational achievement, and we rank individuals accordingly.

Given the fact that parents' information is based on recall, we do not have the corresponding information on parents. One could claim that each generation should possess its own ranking, which reflect events specific to that age cohort (degree of industrial development, wars, etc.). But data availability and methodological differences in sample construction prevent this possibility. We are forced to use the same ranking for both generations, even if we are aware that part of the observed mobility is actually due to the process of development, the change in the distribution of occupations and the process of mass schooling.

As we mentioned, we make use of the SHIW survey conducted in 1998. It comprises 20.901 individuals, gathered into 7.147 families. Among the individuals, there are 12.717 individuals with a non-null income. Total net income is obtained from dependent labour employment, from self-employment, from pensions or from ownership of capital. Since income from self-employment activity are plagued by under-reporting,[9] we have revised it upward by 40%, which corresponds to the discrepancy between post-tax income from self-employment and corresponding values based on national accounts (averaged over the period 1980-93). For each member of the family we have information about his/her maximum educational achievement (but not about the educational career – we ignore any failed attempt), the current work status and the current or past sector of employment. In addition we have also analogous information about the parents of the household head and his/her spouse. This information is indicatively referred to the same current age of the respondent.[10]

We have decided to rank people according to their occupations. This survey does not provide detailed information about the occupation of the interviewee. We know the work status and the sector of employment, which are reported below.

Schizzerotto index, the interviewees were asked to motivate the expressed ordering: the expected income in each occupation was indicated as the first reason for the proposed ordering.

[9] See Cannari-D'Alessio 1993 and Brandolini 1999.

[10] The questionnaire asks "What were the educational qualifications, employment status and sector of activity of your parents when they were your current age?".

Table 1 – Distribution of relevant variables

Work status of the respondents	cases	%
blue collar	2487	11.9
office worker	2067	9.89
teacher	582	2.78
junior manager-official	332	1.59
senior manager	161	0.77
professional	394	1.89
entrepreneur	123	0.59
self-employed	696	3.33
family business	316	1.51
shareholder/partner	197	0.94
first job seeker	937	4.48
unemployed	649	3.11
homemaker	2621	12.54
well off/rentier	26	0.12
job pensioner	3211	15.36
non-job pensioner	987	4.72
student	4030	19.28
pre-school-age child	1009	4.83
conscript	76	0.36
Total	*20901*	*100*

Sector of employment	cases	%
agriculture	897	8.11
manufacturing	3044	27.51
construction	677	6.12
retailing	1633	14.76
transport communications	465	4.2
credit insurance	327	2.96
IT services	628	5.68
domestic services	414	3.74
public administration	2948	26.64
extraterritorial	31	0.28
Total	*11064*	*100*

Maximal educational certificate	cases	%
no education	3102	14.84
primary school	4710	22.53
lower secondary school	5690	27.22
upper secondary (3 yrs)	918	4.39
upper secondary (5 yrs)	5062	24.22
BA	124	0.59
MA	1271	6.08
PhD	24	0.11
Total	*20901*	*100*

Unfortunately, the disaggregation of work status, sectors and educational achievements for parents is less detailed than the corresponding disaggregation for children. Therefore we have aggregated information about children in order to be comparable with the corresponding aggregation of their parents. By restricting to individuals who are employed and earn a positive income, we obtain 7.340 individuals in the children generation. The percentage distribution of relevant variables in the two generations is as follow:

Table 2 – Comparable distribution across generations

Educational achievement	1	2	3	4
no education	0.86	0.98	19.21	18.14
primary school (*elementare*)	11.14	13.62	51.28	53.56
lower secondary school (*scuola media*)	30.2	31.22	15.62	12.33
upper secondary school (*scuola superiore*)	44.34	41.31	10.29	12.41
bachelor (*laurea*)	13.47	12.87	3.59	3.56
Work status				
blue collar	33.81	30.48	47.57	43.32
office worker	28.1	26.89	15.51	10.59
teacher	7.91	5.42	1.85	8.77
junior manager-official	4.51	6.24	4.35	2.6
senior manager	2.19	3.11	1.21	==
professional	5.36	6.53	2.61	2
entrepreneur	1.67	2.42	2.3	2.26
self-employed	16.44	18.93	24.6	30.47
Sector of employment				
agriculture	4.39	3.85	23.59	32.03
industry	32.01	33.16	24.35	15.71
public administration	28.66	29.52	17.03	17.27
private services	34.94	33.47	35.04	34.98
Number of cases	*7355*	*3767*	*3565*	*1152*

Legend:
1 = whole sample of employed in the generation of children
2 = household head sample of employed in the generation of children
3 = (employed) father of (employed) household head
4 = (employed) mother of (employed) household head

By combining educational credentials (5 items), work status (8 items) and sector of employment (4 items), we get 120 potential combinations of these features. For each cell identified by a combination of education/work status/sector we have computed the median and the mean income in the full sample. The orderings of all combinations according to the mean or to the median are rather similar, since the two measures are highly correlated.[11] We have ranked the combinations according to the median; however when the difference in ranking with the mean exceeded an absolute value of 20 positions (6 cases in bold in the table in the appendix), we have sorted those positions according to the mean ranking. Our final ranking of the combination is reported in the appendix. Once we have determined a ranking of social positions, we use it to extend the available sample by attributing to pensioners and to people who lost their job the corresponding social position they held when employed. In this way the available sample in the generation of children increases from 7355 to 10979 individuals. The distribution of social positions in the population is reported in figure 1. We notice that the distribution of social positions is more unequally distributed in the parents generations than in the children generation, as grasped by the following table 3.[12] By recording a lower inequality in social positions across generations we could anticipate that some "equaliser device" has operated along the century. *Social mobility* and/or the *educational push* are the best candidates to this explanation.

[11] The Pearson correlation coefficient is 0.96, and the Spearman rank correlation coefficient is 0.92.

[12] The totals of table 3 do not coincide with the totals of table 2 because we relax the restriction of parents and children being contemporaneously employed.

Table 3 – Inequality measures

	household head		spouse household head		HH father	HH mother
	social position	incomes	social position	incomes	social position	social position
relative mean deviation	0.23149	0.12528	0.21132	0.09665	0.2953	0.3158
coefficient of variation	0.5703	0.47397	0.54341	0.31877	0.7829	0.8034
standard deviation of logs	0.6618	0.32469	0.67315	0.28867	0.9609	0.9809
Gini coefficient	0.31597	0.18119	0.29897	0.14637	0.4196	0.4328
Mehran measure	0.44589	0.24021	0.43076	0.20623	0.5787	0.5983
Piesch measure	0.25102	0.15168	0.23308	0.11644	0.34	0.35
Kakwani measure	0.09036	0.0353	0.08424	0.02422	0.1573	0.1683
Theil entropy measure	0.16005	0.07145	0.14888	0.04417	0.2926	0.3114
Theil mean log deviation measure	0.18645	0.06018	0.18214	0.04229	0.3718	0.3961
Entropy measure GE -1	0.29019	0.05793	0.31438	0.04503	0.7339	0.7407
Number of observations	*6155*	*6155*	*3120*	*3120*	*6383*	*1993*

We now move to the proper analysis of intergenerational mobility in social positions. Following a consolidated procedure, we start by considering the couple father-son, to avoid distortion due to differences in participation rates across generations and/or regions. Subsequently this assumption will be relaxed. We notice that intergenerational mobility is not evenly spread across the country: the peripheral regions exhibit lower mobility even partially controlling for permanent emigration.[13] This can be partially due to the increase in educational achievements, as witnessed by the higher correlation coefficients computed on educational achievements (see also figure 2).

Table 4 – Intergenerational mobility in social positions

	Spearman rank correlation index	number of cases
Whole sample (father/son)	0.2563 (0.00)	4654
Born and resident in the same region:		
north-west	0.2569 (0.00)	670
north-east	0.1924 (0.00)	700
centre	0.2103 (0.00)	835
south	0.2705 (0.00)	1157
islands	0.3269 (0.00)	448
Internal migrants	0.2583 (0.00)	844

Note: in parenthesis the p-value probability for the independence of the social ranking across generations

Table 5 – Intergenerational mobility in educational achievements

	Spearman rank correlation index	number of cases
Whole sample (father/son)	0.5612 (0.00)	5174
Born and resident in the same region:		
north-west	0.4906 (0.00)	752
north-east	0.4953 (0.00)	769
centre	0.5330 (0.00)	911
south	0.5723 (0.00)	1305
islands	0.6149 (0.00)	507
Internal migrants	0.5947 (0.00)	903

Note: in parenthesis the p-value probability for the independence of the social ranking across generations

[13] We ignore whether an individual experienced a period of migration out of the birth region. However we have taken a difference between the region of birth and the region of residence as a potential proxy for migration.

But intergenerational mobility does not seem constant across different generations. We can observe its time path in Italy during the last century taking the average across age cohorts (see figure 3) and compare it with the same measure computed on educational achievements. According to this measure, the highest mobility is observed in the immediate aftermath of the two World Wars, while the lowest is registered in coincidence with the baby boom. Could education account for this dynamics ? We are tempted to provide a positive answer. The educational mobility measure records two peaks (in 1930-35 and 1955-60), which occur 15 years after the end of the two wars: this is rather plausible, since the two wars deprived several families and prevented the full educational achievement in the children generation (and thus the full social conditioning).[14] The aftermath of World War II show an increased access to education, accompanied by an increased mobility in social positions. One could object that the apparent relationship between mobility in social positions and mobility in educational achievement is deceptive, since the latter variable has been built making use of information contained in the former. To have an idea of how our measure of intergenerational mobility in social positions get closer to more traditional measures, we resort to interquartile mobility matrix (see table 6) Our procedure suggests greater mobility in Italy: the Spearman rank correlation coefficient computed on the 1615 couples father/son of panel (a) of table 6 is 0.37, whereas the corresponding measure for the panel (b) is equal to 0.25.[15]

Table 6.a – Intergenerational mobility in occupational prestige – fathers/sons – Italy 1985

	I quartile son	*II quartile son*	*III quartile son*	*IV quartile son*
I quartile father	40.20	25.81	19.35	14.64
II quartile father	26.73	37.87	17.33	18.07
III quartile father	22.52	26.98	28.71	21.78
IV quartile father	10.40	9.65	34.41	45.54

Source: Table 2 in Checchi 1997

Table 6.b – Intergenerational mobility in social positions – fathers/sons – Italy 1998

	I quartile son	*II quartile son*	*III quartile son*	*IV quartile son*
I quartile father	31.63	31.47	13.84	23.06
II quartile father	23.74	22.03	23.58	30.64
III quartile father	26.66	21.40	24.42	27.52
IV quartile father	17.04	21.73	22.36	38.88

Source: our elaborations on SHIW 1998

Is this increase a genuine increase in social mobility, or it is mainly attributable to differences in the procedure adopted here ? We are tempted to infer that procedural differences cannot account for this increase. The 1985 survey classified people according to 93 basic occupations, whereas here we classify the sample according to 115 combinations of sector/job/education credentials. We could introduce "false" mobility if one of the basic components (for example the sector of activity) would affect social prestige in a non systematic (erratic) way. As a way of control, we have regressed the actual individual (log)incomes onto the basic elements of our combination (see table 7). As it can easily be detected, each element affects significantly the incomes in the sample, and the implicit ranking of the dummy coefficients provide a reasonable ranking in terms of incomes:

Education: no education < primary school < lower secondary school < upper secondary school < bachelor
Sector of employment: agriculture < private services < industry < public administration
Work status: not employed < blue collar < self-employed < teacher < office worker < entrepreneur < professional < junior manager-official < senior manager.

[14] This is obviously true not only for the Italian case: see Ichino-Winter-Ebmer 2000 for the German case.

[15] Analogously, the regression coefficient of sons' social position onto fathers' social position (controlling for age and age squared) in panel (a) is equal to 0.364 (15.03), whereas in panel (b) it is 0.308 (21.32). If we take the second maximum eigenvalue, it is equal to 0.33 in panel (a) and to 0.13 in panel (b).

Notwithstanding our correction of incomes from self-employment, one can notice that self-employed and entrepreneurs come out not very high in this ranking, despite the fact that they enjoy a better quality of work and are very likely to earn higher incomes than reported.

Table 7 – Determinants of (log)incomes – Italy 1998 – robust regressions

	sample of individuals with incomes		sample of individuals employed & working	
	coeff	*t stat*	*coeff*	*t stat*
primary school (*elementare*)	0.239	7.51	0.245	2.50
lower secondary school (*scuola media*)	0.293	8.75	0.247	2.57
upper secondary school (*scuola superiore*)	0.336	9.75	0.272	2.81
bachelor (*laurea*)	0.441	10.09	0.358	3.55
industry	0.292	9.68	0.392	7.86
public administration	0.295	8.83	0.362	6.96
private services	0.132	4.19	0.209	4.13
blue collar	0.357	1.61	===	===
office worker	0.668	3.00	0.282	12.99
teacher	0.593	2.64	0.198	5.67
junior manager-official	1.098	4.89	0.731	20.02
senior manager	1.427	6.26	1.102	21.18
professional	0.979	4.29	0.603	12.07
entrepreneur	0.896	3.80	0.642	6.98
self-employed	0.568	2.55	0.259	8.98
intercept	8.997	40.10	9.356	93.20
Number observations		10757		7340
R^2		0.17		0.15
F	(15, 10741)	183.60	(14,7325)	101.46

On the whole, we conclude that our classification of social positions, based on earned incomes and taking into account educational credentials seems robust, and therefore the implications on social mobility offer some reliability.

We now move to consider the issue of marriage. Marriage affects social mobility because it creates additional opportunities of social mixing. While so far we have considered social mobility through the rank correlation between fathers and sons, each individual is actually conditioned by the social position of both parents. If we define the social position of origin as the highest value of social position in the couple of parents, we discover that social mobility may even decrease when taking into account the family environment. Looking at table 8, we notice that social mobility tends to decline when we take into account social progression of women heading a family.

Table 8 – Intragenerational mobility: correlations in the couple

	Spearman rank correlation index
Father-son (household head)	0.2563 (4654)
Family-son (household head)	0.2622 (4654)
Father-daughter (household head)	0.3967 (907)
Family-daughter (household head)	0.4021 (907)
Family-son or daugther (household head)	0.2819 (5561)
Family-son or daugther (household head or spouse)	0.2815 (8011)

But marriage opportunities affect (intragenerational) mobility through mixing in a couple individuals coming from different social strata. Table 9 indicated that social norms in couple formations were stricter in old days than they are in the current generations. While for the parent generation educational

level and social positions were strictly correlated between the partners,[16] this applies to a lesser extent in the children generation.

Table 9 – Intragenerational mobility: correlations in the couple

	Spearman rank correlation index **social positions of origin**	Spearman rank correlation index **attained social positions**	Spearman rank correlation index **educational achievements**
Children generation	0.3841 (4478)	0.4506 (2759)	0.6137 (6006)
Parent generation	---	0.7873 (1930)	0.7957 (6756)

Note: in parenthesis the number of observations – The social position of origin is measured as the highest value in the couple of parents. – The different numeber of observations between first and second column is due to the presence of unemployed individuals and/or housewives, whose social origin is known, without having a present position

Table 10 – Intergenerational mobility: correlations in couple status

	Spearman rank correlation index social positions (using father/son for married sons only)	Spearman rank correlation index social positions (using the highest value in the couple)	Spearman rank correlation index social positions (using the average value in the couple if 2 values are available)
Whole sample	0.2536 (4369)	0.2718 (4898)	0.2777 (4898)
Born and resident in the same region:			
north-west	0.2575 (607)	0.2771 (698)	0.2766 (698)
north-east	0.1855 (654)	0.2234 (757)	0.2164 (757)
centre	0.2023 (784)	0.2544 (896)	0.2707 (896)
south	0.2760 (1117)	0.2718 (1198)	0.2855 (1198)
islands	0.3405 (421)	0.3552 (467)	0.3579 (467)
Internal migrants	0.2397 (786)	0.2402 (882)	0.2492 (882)

Note: the variation in the number of observations when moving from first to second or third column is due to the fact that there are 974 couples headed by a woman and 379 men who are singles.

[16] There is an unavoidable bias in computing the correlation indices for social status, because it requires that the spouse has (or had) an occupation. A priori we cannot judge whether this is distorting our result in favour or against our argument.

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Appendix: proposed social ordering

cases	median income	rank1	mean income	rank2	rank (final)	education	work status	sector of activity
3	3500	1	3500	1	**1**	primary	office worker	agriculture
4	9000	2	12030	4	**2**	no educ	selfemployed	private services
2	11817	3	11817	2	**3**	bachelor	blue collar	private services
1	12000	5	12000	3	**4**	no educ	entrepreneur	private services
19	12000	4	12328.87	5	**5**	no educ	blue collar	agriculture
3	12390	6	13942.32	7	**6**	no educ	selfemployed	industry
1	13654	7	13654	6	**7**	primary	selfemployed	public administ
61	15000	9	16175.8	9	**8**	primary	blue collar	agriculture
7	15000	10	20142.86	15	**9**	no educ	blue collar	private services
75	15600	11	16454.19	10	**10**	lower secondary	blue collar	agriculture
1	15623.5	12	15623.5	8	**11**	no educ	office worker	industry
1	17500	13	17500	11	**12**	primary	professional	industry
209	18000	14	18749.47	12	**13**	upper secondary	blue collar	private services
28	18000	15	20496.49	16	**14**	upper secondary	blue collar	agriculture
1	20000	16	20000	14	**15**	bachelor	blue collar	public administ
341	20000	17	22054.68	19	**16**	lower secondary	blue collar	private services
3	20000	18	24127.31	25	**17**	lower secondary	teacher	public administ
1	20719.34	19	20719.34	17	**18**	primary	jnr manager-official	public administ
146	20772.82	20	27606.72	38	**19**	primary	selfemployed	private services
382	22100	21	24832.65	27	**20**	upper secondary	blue collar	industry
104	22500	22	23074.81	20	**21**	primary	blue collar	private services
683	23000	23	24337.73	26	**22**	lower secondary	blue collar	industry
4	23218	24	19059	13	**23**	bachelor	teacher	private services
23	23220	25	23486.98	21	**24**	no educ	blue collar	industry
3	23260	26	25767.88	28	**25**	primary	entrepreneur	agriculture
1	23666	27	23666	22	**26**	primary	teacher	public administ
5	24000	30	21370.48	18	**27**	bachelor	blue collar	industry
1	24000	32	24000	24	**28**	lower secondary	teacher	industry
3	24000	28	23902.67	23	**29**	lower secondary	office worker	agriculture
17	24000	31	26446.08	30	**30**	primary	office worker	private services
301	24000	29	29825.24	45	**31**	lower secondary	selfemployed	private services
29	24400	33	27516.29	36	**32**	primary	selfemployed	agriculture
263	24471.06	34	25871.09	29	**33**	primary	blue collar	industry
43	25392.94	36	27543.25	37	**34**	primary	blue collar	public administ
150	25509.87	37	26479.62	31	**35**	lower secondary	blue collar	public administ
29	25527.1	38	29848.38	46	**36**	lower secondary	selfemployed	agriculture
88	26000	42	27029.76	33	**37**	upper secondary	blue collar	public administ
35	26000	41	28962.84	41	**38**	bachelor	office worker	industry
456	26000	40	30962.15	50	**39**	upper secondary	office worker	private services
251	26040	43	28850.64	40	**40**	upper secondary	teacher	public administ
97	26220	44	28519.53	39	**41**	lower secondary	office worker	private services
33	26266.93	45	27504.41	35	**42**	primary	office worker	public administ
1	26540	46	26540	32	**43**	primary	snr manager	industry
2	27041.63	47	27041.63	34	**44**	no educ	blue collar	public administ
110	27120	48	31039.99	51	**45**	bachelor	office worker	public administ
9	28000	49	34169.95	61	**46**	lower secondary	jnr manager-official	private services
288	28093.86	50	37033.51	71	**47**	upper secondary	selfemployed	private services
19	28263.51	51	33106.76	55	**48**	upper secondary	selfemployed	agriculture
8	28536.01	52	29186.41	42	**49**	primary	entrepreneur	industry
103	28841.4	53	38000.13	72	**50**	upper secondary	selfemployed	industry
29	28880	54	29192.61	43	**51**	lower secondary	professional	private services
604	28958.75	55	31667.96	53	**52**	upper secondary	office worker	public administ
3	29000	56	30521.2	49	**53**	upper secondary	professional	public administ
6	**37454.78**	**82**	**33171.78**	**56**	**54**	**primary**	**entrepreneur**	**private services**
319	29153.1	57	33252.43	57	**55**	bachelor	teacher	public administ
2	29300	58	29300	44	**56**	upper secondary	teacher	private services
339	29908	59	33603.46	58	**57**	upper secondary	office worker	industry
1	30000	61	30000	47	**58**	bachelor	entrepreneur	industry
3	30000	62	31521.74	52	**59**	bachelor	office worker	agriculture
56	30000	60	34698.77	63	**60**	bachelor	office worker	private services
2	30372.96	63	30372.96	48	**61**	primary	snr manager	private services
132	31074.34	64	39454.2	75	**62**	lower secondary	selfemployed	industry
76	32656.65	65	34515.45	62	**63**	lower secondary	office worker	industry
2	32760	66	32760	54	**64**	lower secondary	professional	agriculture
210	32765.56	67	33800.71	60	**65**	lower secondary	office worker	public administ
38	**25815.67**	**39**	**35626.37**	**68**	**66**	**bachelor**	**selfemployed**	**private services**
7	32979.03	68	43213.93	80	**67**	upper secondary	selfemployed	public administ
6	33203.6	69	33714.67	59	**68**	primary	professional	agriculture
75	33942	71	41883.92	77	**69**	primary	selfemployed	industry
35	34810.94	72	43187.3	79	**70**	upper secondary	professional	industry
2	34825.63	73	34825.63	64	**71**	lower secondary	snr manager	industry
2	34864.6	74	34864.6	65	**72**	bachelor	jnr manager-official	agriculture
2	34989.4	75	34989.4	66	**73**	no educ	selfemployed	agriculture
1	35444	76	35444	67	**74**	upper secondary	teacher	agriculture

2	35928.21	77	35928.21	69	**75**	lower secondary	entrepreneur	agriculture
1	35992	78	35992	70	**76**	bachelor	professional	agriculture
141	36000	79	43754.85	83	**77**	upper secondary	professional	private services
26	36490.1	80	45852.06	86	**78**	lower secondary	entrepreneur	private services
5	37275.11	81	38829.63	74	**79**	lower secondary	professional	industry
19	**24874.29**	**35**	**43528.98**	**82**	**80**	**upper secondary**	**office worker**	**agriculture**
34	38460	83	43324.13	81	**81**	upper secondary	entrepreneur	private services
22	40670.11	85	42691.04	78	**82**	lower secondary	jnr manager-official	public administ
8	41272.44	86	49752.87	90	**83**	lower secondary	entrepreneur	industry
2	41756.89	87	41756.89	76	**84**	primary	professional	public administ
61	42180	88	47393.37	87	**85**	upper secondary	jnr manager-official	public administ
7	43436	89	45502.05	85	**86**	lower secondary	jnr manager-official	industry
2	44984.05	90	44984.05	84	**87**	upper secondary	professional	agriculture
9	45044	91	38756.98	73	**88**	bachelor	selfemployed	public administ
10	45364.25	92	105287.8	111	**89**	bachelor	selfemployed	industry
8	45420.77	93	73860.97	104	**90**	upper secondary	entrepreneur	agriculture
26	46021.16	94	61972.54	99	**91**	bachelor	professional	industry
54	47785.21	95	50655.63	91	**92**	bachelor	jnr manager-official	public administ
1	48000	96	48000	88	**93**	upper secondary	snr manager	agriculture
42	48038.76	97	49725.89	89	**94**	upper secondary	jnr manager-official	industry
17	49902.16	98	119918	113	**95**	upper secondary	entrepreneur	industry
95	50000	99	88968.66	107	**96**	bachelor	professional	private services
38	51683.45	100	60252.01	97	**97**	bachelor	professional	public administ
34	52367.55	101	56953.16	95	**98**	bachelor	jnr manager-official	industry
4	**33557.58**	**70**	**67153.79**	**102**	**99**	**primary**	**office worker**	**industry**
67	53120	102	55351.3	94	**100**	upper secondary	jnr manager-official	private services
32	54239.83	103	60360.09	98	**101**	bachelor	jnr manager-official	private services
3	**14000**	**8**	**54780.67**	**92**	**102**	**lower secondary**	**selfemployed**	**public administ**
2	55199.2	104	55199.2	93	**103**	lower secondary	snr manager	public administ
5	55369.97	105	84610.42	106	**104**	bachelor	entrepreneur	private services
14	57056.26	106	57476.93	96	**105**	upper secondary	snr manager	public administ
75	61081.6	107	70392.45	103	**106**	bachelor	snr manager	public administ
7	**40359.07**	**84**	**93023.22**	**108**	**107**	**primary**	**professional**	**private services**
1	62996	108	62996	100	**108**	upper secondary	jnr manager-official	agriculture
1	66450	109	66450	101	**109**	no educ	professional	agriculture
14	80637	110	106900.9	112	**110**	upper secondary	snr manager	industry
18	80834.7	111	100718.7	110	**111**	bachelor	snr manager	private services
16	84234.08	112	77601.86	105	**112**	upper secondary	snr manager	private services
15	93788.05	113	94042.39	109	**113**	bachelor	snr manager	industry
1	166805.1	114	166805.1	114	**114**	bachelor	snr manager	agriculture
1	474866.7	115	474866.7	115	**115**	bachelor	entrepreneur	agriculture

Figure 1 – Population distribution of social positions

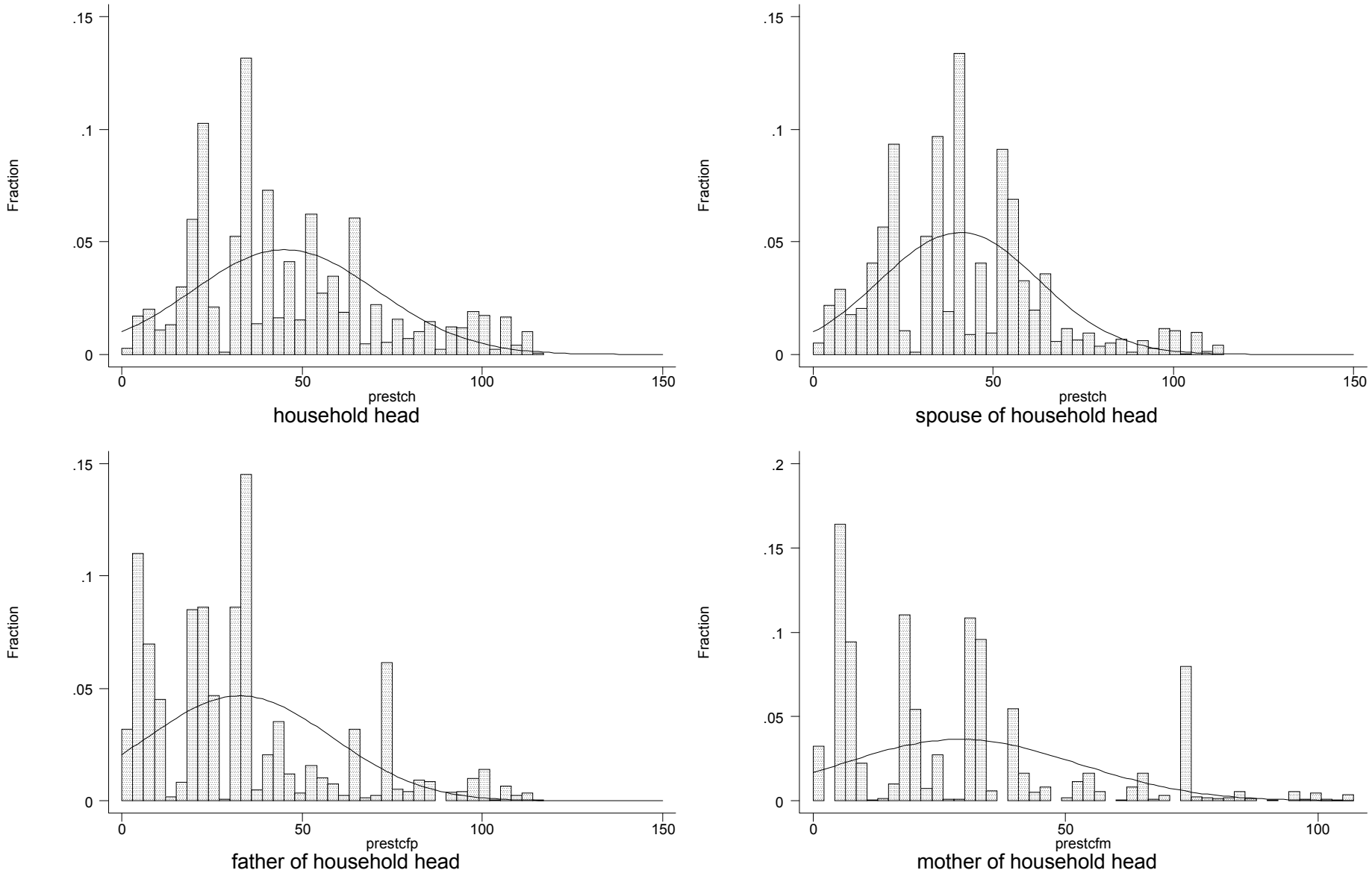
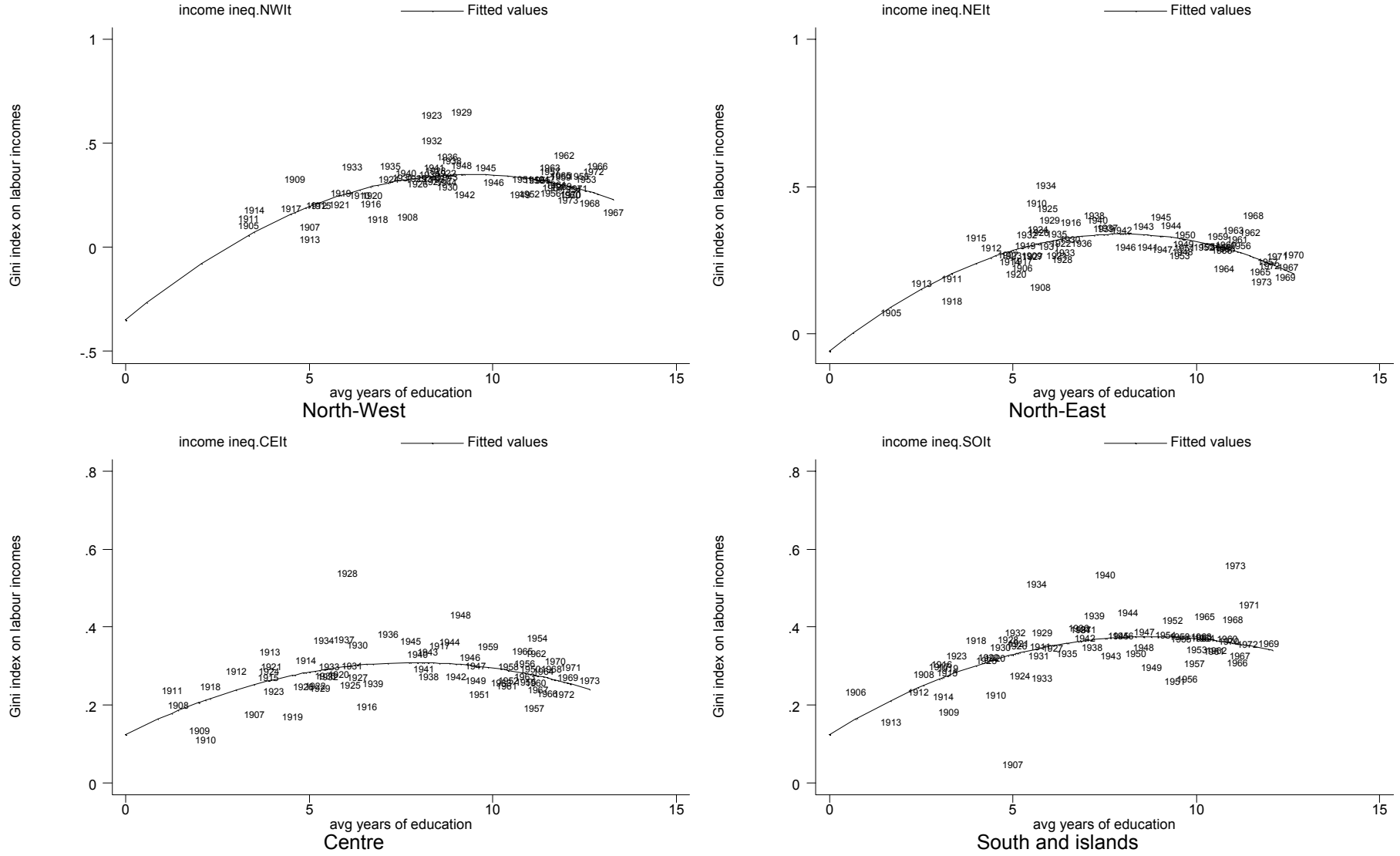


Figure 2 – Inequality in incomes and average educationa achievements by age cohorts



Labour incomes inequality and average education

Figure 3 – Intergenerational mobility according to age cohorts

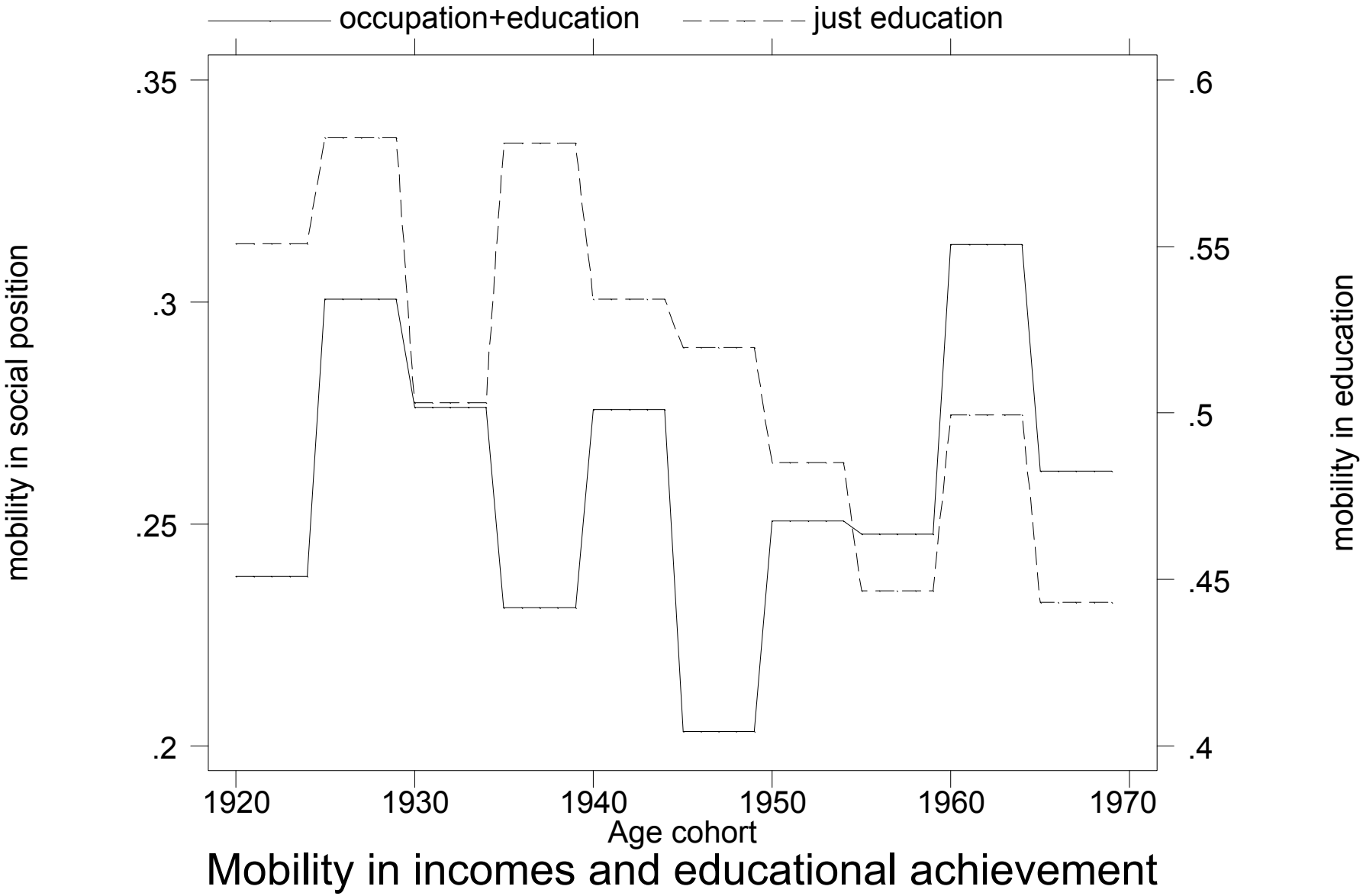


Figure 4 – Social mobility according to couple formation