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(Occasional Papers)

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EDUCATION, INCOME AND WEALTH:
PERSISTENCE ACROSS GENERATIONS IN ITALY

by Luigi Cannari[*] and Giovanni D'Alessio[*]

Abstract

The paper examines the intergenerational persistence of economic conditions in terms of education, income and wealth, and the importance of starting conditions in explaining success in Italy. The intergenerational persistence of economic conditions turns out to be relatively high by international standards; in recent years this phenomenon has displayed an upward trend. Variables that are not controlled by individuals explain their economic success to a greater extent than in the past.

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1   Introduction[1]

Mobility of economic conditions across generations is a fundamental characteristic for a society. The possibility of achieving an improvement in living conditions is a powerful incentive for the development of personal abilities, innovation, and commitment to work; it is advantageous not only for the individual, but also for the entire community, which can benefit from a more robust economic growth.

Intergenerational mobility is also a crucial topic in terms of equality. A society that registers a significantly higher possibility of economic success depending on inherited family wealth tends to generate discontent and is a source of possible tensions on the part of the disadvantaged population. This circumstance also constitutes a violation of the principles of equality on which Western democracies are founded. Article 3 of the Italian Constitution reminds us that it is the duty of the Republic to remove obstacles that, by limiting the equality of citizens, impede the full development of the human person.

The economic success of an individual can in fact be hindered (or favoured) by the existence of factors that are beyond their control (such as gender, place of birth, ethnicity, education and the economic conditions of the family of origin). It is therefore necessary to question the causes that give rise to unequal opportunities and to reflect on the most appropriate policies to favour the realization of individuals and a more inclusive growth.

In this paper, we examine the intergenerational transmission of educational levels, income and wealth, providing measures of the intensity of the relationship between the conditions of parents and those of their descendants. The measure of the degree of inheritance of economic conditions is carried out over a period of more than two decades, with the aim of assessing whether there have been changes in the degree of fluidity in Italian society.

The work is organized as follows: in paragraph 2 the main literature on the subject of the intergenerational transmission of economic conditions, with particular reference to income and wealth, is briefly reviewed. In paragraph 3 we first examine the link between the education of the parents and that of their offspring, an important determinant of the intergenerational transmission of economic conditions. Subsequently, estimates are provided on the link between income and wealth across generations. Paragraph 4 concludes the work.

2   Studies on intergenerational persistence in Italy

Studies on the persistence in social classes and occupational conditions between parents and offspring and on the intergenerational transmission of income and wealth provide important elements for assessing the equality of opportunities for individuals with different conditions of the family of origin (OECD, 2018). In Italy, analyses of this kind

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have a long-standing tradition (see, for example, Barbagli and Schizzerotto, 1997; Cobalti and Schizzerotto, 1994; Fabbri and Rossi, 1997). These studies, despite differences in method, have highlighted the lack of mobility in Italian society. According to recent comparative analyses, Italy features among countries where family origins strongly influence the success of descendants (Bernardi and Ballarino, 2016; Ballarino et al., 2016). Measures of 'unfair inequality' place Italy among the countries in which the distribution of income differs most from that which meets criteria of equality of opportunities and freedom from poverty (Hufe et al., 2018).

One aspect that contributes significantly to the persistence of the social and economic conditions from parents to their offspring is education (see, for example, Ballarino and Schizzerotto, 2011; Checchi et al., 2013; Ballarino et al., 2016). Despite the important role played by public education in Italy, intergenerational persistence in education levels continues to be high, with values of around 0.5 for the correlation between the years of study of the parents and those of their offspring. Yet the importance of social origins on occupational success does not only reveal its importance through education. Even with the same education, those coming from a family belonging to the upper classes are more likely to enter and remain in high positions in the occupational structure (Mocetti, 2014; Ballarino et al., 2016, Mocetti et al., 2018).

In recent years, researchers have been particularly interested in measuring the intergenerational elasticity coefficients (IGE) of incomes and in their international comparison (Corak, 2006). For Italy, Mocetti (2007) and Piraino (2008) used sample data from the Survey of Household Income and Wealth (SHIW) conducted by the Bank of Italy,[2] which in addition to the usual income information has collected data on the education and occupation of the household head (and for some years, also of the spouse) for many years now. Although in different ways, the two studies have estimated the coefficients of intergenerational elasticity by using called Two-Sample Two-Stage Least Squares (TS2SLS) method, reaching the conclusion that the estimated coefficients for Italy are quite high by international standards.[3]

More recently, Corak (2013) and the OECD (2018) have highlighted how income inequality and low intergenerational mobility are positively associated, even in Italy, where the level of income inequality and the degree of intergenerational persistence are relatively high, and are similar to those of the United States and the United Kingdom.

The studies based on the sample surveys have recently been supplemented by analyses that use administrative data taken from the archives on income tax returns or from those of the National Social Security Institute (INPS). The results of the work by Barbieri et al. (2018) confirm the high inheritance of economic conditions in our country. Acciari et al. (2017), using administrative data on tax returns, show that intergenerational mobility is lower in the regions of Southern Italy compared with those of the Centre and the North; greater persistence also characterizes individuals belonging to the richest decile.

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[2] See Baffigi, Cannari and D'Alessio (2016).

[3] Both papers provide a robustness analysis of estimates under different assumptions concerning the statistical method employed (the TS2SLS or the method that uses the estimated incomes for both parents and children), the reference indicator (income or wages), the family background information used (only of the household head or also of the spouse), and the reference period of the data for the parents.

Güell et al. (2018), adopting a strategy based on the variability of economic conditions associated with surnames, study the intergenerational mobility present in the various Italian provinces, and recorded a remarkable heterogeneity. This result is attributed by the authors to the inability of policies and institutions - fundamentally common across the provinces - to promote intergenerational mobility.[4]

As for wealth, estimates of IGE coefficients are less frequent due to a lower data availability. However, the studies conducted show that the levels of persistence in wealth between parents and offspring in Italy are quite high by international standards (Bloise, 2018).[5]

Overall, the conclusion drawn from these studies is that intergenerational mobility in Italy is relatively low by international standards. As to the evolution over time of the inheritance of economic conditions, as far as we know there are no previous structured studies: the results of the present paper indicate a tendency for the importance of the factors linked to the conditions of the family of origin to increase.

3   The role of the family of origin and the equality of opportunities

3.1   Intergenerational transmission of education

One of the channels for the transmission of welfare conditions from parents to children is education. As regards this aspect, some elements that characterize the structure of the Italian school system contribute to keeping inequalities in the starting points (Checchi and Zollino, 2001). Firstly, compulsory schooling is judged capable of only partially compensating the cultural differences between the families of origin. Checchi and Zollino point out how the final grade gained at school increases according to the level of education of the parents. A second factor, partly linked to the previous one, is represented by the differentiation by secondary school addresses. Students self-select themselves in the different types of secondary education (or school leaving) on the basis of the results previously achieved and the profession and qualification of their parents. This mechanism determines a segmentation of the student population (for example between high schools and vocational schools) strongly correlated with the social classes of origin; segmentation is strengthened over time through the mechanism of the peer effect, according to which individuals with similar characteristics share values, aspirations and behaviours and thus reinforces the prevailing characteristics of the group into those of individuals. Finally, wealthy families who take advantage of private schools tend to benefit from a more favorable external environment, by wealth and by profession, with potential advantages in their subsequent career.

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[4] Barone and Mocetti (2016), adopting the methodology proposed by Güell et al. (2015), find much lower levels of economic mobility in 14th century Florence than those found today.

[5] The analysis of the transmission of wealth can also be approached from another point of view, by measuring the importance of inherited wealth on the total wealth held. Cannari and D'Alessio (2008), Vecchi et al. (2017) and Cannari and D'Alessio (2018) provide evidence in this sense, showing how the contribution of inheritance to the net wealth of households is important on average between 30 and 50 per cent, depending on the definitions used, and is growing over time.

The objective of this section is to evaluate the degree of persistence in education levels between parents and offspring over time in Italy. To this end, we examined the answers provided by the approximately 90,000 respondents in the SHIW between 1993 and 2016 regarding their educational qualifications, those of their spouses and of their parents.[6]

For simplicity of analysis the degree achieved has been converted into years of study; by subdividing the sample into classes composed by a five-year birth cohort of the household head or the spouse, we obtain the same number of correlation coefficients between the years of education of parents and offspring (Figure 1).

Figure 1

Correlation of the years of education of parents and offspring, according to the birth cohort of the interviewees
(household heads (HH) and spouses (SP))
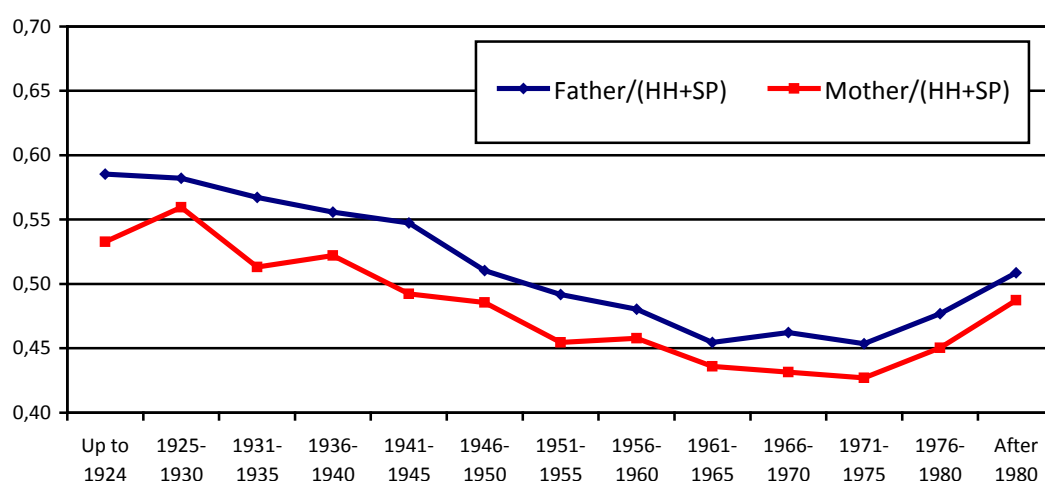
The data show a decreasing trend in correlation coefficients between the years of education of parents and those of their offspring; we move from values close to 0.55 for those born before the 1930s to values of about 0.45 for those born between the mid-fifties and the mid-seventies. For the following generations the correlations increase again; in the last two classes (1976-80 and after 1980), however, the sample size is relatively small (about 3,000 and 2,200 units respectively), and the results require cautious analysis. The correlation coefficients between the years of education of offspring and those of their fathers are higher than those with the years of study of their mothers, but the two trends are similar.

The analysis of intergenerational persistence can be also carried out by examining the elasticity of the years of study of the offspring compared to those of the parents, evaluated by controlling some phenomena correlated with those under examination, such

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[6] The household heads interviewed were asked to provide the educational level (and until the 2012 survey the job status and sector of activity) of their parents, when they were the same age as the interviewee. The same information was requested for the interviewee's spouse, except in the surveys for 2008, 2010 and 2012. In the study of the relationship between the educational levels of parents and offspring, household heads and spouses were considered indistinctly in a single sample, which selected only those aged at least 30, for a total of about 120,000 units.

as the progressive improvement in women's level of education and the increased presence of foreigners in Italy.

By organizing the birth cohorts into five-year classes, the coefficients of a model that relates the logarithm of the years of study of the interviewed household head or the spouse to that of their respective parents were estimated. In the model, the year of the survey, the geographical area of residence, the gender, the interaction between the gender and the birth cohort and that between the dummy that identifies those born abroad and the birth cohort were all controlled.

The results reported in Table 1 and based on the years of study of the father (model 1) show that the effect of intergenerational transmission tends to decrease over time, from values around 0.46 for those born until 1924 to values around 0.11-0.12 for those born in the sixties, and then go up again slightly for younger generations.[7] Considering the average of the years of study of both parents (model 2), the values of the coefficients increase slightly compared with the previous case (the maximum value is 0.49 for those born until 1924) but keep the same trend, first decreasing and then slightly increasing. Considering the years of study of the two parents separately, the greater role of the father's education compared with that of the mother is confirmed; when adding up the coefficients of the father and the mother, the overall result does not change with respect to the previous model; this result must be attributed to the strong correlation between the educational level of the two parents (on average around 0.75).

Overall, the models confirm what has already been highlighted by looking at correlation coefficients: the intergenerational transmission of education levels shows a downward trend for generations born until the mid-seventies, and an increasing trend in subsequent generations.

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[7]   This trend seems to be supported by the weak significant difference between the coefficient for those born between 1961 and 1965 compared with that of younger generations. The model also has a positive coefficient for males that decreases over time until it becomes negative for younger generations.

Table 1

Intergenerational elasticity coefficients (IGE)
between years of education of parents and offspring
(coefficients of a log/log model on household heads and spouses*)

Birth cohort	Model 1	Model 2	Model 3	
	Years of education of the father	Average of years of education of the father and of the mother	Years of education of the father	Years of education of the mother
Up to 1924	0.458	0.486	0.328	0.168
1925-1930	0.379	0.414	0.237	0.186
1931-1935	0.352	0.386	0.245	0.142
1936-1940	0.280	0.306	0.198	0.108
1941-1945	0.234	0.260	0.168	0.089
1946-1950	0.178	0.203	0.107	0.096
1951-1955	0.151	0.171	0.105	0.064
1956-1960	0.134	0.154	0.087	0.065
1961-1965	0.120	0.139	0.075	0.060
1966-1970	0.114	0.133	0.087	0.042
1971-1975	0.123	0.150	0.083	0.061
1976-1980	0.142	0.167	0.104	0.054
After 1981	0.158	0.168	0.113	0.055
Number of observations	120,302	119,139	119,139	
R^2	0.413	0.421	0.421	

(*) Other variables in the model are not shown: year of the survey, geographical area of residence, gender, born abroad dummy, interaction of birth cohort and born abroad dummy and interaction of birth cohort and gender. All the coefficients are significantly different from zero at the 1 per cent significance level.

3.2   *Intergenerational transmission of income and wealth*

In this paragraph we estimate the relationship between income and parents' wealth and that of their offspring with the TS2SLS methodology used for the first time by Björklund and Jäntti (1997) and already applied by various authors to Italian data.[8]

This methodology is based on the availability of two different samples observed in different time periods: a sample of individuals (adult offspring) for whom information is available on their income and on the characteristics (but not on the income) of their parents; a sample of 'pseudo-parents', or of individuals who were of an intermediate age in a period in which the 'pseudo-offspring' were children.

The sample of the pseudo-parents is used to estimate the relationship between income and the socio-economic characteristics of the recipients; this relationship is then applied to the characteristics of the parents reported in the sample of adult offspring, in order to obtain an estimate of their parents' income. Finally, the income of the offspring is regressed according to the (estimated) income of the parents. The regression can be carried out in a log-log form, leading to estimates of the elasticity of the offspring's income compared with the parents' income (IGE coefficients) or by using income quantiles (or ranks) to estimate the intergenerational mobility in terms of position on the income scale (rank-rank coefficients).

The TS2SLS procedure can lead to estimates characterized by different types of biases, due to measurement errors in the income of the parents and in the link between that of the offspring. In theory the bias can be in both directions, but according to some authors

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[8]   See Mocetti (2007), Piraino (2008), Mocetti (2011), Acciari et al. (2016), and Barbieri et al. (2018).

(Björklund and Jäntti, 1997; Blanden, 2013) the IGE coefficients are probably overestimated.

SHIW data are used for the estimates reported in this paragraph. This survey has been collecting information since 1993 on the characteristics of the parents of the head of the household interviewed and of the spouse (albeit with a degree of detail that is variable over time), in addition to information on the income and wealth of household members. The household heads and income earners, aged between 30 and 50, are selected from these surveys. This set constitutes the sample of adult offspring.

For the sample of the pseudo-parents, the micro-data of the SHIW waves carried out starting from 1977 are used, selecting male income earners between the ages of 30 and 50; the relationship between the income from work and the individual characteristics is estimated using this sample. This relationship is then applied to the parents' data indicated by the interviewees in the sample of offspring to estimate their parents' income. In making the estimate, the parents are given the same age as their offspring, since in the questionnaire the information collected on the parents refers to the moment in which the parents were the same age as their offspring at the time of the interview.

The relationship is estimated by using two different sets of explanatory variables: the first set consists of the age, the area of residence and the education level of income earners; the second also includes the sector of economic activity and the recipient's job status.

The estimates used to reconstruct the parents' income in the sample of adult offspring are based on SHIW waves (i.e. on the samples of the pseudo-parents) for about 25-30 years earlier; in this way the coefficients are allowed to evolve over time. For example, in the sample of offspring observed in 2016 (the most recent SHIW available at present), parental income data are reconstructed from the relationship between the income from work and the characteristics of the estimated earner in data from income earners collected in surveys between 1986 and 1989. For the sample of offspring interviewed in 2014, the estimates made for the period 1984-1987 are used, and so on. Since the oldest SHIW microdata refer to 1977, data from the period 1977-79 are also used for the estimate of parents' incomes in samples of descendants that precede the survey on 2008. Estimates of the relationship between the incomes of the offspring and those of the parents between 1993 (the first year for which information on the parents of the family heads interviewed is available) and 2008 therefore require a certain caution as the difference between the period of survey for the sample of pseudo-parents and that for the pseudo-offspring tends to reduce progressively.

Estimates of elasticity (IGE) computed on labour income are between 0.36 and 0.64 (with an average value of 0.45) when the parents' income is reconstructed using the information on the level of education, the sector of activity and the job status (Table 2). These values appear in line with those of around 0.5 obtained by Mocetti (2007; 2011),

Piraino (2008) and Barbieri et al. (2018).[9] Values of this magnitude indicate that Italy is a country with low intergenerational income mobility in comparison with the main advanced economies.[10]

When income from work of the parents is estimated based on the level of education only, without taking into account the job status and the sector of activity, the IGE is higher than in the previous case (on average equal to 0.71); this result could however derive from the lower accuracy of parents' income estimates, and from the fact that parents' education can directly influence (as well as through the income of the parents) the income of their descendants.

The temporal profile of the elasticities computed on labour income provides a picture of a society that in recent years has tended to become less mobile (Figure 2). In particular for the years from 2010 to 2016, the IGE coefficients appear higher than those of previous years. The most recent surveys therefore modify the view of a substantial stability found until 2008 by Mocetti (2011).[11]

IGE estimates are characterized by a certain instability; therefore, other assessments were made, regressing the rank of the income of the offspring on the rank of the parents' income, the latter estimated as described above.

The coefficients estimated on the ranks of parents' and offspring's income from work are between 0.25 and 0.33 (on average it is equal to 0.27), when the parents' income is calculated by including the job status and the sector of activity among the regressors; it is equally between 0.25 and 0.33 (but with an average of 0.29) when these variables are excluded from the regressors. Estimates based on the ranks therefore appear lower in level and more stable than those based on the values. The order of magnitude of the coefficient is a little higher than that estimated by Barbieri et al. (2018) and Acciari et al. (2017).

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[9] The results obtained here are higher than the estimates of Acciari et al. (2017), who obtain an IGE equal to 0.22 by using administrative data for Italy. This result could derive from the fact that the reconstruction of parents' incomes is based on two-year administrative data (1998-99), which could be affected by a certain randomness; the results could also be affected by tax evasion phenomena, and the limited distance between the period of observation of the parents' incomes and that of the offspring (about 13 years).

[10] According to Mocetti (2007) and Piraino (2006), Italy presents an IGE for household income similar to those of the United States and the United Kingdom (countries with a high level of intergenerational persistence of economic conditions) and higher of those of Sweden and Canada. The Global Database on Intergenerational Mobility (GDIM) of the World Bank confirms that the IGE for Italian income is relatively high compared with the main advanced countries.

[11] It should also be noted that Mocetti (2011) obtained an increase in the degree of persistence for those born at the turn of the 1980s, who probably entered the labour market in the 2000s.

Table 2

Intergenerational persistence of income
(IGE and rank coefficients)

Year	Income from work				Disposable income	
	Education, job status and sector of activity *	Only education *	Education, job status and sector of activity **	Only education **	Education, job status and sector of activity **	Only education **
1993	0.45	0.54	0.26	0.27	0.26	0.26
1995	0.43	0.67	0.28	0.30	0.24	0.28
1998	0.37	0.53	0.28	0.26	0.28	0.26
2000	0.36	0.56	0.25	0.28	0.32	0.31
2002	0.45	0.69	0.25	0.25	0.32	0.32
2004	0.42	0.71	0.26	0.30	0.30	0.32
2006	0.39	0.68	0.25	0.26	0.29	0.30
2008	0.37	0.61	0.28	0.31	0.31	0.35
2010	0.64	0.95	0.33	0.33	0.34	0.33
2012	0.64	0.80	0.28	0.28	0.34	0.36
2014	-	0.97	-	0.33	-	0.39
2016	-	0.76	-	0.33	-	0.40

* Estimates of the Intergenerational elasticity index (IGE).
** Estimates based on ranks.

Considering total disposable income in place of the income from work, both the IGE coefficients and the estimated coefficients on the ranks are higher. This is due to the fact that disposable income includes income from capital, connected with wealth, which in turn is characterized by a high level of intergenerational persistence. We will return to these phenomena later on.

Rank-based estimates, and in particular those for disposable income, also confirm a tendency towards a stronger relationship between the economic conditions of parents and offspring in more recent years.[12]

SHIW data make it possible to widen the analysis to include household wealth. To estimate the wealth of parents, a model similar to that used for income was used. Unfortunately, since wealth information has only been collected in SHIW with some accuracy since 1991, it is not possible to estimate the wealth of the parents using, as for income, data from 30 years prior to those for the offspring.

Therefore, two different strategies have been applied. In the first, the wealth of the parents was estimated on the basis of data on real assets only, which constitute the main part of net wealth, and the data for which have been available since 1977. In the second one, for the most recent surveys, data were used referring to surveys with a time lag of about 18 years (data from 1998-2000 for 2016, from 1995-1998 for 2014 and so on) while for the surveys before 2010 the estimates for the parents were obtained with data from the period 1991-93, thus maintaining a constant relationship between education and work on the one hand and wealth on the other. Both these estimates should therefore be interpreted with some caution.

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[12] The tendency of IGE coefficients to increase is confirmed by considering together the data for the various years and inserting a term of interaction between the IGE coefficients and the time into the model; the interaction coefficient is indeed positive and significant at the usual levels of probability.

Figure 2

Intergenerational persistence of income
(coefficients computed on income from work)
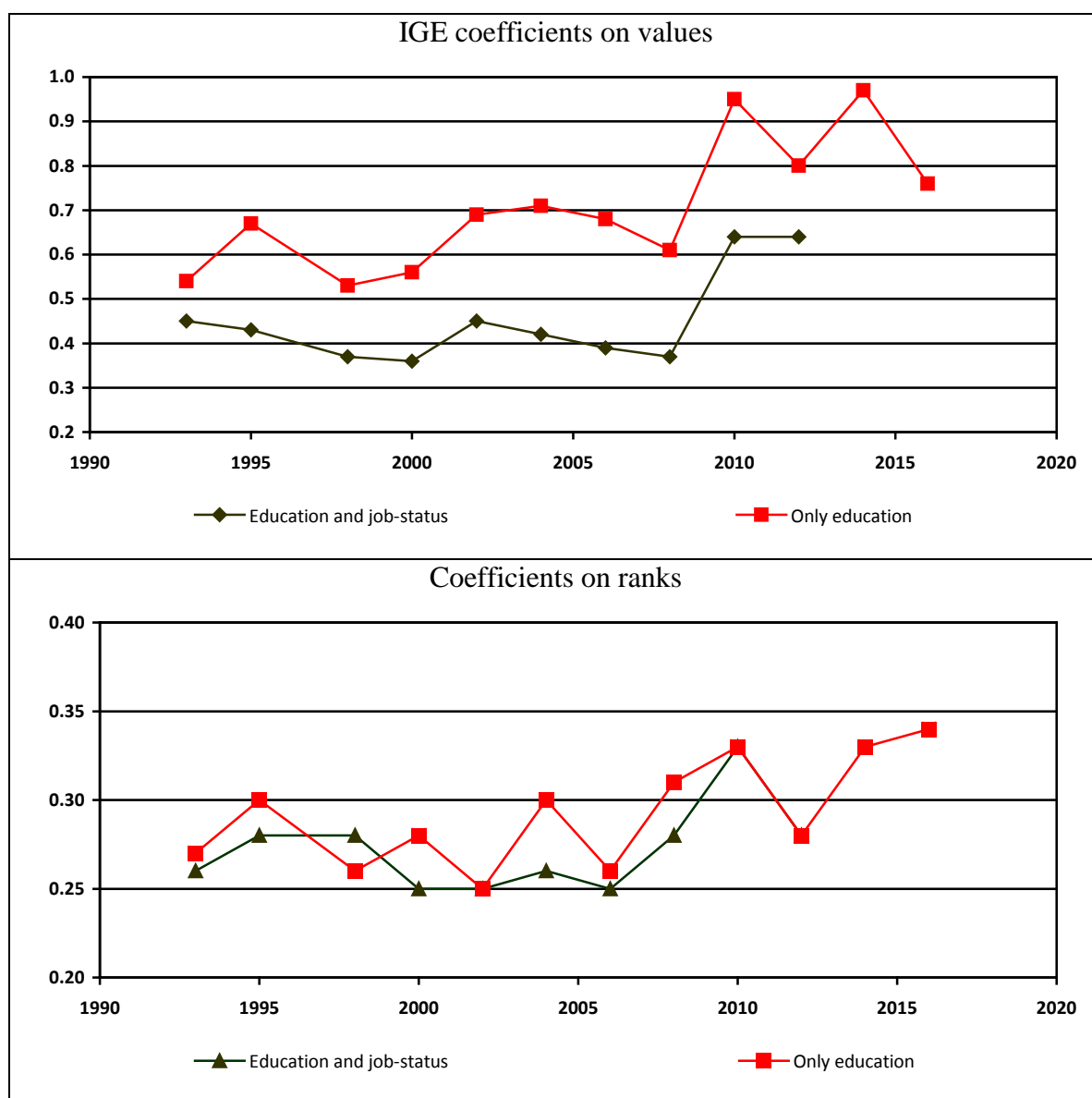
Since net wealth can also have zero or negative values, for the analysis of the relationship between the wealth of the parents and that of the offspring we resort to a regression on the ranks. By including job status and sector of activity among the explanatory variables for the wealth of the parents (in addition to education, area of residence and age) and using real assets, the coefficients of the regressions on the ranks are in the 0.16-0.23 interval (with an average of 0.21). Higher values (between 0.17 and 0.49, with an average of 0.29) are found in the estimates that exclude the parents' job status and sector of activity. The latter method can be extended to the most recent surveys (2014 and 2016), in which the information on the parents' job status and sector of activity were not collected.

The estimates obtained by using wealth data from 1991 onwards are quite similar (see Table 3). In particular, both series seem to indicate a tendency to increase the

persistence of economic conditions between parents and offspring, particularly in recent years (Figure 3).

The size of the coefficients in recent years is equivalent to that obtained by Bloise (2018). These values place Italy among the advanced countries with rather high levels of intergenerational wealth persistence.

Table 3

Intergenerational persistence of wealth[*]

| Year	Education and job status **	Education **	Education and job status***	Education ***
1993	0.23	0.22	0.26	0.30
1995	0.19	0.23	0.24	0.32
1998	0.21	0.17	0.23	0.20
2000	0.23	0.27	0.26	0.26
2002	0.22	0.22	0.26	0.20
2004	0.23	0.28	0.27	0.28
2006	0.16	0.24	0.21	0.23
2008	0.20	0.31	0.25	0.30
2010	0.21	0.26	0.25	0.23
2012	0.23	0.34	0.32	0.32
2014	-	0.45	-	0.33
2016	-	0.46	-	0.38

* Estimates based on ranks.
** Coefficients estimated on real asset data for the parents from 1977 onwards.
*** Coefficients estimated on net wealth data for the parents from 1991 onwards.

Figure 3

Intergenerational persistence of wealth
(coefficients estimated on ranks of real assets (RA) and net wealth (W))
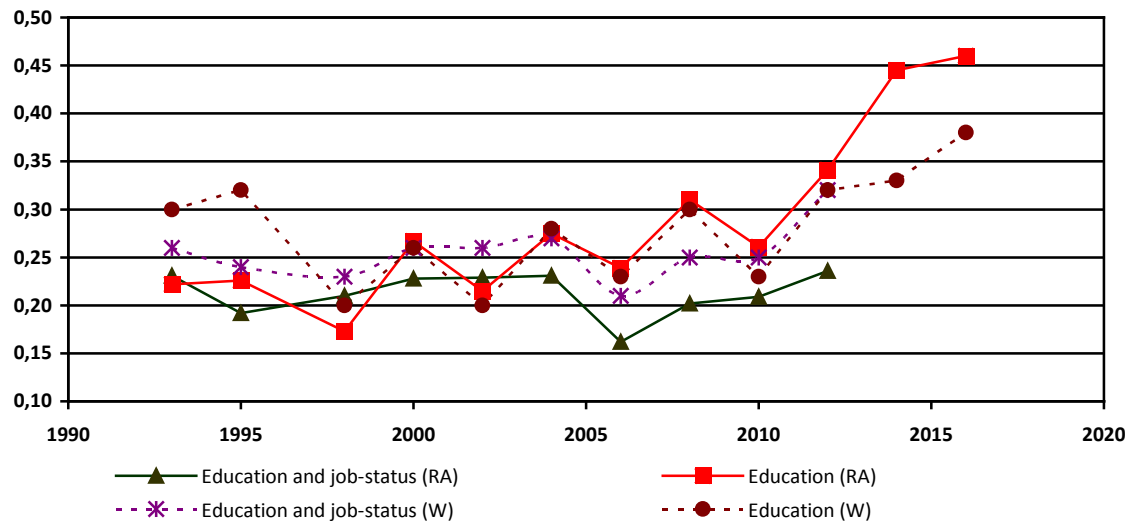
Finally, we report some results taken from the direct observation of households of parents and offspring in the SHIW. In fact, since 1995 the survey has been interviewing the households that are created when the offspring leave their family of origin and form a new household. In practice, the collection of data is subject to the fact that the new household resides in a municipality sampled for the survey and to other aspects of a practical nature. In the end, in all the SHIW waves, there are a total of 603 families of parents and offspring interviewed in the same survey, for which we have income and

wealth for the same year. In some cases there are more records for the same households, since the SHIW has a panel component and both the parents and the offspring may have been interviewed on several occasions. The total number of different households for which information on parents and offspring is available for at least one year is 336; for the offspring, these are mainly young subjects with an average age of 32, a period in which both income and wealth refer to the initial phases of the life cycle.

The contemporary correlation (which does not take into account the different ages) between the income and wealth of households of parents and offspring is respectively 0.29 and 0.20. Taking the average of the values in cases where more surveys for the same household are available, the correlation rises to 0.30 for income and 0.31 for wealth respectively. This confirms what was already found by other authors about higher coefficients obtained over longer periods (or other approximations of permanent income). Estimated IGE coefficients in models where age and squared age are also present are equal to 0.27 for income and 0.24 for wealth. These results show a certain instability, due to the modest sample size, and the randomness of the values measured in individual years (or short periods); they are also affected by the fact that the offspring are observed at a predominantly young age.

3.3   Channels of intergenerational transmission

In this section we examine the channels through which intergenerational transmission of income takes place. Following the methodology shown in World Bank (2018), it is possible to break down the index of intergenerational persistence of income from work (IGE) into the following components: T_1) the effect of parents' education on the income of their offspring, through the offspring's education; T_2) the effect of parents' education on their offspring's income, for channels other than the education of their offspring; and T_3) the effect of other characteristics, other than education, on the income of offspring. Indicating with B_y and B_s the intergenerational persistence of income from work and of education (years of study) of parents and offspring respectively, λ_p and λ_c being the respective coefficients of the returns from schooling, R^2_p and R^2_c the share of variance explained by the Mincer equation for parents and offspring, δ_s the angular coefficients of the regression of the other determinants of the offspring's earnings, and δ_y the angular coefficients of the regression of the other determinants of the parents' earnings, we obtain the following decomposition:

$$B_y = T_1 + T_2 + T_3 = R^2_p \; (\lambda_c/\lambda_p) \; B_s + R^2_p \; (\delta_s/\lambda_p) + (1 - R^2_p) \; \delta_y$$

The returns from the schooling coefficient (λ_c), estimated with a simple equation that for each year takes into account the geographic area, gender, age and age squared, has a value oscillating over the years of around 6 per cent. The coefficients of determination for these equations (R^2_c) decline sharply, going from about 40 to less than 20 per cent; the years of study are therefore less and less relevant in explaining the variability of income from work. The term referring to the performance of parents' education (λ_p) was obtained by considering the estimated coefficient in the survey of about 25 years earlier (and using the oldest data available for the years 1993 to 2000); similarly we proceeded with the R^2_p coefficient.

The three elements identified in the above formula, T_1, T_2 and T_3 are reported in Table 4. The effect of parental education on their offspring's income through the education of offspring (T_1) tends to decline in the period 1993-2016, from about 0.21 to below 0.15. The term indicating the effect of parental education on the income of offspring, for channels other than the education of their children (T_2), is the smallest of the three considered, and ranges from 0.05 in 1993 to 0.12 in 2002 and then falls again to 0.07 in 2016. The most significant effect on the income of offspring is that attributable to characteristics other than education (T_3), which has increased decidedly over time. In relative terms, the weight of this component goes from about half in 1993 to just under three quarters in 2016.

Table 4

Decomposition of IGE index on income from work (*)

Year	B_y	B_s	R^2_c	R^2_p	λ_c	λ_p	δ_s	δ_y	T_1	T_2	T_3
1977			0.390		0.060						
1978			0.348		0.058						
1979			0.382		0.065						
1980			0.359		0.058						
1981			0.322		0.053						
1982			0.308		0.053						
1983			0.355		0.056						
1984			0.329		0.057						
1986			0.251		0.050						
1987			0.320		0.054						
1989			0.264		0.046						
1991			0.264		0.049						
1993	0.540	0.510	0.261	*0.390*	0.065	*0.060*	0.007	0.453	0.215	*0.048*	*0.277*
1995	0.670	0.512	0.243	*0.390*	0.063	*0.060*	0.012	0.632	0.210	*0.075*	*0.386*
1998	0.530	0.484	0.212	*0.390*	0.059	*0.060*	0.011	0.451	0.185	*0.070*	*0.275*
2000	0.560	0.468	0.214	*0.390*	0.052	*0.060*	0.014	0.511	0.158	*0.090*	*0.312*
2002	0.690	0.419	0.206	0.390	0.056	0.060	0.019	0.677	0.154	0.123	0.413
2004	0.710	0.421	0.199	0.382	0.056	0.065	0.017	0.765	0.138	0.100	0.473
2006	0.680	0.397	0.198	0.322	0.052	0.053	0.019	0.650	0.125	0.114	0.441
2008	0.610	0.428	0.203	0.355	0.053	0.056	0.013	0.590	0.144	0.085	0.381
2010	0.950	0.412	0.211	0.290	0.057	0.054	0.015	1.043	0.127	0.083	0.741
2012	0.800	0.432	0.190	0.320	0.060	0.054	0.012	0.848	0.153	0.071	0.576
2014	0.970	0.434	0.163	0.264	0.050	0.046	0.017	1.013	0.125	0.099	0.746
2016	0.760	0.435	0.168	0.264	0.055	0.049	0.013	0.761	0.131	0.069	0.560

(*) The coefficients for parents (R^2_p and λ_p) are those estimated 25 years earlier. In the event that information is not available we use data from the nearest available year (from 1993 to 2000, in italics in the table).

3.4   A wider look at the family of origin

So far we have examined the intergenerational persistence of economic conditions, estimating the elasticity of income (and wealth) with respect to the family of origin, and reconstructing aggregates through indicators of education and job activity.

This paragraph extends the analysis to the family background, evaluating how the economic conditions of the households interviewed relate not only to those of the parents, but also to those of any siblings. The analysis of the economic condition of siblings makes it possible to broaden the spectrum of phenomena included in the family background; siblings, in fact, share not only the family of origin but also a series of effects related to

the territory and the context in which they live (Bjorklund et al., 2010; Bingley and Cappellari 2017).

Unfortunately, more detailed information on the family background was only collected in the SHIW in 1993. The conclusions that can be drawn are therefore limited in time; they are however very useful for integrating the available information set.

The 1993 survey questionnaire included a special module on social mobility in which the household head and the spouse were asked to indicate whether their parents and siblings were still alive and, if so, to evaluate - in relative terms - the gap in their economic conditions compared to their own.

The question asked to assess the economic level of the parents of the household head and of the spouse was as follows: "*Think now about the economic conditions of your household and those of your parents. Do you judge the economic conditions of your household higher, lower or equal to those of your parents?*". If the answer was "*lower*" or "*higher*" the follow-up question was: "*How much, in percentage terms, do you judge the economic conditions of your family to be lower/higher compared with those of your parents?*". A similar question was asked about the siblings of the household head and of the spouse.

The sample is quite large: there are about 3,300 households whose heads had at least one of their parents still alive and about 2,300 families in which both spouses had at least one of their parents still alive. Samples are less numerous when siblings are examined jointly; for example, in about 1,800 cases we have information on the households of the siblings of the heads and of the spouses, as well as information on the families of origin.

As we have said, for the parents and offspring of the head and the spouse of household interviewed there is no direct information on the economic conditions but only indications provided by the interviewees in comparison to their own. To reconstruct an absolute measure for these households, we assumed we were able to approximate the 'economic conditions' mentioned in the question with the equivalent income, defined as household income divided by the square root of the number of components.

The equivalent income of the parents Y_p (and of the siblings Y_b) was therefore obtained starting from that of the family interviewed Y as $Y_p = Y/(1-p)$ or with $Y_p = Y/(1+p)$ depending on whether the respondent judged the economic conditions of his/her household to be higher or lower than those of his/her parents' (sibling's) household by p per cent; in cases where the economic conditions were judged equal, $Y_p = Y$ (or $Y_b = Y$) was placed.

The studies in this field generally use permanent income measures; the indicators considered here refer to 'economic conditions' which - albeit in an approximate way - could capture a long time dimension. However, to control for other potentially confusing factors with respect to intergenerational analysis, the age of the interviewee and his/her square were also considered as independent variables in the regressions, in addition to the area of residence, the gender and the educational degree.

The study of the impact of parents' income on that of the respondent was examined with regression models similar to those used in the previous paragraphs, using the logarithms of income measures.

The IGE coefficient referring to the economic conditions of the parents of the household head is equal to 0.71 (Table 5, model 1), higher than previously estimated on the total income, especially as regards the estimates made in the ranks (model 4). It is possible that this is due to the different ways in which incomes are measured. The estimates obtained in the 1993 survey could be affected by the rather high frequencies of families who judge their economic conditions to be equal to those of their parents (around 30 per cent) and siblings (around 55 per cent); in such cases we estimate income to be exactly equal to those of the interviewed households, leading to an overestimation of the correlation. Moreover, the estimate of the income of parents and relatives is made using the household income of the household interviewed as a basis, and thus measurement errors are positively correlated with those that characterize the respondent's income.

The R^2 coefficient of the above model is equal to 0.69. If the income of the spouse's parents is also included in the model, the R^2 coefficient becomes 0.73; introducing the income of the siblings of the household head and of the spouse as well puts the R^2 coefficient up to 0.89. According to these estimates, therefore, the impact of the family of origin, including all the factors that can be traced back to it (such as income, wealth, transmitted aspirations, cultural elements, knowledge and so on) as well as all the extra family factors that are shared by siblings (such as the neighbourhoods of residence, the environments and schools attended), would reach almost 90 per cent of the variability of income. Estimates might be influenced by the imperfect measurement used in the analyses; however, these results undoubtedly indicate that the share of variability in the economic outcomes attributable to the individual's capabilities, which is not explained by the family context, is limited.

To confirm this conclusion, the correlations of the income of siblings can be examined. The value of the correlation coefficient between the equivalent income of the interviewed household and the average of the equivalent income for the siblings of the household head is equal to 0.72. The partial correlation, net of income and education of the parents, is equal to 0.65, indicating the presence of additional relevant factors, common to the siblings.

Following Bjorklund et al. (2010), the correlation of the income of the siblings can be decomposed into a part attributable to the direct effect of the parents, taken from the square of the IGE coefficient, and factors uncorrelated with the IGE that describe the context common to the siblings: Sibling correlation = IGE2 + other factors uncorrelated with the IGE.

On the basis of the estimated correlation values of the siblings' income of around 0.72 and considering an IGE value of around 0.7, we derive that these additional family background factors (uncorrelated with the parents' income) account for about 0.22, i.e. a little less than half of the direct effects of the parents' economic conditions ($0.7^2 = 0.49$).

Table 5

**Elasticity of respondents' income
compared with that of their parents and relatives, 1993**

Model*	Economic conditions of relatives	Elasticity	R^2	Sample size
Model 1	Parents - household head	0.706	0.687	3331
Model 2	Parents - household head	0.249	0.733	2313
	Parents - spouse	0.502		
Model 3	Parents - household head	0.103	0.890	1855
	Parents - spouse	0.146		
	Siblings of household head	0.347		
	Siblings of spouse	0.345		
Model 4 (rank)	Parents - household head	0.718	0.626	3331
Model 5 (rank)	Parents - household head	0.236	0.690	2313
	Parents - spouse	0.561		
Model 6 (rank)	Parents - household head	0.098	0.863	1855
	Parents - spouse	0.179		
	Siblings of household head	0.380		
	Siblings of spouse	0.347		

(*) Further regressors not shown in the table: geographical area, gender, age and age squared.

3.5 Variance of years of education, income and wealth explained by starting conditions

The estimates presented so far have highlighted the effects that the characteristics of the family of origin have 'on average' on education and on the economic conditions of offspring. In this section we examine how much of the variability of a person's education, income and wealth is explained by the 'starting conditions', i.e. the characteristics of the family of origin and some factors (such as birthplace and gender) that are not under his/her direct control. A strong role of these variables in explaining individual success is a sign that social organization has difficulty ensuring equality of opportunities.[13]

In an initial set of experiments, the conditions of origin were approximated by the place of birth (divided into 5 categories, determined by the geographical area for those born in Italy and distinguishing European or American countries from others for those born abroad), the age (linear and quadratic term), and the gender and the education of father and mother of the household head. These variables were considered as explanatory variables in a regression model in which the independent variable is first the number of years of education, then the income, and then the wealth.

The R^2 coefficients that are obtained for these regressions (Table 6) show that the starting conditions have a decreasing effect on the years of education until 2006 (from 0.26 to about 0.20); from 2008 onwards the share of variability attributable to the starting conditions returns to growth, reaching levels in 2016 similar to those of 1993.

The models that also consider the job status and the sector of activity of the father and mother among the explanatory variables (information available only until 2012) have R^2 coefficients that are higher than the previous models by about 2-3 percentage points, but confirm the trend observed in the period with restricted models.

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[13] On these aspects see Hufe et al. (2018).

Table 6

**Effect of the starting conditions of household head
on income and wealth*, 1993-2016**
(R^2 coefficients of linear models)

Year	Education		Income								Wealth			
	Restricted model **	Extended model ***	Restricted model**				Extended model ***				Restricted model**		Extended model ***	
	Year of schooling	Year of schooling	Per-capita	Log Per-capita	Equivalent	Log Equivalent	Per-capita	Log Per-capita	Equivalent	Log Equivalent	Per-capita	Log Per-capita	Equivalent	Log Equivalent
1993	0.262	0.282	0.188	0.231	0.231	0.235	0.198	0.242	0.239	0.244	0.102	0.058	0.116	0.066
1995	0.249	0.272	0.201	0.251	0.241	0.247	0.213	0.260	0.251	0.255	0.090	0.080	0.107	0.091
1998	0.258	0.287	0.197	0.258	0.233	0.251	0.215	0.271	0.250	0.264	0.086	0.083	0.104	0.088
2000	0.230	0.263	0.207	0.258	0.251	0.264	0.227	0.280	0.269	0.283	0.090	0.087	0.115	0.097
2002	0.211	0.253	0.227	0.277	0.264	0.286	0.255	0.309	0.282	0.309	0.111	0.092	0.134	0.105
2004	0.219	0.250	0.209	0.261	0.250	0.269	0.265	0.302	0.286	0.293	0.102	0.092	0.149	0.110
2006	0.196	0.227	0.214	0.258	0.263	0.275	0.246	0.281	0.286	0.293	0.055	0.073	0.091	0.072
2008	0.220	0.238	0.236	0.294	0.293	0.315	0.260	0.323	0.311	0.335	0.125	0.121	0.157	0.148
2010	0.215	0.250	0.226	0.274	0.286	0.302	0.253	0.302	0.306	0.317	0.154	0.145	0.186	0.150
2012	0.238	0.263	0.249	0.290	0.291	0.305	0.273	0.322	0.314	0.329	0.114	0.154	0.201	0.157
2014	0.237	-	0.233	0.284	0.279	0.290	-	-	-	-	0.135	0.123	-	-
2016	0.253	-	0.240	0.274	0.290	0.289	-	-	-	-	0.168	0.119	-	-

* Income and wealth data were winsorized for each year at 5% and 95%; in the models using logarithms the negative values are set equal to 1. ** The restricted model approximates the conditions of origin with the place of birth, the age (and its square), the gender and the educational level of father and mother. *** The extended model also includes the job status and the sector of activity of the father and mother of the household head among the explanatory variables.

Results on income, on the other hand, show that the starting conditions have an effect on this variable that tends to increase over time throughout the period observed; in the 1990s the explanatory variables accounted for about 20 per cent of the variability of per capita income, and 23.5 per cent of the equivalent income, against values that are in both cases about 5 percentage points higher at the end of the period. Similar results are obtained considering the equivalent income and the logarithms for these two measurements.
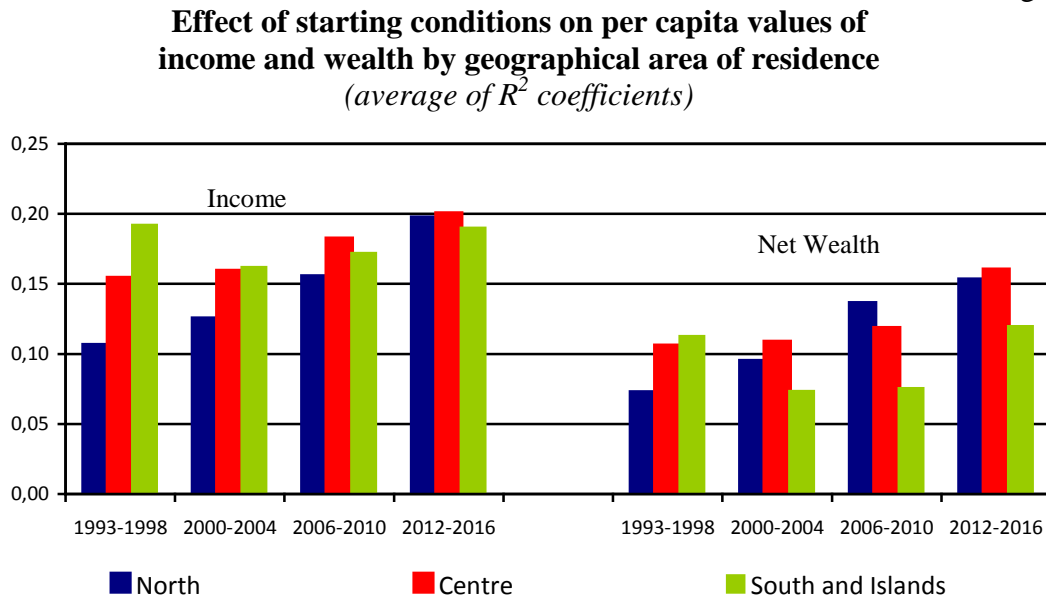
By including the job status and the sector of activity of the father and mother as explanatory variables (until 2012), the models have R^2 coefficients higher than the previous ones by about 1 point in the 1990s and about 2.5 points between 2008 and 2012.

If the starting conditions are used to evaluate the effect on per capita wealth, lower R^2 coefficients are obtained in terms of income, but with a similar trend. For the per capita wealth too, the starting conditions, approximated in the ways indicated above, have a significant effect, equal to about 10 per cent of the variability in the 1990s and to more than 15 per cent in the last year investigated. As with income, the progression seems more significant when the professional conditions of parents are included in the explanatory variables.

In the 1990s the effects of the starting conditions on income and wealth were decidedly more important in the South than in other areas of the country; over the years this difference has diminished to the point that it disappears in the case of income and

even reverses the sign in the case of wealth (Figure 4). In the South, however, the parents' education factor remains relatively more important while in the Centre and the North, the factors relating to the place of birth are more important (for foreigners in particular, which explains a significant part of the increase in the importance of the starting conditions found in the Centre and the North over time).

Effect of starting conditions on per capita values of income and wealth by geographical area of residence
(average of R^2 coefficients)

4   Conclusions

In this paper, we provide several measurements of the intergenerational persistence of educational levels and economic conditions in terms of income and wealth and of the role played by the starting conditions.

Estimates show a high intergenerational persistence in educational levels; the correlation coefficients between the years of study of the parents and the offspring range from values close to 0.55 for those born before the 1930s to values of about 0.45 for those born between the mid-fifties and the 1970s. For subsequent generations, a reverse trend is observed, with increasing correlation levels. The levels of correlation between the years of study of the household head and that of the respective mothers follow a similar trend but at lower levels, indicating a lower capacity of maternal education to influence the educational outcome levels of descendants compared with paternal education.

Estimates of the elasticity of labour income place Italy in the category of countries with low intergenerational mobility, confirming the results of previous studies. The temporal profile of the elasticities computed on labour income provides a picture of a society that in recent years has tended to become less mobile; for the years from 2010 to 2016, IGE values are higher than those of previous years. Rank estimates, lower in level and more stable than those for IGEs, and in particular those for disposable income, also point to a tendency towards an increasing persistence between parents and descendants' income conditions in more recent years.

Following the World Bank (2018), the index of intergenerational persistence of labour income has been decomposed, thereby isolating the effect of parental education on the income of offspring, through the education of offspring (T_1), the effect of parents' education on their offspring's income, for channels other than their offspring's education (T_2), and the effect of other characteristics, other than education, on the income of offspring (T_3). The analysis highlighted a declining role of the education factor (in particular T_1) while the contribution of family factors other than education (T_3) is decidedly increasing.

For wealth too, we find values that place Italy among the advanced countries with relatively high levels of intergenerational persistence; as for education and income, there has been a tendency for the phenomenon to increase in recent years.

On examining the share of variability of years of education, income and wealth accounted for by the starting conditions, i.e. the characteristics of the family of origin and some factors (such as birthplace and gender) that are not under the direct control of individuals, we observe a significant role for these variables in explaining the outcomes. In the case of education, the role of these factors shows a decreasing trend until 2006, while in the following years the trend is reversed. For income and wealth, on the other hand, the starting conditions have an increasing effect in the period examined. The phenomenon is partly attributable to the growing share of residents from other countries.

Some estimates made on data referring to the extended family, which also includes within its perimeter the siblings of the household head as well as the spouse's family - unfortunately only available for 1993 - suggest that the weight of the starting conditions may be more substantial than commonly hypothesized on the basis of the relationship between parents and offspring only. According to these estimates, the impact of the family of origin, including all the factors that can be traced back to it (such as income, wealth, transmitted aspirations, cultural elements, knowledge and so on) as well as all extra-family factors that are shared by siblings (such as neighbourhoods, environments and schools attended), is nearly 90 per cent of the variability of income. These results require some caution, as they are based on a limited sample and the data are subject to measurement problems; they are nevertheless indicative of the strong dependence of the economic outcomes of individuals on the characteristics of their family of origin and on their starting conditions.

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