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FROM RAGS TO THE RICHES:

AN ANALYSIS OF INTERGENERATIONAL MOBILITY AND INCOME INEQUALITY WITH A CLOSER LOOK TO THE ITALIAN CASE.

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INTRODUCTION

Se vogliamo che tutto rimanga come è, bisogna che tutto cambi.

(If we want things to stay as they are, things will have to change.)

(G. Tomasi di Lampedusa, *Il Gattopardo*)

The world is changing. Or, at least, it should be. People are all, and all over the word, calling for some change, and they are everywhere and every time promised that change will come.

But which are those changes everyone is so in need of? It's crystal-clear that economies in first place and, as a both cause and consequence, society as a whole are not working in the proper way. The world is stuck in a dangerous economic crisis and the threatening phantom of recession is wafting on the most developed and rich countries. Politics is revealing its most corrupted face. The labour market seems a hopeless land where obtaining a good job is a very hard job itself, but keeping it can be an even harder one. Education system is showing its failures, its limitations and its inability to match with the work system. Under this scenario, the successful ones are perceived to be the luckiest, the most cunning, sometimes the ones not afraid to resort to deception, fraud, illegal or unfair means toward the end.

But, if troubles are evident and injustices gross, less clear appear possible solutions as well as correcting or preventing measure able not only to change, but also to improve the current situation in a significant way: given a clear canvas and a paintbrush, how tomorrow's reality should be depicted?

To pick a starting point, a big failure of today's society is represented by the incentive and reward mechanism applied to every stage and context of an individual life from the cradle to the grave: in one word, meritocracy.

Boosting and promoting efforts, commitment and study to gain expertise, knowledge, skills and to achieve results, which will be recognized, evaluated on the basis of merit and worth and finally given the deserved reward. That system constitutes and embraces both incentives and reward to quality productivity we are in need of. And such a need to shape society in accordance to this basic and fundamental principle is well understood

by simple people as well as academics, economists, technicians, experts of the related fields, ministers or heads of governments. If meritocracy is both a goal to be achieved in most government's agendas (from U.S. president Barack Obama's to the Italian Prime Minister Mario Monti's ones) and a system of values desired to govern the functioning of a country, its absence or its ineffectiveness will be as easy to be detected as difficult to be cured, being it caused by certain inefficiencies which are sometimes hard to be even named.

One of those has been named intergenerational immobility: the influence of socio-economic status of parents on that of children, and more specifically the influence played by fathers' income on sons' one; an issue raising everyday more and more interest, along with more and more concern, and the focal point of this piece of writing.

This work is intended as an analysis of the phenomenon, through its causes, consequences, relations and implications, performed though a summary of previous literature researches and studies, starting from the very first ones, as those led by economist Gary Solon, back in 1992, until the most recent findings resulting from the adoption of refined and innovative techniques, as for Italian studies by Piraino (2006) or Mocetti (2007).

The first section of this thesis will be entirely dedicated to the main focus of this study, namely the phenomenon of intergenerational mobility. A definition of this particular type of social mobility is provided, along with estimation methods, possible biases in sample selection and estimating procedures as well as correcting bias measures. The values of mobility estimated in this section are referred to the U.S., as it has been the first country where such estimations were made possible by the availability of cross-sectional sample data. Along with the numerical definition of the phenomenon, the analysis goes further in investigating the main drivers affecting the given level of (im)mobility, either in a general country or in the U.S. specific case. Causes will be grouped in three broad macro-areas which are family influence, education along with labour market dynamics and public policy goals and actions.

The second section, instead, will focus on another widespread phenomenon of today's societies: inequality in the distribution of income across population individuals of a given state. It is investigated not as a separate and distinct characteristic of a given society, but it's put in relation with the level of intergenerational mobility in that society

to better recognize and understand the correlation occurring between the two. Once found this relation, which is depicted by the so called "Great Gatsby curve", term first used by Krueger and adopted throughout this paper, causing factors pertaining to both the phenomenon of rising inequality *per se* and to its link with the level of intergenerational mobility will be presented and briefly analysed. The section will close with the presentation of possible consequences of the coupling of the two phenomena and the implications of each one of them.

The third and last section will be dominated by the Italian country and, of course, its current situation with respect to the level of intergenerational mobility. After having briefly explained the problems and limitations presented by such a country in having a reliable estimate of the intergenerational correlation, mainly regarding the lack of suitable sample data in both characteristics and size of the sample, the new sample data along with technique and methods recently adopted to overcome the problems are presented and then their resulted estimates are showed. Once depicted the sad and concerning Italian situation, which is one of a very immobile and rigid country, there will be room to address the peculiarities of the Italian cases, not only through analyzing differences and similarities compared with other countries presenting different or similar levels of mobility, but also and mainly focusing on those factors, habits and characteristics which are peculiar of Italy. Main problems, limitations, rigidities, inefficiencies and bad habits will be investigated as well as accompanied by some proposed measures, devoted to the aim of increasing the level of mobility and move toward a scenario of equality of opportunities.

The work close with the implicit hope that those change will come, that they will occur in the shortest possible run and will be as useful and effective as possible, rather than be those kinds of changes that seem to upset and revolutionize everything, just to leave everything stays the same in the end.

INTERGENERATIONAL MOBILITY

> *We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness*.
>
> United States Declaration of Independence, 1776

Whom you were born, it's not up to you. It is deterministically influenced by several factors and people, all but your choices. Your surname is your father's one. Your name depends on preferences of your parents, or maybe their devotion to your grandparents or admiration for a given personality. The colour of your eyes as well as the one of your hair and the type of completion are affected by past generations of hair and eyes and skin colours, as Mendel's peas have shown. Mr. Charles R. Darwin would go even further, saying that you're the outcome of the struggle for the survival perpetuated by all the human kind behind you.

Whom you will be, what you will be and how will you get to become that person are commonly believed to be self-determined. Or at least not pre-determined. That's the founding thought behind the dream that has fuelled the growth of the first world power. The "dream of a land in which life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement. [...] It is not a dream of motor cars and high wages merely, but a dream of social order in which each man and each woman shall be able to attain to the fullest stature of which they are innately capable, and be recognized by others for what they are, regardless of the fortuitous circumstances of birth or position"[1] (Adams, 1931). The American dream is about freedom, a freedom which is manifest in the pursuance of prosperity and success, in the opportunities allowing for an upward social mobility through hard work.

To summarize this study in a few words, they should be exactly these two ones: opportunity and mobility.

[1] James Truslow Adams coined the term "American Dream" in his 1931 book *The Epic of America*.

Social mobility (and mobility itself even more), in fact, embraces a broader concept than the one we're going to analyse in detail. It deals with the individuals' or group's social position (often related to or identified as their income level) and its movement over time. The time horizon considered helps make a distinction between intra-generational mobility and inter-generational one.

The former deals with movements and changes of the individual's status during his or her lifetime, while the latter deals with the "intergenerational association of the socioeconomic achievement of parents and those of their children" (Mocetti, 2007) and will be the main topic of this analysis.

The interest around this phenomenon and, even more, the concern about its extent have been great and have stemmed from the main implication of a positive correlation between father's and son's income position: the violation of the principle of equality of opportunity, opportunity believed to be indiscriminately available to each and every one.

Under such a scenario, failure or lack of success is just the outcome of incapacity to seize or exploit the opportunities life provides us with, rather than the impossibility to have them.

"But the real explanation of why the poor are where they are is that they made the mistake of being born to the wrong parents, in the wrong section of the country, in the wrong industry, or in the wrong racial or ethnic group. Once that mistake has been made, they could have been paragons of will and morality, but most of them would never even have had a chance to get out of the other America." (Harrington, 1962)

That's what Michael Harrington was writing about poverty in 1962. In his view, poverty (and by contrast richness) is not the outcome of how we exploit both our qualities and strengths and the opportunities life will present to us, but it's the inheritance of our birth condition, i.e. it's a plight (or a gift, in case of wealth) which poor parents are high likely to pass on to their offspring. (Kilson, 1981)

To understand if and how this "passing" is in place and works, it's necessary to analyze some results of econometric studies and model developed throughout the XX century.

Starting from the Solon model and the estimate of "father-son correlation" in the U.S. the result field will be broadened including some of the modifications and elaborations Gary Solon himself has gone through, along with Chul-In Lee.

Intergenerational correlation estimates

In 1992, Gary Solon, from University of Michigan, aware of the littleness of empirical evidence supporting conclusions about the intergenerational mobility phenomenon and of the serious biases faced by the few existing estimates, due to measurement errors and unrepresentative data samples that made impossible to ascertain accurately and in a reliable way the degree of intergenerational mobility in the U.S., provided an estimate of intergenerational correlation based on intergenerational data from the Panel Study of Income Dynamics (PSID from now on). The degree of father-son correlation in long-run earnings, hourly wages and family income resulted to be around 0.4 or even higher.

The data was collected from the PSID, a national longitudinal survey of about 5,000 families conducted since 1968 and particularly suited to avoid bias present in previous researches: the fact that data comes from a national probability sample helps avoid the problem of homogeneity while its longitudinal nature allow to explore them empirically either with short-run or with long-run measures (Solon, 1992). The sons of the samples are the male children of 1968 PSID households, who reported positive annual earnings for 1984, upon collection of data in 1985. Sons included are the one born between 1951 and 1959, so, on the one hand, to eliminate those older than 17 in 1968 and to avoid overrepresentation of late leaving home ones and, on the other one, to ensure that in 1984 they were all at least 25. In cases in which more than one son from the same family falls in the description above, the only considered will be the oldest one. Fathers in the sample are the heads of households in which sons were living in 1968 and who reported positive annual earnings in the range of time running from 1967 to 1971. They are not always, nor necessarily, the sons' natural fathers, but they are nevertheless retained from the sample as they are instrumental to the purpose of showing the existence of a socio-economic position correlation and not a genetic one.

Below (in table 1) you can see the sample characteristics. (Solon, 1992)

Table 1: Sample Characteristics

Variable	Mean	Standard deviation	Minimum	Maximum
Son's age in 1984	29.6	2.4	25.0	33.0
Son's earnings in 1984	22,479	15,019	19	147.656
Son's log earnings in 1984	9.75	0.94	2.94	11.90
Father's age in 1967	42.0	7.7	27.0	68.0
Father's earnings in 1967	29,304	20,015	405	202,215
Father's log earnings in 1967	10.10	0.69	6.00	12.22

Sons' earnings result to be lower as they are observed at an earlier stage of their lives with respect to their parents' ones.

If y_{1i} is considered as the long-run economic status of son and $y_{0\,i}$ as the one of the father in family *i* and in the model were incorporated also the age effect on earnings, wages and income, we will have

$$y_{1it} = y_{1i} + \alpha_1 + \beta_1 A_{1it} + \gamma_1 A_{1it}^2 + v_{1it}$$

representing the sons' income, with A_{1it} being the age of the son of family *i* in year *t* and similarly

$$y_{0is} = y_{0i} + \alpha_0 + \beta_0 A_{0is} + \gamma_0 A_{0is}^2 + v_{0is}$$

representing the fathers' one, with A_{0is} as the estimate of the age of the father from family *i* in year s. The variable A^2 gives the non linear effect of the age, of different impacts according to the (different) stages of one's life, while the coefficients γ_1 and γ_0 are different to allow for differences in generations according to different age ranges.

Starting from the basic regression on the log annual earnings of both fathers and sons

$$y_{1i} = \rho y_{0i} + \epsilon_i$$

and substituting back, the final regression function obtained is

$$y_{1it} = (\alpha_1 - \rho\alpha_0) + \rho y_{0is} + \beta_1 A_{1it} + \gamma_1 A_{1it}^2 - \rho\beta_0 A_{0is} - \rho\gamma_0 A_{0is}^2 + \epsilon_{i+v_{1it}} - \rho + v_{0is}$$

To estimate ρ from OLS estimation of the above equation, y_{1i} is considered as the natural logarithm of the son's annual earnings in year 1984 and y_{0is} as the ones of the

fathers in year *s*, ranging from 1967 to 1971, in 1984 U.S. dollars, as measured by the CPI.

Table 2: OLS Estimates of ρ from Log Earnings Data

<table>
<tr><td rowspan="2">Year of father's log earning</td><td colspan="5">Measure of father's log earnings</td></tr>
<tr><td>Single-year measure</td><td>Two-year average</td><td>Three-year average</td><td>Four-year average</td><td>Five-year average</td></tr>
<tr><td rowspan="2">1967</td><td rowspan="2">0.386
(0.079)
[322]</td><td></td><td rowspan="2"></td><td rowspan="3"></td><td rowspan="4"></td></tr>
<tr><td rowspan="2">0.425
(0.090)
[313]</td></tr>
<tr><td rowspan="2">1968</td><td rowspan="2">0.271
(0.074)
[326]</td><td rowspan="3">0.408
(0.087)
[309]</td></tr>
<tr><td rowspan="2">0.365
(0.081)
[317]</td><td rowspan="3">0.413
(0.088)
[301]</td></tr>
<tr><td rowspan="2">1969</td><td rowspan="2">0.326
(0.073)
[320]</td><td rowspan="3">0.369
(0.083)
[309]</td><td rowspan="3">0.413
(0.093)
[290]</td></tr>
<tr><td rowspan="2">0.342
(0.078)
[312]</td><td rowspan="3">0.357
(0.088)
[298]</td></tr>
<tr><td rowspan="2">1970</td><td rowspan="2">0.285
(0.073)
[318]</td><td rowspan="3">0.336
(0.084)
[301]</td></tr>
<tr><td rowspan="2">0.290
(0.082)
[303]</td><td rowspan="3"></td></tr>
<tr><td>1971</td><td>0.247
(0.073)
[307]</td></tr>
</table>

Notes: Standard-error estimates are in parenthesis, sample size in brackets. (Solon, 1992) [2]

The results above (in table 2), along with the ones included in the appendix, shed the light on an even more worrying situation than the one expected till then. They support the conclusion that the level of intergenerational income correlation in the U.S. is around at least 0.4 (and even higher) while family income correlation is around 0.5. The fact that father's income is a good predictor of son's future income is remarkably, and paradoxically, similar to the correlation between fathers' and son's height, discovered more than 100 years ago by Sir Francis Galton.

Sir Francis Galton, cousin of Charles Darwin, was a XIX century English scholar and polymath: his interests ranged from anthropology to meteorology, from psychometrics to geography, from statistics to eugenics. We owe him the statistical concept of correlation, the use of the regression line and the one of the normal distribution (Bulmer, 2003) and pretty much this thesis, up to know. With the aim of proving the existence of hereditary physical and psychological factors, he studied the correlation

[2] For an estimate of ρ with a "balanced" number of observation=290 see Appendix A

between height measures. To help contextualize the result of a $\rho = 0.5$, consider that it's equivalent to say that the son of a family in the 10^{th} percentile of the income distribution has the same likelihood of ending up, as an adult, being in the 90^{th} percentile as the one of a son, whose father is 1.67 m tall, of growing up to be 1.85 m tall. Possible, but highly improbable. (Krueger, 2012). Mathematically speaking, a son born in a family in the 5^{th} percentile of the country earning distribution, has 0.49 chance of remaining in it, only 0.17 to earn a position considered above the median and a ridiculously small 0.03 chance of getting to the 95^{th} percentile. This scenario is the one of a very immobile society.

Later on, in 2009, Solon and Lee went further in the analysis collecting data from the PSID, at that time enriched with the interviews made to the sample again in 1997 and every year since then; they were thus able to obtain results pertaining to the cohorts born in years from 1952 to 1975. The study also makes a distinction between male and female children income correlation with their fathers' one, but the resulting estimates are more or less the same. Their aim was to measure the intergenerational elasticity in long-run income, i.e. the slope coefficient in the regression of child's logarithm of income on father's one (Lee & Solon, 2009). The observations are reported for 22 years, from 1977 to 2000, and the final estimates are the simple average of the values found out for the specific year: for sons, the final one was about 0.44 while for daughters around 0.43. The results were then averaged for 5 years period, enabling a clear understanding of patterns throughout ages, time periods and cohorts. The elasticity estimate turns out to be lower in the early stage of children's life, but the most striking conclusion is that the level of intergenerational correlation in the U.S. has not changed in the past two decades.[3]

[3] For more detailed analysis and chart, see Appendix B

Analysis of the phenomenon

This work started from the end. Meaning that, it has given conclusions and estimates and value of a metric of a given phenomenon, without leaving room for understanding causes and factors and real implications coupled with a specific level or number. That number, in this case 0.4 or 0.5 depending on the case and the study referring to, is representing a bunch of different phenomena and peculiarities.

So, starting from the econometric estimates, it's now time to focus on direct and indirect drivers of the level of mobility in one country, in general and in the U.S. in particular.

The outstanding estimate of intergenerational mobility in the U.S. brings us to questioning why the U.S. present such a high level of immobility, so to better comprehend even differences among countries and lead us into the further analysis on the Italian situation.

Solon (2004) helps us summarize and organize the underlining causes of generational mobility in three macro clusters, referring to the role played by three fundamental institutions in determining children's life chances and outcomes: family, labour market and the state.

The role of family is crucial and is mainly related to inheritance. The term refers not only to the genetic capabilities or particular characteristics passed from parents to offspring but also and mainly to the "economic inheritance", namely the endowment given to children in the form of both bequests and investments, and to the "environmental inheritance", which refers to the particular context in which the baby is born, raised and in which develops his or her personalities, attitudes, values and lastly him or her-self.

The investments mentioned before also play a fundamental role regarding the labour market; this role depends on the cost and return on investing in human capital and in education. The labour market analysis will be performed according to both educational mobility and occupational mobility.

Last, but not least at all, public policy is of paramount importance in shaping and promoting (or sometimes endangering) a high level of mobility. Its main actions can occur through progressive public programs, where the more their progressivity, the more they'll serve the purpose of fostering mobility in the country.

Family

Family is the first actual social context and environment each and every one ever faces and moves his first steps into. Before analyzing the trivial importance of family monetary resources, we should focus first on non-monetary ones.

To get an idea of what we are talking about, we could borrow the story of Chris Langan and Robert Oppenheimer from Malcolm Gladwell's book *Outliers*, a brilliant and compelling analysis of success.

The book is aimed at providing numerous examples in support of the author's thesis that extraordinary achievement is less about mere and sole talent than it is about opportunities.

Chris Langan is today considered one of the smartest men in America and he has become the "public face of genius". He has an IQ of 195, which is 95 points above the world average, and almost 50 points above Einstein's one. He started talking when he was six month old and learnt to read by listening to the radio. His brothers remember of him studying from physics to philosophy all day and then just skimming foreign language book three minutes before class and pass the test outstandingly, "he could brief a semester's worth of textbooks in two days". But he grew up in an all but easy family context. His mother was really poor, estranged from her San Francisco family, had four children from four different men, all disappeared or dead, apart from Jack Langan, an alcoholic violent man, who forced the family to move throughout the country looking for some part time job. One day he simply left, leaving the burden of the family upon the shoulders of the eldest child: Chris. While working, he scored perfectly at his SAT and was offered scholarship at both Reed University and Chicago State University. He chose Reed and he himself acknowledges that as a huge mistake: the totally different lifestyle made him victim of a real culture shock, which he react to closing himself into the library all day. Due to his mother neglect of filling out the financial statement necessary for the renewal of the scholarship, he lost it and, unable to get any help by the dean, was forced to leave college and go back to work. He tried the "academic road" again some years later: he enrolled at Montana State University while still working and living 13 miles away. When his car broke down, unable to afford to repair it, he asked for a change in class time, as it was impossible for him to hitchhike or walk from home and be in class at 7:30. He saw the request denied twice and decided to

“go without the higher education system”. He has always dreamed about becoming an academic, earning at least one PhD and he has more than the necessary competencies to do so, and yet he ended up working in construction or as a bouncer in a bar. He has continued studying and also developed a “Cognitive Theoretical Model of the Universe”, but with no academic credentials and just one year and a half of university, he has received no recognition so far.

Another kind of story is the one of J. Robert Oppenheimer, the American physicist often called the “father of the atomic bomb”, due to his contribution in developing the nuclear weapon during the World War II. He was considered, as well as Chris, a genius. He was doing experiments in lab at the age of eight, speaking fluently in Latin and Greek at nine and studying physics and chemistry at ten. He was the son of wealthy Jewish textile importers, emigrated in the US from Germany, raised in an apartment in Manhattan on whose walls there were exposed paintings by Picasso, Vuillard and van Gogh. He graduated from Harvard and started his doctorate in Cambridge. There his long lasting struggle with depression got worse, exacerbated by his hate for experimental physics (he was all for theoretical one), until getting out of hand with Oppenheim’s attempt to poison his tutor, and future Noble Prize, Patrick Blakett. But after he was allowed to defend himself and to negotiate the consequences of his action, he was simply put on probation and needed to attend regular session with a psychiatrist.

Few years later, notwithstanding his precedents, his little consideration for practical experiments, his friendship with Communist exponents and the total lack of any administrative capability, he was able to convince Leslie R. Groves, director of the Manhattan Project, he was “absolutely essential to the project” (as written by Groves himself in a report to the Engineer District). After the war, he became director of the Institute of Advanced Study in Princeton and was awarded the Enrico Fermi Award.

So far we have seen that Chris Langan and Robert Oppenheimer, and in the same way their stories, share lots of commonalities as well as abyssal differences. Both men can be defined as modern geniuses, both of them faced some problems or accidents which could potentially endanger their academic careers, but what really happened and the story endings are really different. Why Oppenheim was able to come clean out of an attempted murder while Langan was unable to even convince his dean to move him to afternoon class?

The psychologist Robert Sternberg would have said the distinguishing element between Oppenheim's success and Langan's failure was a set of skills which he refers to as "practical intelligence": it is a kind of procedural intelligence, totally opposite to knowledge for its own sake, and related to knowledge of the right way, the right time, the right fashion and the right message to say in order to maximize effects, knowledge helping in reading situations and in getting what you want. (Gladwell, 2009)

It is a type of intelligence completely distinct and unrelated with general or analytical intelligence, the one measured by IQ, which are innate abilities you could only be born with. "Social savvy" instead is knowledge and therefore it has to be learned from someone of something: that is the families. The real big difference, and discriminating factor, between the two geniuses is their family condition.

The sociologist Annette Lareau conducted an experiment really helpful in validating this statement: she followed continuously and for an appreciable amount of time a group of third graders in their everyday family life, activities, habits and interactions with parents. To control for differing factors, she chose both black and white families, both wealthy and poor ones. At the end, she came out with the astounding conclusion that it was possible to identify only two main "parenting philosophies" which, even more interestingly, divided perfectly among class lines: wealthy families adopted a "concerted cultivation" style, while poor ones followed a strategy of "accomplishment of natural growth".

While there's no such thing as a right or morally better style, the two present different characteristics, with the former having huge advantages. If concerted cultivation is about actively fostering and incentivizing development of talent, skills and opinions, the accomplishment style deals with simple care for children, lets them grow and develop on their own: if children in the former case have more experiences, learn to cope with different environments and structured authorities, to speak up for their ideas and learn a sense of entitlement, poorer children show great independence, high sobriety and often even more talent, but develop a "sense of distance, distrust and constraint", they suffer the environment and the context in which they act rather than mould it and shape circumstances to turn them into their favour.

In summary, the diverse attitudes Oppenheimer and Langan showed toward authorities when dealing with requests to make or decisions to drive and which made the difference

in their academic careers as well as life success are the product of the so called "advantage (or disadvantage, for Chris) of class".

So families, and the class they belong to, play an important role in determining children success through educational model they, usually unintentionally, transmit them. But context has also a crucial part in skill and capabilities development, namely the "neural sculpting" phenomenon studied by the discipline called neuroscience.

The starting point of a cross-disciplinary examination of researches in economics, developmental psychology and neurobiology is the strong effect of early environment on human skill development, on brain architecture and neurochemistry: individuals growing in disadvantaged environment tend highly to acquire diminished cognitive and social skills (Knudsen *et al*., 2006).

The effect of the disadvantaged environment in increasing probability of adverse outcomes regarding cognitive emotional and social development, highly correlated to economic success and quality of adult life, is associated to a number of risk factors, comprising not only poverty, but also "limited parent education, social deprivation or neglect, interpersonal violence" (Knudsen *et al*., 2006). So no more just economic endowment of family, monetary transfer or educational model, but quality of early life itself becomes a predictor of adult productivity.

The analysis moves from the crucial concept that brain architecture is influenced by an "inextricable interaction between genetics and individual experience". And the early experience has the most powerful influence as it shapes neural circuits underlying all our behaviours. During early stages of life, for example, in case of a disadvantaged eye conveying a worse vision, a change in architecture is manifest in a change in the visual cortex, dominated by input from the advantaged eye (Knudsen *et al*., 2006). This is possible thanks to the increased capacity for neural plasticity which is limited to a sensitive period in early life, as it is demonstrated by both studies of deprivation, as for the case above, and studies of development (Nelson, 2000).

The second point to stress here is the hierarchical structure followed by both mastery of skills and development of neural pathways. "Skills beget skills" and the complex cognitive capacities we develop throughout our lifetime, especially during mature stages, depend and build on the basic analytic, synthetic and recognition capabilities developed in the early stages of life. One useful example is the language acquisition,

whose studies pertain to the set of developmental ones. Language acquisition is a complex cognitive capability *per se*, and still children at birth are able to learn whatsoever world language and, through early experience, to become "expert" of that language and of every other language they learn during those early years in life. Learning a second language as an adult requires way greater effort and it will never result in a complete mastery of it.

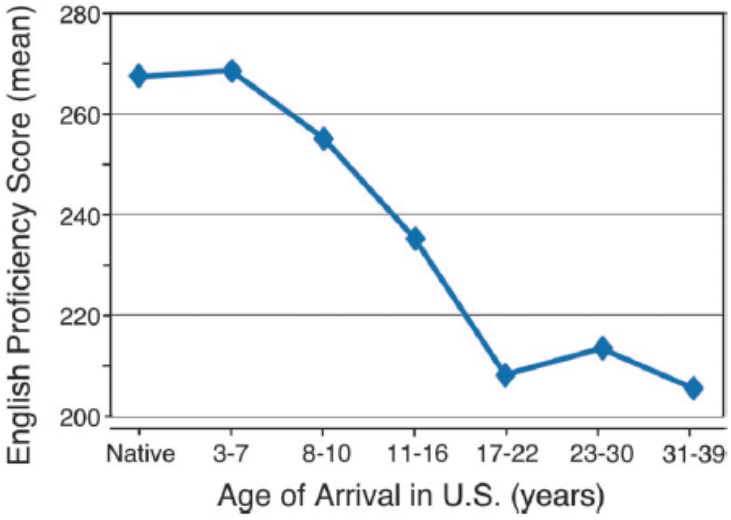

Figure 1 shows the different sensitivity to language acquisition. English language proficiency scores as a function of age of arrival in the United States for a group of Chinese and Korean adult immigrants (*n* =46). All subjects were students or faculty at the University of Illinois and had been in the United States for at least 10 years before testing. The test measured a variety of grammatical judgments. Data are from Johnson and Newport

The third and probably most useful point of the research deals with the practical intervention to exploit those findings: the significant and lasting impact of early experience and acquisition of skill, strengthen by early learning conferring value to acquired skills and increased efficiency and ease and motivation to learning at later ages, calls for early intervention. The neural plasticity characterizing the early years of childhood, in fact, implies the existence of a "window of opportunity" open to some environmental inputs for neural system development: if inputs do not occur in that interval of time or in the proper way, the "window" will close and the developmental opportunity is lost or will occur in a suboptimal fashion. It has been estimated that early intervention program can produce an average gain in children IQ of 8 points (ranging from 4 to 11), in school achievement and progress. (Nelson, 2000). Two projects aimed at demonstrating this impact are the so called Perry and Abecedarian programs. The graph below (figure 2) shows the result of these two different early intervention

programs for disadvantaged children: the Perry Preschool Program and the Abecedarian Program. The former addressed 64 disadvantaged black children of Ypsilanti, MI between 1962 and 1967, while the latter involved 111 disadvantaged children from families scoring high on the risky index, between 1972 and 1977. The difference showed between successful outcomes of treatment groups' and control groups' ones suggests a positive effect of the programs.

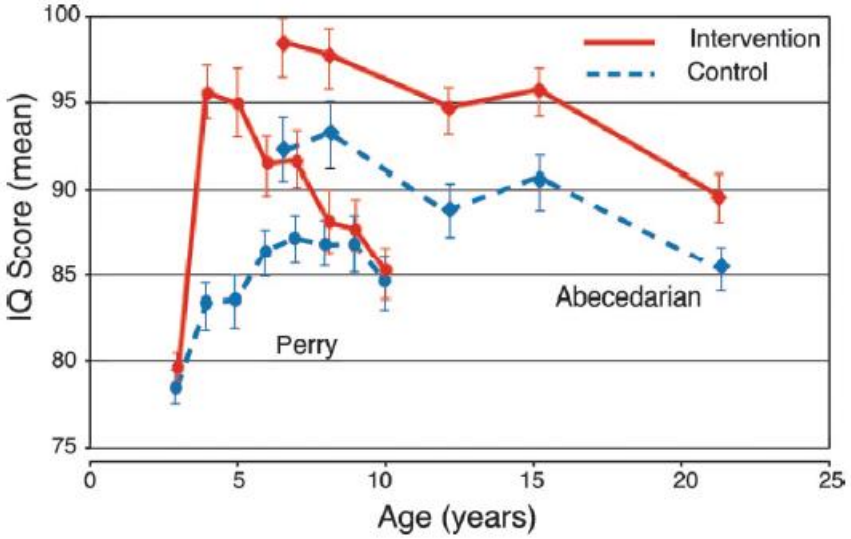

Figure 2: The effect of Perry and Abecedarian Programs on IQ scores of both intervention and control group

Those positive effects of both the Perry (A) and the Abecedarian (B) programs were observed also at later stages of the children's lives (figure 3), where the difference between treatment (red) and control group (blue) keeps on being present in academic, economic and social outcomes (Knudsen *et al*., 2006).

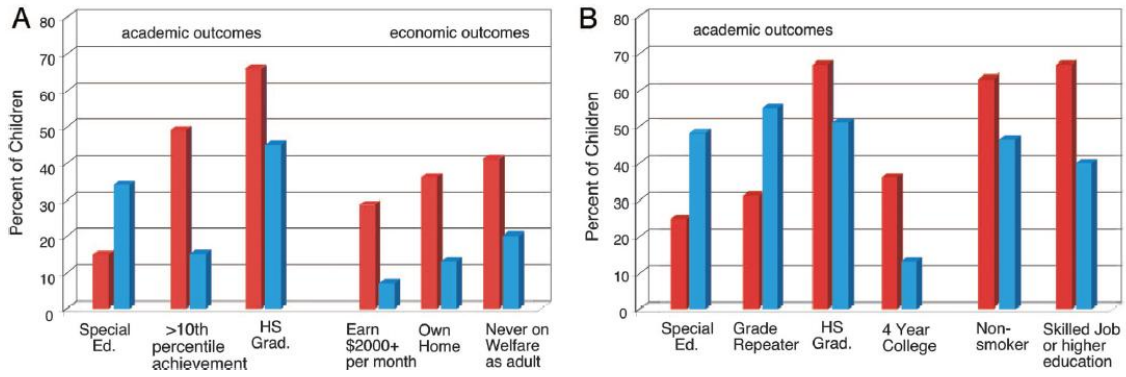

Figure 3: Long-run effects of Perry (A) and the Abecedarian (B) programs

Moreover, as the XXI workforce needed will be one with always greater intellectual flexibility, social and cultural adaptability, strong problem-solving skills and readiness

to learn and adapt to continuously and fast changing work context and world environment, the most efficient and farsighted strategy to promote a strong workforce is nowadays to invest greater human and financial resources in social and cognitive development of "disadvantaged children". The earlier the intervention, the lower the cost of (and with respect to) later investment; besides, prevention is more efficient than remediation: pre-school intervention showed significant long-term effects, not found in case of later remediation (figure 4). That does not mean later investments are to be neglected, but they will serve the purpose of maximizing their effects while minimizing their costs if coupled with early investment in lives of disadvantaged children.

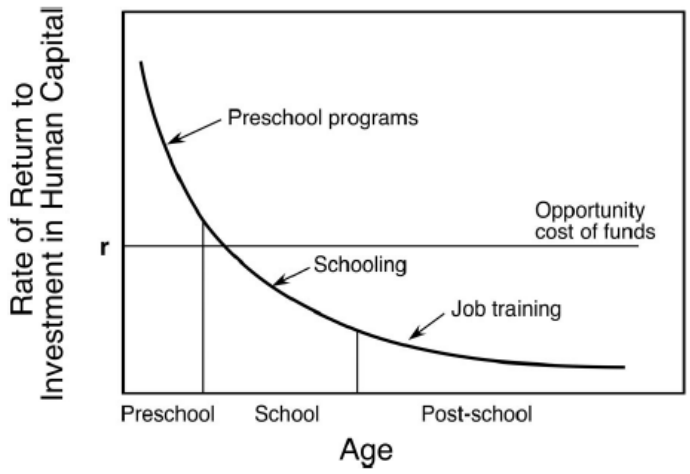

Figure 4: Rates of return to investment in human capital as function of age when the investment was initiated. The data were derived from a life cycle model of dynamic human capital accumulation with multiple periods and credit constraints. Investments were initially set to be equal across all ages. "r" represents the cost of the funds. Data are from Cunha *et al.* (Knudsen *et al*., 2006).

As anticipated above, however, the third factor perpetuating the influence of parents on children, along with the genetic and the cultural ones, is economic. The model developed by Becker and Tomes (1979) aims at demonstrating and estimating the impact of families on offspring through allocation of time and money and decisions between current consumption and future investment in human capital. Of course, all the care about children and the ability of influence their future earnings are not sufficient to totally determine them. However, when we talk about investments, we refer mainly to monetary transfers, considered as both current investment in physical health, social development or education and bequests as well as long-term investments in future consumption of children. Choices will depend of course on parental endowment constraints and preferences, also affected by the rate of return of both type of

investments. “The greater the parental preferences for the future, the greater the return to any investment, the greater the inheritability of other aspects of family background important for earnings, the greater β” (Corak, 2006), namely the greater the intergenerational correlation estimated in the regression by the coefficient factor β.

Becker (2001) concludes his analysis of family economics, i.e. the economic relevance of the role of families in society with respect to the impact they have on their offspring earnings, stating that “family behaviour is active, not passive, and endogenous, not exogenous” therefore economies as a whole and families in the specific, with their structure, behaviour and decisions, are highly interrelated.

Education and labour market

We focused in a particular way on the role of family due to its great influence on children through a variety of factors as genetics, income itself, heredity, culture, investments habits, aspirations, and even social connections. But a great deal of influence still pertains to the education system *in primis* and to the work environment in second place.

Education plays a crucial role as represented by investment in human capital. Human capital per se is identified by those sets of skills, competencies, knowledge and personal values and features, which are embodied in people, cannot be separated from them and represent ability to produce economic value by performance of labour. Investment in human capital is considered therefore fundamental for the economic society as a whole and has education, training and health as its most important forms (Becker, 19675). Trivial as it may seem, as higher cost of investment in human capital is coupled with a decrease in investment, an increase in the (potential) return to human capital creates incentives toward investing in it. Solon (2004) identifies a high return to education as one of the causing factors of low intergenerational mobility. If greater incentives in investing, in fact, are coupled with higher capacity to do so, wealthier families will be more willing to invest in their children education and more able to do so in a significant way, so to maximize their investments’ effects, passing their higher endowment to their children, ensuring them the greatest return from their outstanding investment.

As mentioned earlier, when discussing the importance of early environment on children development, the first measure to take is the one regarding early intervention during the first, or even pre, schooling years: additional rungs of the education ladder beyond early childhood could also promote higher mobility (Smeeding *et al.*, 2011).

Moreover, it has been noticed that the educational attainment of parents and the one of children showed a positive correlation, meaning that years of parents' education exert an influence over children's educational carrier, either due to children's choice affected by family cultural or personal model, or due to parents' encouragement or demand. Data from 2003 round of the Program for International Student Assessment (PISA) showed that children cognitive skills were highly related to parents' educational level and that this effect (however, not causality) was stronger for fathers with respect to their male sons, while mothers' educational attainment influenced particularly daughters' ability.

Hence, it's no more just the environment taking a part in children development, but money transfers can make the difference especially when they help pay for key investment goods (such as higher education or housing) or getting a direct access to job and occupation. If it's true that many parents give money to their children, the contrary is also true, and the difference of amount given varies a lot. In the US, for example, where high level of education is highly costly, annual parental transfers for college-age children are remarkably higher with respect to other countries and children from high-income families are more likely to graduate from college without debt; so the effect of parental resources allocated on children education is of great extent on longer-term children welfare and therefore on the overall level of intergenerational mobility

Education attainment is strictly related to increasing the opportunities available in the labour market. But the labour market itself, how it works and its degree of equality all play a role in determining the level of mobility and equality of opportunity in a given state. The structure of labour market should be one promoting meritocracy, equality of opportunity in "obtaining good jobs" (Corak, 2012) along with inequality of outcomes, when based on merit and efforts, and minimizing the relevant role of family interactions, so that "good jobs" allocation is not determined by family contacts, discrimination and nepotism.

Moreover the labour market can also influence the other drivers of mobility, namely education and, especially, the family role. If the family environment is crucial for early

development of children cognitive and social ability, parental example or model can influence children's choices as well as their educational style can mould their future being and attitude toward the world and obviously the family income itself counts a lot for the offspring earning, then labour market will be of paramount importance also with respect to parents' (or future ones') present work conditions and, then, impact they'll have on their (future) offspring. To give and example, two earning income parents will represent, through the factors cited above, a greater opportunity for their children's success. To allow that scenario, the labour market should be structured in such a way to promote and help employment of both parents, especially of mothers: one way to do that could be the "alternative care arrangements available to children", even to those in pre-schooling ages, or allowing for greater chance of part-time jobs for mothers, in such way affecting both quality and quantity of parental participation in the labour market. Corak (2012) makes a comparison between Canadian and US mothers, finding out that the former ones have higher participation rates in the labour force, while the latter ones showed a significantly lower participation rate, but they worked longer hours: the conclusion is that in the US mothers either don't work or work full-time, while in Canada they have options to work fewer hours, and so the great tendency to work part-time enables them not to choose between family and work.

Obviously, as the base influence the superstructure and is influenced in turn by it, so "labour market participation is both cause and effect of some facilities or arrangements, such as the availability of alternative child care ones" (Corak, 2012) and this is, like in the Canada/US comparison example, mirrored by differences in education outcomes and children's performances.

Public policy

The third fundamental institution is represented by the state, and more specifically by public policy.

Solon (2004) focused on the progressivity of public policy, which represent the extent to which certain policies are more beneficial to the less well off than to the better off, so the degree to which children from less advantaged backgrounds disproportionately benefit from such public program. Obviously, the more progressive social policies are, the more they level the playing field, the more they promote social mobility by

compensating in the same degree family background and labour market inequalities. Public policy, obviously, deals with the welfare state, so with social security, labour market regulation, health care, housing and family policies (Smeeding *et al*., 2011), but progressive policies in particular take the form of either income transfer or investment ones.

The former policies relate mainly to labour market structure and its inequality correction and they are intended as both means of redistribution and insurance again bad time income losses. They aim at reducing the families' income gap so to allow children's income to converge toward the mean, and such aim of reducing child poverty is legitimized by the future gains, for children themselves as well as for society as a whole. The problem with this kind of policies is that parents' income has different effects on children's future one depending on the source of such income, whether it is transfer income or it has the form of asset and earnings; moreover, it has been found a positive relation between the parental participation in income transfer programs and the likelihood for children to rely on such a support in their future life, being them less engaged in labour market: it's been argued that income transfer policies seem to discourage the acquisition of self-sufficiency and rather they perpetuate the generational cycle, the rationale being in both perception of program as a "legitimate income source" and information possessed in greater amount by children of people already taking advantage of such program.

Investment policies, on the other hand, address family functioning, early childhood and public expenditures, so they deal with long-term investment in children and in their welfare. It's important to focus, for example, on investment on education, addressing not only early child development, but also the limitation toward the access to quality tertiary education or even to the labour market, due to early tracking or unfair and non meritocratic selection practices. Some economists already argued, upon showing the negative relation between return to education and intergenerational mobility, that educational expenditures should be allocated in such a way to reduce educational return.

When talking about public policy, we are of course referring to related taxation policy and regulation as well, but we should not neglect, in our analysis, the role played not only by unpredictable factors and circumstances, like a demographic change, but also and foremost by the degree of inequality in a given country and its correlation with the intergenerational mobility in the very same one.

INEQUALITY AND ITS RELATION WITH INTERGENERATIONAL MOBILITY

> *He had come a long way to this blue lawn and his dream must have seemed so close that he could hardly fail to grasp it. He did not know that it was already behind him [...] Gatsby believed in the green light, the orgiastic future that year by year recedes before us. It eluded us then, but that's no matter — tomorrow we will run faster, stretch out our arms farther... And one fine morning — So we beat on, boats against the current, borne back ceaselessly into the past.*
>
> F. S. Fitzgerald, *The Great Gatsby*

The analysis of the intergeneration mobility phenomenon, of its causes and main drivers, has been helpful to understand a potential problem faced by economies and societies as a whole. But the analysis *per se* would produce what will remain just an instrumental result if not considered in relation with other variables. Therefore the focus will now be on another worrying phenomenon in nowadays economic environment: inequality.

Inequality, or better income inequality, is the metric pointing to disparities in distribution of income or wealth in a given population among its participants (individuals or households), something even referred to as the differences between the poor and the rich.

The issue has always been considered a very delicate one, due to the implications with topics such as fairness or equity and to its relation with the job market.

Historically, inequality has been distinguished in two separate concepts: inequality of outcomes and inequality of opportunities.

The former, namely the inequality of outcomes, is an acceptable state-of-fact, rather it can be an even desirable and fair one, provided the inexistence of the latter: if there is equality of opportunities, a certain degree of inequality in results and income distributions provides incentives and motivation for effort, improvement and productivity, being in such way a useful oiling mechanism for the economic machine.

However the latter itself entails more problematic issues: disparities in income and wealth among individuals are a more serious and concerning problem if the ones ending up "at the bottom of the pyramid" are always the same and there are no, or very few, chances for them to reach the top of it. We could simply summarize this concept saying that inequality is acceptable, provided similar opportunities for everyone and a good level of social mobility. Here we go again.

The relation between the level of social mobility in a given country and its degree of inequality is not just a mind-product or a parallel drawn in a possible scenario. The two phenomena, apart from increasing one the seriousness of the other and vice-versa, are actually interrelated: scholars and economists have analyzed and proven the existence of a causal relation among the two of them.

Alan B. Krueger, Princeton economist and professor, as well as chairman of President Obama's Council of Economic Advisors, presented data and evidence in support of the correlation between income inequality and intergenerational mobility, which he called the "Great Gatsby curve", in his speech "The Rise and Consequences of Inequality" held in January 12, 2012 at the Centre for American Progress.

The main point of his speech is the concerning situation of the U.S. job market and its economy, as more than 30 years of rising inequality have been detrimental to the division of opportunities and labour, threatening seriously the possibilities for real economic growth. President Obama himself stated that "the rungs on the ladder of opportunity have grown farther and farther apart and the middle class has shrunk. […] And if the trend of rising inequality over the last few decades continues, it's estimated that a child born today will only have a one-in-three chance of making it to the middle class – 33%"[4]

Krueger supports his statements with data summarized and organized in easy-to-read graphs and histograms. The increase in inequality is testified by the enormous disproportion in growth of income for families at the top of the income distribution with respect to those in the middle and especially to those at the bottom, who saw their income shrinking more and more after 1970.

[4] From President Obama's speech in Osawatomie, Kansas on December 6, 2011 available at http://www.guardian.co.uk/world/2011/dec/07/full-text-barack-obama-speech

From the graphs below (figures 5 and 6), the phenomenon of non uniform growth Krueger referred to appears crystal-clear.

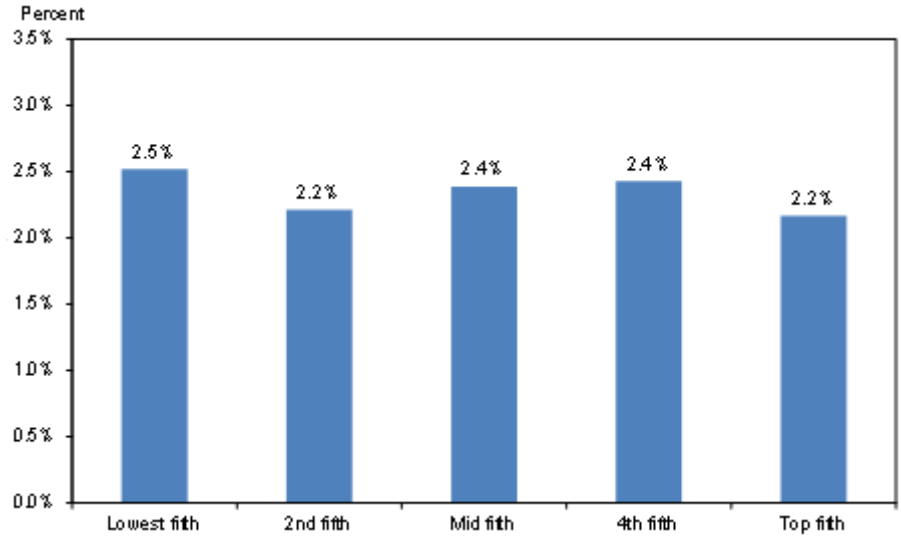

Figure 5: Annual Growth Rate of Income Across Family Income Distribution from 1947 to 1979

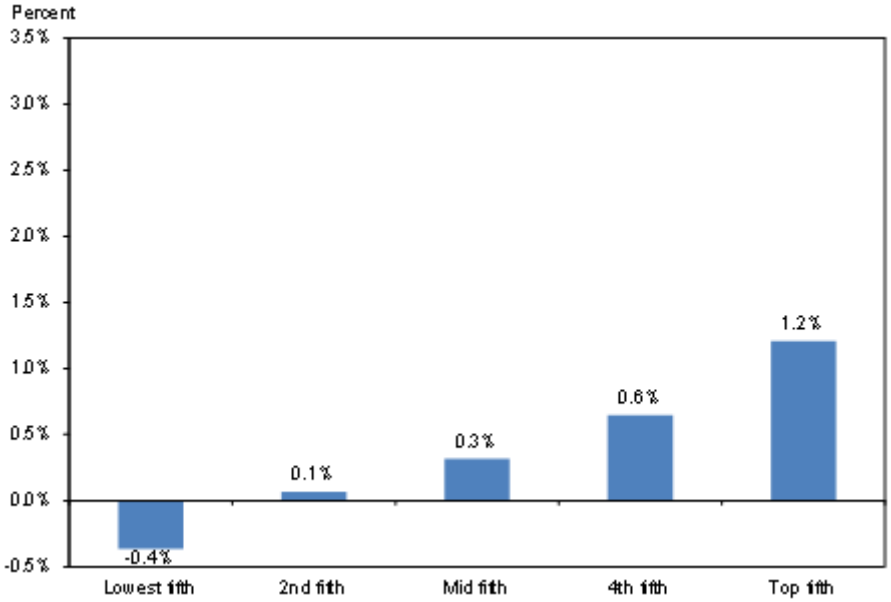

Figure 6: Annual Growth Rate of Income Across Family Income Distribution from 1979 to 2010

The effect on the middle class, namely its shrink, can be observed by looking at the trend of the income earned by the median household in years from the 1970s to the 2000s, after adjustments for inflation (figure 7). It experienced a real decline during the last decade.

If the growth rate of income had remained stable at the same level of the one in the '90s, the annual median household income would have now been greater than the present one by an amount of about USD 8,900.

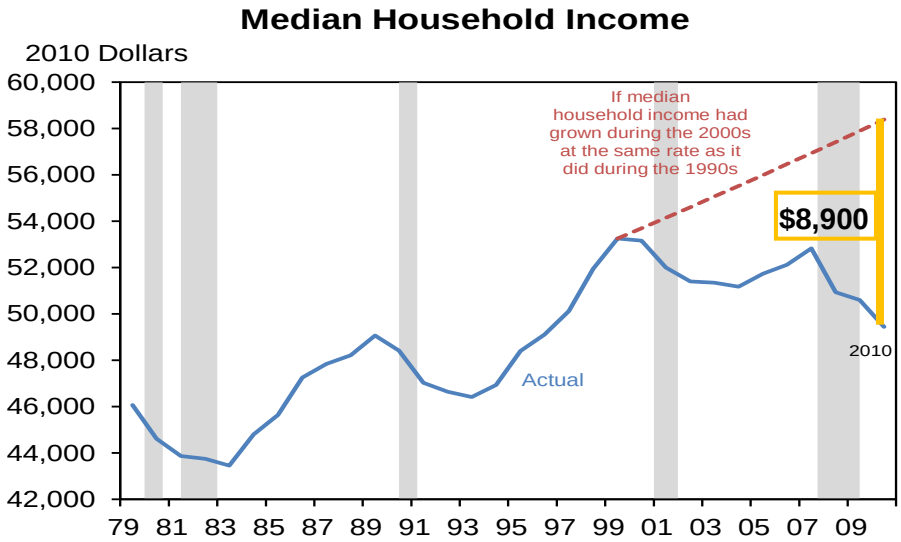

Figure 7: Median Household Income from 1980's to 2010's, actual (blue) versus potential (red) and their difference (yellow)

The gradual disappearance of the middle class is accompanied by the seriously unequal distribution of after-tax income growth and the huge disproportion between the rate of growth of the lowest quintile, which is of about 18%, and the one of the top 1% of the distribution, which reaches an impressive rate of 278%, data from the Congressional Budget Office report (figure 8).

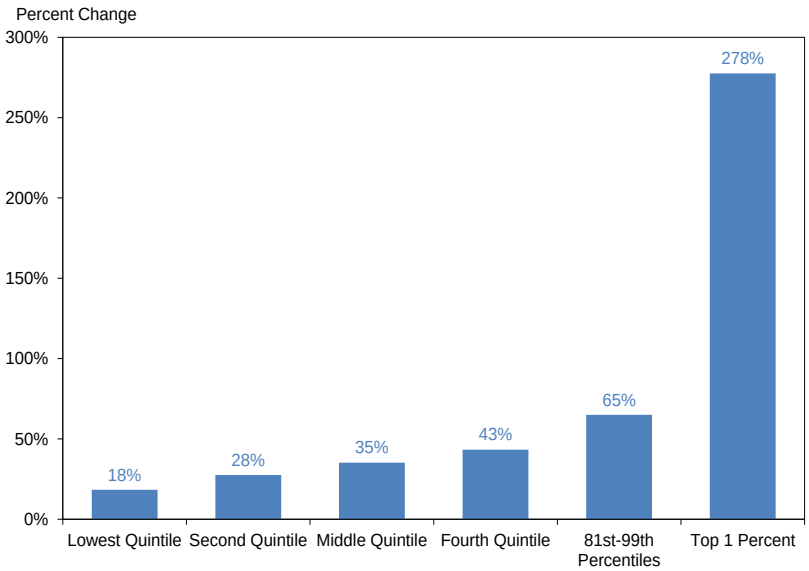

Figure 8: Growth rate in Real After-Tax Income from 1979 to 2007

Just to better comprehend the magnitude of this results and their implications, it's useful to understand and consider income and its growth as a share of total income. This rise in the share accruing to the top by 13.5 percentage points is equivalent to a shift of $1.1 trillion of annual income to families lying in that top 1%, an amount exceeding the total one of incomes of families in the bottom 40% (Krueger, 2011).

The "Great Gatsby Curve"

Before starting analyzing the causes and drivers of both the level of inequality and the connection between the latter and the intergenerational mobility, it's time to present the so called "Great Gatsby curve" and to support with numerical and statistical data the above discussed relation.

The first section of this work has been already dedicated to the analysis of the intergenerational mobility and the procedure to estimate the extent to which fathers' income is a predictor of children's one, focusing on the intergenerational correlation (IGC) as estimate of this relation, whose value is between 0.4 and 0.5. Recent studies, instead, have been using another statistic which brings almost the same results as the IGC: the Intergenerational Income Elasticity (IGE), which is an estimate of the sensitivity of children's income to the fathers' one and whose relational link with the inequality has already been analyzed by Miles Corak. The IGE is estimated to have a value of around 0.4 in the U.S., therefore coherent with the IGC one, and it's put in relation with the measure of after-tax income inequality, namely the Gini coefficient, as from data of OECD.

The Gini index is a measure of statistical dispersion owed to the Italian statistician Corrado Gini and – as defined by the OECD – "measures the area between the Lorenz curve and the hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line", that is the deviation of the income distribution of the components of a given population from a perfectly equal distribution. Such a perfectly-equal-economy scenario would be represented by a Gini index of zero, while a perfectly unequal one by 100.

The scatter diagram below, in figure 9, shows the relationship between inequality in the middle of the 1980s, as estimated by the Gini coefficient, on the vertical axis, and intergenerational mobility, as estimated by the IGE, on the horizontal axis. Obviously, the greater the elasticity present in one country, the lower the level of intergenerational mobility in that same country.

The "Great Gatsby curve", in fact, presents a positive and highly significant slope, which dissipates any doubt about the existence of such a link and its statistical significance.

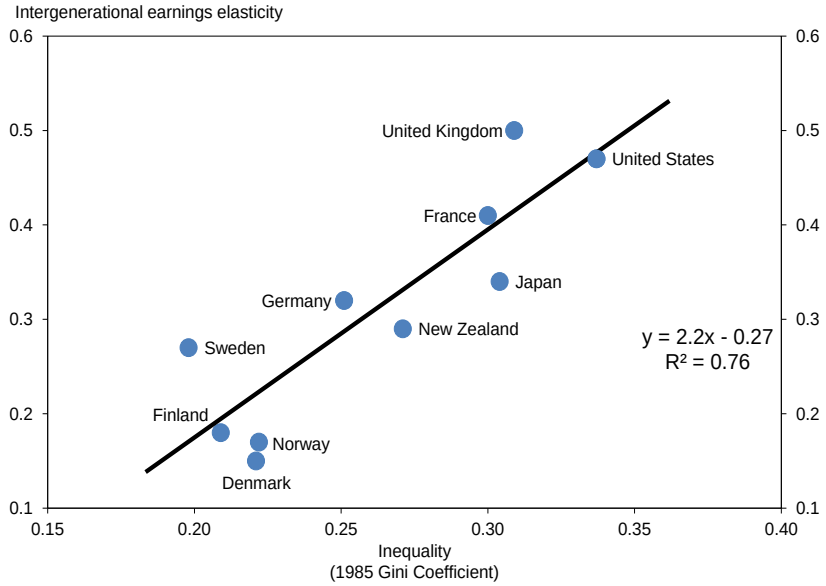

Figure 9: The Great Gatsby Curve.
Source: Corak (2011), OECD, CEA estimates

What's even more interesting is the potential use of this curve to make predictions about the future mobility in the United States. As indeed the inequality is expected to rise, we can observe and forecast the future level of intergenerational mobility.[5]
Starting from the same theoretical assumptions, D. Andrews and A. Leigh (2009) tried to demonstrate the relationship adopting slightly different statistics, in their work "More Inequality, Less Social Mobility".

They utilized the 1999 Social Inequality III module of the International Social Survey Program (ISSP) as data set and the intergenerational correlation (IGC) as an estimate of intergenerational income mobility for the years between the 1970s and the late 1990s, rather than the IGE, with the difference being that, in the correlation case, they held the variance in earnings constant for both periods.

[5] For the graphic representation of the projection, see Appendix C.

Regarding income inequality, instead, the measure chosen was the Gini coefficient as estimated by the Luxembourg Income Study (LIS), and, in particular, the Gini index for the year 1975, considered the year in which parents were making choices concerning the investment in their children, those aged from 25 to 54 in 1999. The relationship found for all the 16 countries in the sample resembles the one showed by Krueger's depicted Great Gatsby curve (figure 10). It shows the effect for children of growing up in unequal countries in the '70s on the level of mobility in the late '90s (Andrews &. Leigh, 2009), which is clearly positive but not statistically significant at the usual levels, as the slope is equal to 0.7 but the t-statistic only to 1.57.

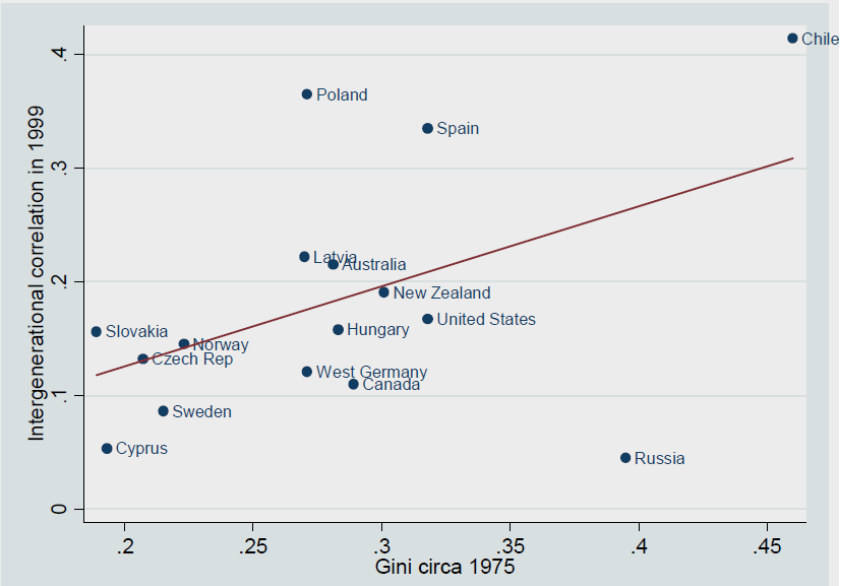

Figure 10: ρ = - 0.01 + 0.70*Gini (t = 1.57) R^2 = 0.22

However, these results may be biased by the presence of the former communist countries, i.e. the Warsaw Pact ones, which were not market economies in the 1970s and so may clash with the theoretical foundation of the link between mobility and inequality, which is based, as analyzed later, among the other factors, on private expenditures on education, political donations and median voter models, all of these more likely to apply and comply with capitalist democracies than Central Planning countries.

Running the regression again (figure 11), this time excluding former Eastern Bloc countries from the sample, the coefficient turns out to be not only statistically significant at the 1% level, but also almost doubled, equalling now 1.32.[6]

[6] A similar result is obtained by excluding Chile from the sample.

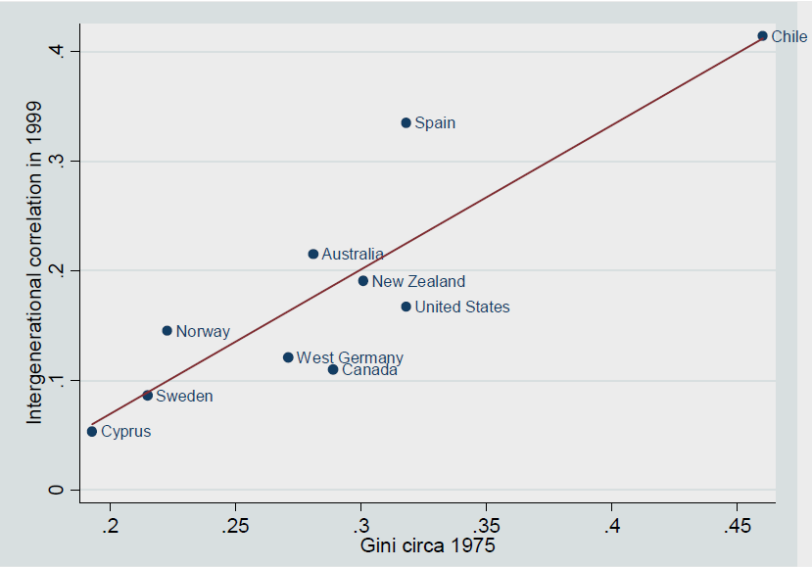

Figure 11: Excluding former Warsaw Pact countries
ρ = -0.19 + 1.32*Gini (t = 12.01) R^2 = 0.77

The above estimates, thus, from a practical perspective, mean that a 10 point increase in the Gini coefficient is linked to a 0.07 or 0.13 increase in intergenerational correlation, that is saying that the more unequal is the country, the more it's difficult to move from rags to the riches.

Main causes

As observed by the first economists who studied intergenerational mobility, like Becker and Tomes (1979) or Solon (2004), and as explained in the previous section, we could group the main causes of intergenerational levels and differences across countries in three main factors: families' functioning and effectiveness in determining children's human capital, labour market functioning, especially with respect to return to human capital, and public policy functioning and the degree of progressivity of public investment. Where the return to human capital is rising and the progressivity of public policy declining, there we will face a drop in intergenerational mobility. Therefore return to human capital in a country is considered to be a "marker for the degree of earning inequality" in such a society. (Solon, 2004)

So Solon as first spotted a link between the two phenomena and the great differences among countries. Krueger himself was able to draw an invisible and not well defined line between high inequality and low mobility countries, such as the U.S., and the less

(or least) unequal ones, Scandinavian countries and Denmark, being also the "more mobile" ones.

A research on the causes of the level of inequality could be usefully combined to the one related to drivers of intergenerational elasticity and maybe used as starting point to address the problem and its implications.

However, before going deeper in the analysis of causes and factors of inequality levels, it should be said that we are considering as reference country the U.S., which presents a kind of unique characteristic and interesting peculiarity: apart from its remarkable size, the U.S. is made of a multitude of different countries within it, all differing among them to an appreciable extent. In fact, each of these countries has its own prerogatives, its own government, its own political organizations and figures, its own tax policy, public spending decisions, level of education, employment rate as well as distribution of income affecting and determining its very own level of inequality. But when considering the overall level of inequality, at the U.S. level and no more at the level of each singular federal state, the process of "summing" all of these different distributions results in a total one, erroneously considered, and not really mirroring, the singular actual reality the way it is empirically experienced.

Coming back to the etiological research, the economist Krueger, during the speech, presented first the causes emerged by a poll of non-randomly selected economist during a conference at the New York Federation. The results are summarized by the graph below, in figure 12.

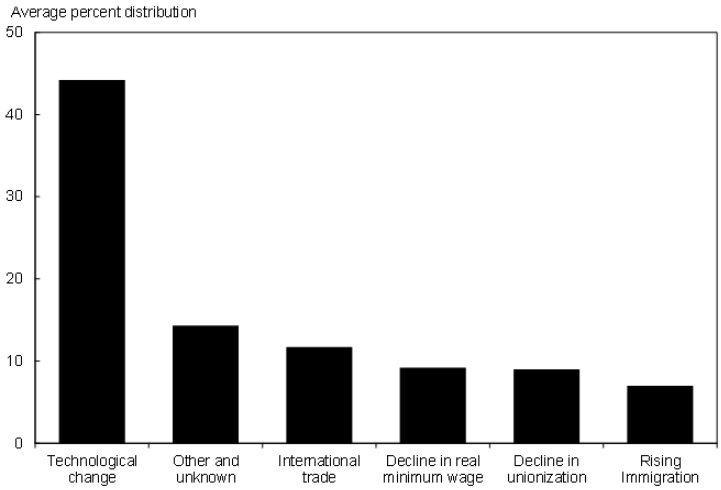

Figure 12: Causes of rising inequality.
Source: Economic Report of the President, 1997

The main factor resulting from the poll was the skill-biased technological change. Nowadays, with the development of computer and information technology and their paramount importance in the work context as instruments, drivers of innovation and main sectors of innovation, the demand for workers has dramatically shifted toward the highly skilled ones who posses analytical capabilities, while for the other workers it has worryingly shrunk. Anyway this changes in demand cannot be attributed only to a change of "preferences" regarding the type of workers or skills required, but also to the recently experienced increase in the supply of skilled and highly educated workers.

Ironically the second best placing factor was the "other and unknown factors", but as Krueger comments, from 1997 until today, we've acquired a more profound knowledge of the issue and we could, for example, cite the "proliferation of high salaries earned by the financial sector" as a determining drivers (Krueger, 2011). Moreover, in the past few years, the financial crisis and its consequences have largely contributed to the decline of income mobility, by increasing the number of workers in the rank and file of the unemployed ones or of the ones seeing their earnings decrease drastically. Mobility is also damaged by lots of other linked factors, such as the impossibility for homeowners to sell their houses and move towards higher job demanding places, due to the related crisis of the real estate.

Another major factor, which is undeniably related to the diffusion and rise, in both scale and importance, of international trade, is the phenomenon which goes under the name of "globalization", and all its side effects, such as the strengthening of competition in the market, could be beneficial for certain categories of workers but even detrimental to others. Think for a moment of the manufacturing industry and the deep impact on competition with Chinese industries and their cutting edge technologies.

Other non negligible factors regard institutional changes, like the decline in unionization, with union membership dropping from 20% of employees in the 80's to a mere 12% nowadays, and the correlated decline in minimum wages, due to the diminished importance of union efforts toward rising them and the effect of the inflation on the real value of wages, or other various related social phenomena, like the increasing flow of immigration

In such a context, tax policy has been acting more as a catalyst than as a proper cause. The progressive tax system is still designed to widen the existing gap of pre-tax

earnings by disproportionately favouring the wealthiest more than all other taxpayers and the recent reduction in its progressivity made the U.S. tax rates the lowest paid by the top earners ever since.[7] Moreover the Bush-era cuts in income, capital gains and estate tax only pursued the aim of enriching the wealthiest people even more. The reduction in estate tax, for example, eased transmission of wealth by mean of inheritance, so contributing to the preservation and passage of economical advantages from one generation to the other. Intergenerational (im)mobility again.

Wharton Finance professors Richard J. Herring and Nikolai Roussanov also quote the impoverishment in education as a driver of inequality. They found the U.S. educational standards to have clearly declined so far, with the rate of college completion, and especially the rate of science or engineering degree one, falling down, and also the data to be particularly concerning in an environment highly demanding of skilled workers, so where the educational premium has grown. This impoverishment is due, according to the two economists, to a deterioration of the educational system as a whole, and in particular of the primary educational one, therefore causing increasing damages for workers relying on the initial level of education and decreasing even further the chances for them of getting good jobs or, at least, well-paid ones.

Main implications

Why should we be concerned? The immediate answer is trivial and it's the founding argument of this research: because of evidence suggesting that inequality is and will keep on rising, we all expect intergenerational mobility to fall. And we already know why this is not just bad, but even worse. Krueger writes Obama said this much better than he ever could: "This is not just about class warfare. This is about the nation's welfare" (Krueger, 2011). To spell it we could say that enacting some corrective measures would not just serve a philanthropic, egalitarian or fairness-and-justice-driven aim, but also an economic goal. Keeping on walk along this pathway, we are and we'll be losing efficiency, belittling merit and decrying talent or even geniuses (think of the Gladwell story), discouraging efforts and generating a huge cost to economy and society as a whole.

[7] Differences in progressivity of tax system among countries can be observed in Appendix D

As we've seen, middle class is among the first victims of rising inequality and decreasing income growth. The overall result on the U.S. economy is a reduction in the aggregate consumption coupled with an increase in the debt accumulated by middle class. The former phenomenon is mirrored by a reduction in aggregate demand as the better-off individuals are, the lower their marginal propensity to consume, as was noted by Robert Reich. This negative relation normally pertains to the short run horizon, but the estate tax reform has prolonged it, by decreasing significantly the cost of saving for the next generation through tax cut on inheritance. The latter one instead could be explained by the analysis by Dirk Krueger and Fabrizio Perri (2006) who found that the relationship between income inequality and consumption inequality is not proportional: this meaning that middle or bottom end class needs to accumulate debts at unsustainable rate and well beyond their means to preserve their level of consumption.

Torsten Persson and Guido Tabellini (1994) analysed and provided evidence of the effect of great or even rising income inequality on long term economic growth. The intermediary role here is played by the political decisions, which, according to the two economists, often result in policies leading in fact to less growth; the link is simple: an increasingly unequal distribution of income calls for redistributive policies, curtailing in turn incentives for productive accumulation of capital, human capital or even technically useful knowledge. And if accumulation of productive knowledge is what determines growth, such accumulation needs incentives which depend on the ability of individuals to appropriate of the "fruits of their efforts", ability related to the tax and regulatory policies adopted by political institutions. (Persson & Tabellini, 1991). [8]

Incentives should be considered also from a psychological and behavioural point of view. Studies on organizational behaviour, backed by experiments on effects of remuneration on productivity, show that money as a rewarding or motivating instrument presents a decreasing marginal return, meaning that increasing pay raises employees' morale and productivity only for those employees who felt to be unpaid before. The higher the initial pay and the lower the perception of under-remuneration by the employee, the smaller the effect of an increase in the salary on her work performance. Moreover, perception plays an important role also with respect to allocative justice in the workplace. It has been proven that wage discrepancies affect negatively workers' morale and satisfaction, and therefore efforts, productivity and outcomes. So, coming

[8] For a chart summarizing some of their finding in econometric terms, see Appendix E

back to the increasing-pay argument, doing that in such a way to reduce discrepancies between different groups of workers, rather than stress them, could produce remarkably positive effects, while measures moving in the opposite direction, thus accentuating the wedge, could only worsen both groups of employees' performance.

AN ITALIAN COMPARISON

The country you belong to is not, as usually believed, the one you love but the one which you are ashamed of.

(Il Paese a cui si appartiene non è quello che si ama ma quello di cui ci si vergogna.)

Carlo Ginzburg

The reason why most literature about intergenerational mobility regards mainly the U.S. is to be found in the availability of data necessary to estimate it in the proper and reliable way. However, the interest about the transmission of socio-economic status between generations has risen and widespread in the global context and it also involved the possibility of performing international comparisons among different countries to understand mechanism determining differences as well as similarities in such values.

An Italian estimate

As previously anticipated, the main problem with Italy is the limited availability of data, where no such thing like a cross-sectional longitudinal panel data, like the U.S. Panel Study of Income Dynamics national survey, exists. This data limitation forced the first studies of this topic to use some proxy or measure of socio-economic condition, like occupational or educational attainment (Checchi, 2001), however with recently developed empirical studies, it has been made possible to overcome lack of data in a multitude of countries, including Italian one.

If intergenerational correlation can be represent by the coefficient β of the regression

$$y_{si} = \beta y_{fi} + \epsilon_i$$

where β represents the intergenerational persistence while y_{si} and y_{fi} respectively the measure of long-run economic status of sons and the one of fathers, with OLS estimation of coefficient β, socio-economic status was typically represented by the

logarithm of their income measure , or better of the average of 5 year measures, to get a better estimate of their "permanent income". Alternatively, measurement errors could be minimized adopting an instrumental variables (IV) estimation, using education or occupational position, considered of suffering less from transitory variation, but incurring in the risk of upward bias due to IV independent of fathers' income.

As both procedures are not directly applicable to Italian case, Piraino (2006) proposed the use of "repeated cross-sections from household surveys" presenting retrospective information of family background given by children. However, as there was little presence of income or earning data among the characteristics reported by sons, income variable has to be first inferred by other values (education, occupation, demographical characteristics just to give some examples), related to "old men" chosen to represent the pseudo-fathers, and then the estimate of the intergenerational correlation coefficient can be performed.

So this is a two stage procedure based on two different samples: the one of sons reporting information about their fathers' socio-economic conditions and the one of pseudo-fathers, whose age is consistent with the one of the actual ones. This procedure has been defined by Inoue and Solon (2005) as a "computationally convenient two sample two stage least squares (TS2SLS) variant of Angrist and Krueger (1992)'s estimator", which was in turn a special case of "two sample IV". The TS2SLS estimation, however, results to be more asymptotically efficient than the TSIV one due to corrections for differences in IV distributions between the different samples. To avoid the problem of using predictors of fathers' incomes which are themselves predictor of sons' incomes, vulnerability causing a downward bias in the estimates, an alternative procedure could be the one of predicting both fathers' and children's ones. (Piraino, 2006) Finally, the last alternative procedure could be to perform OLS estimation on income earned at the same time by co-residing fathers and sons, incurring however in underestimation due to the small size and the low level of representativeness of the sample.

Data used by Piraino (2006) is taken by the Bank of Italy Survey on Household Income and Wealth (SHIW), which is a nationally representative household survey conducted on about 8,000 families each year from 1977 and at odd years after 1987 and is considered to be the best source of income distribution in Italy.

Income is defined as disposable income earned from wages, salaries, self-employment or cash from properties, but not from financial assets, all net of taxes and social security contribution; each income record is coupled by information on individual characteristics, ranging from demographical to educational and occupational one.

Father data is taken from the oldest wave of the survey, back in 1977, where fathers included are the male, head of the households with at least one co-resident child aged between 30 and 50, therefore born not before 1927 and not after 1947.

Son data is taken, instead, from the 2002 SHIW, with sons defined as male heads of households as well, aged from 30 to 45, whose fathers were born between 1927 and 1947, and who reported both positive income and their fathers' socio-demographic characteristics.

The table 3 shows the sample statistics, where the selected sample is the one after the exclusion of individuals reporting non-positive income for the years of the survey.

Table 3: Descriptive statistics for selected fathers and sons

	Pseudo-Fathers (1977)		Sons (2002)	
	All Males 30-50 in 1977	Selected Sample	All Males 30-45 in 2002 (whose fathers were born b/w 1927-1947)	Selected Sample
N	1133	953	733	612
Mean age	41.41 (4.99)	41.39 (4.99)	38.02 (4.13)	38.09 (4.13)
Mean log income	9.65 (0.53)	9.69 (0.50)	9.87 (0.56)	9.93 (0.47)

Notes: Standard deviations in parentheses. Income in 2002 Euros, deflated by CPI.

In the first stage, the variables obtained from information given in the 2002 survey are grouped in four main clusters: (maximum) educational achievement, subdivided in six categories (no school, elementary, lower secondary, high school, bachelor, post graduate), work status, divided in four categories (blue collar, office workers/teachers, managers/professionals/entrepreneurs, self-employed), sector of employment (agriculture, industry, PA, private services) and a geographical dummy, showing whether or not the father lives in the South.[9]

[9] Descriptive statistics for the sample are reported in a table in Appendix F.

The empirical results of the estimate of coefficient β show a value ranging between 0.479 and 0.509, thus a very high and significant level of intergenerational persistence is present in Italy, where almost half of fathers' economic advantage is passed on to their offspring (Piraino, 2006). Results are presented below, in table 4.[10]

Table 4: Estimated Intergenerational elasticity in Italy

Technique	Uncorrected for age	Corrected for age
1. TS2SLS	0.479 (0.076)	0.509 (0.071)
2. Predicted incomes	0.333 (0.059)	0.339 (0.059)
3. Co-residing	—	0.327 (0.082)

Notes: bootstrapping standard errors in parentheses. Income is predicted by educational, occupational and geographical dummies.

An alternative way to identify the level of intergenerational mobility is given by the transition matrices, a discrete categorization useful to investigate "the conditional probabilities of transition among ordered income quantiles/groups" (Piraino, 2006). By constructing four income classes, which are "low income" (income below two thirds of the median), "lower middle" (above low income, up to the median value), "higher middle" (from median value to a value equal to 1.5 median) and "high income", it's possible to understand the dynamic patter of mobility and, in this case, to underline how difficult is for low-income Italians to pass from rags to the riches.

Table 5: Transition Matrix by Income Classes

Son Father	Low-Income	Lower middle	Higher middle	High-Income
Low-Income	20.14	51.37	19.87	8.63
Lower middle	11.59	47.38	29.32	11.71
Higher middle	11.75	35.12	26.98	26.14
High-Income	2.83	11.15	38.07	47.95

Notes: Values are expressed in percentages.

[10] More results are available in the Appendix G.

If some mobility toward the immediately upper class is still possible, moving up from the bottom to the top is highly improbable, and yet slightly more likely than the fair possibility that people from the top fall down to the bottom of the distribution.

A European comparison

As told before, apart from the result *per se*, the interest in estimating the level of intergenerational mobility also arises from the usefulness of *ex post* comparison, allowing for analysis of differences, national prerogatives and factors causing them.

To analyse cross-county differences, however, results need to be comparable and so data requirements are even stricter than in case of a single country analysis as both selection rules to apply and selected sample need to be similar.

Comparison used to be made on results, which were obtained by different economist in different studies and with different measures and data samples; therefore the comparison cannot be considered a totally reliable one, but the idea of a sort of mobility ranking could be nonetheless inferred.

Using values from either Corak (2006) or different studies, all of them adopting the two-sample method of estimation, the main evidence suggested is that the U.S. and the UK rank as the most immobile countries among the developed and richest countries, while Canada and the Scandinavian countries present the lowest level of intergenerational mobility and are therefore classified as the most mobile ones.[11]

Comi (2003) provides estimates of mobility in 12 European countries allowing for comparison among them.

Data are taken from the European Community Household Panel (ECHP), which presents five waves from 1994 to 1998, using the same "community questionnaire" throughout Europe.

There has been considered both father-son and father-daughter pairs and no child was initially excluded from the sample. Fathers are individuals aged between 35 and 70 who were matched with a child aged from 16 to 35 in at least one wave of the survey. Children excluded were the ones enrolled in school during a given years, while fathers

[11] Summarizing tables and graphs are presented in Appendix H.

excluded were those still studying or retired; also self-employed and unemployed were not considered.[12]

First problem of the sample is that the great differences regarding social habits among different countries, like for example cohabitation with parents or home leaving ages, could also reflect differences in educational system and thus produce a sample selection bias. Another problem is the high sensitivity to a life cycle bias dealing with age of both fathers and sons at the time of the data collection. It has been proven that, as income variance grows over time, the intergenerational persistence decreases with the age of fathers and sons, so differences in the age of the two group individuals at the point of measurement could produce less reliable estimates. Besides, to avoid downward bias in considering early life observed income, the regression model should incorporate age variables (both age at time of measurement and age squared variables) for both fathers and sons.[13] Another selection bias could be then represented by the decision to exclude from the sample the non-continuously employed, meaning those individuals that reported non-positive earning for at least one year of the survey: it's obviously more common and more likely for low income earners to become unemployed that for high income ones.

The regression is run using OLS estimations of equations and the estimation of coefficient β suggests a quite worrying situation for Italy, which results the most immobile country regarding son-father couples (β between 0.27 and 0.2) and the "second best" when considering daughter-father ones (β between 0.27 and 0.22). Estimates are way smaller than the others found by different researches, but allow for significant comparison. The main conclusion is that Italy is the one presenting the worst scenario with respect to intergenerational mobility among rich countries of Europe.[14]

The Italian situation

The three main clusters of causes, determinants and drivers we discovered to have a relevant impact on the level of intergenerational mobility are broadly the same. That's why in this section we are going to retrace the very same factors analyzing and focusing on specificities and peculiarities of the Italian case.

[12] Sample information is showed in Appendix I.
[13] Age data of the sample is included in Appendix I.
[14] Tables of results are shown in Appendix L.

Educational mobility

The importance of family background and education has been wide known and also explained in the first chapter. What's been even more interesting is the discovery of a relationship between the two. And what's surprising is the huge role played by these factors in a country like Italy, which is dominated by public schools, almost free of charge higher education, which access to is facilitated by a system of public financing through taxation, and still presents itself as a very immobile country also regarding educational attainment, which is highly correlated with family income, as showed below (in table 6).

Table 6: Sons' educational attainments and fathers' income

Sons' education	Mean fathers' log income
Elementary school	9.30
Lower secondary school	9.76
High school	9.76
Bachelor	9.90

It should be said that, however, children's educational attainment is influenced not only by family's economic endowment, but also by family's (and father's *in primis*) educational attainment. The table 7 below shows the mobility matrix putting in relation fathers' and sons' educational attainment.

Table 7: Mobility Matrix by educational attainment

	Destination: son's education				
Origin: father's education	None	Primary school	Lower secondary	Upper secondary	University degree
None	3.5	19.0	47.6	28.3	1.6
Primary school	0.1	6.0	50.0	38.3	5.6
Lower secondary	0.0	1.3	26.2	56.7	15.8
Upper secondary	0.0	1.0	6.8	59.2	33.0
University degree	0.0	0.4	9.2	35.8	54.5
	0.4	6.2	39.3	42.5	11.6

Value expressed in percentages. Source: Mocetti (2006).

As a certain step upward (with respect to their own fathers) in the ladder of educational attainment, is possible (almost half of children whose father has no education at all achieved a lower secondary education), that's still the case where the greater majority of people earning a degree (54.5%) comes from households where fathers earned a degree, and that's the same for upper secondary education (59.2%) and for no education (3.5). Another remark, which has been done many times till now, is that going from rags to the riches, with due caution and case peculiarity, is more likely than the contrary.

But if educational attainment doesn't only depend on economic background of family, it might depend strongly on family background as a whole. In fact, one explanation of this strong correlation could be found in "early tracking", which is a term referring to the hierarchical structure of schooling system, where patterns and possibilities of choice at later stages depend on choices made at earlier ones. Obviously enough, the earlier the tracking, i.e. the earlier the determining choices' occurrance, the stronger the impact of family background on decisions made at this "transition stages" (Mocetti, 2006). In Italy we have a strict system of early tracking, where the first age of selection is around 13-14, so when children, after completion of middle school, are called to choose whether to continue studying. If they do so, their choices are among *licei*, which are "academically oriented high schools" not granting any title or recognition at the end, *isituti tecnici*, which are technically oriented ones, and *istituti di formazione professionale*, i.e. vocational schools. Later choices are greatly influenced by this one. At 18 or 19 year old, majority of people from technical or vocational school choose to work upon receiving their diploma, while majority of those coming from *liceo* goes to university, besides also the characterization of the *liceo* has an impact, where people from *liceo classico*, grammar high school, will be more oriented toward classical, humanistic or social sciences studies while people from *liceo scientifico*, scientific high school, toward scientific, technical, engineering and mathematical studies.

Moreover, students from low-income families are less likely to go into tertiary education even though education is based on a public funded system aiming at providing full access regardless of income. To interpret this situation, the choice of earning a university degree is analysed considering both its incentives and costs.

If the main incentive for students of enrolling in university is represented by the chance of improving their employment possibility, and therefore future earnings and income, in Italy this choice is not seen as a very rewarding one. A higher education does not ensure

the avoidance of risk of unemployment and its return is not only lower than in most of the developed economies, but it's also poorly related to academic performance. It's also poorly recognized and appreciated by the Italian private industry, which relies mainly on internal training and where social and family ties play a great role during the hiring process.

Regarding costs, it could be observed that Italian system, on one hand, has tried to increase equality of opportunities and access possibilities to university decreasing enrolment fees but, on the other hand, has engaged in no efforts to grant tuitions or scholarships. This mistake is due to the restricted logic considering university costs as limited to the direct fee payment, when instead university fees represent only a small proportion of the total. Apart from books and course material, for example, the major cost is faced by the so called "*fuori sede*" students, meaning those studying away from hometowns, and consists mainly in accommodation and everyday life. In addition to all of them, the last cost component to consider is the one represented by the opportunity cost of not working to continue studying, which is high also due to the long duration of tertiary education in Italy.

Occupational mobility

Upon discovery of the great importance of family background and educational attainment, some scholars, like Bowles and Gintis (2002), tried to separate the effect of fathers' income and children education on the intergenerational correlation measure. Thanks to their descriptive, but not causal, analysis, they found that the total U.S. estimate of IGC, equal to 0.48, could be subdivided in a 0.345 representing the direct effect of fathers' income and a mere 0.135 representing the indirect one, namely the role of sons' education, in such way accounting just for one third

So, if the educational attainment *per se* is not the only determinant in making Italy one of the less mobile and more "rigid" society among the advanced ones, one explanation might be that in Italy "equally educated children have unequal chances depending on their family background" (Piraino, 2006).

It is also true that having a public and publicly financed higher education system is not enough to guarantee equality of opportunity, and that inequality may be in part due to

entry process and selection, which are no more efficient or guaranteeing the right return on education, or to the high level of standardization of the Italian system, which neglects to recognize and foster merit and talent, making it difficult to signal ability and passion, so that parental connections become the rule governing such a world.

But another peculiarity of Italian country is the strong occupational persistence. The table 8 below tries to show correlation and link among generations of occupations divided by categories

Table 8: Mobility matrix by occupational attainment

	Destination: son's occupation				
Origin: father's occupation	blue-collar worker	office worker, teacher	manager, official	member of profession	entrepreneur, free lance
blue-collar worker	47.6	24.4	5.1	3.2	19.8
office worker, teacher	13.8	43.3	14.9	13.3	14.7
manager, official	5.1	31.1	32.1	16.1	15.6
member of profession	5.5	17.5	17.3	25.9	33.7
entrepreneur, free lance	21.4	17.1	6.1	8.2	47.3

Values expressed in percentages. *Source*: Mocetti (2006)

Without any consideration on wage, earnings or income, it's crystal clear that most of the children end up as adults doing the same job as their fathers.

Among the reasons, there are, for sure, the entry barriers some professions are subject to, the strong presence of family businesses providing family members with preferential access to them or the natural outcome of family impact itself, not only through economical or educational contribution, but also the one granted through educational model, norms and habits. But another driver may play a substantial role in increasing the level of intergenerational persistence by strengthening family influence on children's life, one which is strongly specific of the Italian scenario: the habit of cohabitation of the youth with their parents. According to Manacorda e Moretti (2006) Italian young men live with their parents until the age of 30 and even more, with the 80% of those between 18 and 33 year old still living in their household as children. This sharing-the-same-roof condition helps parents affect children beliefs, attitudes, choices

and preferences, which are shaped by parents' one, especially when children feel compelled to abide to parents' explicit norms, or to stick to their tacit aspirations, wants and occupational desires for them or even "comply with social convention or family traditions" (Mocetti, 2006).

The reasons behind this social habit are not just the undeniable advantages of living in the parental home, whether economical, personal, relational or even opportunistic ones, but also the high rate of youth unemployment and the dramatically low level of unemployment benefits, making it almost impossible for Italian young people to run a house on their own, where most of them living on their own are continuously, and sometimes entirely, financed by their parents: family represents and provides the support and insurance that the welfare state fails to.

Moreover the labour market itself is probably even more "rigid" than the educational system: it has a strong internal market and its work relationships present a long term horizon. This characterization gives a paramount importance to the first job, which can have a long-lasting effect on an individual's entire career. And the willingness to take risk and accept, for example, only "good jobs", those job paying more than a certain threshold or providing certain services and warranties or promising carrier advancement possibility, will greatly depend on the social class of origin: to keep it simple, the lower the class, the higher the risk-aversion, the higher the possibility of accepting a low-wage job.

Another problem is presented by the extensive barriers to entry in the labour market, leaving a great room to manoeuvre for nepotism, family network and social connection exploitation, in a few words the great importance of family ties and social referral as hiring mechanism. Where this informal and personal contact system provides a reliable and cheaper source of information on the candidate and constitutes also a mean of peer monitoring, it may also, apart from damaging and preventing intergenerational mobility, represent a source of inefficiency in the job and rent allocation; therefore the less competitive and the more closed the labour market is, the more the drawbacks will outpace the benefits of such a system.

Proposed measures

If some of the measures already proposed and suggested when talking about how to increase the level of intergenerational mobility are still more than valid, a few words are to be said to address the Italian peculiarities.

Regarding the education problem, policies in the area should be revised, the early selection age, as well as school leaving age, should be increased to delete the too early tracking and allow for more flexibility throughout the system and the schooling years. Moreover, cost and benefit estimates should be rethought and a new equilibrium found, taking into consideration all cost variables and maybe realigning university fees with the actual cost of the service, so to have resources free to be allocated in the creation of scholarships or to grant student loans for expenses not covered by tuitions and fees exemptions. These corrective measures should also create incentives to enhance not much participation, but, better, academic results, allowing for recognition of both merit and talent, with the aim of minimizing the worrying Italian phenomenon of students leaving university before graduation or, even worse, the one of *fuori corso* students, i.e. those enrolled in a number of years greater than the standard period of the course, both largely widespread and growing in the Italian university reality. Solving those problems could also bring to the resolution of the problem of cohabitation and all the related caveats and drawbacks.

Labour market, instead, should be revised to be more flexible, more open and more competitive. Removing barriers to profession, stiffening competition and minimizing or changing the role of social referral mechanism could help achieve a more efficient and equal labour market, and therefore a more mobile society as a whole.

CONCLUSIONS

So far this analysis has pivoted on determining existence, extent and causing factors of the phenomenon called "intergenerational mobility" defined as "transmission of economic status" (Lee & Solon, 2009) between fathers' generation and sons' one.

Main aim of this work was to help recognize it in everyday life, see it growing and rising, observe its distinguishing factors, evaluate its inevitable implications and maybe understand the importance of fighting it.

There have been proposed possible solutions and correcting measures, all oriented toward the goal of equality of opportunities or "equality at the starting point" (Einaudi, 1967).

As a sportive race is not fair unless all participants part at the very same time from the starting blocks and no external inconvenient impedes participants from exploit their capacities, in the same way the human race for life if fair only as long as all participants are provided with the same starting opportunities regarding upbringing, education, training and work choices (Einaudi, 1967).

There's no fault or demerit in being born from poor, incapable, careless parents as well as there's no merit or will in being born from wealthy, caring, thoughtful and encouraging parents; and the fact that falling in one of the two cluster is not only a random happenstance, but also one that can influence your entire life, especially your educational and occupational outcomes, and therefore your economic success, has relevant implications in fairness as well as efficiency of the entire society.

The rebounds of the lack of mobility have been shown to present at different layers of human development and at different stages and contexts of human life, but they are all closely related and are self-reinforcing one another. Italian situation appears as "the worst of possible words" (Checchi, 1997), with its level of mobility among the lowest of all developed economies, its great dependence on an individual's initial conditions worsen and increased by lowest educational incentives and its highly rigid labour market structure.

For this reason, governments, public authorities and all involved parties should work to reform and improve the actual situation, allowing for newborns to have equal

opportunities at their disposal , to be able to exploit those opportunities if willing and capable, to see their merit and their achievements recognized and to enter the labour market with a "label" signalling their abilities.

As you can deduct, equality of opportunities does not mean equalizing outcomes, rather it does mean greater inequality of rewards reflecting distribution of abilities and addressing in the proportionally adequate way the different exploitations of those equal opportunities, different efforts put in it and diverse results out of it.

The target scenario of equality of starting points itself has been subject to the most different definitions and interpretations, ranging from Amartya Sen (1973)'s radical one, who includes natural talent in the better endowment and individual inherits and which thud does not need any incentives or rewards, unlike acquired abilities reflecting social arrangements and so deserving both incentives and rewards, to the more moderate one of Luigi Einaudi (1967), who considers unfeasible and unnecessary trying to perform a sharp cut to any connection and link between the two closest generations, i.e. the one of fathers and the one of sons, emptying the ideas of perpetration of the species and of family community of any meaning, impeding parents to make their offspring enjoy the fruits of their own work.

It's obvious and redundant to be said that this goal is not an easy one, and that solutions to problems, which may seem similar and share similar characteristics, are not necessary similar themselves. That one thing is to help and work toward the right functioning of a clockwork, oiling the device, and a completely different, and way harder task, is to totally upset and revolutionize the existing system, one considered too inefficient and unequal to be correct rather than radically thought anew.

Which vision is the most right one, or the most realistic to be obtained or simply the most desirable one is not job for this work to tell. Its job was to shed light on such a concerning problem and on its call for immediate and effective solutions. To both reveal the dirt under the rag and propose possible ways to clean it; so to clear it up the long way that stands to go from rags to the riches, and also, "unfortunately"(?), in the opposite direction.

APPENDICES

Appendix A

As observations of fathers' earnings were not available for all years in the range due to their attrition from the sample, lack of reporting or non-positive earnings reported for that year, the sample composition varies throughout the years, along with the estimates of ρ. That's why the equation is re-estimated with a sample size of 290 observations, reporting earnings of fathers available for all the 5 years, results in table 9.

Table 9: OLS Estimates of ρ from Log Earnings Data for "Balanced" Sample (N=290)

Year of father's log earning	Measure of father's log earnings				
	Single-year measure	Two-year average	Three-year average	Four-year average	Five-year average
1967	0.369 (0.094)				
		0.409 (0.093)			
1968	0.396 (0.087)		0.432 (0.093)		
		0.422 (0.088)		0.420 (0.094)	
1969	0.406 (0.085)		0.405 (0.090)		0.413 (0.093)
		0.382 (0.098)		0.397 (0.090)	
1970	0.309 (0.087)		0.374 (0.088)		
		0.324 (0.086)			
1971	0.285 (0.078)				

Standard-error estimates are in parentheses. (Solon, 1992)

To have even more detailed results and to avoid instrumental variables omissions or errors-in-variables problems, the economics status was measured by the natural logarithms of hourly wage rates as well as family incomes and family incomes relative to the official federal poverty standard, to adjust for family size and composition (Solon, 1992) and the father's education was included as instrumental variable for $y_{0\,is}$. The IV estimates for the year 1967 are greater than the OLS estimates, the former likely being upward-biased and the latter downward-biased. They nonetheless confirm general conclusions above.

Table 10: OLS and IV Estimates of ρ for Various Single-Year Income Measures in 1967

Income measure	OLS	IV	Sample Size
Log earning	0.386 (0.079)	0.526 (0.135)	322
Log Wage	0.294 (0.052)	0.449 (0.095)	316
Log family income	0.483 (0.069)	0.530 (0.123)	313
Log (family income/poverty line)	0.476 (0.060)	0.563 (0.103)	313

Standard-error estimates are in parentheses. (Solon, 1992)

Appendix B

Data are taken from the PSID, the longitudinal survey run by the University of Michigan's Survey Research Center, started in 1968 with a population sample of almost 5000 U.S. families.

The sample has been re-interviewed in 1997 and every year since then. The method is the same of the first analysis, but this time Solon and Lee considered both sons and daughters who were born between 1952 and 1975. The lower bound date was chosen so to avoid interviewing children older than 16 in 1968 and so over-representing children leaving home at later ages. This choice implied that the first income observation for children is dated 1977, to have them be at least 25 at that time. The upper bound date (2000) was chosen to have a range of ages from 25 to 4, so that in 2000 in fact children from the 1952 cohort were almost 48, while those from 1975 one were almost 25.

Income was considered as family income in houses in which fathers were the heads, and the variable considered in the regression was the average natural logarithm of family income over the three year range over which the child went from being 15 to being 17 years old (for children from 1952 cohort, family income in years 1967-1969 was considered); in fact fathers' last interviews occurred in 1994, when children from 1975 cohort turned exactly 17. Variables included of course family income, but also dummy variable for each year t (with t = 1977, ... , 2000), and controls for a quartic in parental age at the time of the family income observation, a quartic in child's age at the time of his/her own income observation and interactions with child age's quartic and parental income. The age variable for the child is t – c – 40 in order to be equal 0 when the child is 40 and simplify the interpretation of the coefficient of the income. (Lee & Solon, 2009). The sample size is made of 11,230 observations of 1,228 sons and 12,666 observations of 1,308 daughters. The estimates are normalized for 40 year old individuals and they get more and more precise as new observations are added to the sample. Results are presented in table 11.

Table 11: Estimated Intergenerational Income Elasticities by Year and Gender

Year	Estimates for Sons	Estimates for Daughters
1977	0.34 (0.20)	0.05 (0.17)
1978	0.54 (0.13)	0.19 (0.13)
1979	0.50 (0.15)	0.20 (0.12)
1980	0.48 (0.13)	0.27 (0.11)
1981	0.42 (0.14)	0.37 (0.11)

1982	0.52 (0.12)	0.37 (0.11)
1983	0.46 (0.11)	0.45 (0.11)
1984	0.39 (0.11)	0.49 (0.10)
1985	0.41 (0.12)	0.53 (0.10)
1986	0.47 (0.10)	0.49 (0.10)
1987	0.41 (0.12)	0.50 (0.09)
1988	0.38 (0.09)	0.54 (0.09)
1989	0.42 (0.09)	0.56 (0.08)
1990	0.36 (0.08)	0.52 (0.07)
1991	0.43 (0.08)	0.53 (0.07)
1992	0.45 (0.08)	0.49 (0.07)
1993	0.49 (0.08)	0.50 (0.07)
1994	0.43 (0.07)	0.48 (0.07)
1995	0.40 (0.07)	0.48 (0.06)
1996	0.43 (0.07)	0.43 (0.06)
1998	0.47 (0.06)	0.54 (0.06)
2000	0.49 (0.06)	0.46
Number of observations	11,230	12,666
Wald statistic for testing equality of elasticity across years	26.75 ($p = 0.18$)	33.34 ($p = 0.04$)

Notes: Standard-error estimates in parentheses are robust to the serial correlation resulting from repeated observations of the same individuals. (Lee & Solon, 2009)

As stated before the simple average of elasticity estimates over the 22 years is 0.44 for male children and 0.43 for female ones. To control for the cohort-effect and to understand how the elasticity estimates change for the same cohort throughout the ages or across different cohorts and time periods, elasticities have also been averaged every 5 years. From the chart below (table 12), in this way, it's possible either to follow diagonally the evolution of the elasticity relative to a given cohort in different periods of time, or to compare vertically different estimates with respect to different cohort for a specific five-year period or eventually to observe horizontally the effect of the different time periods on income of children from different cohorts but of the same age at that time.

Table 12: Estimated International Income Elasticities by Gender and Age Group Averaged Over Five-Year Periods

Gender and Age Range	1981-1985	1986-1990	1991-1995	1996, 1998, 2000
Sons				
25-29	0.31	0.20	0.35	0.32
30-34		0.44	0.38	0.45
39-39			0.48	0.40
40-44				0.45

Daughters				
25-29	0.40	0.52	0.40	0.36
30-34		0.47	0.48	0.36
39-39			0.46	0.51
40-44				0.43

Source: (Solon, 1992)

Appendix C

Given the positive relation between inequality, as estimated by the Gini coefficient in the middle of the 1980s, on the vertical axis and intergenerational mobility, as estimated by the IGE, on the horizontal axis, we can use the curve to predict the effect of a rise in inequality in the U.S., from a value of Gini of 0.47 to one of 0.56, on the level of intergenerational mobility (figure 13).

It was easy to foresee that the increase in inequality would reduce the level of mobility even more. The estimate is that the persistence in the advantages (or disadvantages) passed from fathers to children would increase by one quarter as a consequence.

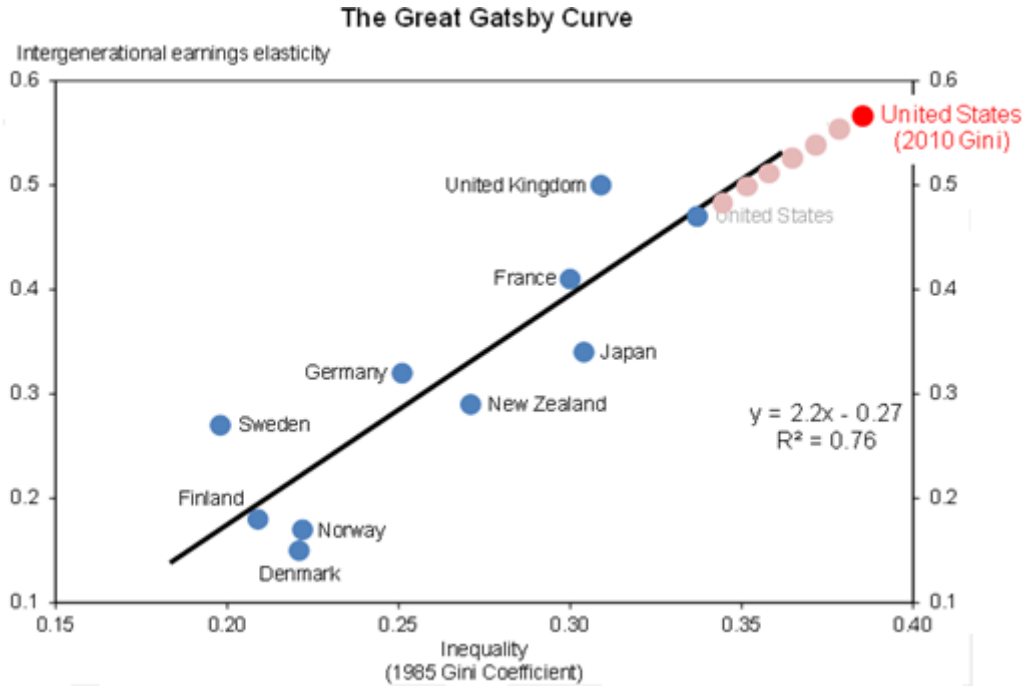

Figure 13: The Great Gatsby Curve

Appendix D

The U.S. tax system resulted to be one of the least progressive, under a comparative perspective adopted in the analysis made by the OECD. The graph in figure 10 is useful to compare level of inequality when considering the pre-tax income, depicted by the blue bars, and its level when considering after-tax income, depicted by the red bars. The difference between them two is a metric of the reduction in inequality pursued by and achieved through the tax policy. The U.S. is clearly among the five countries with the least progressive system, along with Turkey, Mexico, Chile and Korea.

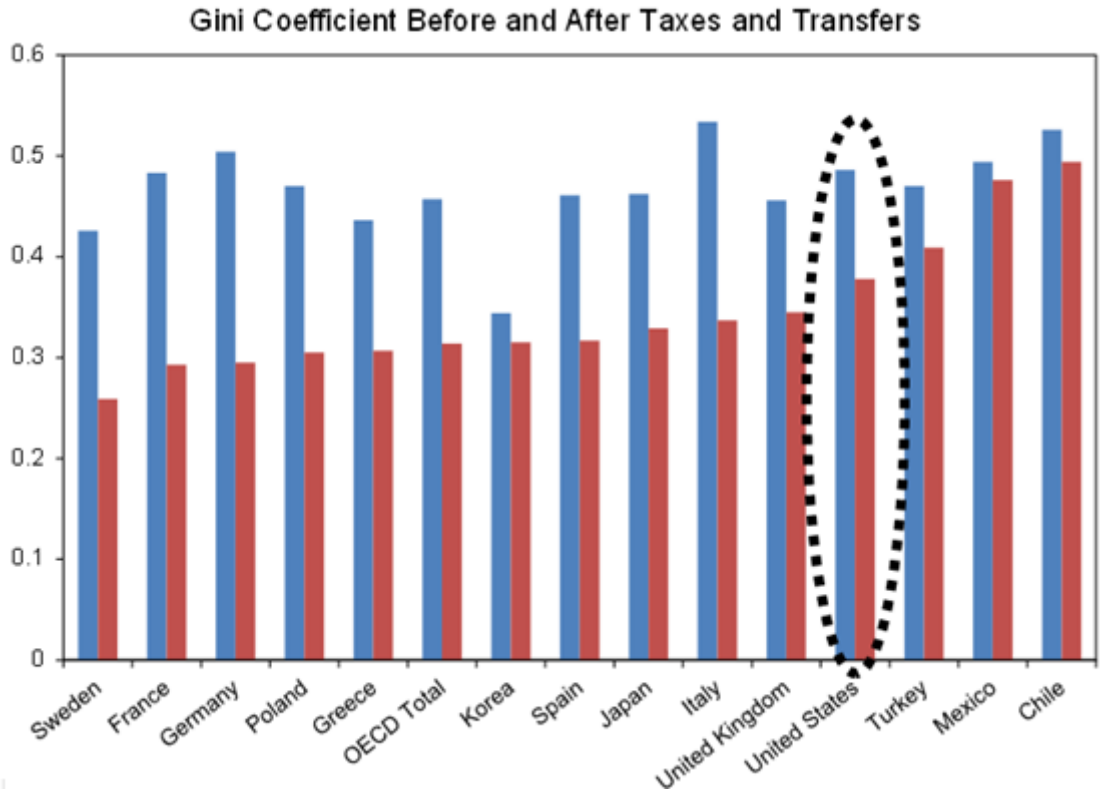

Figure 14: Gini Coefficient Before and After Taxes and Transfers. *Source*: OECD

Appendix E

Data set regards nine countries: Austria, Denmark, Germany, Netherlands, Scandinavian countries, so Finland, Norway and Sweden, the U.S. and the U.K. Time period ranges from 1830 to 1985 and it's subsequently divided in sub-periods of 20 years each, except for the last subset comprising 15 years only.

The dependent variable is a measure of annual average growth rate of GDP per capita and it's called *RTGROWTH.*

Independent variables are: the distribution related one, named INCSH which is a measure of the share in personal income of the top 20% of the population; the effect of the political participation estimated by variable NOFRAN, capturing the share of enfranchised age and sex group not in the electorate; the education level adopting an index of schooling under the name SCHOOL.

Data summary is following (in tables 13 and 14).

Table 13: Sample Data

	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
RTGROWTH	57	1.875	1.026	0.17	5.05
GDP	57	3005	2132	752	9459
INCSH	38	0.504	0.068	0.38	0.67
SCHOOL	52	0.140	0.081	0.017	0.362
NOFRAN	59	0.278	0.312	-0.01	0.89

Source: Persson & Tabellini, 1991.

Table 14: Correlation Matrix

	RTGROWTH	*GDP*	*INCSH*	*SCHOOL*
GDP	0.280			
INCSH	-0.472	-0.717		
SCHOOL	0.401	0.889	-0.622	
NOFRAN	-0.364	0.580	0.754	0.620

Source: Persson & Tabellini, 1991.

The results are shown below (in table 15). The most interesting one is the coefficient for INCSH, which captures the effect of inequality on the growth rate of GDP. The coefficient is not only negative signed, as expected to be, but also almost always statistically significant. The economic value, finally, is a non negligible one; rather the results suggest that an increase in the income share owned by people in the top 20% of the income distribution, by one standard deviation, i.e. by 0.07, reduces the average annual growth rate by almost half a percentage point.

Table 15: Sample Data

	(1)	(2)	(3)	(4)	(5)	(6)
# Observations	38	38	38	38	38	38
CONSTANT	4.937 (2.290)	4.953 (3.480)	5.244 (2.445)	5.781 (4.675)	4.979 (2.342)	6.656 (3.613)
INCSH	-5.264 (-1.435)	-5.290 (-1.786)	-6.480 (-1.847)	-7.521 (-2.981)	-5.358 (-1.480)	-8.520 (-2.710)
NOFRAN	-1.374 (-1.099)	-1.377 (-1.158)			-1.389 (-1.126)	
SCHOOL	0.031 (0.011)		0.902 (0.309)		4.923 (1.080)	
GDP					-021E-03 (-1.425)	-0.62E-04 (-0.645)
R^2	0.159	0.183	0.154	0.176	0.183	0.162
SEE	1.016	1.001	1.018	1.006	1.001	1.014

Source: Persson & Tabellini, 1991.

Appendix F

Here below (table 16) the characteristic of sons and fathers as emerged from the sample analysis.

Table 16: Descriptive statistics for fathers and pseudo-fathers.

	Sons' report of fathers characteristics	Fathers' own report of their characteristics
Mean Age	42.36 (5.18)	41.39
Education		
None	0.08	0.06
Elementary	0.53	0.50
lower secondary	0.25	0.25
high school	0.11	0.13
Bachelor	0.03	0.06
Work Status		
blue collar	0.47	0.47
office worker & teacher	0.17	0.19
manager/professors/entrepreneurs	0.11	0.06
self-employed	0.25	0.28
Work sector		
agriculture	0.16	0.08
industry	0.30	0.44
public administration	0.14	0.14
private services	0.40	0.34
Area		
north/centre	0.65	0.69
south	0.35	0.31

Notes: All frequencies are weighted using sampling weights (Piraino, 2006)

Appendix G

The results (in table 17) show more variation when testing for different predictors and it can be observed than even when neglecting the effect of education, the coefficient value is lower but still high enough to exclude an upward bias.

Table 17: Estimated Intergenerational Elasticities (2002-1977) for different sets of predictors of income.

Predicting variables	2S2SLS		Predicted Incomes	
	(a)	(b)	(a)	(b)
1. education, work status	0.510 (0.072)	0.546 (0.073)	0.264 (0.024)	0.271 (0.024)
2. work status, sector, area	0.444 (0.058)	0.468 (0.058)	0.210 (0.024)	0.213 (0.023)
3. education, work status, area	0.530 (0.066)	0.553 (0.066)	0.367 (0.029)	0.372 (0.029)
4. education, work status, sector	0.414 (0.062)	0.453 (0.061)	0.234 (0.021)	0.234 (0.021)
5. education, sector, area	0.525 (0.079)	0.556 (0.077)	0.393 (0.040)	0.391 (0.039)
6. education	0.594 (0.093)	0.642 (0.093)	0.301 (0.029)	0.305 (0.028)

Notes: (a) does not control for age; (b) includes control for age (Piraino, 2006)

Appendix H

Table 18: Estimated Intergenerational Elasticities (2002-1977) for different sets of predictors of income.

Country	Study	Elasticity	Estimation Method	Sons' ages (average or range)	Fathers' ages (average or range)
United States	Solon (1992)	0.41	OLS	25-33	44
	Solon (1992)	0.53	IV	25-33	44
	Mazumder (2005)	0.61	OLS	30-35	27-69
UK	Dearden et al.	0.58	IV	33	47.5
Germany	Wiegand (1997)	0.34	OLS		
Canada	Corak and Heisz (1999)	0.23	OLS	29-32	42.5
Sweden	Osterberg (2000)	0.13	OLS	25-51	52
Finland	Osterbacka (2001)	0.13	OLS	34.9	46

Source: Piraino (2006)'s selection from the review in Corak (2004*b*)

Table 19: Comparable international evidence

Studies	Country	$\hat{\beta}$	Set of instruments	age^{son}	age^{father}
Bjorlund and Jantti (1977)	Sweden	0.28	Education, occupation	30-39	43
Bjorlund and Jantti (1977)	US	0.42	Education, occupation	28-36	45
Dearden *et al.* (1977)	UK	0.42	Education, social class	33	47
Fortin and Lefebvre (1998)	Canada	0.21	Occupation	30-39	-
Lefranc and Trannoy (2005)	France	0.41	Education, social class	30-40	55-70
Dunn (2004)	Brazil	0.69	Education, occupation	25-34	30-50
Ferreia and Veloso (2004)	Brazil	0.58	Education	25-64	25-64
Ermisch and Nicoletti (2006)	UK	0.29	Occupational prestige, social class	37	53

The estimated elasticity concerns father-son pairs. The dependent variable is log annual earning in all studies but in Dearden *et al.* (1997)'s one where it is predicted sons' earnings. (Mocetti, 2006)

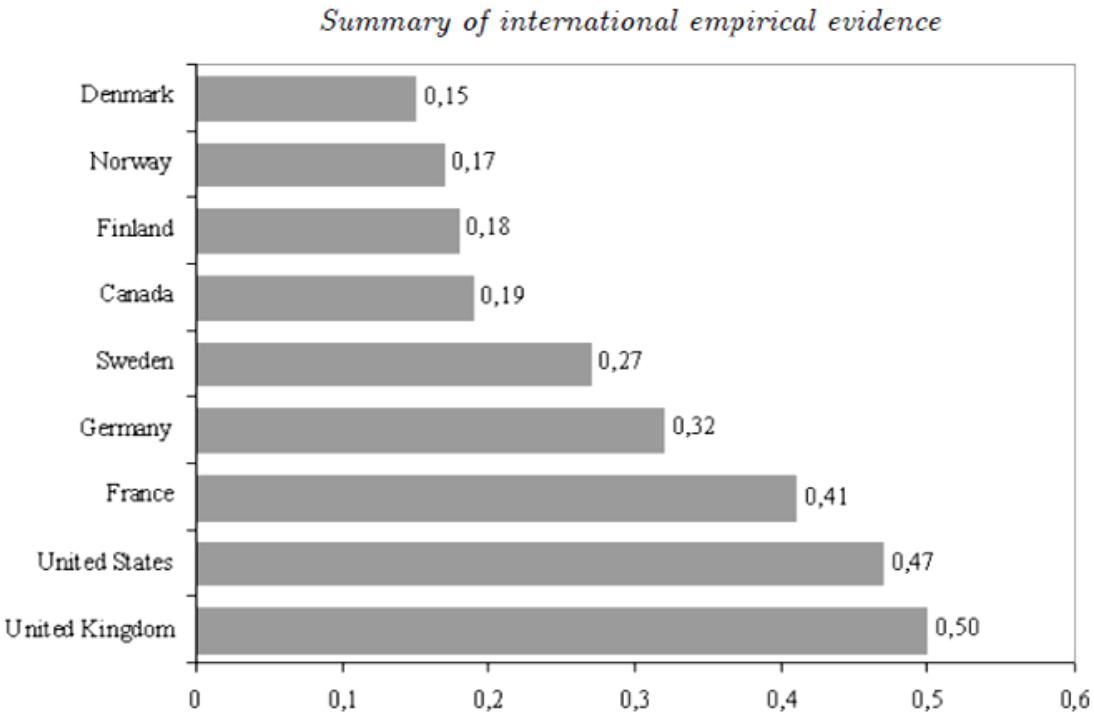

Figure 15: Summary of international empirical evidence. The value of elasticity reported is the one considered more reliable according to Corak (2006). (Mocetti, 2006)

Appendix I

The starting sample includes 50709 son-fathers couples and 39269 daughter-fathers ones, while the final ones accounted for 9302 and 5709 respectively. Italian final sample is made up of 9302 son-fathers couples and 630 daughter-fathers ones (table 20).

Table 20: Starting and final samples for earning estimation: numbers of pairs by country

Country	Starting sample			Final Sample		
	Son-father pairs	Daughter-father pairs	Total pairs	Son-father pairs	Daughter-father pairs	Total pairs
Germany (Gsoep)	4000	2772	6772	1373	890	2263
Denmark	852	654	1506	293	157	450
Netherlands	1997	1520	3517	522	301	823
Belgium	1698	1407	3105	266	129	395
France	4000	3144	7144	540	257	797
Uk (Bhps)	1885	1325	3210	646	523	1169
Ireland	4458	3544	8002	842	631	1473
Italy	10030	7970	18000	1158	630	1788
Greece	5269	3729	8998	439	284	723
Spain	8584	7071	15655	1166	686	1852
Portugal	5332	4280	9612	1265	659	1924
Austria	2604	1853	4457	792	562	1354
Total	50709	39269	89978	9302	5709	15011

Source: Comi (2003)

Apart from age of sample individuals, also educational habit and age of entry in the labour market are considered, to control for national social habit and prerogatives (table 21).

Table 21: Average age of the samples by country

Country	Son-father pairs		Daughter-father pairs		Expected years in education for 15 years old*
	Average age of sons	Average age of fathers	Average age of daughters	Average age of fathers	
Germany (Gsoep)	22.7	50.2	21.5	49.5	4.5

Denmark	20.5	48.9	20.4	48.4	3.7
Netherlands	22.0	50.4	21.1	49.1	2.7
Belgium	24.3	51.1	23.8	50.9	6.2
France	23.6	50.1	23.6	49.5	6.8
Uk (Bhps)	21.8	49.9	21.4	50.1	2.7
Ireland	22.5	52.3	22.8	52.9	4.8
Italy	23.9	52.3	23.5	52.6	5.8
Greece	24.0	52.6	23.5	53.2	6.0
Spain	23.4	52.7	23.8	53.2	5.2
Portugal	22.6	52.1	23.1	51.5	4.8
Austria	21.3	48.9	20.7	47.7	3.9
Total	22.7	51.2	22.4	51.2	-

*Education at a glance 2001: OECD calculates the age –specific proportion of young people still in education and then total it to 15-29 years old to yield the expected years in education. (Comi, 2003)

Appendix L

Table 22: Son-father pairs: $\hat{\beta}$ from the regression of equations

Country	OLS Pooled		Father earnings averaged excluding years of unemployment		Father earnings averaged including years of unemployment	
	$\hat{\beta}$	Sample	$\hat{\beta}$	Sample (1)	$\hat{\beta}$	Sample (1)
Germany (Gsoep)	.18 (.052)	1373	.16 (.053)	1502	.13 (.034)	1509
Denmark	-.09 (.09)	293	-.09 (.089)	316	-.055 (.084)	316
Netherlands	-.067 (.071)	522	-.03 (.058)	555	-.02 (.058)	552
Belgium	.21 (.084)	266	.21 (.082)	277	.10 (.051)	278
France	.12 (.049)	540	.11 (.051)	568	.08 (.043)	567
Uk (Bhps)	.10 (.052)	646	.12 (.051)	718	.12 (.048)	716
Ireland	.03 (.034)	842	.01 (.035)	998	.04 (.025)	992
Italy	.27 (.040)	1158	.24 (.046)	1261	.20 (.034)	1259
Greece	.16 (.053)	439	.11 (.046)	539	.11 (.036)	534
Spain	.17 (.037)	1166	.17 (.035)	1370	.095 (.026)	1370
Portugal	.20 (.033)	1265	.18 (.033)	1456	.12 (.025)	1466
Austria	.02 (.061)	792	.03 (.064)	836	.02 (.051)	836

Notes: (1) samples are different because of the exclusion of some outliers from the regressions. Outliers are detected using the Hadi procedure (Comi, 2003)

Table 23: Daughter -father pairs: $\hat{\beta}$ from the regression of equations

Country	OLS Pooled		Father earnings averaged excluding years of unemployment		Father earnings averaged including years of unemployment	
	$\hat{\beta}$	Sample	$\hat{\beta}$	Sample (1)	$\hat{\beta}$	Sample (1)
Germany (Gsoep)	.36 (.070)	890	.33 (.066)	957	.26 (.052)	955
Denmark	.09 (.15)	157	.055 (.154)	160	.05 (.145)	160
Netherlands	-.029 (.106)	301	.03 (.104)	380	.047 (.088)	309
Belgium	.19 (.16)	129	.16 (.164)	135	.06 (.140)	135
France	.28 (.091)	257	.28 (.089)	268	.27 (.085)	268
Uk (Bhps)	.024 (.058)	523	.025 (.064)	585	.045 (.057)	584
Ireland	.13 (.035)	631	.15 (.036)	717	.13 (.036)	714
Italy	.27 (.054)	630	.26 (.048)	714	.22 (.028)	709
Greece	.20 (.075)	284	.07 (.07)	343	.08 (.063)	337
Spain	.24 (.048)	686	.20 (.043)	814	.09 (.034)	818
Portugal	.15 (.043)	659	.18 (.050)	755	.11 (.037)	766
Austria	.15 (.063)	562	.12 (.061)	584	.07 (.051)	581

Notes: (1) samples are different because of the exclusion of some outliers from the regressions. Outliers are detected using the Hadi procedure (Comi, 2003)

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