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Intergenerational Transmission of Disadvantage: Mobility or Immobility Across Generations?

Anna Christina D'Addio

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SUMMARY

1. This report surveys the research in OECD countries on intergenerational mobility – i.e. the extent to which key characteristics and life experiences of individuals differ from those of their parents. A number of findings emerge:

- *Intergenerational earnings mobility varies significantly across countries*. It is higher in the Nordic countries, Canada and Australia but lower in Italy, the United States and the United Kingdom. The extent of intergenerational earnings mobility depends on individuals' and households' characteristics and varies over the income distribution (i.e. mobility is lower at both the top and the bottom of the distribution in many countries). Various studies also show that: (i) countries where both income inequality and rewards to education are higher, display lower intergenerational earnings mobility; and (ii) the degree of persistence of family income across generations is stronger than that of earnings.
- *Education is a major contributor to intergenerational income mobility and educational differences tend to persist across generations*. The range of family characteristics that shape educational mobility across generations includes ethnic origin, the language spoken at home, family size and structure, and the socio-economic and cultural background of the parents. Moreover, some of the cross-country differences in the extent of intergenerational mobility of education are shaped by policies. For example, early streaming of students, based on their ability, seems to considerably reduce mobility across generations.
- *Evidence of intergenerational immobility extends to other outcomes*. For example, occupations persist across generations and this persistence depends on factors such as education and also race or migrant status. Wealth also persists heavily across generations: as they are larger at the top of the income distribution, wealth transfers may deepen inequality. Welfare receipt is also transmitted across generations and this transmission appears to be influenced by specific aspects of programme design. Finally, personality traits also tend to persist across generations and affect both labour market outcomes and decisions about family formation: for example, children of divorced parents are more likely to divorce when they are adults.
- *Early and sustained investment in children and families can help*. A key role is played by early childhood education, care and health. Financial transfers and in-kind services to parents are also important as they provide them with the resources to better rear and care for their children. Overall, a strategy based on a greater investment in children holds the promise of breaking the cycle of intergenerational disadvantages because of its effects in reducing child poverty and contributing to child development.

2. Low intergenerational mobility has important policy implications as it implies that the life chances of individuals will partly reflect characteristics for which they are not responsible. However, it should be emphasized that, while it is often possible to quantify the extent of intergenerational mobility with a single number (e.g. in the case of income), this quantification does not imply a judgement about what mobility should be. No society is completely mobile or immobile and some of the mechanisms contributing to intergenerational persistence of outcomes are both acceptable and indeed desirable. This underscores the importance of identifying what measures are most effective in reducing some of the inequalities of opportunities that are associated with different birth endowments.

RÉSUMÉ

3. Ce rapport examine la recherche consacrée à la mobilité entre générations dans des pays de l'OCDE – autrement dit, la mesure dans laquelle les caractéristiques clés et les expériences principales de la vie des individus diffèrent de celles de leurs parents. Un certain nombre de résultats émergent :

- *La mobilité entre générations en termes de revenus varie de manière significative d'un pays à l'autre*. Elle est plus importante dans les pays nordiques, au Canada et en Australie mais inférieure en Italie, aux Etats-Unis et au Royaume-Uni. L'ampleur de la mobilité intergénérationnelle des revenus dépend des caractéristiques des individus et des ménages et change à travers la distribution des revenus (c'est-à-dire la mobilité est inférieure dans les strates à bas revenus et à hauts revenus dans beaucoup de pays). Les diverses études montrent également que : (i) les pays où l'inégalité des revenus et les rendements liés à l'éducation sont plus élevés affichent aussi une moindre mobilité (en termes de revenus) entre générations ; et (ii) le degré de persistance des revenus des ménages entre générations est plus fort que celui mesuré en termes de revenus individuels.

- *L'éducation est un composant essentiel de la mobilité intergénérationnelle en termes de revenus et les différences éducatives tendent à persister à travers les générations*. Parmi les caractéristiques familiales qui contribuent à déterminer la mobilité éducative à travers les générations, on trouve l'origine ethnique, la langue parlée à la maison, la taille et la structure de la famille, ainsi que les caractéristiques socio-économiques et culturelles des parents. D'ailleurs, certaines des différences transnationales dans l'ampleur de la mobilité entre générations en termes d'éducation sont générées par des politiques. Par exemple, l'orientation précoce des étudiants, basée sur leur capacité, vers certaines filières, semble réduire considérablement la mobilité à travers les générations.

- A l'évidence, *l'immobilité entre générations s'étend à d'autres domaines*. Par exemple, les métiers persistent à travers les générations, ceci étant dû à des facteurs tels que l'éducation, la race et le statut de migrant. La richesse persiste également de façon très marquée à travers les générations : les transferts de richesses étant plus importants pour les hauts revenus, ils peuvent contribuer à l'augmentation des inégalités. La dépendance aux prestations sociales est également transmise à travers des générations et cette transmission semble être influencée par des aspects spécifiques de conception de programmes. Les traits de personnalité tendent également à persister à travers des générations et à affecter les décisions concernant l'activité des individus sur le marché du travail et la formation/scission d'une famille : par exemple, les enfants de parents divorcés ont une plus grande probabilité de divorcer lorsqu'ils seront à leur tour des adultes.

- *Des investissements soutenus qui interviennent tôt dans la vie des enfants et de leurs familles peuvent aider à combattre l'immobilité intergénérationnelle.* Dans ce domaine, l'éducation, les soins et la santé des enfants jouent un rôle clé. Les transferts financiers et les prestations en nature aux parents sont également importants car ils leur fournissent les ressources pour pourvoir au bien-être de leurs enfants. De façon générale, une stratégie basée sur un plus grand investissement dans les enfants assure la rupture du cycle des désavantages entre

générations en raison de ses effets sur la pauvreté des enfants et sa contribution au développement des enfants.

4. La faible mobilité entre générations a des implications importantes en matière de politique puisque dans ce cas les chances de la vie des individus refléteront en partie des caractéristiques dont ils ne sont pas responsables. Cependant, tandis qu'il est souvent possible de mesurer l'ampleur de la mobilité entre générations avec un nombre (par exemple dans le cas du revenu), cette quantification n'implique pas un jugement sur ce que devrait être la mobilité. Aucune société n'est complètement mobile ou immobile et certains des mécanismes contribuant à la persistance entre générations des résultats sont acceptables, et en effet, souhaitables. Il est pourtant essentiel d'identifier quelles mesures sont les plus efficaces pour réduire certaines des inégalités qui sont associées à différentes dotations de naissance.

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INTRODUCTION

5. The Final Communiqué from the 2005 Meeting of OECD Social Policy Ministers stated: "Social and family policies must help give children and young people the best possible start to their lives and help them to develop and achieve through their childhood into adulthood", and went on to note that "Promoting child development requires society and families to invest adequate resources. … Special effort should be targeted on the families that are struggling to give their children the resources, both financial and time, that they need." As a result, Ministers agreed that "the OECD should identify which interventions alleviate and will contribute to the eventual eradication of child poverty, break the cycle of inter-generational deprivation, and develop the capacity of children to make successful transitions through the life course. The OECD should look at the potential role of policy in supporting families." This paper is an initial part of the process of responding to this Ministerial Mandate.

6. This paper reviews the extensive international evidence on the transmission of advantages and disadvantages between generations by looking at the extent of intergenerational mobility (or immobility) in a variety of dimensions (i.e. income, education, occupations and personality traits) and in a cross-country perspective.[1] Intergenerational mobility is defined as the extent to which the key characteristics and outcomes of individuals differ from those of their parents, and intergenerational immobility can be defined as the extent to which these key characteristics and outcomes for children are similar to those for their parents.

7. These simple definitions hide, however, a great deal of complexity as different characteristics are transmitted in different ways.[2] The extent of intergenerational mobility depends, thus, on parental and household characteristics but also on institutional settings, policies, and the macro-economic and historical contexts.[3] For example, economic growth and industrialization have enhanced the opportunities for children to climb the social ladder relative to their parents.[4]

---

1. In fact, there are multiple advantages of looking at international comparisons rather than national studies. The variations in national contexts – structural, institutional, or cultural – are much greater than variations within a country over time. Hence, it becomes easier to identify which policies and other factors might be important in determining intergenerational mobility.

2. In addition, different studies of mobility use different methodologies, time-frames and data sources, so that results are not always comparable across studies and may sometimes appear to contradict each other.

3. Changes in the composition of the labour force, in household structure, in the characteristics of the wage distribution may all affect the extent of intergenerational mobility. For example, Esping-Andersen (2004) shows that in Scandinavian countries the fact that life chances depend much less on social inheritance may be largely explained by their compressed wage distribution.

4. This higher mobility does not necessarily translate into higher earnings or income owing to widening earnings inequality within occupations. This implies that much mobility may not be desirable as it may be associated with large variations in households' and individuals' income that might generate tensions among different social groups (for example because upward mobility may benefit more the individuals who have the best background characteristics) and lead, in turn, to widening inequality (see Aldridge, 2003).

8. The inequalities that arise from the intergenerational transmission of low income, social isolation, personality traits or genetic attributes of individuals have all important policy implications. Educational policy, early childhood investment, access to health care and immigration policy all affect the extent to which the social and economic position of individuals in a society is determined by their skills and ambitions rather than by inherited advantage or disadvantage (Corak, 2001a). For example, when intergenerational mobility is low, poverty during childhood will not only undermine the health, nutrition and education prospects of children, but will also increase the chances that the children of the next generation will grow up in low-income households.[5] Therefore, one of the most important issues facing policy makers is the extent to which the disadvantages experienced by children arise from those experienced by their parents, which are passed on to children either at birth or at a young age, and can then affect the whole course of their future lives.

9. Understanding the extent to which the life chances of children are either positively or adversely affected by the circumstances and behaviours of their parents is an integral component of the process of developing effective policies to give children "the best possible start to their lives". If the degree of intergenerational transmission of disadvantage can be reduced, the aptitudes and abilities of everyone in society are more likely to be used efficiently, so promoting both growth and equity. However, while reducing the negative effects of parental background on child outcomes is something that most policy makers would wish to promote, it is relevant to note that a society in which the circumstances and behaviours of parents had *no* effect on outcomes for their children would not be desirable. The vast majority of parents want to do the best that they can for their children, investing time, emotional commitment and money in them. Some ways in which parents influence the development of their children are both desirable and acceptable.

10. Promoting intergenerational mobility appeals to the widespread belief that everyone should have the same opportunities in life rather than make the same choices and achieve the same outcomes irrespective of preferences and behaviours. However, whether the resulting inequality ought to be the target of policy interventions will depend on how equity is defined and on the efficiency losses that arise from attempts to modify mobility. Therefore, there is no consensus about the desirability of policies directed at modifying intergenerational socio-economic mobility.[6] In addition, it is difficult to identify the spheres of the family background that matter most for the probability of success in life. Different resources – such as human, social and material capital– contribute to create "intergenerational linkages" and, thereby, affect the future socio-economic, psychological and behavioural outcomes of children.

11. The report is structured in four chapters. The first introduces the concept of intergenerational mobility and some of the main issues concerning its definition. The second reviews theories of child development and how these relate to intergenerational mobility. The third surveys the evidence about intergenerational mobility of income. The fourth surveys the empirical evidence about intergenerational transmission of education, occupation and personality traits, factors that may also contribute to strengthen intergenerational income persistence. Some conclusions and policy recommendations on how to assist disadvantaged children close the report.

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5. As Corak (2001a, p. 274) puts it, "elimination of child poverty is both ends and means: an end in and of itself and a means to a better future".

6. See, for example, Bowles and Gintis (2002a), Harding *et al.* (2005), Roemer (2004), Swift (2004) and Jencks and Tach (2006).

CHAPTER 1: KEY CONCEPTS AND ISSUES

1.1 Social mobility: Inter-generational and intra-generational

12. Social mobility refers to the extent to which, in a given society, individuals' social status changes either within the life-course (intra-generational) or across generations (intergenerational). Intergenerational mobility– which implies the simultaneous consideration of the position of parents and their offspring in society – is therefore only one aspect of social mobility.[7] While both intergenerational and intra-generational types of social mobility are intimately related and matter for the life chances available to individuals and their families, this report only focus on the intergenerational transmission of advantages and disadvantages.

1.2 Intergenerational mobility, equality of opportunity and efficiency

13. There are many reasons to be interested in intergenerational mobility.

- First, the ways resources are allocated across generations may influence overall social welfare defined over the entire income distribution of different generations (Atkinson, 1981; 1983). Indeed, in all present actions, past and future generations are inherently represented: past generations, because current actions embody their legacy, and future generations, because current decisions affect their well-being through the various endowments that they will inherit.
- Second, intergenerational mobility may improve equity by reducing economic inequality, promoting social justice and achieving a more equitable allocation of resources.[8] For example, the likelihood of achieving social cohesion can be higher in a society where people believe that they can move up the social ladder thanks to their abilities, talents and efforts rather than to opportunities linked to their socio-economic background. The extent of intergenerational mobility may thus be seen as a measure of equality of opportunity (Box 1).
- Intergenerational mobility may also be an instrument for achieving greater economic efficiency. Low intergenerational mobility may imply that some individuals' talents are wasted, which underscores the importance of identifying those factors that constrain individuals' choices in such a way that the allocation of talent is not optimal. This issue is important for economic growth, which depends on full utilisation of individuals' talents and for a fair distribution of costs and benefits within and between generations.

---

7. Sociologists typically analyze intergenerational mobility across class and occupations, whereas economists focus on income or earnings mobility. The sociological literature also makes a distinction between absolute and relative mobility. The first simply looks at the number of people moving from one class to another. Relative social mobility – also termed social fluidity – refers to the probability that people from different origins move into a particular social class (i.e. the ratio of people from two distinct categories who are making a particular mobility transition).

8. However, none of these reasons justify complete independence between origin and destinations (i.e. "perfect mobility") or "a society in which where a person ends up, is random with respect to where she starts out" (Swift, 2004). See also Harding *et al.*, (2005); Bowles and Gintis, (2002a, 2002b) and Bowles *et al.* (2005).

Box 1. Some concepts of equality of opportunity

The concept of "equality of opportunity" has evolved over time. Traditionally, equality of opportunity (i.e. equity) was described in terms of the absence of legal barriers to education, occupations and jobs. Some later writers proposed a more radical view of equality of opportunity. In this respect, Rawls (1971) and Sen (1980; 1985) have argued that individuals are different and their differences relate to a set of circumstances that are arbitrarily distributed. Therefore, they suggest that eliminating legal barriers is not sufficient: equality of opportunity requires compensating the individuals for their differences: for Rawls, this occurs when individuals obtain the same bundle of primary goods, while Sen stresses equality of personal functioning (Moreno-Ternero, 2004). Subsequently, Dworkin (1981a, 1981b) added the role of personal responsibility – defined also over preferences – and suggested that individuals need to be compensated only for those aspects for which they are not responsible (see also Arneson, 1989; and Cohen, 1989). Studies that are more recent have looked at equity in terms of equalization of capabilities (Sen, 1992) or opportunities (Roemer, 1993, 1995, 1996, 1998).

In particular, Roemer (1998, 2002) innovates on previous formulations of equality of opportunity, by translating the existing concepts into a coherent framework built around five components: (i) circumstances – i.e. the characteristics of the environment that are beyond individuals' control and influence their beliefs, behaviour and outcomes; (ii) the type, i.e. the social group of individuals characterized by the same circumstances; (iii) efforts, i.e. those characteristics that influence individuals' status and over which they have some control; (iv) the objective, i.e. the reasons for which equality of opportunity is to be achieved; and (v) the instruments, i.e. all the tools that make it possible to achieve equality of opportunity. In Roemer's view, policies to equalize opportunity should make the attainment of an objective independent of the individuals' circumstances and dependent only on their efforts. However, these "ideal" policies are difficult to implement given limited resources. Roemer proposed that the best policies are those that maximize the advantage of the worst-off type for a given relative effort level (i.e. an equality of opportunity policy). Roemer (2005) also stresses that equality of opportunity does not necessarily imply equality of outcomes but rather "level(ling) the playing field so that all have the potential to achieve the same outcomes; whether or not, in the event, they do, depends upon individual choice". Roemer's theory has been extensively discussed (e.g. see Roemer, 1995, 2003, 2006; Fleurbaey, 2001; Kolm, 2001; Hurley, 2002) and has been largely applied in empirical works (Betts and Roemer, 2004; Llavador and Roemer, 2001; Roemer *et al.*, 2003).

1.3 Setting the playing field

14. Individual lives are shaped by their context, i.e. by the relations between households, communities, the state and the market. These relations may affect the transfers that flow from one institution to another. Because of the complexity of these relations, some general comments must be kept in mind while reviewing the evidence:

- **The macro-economic context is important.** Economic growth fuels intergenerational mobility because productivity growth is a fundamental factor that drives wages (and per capita living standards). Over time, improvements in overall productivity (and in wage levels) tend to make children, on average, better off than their parents even if there is little or no movement between the ranks of the rich and of the poor in society.

- **Multiple resources are transmitted.** It is not just income or education which are transmitted across generations. Parental beliefs and attitudes may also affect family and work outcomes of children when they are adults.

- **The way these resources are transmitted, the interactions and the outcomes achieved are not straightforward.** For example, parents may transmit resources through deliberate actions or not. Intergenerational transfers may be private, as in the case of child-rearing costs and support for elderly parents; or public, as in case of public education, health, and other

programmes with an age component.[9] Public transfers may be imposed directly by the public sector or indirectly, for example when the public sector incurs debt that must be born by future generations. In addition, private transfers can be substituted for, or crowded out by, public transfers. Intergenerational transfers may also be positive or negative. Positive transfers include financial transfers (gifts and bequests), but also positive values, aspirations, etc); negative transfers encompass, for example, gender discrimination and poor health.

- **Correlations do not necessarily imply causality.** Many of the studies of intergenerational mobility are more interested in correlations than in causality.[10] But, to distinguish causal and non-causal mechanisms is crucial for policies. For example, higher educated parents may have more educated children either as the result of genetic resemblance or because they have different preferences and adopt "better" parenting practices than less educated parents. Obviously, policy implications differ in the two cases (see e.g. Black *et al.*, 2004; Heckman and Carneiro, 2003).

15. Summing up, to understand the implications of intergenerational mobility it is crucial to identify: (*i*) the resources that matter most in shaping individual's life chances; *(ii*) the channels through which they are transmitted; (*iii*) the size of the resources that are transmitted; and (*iv*) the implications of the transmission for the individuals and the society at a large. Chapter 2 covers issues (i) and (ii), while Chapters 3 and 4 deal with (iii) and (iv).

9. Some of the characteristics that make private transfers different include the voluntary nature of transactions among family members of different generations, and the absence of an "explicit" price governing the activity.

10. Correlation quantifies the strength of the relation between two variables but does not imply a cause-and-effect relationship among variables that can be both moved by external factors.

CHAPTER 2: CHILD DEVELOPMENT AND INTERGENERATIONAL LINKAGES

2.1 Child development and intergenerational mobility: the links

16. The links between child development and intergenerational mobility are fairly obvious, as many of the resources that contribute to child development also determine, to a large extent, how children fare in life. For example, the research on the life-course and on human development emphasises that events occurring during childhood, together with home and school environments, have a strong influence on adult functioning and well-being (Elder, 1974, 1998; Bronfenbrenner, 1986). Both the ways these resources are transmitted and the influence they have on development and future opportunities of children are complex. This chapter surveys these issues.

2.2 What is transmitted and how is it transmitted

17. In addition to genetic endowments, parents provide their children with several other resources (or different forms of "capital"). Parents may invest in their children by financing their education or by providing good health and nutrition. Parents may also transmit wealth (financial and material) through bequests or gifts. Finally, they may transmit tastes, values and beliefs through the combined effect of multiple social resources.

2.2.1 Human capital

18. Human capital includes the knowledge, experience and talents (i.e. education and learning processes but also physical health) that contributes to one's productivity, enhancing the ability to perform specific tasks (Becker, 1964, 1981, 1986, 1991). As in the case of material capital, human capital is purchased (through education) and maintained (through training and education).[11] It rewards its owner through returns in the form of increasing productivity (and thus wages) and higher physical well-being. In the household context, human capital includes the collection of parental skills acquired in both formal and informal ways which affect children's outcomes.

19. Human capital lies at the heart of the economic models of intergenerational inheritance proposed by Becker and Tomes (1979; 1986) as outlined in Box 2.[12]

---

11. Cultural capital is a very similar concept and refers to those forms of knowledge, skills and education, which give individuals both a higher status in society and high expectations (Bourdieu, 1986). In this framework, abilities and talents of individuals are primarily determined by the time and cultural capital invested by parents.[11] See Bourdieau (1973, 1979, 1980); and Bourdieau and Passeron (1979). Cultural capital is thus transmitted across generations but the mechanisms of transmission vary over its components. For example, books and works of art may be transmitted in the same way as material capital, while what individuals learn cannot be transmitted instantaneously (e.g. Bleakley and Chin, 2004; de Graaf and Kalmijn, 2001; Foley, 2006; Jaeger and Holm, 2007).

12. Current models of skill formation based on Becker and Tomes (1979; 1986) or Loury (1981) suppose that childhood lasts one period: only the total amount of investments during childhood, and not how they are distributed over the lifecycle of the child, is all that matters. Cunha (2006) develops a model that recognizes the multiplicity of periods in the child's life cycle. The model has important policy implications

Box 2. The models of Becker and Tomes (1979; 1986)

The Becker-Tomes models (1979, 1986) deal with the intergenerational transmission of inequality and the allocation of resources within the family. In Becker and Tomes (1979), capital markets are perfect. Parents are altruistic and derive satisfaction from the well-being of their children. The utility of the parents today is assumed to be a function of own consumption today and child's income tomorrow, and may thus be written as $U = U(c_t, I_{t+1})$, with c_t denoting parental consumption and I_{t+1} being the income of a representative child.

The assumptions of the models deal with three crucial aspects of intergenerational transfers: *(i)* the transmission of the endowments from parents to children; *(ii),* the parental investment in their children; and *(iii)* the potential constraints to this investment.

Parents partially transmit their endowments (*E*) to their children. These endowments include cognitive ability, physical appearance, attitudes, family connections as well as cultural and genetic traits. The process governing the transmission is written as

$$E_{t+1} = d + hE_t + v_t$$

where E_t and E_{t+1} denotes the endowment of the parents and of the children, respectively; ν_t is the stochastic component of the transmission process (which measures unsystematic components of luck) and *h* is the coefficient accounting for the inheritability of the endowments. Parents cannot invest in their children's endowments, but they can directly affect their children's income (i.e. the children's well-being in the model) by investing in their human capital and by transferring financial assets. The adult income of a representative child may be written as

$$I_{t+1} = H_{t+1} + (1 + r_t)B_t$$

where *H* denotes the returns to human capital (i.e. the earnings of the child when adult); *B* are the financial transfers made by parents and *r* is the rate of return on financial assets. The relation between human capital and earnings is also specified as

$$H_{t+1} = H(x_t, E_{t+1}) + w_t$$

where x_t are the expenditures of parents in their children's human capital; E_{t+1} are the children's endowments; and w_t is market luck. This equation translates the investment in human capital received in childhood into the earnings when adult. In this sense, the model implies that parents pass on to their children some endowments, but a the same time they affect their offspring later earnings with expenditures made on their skills, health, learning motivation, "credentials" and other characteristics.

In the absence of borrowing constraints (Becker and Tomes, 1979) earnings are determined exclusively by endowments and therefore only by inheritability. Borrowing constraints allow making the connection between equality of opportunity and family wealth: imperfect capital markets imply that parents cannot borrow against future earnings of their children in order to finance their children's human capital accumulation (Becker and Tomes, 1986). Two kinds of families may be thus distinguished: those that are non-capital constrained (i.e. the "rich") and those that are capital constrained (i.e. the "poor"). The former will always invest in human capital until its marginal return equals the rate of return on financial assets. By contrast, poor parents cannot always invest optimally. For example, in the case of a negative income shock, those families who have insufficient assets and face borrowing constraints may have no other option than to lower their investment in children; intergenerational inequalities may then persist over time. Thus, one of the central implications of the Becker and Tomes (1986) model is that earnings regress to the mean at slower rates for poor families than they do in rich families. While with complete markets the importance of family background (excluding transfers of genetic endowments that concur to form children's ability) would be very limited, in the presence of market imperfections, the private marginal benefit and cost curves depend on household's characteristics (e.g. Behrman and Taubman, 1985; Behrman *et al.* 1998).

Theoretical extensions of these models include Checchi *et al.* (1999), who examine the role of school financing in intergenerational mobility; Mulligan (1999) who introduces uncertainty; Han and Mulligan (2001) who examine biases that result from mis-specified population regression models (see also Mulligan, 1997); and Solon (2004) who proposes a theoretical framework for the mechanisms behind variations in intergenerational correlation (see *infra)*. See also Willis (1986), Galor and Tsiddon (1997a, 1997b), Galor and Moav (1999) and Maoz and Moav (1999).

for parental investments in children and also for policy makers, which derive mainly from the complementarities of the investments made at different point of the child's life-cycle. See also Heckman (2006b), Carneiro and Heckman (2002), Heckman and Carneiro (2003) and Heckman *et al*. (2006).

20. The model of Becker and Tomes (1979; 1986) suggests at least two explanations for income correlation across generations: (i) the need for financing the investment in human capital and the borrowing (or credit) constraints that may arise; and (ii) the ability of parents to influence their children's innate skills and the ability to produce incomes (independently of the accumulated human capital). In this setting, both endowments and investments contribute thus to build the link between the incomes of different generations.

2.2.2 Material and financial capital

21. Wealth is passed from parents to their children through *inter-vivos* transfers (e.g. gifts) and after death in the form of inheritances and bequests (Kohl, 2004). Intergenerational wealth transfers may strengthen social cleavages and thereby deepen inequality and have important side effects on housing markets and society at a large;[13] for example between 12% and 26% of individuals are reported to become home-owners directly through inheritance in selected European countries (Di and Yang, 2002). Wealth transfers may also affect children's later earnings directly or indirectly. Direct effects come from the return on capital arising from gifts and bequests. However, there are also indirect effects. For example, so-called "permanent" earnings might be expected to increase if the income flowing from assets provides the resources for better nutrition, health, education, access to good housing (and neighbourhood) conditions and also for critical start-up capital for many activities. For example, Boehm and Schlottmann (1999, 2002, 2004a, 2004b) report that, in the United States children of homeowners are also more likely to achieve higher levels of education and therefore permanent income and that these effects are particularly significant for low-income households (e.g. Hill and Stafford, 1978; Kotlikoff and Summers, 1981, 1988; Modigliani, 1988; Blanchflower and Oswald, 1998; Holtz-Eakin *et al.*, 1994; Lindh and Ohlsson, 1996; Shapiro, 2004; Shlay, 2006).

22. Perhaps most importantly in an intergenerational perspective, wealth reduces the importance of capital market failures. In an ideal world, people would be able to borrow on capital markets to finance investments in human capital, so parental background should have no impact on whether people engage in such investments – all that should matter is whether they can benefit from them sufficiently to service the debt. In practice, such borrowing against future earnings is difficult, and so liquidity constraints affect investment in human capital (Becker and Tomes, 1986). Low-income parents might not invest optimally in their children's human capital: poverty risks, joblessness and lack of education are therefore likely to accumulate and result in a larger share of individuals at higher risk of social exclusion.

23. Finally, wealth transfers may influence those traits that are important for economic success, such as saving and schooling propensities, the work ethic and risk-related behaviours (e.g. Browning and Lusardi, 1996).

2.2.3 Social capital

24. Beyond what parents invest and transmit, the future life-experiences of children depend on social capital that, according to the OECD definition, refers to "networks together with shared norms, values and understandings that facilitate co-operation within or among groups" (Coté and Healy, 2001).[14] Social

13. Intergenerational wealth transfers have therefore both equity and efficiency implications (e.g. see Laitner and Ohlsson, 2001; Piketty, 2000). Taxation of intergenerational transfers may be desirable to reduce inequality, but, at the same time, taxation of bequests may have negative effects on other economic aggregates (for example, savings may be used to create estates; see Kotlikoff and Summers, 1981) and on the incentives of potential donors depending on the motivations underpinning wealth transfers (Cox 1987; Sugden, 1984; Becker, 1976, 1991). See also Ohlsson *et al.* (2006); De Nardi (2004); and Quisumbing, (2006).

14. See also Loury (1977), Bourdieu (1986), Coleman (1988) and Putnam (2000).

capital operates in different spheres such as the family, the neighbourhood and the school (Coleman and Hoffer, 1987) where peers and social groups may influence children and adolescents. Because of this, labour market conditions, demographic changes and attitudes towards race matter. Therefore, both the quantity and quality (type of tie, content, interaction dynamics) of social capital matter in an intergenerational perspective (Adler and Kwon, 2002; Bleakley and Chin, 2004).[15]

25. Borjas (1992) added a specific type of social capital, termed "ethnic capital", to the model of intergenerational mobility of Becker and Tomes. He emphasized that, in addition to parental inputs, the characteristics of the ethnic environment where the children are raised matter. The concept of ethnic capital implies that "ethnicity acts as an externality in the human capital accumulation process" (Borjas, 1992). When the externalities are strong, ethnic differences can persist across generations. This "spill over" operates mainly through geographic concentrations of peers and differs from that related to the neighbourhood: even within the same neighbourhood, children are more likely to interact with other individuals from the same ethnic group, in which case the impact of peers of the same ethnicity will outweigh that of other neighbours. Similarly, relatives or friends from the same ethnic background who do not live in the immediate neighbourhood can serve as role models and exert an influence on the child, thus contributing to the diffusion of ethnic capital.[16]

2.3 How resources affect child development and later outcomes of children

26. This section describes how parental education, income, their personality traits, genetic factors and the environment where children grow up influence child development.

15. The literature distinguishes between two kinds of social capital: family social capital and community social capital. Family social capital covers the relationships between parents and their children (time, efforts, resources and energy that parents invest in their children; see Coleman, 1988). Community social capital is defined over: (1) social support networks; (2) civic engagement in local institutions; (3) trust and safety; and (4) degree of religiosity. The literature further distinguishes between functional and value communities. In a "functional community", the adult members feel responsible for all the children. These communities display a high level of network density and high consistency of expectations and values about education. Social capital will benefit the members of those communities since interactions occur inside and outside the school. Coleman (1990) describes this phenomenon as "intergenerational closure", i.e. "a child's friends and associates in school are sons and daughters of friends and associates of the child's parents". In the "value communities" there is no social network between the members outside the school, though the members share values and expectations regarding education. A further distinction exists between bonding and bridging social capital: (i) "bonding" social capital describes closer connections between people and is characterised by strong bonds, such as those among family members or among members of the same ethnic group; and (ii) "bridging" social capital describes more distant connections between people and is characterised by weaker, but more cross-cutting ties, such as those with business associates, acquaintances, friends from different ethnic groups, friends of friends, etc.

16. Following Borjas' argument, an "open" society, with high degree of intergenerational mobility, is likely to attract unskilled workers in the first generation, since their children have a higher chance of improving their position in the labour market compared to their parents. Conversely, a "closed" society, with a low degree of intergenerational mobility is likely to attract skilled workers in the first generation, since their children are more likely to maintain their labour market position. The outcomes for the immigrants depend also on the assimilation and integration processes in the host country – the length of stay in the country, and proficiency in the host-country language matter crucially in shaping immigrants' differences (see e.g. Foley, 2004; and Bluedorn and Cascio, 2005). Borjas (1995) also argues that the intergenerational correlation of economic outcomes is strongest in neighbourhoods where groups are highly concentrated.

2.2.1 Parental education

27. Parental education may affect child development both directly and indirectly. For example, the effect of education on parental incomes may modify the share of resources devoted to housing, schools and child-care: in other words, low education may imply lower parental incomes and inability to borrow. Hence, parents may regard the children's contribution to family income as more important than their education and contribute to children's feeling that school is a hostile or unpleasant environment.

28. Parental education also modifies parental behaviour through the re-allocation of parental time between labour market and domestic activities.[17] Furthermore, it may affect household size and the distribution of education opportunities among siblings.[18] It may also influence the environment in which children spends their childhood and adolescence (Feinstein *et al.* 2004), thereby contributing to shape their tastes and preferences.[19] Parental education may also boost health-awareness and discourage behaviours that can have an impact on the development of the child (for example smoking and nutrition behaviours during pregnancy).[20] Finally, parental human capital may also enhance children's life chances by developing their demand for cultural goods and services.

2.2.2 Parental income

29. The literature documents that child development is also critically shaped by parental income (e.g. Hill and Duncan, 1987). For example, children from low-income backgrounds are more likely to have lower educational attainment (Duncan *et al.*, 1998), lower household income or earnings in adulthood than those from high-income households (e.g. Hobcraft 1998; McKnight 2002; Sigle-Rushton 2004). Childhood poverty is also linked with teenage pregnancies and subsequent adult social disadvantage (Hobcraft and Kiernan 2001). Parental income also affects future life chances through its effects on health status (Box 3).

30. The literature also documents that the effects of income on child development are likely to vary according to the source of income i.e. work, assets or welfare. Several studies suggest that income from

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17. See also Carneiro *et al.* (2006) on the benefits of the mother's education on the child's educational performance.

18. On the one hand, liquidity constraints are likely to be less binding when parental educational attainment is high; furthermore, if one of the parents has a sufficiently high level of human capital, (s)he may be able to support all the household's expenditures and his/her spouse may decide not to work, or to work less, to devote time to the domestic activities and the education of the children. On the other hand, education increases labour productivity and thereby increases the opportunity cost of the domestic activities. In turn, this may lead to the reallocation of time in favour of the activities carried out externally, and in particular professional activities (Becker, 1965). Higher levels of education of mothers may therefore reduce the number of children they decide to have (Becker and Lewis, 1973).

19. For example, highly educated parents are likely to spend income differently (e.g. buying more books). Higher educational attainment of the parents also creates a cognitively stimulating home learning environment and more verbal and supportive teaching styles (Harris *et al.*, 1999). Parental support for homework is generally higher among highly educated parents. The skills acquired through formal education may also enhance parents' abilities to organize their daily routines and resources in a way that enables them to accomplish their parenting goals effectively (Hango, 2005).

20. At the same time, highly educated parents may have higher resources to protect children from health-related problems. The social networks of more educated parents may help their children in the job-search process leading also to higher marginal benefits. See Feinstein (2006) for an extensive review about the effects of education on health.

welfare may have negative effects on a variety of children's outcomes[21], but the direction of the effects varies according to the type of benefit received (Corak and Heisz, 1998, 1999); for example, the effects of unemployment benefits are different from those linked to child support, which is generally associated with an improvement in educational attainment and test scores (Mayer 2002).[22]

Box 3. Parental income and health status

The mechanisms through which income is related to health remain controversial (Chase, 2002; Deaton and Paxson, 1998), as some of these mechanisms are causal and others are not. For example, a causal link is the fact that higher income allows individuals to buy better health care and goods that produce better health; non-causal links are built through other factors, correlated with income – such as lifestyles or preferences – which themselves affect child health (see for example Adams *et al.*, 2003; Doyle *et al.*, 2004; Feinstein, 2006). Both causal and non-causal links often lead to health effects that persist beyond adolescence. The identification of the mechanisms that are either causal or non-causal matters for policies. For example, when parents cannot afford to buy good care for their children because of its cost, the reduction of care costs through tax and benefit policies might improve the health of the children. By contrast, when the health of the children is linked to parental behaviours, such as bad nutrition or smoking during pregnancy, tax/benefit policies alone are not sufficient.

Recent studies have analysed how health varies with changes in income and document that increasing incomes have small effects on health (for example, Adams *et al.*, 2003; Contoyannis *et al.*, 2004; Frijters *et al.*, 2005; Meer *et al.*, 2003). Others have focused on the link between family income and the health of the child and tend to conclude that poor health in childhood is associated with low educational attainment, worse health and inferior labour market outcomes in adulthood. Examples are Korenman and Miller (1997) and Case and Paxson (2006a) for the United States; Currie and Hyson (1999), Currie and Cole (1993), Currie (2004), Case *et al.* (2004), Graham and Power (2004) and Burgess *et al.*, (2004); Currie *et al. (2004)* for the United Kingdom; Lundberg (1993) and Elstad (2005) for Scandinavian countries; and Currie and Stabile (2003) for Canada. Case *et al.* (2002) documented also that the income gradient in health became steeper with age (see also Currie and Stabile, 2003; and Currie *et al.*, 2004).

The adverse health effects of low income are also likely to cumulate over children's lives and an important share of the intergenerational transmission of socioeconomic status works through the impact of parents' income on children's health (see, for example, Eriksson *et al.*, 2005; Case *et al.*, 2002).

21. Not controlling for selection bias, Haveman and Wolfe (1994) and McLanahan (1985) report that welfare dependency of parents reduces the children's chances of graduating from high school; Corcoran (1995), Corcoran and Adams (1993) and Hill and Ponza (1983) find that welfare dependency of parents reduces sons' earnings and hours of work; Haveman and Wolfe (1994) report that it also increases the chances of idleness among youth. Lefebvre and Merrigan (1998) argue that income from welfare is negatively related to children's test scores. The studies controlling for selection bias suggest very little (and often statistically insignificant) differences in the outcomes of children raised by parents who are either in welfare or in work. Examples are Hill and O'Neill (1994), Peters and Mullis (1997), Currie and Cole (1993), Levine and Zimmerman (2000), Guthrie (2002) and Page (2004).

22. For example, Corak and Heisz (1999) report that children whose parents collected unemployment benefit end up earning less as adults in Canada and that the effects of welfare recipiency on child outcomes are likely to be different according to the age of the children and the length and incidence of exposure (Corak *et al.*, 2004). Mayer (2002) decomposes the effect of different types of income into three parts: an income effect, a behavioural effect and a selection effect. The income effect refers to the fact that different sources of income have different costs. For example, if the mother works, she needs to pay for the care of her children. In this case, welfare or child support is expected to have a positive effect on the outcomes of children compared to children living in identical households where the mother works. In fact, they will benefit from a higher disposable income. This effect is, however, very difficult to estimate. The behavioural effect is associated with the attitudes of parents who are recipients of welfare support. For example, income from welfare may reduce the incentive of parents to look for a job, leading them to provide a bad example for their children. Finally, the selection effect refers to the fact that the source of income may reflect unmeasured parental or family characteristics. Therefore, it is important to account for possible selection effects when determining the effect of the different sources of income, as only in this case can the "pure" income and behavioural effects be identified. See also Mayer (1997).

31. However, the debate is lively on the ways through which income affects child development, as well as on the size of these effects. Different views on these issues are reflected in different conceptual models:

- In the "investment model", parents use additional income to purchase goods and services for their children. According to Becker (1965), families with higher economic resources can purchase or produce better "inputs" for their children's development. In this framework, poor parents cannot offer their children some of the goods and activities that favour their development – e.g. good housing, adequate conditions for study, food, books, cultural visits and computers. Therefore, their children are less likely to succeed. Policies may compensate for the lack of these goods and services with financial transfers (if these are used for the benefit of the children) and in-kind services.

- In the "stress" model, a higher parental income may improve child development by reducing parental stress and allowing the adoption of better parenting styles. For example, low income is a stressful event that influences the extent to which parents can support their children. Similarly, other circumstances that modify the household's income may increase parental stress and negatively affect child development (e.g. divorce, separation, unemployment, etc.).

- Finally, in the "role model" parental income matters for child development through the interactions it generates with parental behaviours, values and aspirations. For example, low-income parents may have values, standards and attitudes that affect children's later outcomes (e.g. a culture of poverty and welfare) [23].

2.2.3 Household and social environment

32. Parental income alone does not translate into the material or the psychological well-being of the children as children's outcomes also depend on family structures, parenting styles, their values and attitudes, the experience of family conflicts or the daily difficulties in making ends meet, and the social environment where the children are raised.

33. A large literature documents that family structure, size and birth order may affect child development. For example, children raised in single-parent families achieve lower educational attainment, are more likely to drop out of high schools and to complete fewer years of schooling (Hauser and Featherman, 1976; Astone and McLanahan, 1991; Hauser and Phang, 1993; McLanahan and Sandefur, 1994). [24] The influence of family types extends to other child outcomes; for example, children living in single-parent families are also more likely to be out of work and to live on welfare benefits when adult (e.g. Astone and McLanahan 1991; Biblarz and Raftery 1993). Girls in single-parent households are more likely to experience marital breakdowns, to have children out of wedlock (e.g. McLanahan 1988; McLanahan and Bumpass 1988; McLanahan and Sandefur 1994; Wu 1996; Wu and Martinson 1993) and to be teenage mothers. Birth order may also affect future children's outcomes because parents have a higher

23. The theory of the culture of poverty (Lewis, 1959, 1965, 1966, 1998) suggests that people become, are and remain poor because of their beliefs, attitudes and behaviours. Those values and attitudes affect the way through which different forms of capital are transmitted, but are in themselves a form of capital that is transmitted across generations. In this respect, Ludwig and Mayer (2006) argue that encouraging positive social behaviours in the parents of poor children is a worthwhile goal in its own right, although this strategy for reducing poverty among future generations has limits. See also Page (2004).

24. For example, both income and time devoted to children are often lower in single-parent households than in two-parent households.

tendency to delegate "authority" over the younger children to their first-born children and this, according to the learning theory, may increase opportunities for first-born children.

34. The size of the household and the number and gender of siblings may also affect future children's outcomes (Feinstein *et al.*, 2004). For example, Nguyen and Haile (2003) find that the presence of more than two siblings has a negative effect on children's educational attainment in the United States. Grawe (2005a) also finds that a large family size may be harmful to educational attainment of children and significantly influences a number of achievement measures – both cognitive and non-cognitive. He highlights that "family size effects" appear very early (age two) and that they stop growing as the child ages.[25] Bauer and Riphahn (2005) report that family size and the number of siblings both affect parental educational choices for later-born children in Switzerland, especially when the parents have medium/high education levels.[26] Burgess *et al.* (2004) find that birth order and gender contribute to influence the health status of children in the United Kingdom. Björklund and Jäntti (1998) report that children from large families are likely to earn less than children born in small families in Finland, Sweden and the United States.[27] Björklund *et al.* (2004a) argue that earnings differentials by number of siblings are large in Finland, Norway and Sweden and that birth-order earnings differential are significant only in Norway and Sweden (in particular with reference to first-born and last-born children). Black *et al.* (2005) report that the correlation between family size and children's educational attainment is negative in the United States, but only birth order has a significant and large effect on children's education, as later-born children obtain less education.

35. "Poor parenting" may also influence the social and emotional development of children and, in this way, their future life chances (Mayer, 2002; Baumrind, 1991). Some psychologists posit that parenting practices – and behaviours – also mediate the transmission of risk behaviours across generations (Capaldi and Clark, 1998). Based on measures of warmth and supervision in the parent-child interaction, the literature identifies four typologies of parenting practices (Baumrind, 1966, 1967, 1968, 1971): (1) authoritative parents, i.e. who display high levels of both warmth and supervision; (2) authoritarian parents, i.e. who display high supervision but low warmth; (3) permissive parents, i.e. parents that display high warmth but low supervision; and (4) disengaged parents, i.e. who display both low warmth and low supervision. Several studies suggest that authoritative parents represent the optimal parenting practice because of the better outcomes displayed by their children (e.g. they have high levels of competence, higher self-esteem and fewer mental health problems; e.g. Maccoby and Martin, 1983). Other authors underscore that "unskilled parenting" (such as lack of monitoring) creates very early in the life of children the conditions of their antisocial behaviour, which is related to several negative outcomes (Patterson, 1998).

36. Finally, parenting practices and parental behaviours may affect children's outcomes owing to social learning processes. Through these processes, children model their behaviours on those of their parents or on those of individuals whom they value (Capaldi and Clark, 1998). For example, maternal roles are a crucial determinant of childrearing (Swinehart, 1963; Hoffman and Youngblade, 1999) and children's outcomes (e.g. Carneiro *et al.*, 2006). For example, Cunningham (2001) reports that mothers' attitudes towards gender roles when they were 15 years old correlate with those of their children (at age 18).

25. See also Grawe (2005b).

26. See also, for Norway, Hægeland *et al.* (1999) and Aakvik *et al.* (2003).

27. See also Hlaimi (2005) who modifies the model of Becker and Tomes (1986) to allow for the presence of children of different birth-order.

37. Social learning processes may also operate within the neighbourhood. Therefore, the relation of neighbourhood conditions to individual outcomes – such as education, income and employment – might matter for policy makers.

38. Box 4 outlines some of the theories developed to capture neighbourhood effects, i.e. "social interactions that occur close to an individual's residence and affect social and economic well-being" (Oreopoulos, 2005). In this area, empirical studies vary largely according to the data, assumptions and methods used, but also on how the researchers account for non-random selection of neighbourhood and omitted variable bias (or unobserved parental characteristics). There is, therefore, a great deal of confusion and ambiguity as to the long run causal impact of neighbourhood on individual's outcomes (and also to their role on intergenerational mobility). This effect, which is difficult to identify and isolate, concerns, for example, the ability of a child who grows up in a low-income household, residing in a disadvantaged area, to improve his situation (keeping everything else constant) if he, and his family, moved to a better area (or conversely). Indeed, unobserved factors may affect both residential choices and parental characteristics and this often leads to overestimates of the neighbourhood effect (Borjas, 1997).[28] The influence of neighbourhoods on individual outcomes tends also to vary with the age at which they are measured (e.g. Ellen and Turner, 1997; Vartanian and Buck, 2005; Finnie and Bernard, 2006).[29]

28. Several studies have addressed this issue and tried to isolate the "pure" neighbourhood effects. See, for example, Corcoran *et al.* (1990), Aronson (1997, 1998), Duncan *et al.* (1997), Haveman and Wolfe (2000), Solon *et al.* (2000), Galster *et al.* (2000), Ginther *et al.* (2000), Leventhal and Brooks-Gunn (2000), Duncan *et al.* (2001), Durlauf (2003), Harding (2003), Solon and Page (2003a, 2003b), Oreopoulos (2003a, 2005), Vartanian and Buck (2005), Kling *et al.* (2006). See also Dietz (2000), Ginther *et al.* (2000), Quillian (2003), Brooks-Gunn et al. (1997a, b). For example, Oreopoulous (2003a), studying the long-run effect of growing up in poor neighbourhoods in Canada, argues that neighbourhood quality plays little role in determining a youth's eventual earnings, unemployment likelihood, and welfare participation. By contrast, family differences, as measured by sibling outcome correlations, account for up to 30 percent of the total variance in the data. Similar results are shown also in Brännström (2005) for Sweden – though Nordin (2005) documents a potential (but not causal) effect of neighbourhood related to growing up in ethnically segregated neighbourhood in Sweden; and Rauum *et al.* (2005) for Norway.

29. For example, Vartanian and Buck (2005) report that a one standard deviation increase in "neighbourhood advantage" (see *infra)* increases adult income for the 0 to 4 age group by 20 percent, by 10 percent for the 5 to 8 age group (not statistically significant), by 12 percent for the 9 to 13 age group, and 7 percent for the 14 to 18 age group. They also find that young children are affected by neighbourhood conditions and argue that this effect may operate through the experiences of their parents. Similar results are reported for the models that controls for neighbourhood quality.

Box 4. Neighbourhood effects: A short overview of the theories

Jencks and Mayer (1990) outlined six theoretical mechanisms that contribute to explain the influence of neighbourhood effects on individual outcomes of children and youth. They are: *(i)* the collective socialization theory; *(ii)* the social isolation theory; *(iii)* the epidemic theory; *(iv)* the competition theory; *(v)* the relative deprivation theory; and *(vi)* the institutional resource theory. Vartanian and Buck (2005) combine the main aspects of these mechanisms in three main neighbourhood theories that are: (1) the neighbourhood advantage theory; (2) the deprivation theory; and (3) the epidemic theory.

- The *neighbourhood advantage theory*, which combines elements of the collective socialization theory, the social isolation theory and the neighbourhood institutional resource theory, suggests that good neighbourhood conditions during childhood affect positively adult outcomes. Children who grow up in neighbourhoods that exert a positive role and that are characterised by a great deals of institutional resources (such as libraries and playgrounds) are more likely to learn from these resources and therefore be advantaged when adults. Negative neighbourhood conditions may thus consist in lack of community resources such as schools or higher exposure to crime (Aaronson, 1997, 1998; Harding, 2003; Kling *et al.*, 2006; Vartanian and Buck, 2005; Single-Rushton, 2004; Hobcraft, 1998).

- The *relative deprivation theory* highlights the role of the perception of disadvantage by individuals, i.e. children or parents mainly compare themselves to those who are better off, and often ignore those who are worse off. In this setting, therefore, the absolute level of parental income is less important to children's outcomes than the position of disadvantaged children relative to the local community or wider society (Townsend 1987). For example, children may feel relatively deprived when they do not own the same things as other children in their school or neighbourhoods.

- The *epidemic theory* (Wilson, 1987; Crane 1991) suggests that the effects of neighbourhood are similar to epidemics and non-linear: up until a certain point, their effect is modest; beyond that level, the negative effects of poor neighbourhoods are highly contagious. Contagion may result, for example, from the lack of positive roles of empowerment or of economic opportunities. The development of very disadvantaged neighbourhood is linked, in this setting, to the high incidence of social problems in particular areas. For example, concentrated or cumulated poverty is assumed to amplify the effects of individual poverty. Examples are Alba and Logan (1993), Duncan *et al.*, (1997); Galster *et al.*, (2000); Keels *et al.*, (2005); and Vartanian, (1999).

2.2.4 Cognitive abilities

39. The potential contribution of genetic endowments to children's success in life has been extensively treated in the literature but it is still controversial.[30] Several studies conclude that genetic factors concur to shape cognitive abilities, often approximated with the IQ, and report high positive correlations between the cognitive performance of parents and those of children. For example, Daniels *et al.* (1997) using data from 212 studies report average IQ correlations of .50 and .41 between couple-parents and their biological children and single-parents and their biological children, respectively. However, the

30. Originally, the literature also suggested that parental socio-economic status affects later child earnings (after controlling for quality of education) mainly through cognitive functioning and education. However, when looking at the effect on earnings of cognitive performance – i.e. the effect of IQ – and education – i.e. years of schooling –based on 65 estimates from 24 studies, Bowles and Gintis (2002a) conclude that the effect of IQ on earnings is high but that of education is larger. See also Goldberger (1978), Heckman and Vytlacil (2001), Loehlin (1992, 1993).

final outcome depends on the extent of *heritability,* i.e. is the proportion of the variance of the *phenotype* that is attributable to the genetic variance among individuals.[31]

40. Genetic explanations of child development, and more generally of social phenomena, are typically based on methods that fail to account for interaction effects. These interactions are extremely important as both family and school environments (i.e. "nurture") affect children's cognitive skills (i.e. "nature").[32] For example, heritability estimates are specific to populations and environments for which they are measured – e.g. socioeconomic status affects the heritability coefficient (Heckman and Carneiro, 2003). For example Turkheimer *et al.* (2003) documents that the share of IQ variance attributable to genes and environment vary non-linearly with SES and that, while in poor families 60% of the variance in IQ is accounted for by the shared environment (and the contribution of genes is close to zero), in affluent families, the result is almost exactly the reverse. The same authors also argue that richer families help their children to eliminate the effect of their defective genes and to enhance their productive genes; for example, richer parents may offer a treatment to their child if he is aggressive; conversely, low-income parents might not be able to do so.[33]

2.2.5 Personality traits and other non-cognitive abilities

41. Recent studies have stressed the influence of non-cognitive abilities on development and socio-economic status (e.g. Heckman and Rubinstein, 2001; Heckman *et al.*, 2006; Postlewaite and Silverman, 2006; Cunha *et al.*, 2006). Psychologists and sociologists have investigated the role of personality traits (extraversion, agreeableness, conscientiousness, emotional stability and intellect) in explaining differences in educational attainment and occupational success. Other studies have emphasised the importance of social sensitivity, sociability, emotional stability, self-control, culture and leadership for both earnings and occupational success in adult life (Jencks, 1979; Filer, 1981). For example, the perception of control over outcomes has a statistically significant influence on various measures of occupational success, independent of the standard explanatory variables (Duncan and Dunifon, 1997; Andrisanni and Nestel, 1976). Some economic studies have also documented the influence of non-cognitive and psychological traits on earnings (Bowles, *et al.*, 2001a, 2001b; Juhn *et al.*, 1993; Kuhn and Weinberger).[34] For example, Bowles *et al.* (2001a) provide a survey of empirical evidence concerning factors that they refer to as "non-skill determinants of socio-economic success" and argue that "seemingly irrelevant personal characteristics, including beauty, height, obesity, and even whether one keeps a clean house, are often robust predictors of earnings".[35] Finally, good looks predict high earnings for both men and women (Biddle and Hamermesh, 1998).

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31. A "phenotype" is an observable trait. The genotype is what is transmitted across generations. A crucial issue in genetics, for the measurement of heritability, is to quantify the portion of a phenotype that is genetic.

32. Several studies use monozygotic twins (i.e. individuals genetically identical) to separate the effect of the genes from that of the environment.

33. See also Reifman (2001).

34. In particular physical appearance such as obesity for women and height for men predicts earnings. See also Cawley (2004).

35. Heckman and Rubinstein (2001), Osborne (2005), Heckman *et al.* (2006) also reach similar conclusions. See also Case and Paxson (2006b).

2.4 Summing up

42. For policies, it is important to know which factors matter most for child development. For example, while economic disadvantages may be either a cause or a consequence of attitudes and values, policy implications are likely to differ in the two situations. If poverty causes the values, an increase in parental income, for example through cash transfers, might encourage parents to give up the "culture of poverty" and in turn might give their children improved chances. Conversely, if poverty is a consequence of the "culture of poverty", an increase in parental income may have little impact. By contrast, policies that modify parental values, for example by creating incentives for the continuation of schooling, might in the end improve children's outcomes more effectively.

43. Overall, the literature suggests that a variety of resources contribute to child development. These resources interact with the children's cognitive and non-cognitive abilities in ways that combine to influence their future life chances. Among these resources, parental income and education are critical, but others also matter. In fact, the literature suggests that the effect of liquidity constraints on parental educational choices is less important than that of a wider set of parental characteristics. These include the home and social environment where the children are raised and where their beliefs, attitudes and values are shaped. For example, Heckman and Carneiro (2003) suggest that better family resources during a child's formative years are associated with a higher quality of education and a better environment for fostering cognitive skills such as verbal ability and non-cognitive habits, including self-discipline, which improve life chances.

44. Therefore investing in early childhood seems to be an efficient social policy and a large literature suggests that early child development programmes have a positive impact on school achievement and other outcomes (e.g., Duncan *et al.*, 1994; Shonkoff and Phillips, 2000; Cameron and Heckman 1998, 2001; Chevalier and Lanot, 2001; Carneiro and Heckman, 2002; Heckman and Carneiro, 2003; Heckman and Masterov, 2004; Cameron and Taber, 2004; Esping-Andersen, 2004; Barnett and Belfield, 2006; Heckman, 2006a; Cunha *et al.* 2006; and Heckman *et al.* 2006. See also OECD, 2001, 2006). Some recent longitudinal studies also highlight that these programmes significantly reduce the risk of early pregnancy, criminal activity, violence, and drug use (see e.g. Kagitcibasi *et al.*, 2001).

CHAPTER 3: INTERGENERATIONAL MOBILITY OF INCOME

3.1 Introduction

45. Although socio-economic status is commonly assessed by some combination of income, education and occupational status, the literature suggests that parental income is among the best predictors of future life chances of children. Indeed, income may enhance these chances either directly, when transmitted in the form of gifts or estates, and indirectly when it is associated with a higher probability of receiving better "care" (food, housing, health, etc), better lifestyles and behaviours. Therefore, the analysis of the extent of intergenerational income mobility may provide useful information on the opportunities available to individuals.

46. This chapter presents the empirical approaches commonly adopted to study intergenerational income mobility and surveys the evidence about intergenerational mobility of income across countries, over time and across different income ranges. It also discusses some of the main factors that underpin this transmission.

3.2 Empirical approaches and specific estimation issues

47. Intergenerational income mobility is typically assessed through the estimation of a function that reflects the theoretical assumptions of the model of Becker and Tomes (1979; 1986) outlined in Chapter 2.[36] In this framework, the child's income may be written as a linear function of parental income (Box 5). The key parameter of the model is the coefficient associated with (the log of) parental long-term incomes – the parameter β – also termed "intergenerational income elasticity". This parameter measures the fraction of income differences between parents that are transmitted, on average, to their children (the higher this elasticity, the lower is intergenerational income mobility) and summarizes in a single number the degree of generational income mobility in a society. For example, a value of the elasticity of 0.5 implies that half of the relative difference in parental incomes is transmitted, on average, to the children. One minus the intergenerational elasticity measures the extent to which incomes "regress" to the mean and characterizes how income differences between families (in percentage terms) evolve over time. This elasticity is not a standardized measure and may reflect changes in inequality over generations.

36. The first statistical measure of intergenerational transmission was proposed by Galton (1889) who was interested in the transmission of individual height across generations. He developed the idea of a "regression towards the mean" that can be used to investigate other phenomena. In the case of socio-economic status, it would imply that the majority of the offspring of well-off families would be less well-off than their parents, but will stay at a level above the average. Conversely, children from low-income backgrounds will be on average better-off than their parents, but they will still be below the average of their generation. In other terms, the approach of Galton measures the speed of convergence of a given process toward the mean. However, this tool does not allow accounting for a larger set of factors that matter for intergenerational inequality (race, age, family structure, social class, etc). See also Goldberger (1989).

Box 5. Intergenerational income mobility: an empirical model

The theoretical model of Becker and Tomes (1979; 1986) allows estimation of intergenerational income mobility through the following equation:

$$\ln Y_{i,t} = \alpha + \beta \ln Y_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

where $Y_{i,t}$ is the children's permanent income when they are adults (*t* indexing the generation and *i* the family) and $Y_{i,t-1}$ is the permanent income of parents (generation t-1), α is the average income of the children (generation t) when adults, $\varepsilon_{i,t}$ captures unobserved components and β reflects the relation between the income of individuals and that of their parents. This "intergenerational elasticity" expresses the fraction of relative income differences that is transmitted, on average, across generations; positive values imply generational persistence (i.e. higher incomes of the parents lead to higher child's incomes) while negative values imply generational reversion of income (i.e. higher parental income leads to lower child outcomes). In general, the empirical evidence suggests a parameter $0 \le \beta \le 1$. The two extreme situations are: (i) $\beta = 1$: complete generational immobility; and (ii) $\beta = 0$: complete generational mobility.

Equation (1) can be extended by adding a quadratic term of parental income, or by specifying the functional form in a more general way. Some additional right-hand side variables – such as age and age squared in order to account for the lifetime profile of income for both the father and son – are generally included

48. An alternative measure of generational income persistence is the "intergenerational correlation coefficient". The intergenerational elasticity β and the intergenerational correlation coefficient ρ are equal only if the incomes of parents and children have equal variances. In this sense, the correlation coefficient is a measure of the association between variables whose dispersion has been standardized. The expression of the intergenerational correlation suggests that the intergenerational elasticity and the intergenerational correlation coefficients differ when inequality changes: when inequality rises, the correlation coefficient may be the same but "earnings may regress to the mean at a slower rate" (Aaronson and Mazumder, 2005).[37] Besides intergenerational correlations, many studies have paid attention to siblings' correlations (e.g. Griliches, 1979; Goldberger 1978; Aaronson, 1998; Loehlin, 1993). Indeed, the correlation among the incomes of siblings, i.e. an "omnibus measure" that captures the impact of both family and community background factors on the individual outcomes, can be interpreted as the portion of the earnings' variance related to shared (family and community) factors. Examples of studies analysing siblings correlations include Corcoran *et al.* (1990), Solon (1999), Conley and Glauber (2005), Björklund *et al.* (2002, 2004a, 2005), Levine and Mazumder (2007). To further separate the influence of genetic endowments and of family and community factors some studies have focused either on a particular kind of siblings, such as twins (such as Taubman, 1976; Ashenfelter and Krueger, 1994; Miller *et al.*, 1995; Rouse, 1999; Björklund *et al.*, 2005) or on adoptees (e.g. Björklund *et al.*, 2004b).

49. The parameter ß, i.e. the intergenerational elasticity, is simply an average estimate of the degree of intergenerational income mobility. The extent of mobility may however vary across different income ranges. To capture this aspect, some studies use mobility matrices, which rely on discrete categorizations of the distribution of income such as quartiles, quintiles, or deciles. Each cell represents the probability for a child's income to be in the *i*th-decile, conditional on his parent's income being in the *j*th-decile. This

37. The intergenerational elasticity may be thus a misleading measure of rank mobility. One minus the intergenerational correlation coefficient measures the extent of positional mobility. For example, an intergenerational correlation coefficient equal to one implies that a child's position in the income distribution is identical to that of their parent's in the prior generation (on the interpretation of intergenerational correlations see also Grawe and Mulligan, 2002).

information enables investigation of the direction and the pattern of mobility in a way that cannot be accomplished by mean regression measures, but the two approaches are nonetheless complementary.

50. Several issues make the estimation of intergenerational income mobility a difficult exercise:

- Several studies estimate intergenerational mobility based on father-son pairs of earnings rather than of family income (i.e. which includes incomes of all the family's members and from all sources). When the male-breadwinner model was more prevalent, father's earnings were a reasonable proxy of household income. Today, however, the higher educational attainment and labour market participation of women imply that models that do not account for these changes might fail to give an accurate picture of income mobility. Recent studies recognize that family income is the variable that most directly influences the standard of living of individuals (e.g. Chadwick and Solon, 2002; Ermisch *et al.*, 2006; Lee and Solon, 2006) and, because it is less volatile than earnings, it is also a better measure of permanent income. However, family income depends on the structure of the household (e.g. larger families might need to consume more than smaller families) and on other characteristics (e.g. the rate of marriage) that also vary with socio-economic status. Other factors also need to be considered when measuring family income. They are: (1) the extent of female labour market participation (i.e. women participate less often, and also work in part-time jobs more frequently than men); (2) the sources from which income is derived (welfare instead of wage income or cash income from assets); and (3) assortative mating (box 6). Because of these difficulties, cross-country comparisons of intergenerational income mobility typically use father-son pairs of earnings rather than family income.

Box 6. Assortative mating in an intergenerational perspective

Assortative mating occurs when individuals form partnerships with the individuals who share similar – positive assortative mating– or dissimilar characteristics – negative assortative mating – (see Epstein and Guttman, 1984). The literature suggests two main reasons why parental characteristics of husbands and wives are likely to be similar. They are "preferences" and "social spaces", which people from the same background tend to occupy.

The extent to which, adults born to parents from a given background will marry persons from similar backgrounds affects the extent of income mobility between generations (i.e. the higher the degree of assortative mating, the lower is intergenerational mobility). Because of assortative mating, estimates of intergenerational mobility using individual's earnings are likely to be biased and the full extent of intergenerational income persistence will be underestimated (Lam and Schoeni, 1993, 1994; Chadwick and Solon, 2002).

- Some specific methodological issues –i.e. *(i)* measurement errors related both to the number of periods used to measure permanent income and to the age at which it is measured; *(ii)* the nature of the sample on which estimations are based; and *(iii)* the specification, e.g. linear versus non-linear, of the relation between the (log-) earnings of the parents and of the child may lead to biased estimates if they are not duly taken into account (Box 7). Also, differences in the data and the methods used may lead to different estimates for the same country. Finally, changes in the earnings distribution across cohorts or groups of individuals, but also differential participation in the labour market between men and women (as the returns to human capital investment differ between them) may also generate different values of the intergenerational elasticity.

51. For all these reasons, comparing cross-country estimates of intergenerational income mobility requires a great deal of caution (Solon, 2002).

Box 7. Specific issues in the estimation of intergenerational income elasticity

Becker and Tomes (1986), surveying empirical evidence on intergenerational income mobility for a number of developed countries, concluded that modern societies were highly mobile. However, this conclusion was mainly related to some specific methodological issues concerning the appropriate measurement of parental "permanent" earnings (see on this, for example, Atkinson *et al.*, 1983; Jenkins, 1987; Solon, 1989, 1992; Zimmermann, 1992; and Reville, 1995).

A first issue relates to *measurement errors* arising as a consequence of (i) the number of periods used to measure income; and (ii) the age at which earnings are measured.

- The early studies of intergenerational income mobility relied on a unique observation to measure father's permanent incomes. Because of both *response errors* and *transitory components,* this is a poor approximation of permanent income. Measure of the father's and son's earnings based on a single year can generate some important biases. The first kind of bias reflects the variance of transitory fluctuations. Indeed, averaging over a short period of time may lead to a downward bias that is attributable to measurement errors in income fluctuations. For example, evidence on long-term earnings profiles shows that transitory components are highly serially correlated; averaging over multiple years helps to reduce the bias in the coefficient estimates (see Mazumder, 2001, 2002, 2005a, 2005b; Aaronson and Mazumder 2005, Hendricks, 2007, Haider and Solon, 2006; Corak, 2006). Another bias is due to the variance of the measurement error. Measurement errors in incomes may be dealt with instrumental variables (IV) estimators: the idea is to instrument for the father's income or earnings with other variables (most commonly occupational status and education) that are generally less affected by transitory variations than the single-year measures of earnings. A problem of IV estimators is that the instruments might be correlated to the son's economic status independently of fathers' income, which will cause an upward bias (see also Bound *et al.*, 1995). As a consequence, some authors have suggested interpreting OLS and IV estimates as lower and upper bounds, respectively, of the true value of the intergenerational elasticity. The instrumentation of fathers' earnings by education can also be performed across multiple samples. Under some reasonable assumptions, moments from multiple data sets may be combined to obtain consistent IV estimation (Angrist and Krueger, 1995; and Arellano and Meghir, 1992). In this approach (i.e. two-samples least squares or 2SLS), the variables come from two different datasets. Dearden *et al.* (1997), Björklund and Jäntti (1997), Dunn (2004), Lefranc and Trannoy, (2005) and Piraino (2006), are examples of studies using this approach to estimate intergenerational mobility.

- Beyond varying with the number of periods of income that are used in the estimation, the estimates of intergenerational income elasticity vary also with the age at which earnings are observed (life-cycle bias). Grawe (2006) argues that estimates are higher using data on mature fathers rather than young fathers. Several studies (e.g. Jenkins, 1987, Reville, 1995; Chadwick and Solon, 2002; Dunn, 2004; Grawe, 2006; Mazumder, 2001, 2005a, 2005b; Lucas and Pekkala, 2004, 2005; Hertz, 2005b; Haider and Solon, 2006; Vogel 2006; and Böhlmark and Linquist, 2006) have investigated the effects of varying the ages at which sons' earnings are observed. In general, they report that the estimated intergenerational elasticity increases as the sons' earnings are observed further into their careers. This effect may be linked to the rising returns to schooling as the next generation ages.

A second issue relates to the *characteristics of the samples* used as, for example, a high homogeneity of the father's sample might lead to underestimates of the intergenerational income mobility (Solon, 1989). In addition, Couch and Lillard (1998) raise doubts about the validity of estimated inter-generational earnings elasticities that exclude observations when either the parent or child have zero earnings, or low pay, or work less than full time.

Finally, a third issue relates to *the form of the relation between the log-earnings of the parent and of the child*. According to Becker and Tomes (1986) that relation is linear in the absence of borrowing constraints, but it is not in presence of borrowing constraints as the estimate of intergenerational elasticity will reflect both the impact of inherited endowments of human capital and the parents' propensity to invest in the human capital of their children. Thus, low-income parents with high-ability children might not borrow sufficiently to make the optimal investment in human capital for their children. Grawe (2004a) and Corak and Heisz (1999) document, for example, that the relation between parents' and child's earnings is S-shaped in Canada; and Grawe (2004a) argues that the existence of credit constraints is neither a necessary nor a sufficient condition for non-linearity in intergenerational mobility (see also Grawe, 2005b). Family background characteristics (such as family structure) may also introduce non-linearities (Björklund *et al.*, 2004; Hlaimi, 2005). Finally, patterns of non-linearity may vary across countries and a wrong empirical specification may lead to biased estimates of the parameters of interest. For example, Bratsberg *et al.* (2006) report that in the Nordic countries the relation is highly non-linear with flat portions of the regression line at the bottom of the fathers' earnings

distribution – implying that being born into very poor or moderately poor families has little impact on the children's adult earnings; while the relation between father's and child's earnings is log-linear over the entire income distribution in the United Kingdom and the United States (see also Couch and Lillard, 2004 for a comparison of the functional forms for the United States and Germany). Differences in education systems and policies might thus lead to different patterns of non-linearity in the relation of interest (across countries) and therefore also to different paths of intergenerational mobility (e.g. Bratsberg *et al.*, 2006).

3.3 Cross-country evidence on intergenerational income mobility

52. This section presents the evidence separately for incomes from work (i.e. earnings), from assets and from welfare.[38] It is, however, useful to note that the studies comparing the extent of intergenerational mobility of family income (which include income from all sources) and earnings tend to suggest that the extent of transmission of family income across generations is large and even larger than that of earnings. For example, Blanden (2005a), comparing intergenerational earnings and family income mobility in the United States, West Germany and Canada, argues that the intergenerational elasticity parameter β is slightly higher (i.e. mobility is lower) for family income than for father's earnings in the United States and Canada, although the opposite pattern applies to West Germany (see also Blanden *et al.*, 2005a and Blanden *et al.*, 2006; Hertz, 2007; Mazumder, 2001, 2005).

3.3.1 Intergenerational mobility of income from work

53. The cross-country comparison of intergenerational mobility of income from work uses estimates based on father-son pairs of earnings. While early studies concluded that countries were highly mobile, recent studies report a much higher persistence of earnings across generations. The previous results reflected mainly a number of methodological issues (see Box 7 above)[39].

54. Studies that use consistent approaches and/or data to compare intergenerational earnings mobility across OECD countries include Comi (2004), Blanden (2005a), Grawe (2004b), Jäntti *et al.* (2006), and Corak (2006).[40] Comi (2004) uses data from the European Community Household Panel (ECHP) to measure intergenerational earnings mobility in 12 European countries. However, the ECHP is a very short panel and therefore earnings are observed when children are still living with their parents. Besides other drawbacks, selection biases may arise as a consequence of differences in the habits about cohabitation with parents and home leaving ages. In contrast with the majority of studies available on intergenerational earnings mobility, Comi (2004) reports no significant association between the earnings of fathers and those of their sons in two cases (the Netherlands and Denmark), marginally significant in two more cases (Austria and Ireland); for the other countries, the ranking also appears different from that reported by many

38. Mazumder (2001), comparing the extent of intergenerational mobility of income of work, wealth and welfare in the United States, argues that the extent of persistence of welfare payments is, for sons, very similar to that of asset income, both being much larger than that of earnings.

39. Becker and Tomes (1986) contains an extensive review of the literature on intergenerational earnings mobility. The majority of the studies they examine indicated that a 10 percent increase in parents' earnings (or income) increases children's earnings by less than 2%. They also concluded that: "Almost all earnings advantages and disadvantages of ancestors are wiped out in three generations. Poverty would not seem to be a culture that persists for several generations" (Becker and Tomes, 1986).

40. Some estimates are also available for non-OECD countries. For example, Ng (2005) estimates the intergenerational correlation coefficient in Singapore between .23 and .28. Lillard and Kilburn (1995) found for a Malaysian sample with mean age of 25 a coefficient of .26. Hertz (2001) estimates a coefficient of 0.44 for South Africa, while Dunn (2004) estimates coefficients for Brazil are equal to or greater than 0.53 (see also Ferreira and Veloso, 2004 for Brazil). Grawe (2004b) presents estimates of intergenerational earnings persistence for Malaysia, Ecuador, Nepal, Pakistan and Peru.

other studies with United Kingdom and Italy being the most mobile and the least mobile countries, respectively.[41]

55. Blanden (2005a) uses data for Britain, the United States, West Germany, Canada, Sweden, Norway, Finland, and Denmark, and concludes that "America and Britain have the highest intergenerational persistence (lowest mobility)". Conversely, the Nordic countries and Canada are the most mobile (Blanden, 2005a and Blanden *et al.*, 2005a).

56. Grawe (2004b), who uses different methods depending on the available data (i.e. OLS, IV and two-stage IV approaches), computes mobility with mean regression methods for the average individual and with quantile regression methods for the exceptional children (i.e. highest-earning children born to a low-earning family*)* Grawe (2004b). Based on pair-wise comparisons between countries (keeping sample selection criteria constant), he argues that: *(i)* to the extent that comparisons can be made, Canada is, on average, more mobile than United Kingdom and Germany; and *(ii)* if data from the PSID are representative, the United States and United Kingdom are less mobile than Germany and Canada.

57. Jäntti *et al.* (2006) compare mobility in Denmark, Finland, Norway, Sweden, United Kingdom and the United States using mean regression procedures and transition matrices (see below*)*. The results suggest that Denmark is the most mobile country (with an intergenerational elasticity of earnings of 0.071), followed by Finland (0.173), Norway (0.155), Sweden (0.258), United Kingdom (0.306) and the United States (0.517).

58. In his meta-analysis, Corak (2006) attempts to take care of the potential biases discussed in Box 7 (i.e. the father's age at which earnings are observed, the number of years used to measure the fathers' earnings, and whether IV methods have been used or not) by: *(i)* looking at results obtained with different methodologies for the United States (for which most estimates are available); and *(ii)* scaling the preferred estimates for other countries up or down. The results reported by the studies mentioned (with the exception of Comi, 2004) are largely consistent with the ranking reported in Corak (2006). Therefore, Figure 1 ranks countries with respect to the (best point) estimates of intergenerational earnings elasticity based on Corak (2006) complemented by a few national sources. It suggests large cross-country differences between on the one hand Denmark, Norway, Finland, Australia and Canada where the elasticity is less than 0.20, and the United States, the United Kingdom and Italy, where the estimated elasticity is higher than 0.40.[42] For example, an elasticity value of 0.50 - as in Italy or the United Kingdom - implies that 50% of the relative difference in parental earnings is transmitted, on average, to their children. An elasticity of 0.15 (as in Denmark) implies that 15% of the difference in parental earnings is transmitted to children.[43] It is important to note that, the absolute effect of a given elasticity will be greater in more unequal societies. In other words, the United States has a wider earnings distribution than does, say, Norway. Even if they had the same intergenerational earnings elasticity, the implied size of the income effect in *absolute* terms would therefore be higher in the United States than in Norway.

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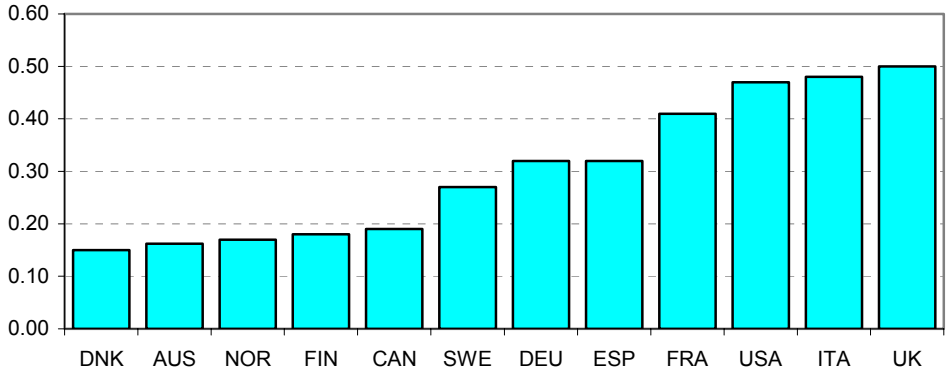
41. The complete ranking for the countries that display a significant association between fathers' and son's earnings is: United Kingdom (0.09), Germany (0.15), France (0.17), Spain (0.17), Portugal (0.19), Belgium (0.23), Greece (0.24) and Italy (0.27);

42. In a recent study, Vogel (2006) compares intergenerational earnings mobility in the United States and Germany. While correcting for life-cycle bias in life-time earnings, Vogel (2006) reports lower estimates for the United States than those shown in most of the latest available studies. Finally, Bauer (2006) reports for Switzerland, an estimate of the intergenerational earnings correlation very close to the highest values observed, as it equals 0.442.

43. Keeping things extremely simple, a value of the elasticity of 0.5 implies that 5/10 of the relative difference in parental incomes is transmitted, on average, to the children.

Figure 1. Intergenerational Earnings Elasticity estimates from various studies



Note: The height of each bar represents the best point estimate of the intergenerational earnings elasticity resulting from the extensive meta-analysis carried out by Corak (2006). The higher the parameter, the higher is the persistence of earnings across generations and thus the lower is intergenerational earnings mobility.

Source: Based on Corak (2006) for all countries except Italy, Spain and Australia. For these countries, estimates are as in Leigh (2006) for Australia, Hugalde (2004) for Spain and Piraino (2006) for Italy.

3.3.2 Intergenerational transmission of income from assets

59. In addition to earnings, income from assets may be transmitted across generations. Results from studies for individual countries suggest that intergenerational correlation of wealth transfers is strong (Box 8). To explain the correlation between parents and their children's wealth, one can call upon various factors: institutional factors and fiscal rules; demographic factors like marriage and fertility rates; social factors like assortative mating; and economic growth. Parents and children could also have similar wealth because of similar propensities to save.

Box 8. Intergenerational transmission of wealth: the evidence

The available literature suggests that children of wealthier parents are more likely to be wealthy in their turn (e.g. see Di and Yang, 2002 and Withers and Reid, 2005). Wealth persistence across generations is also more important at the top of the income distribution and this may deepen inequality (see e.g. Hertz, 2005a, 2006; Hout, 2004; Ohlsson *et al.,* 2006; Chiteji *et al.*, 2000; De Nardi, 2004) and create a "wealth trap" (Piraino, 2006).

Some studies have estimated the correlation between the wealth bequeathed by the father and that left by each child. For the United States, Harbury and Hitchens (1979) report an intergenerational elasticity of inheritance, between fathers from very rich families and their children, of around 0.50: this implies that parents bequeathing twice the average have children that will bequeath half more than the average bequest of their own generation. Menchik (1979) studies the relation between the wealth of "fortunate" parents (i.e. parents with wealth higher than $40,000 who died in the period 1930-1940) and that of their children and finds the intergenerational correlation to be around 0.60, while the intergenerational elasticity coefficient ranges between 0.69 and 0.76 (see also Kearl and Pope, 1981).

Other studies rely on data collected before death (and therefore inheritance) takes place and typically report lower estimates of the intergenerational elasticity. For the United States, Walh (1985) using data over the 19th century reports estimates between 0.35 and 0.60. Mulligan (1997), using data covering the end of the 1990s, obtains elasticities ranging between 0.40 and 0.50. Finally, Charles and Hurst (2003) obtain an estimate of around 0.37 at the end of the 1990s. The size of previous generations' wealth is also likely to matter. In fact, various studies have shown that grandparents sometimes help parents secure quality schooling for their children, either by assisting them with home purchases in good neighbourhoods or by paying for private school tuition (e.g. Shapiro and Johnson, 2005;

Oliver and Shapiro, 1995). Walh (1985) compare three generations and the estimates reported are in the range of 0.2-0.3 and 0.05, respectively for father-son and grand-father-(grand) son pairs of wealth. Arrondel and Grange (2004), estimate the intergenerational transmission of wealth in the French region of Lower Loire, from 1800 to 1938. They report an average correlation between father's and son's wealth of 0.37 and an intergenerational elasticity ranging between 0.24 and 0.44 (being lower for the most recent cohorts; see also Bourdieu *et al.*, 2002).

3.3.3 Intergenerational transmission of welfare-income

60. The research on the intergenerational transmission of welfare- income is sparse and the extent to which it reflects or interacts with unobserved variables, as well as with the racial composition of the population and the institutional structure of social policies, is largely unknown. Nevertheless, this research tends to suggest that (i) recipiency of welfare income persists across generations; and (ii) that part of the differences between the intergenerational impact of these programmes across countries might depend on the ways these programmes are designed. Some of the results highlighted by this research, for selected OECD countries, are as follows:

- In the United States, most of the literature has focused on welfare transmission between mothers and daughters – either in the AFDC, Aid to Families with Dependent Children or in the subsequent TANF, Temporary Assistance for Needy Families programmes. These studies generally conclude that daughters of welfare recipients are more likely to receive welfare than daughters of non-recipients.[44] Page (2004) reports an intergenerational correlation coefficient in welfare participation of 0.32 (implying that women who experienced a spell of welfare receipt during childhood are almost three times as likely to become welfare participants when they are adults, compared with women that did not receive welfare, much higher than that reported by the majority of previous studies.[45] Studies have also looked at differences between ethnic groups or environments. Borjas and Seyoshi (1997) suggest that growing up in environments characterized by welfare dependency strengthens the effect of both duration and incidence of welfare; and that children raised in households living on welfare are more likely to be dependent on welfare for longer. Gottschalk (1996) concludes that unobserved variables explain a large portion of the intergenerational correlation in welfare participation for blacks but not for non-blacks. The correlation across generations is significant for both blacks and whites even after taking account of those effects.

- In Canada, Corak *et al.* (2004) report a ten percentage point difference in the use of unemployment insurance (UI) between those whose fathers had received UI and those whose fathers did not. One third of this difference is explained by differences in observable characteristics; another third by unobserved heterogeneity; and the remaining third by social learning related to family background. Both the incidence of a first unemployment-insurance claim and the chances of experiencing repeated spells of UI are significantly influenced by family background. Coelli *et al.* (2004) examine the impact of graduation from high school on the probability that individuals, whose parents received Income Assistance use welfare themselves in British Columbia while addressing endogeneity problems. They conclude that graduation would reduce that probability that dropouts depend on welfare by ½ to 3/4.[46] Larger effects are

44. One of the conditions to be eligible to these programmes is single parenthood. This implies that the findings of this literature cannot be generalized to other categories of welfare dependents. See also Duncan *et al.* (1988); Solon *et al.* (1988); Duncan and Yeung (1995); Gottschalk (1990; 1992; 1996); Gottschalk *et al.* (1994), Antel (1992); Levine and Zimmerman (1996; 2000); Ratcliffe (1996); Pepper (1995).

45. See also Mazumder (2002, 2005a).

46. Similar results are reported in Moeser *et al.* (2003).

documented for individuals from "troubled family backgrounds and low income neighbourhoods". Beaulieu *et al.* (2005), who study the intergenerational correlation of participation in Quebec's social assistance programme, find that periods spent on social assistance during the early stages of childhood and late adolescence significantly increase the probability of depending on public transfers when children reach the adult age; similar results are reported by Finnie and Bernard (2006).

- In New Zealand, Maloney *et al.* (2003) investigate intergenerational correlation of social welfare from the Unemployment Benefit (UB) or the Domestic Purposes Benefit (DPB). Their estimate of intergenerational correlation is over 0.37 for the whole sample, and is higher for female recipients, for Maori and for individuals without educational qualifications. The proportion of years spent in a single-parent household and the educational attainment of both parents explain nearly two-thirds of the effect; the remaining one-third reflects the lower educational attainment of children reared in families receiving social welfare benefits. Seth-Purdie (2000) reports that young individuals raised in welfare-dependent households are more than twice as likely to receive income from these same programmes by the time they reach age 21 as youth raised in families that never receive welfare benefits.

- In Sweden, Corak *et al.* (2004) report that use of unemployment insurance is correlated across generations and that this correlation does not reflect social learning, but instead is affected by observed and unobserved heterogeneity. The individual learning process turns out to be a very powerful determinant of the experience of subsequent claims. Rank and Cheng (1995) and Stenberg (2000) also present significant evidence (particularly strong in the latter) of intergenerational transmission of the dependency on social assistance.

- In Australia, Pech and McCoull (2000) document that the majority of young people, whose parents relied heavily upon income support, were more likely than other young people to rely on it. They also argue that the probability of relying on income support increases with the level of parental receipt of income support. However, the authors also highlight that young people (with parents dependent on income support) relied upon income support only for short periods of time (see also Pech and McCoull, 1998). [47]

61. The inheritance of welfare participation may reflect various mechanisms, some causal and some non-causal.[48] Some causal links are very important. First, parental welfare participation may reduce the stigma associated with the status of being a welfare recipient or increase the incentive to imitate their parents (An *et al.*, 1993; Corcoran *et. al.*, 1992; Pepper, 1995; Levine and Zimmerman, 1996, Gottschalk, 1996). Second, parental participation in welfare may reduce the participation cost of their children (for example, parents who are informed about the procedures and the characteristics of the programmes are more likely to pass the information on their children; Antel, 1992, Moffitt, 1992; Gottschalk, 1996). Finally, parents who depend on welfare are likely to have fewer interactions with the labour market and thus fewer job contacts, which, in turn, make the job-search process of their children more difficult. These causal links may proceed from the interactions of various factors (e.g. the lack of appropriate resources in

47. A vast research programme to investigate the persistence of welfare across generations based on a "trans-generational" database is also on going in Australia. See Cobb-Clark *et al. (2006)*.

48. A related issue concerns the intergenerational transmission of unemployment. Many studies have empirically documented the fact that the unemployment experience of parents influences children by increasing the risk of becoming unemployed, of staying unemployed longer, and of experiencing repeated spells of unemployment. See, for example, O'Neill and Sweetman (1998) and Österbacka (2001) using British and Finnish data, respectively; Soidre (1999) and for Sweden; and Ekhaugen (2005) for Norway. See also Tabb and Pencavel (2004) who study the intergenerational work behaviour.

the household, poor educational attainment, etc.). Non-causal mechanisms that underpin the intergenerational transmission of welfare dependency are related to observable and unobservable characteristics that make parents and children more vulnerable to the risk of welfare participation; for example, the correlation of attitudes and values is likely to play a role in explaining their socio-economic choices (see e.g. Mulligan, 1997).

62. Overall, from the evidence surveyed, it appears also that the ways social policy is structured and delivered might matter in intergenerational terms. For example, the structure of eligibility rules and the emphasis on active versus passive payments may lead to different intergenerational patterns in the transmission of welfare-dependent status across generations – i.e. passive programmes are likely to lead to higher transmission across generations than active programmes. Thus, the strong intergenerational correlation of welfare observed in the United States might be related to the design of the programme (as it was before 1996) and how it is targeted.

3.4 Variations in intergenerational mobility over time

63. Some studies have focused on different cohorts of individuals in order to analyse the patterns of intergenerational mobility over time. Overall, no clear trends emerge.[49] Most studies refer to the United States and often provide divergent conclusions. For example, Hauser (1998) finds no trend over the period from the 1960s to the 1990s, while Fertig (2003) suggests that intergenerational mobility increases over time for individuals born in the 1950s and 1960s (a result similar to that in Mayer and Lopoo, 2004, for the sons born between 1954 and 1963 and for daughters born after 1961; in Corcoran, 2001, for the sons born between 1953 and 1968).[50] Conversely, Levine (1999) argues that intergenerational mobility has weakened between the 1970s and 1990s mainly reflecting higher returns to education. Chadwick (2002) also reports that mobility lowered over time, but these trends seem to depend strongly on the samples used.[51] Levine and Mazumder (2002) and Lee and Solon (2006) show that different data sets lead to different results.

64. LeFranc and Trannoy (2005) explore changes across various cohorts in France and report that intergenerational elasticity is very stable over time. Fortin and Lefebvre (1998) document the same trend for Canada for the period between the mid 1980s and the mid 1990s. Blanden *et al.* (2004), comparing individuals born in 1958 and 1970, report that intergenerational mobility has fallen over time in Britain; they explain this by referring to the educational upgrading which has mostly benefited the children of richer parents. Moreover, Blanden *et al.* (2006) argue that a high share of the decline in intergenerational income mobility over time is related to a stronger association between parental income on the one hand, and both labour market attachment and non-cognitive traits on the other. Ermisch and Nicoletti (2005) find no trend in intergenerational earnings mobility for two cohorts of sons born between 1950 and 1972 in

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49. Intergenerational mobility of income may vary over time because of changes in: (1) the relative investments in children made by rich and poor parents; (2) the payoff to these investments; and (3) the returns to genetic or biologically transmitted characteristics (Mayer and Lopoo, 2004, 2005).

50. Mayer and Lopoo (2004) explain the weakening correlation over time through the weakening of the connection between parental income and sons' educational attainment, as public investments in children counteracted the differences in the investments that parents made. They estimate the linear trend in mobility for sons separately by levels of parental education, and find that mobility increased for sons whose parents had 12 years of school or less, but changed little for sons whose parents had more than 12 years. Neither estimate was statistically significant. They also highlight that differences in the estimates of intergenerational mobility are related to sample selection rules (e.g. sons of married couples or all the sons) and on the type of income used (e.g. parental income or earnings).

51. See also Hertz (2007) for an analysis of the trends of intergenerational mobility of family income in the United States.

Britain. Bratberg *et al.* (2005) report that, in Norway, intergenerational mobility is stable over time (and even slightly increasing) and suggest that this reflects a stable earnings distribution. They also argue that the educational reforms implemented in Norway, with the aim of increasing equality of opportunity, have contributed to achieve stable, or even higher, mobility across generations. Similar results are reported in Pekkarinen *et al.* (2006) and Pekkala and Lucas (2007) for Finland, while no clear trend appear in the study conducted by Österbacka (2004) also for Finland.

65. Overall, these results suggest little change in intergenerational income mobility over time in Canada and France. For the United States and Finland, no clear picture emerges. The studies for Britain suggest a path of declining mobility over time. By contrast, in Norway, intergenerational mobility of income seems to increase over time.

3.5 Variations across the income distribution

66. The prevailing approaches to examine differences across the income (or earnings) distribution are transition matrices and the non-linear parameterization of the relationship of interest. Some of the most recent studies also use more flexible estimation strategies that give unbiased estimates.[52] For the United States, the evidence based on transition matrices suggests that mobility is higher in the middle of the distribution than in either ends (Zimmerman, 1992). However, studies based on the direct parameterization of the non-linearity (or on letting the father's income vary across sub-groups) offer mixed results (Behrman and Taubman, 1990; Peters, 1992): one reason is that all these studies impose a specific functional form on the father-child earnings relations, which is not necessarily correct. Among the latest studies, Hyson (2003) suggests that the degree of intergenerational earnings mobility is higher at the bottom of the father's earnings distribution in the United States.[53] Corak and Heisz (1999), based on non-parametric techniques applied to a large Canadian data drawn from tax records, report that mobility is higher in the lower end than in the upper end of the income distribution. Grawe (2004b), comparing mobility for different sons' ability, argues that mobility is higher in the upper quintiles in the United States and Canada rather than in Germany and the United Kingdom.[54] Couch and Lillard (2004) report lower mobility at the top than at the bottom of the earnings distribution for the United States and Germany. By contrast, Hertz (2005a) reports a very low mobility at the bottom of the distribution, in the United States, and argues that this lower mobility is likely to be driven by the outcomes for black men. Indeed, when "black" and "whites" are pooled together, the intergenerational income elasticity is higher and upward mobility is more likely to occur among the whites than among the black.[55]

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52. Estimates of intergenerational earnings elasticity may vary across the earnings distribution. For example, this may happen due to the presence of imperfect capital markets (Becker and Tomes, 1986). In that case, low-income families are likely to face borrowing constraints and this might lead to lower intergenerational mobility in the bottom part of the earnings distribution. See Box 7 above.

53. Increasing returns to ability, which in turn are positively correlated with parental earnings, may strengthen earnings' inheritance. For example, a positive correlation between parents' earnings and child's ability might result in higher constraints for the parents in the middle of the distribution with respects to parents in the lower part of the earnings distribution (Hyson, 2003).

54. Therefore, with this approach Grawe (2004b) attempts to explain how parental income and sons' ability interact to lead to intergenerational income persistence. His findings also suggest that above-average (earnings) North American children are more mobile than their German counterparts, while below-average (earnings) American children experience less mobility (Grawe, 2004b).

55. Finally, Hertz (2005a) reports that incomes of black individuals, at the very bottom level of the income distribution, are not sensitive to small increases in own-income. The author highlights that this issue can have important implications as to the effectiveness, at the margin, of policies aimed at eradicating poverty in the next generation.

67. Lower mobility at the bottom of the earnings distribution is reported in several other studies. These include Atkinson *et al.* (1983), Dearden *et al.* (1997), Blanden (2005a) for Britain, Piraino (2006) for Italy and Bratberg *et al.* (2005, 2007) for Norway. Also Jäntti *et al.* (2006), comparing six countries (i.e. Denmark, Finland, Norway, Sweden, United Kingdom and Sweden), report lower mobility in the tails of the distributions and argue that lower mobility at the bottom might explain the pattern of male intergenerational mobility across countries (Table 1).

Table 1. Intergenerational mobility across the earnings' distribution

Probability for the son of being in the same quintile as his father

	Denmark	Finland	Norway	Sweden	United Kingdom	United States
1st Quintile	0.247	0.278	0.282	0.262	0.297	0.422
2nd Quintile	0.249	0.216	0.238	0.225	0.228	0.283
3rd Quintile	0.224	0.219	0.215	0.223	0.188	0.256
4th Quintile	0.223	0.229	0.221	0.217	0.247	0.252
5th Quintile	0.363	0.347	0.354	0.374	0.346	0.360

Source: Based on the diagonal of the transition matrices estimated by Jäntti *et al.* (2006).

68. The extent of the "long-distance" mobility – i.e. the probability for a son to move from the lowest to the highest income quintile relative to the father's position, and vice-versa – is another possible explanation for cross-country differences in intergenerational earnings mobility. Table 2, based on Jäntti *et al.* (2006), illustrates patterns of bottom-to-top and top-to bottom mobility in six OECD countries and suggests that both are low. More particularly, the United States display lower mobility than the Nordic countries in both directions, while the United Kingdom displays lower top-to-bottom mobility than the Nordic countries.

Table 2. Long-distance mobility

Probability of a son to move from the lowest to the highest quintile with respect to the father's position

	Denmark	Finland	Norway	Sweden	United Kingdom	United States
Bottom to top	0.144	0.113	0.119	0.109	0.124	0.079
Top-to-bottom	0.153	0.151	0.146	0.159	0.091	0.095

Source: Jäntti *et al.* (2006).

3.5.1 The inheritance of poverty

69. Low mobility at the bottom of the distribution increases the inheritance of poverty across generations. Several studies report evidence of this in the United States and Canada (Hill and Ponza, 1983; Wilson 1987; Gottschalk *et al.*, 1994; Duncan and Brooks-Gunn, 1997; Duncan *et al.* 1998; Stenberg 2000; Finnie and Bernard, 2006; Corak, 2001a; Corcoran, 2001), the United Kingdom (McLanahan, 1985; Single-Rushton, 2004; Boggess *et al.* 2005; Blanden and Gibbons, 2006) and Finland (Airio *et al.*, 2005).[56]

70. Family background disadvantage, related for example to low education, poor health, lone parenthood or non-employment, may boost the persistence of poverty. Growing up in areas characterized

56. See also Corcoran (1995); Haveman et al. (1997); Corcoran and Adams (1997); Moisio (2000, 2002).

by high concentrations of poverty might also contribute to intergenerational poverty, long-term welfare dependency, crime victimization, and destruction of the family structure itself.[57]

71. The inheritance of poverty threatens equality of opportunity and produces economic inefficiencies. The identification of the factors that contribute most to the process of income transmission across generations may, therefore, lead to a better understanding of the policies needed to weaken the inheritance of poverty. Indeed, actions directed at improving education, health, employment systems, residential mobility and urban revitalization, through their influence on intergenerational income mobility, could also help to break the poverty cycle. This issue is discussed in the next section.

3.6 What matters for income transmission?

3.6.1 Individuals' and households' characteristics

3.6.1.1 The Role of Education

72. Several studies suggest that the effect of education on the intergenerational transmission of income is large and significant (Bowles and Gintis, 2002a; 2002b; Bowles *et al.*, 2005; Blanden, 2005a,b; Piraino, 2006; Blanden *et al.*, 2005b; Blanden *et al.*, 2006; Osborne Groves, 2005a).

73. Solon (2004), modifying the framework of Becker and Tomes (1986), explicitly investigates the role of education in an intergenerational framework and concludes that, at the steady state, the intergenerational income elasticity depends (a) positively on returns to human capital and on the heritability of income-generating traits, and (b) negatively on the progressivity of government investments in children's human capital (Box 9).[58] In the Solon (2004) model, departures from the steady state imply, for example, that (*i*) an increase in the returns to human capital accompanied by stable public investment ($\gamma_t = \gamma$) translates into lower intergenerational mobility; and *(ii)* an increase in the progressivity of public investment in children's human capital, for a given return to human capital ($p_t = p$), leads to higher intergenerational income mobility.

Box 9. The model of Solon (2004)

In the model of Solon (2004), (i) parents cannot borrow against the child's prospective earnings; and (ii) do not bequeath financial assets to the child. Redistributive government policy is represented by progressive public investment in children's human capital, with τ being the proportional tax rate

$$(1-\tau)y_{i,t-1} = C_{i,t-1} + I_{i,t-1} \Rightarrow C_{it-1} = (1-\tau)y_{i,t-1} - I_{i,t-1} \quad \text{(a)}$$

The government's investment in child's human capital (e.g. through public provision of education or health care) and the human capital endowment that children receive both enter the function that translates the investment of the parents into the child's human capital. This technology function is semi-log and imposes decreasing marginal product (θ):

57. The inheritance of poverty related to family structure might imply a widening socioeconomic gap between single-parent and two-parent families. However, Musick and Mare (2004a,b) find very little evidence of divergence in the socioeconomic experiences of single-parent and two-parent families in the United States. The fact that a growing number of individuals living in single-parent families are either poor or non-poor may contribute to explain this result. (I'm not sure what the previous sentence means – by definition people are either poor or non-poor?) See also Blanden and Gibbons (2006) on poverty inheritance related to growing up in social houses.

58. Furthermore, departures from the steady state may be interpreted as shocks to the first-generation (see also Lee and Solon, 2006).

$$h_{it} = \theta \log(I_{i,t-1} + G_{i,t-1}) + e_{it}$$

where G_{it-1} is the public investment in the child's human capital and e_{it} denotes the human capital endowment of the children irrespective of the investment choices of the parents. The endowment of the children is positively correlated with parental endowments and follows an AR(1) process). It is such that $e_{it} = \delta + \lambda e_{it-1} + \upsilon_{it}$; with λ being the heritability coefficient that lies between 0 and 1.

The child's (log) income y_{it} is defined as:

$$\log y_{it} = \mu + ph_{it} \quad (b)$$

with *p* being the earnings return to human capital (the higher *p*, the higher is earnings inequality).

The parent is assumed to have a Cobb-Douglas utility function:

$$U_i = (1-\alpha)\log C_{i,t-1} + \alpha \log y_{it} \quad (c)$$

with α being the altruism parameter that measures preference between child's income and own consumption.

Substituting for *C* and *y* in (c), leads to

$$(1-\alpha)\log\left((1-\tau)y_{i,t-1} - I_{i,t-1}\right) + \alpha\mu + \alpha p\theta \log\left(I_{t-1} + G_{it-1}\right) + \alpha p e_{it}$$

The model suggests that when the level of public investment in the child's human capital investment is low enough that the parent wishes to increase it with private investment: (i) parents invest more in children when they are more altruistic and when returns to human capital increase; (ii) if taxes are constant, public investments partly crowd out parents' investments in children's human capital; and (iii) higher income parents invest more.

In the steady state, the slope coefficient $\beta = \frac{(1-\gamma)\theta p + \lambda}{1 + (1-\gamma)\theta p \lambda}$) is equivalent to the correlation between log y_{it} and log y_{it-1}. Higher β is related to: (i) a higher heritability coefficient λ; (ii) a less positive γ (i.e. less progressive public investment in child's human capital); (iii) a more productive human capital (θ); (iv) higher earnings returns to human capital (*p*). In case of departures from the steady state, owing to the different variances of y in the two time-periods, β is no longer equal to the intergenerational correlation.

3.6.1.2 Opening the black box

74. While education is a major contributor to intergenerational income mobility, several studies suggest that a large portion of the mechanisms governing the transmission of income across generations is unexplained by it (for example see Blanden, 2005a; Blanden *et al.*, 2006, Piraino, 2006, Bowles and Gintis, 2002a, 2002b, Bowles *et al.*, 2005). The next section tries to shed some light on this "black box" considering the additional factors that might influence the transmission of income.

- *Genetics*. The channels that allow inherited traits, and more particularly genetic endowments, to influence income transmission across generations are largely unexplained. For example, Bowles and Gintis (2002a, 2002b), based on the decomposition of the intergenerational correlation coefficient of income, conclude that while the contribution of genetic inheritance to IQ is very small, the total effect explained by genetic factors is very large.[59] The fact that the earnings of

59. Bowles and Gintis (2002a, 2002b) present the decomposition of the intergenerational correlation coefficient of income (from labour and assets) in three transmission mechanisms: genetic, cultural and asset-based. Based on this decomposition, they look further into the contribution of these different components to the intergenerational status transmission process. In particular, the genetic inheritance of IQ may contribute to the intergenerational transmission of income because parental incomes are correlated with offspring's cognitive levels, which in turn affects offspring income both directly and indirectly

identical twins (monozygotic twins) appear to be substantially more similar than those of fraternal twins (or dizygotic twins) suggests also that genetically inherited traits other than cognitive skills account for some of the intergenerational correlation of earnings. For example, other inherited traits, like personality traits (and behaviours – though of course these are not entirely genetically determined) or race, might be important channels of transmission (e.g. Loury, 2005).

- *Wealth.* Wealth transfers may also affect intergenerational income transmission as discussed in Chapter 2. Bowles and Gintis (2002a, 2002b) argue that wealth accounts for around one-third of the intergenerational correlation of income in the United States. Mazumder (2002) also reports that different levels of parental wealth are associated with different intergenerational income elasticities. Greater wealth eases credit constraints which, in turn, have implications for income mobility between parents and their children (for example see Askew *et al.*, 2001). Hertz (2006) finds that inheritance contributes very little to the intergenerational correlation of income, but this result seems to be related to the young age of the adult children –i.e. 37 years – used in his study.

- *Neighbourhood and social conditions*. There is a great deal of ambiguity around the causal impact of neighbourhood conditions in the long-run (see Chapter 2) and very few studies have looked at the role of neighbourhood, housing tenures or geographical locations on intergenerational income mobility. Some studies have however analysed the role of certain characteristics of the neighbourhood (e.g. the rate of activity or of unemployment) on intergenerational income mobility. For example, Palmer (2002) reports that the male unemployment rate in the local environment significantly and negatively affects the children's permanent wages, and thereby the intergenerational elasticity, in the United Kingdom. Hertz (2006) reports that the state of residence explains 4.5% of the intergenerational correlation of income in the United States.

- *Ethnic origins and race*. The intergenerational earnings elasticity may be used to quantify both how well immigrants are integrated into the host country and how income persistence across generations varies with race.[60] Indeed, the influence of the environment on some genetic traits – such as skin colour and other racial markers –contribute to inheritance of socio-economic status to the transmission of income across generations through a particular form of capital that Borjas (1992) refers to as "ethnic capital" (see Chapter 2).[61] Some studies suggest that, in the United

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through educational achievement. In the absence of assortative mating between parents, the role played by inheritance of IQ is rather modest as Bowles and Gintis (2002b) concludes that one twentieth or less of the observed intergenerational status transmission is due to genetic inheritance of IQ. See also Mulligan (1997), Atkinson *et al.* (1983); and Bowles and Nelson (1974). Gagnon *et al (*2006) argue that different propensities to migrate increases genetic divergence across populations. See also Goldberger (1978); Bowles *et al.* (2002; 2005) and Sacerdote (2002).

60. Indeed, difficulties faced by immigrants (e.g. lack of contacts, racism, etc) should disappear as the assimilation process proceeds and individuals belonging to the "second generation" should experience life chances comparable to those of the natives. Cross-countries analyses on this issue are not easy, as the analysts have to deal with some complex methodological issues. Biased estimates arise when not controlling for selection effects that may exist because: (i) immigrants may be a self-selected group with respect to both their decision to migrate and the administrative rules used by host countries (Aydemir, 2003a; 2003b); and (ii) selection may also exist on their unobserved traits (e.g. ability or motivation) that influence the human capital production of their children (see also Hum and Simpson, 2004). Societies, indeed, may differ in how, and to what extent, skills are transmitted between generations. Moreover, generational income mobility may differ among immigrants because of the role of ethnic and social capital (Borjas, 1992; Kyambi and Sriskandarajah, 2005; Longva and Rauum, 2003; Loury, 1977).

61. See Bowles and Gintis (2002a, 2002b) and Hertz (2006). See also Aydemir and Skuterud (2005).

States, intergenerational earnings mobility is lower for immigrants than for natives (e.g. Borjas, 1992, 1993; 2006; Card *et al.* 2000; Hertz, 2005a) and also for black than for whites (e.g. Hertz, 2006).[62] For example, Hertz (2006) documents that the connection between parental income and race explains 14% of the intergenerational correlation of incomes. For the United States, Kearney (2006) documents that the rates of intergenerational transmission of socio-economic status are very similar across black and white parents, but as mean income is lower among blacks than among whites, the likelihood of upward mobility in the overall income distribution is substantially lower among blacks. For Canada, Aydemir *et al.* (2006) find that intergenerational income mobility for the children of immigrants is very similar to that of natives, For Sweden, Hammarstedt and Palme (2006) report that intergenerational earnings' mobility is lower for immigrants than for natives and that this result hides a significant heterogeneity across different ethnic groups. A similar result is reached in Bauer (2006) for Switzerland (see also Loury 2005).

- *Gender of siblings*: Some studies find that the extent of intergenerational transmission of income does not vary according to the gender of siblings. Jäntti *et al.* (2006) comparing intergenerational earnings elasticity for men and women in Norway, Denmark, Sweden, the United Kingdom and the United States, find that cross-country differences in intergenerational income mobility are significant only for men (see also Card, 2005 for the United States). However, studies that control for the degree of assortative mating between partners conclude that intergenerational income mobility is sometimes higher for daughters than for sons, and that a higher degree of assortative mating lowers intergenerational mobility (e.g. Lam and Schoeni 1993; Chadwick and Solon 2002; Harding *et al.* 2005, and Kearney, 2006 for the United States; Hirvonen, 2006; and Holmlund, 2006 for Sweden[63]; Ermisch *et al.* 2006 for Germany and the United Kingdom; Blanden, 2005b for the United Kingdom; and Blanden, 2005c for Canada). [64]

- *Birth-order, family size and family structure*. Few studies have analysed the impact of family structure on intergenerational income mobility. [65] Among them is Lindahl (2002) who reports that

62. Some of the reasons advanced to justify this result are: tighter credit constraints, diverse values and attitudes, the more important role of the family compared to other institutions. However, in many studies children's earnings and wages, as well as their education levels, are found to be higher in the second generation than in the first. Card *et al.* (2000) also find that children of immigrants have higher education and wages than natives. In addition, they suggest that, for the more recent cohorts studied, father's education has the strongest impact on the transmission of economic status across generations.

63. Holmlund (2006) focuses on a reform of educational system that abolished streaming of students based on their ability and extended compulsory education from seven to nine years in Sweden. She argues that, owing to peer group effects, the postponement of ability streaming lowered assortative mating and increased intergenerational income mobility in Sweden.

64. Evidence from the same study also suggests that (1) wives' earnings are more strongly related to their husbands' family backgrounds; (2) partners of men from well-off backgrounds are more likely to work, and given participation, are likely to work longer hours; and (3) partners' earnings and parental incomes are strongly related and therefore the partial correlations between the couple's earnings and parental income are higher than those computed between individual earnings and parental income. Blanden (2005c) argues that a substantial matching on parental income exists also in Canada.

65. Ejrnaes and Pörtner (2004) suggest four types of constraints – financial, household-environment, cultural and biological – that might lead to divergent children outcomes according to the birth-order but also to the size and structure of households (see also McLanahan and Sigle-Rushton, 2004). Liquidity constraints are more likely in larger families and for first-born children whose parents are at the beginning of their careers (Behrman and Taubman, 1986). Household-environment constraints, which relate to the number and age of siblings and to the environment in which they grow up, are likely to be: *(i)* tighter for parents with more siblings as they generally have less time to devote to each child (Hanushek, 1992); and *(ii)* less binding for the first-born child – although siblings of higher birth-order may have the same advantage if the age

the intergenerational earnings elasticity decreases with birth order for a given family size in Sweden and that this is particularly likely to occur at the bottom of the earnings distribution. After controlling for birth-order, Grawe (2005a) also finds significant family-size effects on intergenerational earnings mobility in the United Kingdom.[66] Similar results are reported in Björklund *et al.* (2004) for Scandinavian countries.[67] Concerning family structure, Anderson and Leo (2006) also argue that the income transmission is stronger in "intact families" than in single-parent households. Similarly, Björklund and Chadwick (2003) reports that estimates of intergenerational elasticity are lowest when they are computed for sons that have grown up without a father (either biological or non-biological) and are highest when computed for sons that have grown up with a biological father.

- *Health status:* Eriksson *et al.* (2005) report that, in Denmark, the estimate of the intergenerational earnings elasticity of sons and daughters falls by 28 and 25 percent, respectively, when conditioning on parental health status and that the coefficient for parental earnings' decreases when controlling also for the children's health. [68] According to the authors, "the resemblance in health outcomes across generations appears to (...) reduce significantly intergenerational earnings mobility" (see also Blanden *et al.*, 2006). Hertz (2006) reports that (the relation between parental income and) health status contributes to explain 8% of the intergenerational correlation of income in the United States. Also, Case *et al.* (2004), quantifying the effects of childhood ill health on adult health, employment and socioeconomic status, suggest that health is a potentially important transmission mechanism for the intergenerational correlation of income and education (see also Case and Paxson, 2006a).

- *Non-cognitive abilities*. Non-cognitive skills may moderate the effect of genetic components on socio-economic outcomes and affect the extent of income mobility across generations. Blanden *et al.* (2006) consider a range of non-cognitive and cognitive factors and argue that the former account for 19% of intergenerational earnings correlation and the latter for 27%. However, non-cognitive and cognitive measures are responsible for just 6% and 7%, respectively, when controlling for education and labour market attachment; among non-cognitive abilities, locus of control and application are by far the most important. Personality traits also matter. For example, Osborne Groves (2005a) argues that the transmission of personality traits accounts for around 11% of the father-son earnings' correlation (roughly the same as IQ heritability) and that controlling for human capital reduces the unexplained part of the correlation by two-thirds (see also, Hertz, 2006; Mason, 2007).

3.6.2 Macro-economic circumstances and institutional settings

75. Beyond individual characteristics, the macro-economic context, as well as policies and institutions, may strengthen or weaken the transmission of income across generations. This section

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difference between siblings is large. Cultural and societal traditions concerning first-born children may also imply divergent path of income transmission according to the birth-order. For all these reasons, intergenerational earnings elasticity is expected to be higher for unique children, but lower in single-parent families, in larger families and for later-born siblings. However, there is not much evidence in the literature to support these conjectures.

66. However, both studies report that these results disappear when family size is instrumented with twinning and religious denomination, respectively.

67. Haimli (2005) also documents that the transmission of parental resources may be affected by birth-order.

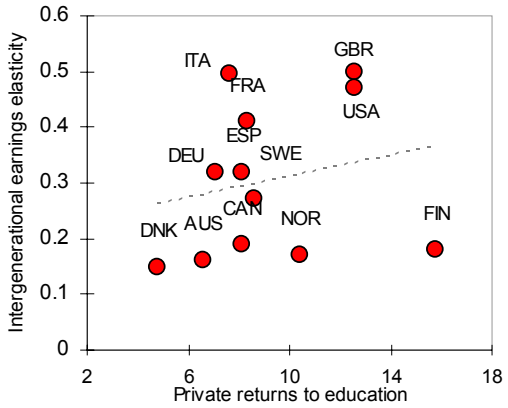
68. Eriksson *et al.* (2005) also report estimates of the intergenerational earnings elasticity for Denmark that are much higher than those reported by previous studies, being of .29 for sons and .27 for daughters.

considers how returns to human capital, education and income inequality may combine to determine patterns of intergenerational earnings mobility.

3.6.2.1 Returns to human capital

76. Models of intergenerational income mobility like the one proposed by Solon (2004) imply that the extent to which human capital is rewarded by the market may matter.[69] Figure 2 depicts the association between estimates of private returns to (upper secondary) education and intergenerational earnings elasticity.[70] It suggests that countries with higher rewards to education also have low intergenerational income mobility, although there is much variation across countries.

Figure 2. Intergenerational income elasticity and returns to education



Source: Data on intergenerational earnings elasticity are based on the same sources as those reported in Figure 1. Data on private returns of education are from OECD, *Education at a Glance*, most recent years.

3.6.2.2 Education inequality

77. Education systems and policies may also affect the extent of intergenerational income mobility. For example, public provision of education may increase mobility as it (i) reduces the cost of education and implicitly affects parental credit constraints; and (ii) provides a substitute for family inputs in the education process.[71] Solon (2004) and Davies *et al.* (2005) argue that intergenerational income mobility is higher under public than under private education (and that an increased role for private schooling significantly reduces intergenerational earnings mobility). Restuccia and Urritia (2004) find that early investments in education account for most of the endogenous persistence in earnings, while college education generates most of the endogenous inequality in earnings. Hanushek *et al.* (2004), experimenting

69. Writing the level of education of the child as a function of parental income and the income of the child as a function of his own level of education (because education gives returns in the labour market), it is possible to make explicit the relation between the intergenerational elasticity and returns to education (see also Solon, 2004).

70. Private returns to education refer to the benefits received by the individual who acquires the additional schooling (e.g. higher lifetime earnings, better health and longevity). Social returns to education refer to the implications (positive or negative) that education choices have on society at large.

71. According to Mayer and Lopoo (2004), mobility should increase more for low-income than high-income youth, as most public programmes support the former more than the latter.

with alternative public ways of subsidizing college education, argue that they all improve the efficiency of the economy while yielding more intergenerational mobility and greater income equality (though the implications for societal welfare vary across the types of tools).[72] For Britain, Blanden *et al.* (2004, 2005b) argue that higher university participation has improved the prospects of children of affluent parents relative to those of low-income parents (see also Machin, 2004, 2006a, 2006b; Chevalier *et al.* 2005; Morgan and Kim, 2006). Finally, Pekkarinen *et al.* (2006) report that the comprehensive reform of the education system implemented in Finland from 1972 to 1977 reduced the intergenerational income correlation by seven percentage points.[73] Similar results are reported by Holmlund (2006) for Sweden and Bratberg *et al.* (2005) for Norway.

3.6.2.3 Income inequality

78. At first sight, income inequality and intergenerational earnings mobility might seem disconnected as they rely on different time perspectives: measures of income inequality are defined with respect to income differences at a point in time, while intergenerational income mobility refers to the income differences across generations. While there is no consensus on this issue in the literature, some of the evidence suggests that a link between cross-section income inequality and intergenerational income mobility might exist (Solon, 2004; Hout, 2004; Aaronson and Mazumder, 2005; Corak, 2006).[74] For example, Björklund and Jäntti (1997) observe that both income inequality and intergenerational earnings persistence are lower in Sweden than in the United States. The same pattern is reported by Gottschalk and Smeeding (1997), Freeman and Katz (1995) and Aaberge *et al.* (2002) for other pairs of countries (i.e. the United Kingdom, the United States, Finland and Sweden).[75]

79. There is a strong positive relation in a cross-section of twelve OECD countries between the extent of intergenerational earnings mobility and income inequality (Figure 3). In general, the countries with the most equal distribution of income at a given point in time exhibit the highest earnings mobility across generations. The exceptions include Australia and Canada, which combine high mobility with only moderate inequality, and France which has lower mobility than could be expected from its level of inequality.

80. There are a number of possible explanations for the relation between cross-section income inequality and intergenerational earnings mobility. For example, the distribution of income is strongly

72. Hanushek *et al.* (2004) observe that "Because human capital is not good collateral for loans, individuals can find it difficult to fund college if the family cannot readily self-finance. Further, because any borrowing constraints are likely to be related to parental income, the resulting decisions on college tend to inhibit intergenerational mobility. To the extent that society wishes to disentangle opportunities of individuals from the socioeconomic status of their parents, subsidizing college may directly meet societal goals". See also Hendricks (1999); Hanushek and Woessmann (2005); and Seshadri and Yuki (2004).

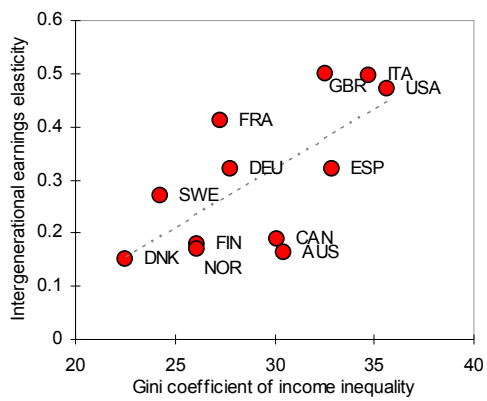
73. This reform shifted the tracking age in secondary education from age 10 to 16 and imposed a uniform academic curriculum on entire cohorts until the end of lower secondary school.

74. In particular, Solon (2004) shows that the cross-sectional variance of log income in a generation is, like the intergenerational elasticity coefficient β, a function of the same parameters (heritability, productivity of human capital, progressivity of public investment of human capital and extent of earning returns to human capital). However, the mapping between the two concepts is not exact since the cross-sectional variance of log-income depends on the process for heritability of endowments. Thus, Solon (2004) argues that "(…) two countries with approximately the same intergenerational elasticity might differ in cross-sectional inequality because they differ in their heterogeneity of endowed income-related traits". See also Hout (2003).

75. The relation between inequality and intergenerational mobility holds also in Brazil and South Africa. See for example Lillard and Kilburn (1995).

influenced by the distribution of earnings. This means that countries with a wide distribution of income are also likely to be those where the returns to education are highest – because education gives access to jobs which are even more highly paid (relative to other jobs) than is the case in countries with a narrower distribution of income. However, if income affects access to education – because of capital market constraints, as described previously, or because rich parents can choose to live in neighbourhoods with good schools – then ability to take advantage of the high returns to education will be limited to children of richer households (Corak, 2006; Solon, 2004; Beller and Hout, 2006). As shown in Figure 2 above, there is indeed (weak) evidence of a positive relationship between the intergenerational earnings elasticity and the returns to education. Hence, income inequality at a point in time and a strong correlation in incomes (earnings) across generations can reinforce each other. [76] However, there are other possible explanations of the correlation between mobility and low static income inequality as returns to education and income inequality also reflect institutional characteristics, so that these relations are more complex in reality: for example, a more compressed earnings distribution, higher minimum wages and broader bargaining coverage all contribute to lower returns to education (and plausibly to lower cross-section income inequality). A better understanding of these phenomena might provide useful insights for the study of patterns of earnings mobility across generations (Solon, 2004; Corak, 2006).

Figure 3. Association between income inequality and intergenerational income elasticity



Source: Data on intergenerational earnings elasticity are based on the same sources as those reported in Figure 1. Data on the Gini coefficient on income inequality are from previous issues of OECD, *Society at Glance*.

81. Corak (2004) shows that both the intergenerational earnings elasticity (parameter β) and the degree of income inequality in a point in time determine the advantages that children from better-off families can expect to have in the next generation relative to those from low-income families. [77] Table 3 shows how these income advantages evolve over time under the assumption that the ratio between the

76. Aaronson and Mazumder (2005) suggest that an explanation for the similarity between the patterns of intergenerational mobility and cross-sectional inequality may lie in the fact that the intergenerational earnings elasticity is affected by changes in the variance of income over time.

77. Indeed, the intergenerational elasticity of incomes directly translates the ratio between the incomes of parents of two different backgrounds (say high-income, *H,* and low-income, *L*) into this quantity (Corak, 2001a, 2004). This relation can be derived by: *(i)* taking the antilog of the deterministic part of the equation used to estimate β (see Box 5); and *(ii)* subsequently by taking the ratio between the children's incomes of the two backgrounds and is written as follows: $Y_{i,t} = \exp(\alpha) \times \exp(\beta LnY_{i,t-1}) = \exp(\alpha) Y_{i,t-1}{}^{\beta} \quad i = L, H$; $\rightarrow \frac{Y_{H,t}}{Y_{L,t}} = \left(\frac{Y_{H,t-1}}{Y_{L,t-1}}\right)^{\beta}$.

incomes of families with children at the lower boundary of the top quintile and those of families with children at the upper boundary of the bottom quintile –i.e. the D80/D20 for families with children – increases from a value of 2.75, in the late 1970s, to a value of 4 in the mid to late nineties (see Corak, 2001a; 2004). A closer look at Table 3 suggests that: (*i*) with unchanged income inequality, a low intergenerational mobility implies higher economic advantages to the children of better-off parents. For example, a D80/D20 of 2.75, and an intergenerational elasticity coefficient of 0.5, imply that children from higher-income families would earn 1.66 times more than children from lower income families. If the intergenerational elasticity increases from 0.5 to 0.8, children from the higher income families would earn 2.25 times more than the children from lower-income families. (*ii*) For a given intergenerational income elasticity, a higher income inequality implies an increase in the economic advantages for the children of better-off parents. For example, for a D80/D20 income ratio of 2.75 and an intergenerational elasticity of 0.5, the children of better-off parents would earn 1.22 times more than the children of lower-income parents; while for a ratio of 4.00, the economic advantage to the children of the better-off parents would increase to 1.32. (*iii*) The economic advantages to children of better-off parents increase faster, the higher the intergenerational income elasticity. For example, with an intergenerational elasticity of 0.6, and an income ratio D80/D20 moving from 2.75 to 4, the advantage would rise from 1.83 to 2.30; while with an intergenerational elasticity of 0.3, it would increase from 1.35 to 1.52.

Table 3. Intergenerational elasticity and income inequality: an illustration

	Values of β									
	0	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Late 1970s (Income inequality = 2.75)	1.00	1.22	1.35	1.50	1.66	1.83	2.03	2.25	2.49	2.75
mid to late 1990s (Income inequality = 4.00)	1.00	1.32	1.52	1.74	2.00	2.30	2.64	3.03	3.48	4.00

Note: The table is drawn using the expression $\frac{Y_{H,t}}{Y_{L,t}} = \left(\frac{Y_{H,t-1}}{Y_{L,t-1}}\right)^{\beta}$. It is assumed that the intergenerational elasticity coefficient (β) varies from zero (perfect mobility) to one (complete immobility or persistence) and that income inequality evolves as follows: (1) the ratio of incomes for families with children at the lower boundary of the top quintile to those at the upper boundary of the bottom quintile was around 2.75, in the late 1970s; and (2) this ratio was around 4 in the mid to late nineties (see Corak, 2001a; 2004).
Source: Corak (2001a, 2004).

3.7 Summing up

82. The literature surveyed in this chapter suggests that income (from work, welfare and assets) persists across generations. The extent to which income is transmitted varies across countries, although no society is perfectly mobile or immobile: for example, intergenerational earnings mobility is highest in the Nordic countries, Canada and Australia, while it is lowest in Italy, the United Kingdom and the United States.

83. Although no consensus exists on this issue, there seems to be a relation between cross-section income inequality and intergenerational earnings mobility. To promote equality of opportunity might then require reducing current income inequality.

84. To explain cross-country differences in the extent of intergenerational income mobility, some authors have highlighted the role of education – its financing and its rewards – and of the degree of assortative mating. Other authors have suggested that patterns of mobility at the bottom and at the top of the income distribution and the extent of long-distance mobility also matter. For example, mobility is very low at the top and at the bottom of the income distribution in many OECD countries. The combined effect

of higher wealth accumulation at the top and persistence of poverty at the bottom might thus deepen inequalities and strengthen social cleavages.

85. Table 4 summarises the contribution of several factors to the transmission of income across generations. It suggests that the influence of schooling and wealth is very large: highly educated and wealthy parents, with higher income, are more likely to have children with high income. If parental income matters, other parental characteristics matter as well. These results underscore that the effect of tight borrowing constraints (in low-income families) may matter more when they are combined with other types of family background disadvantage (related for example to low education and non-employment) and in turn lead low-income parents not to invest optimally in their children's human capital. In fact, the literature highlights that some other characteristics of the parents (e.g. their health, race and personality) and of the household (such as family size and structure) also serve to determine the life chances of children: poverty risks, joblessness and lack of education are likely to cumulate and drive individuals more easily to social exclusion.

86. Clearly, the survey of this literature also suggests that the family should be regarded as an important social policy institution. But families and family resources are heterogeneous. There is, thus, the need to understand all the aspects of family background, which are correlated or uncorrelated with parental earnings or incomes, and that are important in explaining the influence of the family on intergenerational mobility (Solon, 1999). Among these, the mechanisms that contribute to transmit parental education, occupations, values, beliefs and attitudes across generations seem to be critical. The next chapter looks into these issues.

Table 4. Some of the channels underpinning intergenerational income mobility: what the evidence says

Variable	Effect Size	Effect +/-	Examples	
Education: Own schooling or Parental Education	Large and significant	+(*)	Blanden *et al.* (2006); Osborne (2005); Bowles *et al.* (2005); Rumberger (2006); Blanden (2005a); Piraino (2006)	Differential levels of education – measured by years of schooling – explain between 35 and 50% of intergenerational income correlation across countries (Blanden,2005a)
Wealth	Large and significant	-	Bowles and Gintis (2002a; 2002b); Bowles *et al.* (2005); Boehm and Schlottmann (1999, 2001); Mazumder (2001, 2002; 2005); Askew *et al.* (2001)	Wealth accounts for more than 30% of the intergenerational income correlation in the United States (Bowles and Gintis, 2002a)
Social conditions Male unemployment rate measured at childbirth, Economic activity rate measured at childbirth	Significant and large Significant and large	-(*) +(*)	Palmer (2002);Hertz (2006); Bowles and Gintis (2002a)	Unemployment rates in the local environment at son's birth decrease his permanent wages; a 1% increase in the proportion of unemployed men at the local authority level in 1974 leads to a 1.7% decrease in son's 1991 wages.
Cognitive abilities IQ	Small and significant	-	Bowles and Gintis (2002a); Bowles *et al.* (2002); Blanden *et al.* (2006) ; Rumberger (2006); Osborne Groves (2005a)	IQ inheritance contributes very little (1-2%) to intergenerational income transmission (Bowles and Gintis, 2002a,b)
Other than IQ: Test scores in mathematics and science; Writing at age 5; Mathematics at age 10;	Significant and large	-	Blanden *et al.* (2006), Rumberger (2006)	Writing at age 5 and mathematics at age 10 concur to explain around 14% of the intergenerational earnings mobility (Blanden *et al.* 2006)
Other inherited traits Similarities measured among identical twins and fraternal twins	Significant and large	-	Bowles and Gintis (2002a; b);	Though the contribution of IQ is small, genetic factors contribute to around 22% of the intergenerational correlation of income.
Genetically inherited traits other than cognitive skills, (e.g. race)	Large and significant	-	Bowles and Gintis (2002a); Hertz (2005a); Hertz (2006) Mazumder (2001, 2002); Harding *et al.* (2005);	These traits are found to matter. Mobility is lower for Blacks than for Whites (the elasticity shifts from .27 to .49 in Mazumder (2002).
Non-cognitive abilities (and personality traits) Locus of control and self-esteem; Aggressive behaviours, anxiety at age 10;	Significant and large	+(*) -(*)	Blanden *et al.* (2006), Osborne Groves (2005a); Bowles *et al.* (2005); Bowles *et al.* (2002)	Non-cognitive abilities explain around 18% of the income transmission across generations (Blanden *et al.* 2006)
Health status Child birth-weight and height; Child's Mental illness; Parental health problems such as cancer, chronic bronchitis, asthma, allergy	Significant Significant and large	+(*) -(*)	Blanden *et al.* (2006); Eriksson *et al.* (2005); Case and Paxson (2006a); Case *et al.* (2004)	Conditioning on parental health status increase earnings mobility by 27% for sons (Eriksson *et al.*, 2005)

What explains the correlation of incomes across generations? (cont'd)

Variable	Effect Size	Effect +/-		
Family size and structure:	(few studies)		Grawe (2005a); Lindahl (2002); Mazumder (2001); Rumberger (2006); Harding *et al.* (2005); Björklund *et al.* (2004); Anderson and Leo (2006); Björklund and Chadwick (2003)	Intergenerational elasticity is up to 14% higher than the average elasticity for first-born and up to 12% lower than the average for last-born children (Lindahl, 2002). Also, sons of divorced couples are less mobile than their peers from intact families ; differences in educational attainment play an important role in explaining the variations in earnings correlations conditional on divorce (Björklund and Chadwick 2003).
Unique children	Significant	-		
Later born siblings	Significant	+		
Single parent	Significant	+		
Divorced parents	Significant	-		
Assortative mating	Large and significant	-	Lam and Schoeni (1993) ; Chadwick and Solon (2002); Harding *et al.* (2005); Hirvonen (2006); Holmlund (2006) ; Ermisch *et al.*(2006); Blanden (2005b); and Blanden, (2005c)	The higher the degree of assortative mating, the lower is mobility. Ermisch *et al.* (2006) show that in the United Kingdom, on average, about 40–50% of the covariance between parents' and own permanent family income can be attributed to the person to whom one is married.
Labour market attachment such as time spent not in education or in unemployment	Large and significant	- (*)	Blanden *et al.* (2006)	Explains a significant part of income and earnings mobility and significantly decreases sons' earnings.
Migrant status	Significant	--	Bauer (2006); Card *et al.* (2005); Borjas (2004); Hertz (2005a); Aydemir *et al.* (2006)	In Canada, differences in the extent of intergenerational income mobility of natives and immigrants are very small; in the Unites States, Sweden, Switzerland, mobility is higher among natives
Policies				
Educational (such as shifting the age at which the ability of students are streamed, or subsidizing education)	Large and significant	+	Pekkarinen *et al.* (2006); Holmlund (2006); Hanushek *et al.* (2004); Seshadri and Yuki (2004); Oreopoulous *et al.* (2006)	The Finnish reform of education of 1972-1977, which shifted the age at which ability were streamed (from 10 to 16) and imposed a uniform academic curriculum, has implied, approximately, a 20% decrease in the intergenerational elasticity from the pre-reform average of 0.30 (Pekkarinen *et al.*, 2006)
Reducing income labour taxes on the poor	Unclear		Hendricks (1999)	

Note: The third column reports the direction of the effect on intergenerational income mobility that is associated with the variable reported in the first column. A negative sign implies that the variable negatively affects the extent of intergenerational mobility (i.e. mobility is lower and intergenerational income elasticity is higher); a positive sign implies that the variable positively affects the extent of intergenerational income mobility (i.e. mobility is higher and the intergenerational income elasticity lower). An asterisk (*) next to the +/- sign implies that the effect reported is on the son's earnings. Indeed, while in many situations effects on son's earnings and on intergenerational earnings mobility are in the same direction, in other situations this association is not straightforward. For example, a negative effect of the unemployment rate (at the time of his birth) on son's earnings does not necessarily imply that the relation between son's and father's earnings is weakened or strengthened. Indeed, the elasticity β simply represents the extent to which income differences with respect to the average in the parent's generation are passed on to the offspring's generation.

CHAPTER 4: INTERGENERATIONAL MOBILITY OF EDUCATION, OCCUPATION AND PERSONALITY TRAITS

4.1 Introduction

87. This chapter surveys the evidence on the transmission of education (section 4.2), occupation (section 4.3) and personality traits (4.4) across generations as they are correlated with the socio-economic status of individuals and capture factors that go beyond the monetary content of incomes and earnings (Johnson, 2002; Goldberger, 1989). By creating private and social benefits, education is a central component of social stratification and, at the same time, a correlate of opportunity and inequality within and across generations (Machin, 2006a, 2006b). Occupational status is also important as it correlates withlong-term socio-economic status of individuals and it less subject to transitory shocks than incomes (e.g. Nickell 1982; Johnson 2002; Ermisch and Francesconi 2001, 2002). Finally parents' personality traits, their values and beliefs may also affect work attitudes and through this, the earning's capacity of their children.

4.2 Intergenerational transmission of education

88. The processes that shape the distribution of education across generations is an important determinant of educational inequality (Jencks *et al.* 1972; Featherman and Hauser 1978; Mare 1981, 2001). Education is, more generally, one of the major channels underpinning the intergenerational transmission of socioeconomic status as it mediates the influence of several other factors such as income or occupation (Feinstein *et al.*, 2004; Feinstein, 2006). Overall, the literature reports that educational attainment and qualifications are significantly correlated across generations (section 4.2.1). The most important question that researchers have been trying to answer is whether this is because of genetic inheritance, or whether it is because of different behaviours (e.g. are more educated parents on average more effective parents?) The conclusion reached by most studies is that both inherited abilities and family background contribute to explain intergenerational transmission of educational outcomes (section 4.2.2 and 4.2.3). Also the way in which schooling is organised, can matter a lot (section 4.2.4).

4.2.1 Cross-country evidence

89. Several methods have been applied to produce estimates of the intergenerational correlation of educational outcomes.[78] Despite this diversity, the evidence is robust: educational outcomes persist across generations.[79]

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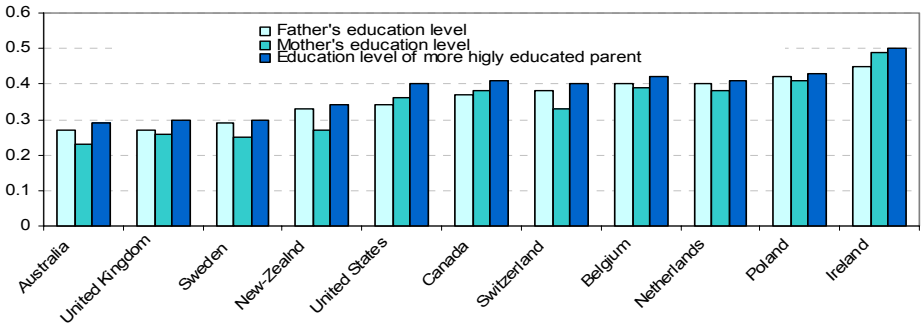
78. The relation between educational achievements, occupational attainment and mobility processes has been much studied (Parsons, 1959; Alexander and Eckland, 1975; Blau and Duncan, 1967; Thomas *et al.*, 1979; Wolfle, 1985). Socioeconomic and family variables (Blau and Duncan, 1967; Eckland and Alexander, 1980), academic ability (Sewell and Shah, 1967) and aspirations (Sewell and Hauser, 1975; Trent and Medskar, 1968) are key factors in the theoretical models. Originally, intergenerational mobility of education was estimated with linear regression models where the dependent variable was continuous, i.e. it was represented by either the number of years of schooling or the individual probability of continuing schooling at different levels (or grades) completed (Blau and Duncan 1967; Sewell and Hauser 1975; Hauser and Featherman 1976; Bourdon 1974). Later studies used a framework of educational attainment based on discrete variables (Mare, 1981; Shavit and Blossfeld 1993). Both these approaches have

90. Figure 4 shows one measure of the relationship between educational outcomes of parents and of their children, i.e. the Spearman rank correlation coefficient between (post-secondary) educational attainment of parents and that of their children, as presented in de Broucker and Underwood (1998). These correlations use data from the International Adult Literacy Survey (IALS) to compare intergenerational education mobility in a group of OECD countries in the mid 90s and suggest that educational outcomes persist across generations, but the strength of this association varies across countries; for example it is strong in Ireland and very weak in Australia. Correlations are also higher for parents with the highest level of education and for fathers more than for mothers.[80]

Figure 4. Intergenerational correlation of educational attainment



Note: The height of each bar corresponds to the rank correlation coefficient quantifying the relation between the respondent's educational attainment and that of his/her parent. For Belgium, data refer to Flanders. Data for Canada, Germany, The Netherlands, Poland, Sweden, Switzerland and the United States refer to the year 1994. For Australia, Belgium (Flanders), Ireland, New Zealand and the United Kingdom the data refer to the year 1996.

Source: de Broucker and Underwood (1998).

91. Figure 5, based on the Programme for International Student Assessment (PISA) database for the year 2003, presents another measure of the influence of parental schooling on children's educational attainment – i.e. the average point-difference in mathematics test scores of students aged 15 that is associated with one year of additional schooling of the parents. It also suggests a positive relation between parental education and educational performance of their children. This effect is highest in Hungary, the

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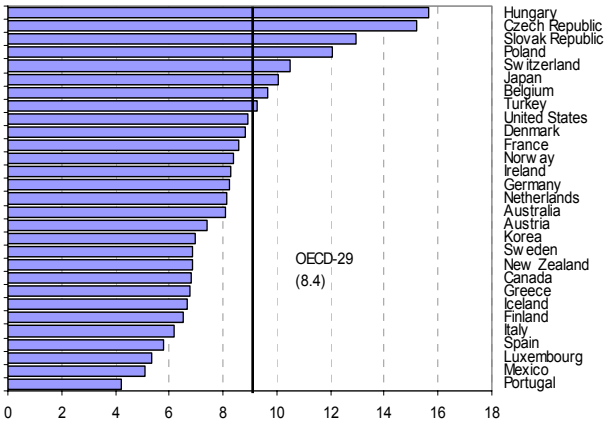
theoretical and methodological problems. Simple OLS estimates of the effect of parental education on child's schooling are (upward) biased as they ignore intergenerational transfers of ability and the extent of assortative mating. They also only provide snapshots of the population at a given point in time, and thus are not useful for analysing the dynamics of mobility. Furthermore, those models do not deal appropriately with unobserved heterogeneity and with the fact that educational transitions are not always sequential. The most recent studies use more sophisticated approaches to deal with these issues (e.g. Breen and Jonsson, 2000; Belzil and Hansen, 2003; Jaeger and Holm, 2003). They also try to identify the causal and the non-causal mechanisms that lie behind the intergenerational transmission of educational attainment.

79. Differences emerge among same sex siblings and twins. For example, same-sex sibling correlations are typically around 0.3-0.5 and as high as 0.7 for identical twins in the United States.

80. An international comparison of intergenerational mobility of education is also presented in Foley (2006) and Checchi and Dardanoni (2002). See also, for the Unites States, Mulligan (1999); Hauser (1998); Behrman and Taubman (1989) and Card (2005) – Belzil and Hansen (2003) report a much lower correlation using a dynamic programming framework. For Norway, Rauum *et al.*, (2003, 2005); for Denmark, Jæger and Holm (2006); for the United Kingdom Dearden *et al.*, (1997); for Italy, Checchi *et al.* (1999), Checchi and Flabbi (2005). For an analysis of intergenerational mobility of education in Latin America see also Behrman *et al.* (2001).

Czech Republic, the Slovak Republic and Poland; it is lowest in Portugal, Mexico, Luxembourg and Spain.[81]

Figure 5. Average maths score point difference associated with one extra year of parents' schooling



Note: The height of each bar illustrates the increase in the average performance in mathematics of students aged 15 associated with an extra year of parental education.

Source: Secretariat computations based on data extracted from PISA (2003).

92. Chevalier *et al.* (2005), based on IALS data, investigate the extent of educational mobility between parents and their children distinguishing between two age groups: those aged less than 45 and those aged 45 and above. For the older cohort, the intergenerational correlation in education ranges from 0.20 in the United Kingdom to 0.55 in Belgium. For the younger cohort, the intergenerational correlation is lowest in Finland, Denmark and Canada while it is highest in the Czech Republic. The results do not suggest any clear trend concerning the evolution of this correlation over time: mobility increases in some countries (i.e. correlations decrease) but decreases in others (i.e. correlations increase). Similar results, based on the same data, are presented in de Broucker and Underwood (1998) and Foley (2004).

93. Several factors may explain patterns of intergenerational educational mobility and its evolution across countries. These include family background characteristics and also underlying structural differences in national economies, characteristics of the educational systems and related policies, or differences in the rewards to education.

4.2.2 Family background and children's education

94. The extent of intergenerational correlation of education may be influenced by family background. de Broucker and Underwood (1998) present a measure of the intergenerational educational mobility gap that summarizes the probabilities that individuals, whose parents have either less than upper secondary or completed postsecondary education levels, succeed in graduating from upper secondary school. According to them, this gap also measures the influence of the parental or inherited circumstances on the system's

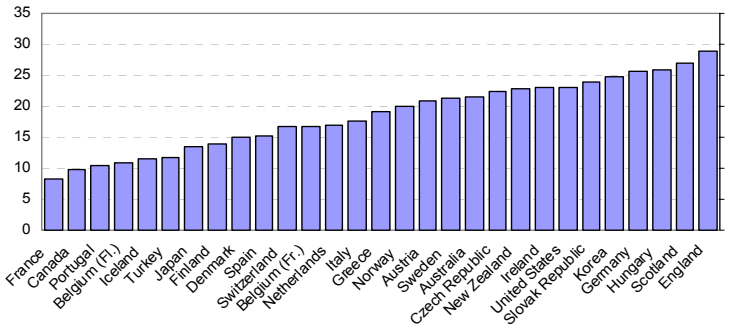
81. Evidence based on PISA (2003) also suggests that students with highly educated parents (either the father or the mother) achieve, on average, higher scores in mathematics than those whose parents have lower or medium education levels. Differences in achievement are larger for students whose parents have low levels of education. The gaps in achievement are very high in the Slovak Republic, Hungary, Czech Republic, Turkey, Germany, Poland and the United States. See also OECD (2004).

outcomes: the higher the gap, the higher the influence of parental education on the educational attainment of children. Based on this synthetic index, countries are ranked from the lowest to the highest in terms of mobility as follows: Australia, New Zealand, Sweden, Canada, United Kingdom, Belgium, United States, The Netherlands, Switzerland, Ireland and Poland.

95. Schütz *et al.* (2005), using data from the TIMMS (Trends in International Mathematics and Science Study) and its replication for a partly different set of countries (TIMSS-Repeat), quantify the cross-country link between educational performance (measured by average math and science test scores of each student) and the family background (approximated by the number of books at home reported in discrete categories).[82] The estimated parameter, the so-called "Family Background Effects"(FBE), shows by how much moves from one category to the next in the number of books at home change the test scores in each country. This family background effect is interpreted by the authors as a measure of inequality of opportunity. Figure 6 reports its estimates for twenty-nine OECD countries and suggests that the effect of parental background is strong although cross-country differences are large. The FBE is largest in England, Scotland, Hungary, Germany, Korea and the United States; and lowest in France, Canada, Portugal and the Flemish part of Belgium.

Figure 6. Estimates of the family background effect measured with the number of books at home

Selected OECD countries



Note: The height of each bar represent the estimate of the Family Background Effect measured with the number of books at home. For example, consider the estimated FBE for the United States of 23.1. A one-point difference in the family-background proxy – e.g., the difference in social background that is equivalent to the difference between having one bookcase and two bookcases of books at home – implies a difference of 23.1 percent of an international standard deviation in test scores for American students.
Source: Based on coefficient estimates in Schütz *et al.* (2005).

96. Another comprehensive measure of family background is shown in Figure 7 and reports the average score differences for students whose parents are, respectively, in the bottom and the top quarters of the index of "economic, social and cultural status" – i.e. the ESCS– and suggests that children from more favourable backgrounds perform better (OECD, 2004).[83] On average, the difference between the scores of students from low-status and high-status background is equivalent to more than two grades.[84] Gaps are especially high in Belgium, Hungary, Germany, the Slovak Republic and Turkey. Overall, the changes in mathematics scores associated with a one-unit change in the index of economic, social and cultural status

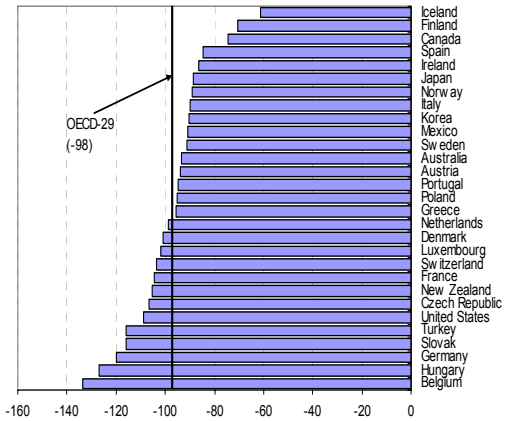
82. See also Mullis *et al.* (2000).

83. OECD (2004) highlights that the relation between the ESCS index and educational performance is affected by how well education systems are performing and by the extent of dispersion of the economic, social and cultural factors that make up the index.

84. The average score difference may be converted into an average number of grades/year as one school year corresponds to an average of 41 score points on the PISA mathematics scale (OECD, 2004).

are lowest in Iceland, Portugal and Mexico (corresponding to .70 of a grade), while they are highest in the Czech Republic, the Slovak Republic and Belgium (corresponding to around 1.25 grade).

Figure 7. Performance gaps in mathematics for students in the bottom and top quarter of the index of Economic Social and Cultural Status



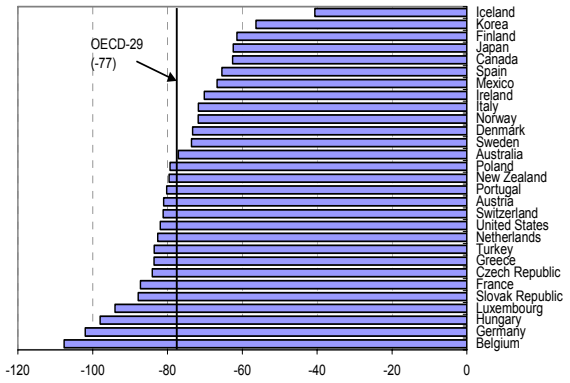
Note: The index of economic, social and cultural status – ESCS – covers the highest International Socio-Economic Index of Occupational Status (ISEI) of the parents or guardians, the highest level of education of the parents converted into years of education, an index of the educational resources in the home (e.g. a desk to study at home) and the number of books at home.

Source: Secretariat computations on data extracted from PISA (2003).

97. Several family background characteristics concur to shape children's educational outcomes. The rest of this section, based on purely descriptive evidence drawn on PISA (2003), presents some of these.

- Occupational status of the parents. Figure 8 illustrates the differences in the average mathematics' scores of students whose parents have different occupational status (measured with the international socio-economic index of occupational status, i.e. the ISEI). Gaps refer to the difference between the scores achieved by students whose parents are in the bottom quarter of the index and those of students whose parents are in the top quarter of the index. On average, children whose parents have higher occupational status perform better. The average gap (i.e. -77 points on a 500-point standardised scale) corresponds to around two years (grades). Gaps are highest in Luxembourg, Germany, Hungary and Belgium, where students whose parents have the highest-status jobs score, on average, about as well as the average student in Finland – the best-performing country in PISA (2003) across mathematics, reading and science. In contrast, in the same countries, students whose parents have the lowest-status jobs score a little higher than students in the lowest performing countries in PISA (e.g. Greece, Italy, Mexico and Turkey).

Figure 8. Score differences in maths for students with parents in the bottom and top quarter of the index of occupational status

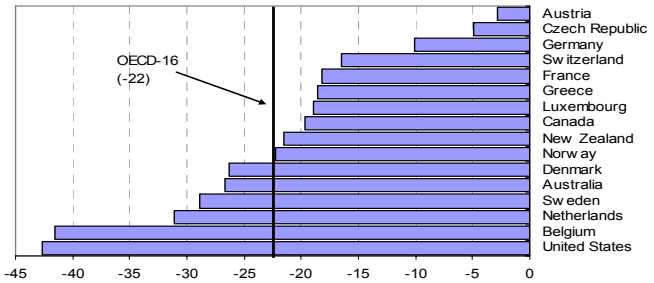


Note: The height of the bar measures the difference between the scores achieved by students whose parents are in the bottom and the top quarters, respectively, of the international socio-economic index of occupational status – HISEI – index. The average reported is unweighted and may differ from the weighted average reported in OECD (2004).

Source: Secretariat computations based on PISA (2003).

- Single-parent families. Figure 9 illustrates differences in educational performance for students raised in single-parent households as compared to those living in other households. Students in single-parent households score, on average, worse than those living in other households, with the average difference (-22) equivalent to half a year (grade). Only in Austria is the performance of students from both types of households similar; by contrast, in Belgium and the United States students living in single-parent households have performance equivalent, on average, to one year (grade) less than those of students living, for example, in couple-households.

Figure 9. Score differences between students living in single-parent and other forms of households

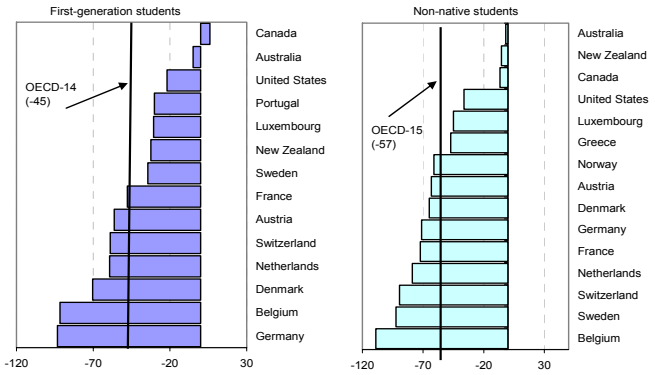


Source: Secretariat computations on data from PISA (2003).

- Migrant status. Native children score better than non-native and first-generation students. Figure 10 compares maths performance of native students (i.e. students born in the country with at least one parent born in the country) with those of first-generation students (i.e. born in the country with parents born abroad) and non-native students (i.e. students born abroad whose parents are both born abroad). For both first-generation and non-native students, the average gap, relative to natives, is equivalent to one year-grade. First-generation students report an achievement gap in almost all OECD countries, with the exceptions of Canada and, to a lesser extent, Australia and New Zealand. For non-native students, the gaps are marginal in Canada, while they are higher

than for first-generation students in most countries. This may be a concern in countries where the share of either first-generation or non-native students is high (e.g. Germany, France, Belgium and the United States).[85] Some multivariate studies have also investigated the extent of intergenerational education mobility between natives and immigrants, but the results are mixed (Box 8).

Figure 10. Score-differences in mathematics between natives and either first-generation or non-native students



Source: Secretariat computations on data extracted from PISA (2003).

Box 10. Intergenerational correlation in education between natives and first- and second-generation immigrants

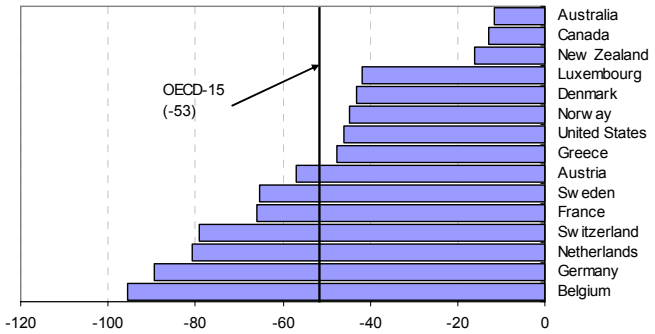
Several studies have analysed the extent of intergenerational correlation of education between natives and either first-generation or second-generation immigrants with theoretical and empirical models. Chiswick (1988), based on Becker (1967), formulates an optimal schooling model to explain ethnic differences and argues that factors, beyond discrimination and "tastes", might explain educational performance in different ethnic groups (see also Coleman 1988). Borjas (1992, 1995) highlighted the role of ethnic capital acting as an externality in the child investment model. Gang and Zimmerman (2000) formulate a model of ethnic origins and educational attainment to explain intergenerational educational mobility of migrants and natives in Germany. In their model, father's labour supply is exogenous, while mother's labour supply is endogenous and the educational attainment of the child enters the utility function of the parents. Gang and Zimmerman (2000) report that the educational level of first-generation immigrants has no effect on the educational attainment of their children while parental education matters for the children of the natives. Moreover, father's education matters more than mother's education for Germans. Ethnicity matters for second-generation immigrants, and the ethnic network's size has an inverted U-shaped effect on the number of year of schooling and schooling level. For example, a 2nd generation Turkish woman has 7 years less of education than her German counterpart. Riphahn (2003), analyzing the educational attainment of German-born children of immigrants, finds that the educational outcomes of second-generation immigrants are significantly below that of natives and that the educational gap between them also widens over time. For Germany again, Dustmann (2005) reports that educational outcomes of immigrants are not correlated across generations, while Frick and Wagner (2000) report the opposite result. Van Ours and Veenman (2003), comparing the educational outcomes of second-generation immigrants both with first-generation immigrants and with natives in the Netherlands, conclude that differences in educational attainment are largely driven by the differences in parental education rather than by ethnicity. For Switzerland, Bauer and Riphahn (2006) argue that intergenerational mobility is higher among immigrants (especially second generation) than among natives. For Denmark, Nielsen *et al.* (2003) report that second-generation immigrants are educationally more mobile than natives.

85. Lower achievement gaps for both non-native and first-generation students may result from policies aimed at removing barriers to educational achievement of immigrants and from actions taken by parents. The differences in the achievement scores may also result from the selection rules applied by the single countries to choose their immigrants.

For the United States, Card (2005) reports that the strength of intergenerational transmission of education is about the same for families of immigrants as for other families (see also Card *et al.,* 2000). Borjas (2006) argues that a significant economic "catching up" has occurred between the first and second generation, although half of the differences between ethnic groups persist across generations. Similar results are presented in Myers *et al.* (2006) that further distinguish the households where only one parent is immigrants from those where both parents are immigrants. Nguyen *et al.* (2005) report that Hispanic and Black students have experienced an important upward mobility in education because they are far more likely than their parents to graduate from high school, but their educational achievement lies far behind that of whites. Also, there are substantial disparities in educational and occupational mobility across ethnic groups (and gender). Finally, intergenerational correlation of education is much stronger for whites than for Blacks or Hispanics (see also Loury, 2005). For Canada, Worswick (2001) argues that, by the age of thirteen, the school performance of immigrants' children is at least as good as that of children of natives (see also Worswick, 2004). Similar results for Canada are reported in Hansen and Kucera (2003) and Boyd (2002).

- Language spoken at home. Figure11 suggests that students who do not speak the local language at home display an achievement gap corresponding on average to (more than) one year grade.[86] The performance gap due to language is largest in Belgium and lowest in Canada, Australia and New Zealand.

Figure 11. Score maths differences according to the language spoken at home



Note: The height of the bars corresponds to the difference in mathematics score between students who speak a language different from the local one at home and those that speak the local language.

Source: Secretariat computations on data extracted from PISA (2003).

98. In sum, this descriptive evidence suggests that several family background characteristics contribute to shape children's educational attainment and thereby to strengthen or weaken the intergenerational correlation of educational outcomes.[87] Therefore, to identify the different mechanisms, causal and non-causal, that underpin the transmission of education is an important research topic.

4.2.3 Going beyond correlation

99. The recent literature on intergenerational education mobility attempts to go "beyond correlations". Thus, it seeks to separate the part of the relation between parents' and child's education that is

86. Bleakley and Chin (2004), for the United States, Casey and Dustmann, (2005) for Germany, Worswick (2001) for Canada, all provide evidence of the negative effects on later children's outcomes, beyond education, of lower language proficiency.

87. Recent studies also underscore environmental effects (quality of the schools or of the neighbourhood) among the factors that matter for the transmission of education across generations (Patacchini and Zenou, 2004). See also Oreopoulos *et al.* (2006).

due to inheritable endowments from the part that reflects the knowledge and skills obtained through education. For example, Belzil and Hansen (2003) suggest that household background variables (especially parents' education) account for 68% of the explained cross-sectional variations in schooling attainments, while ability correlated with background variables accounts for 17% and pure individual-specific ability accounts for 15%.[88] This task, which is not easy as the different components may reflect causal and non-causal links, is however important for the design of policies aimed at reducing inequality since causal and non-causal mechanisms may underscore the need for different policies (see e.g. Black *et al.*, 2004; Hanushek *et al.* 2004, Harding 2003; Breen and Jonsson, 2005). For example, correlation between parental and children's education may result from genetic resemblance or better parenting styles.

100. Recent studies have developed and applied many empirical strategies to identify causality links; these studies tend to suggest that both inherited ability and family characteristics contribute to shaping the links between the educational outcomes of parents and those of their children (Box 11).

Box 11. Empirical strategies to identify causality links between parental and children's education

The main approaches applied to identify the causal effect of parental education on children's educational outcomes are as follows:

- *Proxy variables*. This approach identifies those characteristics (e.g. cognitive and non-cognitive abilities) shared by parents and their children that are not caused by parental education. Typically, these studies focus on cognitive skills and use observed variables to proxy the IQ (e.g. the AFQT scores in Herrnstein and Murray, 1994). The effect of parental characteristics is estimated conditional on the observed variable.

- *Identical twins (or siblings)*. This approach relies on family relatives who have similar genotypes to eliminate the effect of unobserved determinants. Behrman and Rosenzweig (2002) control for unobservable genetic effects using pairs of twin parents and comparing the educational choices of their respective children (see also Rosenzweig and Wolpin 1994; Currie and Moretti, 2003). Findings are quite sensitive to the coding of the data (Antonovics and Goldberger, 2003) and to measurement errors (Griliches, 1979).

- *Instrumental variables or natural experiments*. Both previous approaches do not eliminate the non-genetic endogeneity deriving from unobservable characteristics in educational choices that are correlated with parenting skills. In this alternative framework, the analysts exploit exogenous variations in parental education that are unrelated to the factors likely to affect the educational attainment of the offspring. For example, educational reforms (e.g. extensions of compulsory schooling or the school-leaving age) have proved to be good instruments (Chevalier 2004 for the United Kingdom; Oreopoulos, 2003b and Oreopoulos *et al,* 2006 for the United States; Black *et al.,* 2004 for Norway). For example, based on this approach, Oreopoulos *et al.* (2006) find a strong link between parental and children's outcomes. Black *et al.* (2004), conclude that both family characteristics and inherited ability matter in generating the link between educational achievement of the parents and that of their offspring (see also Magnuson, 2003).

- *Adoption design*. This approach is typically adopted in behavioural genetics (Plomin *et al.*, 2001) and exploits combinations of genetic and social relations to eliminate the effect of unobserved determinants. Based on this approach, Plug (2004) finds that parental education affects the educational attainment of adopted children, but the impact is lower when assortative mating is taken into account. Björklund and Richardson (2001) find that parental education has negligible effects on schooling among (foreign born) adopted children in Sweden; while Sacerdote (2002) concludes that the socio-economic status of the parents has a causal effect on educational attainment in United Kingdom (NCDS data) and the United States (see also Sacerdote, 2004). This approach is not free from problems, however. For example, selection bias may be important if the matching of children with adoptive (biological) parents depends on characteristics correlated with parental education.

88. See also Jaeger and Holm (2003) and Kamerman *et al.,* (2003).

4.2.4 Institutions and educational mobility

101. Institutional settings and the specific features of educational systems also matter for intergenerational educational mobility.[89] The difficult question is whether policies aimed at reducing education inequality have helped to reduce inequalities in educational attainment and to increase mobility or, conversely, have reduced mobility while increasing income inequality (see for example Checchi, 2001; Dearden *et al.*, 2005; Checchi et al, 1999; Machin, 2004, 2006b; Woesmann, 2004).[90]

102. Checchi *et al.* (1999), comparing intergenerational educational mobility in the United States and Italy, conclude that mobility is higher in the United States. They argue that education systems that are too egalitarian may affect the extent of mobility through their effects on returns to education. For example, when the educational system compresses the distribution of education, the distribution of income is also likely to be narrower and returns to education to be low; and, with low returns low-income parents may have not enough incentive to invest in their children's human capital.[91] By contrast, Chevalier *et al.* (2005), comparing cross-country education mobility, report that countries with egalitarian educational systems also enjoy greater educational mobility (see also Foley, 2004).

103. Other studies have looked more directly at the impact of reforms in the educational system on educational mobility. Holmlund (2006) shows that the educational reform implemented in Sweden in the 1950s, which postponed ability tracking and extended compulsory education from seven to nine years, reduced the intergenerational correlation of educational outcomes (and also of incomes). Holzer (2006), who analyzes to what extent the rapid expansion in higher education occurred in Sweden in the 1990s has made the choice of attending it less dependent on family background, concludes that educational association between parents and their youth grew less in the geographical areas of the regional university colleges than in Sweden as a whole. Holzer (2006) also documents that the expansion in higher education generated higher mobility in Sweden except for the group with the lowest educated parents. Bauer and Riphahn (2006) conclude that, in Switzerland, early tracking strengthens "the relative advantage of children of highly educated parents" (see also Shütz *et al.* 2005; Checchi and Flabbi, 2005; Blanden *et al.*, 2004, Blanden *et al.*, 2005b).

104. Institutions, macro-economic conditions and the characteristics of the educational system may also affect some characteristics of the household and of the parents that matter for children's educational outcomes. To investigate this issue, Schütz *et al.* (2005) carry out a multivariate analysis where the age of first tracking in school, enrolment in pre-school education (and its square) and the duration of pre-school education are used as potential determinants of the size of the family background effect; [92] the model also

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89. To rely on cross-country comparisons on this issue is not free from problems as countries differ considerably in the historical development of their educational systems and in the educational options available to the members of the cohorts studied when they were of school age (e.g. see Shavit and Blossfeld, 1993; Chevalier *et al.*, 2005).

90. Policies aimed at raising education equality may contribute to reducing earnings inequality when they improve the opportunities for individuals in the bottom strata, (e.g. Blanden *et al.*, 2005b; Machin, 2004, 2006b; Woessman, 2004). Education policies may thus influence the degree of social mobility through the organisation of education systems that have implications for the distribution of social outcomes and welfare.

91. If the returns are high, the investment in human capital will have a high pay-off and therefore poorer families (with able children) would be more likely to invest. See Checchi and Flabbi (2005) for a comparison of Italy and Germany. See also Hout (2004).

92. To identify the estimated equation, Schütz *et al.* (2005) assume that "any unobserved cross-country heterogeneity that may exist is unrelated to the size of the FBEs". Their preferred model includes (1)

includes educational expenditure per student, the share of private funding of education, the gross national income (GNI) per capita and the country-specific mean test-score performance. The coefficients' estimates for OECD countries suggest that age of first tracking is inversely related to the family background effects (FBEs). This implies, for example, that the earlier an education system tracks its students into different types of schools according to their ability, the more unequal are educational opportunities (around one third of the point difference in the FBE between Austria, Germany, the Slovak Republic and Canada, Portugal and France might be related to their different tracking policies). The authors also report an inverted U-shaped relationship between FBE and pre-school enrolment and that the size of the FBE increases with private expenditure and decreases with private enrolment. Finally, the authors argue that these features of the education system can jointly account for 40 percent of the cross-country variation in their estimated FBEs. Overall, their results suggest that institutions, in addition to family environment, play a role in shaping education mobility.[93]

4.2.5 Summing up

105. In sum, educational attainment persists across generations. This persistence is generated by the combined effect of education and other characteristics of the parents (such as occupation and culture) interacting with various institutions (such as the educational systems and the labour market). Based on PISA (2003), in Iceland, Portugal and Mexico mathematics scores are least affected by family background, while they are most affected by it in the Czech Republic, the Slovak Republic and Belgium – though the United States, Switzerland, Germany and Japan do not fare much better. Austria (close to France and New Zealand) occupies the median position.

4.3 Intergenerational transmission of occupational status

106. Several studies, especially in the sociological literature, have analysed the extent of occupational mobility – used as a proxy for social class mobility – across generations by looking at the relationship between an individual's occupation and that of his/her parents, after controlling for those factors that may affect it. The distinction between absolute and relative mobility (i.e. social fluidity) is very important in this framework. Indeed, changes in the distribution of occupations due to structural changes produce trends in absolute mobility (e.g., in the percentage of sons whose fathers were skilled manual workers who become professionals or managers). In contrast, social fluidity or relative mobility (e.g., the probability that a son of a professional father becomes a professional rather than a skilled manual worker is higher than the probability that the son of a skilled manual worker becomes a professional rather than a skilled manual worker) is independent of the marginal distributions of occupations.[94]

4.3.1 Cross-country evidence

107. The study of intergenerational mobility of occupations has a long tradition. For example, Hout (2004) notes that already in the 1920's some analysts observed that in the United States transmission of occupations was more likely to occur among high-status rather than low-status occupations, and that "occupational groups are far from being rigid, and the membranes between them are far from being

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variables measured both at the student level (the number of books measured at the student level) and at a country level; and (2) country fixed effects.

93. No variable controlling school quality is used in this model. It is, however, likely that also quality of teaching and of the school plays a role (see for instance Feinstein *et al.* 2004).

94. Some studies have supported the hypothesis of an inverse relation between social fluidity and the degree of between-classes economic inequality (see also Erikson and Goldthorpe 1992; Blanden *et al.* 2005b; Featherman *et al.*, 1975).

impenetrable" (Sorokin, 1927).[95] While most of the research on occupational mobility across generations considers individual countries, it allows a number of stylised facts to be identified (Box 12).

Box 12. Some stylized facts from research on occupation mobility from national studies

Erikson and Goldthorpe (2002) identify a number of stylized facts from the sociological literature on intergenerational occupations and social class mobility (see also Ganzeboom *et al.*, 1989):

- First, the association between class of origin and of destination is strong in all modern societies, in particular for men. This association remains after controlling for education and other variables that capture meritocratic factors (Marshall *et al.*, 1997; Breen and Goldthorpe, 1997; 2001).
- Second, the likelihood of experiencing intergenerational class mobility differs according to the occupation or class considered. They suggest that class-inheritance effects are stronger for employees, small employers, self-employed and farmers.
- Third, class mobility is relatively stable over time (e.g. Great Britain and Japan) or increasing. The evidence on such issues is more abundant in France (Vallet, 2001, 2004) while it is sparse for the United States and Sweden.
- Fourth, educational attainment is a crucial "mediating" factor on occupational mobility especially when measured by the highest level of education achieved (rather than by years of schooling). However, the role of education varies according to the occupation considered. For example, Ishida *et al.* (1995) suggest that education is irrelevant for mobility in some occupations such as small employers, self-employed and farmers. Education qualifications seem also more important for "long-range" upward occupational mobility rather than for mobility within a given occupation (Guzzo, 2002).
- Finally, there are various non-linearities in intergenerational transmission of occupations. Indeed, paths of transmission vary with ethnicity, number of siblings, neighbourhood and other characteristics of the households (see the different contributions in Loury *et al.*, 2005). Moreover, recent studies underscores that educational mating (i.e. similar educational achievements of partners) has strongly contributed to shaping occupational mobility is some countries (e.g. Ermisch *et al.,* 2006 for United Kingdom and Germany; and Nguyen *et al.*, 2005 for the United States).

108. International comparisons of occupational mobility are difficult because of differences in the occupation national classification schemes. Nevertheless, some studies have relied on a cross-country perspective. Lipset and Bendix (1959) argued that movements between manual and non-manual occupations were similar in France, Sweden, Germany, Japan and the United States in the 1920s. Blau and Duncan (1967), analysing occupational mobility for fathers and sons aged 20 and 64 in 1962, reported that the opportunities for mobility from the lowest social strata into the top stratum were higher in the United States than in other countries (a result also confirmed by Thernstrom, 1974; and Ganzeboom, *et al.,* 1991). Erikson and Goldthorpe (1992) investigated the absolute and relative rates of mobility across fifteen countries (twelve European countries, the United States, Australia, and Japan) with cross-section data (from 1960s and early to mid-1970s) and concluded that there were small differences between nations in their pattern and degree of fluidity. Kerckhoff *et al.* (1985), comparing the United States and Great Britain, highlighted that important moves from farming into white-collar occupations generated higher upward mobility in the United States; however, they argue that this outcome might be related to differences in the pace of economic growth rather than to changes in social structures. Checchi and Dardanoni (2002) compare intergenerational occupational mobility in a number of OECD countries with various mobility

95. The analysis of social mobility underwent a methodological redirection with the work of Erikson and Goldthorpe (1992) where they defined the core model of fluidity which included dimensions such as hierarchy, inheritance and sectors and they rigorously recoded occupation data in the EGP (Erikson, Goldthorpe, Portocarero) class-scheme.

indices, using the data collected by Treiman and Ganzeboom (1990).[96] The ranking based on average of those indices, sees the United States and the Netherlands as the most occupation-mobile countries, whereas Australia and Germany (based on the survey of 1978) are ranked among the immobile societies. Long and Ferrie (2006a, b) find that the United States exhibited higher fluidity in the occupation structure than Great Britain and they argue that this outcomes is related to the higher residential mobility prevailing in the United States in the past.[97]

109. Finally, the various contributions in Breen (2004) look at variations in social mobility over time (between 1970 and 2000), across eleven countries (including Britain, France, Ireland, West Germany, the Netherlands, Italy, Sweden, Norway, Poland, Hungary), using cross-country comparable occupation coding.[98] The main conclusions are that the: (i) rates of absolute mobility are more similar today across countries than they were in the past; (ii) rates of social fluidity still differ across countries; and (iii) rates of social fluidity tend to converge between men and women within each country. Breen and Luijkx (2004a, b), comparing rates of intergenerational mobility over time, argue that the share of mobile men has been fairly stable over time in several European countries, the main exceptions being Ireland and Poland, where it increased substantially, and Hungary, where it declined substantially (see also Breen and Jonsson, 2005).[99]

110. To sum up, the most recent evidence suggests that absolute mobility has been substantial in all industrialized countries – as economic growth and industrialization have fuelled the opportunities for children relative to their parents. Cross-country convergence in the rates of absolute mobility is also observed, as farming occupations have declined while occupations in (the top of) the service sector have increased almost everywhere. By contrast, relative mobility (i.e. fluidity) is rather stable over time and it differs across countries: the United States is at the median between the more fluid countries (Sweden, Canada, and Norway) and the most rigid nations (such as West Germany, Ireland, Italy and France).

111. It is worthy to note that the United States no longer appears as the "most mobile" country as it did in previous studies. One reason for this "apparent conflict" is that recent evidence is based for the first time, on cross-country comparable occupational coding.

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96. Treiman and Ganzeboom (1990) collected data from 31 mobility surveys in 16 countries and provide a consistent ordering of occupations based on social prestige. Two alternative measures of social prestige are included in the dataset: (1) the ISEI – International Status of Employment Index (ranging between 0 and 90) and the TREI index – Treiman's Standard International Occupational Prestige Scale – (ranging between 0 and 86), originally proposed by Treiman (1977). Checchi and Dardanoni (2002) also use these data to study cross-country differences in intergenerational educational mobility. The ranking of the countries is similar to that based on occupations, with Germany being among the immobile countries and the United States and the Netherlands among the most mobile.

97. See also Di Prete *et al.* (1997) and Di Prete (2002).

98. The data used in the project cover 117 mobility surveys over the period 1970 to 2000. The extent of social mobility has been also largely studied in many non-OECD countries. Examples include Bian (2002) for China, Bourguignon *et al.* (2003) for Brazil, Chan *et al*.. (1995) for Hong Kong; Titma *et al.* (2003) for the Soviet Union; and Louw *et al.* (2006) for South Africa.

99. See Hout (1988), in the same sense for the United States observed over the period 1972 – 1988. Jones *et al.* (1994) found a slight increase in fluidity in Australia but not in Japan (see also Ishida *et al.* 1991, Ishida 1993). A decline in fluidity is reported by Robert and Bukodi (2004) for Hungary. See also Park (2004) Phang and Lee (1996) on Korea.

4.4 Intergenerational transmission of personality traits, risks and attitudes

112. Research about the intergenerational transmission of values – the extent to which parents transmit personality traits, risks and attitudes – and of how parental values affect the childrearing practice – is crucial for a number of reasons.[100] First, while evidence about how preferences or beliefs are formed is still sparse, they critically shape parenting styles, health and family outcomes (Box 13). Second, these preferences may drive divergences between societies in the long-term. Finally, the transmission of beliefs and attitudes may matter for social policy to the extent that they lead to a "culture of dependence", which increases the likelihood of poverty for future generations (see Mulligan, 1997; Jencks, 1979).

Box 13. The inheritance of divorce: some evidence

Several studies report that children with separated or divorced parents have a higher risk of experiencing marital instability when they are adults. Most of these studies are national (for example see for the United States, Amato 1996, Bumpass and Sweet 1972, Glenn and Kramer 1987, Greenberg and Nay 1982, Keith and Finlay 1988, McLanahan and Bumpass 1988, Mott and Moore 1979, Mueller and Pope 1977, Pope and Mueller 1976, Teachman 1982, Wolfinger 1999; for France, Traag *et al.*, 2000; Villeneuve-Gokalp, 2003; for West Germany, Diekmann and Engelhardt, 1999; for Britain, Kiernan and Cherlin, 1999; and for Netherlands, Dronkers, 1997). However, Diekmann and Schmidheiny (2006) focus on the inheritance of divorce in a cross-country perspective based on data from the Family and Fertility Surveys for sixteen countries (including Austria, Belgium, Canada, Czech Republic, Germany, Hungary, Italy, Spain, Sweden, Switzerland and United States). The authors show that inheritance of divorce is strong everywhere, although the magnitude of this effect is much weaker now than in the past when controlling for cohabitation and the age at the start of the union leading to the marriage. They also find that cohabitation is more common among the children of divorced than of non-divorced parents, and that cohabitation increases the risk of divorce.

The inheritance of divorce may reflect several factors. One is that the marital disruption of parents reduces household's economic resources, thereby creating incentives for the children to leave home and marry early. Other explanations emphasize the stress generated by divorce, arguing that it pushes children to marry before they have acquired the skills necessary to fulfil a "spousal role". Other approaches stress that children growing up in households where parents have divorced, may develop "adverse" perceptions of the marital relationship, which make them more vulnerable to marital instability. Other factors that affect inheritance of divorce relate to the macro-environment and to the institutional and social settings. For example, the legal and financial barriers to marital disruption play a role in the extent to which divorce is reproduced across different generations (Engelhardt *et al.,* 2002). Cultural and societal norms, religious beliefs and the stigma associated with divorce also matter.

The inheritance of divorce may have implications for social policy to the extent that it compromises the opportunities of the children of divorced parents. Several empirical studies document that family breakdowns negatively affect children, especially younger ones. These effects include: higher risks of financial poverty, lower school results, higher probability of an early marriage, stronger tendency to cohabit before marriage, less involvement in partnership (e.g. Keith and Finlay 1988; Amato and Keith, 1991; Amato 1996; Diekmann and Engelhardt, 1999; Piketty, 2003; Wu and Martinson, 1993) and a higher probability of experiencing divorce in adult age (e.g. Diekmann and Schmidheiny, 2006). However, the causality of parental divorce on child's outcomes is difficult to establish, as the worse development outcomes may reflect unobserved characteristics that drive both the divorce decision and influence child outcomes (e.g. see Haveman and Wolfe, 1995; Vuri and Sanz de Galdeano, 2004; Francesconi *et al.* 2005 Painter and Levine, 2000; Corak, 2001b; and Lang and Zagorski, 2001). For example, parental conflict in a married couple may have a negative impact on child development and some research suggests that children are better off if parents split (Morrison and Coiro, 1999). Cherlin *et al.* (1991) report that a large portion of what is generally considered the effect of divorce on child outcomes existed prior to the divorce.

100. Studies in this field have been largely inspired by Bronfenbrenner (1958) and Kohn (1959, 1963, 1969, 1995). The research on the intergenerational transmission of problem behaviours has shown intergenerational consistency for alcoholism, tobacco use, and other problem behaviours (Caspi and Elder, 1988; Collins, 1990; DiLalla and Gottesman, 1991; Furstenberg *et al.*, 1987; Hanson *et al.*, 1984; Huesmann *et al.*, 1984; Lahey *et al.*, 1988; Orford and Velleman, 1991; Velleman, 1992; Patterson and Dishion, 1988; Simons *et al.*, 1991; Velleman, 1992). Family environment and genetic predisposition seem to be equally important in the transmission process. See also Bowles *et al.,* (2005). See also Bengston and Kuypers (1971), Bengston *et al.* (1991), Bengston and Troll (1978) and Scabini and Marta (2006).

In recent years, attempts have therefore been made to control for the endogeneity of parental divorce with instrumental variable methods and siblings data (e.g. Corak, 2001b; Lang and Zagorski, 2001). The studies reach similar conclusion for the United States and Canada: that the impact of divorce is not so much on the labour market outcomes of children (or on cognitive developments), but on their marital and fertility decisions. For example Corak (2001b), using a quasi-experimental design, suggests that it is not "divorce per se that is important in determining the outcomes of the children, but, rather, the quality of the human and social capital that is available to them in their formative years" (see also Lang and Zagorski, 2001). Therefore, according to this recent literature, the transmission of divorce across generations might be causal. In addition, as reported in Diekmann and Schmidheiny (2006), the negative correlation between the divorce rates and the intensity of the transmission effect also suggests that countries where "the acceptance of divorce is low, and where divorce is stigmatized, may aggravate the long-term consequences for the children of divorced parents".

4.4.1 The evidence

113. A great deal of social mobility is attributable to characteristics of families that cannot be measured simply by looking at their economic resources. Indeed, several studies report significant correlations between the personality traits of parents and their children. For example, Dohmen *et al.* (2006) document, for Germany, a significant and robust intergenerational correlation for two crucial determinants of economic behaviour: willingness to take risks and willingness to trust other people.[101] The authors report that family structure and other parental characteristics matter for the intergenerational transmission of these traits; for example, mothers, in one-child households, have a stronger impact than fathers on their children's risk attitudes – as mothers are less willing to take risks than fathers, unique children are also more risk-adverse than children with more siblings.

114. Based on a meta-analysis covering forty-seven studies, Loehlin (2005) presents estimates of the correlations between parents and their children's personality traits, attitudes values and interests across various family types: (i) ordinary intact families; (ii) adoptive parents and their adopted children; (iii) parents and their adopted-away offspring (mostly mother-offspring); and (iv) monozygotic twin parents and their twin's child. The unweighted mean of the correlation is 0.13 for personality traits and 0.32 for attitudes, values and interests. Osborne Groves (2005a) reviews estimates of intergenerational correlation of personality traits in "ordinary families" based on several studies and argues that personality traits are both persistent across generations and relatively stable over time (Table 5).[102]

101. See also Soenens *et al.* (2005) who document the intergenerational transmission of perfectionism; Sabatier and Lannegrand-Willems (2005) who document the intergenerational transmission of two aspects of family solidarity in France: agreement on values in three domains (individualism, collectivism, and family values), and representations with regard to self–other relationships (working models of attachment); Simons *et al.* (1991) who document the intergenerational transmission of harsh parenting (see also Smith and Farrington, 2004); Kohn (1983), Kohn *et al.* (1986); Rohan and Zanna (1996) and Albert and Trommsdorff (2003) who document the intergenerational transmission of family values.

102. See also Duncan et al. (2005); Rowe (1994); Osborne Groves (2005b); Bowles *et al.* (2001a; 2001b 2002).

Table 5. Intergenerational correlation of personality traits

	Correlation	Personality trait
Loehlin (2005)	0.13	Various
	0.14	Extraversion
	0.13	Neuroticism
	0.11	Agreeableness
	0.09	Conscientiousness
	0.17	Openness
Carmichael and McGue (1994)	0.03	Extraversion
	0.27	Neuroticism
	0.25	Lie (social desirability)
Crook (1937)	0.29	Neuroticism
	0.22	Dominance
	0.15	Self-sufficiency
Insel (1974)	0.24	Extraversion
	0.21	Neuroticism
Loehlin (1992)	0.15	Big Five Inventory [a]
Loehlin (1993)	0.18	Extraversion
	0.14	Emotional Stability
Rowe (1993)	0.16	Extraversion

Notes: the table presents correlations between one parent and the biological child. a) The Big five inventory refers to neuroticism, extraversion, openness to experience, agreeableness and conscientiousness.

Source: Osborne Groves (2005a).

115. Three potential channels underpin the transmission of personality traits across generations: genetics, child learning by imitation, and deliberate efforts of parents to shape the preferences and beliefs of their children. These channels may act in concert and interact with each other. Moreover, a number of factors mediate the transmission of values, attitudes and personality traits across generations, i.e. the transmission may be "enhanced by *transmission belts*, that is, conditions favourable for transmission in a particular socioeconomic and cultural context, such as personal characteristics of the transmitter and the receiver (resources of education and age), and family interaction variables (parenting styles and parents' marital relationship)" (Schönpflug, 2001). In particular, both occupation and education are important.[103] For example, some studies suggest that middle-class parents tend to value self-directedness and independence in their childrearing practices, while working-class parents give more emphasis to conformity to external authority (Pearlin and Kohn, 1966; Peterson and Peters, 1985; Luster, *et al.*, 1989).

4.5 Summing up

116. The literature surveyed in this chapter suggests that education and occupation persist across generations in many OECD countries. The empirical evidence suggests again that the patterns of transmission vary according to characteristics of the parents (e.g. migrant status or race) and the household (e.g. family structure). Some studies also document the transmission of personality traits and its effects on attitudes about work, health and family formation or the dissolution process (e.g. divorce).

103. Hitlin (2006) presents a framework which bridges two influential approaches linking family socioeconomic status (SES) to children's social psychological outcomes arguing that family shapes both the occupational aspirations and the values of the children. According to much of the research, parental socioeconomic status (SES) is associated with the valuation of autonomy in children (e.g., Alwin, 1988; Grolnick and Ryan, 1989; Kohn, 1969; Lynd, 1929; Lynd and Lynd, 1937; Spade, 1991) through children's reactions to parenting behaviours. A relation between parental SES and social autonomy is also suggested by at least three important studies of social class differences in parental values (Elder, 1974, 1980; Kohn, 1969; Kohn and Schooler, 1982). Some studies also highlight the role of mothers (e.g. Swinehart, 1963), class differences (e.g. Blau, 1965; Kohn *et al.* 1986; Kohn *et al.*, 1990; Kohn and Slomczynski, 1990) or ethnic background (e.g. Aptekar, 1990).

117. The results discussed in this chapter, also suggest that the extent of mobility may vary across domains considered (i.e. income, occupation or education) within the same country. For example, the United States displays a relatively high mobility in education and occupations and a rather low mobility in income. In this respect, Breen and Jonsson (2005) argue that the correlation between education and/or occupation and income is higher than in other OECD countries and this makes the prevailing inequalities more "costly" for disadvantaged individuals. Beller and Hout (2006) suggest that the extent to which education is publicly financed and rewarded in the labour market matters more in the United States than in other OECD countries[104] (see also Ferrie, 2005; Harding *et al.* 2005). Other reasons may underlie these different results. First, researchers interested in the different aspects of mobility address different questions. Second, different types of mobility reflect different underlying concepts: for example, experiencing upward occupational mobility may not necessarily translate into incomes above those enjoyed by the parents, as incomes may vary widely within the same occupation. Third, research focusing on different aspects of intergenerational mobility faces different data constraints: for example, the measure of educational and occupational attainment may be easier than that of income (e.g. because of lower recall errors), but criteria on which occupations are ranked may differ. Finally, researchers use different methodological tools to investigate the extent of mobility: for example, the use of transition matrices in the analysis of income mobility allows illustrating patterns of upward and downward mobility that are not possible with aggregate measure of intergenerational elasticity. There is, however, no consensus about the sources of these differences and this area would benefit of further research.

118. Irrespective of the domains of mobility considered, the literature surveyed in this report suggests that parental education critically shapes the life chances of children, as it correlates with several other factors such as income, occupations, culture and social resources that matter in a life-cycle perspective. Early childhood education and care may offer a protection against the lack of these resources in the parental nest. Therefore, the parents' ability to invest (time or money) in children's and to access school and care of good quality is an essential issue. The importance of parental contribution to child development underscores again that policies with a greater focus on the family might help to remove barriers to intergenerational mobility while enhancing the life chances of more disadvantaged children. These interventions may also increase economic efficiency, as potential skills, otherwise wasted, would be used.

104. See also Scott and Leonhardt (2005).

CONCLUSIONS AND POLICY IMPLICATIONS

119. The research and analyses reviewed in this paper provides clear evidence of relative immobility across generations in many fields such as income, occupations and education. Thus, children largely "inherit" their parents' socio-economic status. This process operates through a broad range of resources inherited from the parents either directly through genes (as in the case of health or ability) and wealth (assets or estates), or indirectly – for example when children learn behaviours and attitudes. These resources interact with the cognitive and non-cognitive abilities of children in ways that can work together to strongly influence their future life chances and to strengthen the transmission of inequality.

120. The possibility of summarizing the information on intergenerational mobility with a single number (for example in the case of income) does not imply that an optimal value of mobility exists or that consensus can be easily reached on the role of social policy in achieving it. Such consensus obviously depends on personal values. Nonetheless, a completely mobile society (i.e. with total independence between origins and destinations) is not necessarily desirable, as some of the mechanisms contributing to intergenerational persistence are economically efficient, normatively acceptable or both. Finally, even with fair equality of opportunity, intergenerational mobility may be low, due to factors that cannot be equalized. However, some characteristics –such as race, migrant status, gender, place of residence, family structure – are of concern to policy; for example, child poverty is not just low-income but also deep-seated factors that transmit from generation to generation: in this case, identifying and alleviating the barriers to intergenerational mobility is crucial.[105]

121. Concerning intergenerational transmission of earnings, the evidence suggests that the degree of association between parental and child incomes varies widely across countries. For example, less than 20% of the differences in parental incomes are passed on to the children in some of the Nordic countries, but also in Australia and Canada, while between 40 and 50% of these differences are passed on to the children in other countries, including Italy, the United Kingdom and the United States. In these countries, either directly (e.g. through intergenerational transfers of money, or extra investment in the success of their children) or indirectly (e.g. through parental life-styles and behaviours) parents determine the success or failure of their offspring to a greater extent. Moreover, the extent of transmission varies over the income distribution: mobility is especially low at the bottom of the distribution and this may strengthen the inheritance of poverty across generations.

122. There is less agreement on the nature of the mechanisms that underpin such intergenerational transmission. While education is a major contributor to intergenerational income mobility, other factors matter. However, the part of the transmission mechanisms that remains unexplained is substantial and other channels (such as family background and the environment where children grow up) deserve further attention. The extent to which income differences are transmitted from parents to their children also depends on the combined effect of parental preferences to invest in their children, the rate of return on these investments and the extent to which other family background characteristics (e.g. culture or social networks) are transmitted to the children. Obviously, the heritability of these factors is also affected by the way both the society and the market operate in the environment where the children are raised. For example, while many children have fared better than their parents in recent decades, this primarily reflects strong

105. For example see Airio *et al.*, (2005); Corak (2001a, 2004).

economic growth; similarly, growing inequality at a point in time may render intergenerational movements (of income, wealth and occupation) more difficult.

123. If countries were to want to promote equality of opportunity, there are a number of steps they could take. The most important seems to be the reduction of different forms of inequality, including current income inequality. Although there is no consensus in the literature, some evidence suggests that those countries with low intergenerational (earnings) mobility are the same as those who have the highest level of income inequality measured at a particular moment in time. The same is true in reverse. This makes intuitive sense: if the extent of mobility varies according to parental background, it is also likely that the inequality linked to family characteristics and resources perpetuates over time. Unfortunately, that means that inequality in one generation is passed on to subsequent generations. However, there are some interesting anomalies. Australia and Canada are more unequal societies than a number of European countries when looking at current incomes of households, but they are among the most intergenerationally mobile. This may be due to immigration – there is evidence that immigration increases both current inequality and income mobility –, but also to the interventions made in early education and care and on disadvantaged individuals as well. Another explanation is that this is a temporary situation: it is possible that in future greater immobility between generations could be expected to increase. More evidence as to what is happening in these countries might be particularly revealing.

124. The level of wealth and education of parents are two crucial determinants of children's future life-chances. For example, the evidence suggests that parental characteristics are reflected in educational outcomes, and that greater public intervention in the accumulation of human capital might reduce intergenerational transmission of advantage and disadvantage. Moreover, parents who are capital-constrained – facing tighter liquidity constrains – cannot invest as much as rich parents in education although these constraints seem less important than other family background characteristics. The effects of such liquidity constraints are also likely to vary considerably accordingly to the ability of the child: they are likely to be tighter for low-income parents of high-ability children.

125. Growing up in low-income households seems to affect heavily children's future life-chances. In fact, parental poverty is related to lower levels of good health, nutrition and housing, all of which affect child development and future incomes. Furthermore, the home and social environment is where beliefs, attitudes and values are shaped (for example welfare dependency of parents is correlated with future welfare receipt of children, even after adjusting for income, in part reflecting the role-model that parents provide). High parental income is correlated with a better quality of education because good schools are generally in good neighbourhoods, where in addition, networks useful in later life may be more present, and crime is less prevalent. It is further correlated with transmission of verbal ability, and non-cognitive skills, including self-discipline, which improve life chances (Heckman and Carneiro, 2003). Reducing poverty, and especially childhood poverty, might therefore contribute to reduce intergenerational inequality.

126. Family structure also seems to matter, perhaps for reasons that again go beyond income and are likely to be related to the role-model that parents provide, to the attitudes they pass on to their children, but also to the different allocation of time and money between family members. Sons from lone-parent households do less well than they 'should', given the income of their parents. (However, most evidence relates to *sons.* This is an area where further evidence on the effect of parental income on *daughters* would be useful).

127. Concerning neighbourhood effects, there is still a good deal of confusion and ambiguity as to their long-run causal impact on child adult outcomes. The best that can be said is that they matter in the here and now for the well-being of children and this is enough to justify policy intervention.

128. The literature surveyed suggests that variations in income and educational attainment are not sufficient to explain the family influence on the extent of intergenerational mobility. Going beyond the effects of parental income effects on child outcomes would require the investigation of household behaviour in response to institutional interventions in order to determine the causal mechanisms through which family background affects intergenerational mobility. In this context, the design of policies, systems and institutions may also be relevant and this, for example, highlights the need of looking at intergenerational implications when setting up specific policies.

129. One of the main objectives of social policy is to break the cycle of disadvantage across generations and prevent the development of a self-replicating underclass. For policymakers, the implications of the above reinforce the lessons of the child development literature. The evidence suggests that interventions targeted at improving childhood outcomes are desirable. Such interventions have become a much more important feature of social policies in many OECD countries in recent years. Childhood poverty is in fact a route through which disadvantage is transmitted between generations, so tackling it needs to be a priority. Doing so by helping parents work can be more effective than by giving them cash transfers, as this may contribute to change attitudes or behaviours. Indeed, there is evidence that parental behaviours can be transmitted across generations, and that these seem to be more important than 'intelligence' in explaining the intergenerational correlation of income. Having a working parent as a role model is important. Reducing the stress and anxiety of children, from whatever source, will have a pay-off in the incomes they subsequently command. Targeting intensive health, nutrition and care supports on particularly deprived households or areas is highly desirable. Most important, getting good quality care in early childhood, pre-school and school is the essential tool for promoting intergenerational mobility.

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