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Publication date:
2011

Document Version
Accepted author manuscript, peer reviewed version

November 3, 2011

Intergenerational income mobility – top incomes and assortative mating in Denmark

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Abstract: This article investigates intergenerational income mobility among top-income people in Denmark focusing on the impact of assortative mating. Earnings and capital income are the variables of interest included in the analyzes testing the hypothesis that both wealth and social heritage are transferred from rich parents to their children. Using administrative registers allow us to look at small fractions of the populations, i.e. dynasties, and to distinguish between sons and daughters and to observe their eventual spouses' incomes. We find that intergenerational mobility is lower in the top, in particular, when including capital income in the total income. Also we find the marriage match has a stronger impact on the family-to-family income transfer in the top of the income distribution where the daughter marries a man more like her father than herself. The highest persistence, however, is between first- and second-generation households, especially between father and mother's aggregated incomes and that of their son and daughter-in-law's with a correlation close to a half.

Keywords: Intergenerational income mobility, top incomes, assortative mating, quantile regression.

JEL: C21, D10, D31, D63, J12, J62

1. Introduction

Intergenerational income mobility is of great importance for the understanding of how individual opportunities and social status outcomes vary across the income distribution. The question is to what extent the offspring of low-income, middle-income, and high-income parents tend to reproduce their parents' economic position. In most studies within this field the focus is on the transmission of income from father to son or from father to daughter, although there are also some studies on the mother-to-son or mother-to-daughter transmission of income. Here, we investigate all possible transmissions, primarily in the top end of the income distribution, and in a way that differs from that of most other studies. We examine 1) the father-son and father-daughter income mobility, 2) the correlation between father and son-in-law, and father and daughter-in-law, and 3) the correlation between the household incomes of two generations. Mothers' incomes are also used as first-generation income, but those results are primarily presented in the Appendix. The implication is that assortative mating comes in naturally as an explanation of how randomly distributed or inherited income appears between generations belonging to top income individuals and households, raising the question: Do we have a nouveau-rich or a dynasty society where "money marries money" (Mann, 1901)?

We use data from administrative registers at Statistics Denmark, enabling us to study the mobility at the very top end of the income distribution because we view information on all Danish citizens. Our interpretation of 'intergenerational income mobility' follows the usual definition: the position of one generation in a rank order relative to the position of a second generation in its rank order. Thus, if a randomly sampled individual achieves a position in the income distribution independently of the position his or her father or mother achieved, the intergenerational income mobility is perfect or complete. The intergenerational income mobility expresses the correlation

between parent and child positions in the income distribution in inverse terms: increased correlation implies decreased mobility and no correlation perfect mobility.

The following section gives the background and a review of the literature, which leads to the third section where the theory and empirical framework are discussed. The data and the methodology are described in the fourth section followed by section five presenting the results from analysing the questions raised. Section six concludes the study.

2. Background

Within the recent decade, there has been increasing focus on top income shares over time (Piketty, 2001; Atkinson, 2005; Piketty & Saez, 2003; Leigh, 2005; Piketty, 2007; Atkinson, Piketty & Saez, 2010; 2011), including studies of top incomes in the Nordic countries (cf. Gustafsson & Jansson, 2008; Hirvonen, 2008; Roine & Waldenström, 2010; Jäntti, Riihelä, Sullström & Tuomala, 2010; Aaberge & Atkinson 2010). The growth of this branch of research has been paralleled by one of reproduction of inequalities, that is, of intergenerational income mobility (e.g. Becker & Tomes, 1979; 1986; Solon, 1992; 1999; Zimmerman, 1992; Corak & Heisz, 1999; Chadwick & Solon, 2002; Mazumder, 2005a; 2005b; Mayer & Lopoo, 2005; Björklund & Jäntti, 1997;; 2009; Burkhauser & Couch, 2005; Kearney, 2006; Blanden, Gregg & Macmillan, 2007; Pascual, 2009; Black & Devereux 2010).[1] Whereas the top-income literature focuses largely on distributions of resources at the societal and aggregate levels, the intergenerational income mobility literature focuses more on individuals and families. Very recently, however, these two traditions have been combined in studies of intergenerational *top* income mobility, see e.g. Björklund, Roine &

[1] Cf. below examples of cohort studies of intergenerational income mobility over time and other more specific studies.

Waldenström (2010), Nam (2004) and for a study of the intergenerational poverty income mobility see Corak (2006)[2].

Intergenerational income mobility in the top is interesting for several reasons. Firstly, studies of intergenerational income mobility somewhat consistently reveal changing associations across income levels with intergenerational income elasticities in the top and in the bottom differing substantially from those of the middle range (Nam, 2004; Mazumder, 2005a; Harding, Jencks, Mayer & Lopoo, 2005; Jäntti et al., 2006; Björklund, Roine & Waldenström, 2010).[3] Thus, simply considering overall elasticities of the entire population may be misleading. Secondly, the top income literature reveals that top income shares in the Western world are increasing, creating a particular need for explanations of this phenomenon in which mechanisms of (low) intergenerational top income mobility potentially play a role. This is also why this third branch of research has not only called for increased focus on intergenerational top income mobility as a complement to the more widely studied top income inequalities for purely intellectual purposes; social justice plays a role too. For instance, people tend to judge so-called "self-made individual" positively, but "inheritors" negatively (Björklund, Roine & Waldenström, 2010; see also Black & Devereux, 2010; Nam, 2004; Roemer, 2009).

Mechanisms of income inequality

Western economies have seemingly diverged regarding the development in top income shares since WWII. In English speaking countries, shares show a U-shaped development over time beginning with a decline and ending with an increase, whereas continental European countries show a

[2] In addition, some studies have included intergenerational top income mobility as a part of broader inquiries into intergenerational income mobility in general, e.g. Hirvonen (2008) and Bratberg et al. (2007b).

[3] Bratberg et al. (2007b) suggest that in the case of the Nordic countries elasticities are linear, whereas in the US and the UK they are convex across the income distribution.

stabilized share over time (for a review, see Atkinson & Piketty, 2007). More recent research has shown that the Nordic countries belong to the former group rather than the latter (for a review, see Atkinson, Piketty & Saez, 2010, 2011). Structural factors and public policy undoubtedly are decisive in this regard. Piketty (2001: 548ff) identifies several factors in contemporary society that may cause an even further increase in inequality in the future, for instance, the rise of the information and service economy (new sectors tend to favor rapid accumulation), and the increased political focus that recent decades have witnessed on lowering of marginal income and corporate tax rates, which have been identified as factors explaining the rising share of incomes in the very top (e.g. Atkinson 2004; for cases of the Nordic countries see Gustafsson & Jansson, 2008; Roine & Waldenström, 2010; Jäntti, Riihelä, Sullström & Tuomala, 2010; Aaberge & Atkinson, 2010).[4] Piketty also mentions intergenerational persistence and patrimony as important mechanisms in this regard. Complementing this, Hussain, Munk & Bonke (2009) point to several other structural features related to high degrees of intergenerational earnings mobility, for example, condensed income distributions, active labor market policies, free access to the educational system, and an equal opportunity-oriented educational policy all contribute to higher intergenerational income mobility (2009: 80). In addition, changes in compositions of educational (e.g. Davies, Zhang & Zeng, 2005), family (e.g. Björklund, Jäntti & Solon, 2007), and political institutions (e.g. Ichino, Karabarbounis & Moretti, 2011) are likely to induce changes in the income elasticity between parents and children. Lastly, Mayer & Lopoo (2008) show that high-spending welfare states are likely to increase intergenerational mobility.

These mechanisms of inequality are of great interest because there seems to be a negative association between cross-sectional inequality and intergenerational mobility (Andrews & Leigh, 2009). Thus, if income inequality has increased in many countries over the last decades, we

[4]In particular, some of these studies note the restraints on progressive income taxation implemented in many countries in the early 1990s.

can expect intergenerational income mobility to have decreased, particularly in the top end of the income distribution (see Solon, 2004).

Intergenerational top income mobility

Although, theoretical (Solon, 2004) and empirical (Andrews & Leigh, 2009), analyzes suggest that increased income inequality is associated with decreased intergenerational income mobility, research is ambiguous as to whether the intergenerational income mobility has actually decreased historically in tandem with increasing income inequality. Whereas changes in the distribution of incomes are straightforward to measure, changes in intergenerational mobility are more complex. This may explain why research results differ substantially (see Corcoran, 2001; Levine & Mazumder, 2002; Fertig, 2003; Nam, 2004; Blanden et al. 2004; Mayer & Lopoo, 2005; Harding et al., 2005; Bratberg et al., 2005; 2007a; Hertz, 2007; Pekkala & Lucas, 2007; Blanden, Gregg & Macmillan 2007; Aaronson & Mazumder, 2008; Lee & Solon, 2009; for a study of earnings see Nicoletti & Ermisch, 2007). Some of these studies show increased elasticities between cohorts, others show no change, whereas only a few studies show decreased elasticities.[5] Thus, overall, intergenerational mobility seems to have decreased. For instance, Nam's (2004) study of American sons at the age of 11–15 years in 1969 and 1979, respectively, shows that transmission of high income increased significantly, whereas transmission of low income remained stable. However, at this point, the empirical debate is mainly a methodological one. Lee & Solon (2009) show that the conclusions of Nam and other studies rest on misleading comparison of cohorts by relying on only two single income years. Lee & Solon use the same survey data (PSID) on all available years to show that no significant decrease in intergenerational income mobility has occurred within recent decades.

[5]Details also vary as to when the increase happened, in which parts of the income distribution, and between which families, and for what reasons.

Furthermore, the critique of economists (i.e. with an income approach) regarding the hypothesis that intergenerational income mobility has decreased has been paralleled by a sociological one (i.e. with a class approach) arguing that mobility between fathers' occupation and children's occupation has not changed substantially (Goldthorpe & Jackson, 2007).[6] However, doubt has been cast on this result since it is based on a comparison of the fathers' class and the child's class alone. Beller (2009) shows that taking mothers into account reveals a substantial increase in intergenerational association (lower mobility) between different cohorts.

In conclusion, as Lee & Solon (2009: 771) also note, even though we may suspect the impact of substaintially increased income inequality since WWII on intergenerational mobility to be negative, research in changes in intergenerational mobility is ambiguous about recent developments.

To further complicate the matter, even in countries with low income inequality and high intergenerational income mobility, intergenerational mobility in the *top* may still be very low. For instance, Björklund, Roine & Waldenström (2010) show that in Sweden (a country that pursues many of the policies described above with an internationally high overall intergenerational income mobility) intergenerational top (0.1 percentile) income mobility is very low. Using piecewise linear regression and quantile regression on approximately 100,000 pairs of Swedish fathers and sons comparing averages of sons' level of income in their 40s to averages of fathers' income while sons were living at home (in line with Corak, 2006; and Björklund & Jäntti, 2009), they show that intergenerational income mobility decreases within the top incomes and reaches a very low level for the very top (with an elasticity above 0.9, compared with an overall elasticity of 0.26), and much more so for "total income" than for "earnings".

[6]For a response to this critique, see Blanden, Gregg & MacMillan (2010). For further details and discussion, see Erikson & Goldthorpe (2002; 2009; 2010), Goldthorpe & Mills (2008), and McIntosh & Munk (2009a,b). Note that these studies of Britain – sociologic and economic alike – are based on survey data, which implies larger uncertainty of estimates than when based on register data as used in this study.

Similarly, based on a comprehensive study of about 400,000 pairs of Canadian fathers and sons, Corak & Heisz (1999) conclude a very high elasticity within the top percentile of income (from a mean of 0.2 to 0.8). The inverse is present in the other extreme of the income scale where elasticity comes close to 0. These results suggest that mechanisms of intergenerational mobility in the top are not necessarily the same as those in the lower end or in the population at large.

Before Chadwick & Solon's (2002) study, research almost unanimously excluded daughters (and mothers) from inquiries of intergenerational income mobility, focusing solely on fathers and sons. To some extent, this was justified by the fact that western societies are economically stratified by sex, which has traditionally made mothers' incomes unreliable measures of their status (see also Ermisch, Francesconi & Siedler, 2006). Based on PSID data, Chadwick and Solon conclude that a substantial level of father-daughter intergenerational elasticity exists (though somewhat lower than for sons). After Chadwick & Solon's study other studies appeared (Mazumder 2005; Bratberg et al. 2005; 2007; Raaum et al. 2007; Holmlund 2008; Hirvonen 2008; Nilsen et al. 2008). According to Jäntti et al. (2006) and Black & Devereux (2010: 15ff), this literature reveals similar national differences in elasticity between fathers and sons (about 0.5–0.6[7] for the US, 0.3 for the UK and somewhat less for the Nordic countries)[8] and a general tendency for the father-daughter elasticity to be lower. For the mother-daughter income elasticity, three studies are of particular interest. First, Österberg (2000) shows that, even though mother's earnings influence child's earnings less than father's does, this difference is lower for daughters than for sons. Second, Hirvonen (2008) compares the result of Chadwick & Solon with the case of Sweden and finds somewhat lower elasticities in the US. Hirvonen also looks at different intervals of the income distribution and finds

[7] This result is somewhat higher than that gauged by previous standard references (see in particular Solon (1992) and Zimmerman (1992)). This is due to persistent transitory fluctuations in income biasing previous results down (Mazumder, 2005b).

[8] However, comparison may be problematic due to linearly different patterns of intergenerational earnings mobility in Anglo-Saxon countries and convex trends in the Nordic countries (Bratberg et al., 2007b; for further discussion of cross-country comparisons, see Muller, 2010).

that mobility is higher in the upper than in the lower end, but that mobility in the top is still less (even for daughters) than in the middle range. Finally, comparing the US, the UK and three Nordic countries, Raaum et al. (2007) confirm the higher mobility in the Nordic countries when it comes to single men, single women and married men, but only for married women if measured by family income. If measured as personal earnings, no difference is evident between countries for married women[9].

These results all stress the importance of a gender-specific perspective when inquiring into mechanisms of intergenerational top income mobility. And the gender perspective also raises the question of the impact of spouses (i.e. of assortative mating) on different generations' access to economic resources

Assortative mating among top incomes

Assortative mating, meaning that individuals marry spouses who are like themselves over a number of dimensions, is well-documented (for an early example, see Glenn, Ross, & Tully, 1974). A review of such literature by Mare (1991) shows that spouses tend to be similar in terms of educational attainment, occupation, and ethnic background. Recently, Chiappori et al. (2010) shows that not only socioeconomic characteristics but also anthropometric characteristics/physical attractiveness matter for the matching on the marriage market. In the German and British contexts, Ermish, Franscesconi and Siedler (2006) estimate that as much as 40–50 % of the correlation between parents' and child's permanent family income can be attributed to the spouse, due to a high correlation between the spouses' human capital (for related studies, see Lam & Schoeni, 1994; Chadwick & Solon, 2002). As Ermish et al. put it: "both parents and parents-in-law shape their

[9]Beller (2009) finds that when looking at class belongings the inclusion of both mother's and father's origins yields a stronger predictor of observed mobility patterns than when only the father is included.

offspring's status." (2006: 659). Of course, the more assortative mating that takes place, the truer this becomes (see Lam & Schoeni, 1994).

The importance of different characteristics may be even more pronounced at the top end of the income distribution because a son or a daughter wants to continue the family position by having "high quality" children (Foster, 2002; Lefgren & McIntyre, 2006). Chadwick and Solon's (2002) study likewise indicates the importance of the role played by assortative mating in reproducing income positions across generations since income elasticities are found to be as high for children's spouses as for the children themselves. Thus, by not limiting the investigation to the relation between parent and child, but by extending it to the relation between mother/father couple and child/spouse couple, even higher elasticities are likely to be found. Assortative mating by income seems to be an important factor in explaining intergenerational persistence and reproduction of inequality (see also Mare, 2000).

3. Theory and empirical framework

According to Nam (2004: 189), there are two main branches of theory regarding mechanisms of intergenerational income mobility: human capital theory focus on parents' transmission and investment in human capital (education and skills) in their children (Becker & Tomes 1979; 1986, Goldberger 1989, Mulligan 1999, Solon 2004), and the non-economic family resource model focus on the ability of parents to provide stimulating environments for their children rather than merely investing economic resources in them. However, as in most other studies, in the following analyzes, we do not distinguish between these mechanisms.

Intergenerational income mobility is a measure of the degree of income transmission from one generation to the next generation. Hence, a high income mobility pictures that children's incomes are independent of parents' incomes. However, if social heritage is present, the second generation's

incomes are correlated with the first generation's incomes so that the income of a child can somehow be predicted by his/her parents' incomes. This holds for earnings provided both generations are occupied on the labor market, while capital income can be transferred between generations even in cases where there are no earnings in one or both of the generations.

The intergenerational determination of children's incomes can be expressed by the following regression equation:

$$(1) \qquad \log y_{ci} = \alpha_c + \beta_c \log y_{pi} + \varepsilon_{cij} ,$$

where $\log y_{ci}$ denotes the natural logarithm of income of a child in family i and y_{pi} the corresponding measure of the parent. The error term ε_{cij} depicts the combined effect on the child's income of factors orthogonal to parental income, and β_c is the intergenerational elasticity of the child's permanent income given the parents' long-term income.

If assortative mating in the second generation is present, we will find a high correlation between the child's and his/her partner's income, see Hirvonen (2008). This can be expressed as

$$(2) \qquad \gamma = \text{corr} (\log y_{ci} , \log y_{pai}) ,$$

where *pa* indicates the partner. A high level of assortative mating will diminish intergenerational mobility on a family-to-family level and accentuate mobility if the matching on the marriage market is random and not conditional on income. The family-to-family income mobility can be depicted as

$$(3) \qquad \log y_{cpai} = \alpha_{cpa} + \beta_{cpa} \log y_{fmi} + \varepsilon_{cpai} ,$$

where y_{cpa} (child and his/her partner) is the second generation's family income, y_{fmi} is first generation family income, and *fm* indicates father and mother.

Intergenerational income persistence on a family level, β_{cpa}, will therefore be determined by two different channels: the parent to child channel, $\beta_{c,}$ and the assortative mating determinant calculated as either the elasticity of parents and children-in-laws' relationships or simply as the differential between β_{cpa} and β_c. Obviously, this requires that the second- and first-generation becomes married/co-habits, while the usual intergenerational mobility analyzes of parents to children also include single families in each generation.

As most children grow up with siblings, the observed variance in earnings is due to factors common to the families, such as parental involvement in child's schooling and neighborhood quality, and thus not only family income. Hence, Levine & Mazumder (2007) show that half the variance among siblings' earnings and wages can be explained by family and community influences. To take account of this phenomenon the error term ε_{cij} in (1) is decomposed as follows:

$$\varepsilon_{cij} = \gamma_{ci} + \eta_{cij} + \nu_{ij} \,, \tag{4}$$

where γ_{ci} is a component common to all siblings in the family, and η_{cij} likewise a component specific to every individual, and, lastly, ν_{ij} the error term.

Based on this theoretical framework the research hypotheses addressed in the following are that in the top of the income distribution:

1) income mobility is relatively low, particularly for sons

2) assortative mating is relatively high

3) income persistence among rich families is high.

4. Data

The data used stem from administrative registers at Statistics Denmark including information on earnings, income, taxes, benefit payments, education, labor market attachment, and other socioeconomic demographics for the period 1980–2008. As every Danish resident or citizen has a unique personal ID number, the information in the registers can be linked to the individuals concerned, their spouses, and to their parents. This is what makes it possible to analyze intergenerational mobility issues.

Using register information also solves the problems of coverage and attrition because the information covers the whole population.

As the data window covers "only" the last 25–30 years and the best proxy of a permanent income is the income earned when being in the 30s, the second generation in this study is aged 35–42 years in 2008 or, equivalently, 7–14 years in 1980. This is considered to be a relatively broad age-bracket, which is important to minimize the problem of non-homogeneity in the residuals, see e.g. Lee & Solon (2009), who stress that the usual assumption of unbiased measurement error does not hold for intergenerational income mobility because 'individuals with high lifetime income tend to have steeper income growth trajectories' (p. 768). Therefore these authors prefer longer observation timespans (from ages 25 to 48 years in their study) controlled for interaction between child's age and parental income. Further, it is important to note that even five-year periods may considerably underestimate the intergenerational persistence. Hendricks (2007) shows that measures of persistence based on lifetime earnings increase 30% compared with measures using 5-year periods.

In our study, the second generation children are aged 7–18 years when their fathers' incomes are included in 1980–84.

According to Chadwick & Solon (2002), early studies in intergenerational income mobility often underestimated elasticities because they used only short-term measures of parents' incomes. And even though single year measures at the age of 30–40 years do not imply such a bias (for specifications, see Böhlmark & Lindquist 2006), the problem of short-term income fluctuations remains. Accordingly, in line with Björklund, Roine & Waldenström (2010), we average income over multiple-year spans.

We use the standard father-son (and father-daughter) correlations as well as the correlations between father's income and son-in-law's income and daughter-in-law's income. Similarly, we include the mother as the first generation parent. Besides individual incomes we also use household incomes (mother and father's pooled income, and the child's and his or her spouse's pooled income) to be able to investigate to what extent second-generation partners contribute to keeping the income position and economic status of the first generation households intact. So the intergenerational transmission/correlation is from 1) father to son, 2) father to daughter, 3) father to son-in-law, 4) father to daughter-in-law, 5) father and mother to son and daughter-in-law, and 6) father and mother to daughter and son-in-law. The transmission channels 1 and 2 refer to the usual nature and nurture determinants, while 3 and 4 are mating-related and 5 and 6 are a mixture of these different determinants.

The same income concepts as in Björklund et al. (2010) are applied, e.g. individual earnings from work and/or business and individual total income (earnings and capital income), and only persons with positive incomes in all ten years (five for child and five for parent) are included. We use five years' average incomes for parent (1980-84) and child (2004-08), whereas Björklund uses six years' for fathers and ten years' for sons. All incomes are inflated to 2008 using the CPI from Statistics Denmark. The final income concept is the average of natural log of each year's income.

The income sample includes 264,307 and the earnings sample 202,720 pairs of father and sons, and 259,913 and 188,968 pairs of father and daughters, while the same numbers of pairs of fathers to married children are 166,429; 137,998; 174,629 and 134,616, respectively. The mother-child sample sizes are roughly similar. The number of son-in-laws and daughter-in-laws with (positive) income and earnings information is more modest, namely 70,966; 59,822; 114,500 and 88,068. This implies that we have between around 600 and 2,600 in the top income percentile and, thereby, around 60–260 in the 0.1 top income percentile – the latter numbers are often too small to find significant OLS elasticities (contrary to quantile regression elasticities).

<Table 1>

<Table 2>

Tables 1 and 2 give an overview of the statistical information in the Danish data used here. We find that the age-differentials are considerably bigger for fathers than for fathers' offspring, which is in line with Björklund et al. (2010), and not that surprising since there is a age limit on sons/daughters, but not for fathers. Hence, the variation in sons' and daughters ages' is between 35 and 42 years, while the fathers' ages vary between 37 and 87 years with the oldest found in the upper end of the distribution (Table 1). As expected, we also find that the discrepancy between income and earnings increases with earnings level or income level and in particular for the second generation. At the top end of the distributions, sons' incomes are 13% higher than sons' earnings and that of daughters is 10% higher, whereas father's income is only 7% over the earnings. For the median pairs the differentials are 4%, 4% and 0%, reflecting that the disparity of capital income has

increased between the two generations, see Björklund et al. (2010) for qualitatively the same findings for Sweden.

We compared married sons' earnings and income with those of married daughters and found a difference for the median persons of about one third in both cases in favor of the sons (Table 2). For children in the 0.1 top percentile the difference between the two sexes is two to one for earnings and even bigger for income (120%). Table 2 also shows that this picture is nearly the same when comparing earnings and income of sons-in-law with those of daughters-in-law, and that sons and sons-in-law as well as daughters and daughters-in-law earn and have incomes very much like each other.

Methodology

The calculation of intergenerational earnings mobility applies the elasticity coefficient method in Equations 1 and 3 in Section 3. We include generation pairs only where both generations have positive incomes in all years under consideration[10].

Analyzing income mobility in the top of the distribution implies that we believe in the possible existence of non-linearity so that social heritage is not equally strong across the whole distribution (Bratberg et al. 2007b, Grawe 2004).

For that reason we run quantile regressions as well as piecewise OLS regressions, where the first ones estimate the effect of an explanatory variable at specific points in the conditional distribution of the dependent variable, i.e. assesses whether an increase in the parent's income raises income differently for the child at different places in their income distribution. In contrast, the

[10] We address negative, zero and missing incomes—or, in short, non-positive incomes—as follows (available upon request). 1) Comparing simple descriptive measures on the included (those with positive incomes) and excluded (those with non-positive incomes) persons. 2) Doing some of the main mobility analyses by including the non-positive incomes by assuming that they are extremely low, e.g. 1,000 DKK, in which case the natural log is zero since incomes are expressed in 1,000s.

piecewise OLS regressions imply that we run equations separately for parent-child pairs belonging to different parent income fractiles investigated.

5. Results

In the following we show the results from the quantile regressions across child income fractiles examining how sensitive children's incomes and earnings are to their parents' incomes and earnings, i.e. using piecewise OLS regressions reveal nearly the same non-linear patterns in many instances but for example not always in top (the OLS regressions are presented in the Appendix). The same is the case for the estimations of parent to children-in-law mobility, here, too, we refer to results obtained from the quantile regression estimations, but also discuss OLS.

5.1 Intergenerational top income mobility – parents to children

<Table 3>

Table 3 shows that the intergenerational elasticity is 0.146 for earnings and 0.218 for income estimated at the median for father-son pairs, while it is somewhat smaller for father-daughter pairs, namely 0.098 and 0.162 (we obtain similar pattern when applying OLS regressions). For both pairs we find an increase in generational income persistence over the level of sons' and daughters' earnings and incomes. At the 90^{th} quantile the coefficients for the father-son relationships are 0.217 and 0.292, respectively, and 0.132 and 0.195 for father-daughters, and at the 99^{th} quantile we find even bigger coefficients, namely 0.257, 0.333, 0.178 and 0.225, which implies that a 10% income differential among fathers is related to a 3.3% income increase for sons' at this end of their income distribution. At the very top end of the distribution—the 99.5^{th} fractile—the father-son income

persistence is 0.348 and for father-daughter 0.233, whereas the earnings persistence is lower for both father-sons and father-daughters (Figure 1). In the piecewise OLS regressions we do not find the same general increase in intergenerational income persistence over father's income levels.

<Figure 1>

For Sweden the same non-linearities in the father-son relationships over the income distribution are found and at virtually the same levels as for Denmark (Björklund et al., 2010). Hence, the income coefficients at the 99th fractile are 0.380 for Sweden (ibid, Table 3) and 0.333 for Denmark, indicating that dynasties prevail slightly more in Sweden than in Denmark.

It is noteworthy that the non-linearity in the relationship in father-son income and earnings distributions is quite similar for Denmark, i.e. the persistence increases to the same extent over the fractiles in the two distributions, while this does not apply to the same extent for Sweden. Here Björklund et al. (2010) find that the income mobility increases over the distribution, whereas the earnings distribution increases only slightly. A possible explanation for this difference is that the degree of equality of opportunities for wage earners is bigger in Sweden than in Denmark at the same time as the distribution of capital incomes is more skewed and more often transmitted between generations in Swedish than in Danish society.

<Table 4>

For the mother-child relationships we find smaller income elasticities than for the father-child relationships that hold over the whole income distribution (Table 4). Hence, the income mobility coefficients for mother-son are 0.045 at the median position of the distribution—50th fractile—and

0.097 at the top end of the second generation's income distribution—99.5th fractile—compared with 0.218 and 0.348 for the same father-son relationships. The mother-daughter relationships were also smaller all over the distribution than those of the father-daughter—0.063 versus 0.162 in the middle of the distribution and 0.082 versus 0.233 at the 99.5th fractile. The same pattern is found for earnings mobility. Also we find this pattern of higher father-child elasticities than mother-child elasticities using piecewise OLS regressions, but mainly for lower up to the third quartile parental income. An obvious explanation for the lower income persistence between mother and child than between father and child is that more mothers than fathers were educated, that mothers are more often out of the labor market, and that, nowadays, males and females are on more equal terms educationally and regarding the labor market.

That gender differentials still prevail is shown by the fact that at median income—50th fractile—the mother-daughter coefficient is greater than the mother-son coefficient—0.063 and 0.045—while for the father-daughter and father-son coefficients, the opposite holds—0.162 and 0.218. However, at the higher levels of the distribution—99th and 99.5th fractiles—both the mother-son and the father-son coefficients are greater than those for daughters, indicating that daughters from well-off backgrounds are relatively less influenced by their mother's income position than are other daughters from lower positions in the income distribution.

We also found that mother-child earnings and income mobilities are relatively close to each other, while income persistence is greater than earnings persistence for father-child relationships. This indicates that children, and in particular sons, "gain" more capital income from their father than from their mother. The income coefficient is far greater than the earnings coefficient for father-son relationships than for father-daughter relationships.

5.2 Assortative mating—parents to children-in-law elasticities

An important aspect of income and earnings mobility is the role of the marriage market, enabling some people to improve or keep the position in society at a family level and consequently maintain or increase their individual consumption possibilities through marriage. Others may rely mostly on their own income, having made other choices on the marriage market. However, the existence of assortative mating decreases the chances of moving around in the distributions. If this is the case at the top of the income distribution, the same rich families will continue to represent a top earnings and income class in society, i.e. the existence of dynasties.

In the following, we start by investigating the extent of assortative mating by looking at the correlation between son's and their wife's (son-daughter-in-law), and daughter's and their husband's (daughter-son-in-law) incomes. We found a high correlation in the income between the couples—see equation 2. We then investigate the role of assortative mating by looking at the intergenerational income mobility for father-daughter-in-law and father-son-in-law pairs and the same for mother-child-in-law relationships. Lastly, we analyze the father-son's family income and father-daughter's family income to see if this gives the same picture of the earnings and income mobility between generations and over the income distribution as do the father-to-child-in-law comparisons.

<Table 5>

For the median income fractile the correlation between sons' and their wives' incomes is 0.199 and 0.258 between daughters' and their husbands' incomes, while the same correlations are 0.113 and 0.157 for earnings (Table 5), which shows that it is easier for daughters than for sons to find economically equal partners. By moving upwards in the earnings and income distributions we

find that the correlations increase for son-daughter-in-law relationships while it decreases for daughter-son-in-law relationships, and at the top end of the distribution—95th fractile—the son-daughter-in-law relationships are bigger than those of daughter-son-in-law relationships. This indicates that assortative mating is more pronounced for sons than for daughters independently of using earnings or income as the economic measure.

That earnings and income mobility is smaller between fathers and daughters than between fathers and sons across the income distribution is already shown above. Table 3 shows that this also holds, and even to the same degree, when looking only at fathers and their *married* children. For children-in-law we find the same pattern, namely that the relationship between fathers' and their daughters-in-laws' incomes is smaller than the relationship between fathers' and their sons-in-laws' incomes. The father and children-in-law correlations, however, are generally smaller than that of fathers and their offspring so that the offspring is economically more alike their parents than children-in-law and therefore more "reliable" in ensuring some persistence in keeping the social position intact. This pattern emerges in most parts of the income distribution (Figure 2), which indicates that a son-in-law is not as capable as a biological son of securing a high degree of income persistence from the one to the next generation, and the same holds for daughters-in-law relatively to biological daughters—for both we find the same correlations to their father-in-law/father's income throughout the income distributions.

<Table 6>

Lastly, we find that income mobility at a family level is smaller for father and mother pooled to son and daughter-in-law pooled than for father and mother pooled to daughter and son-in-law pooled (Table 6). This holds for the whole income distribution as well as for the earnings

distribution. At the top end of the income distribution—99.5th fractile—the coefficients for parents and their daughter and son-in-law is 0.398 and for parents and their son and daughter-in-law as high as 0.480. These coefficients are the highest of all coefficients found, indicating that at a family level there is a very high degree of economic persistence between generations among rich people in Denmark.

6. Summary

Most studies on intergenerational earnings and income mobility focus on the father-child transmission of opportunities and social status. They examine the extent to which the offspring of low-income, middle-income, and high-income parents tend to reproduce their parents' economic position. In this study, we also look at the mother-to-son and mother-to-daughter transmission of income. The implication is that assortative mating presents itself as a natural explanation of how randomly distributed or inherited income appears between generations belonging to top income individuals and households, raising the question: Do we have a nouveau-rich or a dynasty society where "money marries money"?

By applying data from administrative registers at Statistics Denmark, we were able to study the mobility all over the income distribution, including the top end, since we had income information on all Danish citizens. We used quantile regressions as well as piecewise OLS regressions.

In line with most other studies, we found that the intergenerational elasticity is higher for income than for earnings and that these elasticities are smaller for father-daughter pairs. For both pairs we found an increase in generational income persistence with increasing levels of sons' and daughters' earnings and incomes. At the very top end of the distribution—the 99.5th fractile—the father-son income persistence is 0.348 and 0.233 for father-daughter. For Sweden the same non-linearities in

the father-son relationships over the income distribution are found but at a somewhat higher level than for Denmark.

We also found that mother-child earnings and income mobilities are comparatively equal in size, whereas income persistence is greater than earnings persistence for father-child relationships. This indicates that father's capital income is more important than mother's capital income in increasing income persistence, which may reflect that it used to be males who inherited most of the capital income.

An important aspect of income and earnings mobility is the role of the marriage market, enabling some people to improve the position in society at a family level and, thereby, to increase their individual consumption possibilities through marriage, while other people may rely mostly on their own income, having made other choices on the marriage market. However, the existence of assortative mating decreases the chances of moving around in the distributions. If this is the case at the top of the income distribution, the same rich families will continue to represent a top earnings and income class in society.

For the median income fractile the correlation between sons' and their wives' incomes is lower than between daughters' and their husbands' incomes, which suggests that it is easier for daughters than for sons to find economically equal partners. Moving upwards in the earnings and income distributions we found that the correlations increase for son-daughter-in-law relationships, while they decrease for daughter-son-in-law relationships, and at the top end of the distribution—95^{th} fractile—the son-daughter-in-law relationships were bigger than those of daughter-son-in-law relationships.

We also found that the father and children-in-law correlations are generally smaller than that of fathers and their offspring so that the offspring is economically more alike their parents than the children-in-law and therefore more "reliable" in ensuring some persistence in keeping the social

position intact. This pattern emerges in most parts of the income distribution, which indicates that a son-in-law is not as capable as a biological son of securing a high degree of income persistence from one to the next generation, and the same holds for daughters-in-law relatively to biological daughters—for both we found the same correlations to their father-in-law/father's income throughout the income distributions.

Finally, we find that income mobility at a family level is smaller for father and mother pooled to son and daughter-in-law pooled than for father and mother pooled to daughter and son-in-law pooled.

This holds for the whole income distribution as well as for the earnings distribution. At the top end of the income distribution—99.5th fractile—the coefficients for parents and their daughter and son-in-law are 0.398 and as high as 0.480 for parents and their son and daughter-in-law. These coefficients are the highest of all coefficients found, indicating that at a family level there is a very high degree of economic persistence between generations among the rich in Denmark.

Our results are important because they shed light on the reproduction of richness (and power) in a society known for its relatively equal cross-sectional distribution of economic resources. Even here, assortative mating at the top end of the income distribution is more pronounced than in the distribution in general, indicating the desire of sons or daughters to maintain the family position by reproducing income positions across generations. Thus, when looking beyond the relation between individual parent and individual child to the relation between parent household and child household—first and second generations—even more intergenerational income persistence is likely to be seen. Therefore, assortative mating by income seems to be an important factor in explaining intergenerational income persistence and reproduction of income inequality, which calls for further analyzes on income mobility on family levels all over the income distribution.

Tables and figures

Tables

Table 1. Descriptive statistics - age, earnings and total income. Father - child and mother - child. 2008-prices.

		Mean	St.dev.	Min.	P10	P50	P90	P95	P99	Max.
Father - son										
Age:	Father	44.4	6.42	25	37	44	49	53	56	87
	Son	38.3	2.26	35	35	38	40	42	42	42
Earnings:	Father	353.6	216.47	0.6	188	310	402	542	682	17,219
	Son	443.8	320.53	0.1	252	379	496	680	858	38,416
To. income:	Father	357.1	264.01	0.1	173	309	404	551	702	25,408
	Son	463.8	443.99	0.0	218	393	520	723	920	79,200
Father - daughter										
Age:	Father	44.4	6.42	24	37	44	49	53	56	87
	Daughter	38.3	2.26	35	35	38	40	42	42	42
Earnings:	Father	353.2	219.52	1.0	188	310	402	541	684	17,219
	Daughter	312.3	140.29	0.5	189	293	358	444	530	7,520
To. income:	Father	357.3	276.62	0.1	172	309	404	552	704	25,397
	Daughter	329.0	188.80	0.0	187	305	381	478	571	34,262
Mother - son										
Age:	Mother	40.9	5.59	24	34	40	44	49	51	66
	Son	38.3	2.26	35	35	38	40	42	42	42
Earnings:	Mother	183.1	88.08	0.1	83	175	233	287	324	2,473
	Son	441.8	325.24	0.1	251	379	494	673	844	38,416
To. income:	Mother	182.9	92.86	0.0	84	173	228	284	324	9,796
	Son	463.6	445.67	0.0	216	394	521	723	920	79,200
Mother - daughter										
Age:	Mother	40.9	5.59	25	34	40	44	49	51	65
	Daughter	38.3	2.25	35	35	38	40	42	42	42
Earnings:	Mother	184.5	91.33	0.1	84	176	234	288	325	5,425
	Daughter	314.9	139.90	0.5	190	296	361	449	534	6,695
To. income:	Mother	183.9	99.73	0.0	84	174	228	285	325	10,308
	Daughter	330.1	181.85	0.0	187	307	383	479	572	34,262

Table 2. Descriptive statistics - earnings and total income. Father - married child/child-in-law, and father couple - child couple. 2008-prices.

		Mean	St.dev.	Min.	P10	P50	P90	P95	P99	Max.
Father - married son										
Earnings:	Father	358.4	217.82	0.6	192	313	407	552	696	8,799
	Mrd. son	471.6	346.12	0.1	272	396	523	722	917	38,416
To. income:	Father	365.7	263.16	0.2	181	314	412	564	724	12,821
	Mrd. son	512.3	427.62	0.0	285	425	563	785	1,008	41,869
Father - married daughter										
Earnings:	Father	352.4	221.09	1.1	188	310	401	540	681	17,219
	Mrd. dau.	312.9	137.84	0.8	193	292	357	443	531	6,651
To. income:	Father	358.8	274.51	0.1	175	310	405	553	706	24,909
	Mrd. dau.	337.9	180.15	0.0	204	313	388	484	579	34,262
Father - son-in-law										
Earnings:	Father	358.7	229.50	1.6	197	314	406	546	691	17,219
	Son-in-law	475.0	336.93	0.1	275	401	529	724	912	25,332
To. income:	Father	368.9	288.75	1.0	190	318	414	562	721	24,909
	Son-in-law	518.2	412.21	0.2	290	432	572	792	1,011	25,297
Father - daughter-in-law										
Earnings:	Father	360.7	220.23	0.7	193	315	409	556	701	8,799
	Da.-in-law	305.3	134.18	2.0	187	285	349	435	520	6,695
To. income:	Father	368.5	269.01	1.0	182	315	414	569	734	10,955
	Da.-in-law	332.5	159.70	0.0	202	309	381	476	570	8,937
Father and mother - son and daughter-in-law										
Earnings:	Parents	463.5	239.62	0.7	238	434	548	696	829	8,799
	Son/spouse	742.7	398.85	4.0	446	675	839	1,082	1,294	38,418
To. income:	Parents	516.2	292.81	28.8	275	474	591	759	924	11,604
	Son/spouse	855.4	501.44	36.5	541	756	947	1,233	1,496	42,241
Father and mother - daughter and son-in-law										
Earnings:	Parents	464.3	240.71	0.9	245	437	547	690	815	17,219
	Da/spouse	745.9	370.11	3.6	450	680	843	1,086	1,301	25,548
To. income:	Parents	517.0	298.91	38.7	283	478	591	752	907	25,072
	Da/spouse	858.2	463.83	36.5	546	762	952	1,237	1,506	24,860

Tables

Table 3. Income elasticities. Fathers. Earnings and total income. Quantile regression.

	q=0.25	q=0.50	q=0.75	q=0.90	q=0.95	q=0.99	q=0.995
Earnings:							
Son	0.118***	0.146***	0.186***	0.217***	0.231***	0.257***	0.267***
Daughter	0.086***	0.098***	0.108***	0.132***	0.152***	0.178***	0.188***
Son, married	0.123***	0.154***	0.194***	0.221***	0.236***	0.261***	0.267***
Daughter, married	0.081***	0.097***	0.109***	0.134***	0.152***	0.178***	0.190***
Son-in-law	0.082***	0.109***	0.139***	0.155***	0.173***	0.211***	0.232**
Daughter-in-law	0.043***	0.064***	0.087***	0.119***	0.138***	0.138***	0.146***
Total income:							
Son	0.207***	0.218***	0.260***	0.292***	0.309***	0.333***	0.348***
Daughter	0.155***	0.162***	0.171***	0.195***	0.213***	0.225***	0.233***
Son, married	0.178***	0.215***	0.262***	0.293***	0.313***	0.343***	0.364***
Daughter, married	0.137***	0.153***	0.168***	0.195***	0.214***	0.221***	0.228***
Son-in-law	0.118***	0.150***	0.179***	0.188***	0.199***	0.224***	0.239**
Daughter-in-law	0.086***	0.114***	0.135***	0.163***	0.178***	0.181***	0.205***

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01

Table 4. Income elasticities. Mothers. Earnings and total income. Quantile regression.

	q=0.25	q=0.50	q=0.75	q=0.90	q=0.95	q=0.99	q=0.995
Earnings:							
Son	0.022***	0.034***	0.049***	0.055***	0.055***	0.071***	0.090***
Daughter	0.050***	0.050***	0.051***	0.062***	0.071***	0.060***	0.065***
Son, married	0.026***	0.039***	0.052***	0.050***	0.054***	0.082***	0.090*
Daughter, married	0.051***	0.051***	0.053***	0.065***	0.074***	0.057***	0.068**
Son-in-law	0.023***	0.034***	0.040***	0.037***	0.035**	0.033	0.045
Daughter-in-law	0.032***	0.038***	0.042***	0.058***	0.058***	0.050**	0.045
Total income:							
Son	0.031***	0.045***	0.064***	0.077***	0.080***	0.095***	0.097***
Daughter	0.058***	0.063***	0.065***	0.074***	0.082***	0.083***	0.082***
Son, married	0.036***	0.050***	0.066***	0.072***	0.076***	0.102***	0.096**
Daughter, married	0.057***	0.064***	0.066***	0.075***	0.084***	0.082***	0.081***
Son-in-law	0.027***	0.036***	0.048***	0.041***	0.038***	0.061	0.058
Daughter-in-law	0.041***	0.049***	0.055***	0.065***	0.068***	0.053***	0.047

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01

Table 5. Second generation's husband and wife earnings and income correlations (elasticities). Quantile regression.

	q=0.25	q=0.50	q=0.75	q=0.90	q=0.95	q=0.99	q=0.995
Earnings. *Left hand side variable is:*							
Husband	0.155***	0.157***	0.153***	0.120***	0.096***	0.027	0.021
Wife	0.070***	0.113***	0.152***	0.196***	0.212***	0.202***	0.200***
Total income. *Left hand side variable is:*							
Husband	0.280***	0.258***	0.214***	0.135***	0.104***	0.035	0.004
Wife	0.164***	0.199***	0.224***	0.249***	0.245***	0.188***	0.165***

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01.

Table 6. Income elasticities. Father/mother's income - son/daughter-in-law's and daughter/son-in-law's income. Quantile regression.

	q=0.25	q=0.50	q=0.75	q=0.90	q=0.95	q=0.99	q=0.995
Earnings:							
Son and wife	0.163***	0.169***	0.193***	0.218***	0.222***	0.253***	0.294***
Daughter and husband	0.141***	0.149***	0.170***	0.186***	0.193***	0.203***	0.220***
Total income:							
Son and wife	0.196***	0.240***	0.299***	0.344***	0.366***	0.451***	0.480***
Daughter and husband	0.176***	0.212***	0.259***	0.293***	0.303***	0.363***	0.398***

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01

Figures

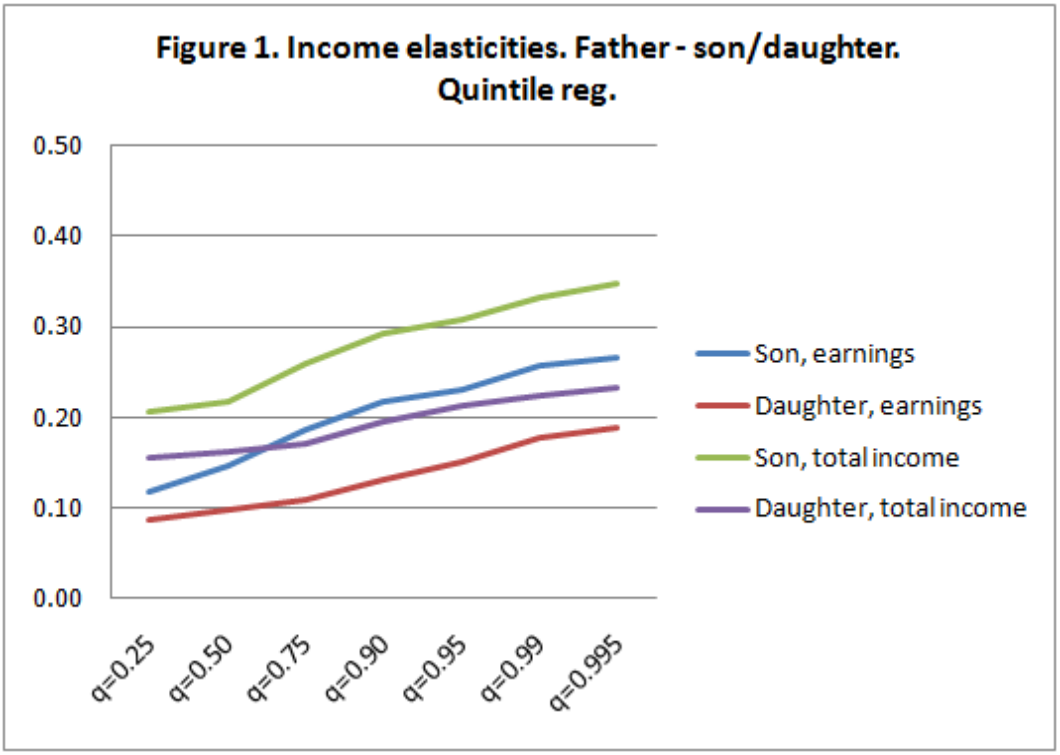


Figure 1. Income elasticities. Father - son/daughter. Quintile reg.
0.50
0.40
0.30
0.20
0.10
0.00
q=0.25
q=0.50
q=0.75
q=0.90
q=0.95
q=0.99
q=0.995
Son, earnings
Daughter, earnings
Son, total income
Daughter, total income

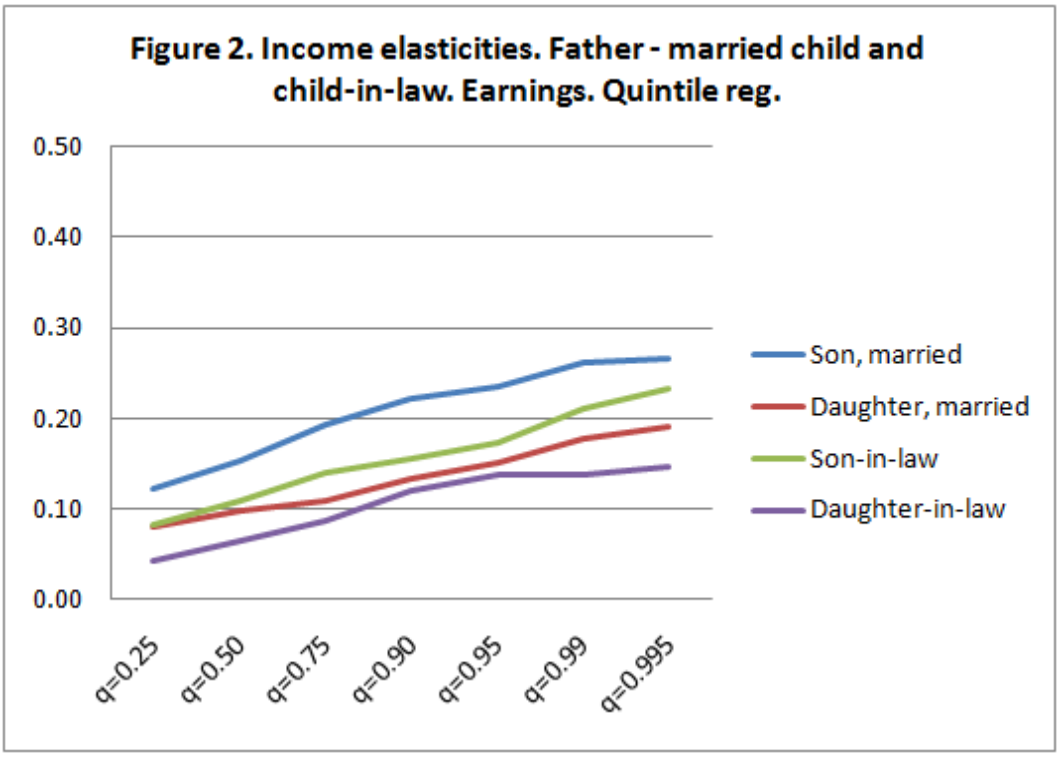


Figure 2. Income elasticities. Father - married child and child-in-law. Earnings. Quintile reg.
0.50
0.40
0.30
0.20
0.10
0.00
q=0.25
q=0.50
q=0.75
q=0.90
q=0.95
q=0.99
q=0.995
Son, married
Daughter, married
Son-in-law
Daughter-in-law

Figure 3. Income elasticities. Father - married child and child-in-law. Total income. Quintile reg.

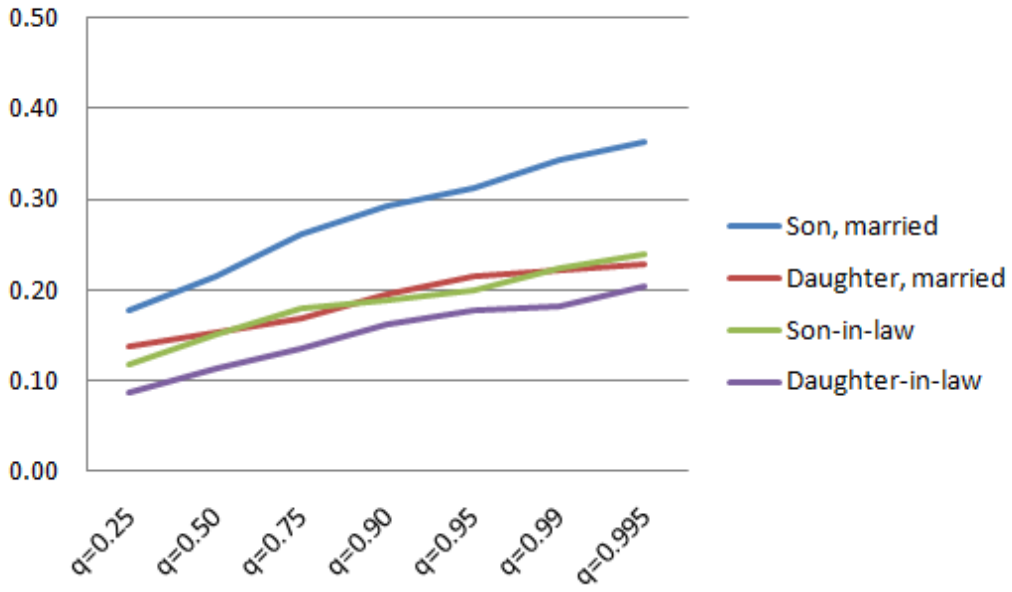
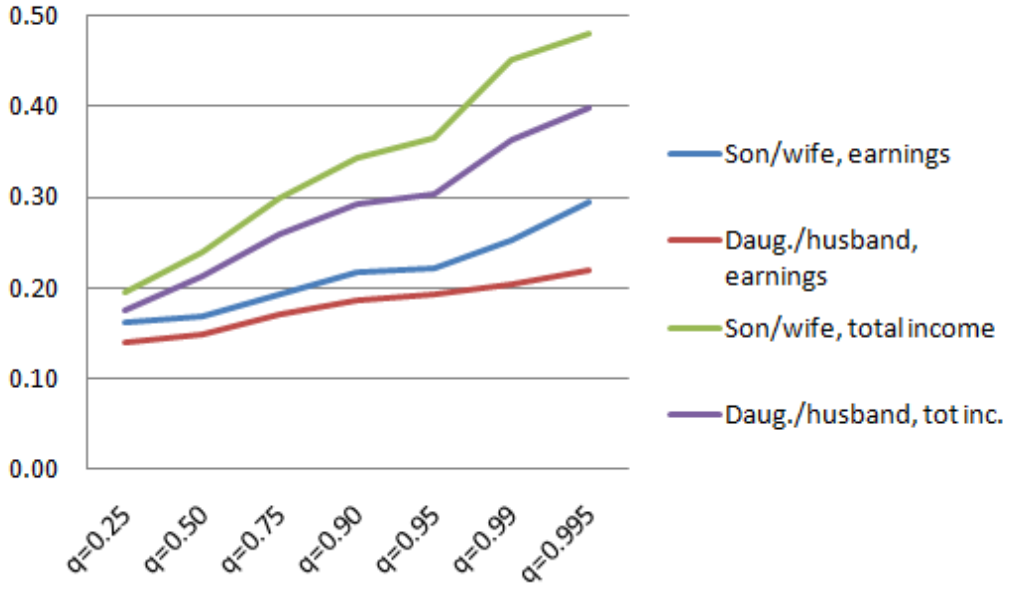


Figure 4. Income elasticities. Father - son/wife and daughter /husband. Quintile reg.



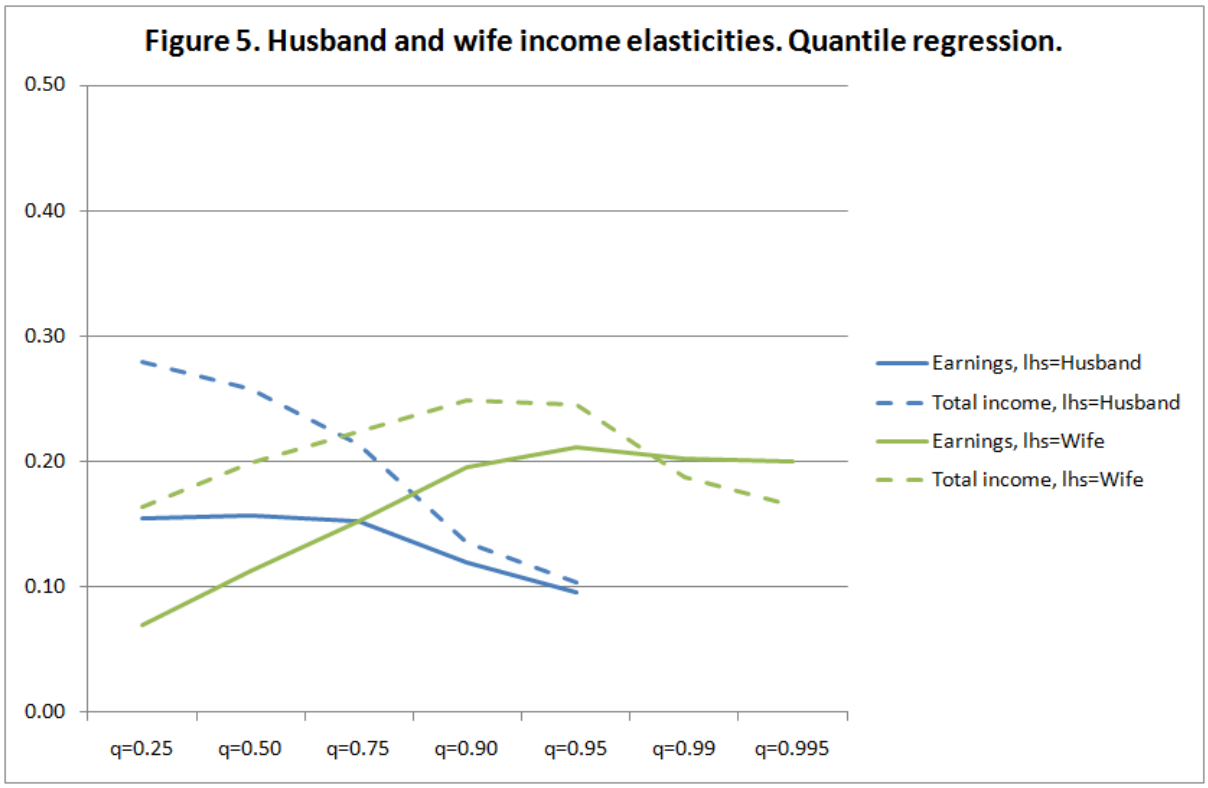


Figure 5. Husband and wife income elasticities. Quantile regression.
0.50
0.40
0.30
0.20
0.10
0.00
q=0.25
q=0.50
q=0.75
q=0.90
q=0.95
q=0.99
q=0.995
Earnings, lhs=Husband
Total income, lhs=Husband
Earnings, lhs=Wife
Total income, lhs=Wife

References

Aaberge, R. & A.B. Atkinson (2010) 'Top Incomes in Norway' in Piketty & Atkinson (eds.) *Top Incomes: A Global Perspective*, New York, Oxford University Press, 448-481.

Aaronson, D. & Mazumder, B. (2008) 'Intergenerational Economic Mobility in the United States , 1940 to 2000' in *The Journal of Human Resources*, 43(1), 139-172.

Andrews, D. & Leigh, A. (2009) 'More Inequality, Less Social Mobility' in *Applied Economics Letters*, 16, 1489-1492.

Atkinson, A.B. (2004) 'Income Tax and Top Incomes over the Twentieth Century' in *Hacienda Pública Española / Revista de EconomíaPública*, 168(1), 123-141.

Atkinson, Anthony B. 2005. "Top Incomes in the UK over the Twentieth Century." *Journal of the Royal Statistical Society, Series A*, 168(2): 325–343.

Atkinson, A.B. & T. Piketty (2007) 'Towards a Unified Data Set on Top Incomes' in Atkinson &Piketty (eds.) *Top Incomes: A Contrast Between Continental European and English-Speaking Countries*, New York, Oxford University Press, 531-566.

Atkinson, A.B., T. Piketty & E. Saez (2011) 'Top Incomes in the Long Run of History'. *Journal of Economic Literature, 49:1, 3–71*

Atkinson, A.B., T. Piketty & E. Saez (2010) 'Top Incomes in the Long Run of History' in Piketty& Atkinson (eds.)*Top Incomes: A Global Perspective*, New York, Oxford University Press, 664-760.

Becker, G.S. & Tomes, N. (1979) 'An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility' in *The Journal of Political Economy*, 87(6), 1153-1189.

Becker, G.S. & Tomes, N. (1986) 'Human Capital and the Rise and Fall of Families' in *The Journal of Labor Economics*, 4(3), 1-39.

Beller, E. (2009) 'Bringing Intergenerational Social Mobility Research into the Twenty-first Century: Why Mothers Matter' in *American Sociological Review*, 74, 507-528.

Björklund, A. &Jäntti, M. (1997) ‘Intergenerational Income Mobility in Sweden Compared to the United States’ in *The American Economic Review*, 87(5), 1009-1018.

Björklund, A., Jäntti, M., & Solon, G. (2007) ’Nature and Nurture in the Intergenerational Transmission of Socioeconomic Status: Evidence from Swedish Children and Their Biological and Rearing Parents’ in *Intergenerational Economic Mobility Around the World*, 7(2), art. 4.

Björklund, Anders & Markus Jäntti 2009.“Intergenerational Income Mobility and the Role of Family Background”, in Salverda, Nolan &Smeeding (eds.) *The Oxford Handbook of Economic Inequality*, New York, Oxford University Press, 491-521.

Björklund, A., J. Roine, & D. Waldenström (2010) ’Intergenerational top income mobility in Sweden: Capitalistic dynasties in the land of equal opportunity? Paper Prepared for the 31st General Conference of The International Association for Research in Income and Wealth, St. Gallen, Switzerland, August 22-28, 2010.

Björklund, A., L. Lindsahl, & L. Lindquist (2010) ’What More Than Parental Income, Education, and Occupation? An Exploration of What Swedish Siblings Get from Their Parents’ in *The B.E. Journal of Economic Analysis and Policy*, 10(1), article 102.

Black, S. E. & P.J. Devereux (2010) ‘Recent Developments in Intergenerational Mobility’, IZA Discussion Paper No. 4866, Prepared for the Handbook of Labor Economics.

Blanden, J., Goodman, A., Gregg, P. and Machin, S. (2004) ‘Changes in intergenerational mobility in Britain’in (M. Corak, ed.), Generational Income Mobility in North America and Europe, pp. 122–46, Cambridge:Cambridge University Press.

Blanden, J., P. Gregg & L. Macmillan (2007) ‘Accounting for Intergenerational Income Persistance: Noncognitive Skills, Ability and Education’ in T*he Economic Journal*, 117, C43–C60.

Blanden, J., P. Gregg & L. Macmillan (2010) 'Intergenerational Persistence in Income and Social Class: The Impact of Within-Group Inequality'. The Centre for Market and Public Organization, Working Paper No. 10/230.

Bratberg, E., Nilsen, Ø.A., & Vaage, K. (2005) 'Intergenerational Earnings Mobility in Norway: Levels and Trends' in *Scandinavian Journal of Economics*, 107(3), 419-435.

Bratberg, E., Nilsen, Ø.A., & Vaage, K. (2007a) 'Trends in Intergenerational Mobility across Offspring's Earnings Distribution in Norway' in *Industrial Relations*, 46(1), 112-129.

Bratberg, E., Røed, K., Raaum, O., Naylor, R., Jäntti, M., Eriksson, T., & Österbacka, E. (2007b) 'Nonlinearities in Intergenerational Earnings Mobility: Consequences for Cross-Country Comparisons' in *The Economic Journal*, 117(518), 72-92.

Burkhauser, R.V. & K.A. Couch (2005) 'Intergenerational Inequality and Intertemporal Mobility' in Salverda, Nolan &Smeeding (eds.) *The Oxford Handbook of Economic Inequality*, New York, Oxford University Press, 522-545.

Böhlmark, A. & M. Lindquist (2006) 'Life-Cycle Variations in the Association between Current and Lifetime Income: Replication and Extension for Sweden' in *Journal of Labor Economics*, 24(4): 879–900.

Chadwick, L. & G. Solon (2002) 'Intergenerational Income Mobility among Daughters' in *The American Economic Review*, 92(1): 335-344.

Corak, M. (2006) "Do Poor Children Become Poor Adults? Lessons from a Cross-Country Comparison of Generational Earnings Mobility." *Research on Economic Inequality, 13*(1): 143–188.

Corak, M. and Heisz, A. (1999) "The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence from Longitudinal Income Tax Data." *Journal of Human Resources*, 34(3): 504–533.

Corcoran, M. (2001) ‘Mobility Persistence and the Consequences of Poverty for Children: Child and Adult Outcomes’ in Danziger&Haveman (eds.) *Understanding Poverty*, New York, Russell Sage Foundation, 127-61.

Davies, J.B., Zhang, J. & Zeng, J. (2005) ‘Intergenerational Mobility under Private vs. Public Education’ in *Scandinavian Journal of Economics*, 107(3), 399-417.

Erikson, R. & Goldthorpe, J.H. (2002) ‘Intergenerational Inequality: A Sociological Perspective’ in *Journal of Economic Perspectives*, 16(3), 31-44.

Erikson, R. & Goldthorpe, J.H. (2009) ‘Social class, family background, and intergenerational mobility: A comment on Mcintosh and Munk’ in *European Economic Review* 53, 118–120.

Erikson, R. & Goldthorpe, J.H. (2010) ‘Has social mobility in Britain decreased? Reconciling divergent findings on income and class mobility’ in *The British Journal of Sociology* 61(2), 211-230.

Ermisch, J., Francesconi, M., & Siedler, T. (2006) ‘Intergenerational Mobility and Marital Sorting’ in *The Economic Journal*, 116(513), 659-679.

Fertig, A.R. (2003) ‘Trends in Intergenerational Earnings Mobility in the United States’ in *Journal of Income Distribution*, 12(3-4), 108-130.

Glenn, N.D., Ross, A.A. & Tully, J.C. (1974) ‘Patterns of Intergenerational Income Mobilities of Females through Marriage’ in *American Sociological Review*, 39(4), 683-699.

Goldberger, A.S. (1989) ‘Economic and Mechanical Models of Intergenerational Transmission’ in *The American Economic Review*, 79(3), 504-513.

Goldthorpe, J.H. & Jackson, M. (2007) ‘Intergenerational class mobility in contemporary Britain: political concerns and empirical findings’ in *The British Journal of Sociology*, 58(4), 525-546.

Goldthorpe, J.H. & Mills, C. (2008) ‘Trends in Intergenerational Class Mobility in Modern Britain: Evidence From National Surveys, 1972--2005’ in *National Institute Economic Review* 205: 83-100.

Grawe, N.D. (2004) ‘Reconsidering the Use of Nonlinearities in Intergenerational Earnings Mobility as a Test for Credit Constraints’ in *The Journal of Human Resources*, 39(3), 813-827.

Grawe, N.D. (2006) ‘Lifecycle Bias in Estimates of Intergenerational Earnings Persistance’ in *Labour Economics*, 13, 551-570.

Gustafsson, B. & B. Jansson (2008) ‘Top incomes in Sweden over three-quarters of a century: a micro data approach’ in *Cambridge Journal of Economics,* 32, 963–976.

Harding, D.J., Jencks, C., Lopoo, L.M. & Mayer, S.E. (2005) ‘The Changing Effect of Family Backgraound on the Incomes of Amarican Adults’ in Bowles, Gintis& Groves (eds.) *Unequal Chances: Family Background and Economic Success*, New Jersey, Princeton University Press, 100-144.

Hendricks, L. (2007) ‘The Intergenerational Persistence of Lifetime Earnings’ in *European Economic Review*, 51, 125-144.

Hertz, T. (2007) ‘Trends in the Intergenerational Elasticity of Family Income in the United States’ in *Industrial Relations*, 46(1), 22-50.

Hirvonen, L.H. (2008) ‘Intergenerational Earnings Mobility Among Daughters and Sons Evidence from Sweden and a Comparison with the United States’ *American Journal of Economics and Sociology*, 67(5), 779-826.

Holmlund, Helena, Mikael Lindahl, and Erik Plug (2008) “The Causal Effect of Parent'sSchooling on Children's Schooling: A Comparison of Estimation Methods” (with MikaelLindahl and Erik Plug), *IZA Discussion Paper* No. 3630.

Hussain, A.H, Munk, M.D. & Bonke, J. (2009) 'Intergenerational Earnings Mobilities – How Sensitive are they to Income Measures?' in *Journal of Income Distribution*, 18 (3/4), 79-92.

Ichino, A., Karabarbounis, L. & Moretti, E. (2011) 'The Political Economy of Intergenerational Income Mobility' in *Economic Inquiry*, 49(1), 47-69.

Jäntti, M., Riihelä, M., Sullström, R. & Tuomala, M. (2010) 'Trends in Top Income Shares in Finland' in Piketty& Atkinson (eds.) *Top Incomes: A Global Perspective*, New York, Oxford University Press, 371-448.

Jäntti, M., Bratsberg, B. Røed, K., Raaum, O., Naylor, R., Österbacka, E., Björklund, A. and Eriksson, T. (2006), "American exceptionalism in a new Light: A comparison of intergenerational earnings mobility in the Nordic countries, the United Kingdom and the United States," Discussion paper no. 1938 (Institute for the Study of Labor (IZA), Bonn).

Kearney, M.S. (2006) 'Intergenerational Mobility for Women and Minorities in the United States' in *The Future of Children*, Vol. 16, No. 2, Opportunity in America, pp. 37-53.

Lam, D. & Schoeni, R.F. (1994) 'Family Ties and Labor Markets in the United States and Brazil' in *Journal of Human Resources*, 29(4), 1235-1258.

Lee, C-I. & Solon, G. (2009) 'Trends in Intergenerational Income Mobility' in *The Review of Economics and Statistics*, 91(4), 766–772.

Lefgren, L. & McIntyre, F. (2006) 'The Relationship between Women's Education and Marriage Outcomes' in *Journal of Labor Economics*, 24(4), 787-830.

Leigh, A. (2005) 'Top Incomes' in Salverda, Nolan &Smeeding (eds.) The Oxford Handbook of Economic Inequality, New York, Oxford University Press, 150-174.

Levine, D.I. & Mazumder, B. (2002) 'Choosing the Right Parents: Changes in the Intergenerational Transmission of Inequality between 1980 and the Early 1990s', Federal Reserve Bank of Chicago working paper no. 2002-08.

Levine, D.I. & Mazumder, B. (2007) ’The Growing Importance of Family: Evidence from Brothers’ Earnings’ in *Industrial Relations*, 46(1), 7-21.

Mann, T. (1901). Buddenbrooks. Gyldendal (5 edition, 2002).

Mare, R.D. (1991). ’Five Decades of educational assortative mating’ in *American Sociological Review*, 56(1), 15-32.

Mare, R.D. (2000) ‘Assortative Mating, Intergenerational Mobility, and Educational Inequality’ Working Paper CCPR-004-00. Los Angeles: California Center for Population Research, University of California–Los Angeles.

Mayer, S.E. & Lopoo, L.M. (2005) ‘Has the Intergenerational Transmission of Economic Status Changed?’ in *The Journal of Human Resources*, 40(1), 169-185

Mayer, S.E. & Lopoo, L.M. (2008) ‘Governement Spending and Intergenerational Mobility’ in *Journal of Public Economics*, 92, 139-158.

Mazumder, B. (2005a) ‘The Apple Falls Even Closer to the Tree than We Thought: New and Revised Estimates of Intergenerational Inheritance of Earnings’ in Bowles, Gintis & Groves (eds.) *Unequal Chances: Family Background and Economic Success*, New Jersey, Princeton University Press, 80-99.

Mazumder, B. (2005b) ‘Fortunate Sons: New Estimates of Intergenerational Mobility in the United States using Social Security Earnings Data’ in *The Review of Economics and Statistics*, 87(2), 235-255.

McIntosh, J. & Munk, M.D. (2009a) ‘Social Class, Family Background, and Integenerational Inequality’ in *European Economic Review*, 53(1), 107-117.

McIntosh, J. & Munk, M. D. (2009b) ‘Testing Mobility Models: A rejoinder to Erikson and Goldthorpe’, *European Economic Review,* 53(1), 121-125

Muller, S.M. (2010) ‘Another Problem in the Estimation of Intergenerational Income Mobility’ in *Economic Letters*, 108, 291-295.

Mulligan, C.B. (1999) ‘Galton versus the Human Capital Approach to Inheritance’ in *Journal of Political Economy*, 107(6), pt.6-2.

Nam, Y. (2004) ’Is America becoming more equal for children? Changes in the intergenerational transmission of low and high-income status’ in *Social Science Research* 33, 187–205.

Nicoletti,C. & Ermisch, J.F. (2007) ‘Intergenerational Earnings Mobility: Changes across Cohorts in Britain’ in *The B.E. Journal of Economic Analysis and Policy*, 7(2), 1-36.

Nilsen, Oivind A., Vaage, K., Arkvik, A. and Jacobsen, K. (2008) ‘Estimates ofintergenerationalelasticities based on lifetime earnings’, *IZA Discussion Paper* No. 3709.

O’Neill, D., Sweetman, O. & Van de gaer, D. (2007) ‘The Effects of Measurement Error and Omitted Variables When Using Transition Matrices to Measure Intergenerational Mobility’ in *The Journal of Economic Inequality*, 5(2), 159-178.

Österberg, T. (2000) ‘Intergenerational Income Mobility in Sweden : What do Tax-Data Show?’ in *Review of Income and Health*, 46(4), 421-436.

Pekkala, S. & Lucas, R.E.B. (2007) Differences Across Cohorts in Finish Intergenerational Income Mobility’ in *Industrial Relations*, 46(1), 81-111.

Piketty, T. (2001) *Les hauts revenus en France au 20ème siècle*. Grasset, Paris

Piketty, T. and Saez, E. (2003) ‘Income Inequality in the United States, 1913-1998’ in *Quarterly Journal of Economics*, 118(1), 1–39.

Piketty, T. (2007) ‘Top Incomes Over the Twentieth Century: A Summary of Main Findings’ in Piketty& Atkinson (eds.) *Top Incomes Over the Twentieth Century: A Contrast Between*

Continental European and English-Speaking Countries, New York, Oxford University Press, 1-17.

Pascual, M. (2009) 'Intergenerational income mobility: The transmission of socio-economic status in Spain' in *Journal of Policy Modeling*, 31(6), 835-846.

Roine, J. & D. Waldenström (2010) 'Top Incomes in Sweden Over the Twentieth Century' in Piketty& Atkinson (eds.) *Top Incomes: A Global Perspective*, New York, Oxford University Press, 299-370.

Roemer, J.E. (2009) 'Equality: Its Justification, Nature, and Domain' in Salverda, Nolan & Smeeding (eds.) *The Oxford Handbook of Economic Inequality*, New York, Oxford University Press, 23-39.

Raaum, O., Bratsberg, B., Røed, K., Österbacka, E., Eriksson, T., Jäntti, M. and Naylor, R. A. (2007), 'Marital sorting, household labor supply and intergenerational earnings mobility across countries', in *The B.E. Journal of Economic Analysis and Policy*, Article 7.

Solon, G. (1992) 'Intergenerational Income Mobility in the United States' in *The American Economic Review*, 82(3), 393-408.

Solon, G. (1999), 'Intergenerational mobility in the labor market', in: Orley Ashenfelter and David Card, eds., Handbook of labor economics, Vol. III (Amsterdam: North-Holland) 1761-1800.

Solon, G. (2004) 'A Model of Intergenerational Mobility Variation over Time and Place' in Corak (ed.) *Generational Income Mobility in North America and Europe*, Cambridge, Cambridge University Press, 38-47.

Riihellä, M.,Sullström, R., & Tuomala, M. (2010) 'Trends in top income shares in Finland in 1966–2007' Tampere Economic Working Papers, 78.

Zimmerman, D.J. (1992) 'Regression Toward Mediocrity in Economic Stature' in *The American Economic* Review, 82(3), 409-429

Appendix

Table A1. Income elasticities. Fathers. Earnings and total income. Piecewise OLS regression.

	All	0<p<0.25	0.25<p<0.50	0.50<p<0.75	0.75<p<0.90	0.90<p<0.95	0.95<p<0.99	0.99<p<0.999
Earnings:								
Son	0.176***	0.032***	0.312***	0.417***	0.229***	0.397***	0.243***	0.126
Daughter	0.110***	0.032***	0.263***	0.241***	0.208***	0.261**	0.027	-0.061
Son, married	0.177***	0.019***	0.293***	0.462***	0.220***	0.250**	0.268***	0.107
Daughter, married	0.108***	0.026***	0.233***	0.254***	0.209***	0.138	0.013	-0.067
Son-in-law	0.123***	0.01	0.233***	0.306***	0.165**	0.165	0.139	0.118
Daughter-in-law	0.072***	0.016**	0.161***	0.144***	0.053	-0.224*	-0.007	-0.168
Total income:								
Son	0.244***	0.067***	0.354***	0.380***	0.292***	0.368***	0.304***	0.260***
Daughter	0.165***	0.039***	0.377***	0.318***	0.220***	0.155*	0.110**	0.074
Son, married	0.242***	0.045***	0.391***	0.412***	0.310***	0.288***	0.283***	0.079
Daughter, married	0.163***	0.025***	0.376***	0.319***	0.232***	0.16	0.124**	0.150*
Son-in-law	0.157***	0.009	0.282***	0.385***	0.283***	0.290*	0.181*	0.097
Daughter-in-law	0.111***	0.020**	0.230***	0.228***	0.140**	0.053	-0.008	-0.235*

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01

Table A2. Income elasticities. Mothers. Earnings and total income. Piecewise OLS regression.

	All	0<p<0.25	0.25<p<0.50	0.50<p<0.75	0.75<p<0.90	0.90<p<0.95	0.95<p<0.99	0.99<p<0.999
Earnings:								
Son	0.037***	0.006	-0.076**	-0.068*	0.281***	0.02	0.372***	0.354**
Daughter	0.055***	0.009*	0.017	0.011	0.193***	0.647***	0.195*	0.187
Son, married	0.038***	0.001	-0.083**	-0.039	0.342***	-0.029	0.383***	0.305*
Daughter, married	0.058***	0.008	0.059*	0.054	0.275***	0.697***	0.193	0.24
Son-in-law	0.031***	0.004	-0.082	-0.034	0.262**	0.136	0.214	0.605**
Daughter-in-law	0.041***	0.009	-0.001	-0.022	0.281***	0.051	0.127	0.136
Total income:								
Son	0.048***	-0.003	0.225***	-0.119***	0.238***	0.569***	0.397***	0.564***
Daughter	0.065***	0.006	0.110***	-0.018	0.354***	0.536***	0.257***	0.07
Son, married	0.053***	0.002	0.179***	-0.114***	0.353***	0.249	0.416***	0.535***
Daughter, married	0.067***	0.006	0.098***	-0.023	0.372***	0.486***	0.290***	0.13
Son-in-law	0.034***	0.000	-0.012	-0.036	0.240**	0.426	0.380**	0.098
Daughter-in-law	0.053***	0.015**	-0.045	0.054	0.301***	-0.090	0.299***	0.316**

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01

Table A3. Income elasticities. Father and mother's income vs son (daughter) and daughter-in-law's (son-in-law's) income. OLS regression.

	All	0<p<0.25	0.25<p<0.50	0.50<p<0.75	0.75<p<0.90	0.90<p<0.95	0.95<p<0.99	0.99<p<0.999
Earnings:								
Son and wife	0.194***	0.068***	0.227***	0.258***	0.312***	0.568***	0.278***	0.010
Daughter and husband	0.168***	0.063***	0.225***	0.255***	0.414***	0.295*	0.119	0.170
Total income:								
Son and wife	0.269***	0.142***	0.207***	0.401***	0.444***	0.320***	0.286***	0.133
Daughter and husband	0.229***	0.121***	0.214***	0.391***	0.408***	0.290**	0.116*	0.196*

* 0.05<p<0.10. ** 0.01<p<0.05. *** p<0.01