

Long-term social mobility in Sweden: A three-generation approach

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Abstract

Most research on social and economic mobility follows a two-generation approach, studying the correlations between the socioeconomic status of, for example, fathers and sons. Much less attention has been given to transmissions of status beyond two generations, and whether social mobility between two generations is maintained also in the third. This issue is of considerable relevance both for our understanding of societal openness and the stability of class structures. In this paper we look at social mobility across three generations in Sweden in the period 1815-1990. Using longitudinal micro-level data from the Scania Economic-Demographic Database, we identify three-generation genealogies (grandfather, father, son) for which we have full information on social class in prime working ages. We use the EGP occupational class scheme, finding that the major part of the grandfather's influence on the grandson is cancelled out when the impact from father to son is taken into account. The results also support a process of regression towards the mean, where upward (downward) intergenerational mobility experienced by the previous generation was strongly associated with downward (upward) mobility in the next.

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Introduction

Patterns and determinants of social mobility and attainment have been fundamental research topics in sociology and economic history for a long time. A key interest has revolved around the extent to which social mobility regimes differ between countries at different levels of development or with a different institutional structure, and whether these patterns changed during and after industrialization (see, e.g., Bourdieu, Ferrie and Kesztenbaum 2009; Breen 2008; Erikson and Goldthorpe 1992; Ferrie 2005; Ganzeboom, Luijkx and Treiman 1989; Ganzeboom, Treiman and Ultee 1991; Grusky and Hauser 1984; Hout and DiPrete 2006; Lipset and Bendix 1959; Long and Ferrie 2007, 2013; Treiman 1970; Van Leeuwen and Maas 2010). In turn, these questions are also related to issues of social stratification more generally, and the extent to which these patterns are dependent on economic development (see, e.g., Treiman 1976).

Most of these studies are based on a comparison of socioeconomic and class attainment across two generations, typically from father to son. More recently, it has become increasingly common to examine to what extent the transmission of status carries over from grandparents to grandchildren, which would imply that a three-generation (or even deeper) perspective is necessary (e.g. Warren and Hauser 1997; see also the discussion in Mare 2011 and Björklund and Jäntti 2012). Moreover a two-generation perspective would likely underestimate the strength of social reproduction, or socioeconomic/class persistence across generations (see Lindahl et al. 2012)

Similar to two-generation studies of class mobility, existing three-generation studies have failed to reach a consensus. While some studies point to important grandparent effects, other studies find no effect of grandparents' class on that of their grandchildren, once the characteristics of the parents are controlled for (see, e.g., the review in Warren and Hauser 1997). Studies instead focusing on income persistence across generations have found a significant influence from grandparents to grandchildren, net of parental impact, which suggests a direct influence (e.g., Lindahl et al. 2012). Despite the emergence of several stratification and mobility studies going beyond a two-generation approach, there is still need for more knowledge about long-term aspects of socioeconomic attainment and mobility (Mare 2011).

While the persistence in class or income across generations is an important aspect of social reproduction, it is, however, also important to focus more directly on social mobility. The aim of this paper is to study class attainment and mobility among males from a three-generation perspective. More specifically, in addition to looking at the impact of the class of the grandfather on their grandsons' attainment, we study to what extent social mobility in one generation is maintained in the

next. Does upward mobility imply a permanent change in status, or are the children of a social climber likely to regress to the class of their grandfather? Similarly, to what extent can children of those who experienced downward social mobility compensate and regain the position of their grandfathers?

In addressing these questions, we use individual-level data from the Scania Economic-Demographic Database (Bengtsson, Dribe and Svensson 2012). Individuals have been linked to form three generations with information on social class, for grandfathers, fathers and sons. The database covers all individuals who ever lived in five parishes in the county of Scania, located in southern Sweden, between 1815 and 2010. From 1968 and onwards, the geographic limitation is lifted, and we follow all descendants of the original population, regardless of where they lived in Sweden. Class attainment and mobility is measured at age 40, using the EGP class scheme (Erikson, Goldthorpe and Portocarero 1979).

We find that the major part of the grandfather's influence on the grandson is cancelled out when the impact from father to son is taken into account. The results also support a process of regression towards the mean, where upward (downward) intergenerational mobility experienced by the previous generation is strongly associated with downward (upward) mobility in the next generation.

In the following sections we discuss some necessary background, data and methods before turning to the empirical analysis, followed by discussion and conclusion.

Background

Much of the economic research into social mobility derives its theoretical foundation from the highly influential model developed by Becker and Tomes (1986). Socioeconomic attainment of children (e.g. earnings or occupational status) is partly the result of parental investments in the human capital of their offspring. This leads to a positive correlation of socioeconomic status in a two-generational setting. This theoretical postulate has also repeatedly been confirmed in empirical studies showing fairly high correlations in earnings between two consecutive generations (usually father and son) (e.g. Solon 1992; Zimmermann 1992; Björklund and Jäntti 2000, 2009, Jäntti and Jenkins 2013). Country differences in the strength of the correlation are, however, not trivial, indicating considerable heterogeneity in intergenerational earnings persistence across different contexts (see for example Blanden 2013). Sweden, for example, appears to have higher earnings mobility, and thus lower

intergenerational persistence in earnings than either the U.S. or Great Britain (Björklund and Jäntti 1997, 2000; Solon 2002)

However, the process of regression to the mean causes the influence of earlier generations on socioeconomic outcomes to gradually diminish. If the correlation between grandfather-father and father-son both amount to 0.3, the correlation between grandfather and grandson is 0.09 (0.3×0.3). In fact, according to Becker and Tomes (1986) most ancestral influences in developed countries are eliminated already after three generations, giving little room for an important role played by grandparents on grandchildren's outcomes. This view is consistent with a first-order Markov process, where the outcome in one generation is only determined by characteristics of the parental generation (e.g., Hodge 1966). Several studies on class attainment based on occupation also give empirical support for this view, showing no, or only a very limited, impact of grandparents' status on the status attainment of their grandchildren once the status of the parents are controlled for (e.g. Hodge 1966; Warren and Hauser 1997; Erola and Moision 2007).

Other recent studies, however, provide evidence suggesting that there indeed are important effects of the grandparental generation on socioeconomic outcomes of the grandchildren, over and above the influence working through the parental generation. In a study of earnings mobility across three generations using data of a cohort of school children from 1938 in Malmö in southern Sweden, Lindahl et al. (2012) find a significant association between the earnings of grandparents and grandchildren net of the impact of parental earnings. In other words, there is a clear grandparental influence on earnings not working through the earnings of the parental generation. Hence, a first-order Markov process cannot fully describe the earnings mobility in Sweden in the twentieth century. They also find a considerably stronger association in the upper end of the income distribution, suggesting greater intergenerational persistence in earnings among high-earners.

Looking instead at education, Modin, Erikson and Vågerö (2013) find that ninth-graders in contemporary Sweden are more likely to achieve top grades in Mathematics and Swedish if their grandparents had high grades in these subjects in third grade. They do not control for parental grades but include controls for parental education level (as well as the educational level of all grandparents), and interpret their results as evidence of a direct influence from grandparents to grandchildren in terms of school performance. Hällsten (2014) (...). Allowing for heterogeneous effects

Turning to occupational attainment and mobility, both Chan and Bolivier (2013), studying Britain in the post WWII period, and Long and Ferrie (2012), looking at the United States and Britain 1850-1910, show significant associations between the attainment of grandparents and

grandchildren, while controlling for the attainment of the parental generation. Similar results are also implied by analyses of rare surnames, where a strong persistence of (high) socioeconomic status in England and Sweden over several generations can be observed (Clark 2014).

In a study covering multiple generations Campbell and Lee also show a strong inter-generational transmission of inequality in China, but in this context wider kin-groups were more crucial for transmission of status across generations than parent-child, or grandparent-grandchild, ties (Campbell and Lee 2011).

There could be several reasons for the existence of a direct link between grandparents' and grandchildren's social class. Grandparents could transmit various resources directly to their grandchildren. These could be resources in the form of wealth or networks, which in turn could provide access to high-status education or occupations (see, e.g., Mare 2011). It is probably to be expected that this kind of direct influence through wealth and high-status networks should be most strongly felt at the upper end of the status distribution, and thus that it could be a major explanation for a high degree socioeconomic persistence in the upper classes (see, e.g., Zimmerman 1992; Lindahl et al. 2012)

Increased longevity and improved health of older people, together with higher rates of union dissolution, also implies that the opportunity of direct influence from grandparents to grandchildren has increased, and the possible effect of this should also have grown over time (Bengtson 2001). Here we should probably expect more of an effect across the entire socioeconomic distribution and not, as in the case of wealth or high-prestige networks, mainly in the upper classes. On the other hand, less intergenerational co-residence and increasing importance of long-range migration could be expected to work in the other direction, reducing the direct impact of grandparents on grandchildren.

So far we have mainly discussed factors contributing to maintaining socioeconomic status, rather than factors promoting mobility. Of special interest in this regard is the extent to which the gains or losses of status are maintained in subsequent generations. Because there is likely to be some randomness both in ability and luck, which could lead to mobility in both directions, we should probably expect the chances of the next generation to maintain the new position attained by the middle generation to be lower than for comparable individuals who did not move socially in the preceding generation. For example, if a father gains social status compared to the grandfather, we cannot expect the grandfather to have much to contribute directly to help the grandson maintain this position. Moreover, because some of the reason for the advancement of the father could be random,

and thus not transmitted to the son (such as good luck or abilities not inherited) the chance that the son will maintain his father's position will be lower than if the father had the same position as the grandfather. In other words, social mobility between grandfather and father could be expected to generate mobility of the opposite direction between father and son, which would contribute to declining persistence of socioeconomic status across generation.

Data and methods

We use data on males from the Scania Economic-Demographic Database (SEDD), consisting of micro-level longitudinal information spanning the entire time period from the late 1700s and until 2011 (Bengtsson, Dribe and Svensson 2012). Until 1967, the data covers all individuals living in five parishes in Scania, in the southernmost part of Sweden. Information is provided from continuous population registers, including information on demographic events, including migration to and from households, for all members of households. Birth and death registers have also been used to adjust for any possible under-recording of events in the population registers. Occupational information is obtained from the population registers, poll-tax registers (*mantalslängder*), and from annual income and taxation registers.

From 1968 and onwards, individual level information is added through various administrative registers, managed by Statistics Sweden. As a result, the database is extended in several respects. Firstly, all individuals who ever lived in the five parishes prior to 1968 and still alive thereafter were tracked until 2011, regardless of their geographic location in Sweden. Additionally, all individuals in the original population were linked to spouses, parents, grandparents, children and siblings, provided that they were alive and living in Sweden sometime from 1968 and onwards. All individuals being added to the sample population were similarly followed until 2011, death, or emigration from Sweden.

As a result of the data linkage, the pre- and post-1968 populations differ according to a few fundamental aspects, with potentially non-negligible consequences for sample selection. Since we focus on intergenerational processes of status transmission, the identification of status attainment in consecutive generations in the pre-1968 population hinges upon individuals only being geographically mobile to a limited degree. More specifically, in this period, the database contains information on all individuals residing in the five aforementioned parishes, implying that the social status of children or parents who lived elsewhere during their labor market career is unobserved. In order to observe social mobility across three generations prior to 1968 we need to observe

individuals in the area under study. Naturally, this is likely to introduce selection bias, as the process of migration is not random (see, e.g. Dribe 2003a, 2003b). The extent to which this is a problem has, however, been ameliorated to a certain extent. All ever married individuals prior to 1895 for whom social origin was missing, were tracked back to their parish of birth from which the social class of the individual's father was obtained from the baptism records, the population registers of the poll-tax registers. While this procedure was not always successful, in about 70 percent of the cases, this resulted in obtaining the in-migrating individual's social origin. Consequently, we thereby obtained three-generational information for a large number of father-son observations where the grandfather did not reside in the area under study.

The post-1968 sample hails from individuals who at some point were living in one of the aforementioned parishes, subsequently expanded by adding longitudinal information on their closest kin. For this time period, individuals are included regardless of where in Sweden they reside, implying that selection due to within-Sweden migration no longer is an issue.

The focus of the paper is into the processes underlying social mobility and attainment over three generations. Consequently, a necessary condition for being selected into the sample is that social class, measured by the EGP classification of occupations (Erikson, Goldthorpe and Portocarero 1979; see also Erikson and Goldthorpe 1993), can be observed for three consecutive generations. Prior to 1968, information on occupation is obtained from several sources, from records at demographic events, when the individual was first observed in the population registers, or on an annual basis in the poll-tax registers and income registers. Occupations were coded into HISCO (Van Leeuwen, Maas and Miles 2002), and subsequently into EGP. From 1970 and onwards, we rely on occupational information provided by the quinquennial censuses conducted until 1990. Originally coded according to the NYK/SSYK classification used by Statistics Sweden, occupations were coded into ISCO-88, and then EGP.¹ While an individual may be observed with an occupation at repeated occasions and from several different sources, we consistently rely on the observation occurring at the age closest to 40, and in the age range 35-45. To the extent that this information is available, the social class of the preceding generation is measured in an identical fashion. If unavailable, the EGP of the preceding generation is obtained from the father's occupation according to the baptism records, established soon after the individual's birth. The resulting study population consists of

¹ To classify from HISCO to EGP we used a transcode table developed, and kindly shared, by Ineke Maas at Utrecht University (Maas 2000). To classify the SSYK in 1960 and 1970 into EGP we used the transcode table developed by Erik Bihagen at SOFI, Stockholm University (<http://www2.sofi.su.se/~ebi/>).

roughly 2,000 individuals whose social class can be tracked backwards for an additional two generations. While disproportionately represented by individuals being born after 1900, the birth years covered by third generation individuals is impressive, spanning the time period from 1797 and until 1955.

- Table 1 here

The EGP-classification has been slightly adjusted for the analysis. More specifically, the original 11-class classification has been compressed into five classes, displayed in Table 1. The empirical analysis initially focuses on describing overall patterns of mobility and attainment across three generations, using outflow tables and Altham statistics. In the following multivariate analysis, we analyze the influence of the grandfather's social class on the individual's attainment using ordered logit models. Furthermore, we analyze to what extent social mobility between the grandfather's and the father's generation influences the individual's probability to be socially mobile, through binomial and multinomial logistic regression. In the multivariate analysis, we control for a range of individual and contextual factors, displayed in Table 2. Life-time migration and number of siblings are included to control for possible confounding effects, but are not themselves a focus of analysis. In sensitivity analyses, regression models are estimated on a subsample of males whose grandfathers were alive and residing in the original study area of the database at the time of the individual's birth. This is performed in order to investigate to what extent patterns of mobility are different among the rather selected group of individuals consisting of multiple generations having resided in one and the same area.

- Table 2 here

As previously indicated, a large share of the third generation was observed in their prime working ages towards the latter part of the time period. More specifically, for a little more than half the third generation individuals in the sample, their social class was measured after 1944. Despite this over representation of observations, third generation attainment was observed as early as 1837, over a century before. The sample means indicate a considerable degree of absolute mobility across generations, due to the expanding higher classes, primarily at the expense of small proprietors, farmers and smallholders (Class IVa+IVb+IVc). In distinguishing between absolute and relative

mobility, we attempt to control for the changing characteristics of the labor market. This is performed by controlling for the share of individuals observed in the individual's origin EGP class, but at the time of attainment. It is expected that a relatively larger size of the origin class when an individual himself performs his career will have a negative influence on the propensity to move out of the class of origin. The greater class diversification that characterizes the more contemporary context is reflected in the shrinking size of the origin class at the time of the third generation's attainment (35 percent), compared to the second (29 percent)

Mobility tables

Table 3 presents origin and destination social class for fathers-sons (G2-G3), grandfathers-fathers (G1-G2) and grandfathers-grandsons (G1-G3). They can be interpreted as outflows from classes for each generation, i.e. in which class people end up if they do not maintain the status of their father, which is indicated by the diagonal. Looking at the top panel (G2-G3) there is considerable inflow to the top class (I+II) from almost all classes, especially from the second highest class of non-manual workers (Class IIIa+IIIb). This outflow is much less pronounced in the second panel (G1-G2), but very clear between G1 and G3. The increasing importance of mobility into the top class of professionals and administrators in the later generation is related to societal transformation in which service sector jobs became increasingly important as well as to a massive expansion of higher education, to which we will return. There are also corresponding outflows both from the non-manual workers (IIIa+IIIb) and from the working classes (V+VI, VIIa+VIIb) which are also in line with this societal transformation. This is, particularly accentuated in the case of the non-manual workers (IIIa+IIIb), whose share of socially immobile does not exceed twenty percent. It should, however, be underlined that this class emerges as the smallest origin class in G1 (n=18), thus making the calculated outflow percentages sensitive to small changes. Overall, many people have experienced an important transition, from origins in manual, blue-collar jobs to destinations in white-collar jobs which to a large extent are requiring higher education. The question, however, remains to what extent observed mobility is a consequence of the societal changes affecting the occupational structure, rather than resulting from an increased societal openness and fluidity.

Table 3 here

In order to more objectively compare the degree of mobility across the different tables, we compute the Altham statistic, providing a summary measure of how much the association between rows and columns in a table differ from each other (see Altham and Ferrie 2007; Long and Ferrie 2013). Individual tables can also be compared to a perfect mobility table (the I-table), yielding an overall mobility measure that is comparable across tables. Table 4 displays the Altham statistics for the comparisons of various mobility tables, testing the null hypothesis that the tables are characterized by the same mobility rates. The first row compares the mobility between grandfathers and fathers to that of fathers and sons (i.e. G1-G2 vs. G2-G3). The fact that $d(P, Q)$ is significantly greater than 0 shows that the associations between rows and columns in the two tables are different from each other, and the fact that $d(P, I) > d(Q, I)$ implies that mobility in table G2-G3 (Q) is closer to independence than table G1-G2 (P), which means that mobility is higher in G2-G3 than in G1-G2. The final metric, $d^i(P, Q)$ tests the difference between the two tables only considering mobility off the diagonal (i.e. excluding non-mobility). This is not statistically significant implying that we cannot reject the null-hypothesis of no difference between G1-G2 and G2-G3 when only considering cells off the diagonal. This means that most of the difference between mobility for G1-G2 and G2-G3 has to do with the likelihood of inheriting the father's class, in other words with class persistence across generations. Taken together, class mobility was somewhat higher in the later generation than in the earlier one, although the difference was not that large and mainly related to a lower intergenerational transmission of status.

Table 4 here

If we instead compare the G2-G3 with G1-G3 (i.e. father-son vs. grandfather-grandson), it is evident that mobility is quite different in these tables, regardless of whether we consider the whole table or only the off-diagonal cells (both $d(P, Q)$ and $d^i(P, Q)$ are statistically significantly different from 0). It is equally clear that mobility was higher between grandfathers and grandsons (G1-G3) than between fathers and sons, which is similar to the pattern for the U.S and Britain at the turn of the twentieth century (Long and Ferrie 2012). It is of course difficult to make a full interpretation of these results without controlling for changes over time in mobility, because the tables used so far combines experiences of a large number of cohorts and there is a considerable overlap in time between the different tables. To study the attainment and mobility patterns in more detail we turn to a multivariate analysis of attainment and mobility patterns using different logistic regression models

Class attainment

We model socioeconomic attainment of the third generation by means of an ordered logit model, using attainment according to the five class EGP as the dependent variable. The odds ratios are displayed in Table 5, and while their exact value is difficult to give meaningful interpretation without calculating marginal effects for each outcome, the sign is straightforward to interpret. A value higher than one means a positive association with lower socioeconomic status (because highest class is given the lowest numerical value), while a value lower than one, conversely, is associated with higher socioeconomic attainment. Looking first at the period effects, the only statistically significant estimates according to all model specifications can be observed for the latest period, in which the chances of attaining an elevated social class was higher. Marginal effects (not shown) indicate a more or less linear effect in the sense that the chance of attaining higher classes consistently became greater, and the risk of ending up in lower classes became lower over time. The possible exception is represented by the immediate post-war period (1945-1968), suggesting a slightly elevated positive association with a lower class attainment. This effect is furthermore primarily driven by the “stayers” (i.e. individuals whose grandfathers resided in the original study area), as suggested by the sensitivity analyses (not shown).

Table 5 here

The results appear to be largely consistent with the emergence of the post-industrial service economy, which gained considerable speed in this period, allowing more people to find employment in new occupations, while a declining proportion took up employment in traditional jobs in agriculture and lower skilled industry. It was also a period of rapid educational expansion in Sweden, with increasing proportions in both secondary and tertiary education. For example, in 1950 only 5 percent of all 19-year olds had graduated with a high school diploma, which increased to 14 percent in 1965, 63 percent in 1975 and 80 percent in 1990 (Stanfors 2007:181). Similarly, while only 11 percent of the population between 25 and 44 had a tertiary degree in 1971 (same for men and women) this had increased 45 percent for women and 35 percent for men in 2005 (Stanfors 2007:186).

Turning to the inter-generational transmission of social class, Model 1 in Table 5 confirms the strong association between the class of fathers and their sons. The lower the class attainment of

the father the lower the attainment of the sons, and vice versa. It emerges as a more or less linear association, with consistently statistically significant parameters. Model 2 suggests that the association between grandfathers' and grandsons' attainment is similar, albeit not as strong as was the case for fathers-sons in Model 1 (i.e. lower magnitude of the estimates). This is in line with a certain degree of regression to the mean, but of a magnitude that should not be overestimated.

The link between grandfather and grandson, however, becomes even more interesting once controlling for the association between fathers and sons (Model 3). From this model it becomes evident that a substantial part of the association between the attainment of grandfathers and grandsons disappear when we control for fathers' attainment. A particularly striking result is obtained among individuals with grandfathers from the two uppermost classes (I+II and IIIa+IIIb). More specifically, when the social class of the father is controlled for, the odds ratio obtained for individuals with grandfathers in class I+II approaches one and is no longer statistically significant. No such change can be observed when the grandfather's belonged to the non-manual employees, exercising a positive influence on the class attainment of their grandson, independent of the social class of the father. This persists in the full model (Model 4) where we also control for share in origin EGP group, place of birth and number of siblings.

Table 6 (Model 5) shows net effects from models originating from the full Model 4, as per above, showing interaction effects between grandfather's socioeconomic status and period, indicating how the grandfather effect has developed over time. Because of the rather limited number of observations, the estimates only represents two periods. The periods are defined in order to being able to contrast transforming/industrializing Sweden and the mature industrial society, where the latter is defined as occurring subsequent to the Second World War. The results indicate that the impact of grandfather's socioeconomic status has diminished over time. Parameter estimates suggest that the influence of the social class of the grandfather was considerable in the period before the end of WWII, while in the post-war period we see little influence of grandfathers' attainment on the attainment of their grandsons, net of the association operating through the attainment of the fathers. This persistence seems to more or less have disappeared in the post-WWII period when Sweden first experienced a period of very rapid economic growth and later also saw a transition to a service economy and the emergence of the welfare state (e.g., Schön 2000). This was also a period of declining income inequality in Sweden (Waldenström 2009:10). Again, the possible exception is represented by the influence of having a grandfather the non-manual working classes (IIIa+IIIb), with a net effect that differs substantially from the others, albeit not statistically significantly.

Table 6 here

Class mobility

Thus far we have mainly been looking at class attainment, which reflects processes of both mobility and persistence. We now turn to a more focused analysis of the patterns of class mobility. We focus on relative mobility, i.e. the chances of social mobility between generations while controlling for the occupational structure at the time of attainment. We do this by including a control for the share of the population in the origin social class at the time of attainment, thus assuming that the composition reflects that in the country as a whole. In Table 7 we first look at overall mobility patterns. The outcome variable is any mobility across generations, thus not distinguishing between whether it was an upward or downward transition. According to Model 6, mobility between the first two generations (grandfathers and fathers, G1-G2) was considerably and statistically significantly lower before WWI than after this point. There is not as clear a pattern among the sub-periods prior to the World Wars, but it appears safe to conclude that mobility was much lower before and during the transitional phases of industrialization than it was in a mature industrial society. The rate of mobility between fathers and sons (Model 7, G2-G3) also increased over time, and here it becomes particularly visible in the period after 1968. This pattern is even more pronounced when comparing grandfathers and grandsons (Model 8, G1-G3). Hence society seems much more fluid today than it was before, which was also showed and discussed in a previous analysis (Dribe, Helgertz and Van de Putte 2013).

Table 7 here

The final column of Table 7 shows that previous inter-generational mobility mattered a great deal, as did the direction of previous mobility. In particular, having a father who experienced downward mobility implied a much higher likelihood of class mobility than having a father in the same class as one's grandfather, while having an upwardly mobile father implied a lower likelihood of class mobility. In Model 10, displayed in Table 8 we analyze this more carefully by period, and it seems clear that the higher mobility of the previously downwardly mobile was mainly a phenomenon of the pre-WWI period, while the lower mobility of the previously upwardly mobile was present in all periods with only limited variation between periods.

Table 8 here

Naturally, it is difficult to make full sense of observed patterns when not explicitly taking the direction of mobility into account. Consequently, we now study mobility using a multinomial logit models, distinguishing between upward and downward mobility, with no mobility as the base outcome (see Table 9). Looking first at G1-G2 mobility (between grandfathers and fathers) in Model 11, downward transitions were much more likely in the nineteenth century than during most of the twentieth century. Indeed, the period 1915-1975 were characterized by distinctly lower risks of downward mobility. For upward mobility, a more or less steady increase since the end of the nineteenth century is observed. A similar pattern emerges when we look at the father-son mobility (G2-G3): declining risks of downward mobility and increasing chances of upward mobility over time. Especially in the period since 1968 there has been a large increase in upward social mobility. This is even clearer when looking at mobility between grandfathers and grandchildren (G1-G3). The likelihood of upward mobility was more than four times higher in the final period compared to 1915-1944, and a staggering 12 times more likely than in 1837-1869. Hence, it seems quite clear that while downward mobility overall has become less frequent, upward mobility has been much more common, which is a natural consequence of the change in social structure as society transformed and education expanded, leading to a greater prevalence of employment in service occupations.

Table 9-10 here

Models 14 and 15 of Table 9 are extended to include the influence of intergenerational mobility in previous generations on the mobility of the final generation. The results are consistent with the idea of regression to the mean in intergenerational class attainment. Having a father who experienced downward mobility implied a significantly lower likelihood of this occurring also for the son, while also substantially increasing the chances of upward mobility. Conversely, downward mobility between preceding generations is associated with higher chances of upward mobility. This pattern is almost identical when controlling for migration and number of siblings. Hence, it seems as if there was a clear compensatory mobility counteracting what happened in the previous generation, and that this was stronger when previous mobility was downwards than when it was upwards. Table

10 indicates that this compensation was stronger in earlier periods, and particularly during the most rapid industrial transformation, even though some compensation took place in all periods.

Conclusions

This paper analyzes social mobility and attainment over three generations, measuring class attainment between 1815 and 1990. Using the EGP occupational class scheme, we focus on the importance of grandparental social class for the attainment of the grandson, and how this has changed over time, linked to important societal changes, increased longevity and migration (influencing intergenerational co-residence). Furthermore, we examine to what extent intergenerational social mobility is maintained in the following generation. To the extent that grandparents' resources are irrelevant for the attainment of the grandson, the opportunities of the latter should arguably be uninfluenced by whether their parents were social movers. On the other hand, to the extent that mobility from one generation to the next to a significant extent was determined by randomly distributed luck or misfortune, we should observe a process where grandsons tend to revert back to the status of their grandfathers.

The results show that the influence of grandparents' social class mainly operates through the class of the father. Hence, the grandfather's influence on the attainment of the grandson becomes largely statistically as well as economically insignificant when the impact from father to son is taken into account. The one consistent exception to this rule is represented by the beneficial effect observed among individuals whose grandfathers were in the class of non-manual workers, whose grandsons were increasingly likely to enjoy upward mobility into the managerial class. The transmission of resources for attainment across three generations, however, largely appears to have been a phenomenon of a pre-industrial or industrializing society. More specifically, the grandparent effect is virtually non-existent after the Second World War, consistent with a diminished reliance on ascription as an attainment mechanism, made possible by the expansion of the educational system and a labor market characterized by a high demand for labor, favoring formal recruitment methods.

The results also indicate that intergenerational mobility is significantly affected by mobility in the previous generation. Thus, it appears difficult for the son of an upwardly mobile father to maintain the social class gained in the previous generation. Similarly, sons of downwardly mobile father enjoy a significantly increased probability of gaining social class. Changes over time suggest this process being the strongest during the most substantial industrial transformation. Hence, relative mobility was clearly not unaffected by the structural labor market changes that characterized this

period. Examining attainment over a time period spanning approximately 150 years, the results tentatively suggest that the grandparental influence is at its lowest, despite grandchildren today being able to enjoy the presence of their grandparents until a later age as a result of increased longevity.

References

- Altham, P. M. E. and J. P. Ferrie (2007). Comparing contingency tables: Tools for analyzing data from two groups cross-classified by two characteristics. *Historical Methods* 40:3-16.
- Becker, G. S. and N. Tomes (1986). Human capital and the rise and fall of families. *Journal of Labor Economics* 4: S1-S39.
- Bengtson, V. L. (2001). Beyond the nuclear family: The increasing importance of multigenerational bonds. *Journal of Marriage and Family* 63:1-16.
- Bengtsson, T., M. Dribe and P. Svensson (2012). The Scanian Economic Demographic Database. Version 2.0 (Machine-readable database). Lund: Lund University, Centre for Economic Demography.
- Björklund, A. and M. Jäntti (2012). How important is family background for labor-economic outcomes? *Labour Economics* 19:465-474.
- Björklund, A. and M. Jäntti (2009). Intergenerational income mobility and the role of family background, in W. Salverda, B. Nolan and T. Smeeding (eds), *The Oxford Handbook of Economic Inequality*, Oxford: Oxford University Press. 19:465-474.
- Björklund, A. and M. Jäntti (2000). Intergenerational mobility of socio-economic status in comparative perspective. *Nordic Journal of Political Economy* 26:3-32.
- Björklund, A. and M. Jäntti (1997). Intergenerational income mobility in Sweden compared to the United States. *American Economic Review* 87: 1009-1018.
- Blanden, J., (2013): Cross-Country Rankings in Intergenerational Mobility: A Comparison of Approaches from Economics and Sociology. *Journal of Economic Surveys* 27(1): 38-73.
- Bourdieu, J., J. P. Ferrie and L. Kesztenbaum (2009). Vive la difference? Intergenerational social mobility in France and the United States during the nineteenth and twentieth centuries. *Journal of Interdisciplinary History* 39:523-557.
- Breen, R. (2008). Social mobility in Europe. Pp. 465-480 in *Social Stratification. Class, Race, and Gender in Sociological Perspective* edited by David B. Grusky. Boulder, CO: Westview Press.
- Campbell, C. and J. Z. Lee (2011). Kinship and the long-term persistence of inequality in Liaoning, China, 1749-2005. *Chinese Sociological Review* 44: 71-103.
- Chan, T. W. and V. Boliver (2013). The grandparents effect in social mobility: Evidence from British birth cohort studies. *American Sociological Review* 78: 662-678.
- Clark, G. (2014). *The Son also Rises: Surnames and the History of Social Mobility*. Princeton: Princeton University Press.

- Dribe, M. (2003a). Migration of rural families in nineteenth century southern Sweden. A longitudinal analysis of local migration patterns. *History of the Family* 8: 247-265.
- Dribe, M. (2003b). Dealing with economic stress through migration: Lessons from nineteenth century rural Sweden. *European Review of Economic History* 7: 271-299.
- Dribe, M., J. Helgertz and B. van de Putte (2013). Intergenerational social mobility during industrialization: A micro-level study of a transforming community in southern Sweden 1830-1968. Unpublished manuscript.
- Erikson, R. and J.H. Goldthorpe (1992). *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford: Clarendon Press.
- Erikson, R., J. H. Goldthorpe, and L. Portocarero (1979). Intergenerational class mobility in three Western European societies: England, France and Sweden. *British Journal of Sociology* 30: S341-415.
- Erola, J. and P. Moisio (2007). Social mobility over three generations in Finland, 1950-2000. *European Sociological Review* 23:169-183.
- Ferrie, J. P. (2005). History lessons: The end of American exceptionalism? Mobility in the United States since 1850. *Journal of Economic Perspectives* 19:199-215.
- Ganzeboom, H. B. G., R. Luijkx and D. J. Treiman (1989). Intergenerational class mobility in comparative perspective. *Research in Social Stratification and Mobility* 8:3-79.
- Ganzeboom, H. B. G., D. J. Treiman and W. C. Ultee (1991). Comparative intergenerational stratification research: Three generations and beyond. *Annual Review of Sociology* 17:277-302.
- Grusky, D.D. and R.M. Hauser (1984). Comparative social mobility revisited: Models of convergence and divergence in 16 countries. *American Sociological Review* 49:19-38.
- Hodge, R. W. (1966). Occupational mobility as a probability process. *Demography* 3:19-34.
- Hout, M. and T. A. DiPrete (2006). What we have learned: RC28's contributions to knowledge about social stratification. *Research in Social Stratification and Mobility* 24:1-20.
- Jäntti, M., & Jenkins, S.P., (2013). Income Mobility. *IZA Discussion Paper* No. 7730. Bonn: IZA.
- Lipset, S. M. and R. Bendix (1959). *Social Mobility in Industrial Society*. Berkeley: University of California Press.
- Lindahl, M., M. Palme, S. Sandgren Massih and A. Sjögren (2012). The intergenerational persistence of human capital: An empirical analysis of four generations. *IZA Discussion Paper* No. 6463. Bonn: IZA.

- Long, J. and J. Ferrie (2007). The path to convergence: Intergenerational occupational mobility in Britain and the US in three eras. *Economic Journal* 117:C61–C71.
- Long, J. and J. Ferrie (2012). Grandfathers matter(ed): Occupational mobility across three generations in the U.S. and Britain, 1850-1910. Unpublished manuscript.
- Long, J. and J. Ferrie (2013). Intergenerational occupational mobility in Great Britain and the United States since 1850. *American Economic Review* 103:1109-1137.
- Maas, I. (2000). Recode from HISCO to EGP. Unpublished manuscript. Utrecht: University of Utrecht.
- Mare, R. D. (2001). A multigenerational view of inequality. *Demography* 48:1-23.
- Modin, B., R. Erikson and D Vågerö (2013). Intergenerational continuity in school performance: Do grandparents matter? *European Sociological Review* 29:858-870.
- Schön, L. (2000). *En modern svensk ekonomisk historia. Tillväxt och omvandling under två sekel*. Stockholm: SNS.
- Solon, G. (1992). Intergenerational income mobility in the United States. *American Economic Review* 82:393-408.
- Solon, G. (2002). Cross-country differences in intergenerational earnings mobility. *Journal of Economic Perspectives* 16:59-66.
- Stanfors, M. (2007). *Mellan arbete och familj. Ett dilemma för kvinnor i 1900-talets Sverige*. Stockholm: SNS.
- Treiman, D. J. (1970). Industrialization and social stratification. Pp. 207-234 in *Social Stratification: Research and Theory for the 1970s*, edited by E.O. Laumann. Indianapolis and New York: The Bobbs-Merrill Company, Inc.
- Treiman, D. J. (1976). A standard occupational prestige scale for use with historical data. *Journal of Interdisciplinary History* 7:283-304.
- Van Leeuwen, M. H. D. and I. Maas (2010). Historical studies of social mobility and stratification. *Annual Review of Sociology* 36:429-451.
- Waldenström, D. (2009). *Lifting all Boats? The Evolution of Income and Wealth Inequality over the Path of Development*. Lund: Lund Studies in Economic History (PhD dissertation).
- Warren, J. R. and R. M. Hauser (1997). Social stratification across three generations: New evidence from the Wisconsin Longitudinal Study. *American Sociological Review* 62: 561-572.
- Zimmerman, D. J. (1992). Regression toward mediocrity in economic stature. *American Economic Review* 82:409-429.

Table 1. Adjusted EGP class scheme used in the analysis.

Original 11-Category EGP Classification		5-Category EGP Classification
I	Higher-grade professionals, administrators, and officials; managers in large industrial establishments; large proprietors	I+II
II	Lower-grade professionals, administrators, and officials, higher-grade technicians; managers in small industrial establishments; supervisors of non-manual employees	
IIIa	Routine non-manual employees, higher grade (administration and commerce)	IIIa+IIIb
IIIb	Routine non-manual employees, lower grade (sales and services)	
IVa	Small proprietors, artisans, etc., with employees	IVa+IVb+IVc
IVb	Small proprietors, artisans, etc., without employees	
IVc	Farmers and smallholders; other self-employed workers in primary production	
V	Lower-grade technicians; supervisors of manual workers	V+VI
VI	Skilled manual workers	
VIIa	Semi-skilled and unskilled manual workers (not in agriculture, etc.)	VIIa+VIIb
VIIb	Agricultural and other workers in primary production	

Source: Erikson and Goldthorpe 1992:38-39.

Table 2. Sample means.

Variable	Mean
Number of siblings	
≤ 2	2.1
3-5	16.4
>5	34.8
N/A	46.7
Residing in metropolitan area	38.6
Place of birth	
County of residence	93.8
Other county	5.9
N/A	0.3
Age at observation, 3G	39.5
Age at observation, 2G	40.2
Share in origin 5-cat EGP group, at attainment, 3G	28.8
Share in origin 5-cat EGP group, at attainment, 2G	34.9
Period of observation, 3G:	
1837-1869	4.8
1870-1894	10.8
1895-1914	10.2
1915-1944	18.7
1945-1968	15.1
1969-1990	40.4
Period of observation, 2G:	
1815-1869	20.6
1870-1894	13.1
1895-1914	12.6
1915-1944	19.8
1945-1975	33.9
5-class EGP, 3G	
I+II	17.6
IIIa+IIIb	4.8
IVa+IVb+IVc	29.7
V+VI	23.0
VIIa+VIIb	25.0
5-class EGP, 2G	
I+II	6.2
IIIa+IIIb	4.0
IVa+IVb+IVc	43.7
V+VI	23.5
VIIa+VIIb	22.6

5-class EGP, 1G	
I+II	3.7
IIIa+IIIb	0.9
IVa+IVb+IVc	52.5
V+VI	15.5
VIIa+VIIb	27.5
Observations	2067

Table 3. Mobility tables.

EGP-5, G2	EGP-5, G3					Total
	I+II	IIIa+IIIb	IVa+IVb+IVc	V+VI	VIIa+VIIb	
I+II	63.3	4.7	19.5	8.6	3.9	100.0
IIIa+IIIb	36.6	9.8	15.9	25.6	12.2	100.0
IVa+IVb+IVc	10.0	2.9	48.5	14.5	24.2	100.0
V+VI	22.7	5.6	13.2	34.6	23.9	100.0
VIIa+VIIb	11.1	6.8	15.6	30.8	35.7	100.0

EGP-5, G1	EGP-5, G2					Total
	I+II	IIIa+IIIb	IVa+IVb+IVc	V+VI	VIIa+VIIb	
I+II	48.0	5.3	34.7	8.0	4.0	100.0
IIIa+IIIb	16.7	11.1	22.2	33.3	16.7	100.0
IVa+IVb+IVc	5.0	2.0	59.9	13.7	19.4	100.0
V+VI	4.0	5.0	27.7	44.9	18.4	100.0
VIIa+VIIb	3.9	6.7	23.8	31.7	34.0	100.0

EGP-5, G1	EGP-5, G3					Total
	I+II	IIIa+IIIb	IVa+IVb+IVc	V+VI	VIIa+VIIb	
I+II	45.3	6.7	17.3	16.0	14.7	100.0
IIIa+IIIb	50.0	16.7	22.2	5.6	5.6	100.0
IVa+IVb+IVc	12.3	3.1	40.6	18.8	25.3	100.0
V+VI	21.2	5.9	17.1	31.2	24.6	100.0
VIIa+VIIb	21.0	6.7	17.8	27.8	26.8	100.0

Note: G1: Grandfathers, G2: Fathers, G3: grandchildren.

Table 4. Altham statistics.

	d(P, I)	d(Q, I)	d(P, Q)	d ⁱ (P, Q)
Grandfathers → Fathers (P) versus Fathers → Sons (Q)	36.809***	31.788***	13.122**	10.507
Fathers → Sons (P) versus Grandfathers → Sons (Q)	31.788***	29.133***	25.444***	19.937***

Note: G1: Grandfathers, G2: Fathers, G3: grandchildren.

* p<0.1, ** p<0.05, *** p<0.01.

Table 5. Ordered logit estimates of class attainment (EGP-5) of G3.

	Model 1	Model 2	Model 3	Model 4
Period				
1837-1869	1.130	1.109	1.149	1.185
1870-1894	0.994	1.046	1.020	1.065
1895-1914	1.014	1.011	1.024	0.983
1915-1944	ref	ref	ref	ref
1945-1968	1.197	1.137	1.177	1.223
1969-1990	0.400***	0.376***	0.400***	0.415***
EGP-5, G2				
I+II	0.168***		0.177***	0.201***
IIIa+IIIb	0.590**		0.589**	0.586**
IVa+IVb+IVc	ref		ref	ref
V+VI	1.447***		1.394***	1.506***
VIIa+VIIb	2.248***		2.191***	2.251***
EGP-5, G1				
I+II		0.395***	0.841	0.921
IIIa+IIIb		0.310***	0.310**	0.292***
IVa+IVb+IVc		ref	ref	ref
V+VI		1.278**	1.132	1.178
VIIa+VIIb		1.355***	1.107	1.117
Share in origin EGP-5 group, at attainment, G3				0.994
Share in origin EGP-5 group, at attainment, G2				
Age at observation, G3	0.964*	0.979	0.966*	0.965*
Age at observation, G2				
Place of birth				
County of residence				ref
Other county				0.424***
N/A				1.026
Residing in metropolitan area (RC:no)				0.726***
Number of siblings				
≤ 2				0.719
3-5				ref
>5				1.052
N/A				0.993
Cutoff, EGP1-EGP2	0.036***	0.065***	0.039***	0.028***
Cutoff, EGP2-EGP3	0.052***	0.090***	0.056***	0.041***
Cutoff, EGP3-EGP4	0.230*	0.367	0.248*	0.184**
Cutoff, EGP4-EGP5	0.688	1.044	0.743	0.554

Note: * p<0.1, ** p<0.05, *** p<0.01.

Table 6. Associations between G1 and G3 attainment. Net effects of interaction models period*class.

	Model 5	
	1837-1944	1945-1990
EGP-5, G1		
I+II	0.637	1.070
IIIa+IIIb	0.182	0.260
IVa+IVb+IVc	ref	ref
V+VI	1.543*	1.042*
VIIa+VIIb	1.203	0.984

Notes: Based on ordered logit estimates controlling for the same covariates as Model 4 in table 5. Estimates in 1937-1944 are base effects while 1945-1990 are net effects from interactions. Levels of significance refer to base effects and interaction effects respectively. * p<0.1, ** p<0.05, *** p<0.01.

Table 7. Relative mobility between different generations. Odds ratios from binary logit estimates.

	Model 6	Model 7	Model 8	Model 9
	G1-G2	G2-G3	G1-G3	G2-G3
Period G3 attainment				
1837-1869		0.736	0.733	0.640*
1870-1894		1.017	0.725*	0.841
1895-1914		0.761	0.756	0.703*
1915-1944		ref	ref	ref
1945-1968		0.842	1.128	0.922
1969-1990		1.596***	2.129***	1.954***
Period G2 attainment				
1815-1869	0.327***			
1870-1894	0.494***			
1895-1914	0.498***			
1915-1944	ref			
1945-1975	0.917			
Mobility G1-G2				
Downward mobility				3.371***
No mobility				ref
Upward mobility				0.591***

Note: Models control for age at attainment and share in origin EGP-5 group at attainment.

* p<0.1, ** p<0.05, *** p<0.01.

Table 8. Effects of mobility in previous generation (G1-G2) on mobility in current generation (G2-G3). Net effects (odds ratios) from interaction models.

	Model 10					
	1837-1869	1870-1894	1895-1914	1915-1944	1945-1968	1969-1990
Downward mobility	14.45	4.48	9.05**	2.42	3.37	2.30
No mobility	1.00	1.00	1.00	1.00	1.00	1.00
Upward mobility	0.60	0.52	0.53	0.65	0.50	0.60

Note: Estimates for the period 1915-1944 are the base effects while all others are net effects. Significance levels refer to interaction effects except for base effects in period 1915-1944.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 9. Relative mobility across generations. Relative risks from multinomial logit estimates (no mobility as base outcome).

	Model 11		Model 12		Model 13		Model 14		Model 15	
	G1-G2		G2-G3		G1-G3		G2-G3		G2-G3	
	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up
Period G3 attainment										
1837-1869			1.625*	0.971	1.081	0.379**	1.800**	0.879	1.758**	1.060
1870-1894			1.065	0.868	1.060	0.338***	1.243	0.743	1.237	0.819
1895-1914			1.401*	1.176	1.138	0.629*	1.482*	1.095	1.470*	1.255
1915-1944			ref	ref	ref	ref	ref	ref	ref	ref
1945-1968			1.126	0.917	0.982	1.272	1.050	0.985	1.081	0.917
1969-1990			0.846	1.823***	0.953	3.474***	0.711**	2.076***	0.664*	1.639**
Period G2 attainment										
1815-1869	2.684***	0.552***								
1870-1894	1.777***	0.665*								
1895-1914	2.008***	1.052								
1915-1944	ref	ref								
1945-1975	1.291	1.403**								
Downward mobility, G1-G2							0.432***	2.578***	0.437***	2.484***
No mobility, G1-G2							ref	ref	ref	ref
Upward mobility, G1-G2							1.607***	0.914	1.639***	0.852
Place of birth										
County of residence									ref	ref
Other county									0.736	1.437
N/A									0.789	0.393
Residing in metropolitan area (RC:no)									0.855	1.482***
Number of siblings										
≤ 2									0.712	1.298
3-5									ref	ref
>5									1.025	0.892
N/A									1.153	1.159

Note: All models control for age at attainment and share in origin EGP-5 group at attainment. * p<0.1, ** p<0.05, *** p<0.01.

Table 10. Relative mobility across generations in different periods. Net effects (relative risks) from multinomial logit interaction models.

Model 16												
1837-1869		1870-1894		1895-1914		1915-1944		1945-1968		1969-1990		
	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up
G1-G2												
Down	0.084*	4.064	0.303	9.376	0.234	1.681	0.861	2.351	0.514	0.000	0.585	0.665
No	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Up	1.670	1.703*	1.656***	0.956	2.232	1.363	1.388	0.624	1.531	2.468*	1.692*	0.960

Note: Estimates for the period 1915-1944 are the base effects while all others are net effects. Significance levels refer to interaction effects except for base effects in period 1915-1944. Model controls for all covariates. * p<0.1, ** p<0.05, *** p<0.01.