The lasting impact of grandfathers:

Class, occupational status, and earnings over three generations (Sweden 1815-2010)

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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. 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 socio-economic mobility across three generations in Sweden in the period 1813-2010. Using longitudinal micro-level data from the Scanian Economic-Demographic Database, we identify three-generation genealogies (grandfather, father, son) that we are able to observe in their prime working ages. We examine the multigenerational transmission of socio-economic status according to three different dimensions; social class, occupational status, and earnings, through estimated lifetime earnings, the HISCLASS scheme, and the HISCAM scale. We find clear associations between grandparental class and occupational status and grandchildren's outcomes, when controlling for the associations between fathers and sons. These associations are remarkably stable over time, and do not appear to be contingent upon close interaction between grandfathers and grandchildren. For earnings, on the other hand, we find no association at all between grandfathers and grandsons, regardless if we are looking at grandparental influence on the paternal or maternal side, or both sides combined

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Introduction

Patterns and determinants of social mobility and attainment have been fundamental research topics in sociology, economics 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 structures, 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, as well as similar studies on income mobility, are based on a comparison of socioeconomic status attainment across two generations, typically from father to son (see, e.g., Black and Devereux 2011). 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 social class persistence across generations (see Lindahl et al. 2012)

Similar to two-generation studies of socioeconomic mobility, existing three-generation studies have failed to produce coherent results. While some studies point to an important grandparental influence, other studies find no effect of grandparents' status on that of their grandchildren, once the characteristics of the parents are controlled for (see, e.g., the review in Warren and Hauser 1997). Some studies looking at 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).

The aim of this paper is to study different aspects of socioeconomic status attainment among men from a three-generation perspective. We look separately at social class, occupational attainment, and annual earnings. Besides assessing the grandparental impact along the male line

(parental grandfather-father-son), as is done in most research, we also look at the influence of the status of maternal grandfathers, as well as the simultaneous influence of both maternal and paternal grandfathers. In a sensitivity analysis, we also study if the grandfather-grandson associations are contingent upon close interaction between grandfathers and their grandsons. In addressing these questions, we use individual-level data from the Scanian Economic-Demographic Database (Bengtsson, Dribe and Svensson 2012). Individuals have been linked to form three generations with information on occupation and earnings for grandfathers, fathers and sons. The database covers all individuals who ever lived in five parishes in the province of Scania, in southern Sweden, between 1815 and 2010. From 1968 and onwards, this geographic limitation is lifted, and we follow all descendants of the original population, regardless of where they lived in Sweden. Class attainment is measured at the age closest to 40, using the HISCLASS scheme (Van Leeuwen and Maas 2011), and occupational status with the continuous HISCAM scale (Lambert et al. 2014; Prandy 1999). Earnings are measured in the same age range, representing prime working ages.

Our findings point to a clear grandparental influence on class and occupational attainment also when father's class/occupational status is controlled for, while there is no similar influence for earnings. These results are stable over time, and do not seem to depend on close interaction between grandfathers and grandsons, operationalized through information on whether the grandfather was alive at the time of the grandson's birth combined with their location of residence. 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 on socioeconomic mobility derives its theoretical foundation from the highly influential model developed by Becker and Tomes (1986). Socioeconomic attainment (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; see also Black and Devereux 2011). Country differences in

the strength of the correlation are, however, not trivial, indicating considerable heterogeneity in intergenerational earnings persistence across different contexts (see, e.g, 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, a process of regression to the mean should cause the influence of earlier generations on socioeconomic outcomes to gradually diminish. 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 their grandchildren's outcomes. This view is consistent with a first-order Markov (AR1) 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 Moisio 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 from 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 that is not working through the earnings of the parental generation. Hence, according to these results, a first-order Markov process cannot fully describe the earnings mobility process in Sweden in the twentieth century. Indications are also found that suggest a 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 the third grade. They do not control for parental grades but include controls for parental educational 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) exploits cousin correlations in several outcomes, finding a grandparental influence above and beyond that of the parents in terms of GPA, years of education and attained occupational prestige. Allowing for heterogeneous effects across different socioeconomic origins, the findings again suggest that the grandparental influence is greatest among individuals from wealthy origins. Based on multilevel variance partitioning (intraclass correlations), Jaeger (2012) finds strong effects of (unobserved) shared factors between cousins on different educational outcomes, using the Wisconsin Longitudinal Study (WLS), but no direct (observed) effects from grandparental socioeconomic status (SES) and education on grandchildren's completed years of schooling. However, in contrast to Hällsten's results for Sweden, the impact of grandparental education for grandchildren is driven by low-SES family origins, which is interpreted as a compensatory effect.

Looking at contemporary China, Zeng and Xie (2014) find a clear beneficial influence of grandparents' education on grandchildren's likelihood of dropping out of school, but that this effect is contingent upon coresidence. Evidently, the Chinese context differs substantially from that of the U.S., as examined by Jaeger (2012) using the WLS. Studying cognitive ability among Swedish military conscripts (born 1960-1985) Modin and Fritzell (2009) show negative associations with both paternal and maternal grandfathers' income (controlling for parental income), but no association with the income of grandmothers on either side.

For 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, Sweden, United States, and other countries over several generations can be observed (Clark 2014). Hertel and Groh-Samberg (2014) compare Germany and the United States, examining class outcomes across three generations measured by a four-class version of the EGP scheme (Erikson, Goldthorpe and Portocarero 1979). For both countries they find significant three-generational associations in relative mobility. In examining the influence of persisting disadvantage across several generations, Wightman and Danziger (2014) find that individuals whose parents and grandparents belonged to the lower end of the income distribution showed significantly worse school attainment. Furthermore, their findings suggest a tendency

towards the offspring of downwardly mobile parents to suffer from lower probabilities of progressing to college, potentially perpetuating the disadvantage of the preceding generation.

In a study covering multiple generations, Campbell and Lee also show a strong inter-generational transmission of inequality in China. In this context, however, wider kin-groups were more crucial for the 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 (see the discussion in Solon 2014). Based on previous research on two-generation mobility, Zeng and Xie (2014) identify three main pathways: biological, economic and socio-emotional. Biological (genetic) factors are of course not dependent on residential proximity and interaction between generations. To the extent that genetics has an impact on ability and socioeconomic status (see, e.g., Beenstock 2012; Black and Devereux 2011; Björklund, Jäntti, and Solon 2007; Björklund, Lindahl, and Plug 2006) it is possible that it could explain some of the maternal grandfather influence, while the impact from paternal grandfathers should be lower because most of the effect is mediated by the inclusion of father characteristics (but perhaps not completely so, as we only measure father's socioeconomic status and not all traits need to be equally manifested in each generation). Thus, a stronger association in status, on average, between maternal grandfather and grandson than between paternal grandfather and grandson could be interpreted as support for this kind of biological pathway in cases when it is not contingent upon geographical proximity.

As for the economic pathway, grandfathers could transmit various resources directly to their grandsons. These could be resources in the form of human capital, 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). These kinds of transfers do not depend on close interaction between the generations through coresidence or geographic proximity. Networks and reputation could even remain important in cases when the grandfather is dead.

Socio-emotional factors or transmission of cultural capital, on the other hand, requires interaction between grandfather and grandson, which for most of the period covered in this study

also presupposes residential proximity and that the grandfather is alive during the childhood of the grandson (Solon 2014; Zeng and Xie 2014). 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, through social or emotional influence via direct interaction, possibly has increased, and that the effect of this also should have grown over time (Bengtson 2001). Here, we should probably expect more of a consistent 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 the increasing importance of long-range migration could be expected to work in the other direction, reducing the direct social or emotional impact of grandparents on grandchildren.

It has also been pointed out that random measurement errors in status variables, such as earnings and occupation, or variations in "market luck", would reduce the rate of regression to the mean implied by simple autoregression. In turn this could create an artificial association between grandfathers and grandsons in multigenerational regressions of the kind used here (see, e.g. Stuhler 2012; Solon 2014; Clark 2014).

In the analysis that follows, we distinguish between grandfather influence according to whether it comes from the maternal or paternal grandfather, if the influence changes over time, as well as if it depends on residential proximity.

Data and methods

We use data for men from the Scanian Economic-Demographic Database (SEDD), consisting of individual-level longitudinal information on socioeconomic origin for individuals born from as early as the mid-1700s and until today (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, with 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. Information on socioeconomic attainment 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 provided through various administrative registers, managed by Statistics Sweden. As a result, the database has been

extended in several respects. Firstly, all individuals who ever lived in the five parishes prior to 1968 and who were still alive thereafter were tracked until 2011, regardless of their geographic location in Sweden. Additionally, spouses, parents, grandparents, children and siblings of individuals belonging to the original population were added to the database, provided that they were alive and living in Sweden sometime after 1968. 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 successive 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 aforementioned five parishes, implying that the social status of children or parents who lived elsewhere during their labor market career is unobserved. Consequently, in order to observe socioeconomic attainment across three generations prior to 1968, individuals need to remain 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 large extent. More specifically, all ever married individuals for whom social origin was missing for the period prior to 1895 were tracked back to their parish of birth. For these individuals, the social class of the father was obtained from the birth records, the population registers or the poll-tax registers. As a result, 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, also avoiding the selection bias. As observations for the post-1968 period cover the entire country, there is no similar selection bias for this period.

The analysis focuses on the processes of intergenerational transmissions of socioeconomic status over three generations. Consequently, a necessary condition for being selected into the sample is that socioeconomic status (occupation or earnings) can be observed for three consecutive generations. In the database, the individual's attained occupation can be observed from as early as the early 19th century and until 1990, whereas earnings – observed annually - is available from 1902 to 2010. Due to these differences in the time periods for which information on occupation and earnings is available, the samples differ between the different

analyses. More specifically, the analysis on intergenerational earnings mobility spans the period 1902-2010, whereas the remaining analysis, based on occupation, covers the period 1813-1990. Sensitivity analyses are performed using similar periods, in order to ascertain that differences in results is not driven by changes over time that is only covered by one of the samples. The analysis relying on information on occupation uses data which - prior to 1968 - 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. From 1970 and onwards, we rely on occupational information provided by the quinquennial censuses, conducted until 1990. Before 1968, occupational notations were coded into HISCO (Van Leeuwen, Maas and Miles 2002). Occupations after 1968 were coded by Statistics Sweden in the NYK/SSYK classification, recoded into HISCO[1] after first being converted from ISCO-88[2] into ISCO-68 (Hendrickx 2002). Hence, all occupations throughout the period have ultimately been coded in HISCO. While an individual may have several occupational notations at different times and from different sources, we systematically rely on the observation at the age closest to 40, in the age range 30-50. To the extent that this information is available, the occupation of the preceding generation is measured according to the same procedure. If unavailable, the status of the preceding generation is obtained from the father's occupation according to the birth records, which in most cases also falls within the age rage 30-50.

We study three different dimensions of socioeconomic status: social class, occupational status and earnings. Social class is measured using HISCLASS which is a 12-category occupational classification scheme based on skill level, degree of supervision, whether manual or non-manual, and whether urban or rural (Van Leeuwen and Maas 2011). HISCLASS contains the following classes: 1) Higher managers; 2) Higher professionals; 3) Lower managers; 4) Lower professionals and clerical and sales personnel; 5) Lower clerical and sales personnel; 6) Foremen; 7) Medium skilled workers; 8) Farmers and fishermen; 9) Lower skilled workers; 10) Lower skilled farm workers; 11) Unskilled workers; and 12) Unskilled farm workers. These 12 classes were grouped in the following five categories:

1. Higher occupations: (1+2+3+4+5)

[1] We have reversed the HISCO to ISCO-68 code, created by Ineke Maas and available from the website http://hisco.antenna.nl/.
[2] We have used the recoding files created by Erik Bihagen, available at http://www2.sofi.su.se/~ebi/.

2. Skilled workers (6+7)
3. Farmers (8)
4. Lower skilled workers (9+10)
5. Unskilled workers (11+12)

The distributions of classes in the different generations are shown in Table 1. In G1 (grandfathers) less than 5 percent belonged to the top group of higher occupations, while this proportion changed to 36 percent in G3 (grandsons). The proportion unskilled workers instead declined from 30 percent in G1 to 8 percent in G3, while the proportion farmers went down from 27 percent to 14 percent. These changes well reflects the dramatic changes taking place in social structure over the twentieth century in Sweden as well as in other Western countries (see, e.g. Dribe, Helgertz and Van de Putte 2014).

Table 1 here

Occupational status is measured using the continuous scale HISCAM which determines the position of an occupation in the overall hierarchy based on social interaction patterns, mainly using information on marriage and partner selection (Lambert et al. 2014). It relies on patterns of interaction between incumbents of different occupations, translating into a relative position in a social hierarchy. HISCAM is generated from the HISCO codes, standardized to have a mean of 50 and a standard deviation of 15 in a nationally representative population. We used the universal scale rather than the Sweden-specific version, due to the small sample size used in constructing the Swedish scale. In our sample, HISCAM has a mean of 54.6 (s.d. 10.0) in G3, 52.9 in G2 (s.d. 8.1 and 52 in G1 (s.d. 7.0) (see Table 1).

Data on individual earnings is available from 1902 onwards, where – similar to the analysis based on occupation – we again rely on observations in the age range 30-50. More specifically, individuals belonging to the third generation contribute with estimates of their lifetime earnings observed no earlier than 1944, born no later than 1906. As a result, the population that is being examined for this part of the analysis is smaller, amounting to 2233 three-generation lines. Using all observations for individuals on their annual earnings in the ages 30-50, we calculate life time earnings following the approach by Lindahl et al. (2012). We

regress the individual's earnings in year *t* on year of birth, its square and cubic, as well as on a set of observation year dummies, following equation (1).

$$(1)\ Ln\ income_{it} = \beta_0 + \beta_1 birth\ year_i + \beta_2 birth\ year, squared_i + \beta_3 birth\ year, cubed_i + \gamma_{1902} Observation\ year\ 1902_{it} + \cdots + \gamma_{2010} Observation\ year\ 2010_{it} + \varepsilon_{it}$$

In the subsequent step, each individual and year-specific residual, $\hat{\varepsilon}_{it}$, is computed and the mean of this residual is included in the three-generation regressions as a measure of life time earnings. This procedure reduces variation from measurement errors, which is important in order to remove artificial earnings mobility (see Solon 1992; Zimmerman 1992; Björklund and Jäntti 1997).

The empirical analysis initially focuses on describing overall patterns of attainment across three generations, using mobility tables of social class. In the following multivariate analysis, we analyze the influence of the grandfathers' socioeconomic characteristics on the outcome of the grandsons, controlling for the characteristics of the fathers, using OLS (for occupational status and earnings) and ordered logit models (for social class). We control for a range of individual and contextual factors as displayed in Table 1. We also distinguish between the impact of paternal and maternal grandfathers' status, and study to what extent the life status and geographic proximity of grandfathers mattered for the influence on their grandsons' attainment.

Class attainment and mobility

Table 2 presents origin and destination social class for fathers-sons (G2-G3), grandfathers-fathers (G1-G2) and grandfathers-grandsons (G1-G3). The G1 observations is based on the sample which maximizes the number of observations, thus taking the highest status observed in the grand-parental generation. If only status is observed on the maternal or paternal side, this observation is used. 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 as indicated by the diagonal. Looking first at the top panel (G2-G3) there is a considerable inflow to the higher occupations from all classes, especially from the skilled workers. The same pattern is present between G1 and G2, and of course also between G1 and G3. Thus, even though there is a strong persistence in the highest-status group, as shown by the 55-70 percent immobile in this class,

changes in social structure implying a great increase in the number of positions in this group allow individuals from lower class origins to move upwards in large numbers. In this way, class persistence and (absolute) class mobility occur at the same time. It is also quite clear that downward class mobility is much less frequent than upward mobility, both between G1-G2 and G2-G3. Overall, many people experience an important transition, from origins in manual, blue-collar jobs to destinations in white-collar jobs which to a large extent requires higher education. The question, however, remains to what extent observed attainment patterns are a consequence of the societal changes affecting the occupational structure, rather than resulting from an increased societal openness and fluidity. In a previous analysis using the same data we show that both processes are at work, increasing absolute mobility due to structural changes, and increasing relative mobility, or openness. The development is particularly noticeable for entry into white collar middle class positions (Dribe, Helgertz and Van de Putte 2014).

Table 2 here

Table 3 shows the odds ratios from ordered logit models on class attainment by G3. Odds ratios greater than one implies an association with lower class attainment, while odds ratios less than one indicates an association with higher class attainment. In M1, for example, having a father in the higher occupations or skilled worker group implies a lower likelihood of ending up in a lower class than being a farmer. For those with a father in the lower skilled and unskilled worker groups, on the other hand, the risk of low class attainment is higher than for farmers, skilled workers and higher occupations. In fact, the pattern indicates a rather linear gradient in terms of the influence from father's class on their son's class attainment. The lower the father's class, the higher the chance that the son ends up in a lower class. It is more difficult to give the magnitude of the odds ratios a meaningful interpretation without calculating marginal effects, but as the main purpose here is to detect associations rather than the strength of the associations these odds ratios are sufficient.

Table 3 here

In M2, we add paternal grandfather's (PG1) class, which practically does not change the father-son association at all. More interestingly, however, there is a similar association between paternal grandfathers and grandsons (PG1-G3) as between fathers and sons, but much weaker. Having a paternal grandfather in the higher occupations is associated with a much lower chance of low class attainment, while having an unskilled paternal grandfather is associated with higher chances of low class attainment. In M3 we instead look at associations with maternal grandfather's class. The pattern is highly similar to the one for paternal grandfather class. Low class MG1 is associated with low class attainment and high class MG1 is associated with high class attainment (but the latter odds ratio is not statistically significant).

Model M4 includes both paternal (PG1) and maternal grandfather's (MG1) class, which again, does not change the basic association between father and son, and neither affects the association between PG1/MG1 and G3 to any greater extent. The odds ratios generally diminish somewhat, without changing the substantive conclusion: having an MG1 or PG1 in the working classes significantly increases the likelihood of low class attainment for G3 compared to farmers and skilled workers. In M5, we use the highest observed grandparental class, regardless of whether this is observed on the maternal or paternal side. Clearly this does not affect the results in any major way. The only real difference is the lack of association between G1 in higher occupations and the attainment of their grandsons. These results clearly support the hypothesis of an independent influence of the grandparental generation on class attainment, in addition to any influence going through the father.

Next, we turn to an analysis of changing G1-G3 associations over time, using the combined G1 variable (because this maximizes sample size). M6 presents results of a three-period interaction model, where the post-WWII period is the reference category. Hence, the odds ratios for G1 refer to the last period, while interaction odds ratios indicate the extent to which the associations are different in earlier periods. The only statistically significant odds ratio is for higher occupations in the earliest period, and it indicates that the association between high G1 status and high G3 status was much stronger in this period than later. It should be noted, however, that the proportion of G1 in this class was quite low (less than 5 percent). Thus, overall the grandparental influence on class attainment does not appear to have changed that much over the twentieth century. The results are highly similar when the model is estimated on the paternal grandfather sample, however also suggesting a significant interaction effect between skilled

worked class origin and an association between lower class attainment during the second period, 1900-1944.

Occupational attainment (HISCAM)

Measuring attainment using the HISCAM scale, we obtain a continuous measurement, instead of looking at aggregated classes. As can be seen in Table 1 above the HISCAM score ranges from 40-99 in our sample, with means slightly higher than 50. We model occupational attainment in G3 modeled using OLS, which makes the results straightforward to interpret. M1 in Table 4 shows that a one unit higher occupational score in G2 (fathers) increases the G3 occupational score by 0.3 units, which is a quite sizeable father-son association in occupational status. The period effects also shows that G3 attainment was about 4 units higher on average in the post-WWII period compared to preceding periods. An example of such a transition is represented by an individual working as a retail trade salesperson (HISCAM ~60) and working as a customs officer (HISCAM ~64).

Table 4 here

Adding paternal G3 occupational status to the model (M2) only slightly reduces the G2-G3 association. The association between PG1 and G3 is about one third of the G2-G3 association and is statistically significant. A 10 unit higher occupational score in PG1 increases the occupational score in G3 by about 1 unit in addition to the association between G2 and G3, which is about 3 units. Looking instead at MG1 in M3 the association is of a similar magnitude to PG1, only marginally weaker.

Including the occupational status of both the paternal (PG1) and maternal grandfather (MG1) in this model (M4) shows that the PG1 association remains more or less the same, while there is no additional impact from maternal grandfather occupation, when controlling for paternal grandfather occupation. This is different from the HISCLASS results, and could be a result of non-linearities in the associations. Not surprisingly, the association between the combined G1 and G3 occupational scores is similar to the PG1-G3 association (M5). In M6 we add the period interactions, which are not statistically significant and also of small magnitude. Hence, similar to

social class attainment the grandparental influence on occupational status did not change markedly over the twentieth century.

Earnings

Three-generation earnings associations are also modeled using OLS, where the earnings variables are obtained through the individual specific mean residual from the auxiliary regression previously described. M1 in Table 5 shows the earnings association between G2 and G3. The coefficient is statistically significant and 0.22, which in line with similar two-generation estimates in other studies for Sweden, typically ranging between 0.2 and 0.3 (Björklund and Jäntti 1997; Björklund, Lindahl and Plug 2006; Lindahl et al. 2012). Adding PG1 earnings (M2) somewhat reduces the G2 coefficient, but shows no indication of a grandparental impact over and above the parental one. Similarly, there is no significant association with maternal grandfather earnings and the earnings of grandsons once the earnings of the father are controlled for.

Table 5 here

When including both MG1 and PG1 in the same model (M4) MG1 earnings has a sizable impact but it is not statistically significant, which is related to the small sample size when requiring information for both PG1 and MG1. Combining the two in M5 shows only a very weak and statistically insignificant association in earnings between G1 and G3, when controlling for G2 earnings. While the coefficient for G2 earnings is about 0.2 it is only 0.02 for G1. Thus, in terms of earnings we find very little to indicate an independent impact of grandparental earnings, either at the maternal or paternal side, on grandchildren's earnings when controlling for the impact of parental earnings. This result is different from the one for the Malmö cohort where the corresponding coefficient was 0.18, and for G2 0.30 (Lindahl et al. 2012).

It also differs from the results obtained for class and occupational attainment where we saw a clear grandparental influence from both the paternal and maternal side. To make sure that this difference is not explained by the different samples and time periods in the different analyses, we re-estimated the models in Table 4 (HISCAM) using the same sample as in Table 5 (earnings). These results are displayed in Table 6 and shows very clearly that the difference in grandparental influence between class/occupation and earnings is real.

- Table 6 here

Sensitivity analysis

As was pointed out before, to the extent that independent grandparent effects are a result of socio-emotional influence, or cultural inheritance, they require some level of proximity and interaction between grandparents and their children, while this is not as clear if they result from economic or biological factors (see Zeng and Xie 2014). As a sensitivity analysis we run interaction models including indicators of life status and residence (same parish) of G1 at the time of G3's birth. Overall these analyses do not produce any consistent evidence that the G1-G3 associations were contingent upon either the life status or residential proximity of G1, as is shown in Table 7. This points to the conclusion that the grandparental influence in this context is indirect, possibly connected to wealth transmission, networks or reputation.

Table 7 here

Conclusions

In this paper we study the associations in socioeconomic attainment across three generations in Sweden over more than 150 years. We look at three dimensions of status - social class, occupational status and earnings - and distinguish the impacts from maternal and paternal grandfathers, respectively. Our results show clear associations between grandparental class and occupational status and grandchildren's outcomes, when controlling for the associations between fathers and sons. These associations are remarkably stable over time, and do not appear contingent upon close interaction between grandfathers and grandchildren. For earnings, on the other hand, we find no association at all between grandfathers and grandsons, regardless if we are looking at the paternal or maternal side, or both sides combined. Hence, while there appears to be clear persistence in class and occupational status across generations, beyond the simple two generation association, there is very little of this when looking at earnings.

One reason for this difference could be that earnings are more transient and thus less persistent across generation compared to other indicators of socioeconomic status, such as class or occupational attainment. A similar argument was made recently by Clark (2014) in arguing for

surnames as the ultimate measure of social status, being more stable than occupation, class or earnings. Similar differences in two-generation associations between class and earnings has been shown for Britain, leading Erikson and Goldthorpe (2010) to conclude that class is likely a more stable indicator of socioeconomic status than income, at least in cases when good measures of life-time income is lacking, which is not a major issue for our study. A lack of close correlation between income a class dimensions of intergenerational mobility has also recently been pointed out by Blanden (2013), who interpreted this as indicating that class and income are two equally important aspects of socioeconomic status (even though various measurement issues cannot be discarded).

Our analysis of the influence of grandfathers on grandsons' socioeconomic attainment clearly indicates such an influence at least in terms of social class and occupational status. The fact that the influence does not seem to depend on close interaction between the grandfathers and their grandsons implies that socio-emotional influence or a transmission of cultural capital probably is not of great importance (cf. Zeng and Xie 2014). Moreover, the lack of a clear difference in the influence between maternal and paternal grandfathers does not offer immediate support for the importance of a genetic pathway. Instead, the results are most consistent with an indirect influence through transmission of wealth, reputation, networks, and possibly human capital, not requiring immediate interactions between grandfathers and grandsons. For example, it could be that the status of the grandfather was known in the community also when he was not present, and that this was important for the occupational choice of the grandson by facilitating entry, using established networks etc.

References

Becker, G. S. and N. Tomes (1986). Human capital and the rise and fall of families. *Journal of Labor Economics* 4: S1-S39.

Beenstock, M. (2012). *Heredity, Family, and Inequality. A Critique of Social Sciences*. Cambridge, MA: MIT Press.

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 (1997). Intergenerational income mobility in Sweden compared to the United States. *American Economic Review* 87: 1009-1018.

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 (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 (2012).How important is family background for labor-economic outcomes? Labour Economics 19:465-474.

Björklund, A., M. Jäntti and G. Solon (2007). Nature and nurture in the intergenerational transmission of socioeconomic status: evidence from Swedish children and their biological and rearing parents. *The B.E. Journal of Economic Analysis & Policy* 7: 1-21.

Björklund, A., M. Lindahl and E. Plug (2006). The origins of intergenerational associations: lessons from Swedish adoption data. *Quarterly Journal of Economics* 115: 955-988.

Black, S. E. and P. J. Devereux (2011). Recent developments in intergenerational mobility. In D. Card and O. Ashenfelter (eds.), *Handbook of Labor Economics. Volume 4b*. Amsterdam: Elsevier.

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 (2014). 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. and J.H. Goldthorpe (2010). Has social mobility in Britain decreased? Reconciling divergent findings on income and class mobility. *British Journal of Sociology* 61: 211-230.

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.

Hendrickx,J. (2002). ISCO: Stata module to recode 4 digit ISCO-68 occupational codes, Statistical Software Components S425801, Boston College Department of Economics.

Hertel, F. and O. Groh-Samberg (2014). Class mobility across three generations in the U.S. and Germany. *Research in Social Stratification and Mobility* 35: 35-52.

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.

Hällsten, M. (2014). Inequality across three and four generations in egalitarian Sweden: 1st and 2nd cousin correlations in socio-economic outcomes. *Research in Social Stratification and Mobility* 35: 10-33.

Jaeger, M. M. (2012). The extended family and children's educational success. *American Sociological Review* 77: 903-922.

Jäntti, M., and S. P. Jenkins (2013). Income mobility. *IZA Discussion Paper* No. 7730. Bonn: IZA.

Lambert, P.S., R.L. Zijdeman, M.H.D. Van Leeuwen, I. Maas and K. Prandy (2013). The Construction of HISCAM: A Stratification Scale Based on Social Interactions for Historical Comparative Research. *Historical* Methods, 46(2), p.77-89.

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.

Mare, R. D. (2011). 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.

Modin, B. and J. Fritzell (2009). The long arm of the family: are parental and grandparental earnings related to young men's body mass index and cognitive ability? *International Journal of Epidemiology* 38:733-744.

Prandy, K. (1999). The social interaction approach to the measurement and analysis of social stratification. *International Journal of Sociology and Social Policy* 19: 215-249

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.

Solon, G. (2014). Theoretical models of inequality transmission across multiple generations. *Research in Social Stratification and Mobility* 35: 13-18.

Stuhler, J. (2012). Mobility across multiple generations: the iterated regression fallacy. IZA Discussion Paper 7072. Bonn: IZA.

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.

Van Leeuwen, M. H. D. and I. Maas (2011). *HISCLASS. A Historical International Social Class Scheme*. Leuven: Leuven University Press.

Van Leeuwen, M. H. D., I. Maas, and A. Miles (2002). *HISCO. Historical International Standard Classification of Occupations.* Leuven: Leuven University Press

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.

Wightman, P. and S. Danziger (2014). Multi-generational income disadvantage and educational attainment of young adults. *Research in Social Stratification and Mobility* 35: 53-69.

Zeng, Z. and Y. Xie (2014). The effects of grandparents on children's schooling: evidence from rural China. *Demography* 51: 599-617.

Zimmerman, D. J. (1992). Regression toward mediocrity in economic stature. American Economic Review 82:409-429.

Table 1. Descriptive statistics.

	HISCLASS	HISCAM	EARNINGS
Birth year (mean):			
G3	1914.0	1912.0	1962.1
	[1796 - 1960]	[1796 - 1960]	[1906 - 1980]
G2	1881.4	1879.2	1933.8
	[1758 - 1942]	[1758 - 1941]	[1878-1961]
G1	1844.9	1840.9	1905.9
	[1716 - 1932]	[1716 - 1932]	[1852 - 1943]
HISCLASS: G3 (%)			
Higher occupations	36.0		
Skilled workers	18.8		
Farmers	14.4		
Lower skilled workers	22.9		
Unskilled workers	7.9		
HISCLASS: G2 (%)			
Higher occupations	27.2		
Skilled workers	17.6		
Farmers	26.5		
Lower skilled workers	22.6		
Unskilled workers	6.1		
HISCLASS: G1 (%)			
Higher occupations	4.6		
Skilled workers	8.2		
Farmers	26.7		
Lower skilled workers	30.4		
Unskilled workers	30.1		
HISCAM (mean):			
G3		54.6	
		[39.9 - 99]	
G2		52.9	
		[39.9 - 99]	
G1		52.0	
		[39.9 - 99]	
Residual log earnings (mean)			
G3			0.002
			[-5.49 - 1.44]
G2			-0.004

			[-5.02 - 2.52]
G1			-0.056
			[-5.39 - 2.60]
Age at observation (mean)	38.0	38.0	36.0
Residing in metropolitan area (%)	40.9	40.2	52.6
Residing in county of birth (%)	53.1	54.7	30.8
Residing in other county (%)	44.5	43.2	60.4
Migrant status N/A (%)	2.5	2.1	8.9
Period (%):			
1813-1899	15.7	16.4	-
1900-1944	19.9	21.4	-
1945-1990	64.4	62.22	-
Observations	3709	3772	2233

Note: Variable min and max values in brackets. Period effects not estimated for the income sample, as all G3 observations occur 1944-.

Source: The Scanian Economic-Demographic Database, Bengtsson, Dribe and Svensson (2012).

Table 2. Mobility tables, HISCLASS (%).

			G3		
G2	Higher occupations	Skilled workers	Farmers	Lower skilled workers	Unskilled workers
Higher occupations	61.1	15.1	4.8	16.2	2.9
Skilled workers	38.5	30.1	5.1	22.6	3.8
Farmers	20.8	13.4	36.0	19.7	10.1
Lower skilled workers	26.0	21.2	9.0	33.7	10.1
Unskilled workers	20.4	17.3	10.2	27.9	24.3

			G2		
G1	Higher occupations	Skilled workers	Farmers	Lower skilled workers	Unskilled workers
Higher occupations	55.8	12.8	8.1	18.0	5.2
Skilled workers	48.0	22.4	3.6	22.4	3.6
Farmers	34.3	15.7	26.0	16.7	7.3
Lower skilled workers	32.3	18.6	13.8	24.3	11.1
Unskilled workers	35.0	21.7	8.5	28.1	6.8

			G3		
G1	Higher occupations	Skilled workers	Farmers	Lower skilled workers	Unskilled workers
Higher occupations	70.9	7.6	5.8	14.0	1.7
Skilled workers	42.1	30.6	8.9	16.8	1.6
Farmers	23.6	13.9	45.1	13.8	3.5
Lower skilled workers	24.1	18.4	25.1	25.4	7.0
Unskilled workers	22.9	18.0	19.4	30.5	9.3

Table 3. Ordered logit regression estimates (odds ratios) of G3 class attainment (HISCLASS).

	M1	M2	M3	M4	M5	M6
G2						
Higher occupations	0.346***	0.335***	0.357***	0.333***	0.344***	0.344***
Skilled workers	0.669***	0.594***	0.673***	0.578***	0.643***	0.638***
Farmers	ref	ref	ref	ref	ref	ref
Lower skilled workers	1.237**	1.175	1.000	0.881	1.157*	1.153
Unskilled workers	2.021***	2.018***	1.646***	1.684**	1.860***	1.847***
G1 (Paternal/Maternal)						
Higher occupations					0.962	1.052
Skilled workers					1.144	1.119
Farmers					ref	ref
Lower skilled workers					1.345***	1.373***
Unskilled workers					1.325***	1.429***
PG1 (Paternal)						
Higher occupations		0.722*		0.529***		
Skilled workers		0.989		0.981		
Farmers		ref		ref		
Lower skilled workers		1.193**		1.116		
Unskilled workers		1.206*		1.317*		
MG1 (Maternal)						
Higher occupations			0.808	0.794		
Skilled workers			1.04	0.998		
Farmers			ref	ref		
Lower skilled workers			1.412***	1.280**		
Unskilled workers			1.334***	1.262*		
Period (rc: 1945-1990)						
1813-1899	2.376***	2.500***	2.366***	2.490***	2.464***	2.457***
1900-1944	1.766***	1.808***	1.634***	1.654***	1.772***	1.991***
Interactions, 1813-1899 * G1 Class						
Higher occupations						1.489
Skilled workers						1.366
Lower skilled workers						1.046
Unskilled workers						0.749
Interactions, 1900-1944 * G1 Class						
Higher occupations						0.0980***
Skilled workers						1.192

Lower skilled workers						0.903
Unskilled workers						0.804
Observations	3,709	2,934	2,369	1,594	3,709	3,709
Pseudo R2	0.075	0.082	0.070	0.080	0.076	0.078

Note: Models control for age, age^2, residing in metropolitan area and lifetime migration.

Table 4. OLS estimates of occupational attainment associations (HISCAM, G3 occupational attainment as dependent variable)

	M1	M2	M3	M4	M5	M6
G2	0.332***	0.290***	0.354***	0.324***	0.309***	0.310***
G1 (Paternal/Maternal)					0.0823**	0.0925**
PG1 (Paternal)		0.0974**		0.119**		
MG1 (Maternal)			0.082*	0.00313		
Period (rc: 1945-1990)						
1813-1899	-4.266***	-4.831***	-4.007***	-4.634***	-4.345***	-4.752
1900-1944	-4.247***	-4.400***	-3.860***	-3.974***	-4.234***	-0.164
Interactions Period*G1						
1813-1899						0.00776
1900-1944						-0.0793
Observations	3,772	3,077	2,482	1,787	3,772	3,772
R^2	0.241	0.248	0.246	0.254	0.244	0.244

Note: Models control for age, age^2, residing in metropolitan area and life time migration.

Table 5. OLS estimates of earnings associations (G3 earnings as dependent variable).

	M1	M2	M3	M4	M5
G2	0.219***	0.189***	0.247***	0.218***	0.215***
G1 (Paternal/Maternal)					0.020
PG1 (Paternal)		0.001		0.024	
MG1 (Maternal)			0.054	0.214	
Observations	2,233	1,300	1,448	515	2,233
R^2	0.052	0.055	0.056	0.083	0.052

Note: Models control for age, age^2, residing in metropolitan area and life time migration.

Table 6. OLS estimates of G3 HISCAM associations for the earnings sample (1902-1990).

	M1	M2	M3	M4	M5	M6
G2	0.334***	0.303***	0.351***	0.336***	0.314***	0.314***
G1 (Paternal/Maternal)					0.083*	0.087*
G1 (Paternal)		0.123**		0.167***		
G1 (Maternal)			0.042	-0.035		
Period (rc: 1945-1990)						
1900-1944	-4.109***	-4.172***	-3.569***		-4.018***	1.436
Interaction Period*G1						
1900-1944						-0.108
Observations	2523	2047	1609	1133	2523	2523
R2	0.1635	0.1757	0.1603	0.1803	0.1658	0.166

Note: Models control for age, age^2, residing in metropolitan area and life time migration.

Table 7. Impact of grandparental life status and residence on intergenerational associations (OLS).

	HISCAM	Earnings
G2	0.308***	0.216***
G1 (Paternal/Maternal)	0.0130	-0.050
G1 life status/residence at birth of G3		
Unknown	-4.373	0.022
Dead	ref. cat.	ref
Alive, living in same parish	-5.728	0.019
Alive, living in another parish	-4.359	0.008
Interactions life status*SES		
Unknown	0.0900	0.239
Alive, living in same parish	0.106	0.115*
Alive, living in another parish	0.0897	0.070
Observations	3,772	2 233
R2	0.245	0.054

Note: Models control for age, age^2, residing in metropolitan area, period (HISCAM), and lifetime migration