CENTRE for ECONOMIC PERFORMANCE

Intergenerational Mobility in Europe and North America

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Executive Summary

The level of intergenerational mobility in society is seen by many as a measure of the extent of equality of economic and social opportunity. It captures the degree of equality in life chances - the extent to which a person's circumstances during childhood are reflected in their success in later life, or on the flip-side, the extent to which individuals can make it by virtue of their own talents, motivation and luck.

Under a project supported by the Sutton Trust we have sought to understand more about how intergenerational mobility compares across countries in Europe and North America. In addition, work has been carried out to understand more about mobility in Britain: how mobility has changed over time; and the role of education in shaping opportunity.

The key findings are:

- International comparisons indicate that intergenerational mobility in Britain is of the same order of magnitude as in the US, but that these countries are substantially less mobile than Canada and the Nordic countries. Germany also looks to be more mobile than the UK and US, but a small sample size prevents us drawing a firm conclusion.
- Intergenerational mobility fell markedly over time in Britain, with there being less mobility for a cohort of people born in 1970 compared to a cohort born in 1958. No similar change is observed in the US.
- Part of the reason for the decline in mobility has been the increasing relationship between family income and educational attainment between these cohorts. This was because additional opportunities to stay in education at both age 16 and age 18 disproportionately benefited those from better-off backgrounds.
- For a more recent birth cohort (born in the late 1970s and early 1980s), there is a more mixed picture on changes in educational inequality. Their education participation in the 1990s was characterized by a narrowing in the gap between the staying on rates at 16 between rich and poor children, but a further widening in the inequality of access to higher education.

- The expansion of higher education since the late 1980s has so far disproportionately benefited those from more affluent families.
- The research shows clearly, using a variety of identification techniques, that family income in the childhood years does make a genuine difference to educational outcomes, rather than reflecting other aspects which differ across families. However, the estimates are not able to say definitively whether this causal effect has increased in strength over time.

Implications

International comparisons of intergenerational mobility show that Britain, like the United States, is at the lower end of international comparisons of mobility. Also intergenerational mobility has declined in Britain at a time of rising income inequality. The strength of the relationship between educational attainment and family income, especially for access to higher education, is at the heart of Britain's low mobility culture. If improving intergenerational mobility is viewed as desirable, this clearly suggests that from early ages, including prior to school entry, Britain needs to adopt a strategy to equalize opportunities. This should apply at all stages of the education process, and include support during the early years, for both parents and children; policies to improve the performance of deprived children in schools; and steps to promote participation at the post-compulsory level. Such policies have the potential to enhance intergenerational mobility by ensuring greater equality of educational opportunity.

Intergenerational Mobility

The level of intergenerational mobility in society is seen by many as a measure of the extent of equality of economic opportunity or life chances. It captures the extent to which a person's circumstances during childhood are reflected in their success in later life, or on the flip-side, the extent to which individuals can make it by virtue of their own talents, motivation and luck.

The most intuitive way to see the extent of intergenerational mobility is to see where children from the most or least affluent families end up in the earnings or income distribution as adults. This can be shown by a transition matrix showing movements in the income distribution across generations.

Table 1 reports an example of such a transition matrix for Britain for children born in 1970. It splits each generation's distribution up into four equal sized quartiles (each containing 25 percent of people) and sees how much movement there is between quartiles across generations. In a fully mobile society a quarter of the children from each income group would then end up in each quarter of the adult earnings distribution, so every cell would contain a .25. In the case of no mobility, all children would be in the same quartile as their parents and the lack of movement between quartiles would be shown by 1's on the diagonal and 0's elsewhere.

The Table makes it clear that, for the cohort born in 1970, 37% remained in the poorest quarter as adults, whilst only 16% made it to be among the most affluent as adults. Likewise, far more of the most affluent quarter remains in the top quarter in the next generation than would occur with perfect mobility.

Table 1: Transition Matrix for Britain, Sons Born in 1970

	Sons' earnings quartile aged 30 in 2000			
Parental average income quartile (average of incomes measured when son aged 10 and 16)	Bottom	2nd	3rd	Top
Bottom	.37	.23	.23	.16
2nd	.30	.30	.24	.16
3rd	.20	.24	.29	.27
Top	.13	.23	.24	.40

Data drawn from the British Cohort Study of 1970 as described in the text.

Among economists, intergenerational mobility is most commonly measured by an intergenerational elasticity (β) measuring the strength of the statistical association between parent and child outcomes. A higher elasticity indicates a stronger impact of parental outcomes on children's economic success, meaning higher intergenerational inequality and less intergenerational mobility. If β equals1 this corresponds to complete intergenerational immobility. If β equals 0, and there is no relationship between incomes across generations, this corresponds to complete mobility. On this basis our research reports an intergenerational elasticity of son's earnings with respect to family income of .29 in Britain for those born in 1970.

From one such observation of intergenerational mobility in one country, it is not instantly obvious what constitutes a high or low level of mobility. So here we adopt two approaches to give benchmarks for mobility in countries. Firstly we compare mobility across a set of other major industrial countries and secondly we use a historical comparison to suggest whether the extent of mobility in Britain has changed over time.

International Comparisons of Mobility

Most evidence on intergenerational mobility across countries is generally from studies considering one or two countries in isolation. However, drawing strong conclusions about relative levels of mobility in different countries is hampered by the fact that few studies are carried out with an explicit comparative aim. Different researchers take their own decisions about variable choice, sample selection and estimation methods, meaning that it is impossible to know whether differences are a consequence of fundamentals or a lack of comparability across studies.

The research outlined here seeks to fill this gap. Here we combine our own analysis for mobility in Britain, the US, West Germany and Canada, with research by Bjorklund et al (2005) who consider Britain, the US, Sweden, Norway, Finland and Denmark. Both studies are strongly focused on using a consistent approach across the studies. Combining them enables a comparison to be made over eight countries.

Table 2 provides estimates of intergenerational mobility on the available data across the two studies. Data limitations mean that not all countries are available for

the same broad periods of time. Also, for some countries data is available on father's earnings whereas for others we only have combined parental income.[2]

Table 2: Internationally Comparable Estimates of Intergenerational Mobility

Country	Dataset	Sons Born	Sons Earnings Measure	Measure of Parental Status	Intergenerational partial correlation[1]
Britain	British Cohort Study	1970	2000 (Age 30)	Parental income 1980 and 1986 (average)	.271[a]
US	Panel Study of Income Dynamics	1954-1970	Age 30	Parental income when son age 10 and age 16 (average)	.289[a]
West Germany	Socio-Economic Panel	1960-1973	2000	Parental income 1984 and 1988 (average)	.171[a]
Canada	Intergenerational Income Data (from tax registers)	1967-1970	1998	Parental income when son aged 16	.143[a]
Norway	Register data	1958	1992 and 1999 (average)	Father's earnings 1974	.139[b]
Denmark	Register data	1958-1960	1998 and 2000 (average)	Father's earnings 1980	.143[b]
Sweden	Register data	1962	1996 and 1999 (average)	Father's earnings 1975	.143[b]
Finland	Quinquennial census panel	1958-1960	1995 and 2000 (average)	Father's earnings 1975	.147[b]

[a]Blanden (2005) Table 3.3

[b]Bjorklund et al (2005) Table 3.

The partial correlation is equal to the beta coefficient scaled to adjust for changes in inequality across generations. This is important as inequality grew at different rates for the countries in this sample.

[1]These results differ slightly from those in Table 5 owing to some adjustments required to ensure that results are comparable across countries and over time.

The results in Table 2 that compare intergenerational mobility across the eight countries suggest a clear pattern. America and Britain have the highest intergenerational persistence (lowest mobility). Germany is around the middle of the estimates, while the Nordic countries and Canada all appear to be rather more mobile.

[2] The earlier data uses a two year average of earnings which will include earnings measured at a younger age, the later data has a single year's measure for earnings as an adult.

Among the Nordic countries the levels of mobility are similar: Norway has the greatest mobility and Sweden the least. The estimates shown here are broadly in line with what we would expect from the current literature which takes one country at a time (as reviewed by Corak, 2004)

Thus the picture that emerges is that Northern Europe and Canada are particularly mobile and that Britain and the US have the lowest intergenerational mobility across the European and North American countries studied here. The USA is seen by some as a place with particularly high social mobility. In part this is a consequence of using measures of class to estimate mobility (these will be affected by changes in the class structure over time). However, the idea of the US as 'the land of opportunity' persists; and clearly seems misplaced.

As we go on to show below, low mobility in Britain is partly explained by the strong relationship between parental income and educational attainment. For the US, the picture is slightly different - parental income leads to a less marked advantage in terms of education, but this educational advantage is worth more in the labour market in the US than in the other countries. Another important dimension of the low mobility in the US is related to race, with Hertz (2004) showing that mobility is substantially more restricted for black families than white families, although he does not show precisely how much of the persistence this accounts for.

Changes in Intergenerational Mobility in Britain

In the internationally comparable estimates, information has been used for two cohorts of British sons, those from the National Child Development Survey (NCDS) who were born in 1958, and those from the British Cohort Study (BCS) who were born in 1970, which were used in the first section. If care is taken in treating these datasets comparably then they can be used to explore how intergenerational mobility has changed over time.

Looking at the transition matrices reported in Tables 3 and 4 it is instantly clear that many more children from the poorest quarter remain in poorest quarter as adults in the more recent cohort. Likewise among the most affluent far more stay among the most affluent as adults than was the case for the earlier cohort.

Table 3: Transition Matrix for Sons born in 1958

	Sons' earnings quartile when aged 33 in 1991			
Parental income quartile when son aged 16	Bottom	2nd	3rd	Top
Bottom	.31	.28	.23	.17
2nd	.30	.28	.23	.19
3rd	.22	.25	.25	.28
Top	.17	.20	.28	.35

Data drawn from the National Child Development Survey.

Table 4: Transition Matrix for Sons born in 1970

	Sons' earnings quartile when aged 30 in 2000			
Parental income quartile when son aged 16	Bottom	2nd	3rd	Top
Bottom	.38	.25	.21	.16
2nd	.29	.28	.26	.17
3rd	.22	.26	.28	.25
Top	.11	.22	.24	.42

Data drawn from the British Cohort Study.

Considering estimates of the intergenerational elasticity confirms that intergenerational mobility has fallen over time in Britain; equality of opportunity declined for those born in 1970 compared with those born in 1958. Table 5 provides the results for males, showing the estimated mobility parameter - the intergenerational elasticity of earnings with respect to family income - and the partial correlation across the generations. It is clear that by either of these measures intergenerational mobility has declined substantially and that these changes are statistically significant. In our underlying papers we explore these results and we are confident that they are robust.

Table 5: Changes in Intergenerational Mobility in Britain

	NCDS 1958	**BCS 1970[3]**	**Change**
Mobility Parameter	.205 (.026)	.291 (.025)	.085 (.036)
Partial Correlation	.166 (.021)	.286 (.025)	.119 (.033)
Sample Size	2163	1976	

Source: Blanden (2004) Table 4.2 Standard errors are shown in parentheses.

[3] These results differ slightly from those in Table 2 owing to some adjustments required to ensure that results are comparable across countries and over time.

As a check that this is not a widespread phenomenon in developed countries experiencing rising inequality, we have also explored the extent to which this experience was shared by the US over the same period. The conclusion from this exercise is that there has been no similar change in intergenerational mobility in the US to match the one that occurred in Britain between the 1958 and 1970 cohorts. This indicates that what happened in Britain is exceptional even when compared with a country experiencing similar changes in inequality[4].

Decomposing the role of education

What lies behind this large reduction in mobility in Britain? Many commentators and political parties link mobility and the education system. In our studies the persistence between incomes across generations is decomposed into that part which is related to education and the part which is not. Further, the education-related aspect of persistence can be split into that part due to the difference in education attainment between people from different income groups and the value of this education in the labour market (i.e. the extent to which those with more education are paid more).

Formally: It is clear that education attainment varies according to parental income, such that $Ed_{ij}^{son} = \alpha_{0j} + \psi_j \ln Y_{ij}^{parents} + e_{ij}$, where j refers to the cohort. Education has benefits in the labour market such that $\ln Y_{ij}^{sons} + \alpha_{1j} + \phi_j Ed_{ij}^{sons} + u_{ij}$ where ϕ_j denotes the return to education in cohort *j*. This means that the overall intergenerational elasticity can be decomposed into the return to education multiplied by the relationship between parental income and education, plus the unexplained persistence in income that is not transmitted through education.

$$\beta_j = \phi_j \psi_j + \frac{Cov(u_{ij}, \ln Y_{ij}^{parents})}{Var(\ln Y_{ij}^{parents})} \tag{3.3}$$

To explore this decomposition the highest qualification levels of the cohort members are translated into the number of years generally taken to obtain them.

The results of the decomposition are shown in Table 6. It is clear that education has an important role to play, with around 35 to 40 percent of the intergenerational coefficient being accounted for by the measures of education used in the decomposition. In addition, the Table demonstrates that the increase in

[4] See Blanden (2005) Chapter 5 for more information on changes in mobility over time in the US.

intergenerational mobility is explained by two factors: an increase in the sensitivity of education to parental income and educational attainment, and an increase in the link between parents' incomes and sons' earnings which is not explained by education. An increase in the wage returns to education in the labour market would also lead to an increase in persistence, however the evidence presented here suggests that for these cohorts at least, the returns to education have not changed.

Table 6: Education and Intergenerational Mobility: Decomposition

	β	Return to education (ϕ_j)	Relationship between parental income and education (ψ_j)	Persistence through Education ($\phi_j\psi_j$)	Persistence not through education $\frac{Cov(u^{son}, \ln Y^{parents})}{Var(\ln Y^{parents})}$
1958 Cohort	.205 (.026)	.081 (.004)	.947 (.121)	.077	.132 (.024)
1970 Cohort	.291 (.025)	.075 (.005)	1.350 (.098)	.101	.191 (.024)

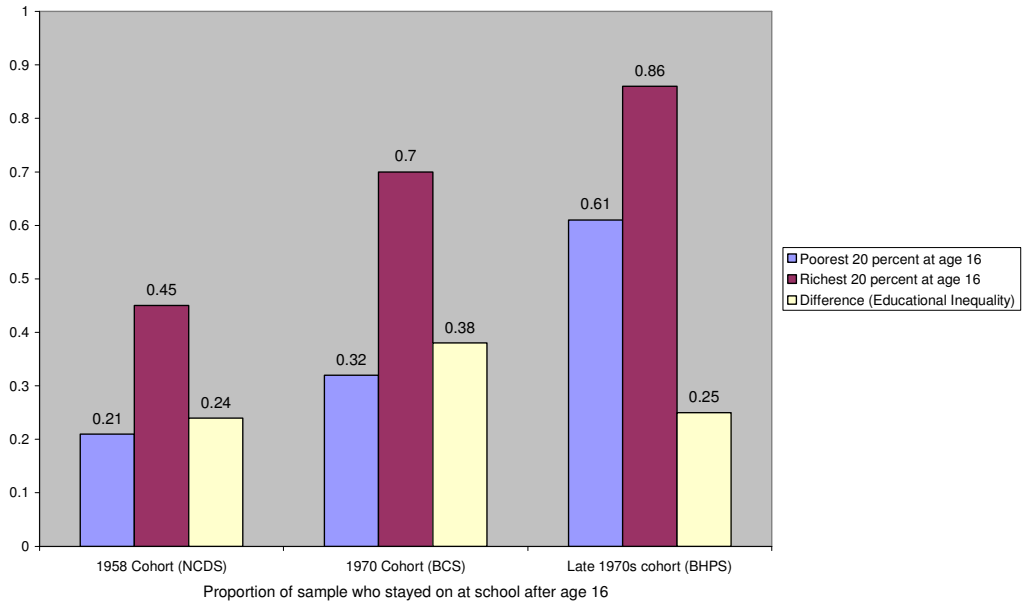
Changes in the Impact of Education on Family Income

As the link between family income and educational attainment of children has increased between the two cohorts, the next step is to assess how education levels achieved have evolved for young people from different family backgrounds. We consider two stages of educational performance, staying on at school after the compulsory school leaving age of 16 and Higher Education degree attainment. As we are now considering educational attainment rather than adult earnings we can add a third cohort of British children reaching age 16 in the 1990s (from the British Household Panel Survey). This gives a partial picture of how mobility may be changing for a more recent birth cohort.

Figure 1 shows the proportions of young people (both males and females) staying on in education beyond age 16 over time. Educational inequality is measured as the difference in the staying on rate of young people with parental income in the richest 20 percent compared with young people with parents in the poorest 20 percent. The first thing to note about these results is that the staying on rate has increased from 1974 to the late 1990s for young people from both income groups. The more interesting result is that the speed of the increase has varied substantially for young people in different periods. It is clear that between 1974 and 1986 (when the cohorts used in the previous section were aged 16) staying on rates for children from the

richest backgrounds were rising faster; this led to an increase in educational inequality. From 1986 to the late 1990s the staying on rate of those from the poorest backgrounds was rising more quickly, leading to a reversal in the extent of educational inequality[5]. Over the 1990s young people from poorer backgrounds have clearly taken up the opportunity to stay on in post-compulsory education, as never before. This is likely to be in part a consequence of the introduction of the GCSE Given the variety of courses available at further education colleges there might be a wide variation in the courses that young people stay on to do. Therefore the next question is: are the trajectories that they are on leading to higher qualifications?

Figure 1: Staying on Rates (Proportions) by Parental Income Group

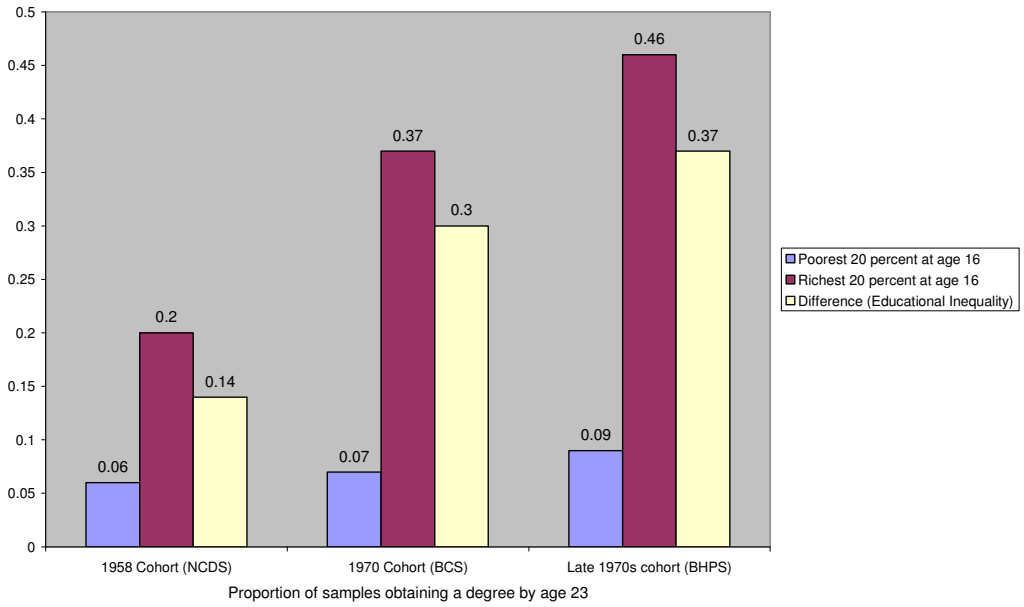


Source: Blanden, Gregg and Machin (2005) Table 5.3.

We can find out more about this by considering the completion of higher education by income group in a similar way. Figure 2 presents results similar to those from Figure 1 but this time treating degree attainment by age 23 as the outcome of interest. Once again, educational expansion is evident, with increases in degree attainment for students from all backgrounds. However, in contrast with the staying on results, educational inequality has risen in all periods. Young people from the poorest income groups have increased their graduation rate by just 3 percentage points between 1981 and the late 1990s, compared with a rise in graduation rates of 26 percentage points for those with the richest 20 percent of parents.

[5] This pattern is also found when an alternative data source is used.

Figure 2: Degree Completion by Age 23 by Parental Income Group



Source: Blanden, Gregg and Machin (2005) Table 5.4.

The clear conclusion here is that the expansion of higher education in the UK has benefited those from richer backgrounds far more than poorer young people. This occurred over a period when means-tested student support declined sharply in the UK. This evidence is a cautionary tale in the recent debate around the introduction of top-up fees for Universities in England and Wales. In the past, increasing the numbers of students has failed to increase the participation of the poorest groups, it is crucial that this situation changes for further expansion of higher education and this is going to require commitments to provide more generous grants, bursaries and other measures to widen participation.

We have found a strong increase in the relationship between educational outcomes and parental income between the children reaching 16 in the mid-1970s and mid-1980s. For a more recent cohort there is a further strengthening of the relationship between family income and degree performance but a weakening for staying on at 16. What is less clear is the extent to which the relationships between education and income are causal, in other words whether 'money matters' or whether it is that richer families produce more educated children because parental education, motivation and other aspects of family culture differ. Separating the effect of income from the impact of other aspects of the family is a difficult identification problem. In

our research we have utilized a number of techniques which net out permanent differences in income (which will be related to factors such as parents' education), to focus on transitory differences in income and their impact on educational outcomes. This can be done in a number of ways focusing on differences across siblings or across time for the same child.

Overall, the results of this investigation provide consistent evidence of a significant causal impact of family income on educational attainment. The results suggest that a one third reduction in income from the mean increases the probability of a child getting no A-C GCSEs by around 3 to 4 percentage points, on average, and reduces the chances of achieving a degree by a similar magnitude (Blanden and Gregg, 2004). Unfortunately it is not possible to judge if the causal effect of income on education has changed across cohorts as our most stringent models cannot be applied consistently across all datasets. While it is clear that family income differences between the rich and the poor do have a substantial impact on children's educational outcome, the estimated impact of income is modest relative to the large differences in attainment between children from richer and poorer families. Consequently, while reducing child poverty can have some beneficial effects, policies to increase intergenerational mobility will need to focus on raising poorer children's attainment through targeted services and access to the best schools.

Conclusion

Social mobility and equality of opportunity have once again become issues of political and social concern in the recent past. Our research has highlighted the decline in intergenerational income mobility in Britain over the last few generations of school leavers. The wider focus of our research is to understand better whether the extent of intergenerational mobility seen in Britain is mirrored in other developed countries and to measure the role of education in this process. The research we have described offers a comparable benchmark of Britain's performance in this dimension. The results show that Britain and the United States have the lowest levels of cross-generation mobility, lying well below Canada and the Nordic countries.

Education has been often seen as a route to greater intergenerational mobility. So it is natural to ask what role education has in the recent decline in mobility in Britain and whether it can help explain why mobility has fallen but remained constant in other countries like the US. Our research highlights how the relationship between

family income and children's higher education attainment has grown between cohorts completing education in the 1970s and the late 1990s. This implies that the big expansion in university participation has tended to benefit children from affluent families more and thus reinforced immobility across generations.

Income inequality has risen at the same time as the gap between the educational attainments of the richest and poorest has grown. Our evidence indicates that income and educational attainment are causally related, through research that tests this hypothesis using a number of approaches to control for observed family differences and to isolate the impact of transitory income shifts. However, they also indicate that equalizing educational attainments by redistribution alone would be unrealistic. To improve this situation we need also to use more direct means such as early years' education, improved schools for poor communities and financial support to pursue post-compulsory education. Indeed, this is the policy direction that the Government seems to be taking through programmes like Sure Start, Excellence in Cities and the Educational Maintenance Allowance (EMA). It is important, however, that all policies used have solid evaluation strategies, as has been pursued with these examples, so we can improve our knowledge of what really works (see Machin and Vignoles, 2005). However, the low level of intergenerational mobility for children in Britain means that current extent of policy development is currently insufficient for the task at hand.

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