Education Mobility in England

The link between the education levels of parents and the educational outcomes of teenagers

A report and discussion based on research by John Ermisch and Emilia Del Bono from the Institute for Social and Economic Research at Essex University

The Sutton Trust, April 2010

Executive summary

This report summarises research by the University of Essex on the link between the educational levels of parents and the educational outcomes of teenage children growing up in England today. The changes in this association over time in England and comparisons of the intergenerational link with that in other countries provide the most up-to-date picture of education mobility in the country, and indicate the levels of social mobility today's teenagers are likely to experience as adults.

Education mobility comparisons over time

- The advantage of having degree educated parents[1] in terms of performing well in tests at age 11 and age 16 has diminished for the current generation of children compared with previous generations, indicating an improvement in education mobility. However, this effect could be due to the increase in the proportion of children in this top educational grouping, making it less exclusive than successive generations as the education levels of parents have risen.

- The disadvantage of having poorly educated parents in terms of performing well in tests at age 11 and age 16 is the same for the current generation of children as the previous generation, indicating no change in education mobility for the least educated households. Again, though, as the education levels of parents have risen, a far smaller percentage of children are now in this lowest group – so the fact the penalty has not increased might be interpreted as a positive sign.

- In 2006 (for children born in 1989/1990), the odds of obtaining at least 5 GCSEs with grades of A*-C were still 4 times higher for children of degree educated parents than for children whose parents did not go to university. The relative advantage has declined over time: in 1986 (for children born in 1970), the odds of obtaining good O-level results were 4.6 times higher for children of parents with HE; in 1974 (for children born in 1958), the odds were 6.5 times higher.

- In 2006, the odds of obtaining good GCSE results for those whose parents left school without any O-levels or equivalent qualifications were 30% of the odds of children whose parents have at least O-levels or GCSEs. In 1986, the equivalent odds-ratio was 32%.

- Nonetheless, stark achievement gaps between children of degree educated parents and those of uneducated parents remain.

[1] For the purposes of this summary, 'degree educated parents' include all those with HE level qualifications.

- In 2006, 79% of children from degree educated parents obtained at least 5 GCSEs at A*-C grades compared with 33% of children whose parents left school without any O-levels or equivalent qualifications – a gap of 46 percentage points. In 1986 and 1974 the equivalent achievement gap in O-levels was 44 percentage points.

Education gap between age 11 and age 14

- Longitudinal analysis of the 1989/90 cohort shows that the achievement advantage of children of higher educated parents relative to those of lower educated parents widens throughout the school years, and in particular when moving between primary (age 11) and secondary (age 14) schools.

- The widening achievement gap is almost entirely accounted for by the fact that children from degree educated parents are far more likely to attend higher performing secondary schools and so benefit from a positive school effect.

- In other words, if every child went to a school with similar average tests results, there would be no further widening of the achievement gap that exists at age 11.

- This school impact exists after the individual characteristics of children attending different schools have been taken into account, and is likely to be due to a combination of better resources, teaching, advice and positive peer effects in the schools.

International comparisons

- The latest international comparisons suggest that education mobility for today's teenagers in England remains lower than that for children in other developed countries.

- The biggest achievement gap is observed for today's teenage children in England when compared with teenage children in three similar countries - the USA, Germany and Australia.

- In England 56% of children from degree educated parents are in the top 25% of tests at age 14, compared with 9% of children whose parents left school without any O-levels – a gap of 47 percentage points. This is over twice the equivalent gap in Australia (23 percentage points) - and higher than the gap in Germany (37 percentage points) and the USA (43 percentage points).

- Comparisons will be provided later in the year for other similar countries such as Canada, Denmark, Sweden and Finland, but it is unlikely that England's position would change markedly, given what we know about the relatively high social mobility levels in these countries.

- England (and Scotland) emerge as the countries with the strongest link between parental background (when estimated by the number of books in the home) and children's odds of scoring in the top 25% on maths and science tests undertaken in 20 developed countries.

- Children with more favourable backgrounds in England are 4.7 times more likely to be amongst the top performers in maths tests than their peers from poorer homes. This compares with the equivalent ratios of 3 in Australia, 3.1 in the Netherlands, and 2.9 in and Canada, Ontario.

Conclusions

- The findings in this study echo official statistics on the achievement gap over the last decade and it has become even more apparent that future gains in overall achievement will require a narrowing of this gap.

- We do not know how much wider the achievement gaps would have been if it were not for the education investment and policies of the last decade.

- A major obstacle to education mobility is that pupil intakes into secondary schools in England remain highly segregated.

- We need to consider more radical options to create more balanced intakes in state schools and pilot innovative schooling approaches to improve attainment for the most disadvantaged children.

- The concern is that if England compares unfavourably in the international comparisons of education mobility now, it may fall even further behind when it comes to future international comparisons of social mobility.

- A failure to respond to this challenge is to condemn our talented children – and our economy - to the bottom of the class in education's new world order.

Introduction

This report summarises research findings, produced by John Ermisch and Emilia Del Bono from the Institute for Social and Economic Research at Essex University, on the link between the educational levels of parents and the educational outcomes of teenage children growing up in England today. Education mobility describes the chances of a child doing well at school despite coming from a poorly educated household. The weaker the intergenerational link in education outcomes, the higher levels of education mobility. Education mobility levels also signal the levels of social mobility that the current generation of children are likely to experience as adults, given the strong and persistent link between earlier educational achievement and future life prospects and earnings.

The analysis thus offers the latest estimate of what social mobility levels in England might be like for children who have grown up under the current Labour Government – assuming that their educational outcomes will predict future life prospects in a similar way to previous generations. In this way, the findings build on previous reports on social mobility published by the Trust estimating the link between the family income of previous cohorts of children and their earnings in adult life, and for more recent cohorts of children, the link between their family background and their early education outcomes[2].

As with previous studies, this analysis provides comparisons of mobility both over time and across countries. It is impossible to say what the ideal levels of education mobility or social mobility might be, but what the research can tell us is whether current levels of mobility have declined or improved compared to previous generations, and whether mobility levels in this country are lower or higher than those in other similar nations. If mobility levels are lower comparatively, it suggests that the intergenerational link is stronger than it could or should be, and that many children who have the individual talents to progress in life are being held back by the background into which they were born.

The first section of the report shows how the intergenerational link in educational outcomes for the current generation of teenagers compares with those of previous generations in England. The second part documents how the achievement gap between children from low and high education households evolves for one cohort of children during the early teenage years, focusing on the impact of different performing secondary schools on this gap - even after controlling for the individual characteristics of children and their parents. The third section demonstrates how the intergenerational link for today's teenagers in England compares with those in other similar nations. The findings and their implications are discussed in a final section. The interpretations and views in this summary report are those of the Sutton Trust.

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[2] See: Intergenerational Mobility in Europe and North America, http://www.suttontrust.com/reports/IntergenerationalMobility.pdf; Recent Changes in Intergenerational Mobility in the UK, http://www.suttontrust.com/reports/summary.pdf; Social Mobility Summit report, http://www.suttontrust.com/reports/academic_papers_report.pdf

The analysis is based on a number of national and international surveys and data sources for the analysis. Three studies are used for the analysis of trends for children in England. The Longitudinal Study of Young People in England (LSYPE) has interviewed 15,000 English children born in 1989-90, and linked this information to the results of the children in national tests contained in the government's National Pupil Database, starting with Key Stage 2 results at age 11 and continuing with Key Stage results at ages 14 (KS3) and 16 (KS4)[3]. Previous generations of children are tracked in the British Cohort Study (children born in 1970), and the National Child Development Study (children born in 1958)[4].

For international comparisons, the research uses several sources. These include similar national cohort studies that have been undertaken in three other countries – the USA, Germany and Australia[5], and the cross national 'Trends in International Mathematics and Science Study' in which children from different countries undertake the same tests[6].

The project is part of a larger research programme funded by the US based Russell Sage Foundation that is investigating how the gap in educational outcomes (and other 'mobility enhancing skills') between children from lowly and highly educated parents evolves over the lifetimes of children in a range of developed countries[7].

The countries - England (and the UK), USA, Canada, Australia, Italy, France, Germany, Finland, Denmark and Sweden – are associated with a range of levels of social mobility and income inequality. One aim of the research is to see whether differences uncovered between countries will point to possible lessons for public policy to address low mobility. The Trust will disseminate these wider findings later in the year.

[3] For more details, see: http://www.esds.ac.uk/longitudinal/access/lsype/L5545.asp
[4] For more details, see: http://www.cls.ioe.ac.uk/
[5] Further details on each cohort study used are available on request
[6] For more details, see: http://nces.ed.gov/timss/
[7] https://www.russellsage.org/programs/main/inequality/cross_national_research_on_the_intergenerational_transmission_of_advantage/

Section 1: Education mobility today compared with previous generations

Summary

The advantage of having degree educated parents in terms of performing well in tests at age 11 and age 16 has diminished for the current generation of children compared with previous generations, indicating an improvement in education mobility. However, this could be due to the fact that the proportion of children in this educational elite has grown over successive generations as the education levels of parents has risen.

The disadvantage of having poorly educated parents in terms of performing well in tests at age 11 and age 16 is the same for the current generation of children as the previous generations, indicating no change in education mobility for the least educated households. Again, though, as the education level of parents has risen, a far smaller percentage of children are now in this lowest group – so the fact the penalty has not increased might be interpreted as a positive sign.

Nevertheless, stark achievement gaps between children of degree educated parents and uneducated parents remain.

Achievements at age 11

The research first considers the link between the education levels of parents and the achievements of children at ages 10 and 11.

For those children born in 1989/90, the study considers achievements in maths and English at ages 10 and 11 in their Key Stage 2 tests at the end of primary school (in the year 2000/01)[8]. This latest generation of children is then compared with two previous generations born in 1958 and 1970, who undertook reading and maths tests at age 10 and 11 as part of two national cohort studies[9].

The analysis links these results for children to information on the educational qualifications of their parents[10]. Parents are then grouped into three education classifications: Low (no qualifications or below GCSEs or O-levels), Medium (A-levels, GCSEs or O-levels), and High (degrees, HE sub-degree level).

[8] Taken from the Longitudinal Study of Young People in England (LSYPE)
[9] Taken from the National Child Development Study and the British Cohort Study
[10] Specifically, the research considers the highest of the two parents' education qualifications (in the case of one parent families, this can be the education of the co-resident parent).

Comparing the odds of doing well in education

A simple and clear way of measuring how the link between children's educational outcomes and their family background has changed over time is to calculate the 'odds ratio' for the achievement of different groups of children over successive generations[11]. This basic mathematical calculation can quantify the difference in odds of performing well in tests for children from university educated family backgrounds compared with the rest of children from households where parents did not obtain degrees (the 'graduate parent advantage'). Alternatively it can be used to find the difference in the odds of performing well in tests for children from parents who left school without O-levels compared with children with better educated parents (the 'uneducated parent penalty').

The analysis focuses on the measure of whether children score in the top 25% in maths and English tests at age 11.

The analysis finds the following:

o The odds of scoring in the top 25% in English tests at age 11 are 3 times higher for the children of degree educated parents[12] than for children whose parents did not go to university for the most recent generation of children (born in 1989/90)[13].

o There has been a significant decline over recent generations in this relative advantage of having a graduate parent. For children born in 1970, the odds of scoring in the top 25% in English tests at the end of primary school were 3.8 times higher for children of degree educated parents; for those born in 1958 meanwhile, they were 4.7 times higher[14].

This finding has to be considered in the context of rising education levels of parents over the three generations of children being considered. When we compare children of degree educated parents with other children, the number of children in this 'top educational' grouping has increased significantly (10% of parents of the 1958 cohort, 12% of the 1970 group and 32% of the 1989 group). One might expect the relative advantage of this larger, less exclusive grouping of children to diminish over time.

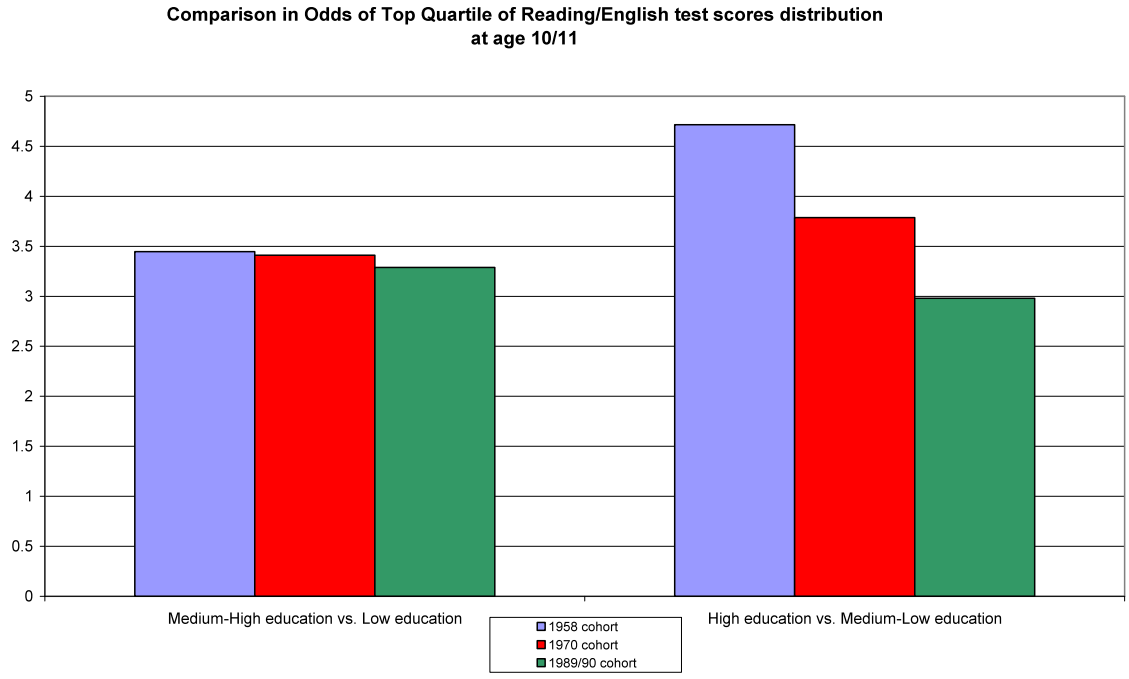
[11] Calculating the logarithm of the odds ratio allows researchers to assess the statistical significance and robustness of the differences considered.
[12] In section 1 'degree educated parents' refers to those with degrees or other HE qualifications
[13] The equivalent odds ratios for the top 25% in maths tests are 2.7 (for the 1989/90 cohort), 3.9 (1970 cohort), and 4.1 (1958 cohort).
[14] This finding has to be treated with some caution as the data for the latest generation of children is based on actual school tests, while that for previous generations is based on tests undertaken as part of cohort studies. Nonetheless it is a significant difference, and if anything one might predict that the education gap would be bigger for achievement tests than for cognitive tests.

The research also finds:

o Among the current generation of children, the odds of scoring in the top 25% in English (or math tests) at age 11 for those whose parents left school without any O-levels or equivalent qualifications are one-third of the odds of children whose parents have at least O-levels or GCSEs.

o This disadvantage of having parents with low education for children in terms of their achievements at ages 10/11 remained broadly the same for children born in 1958, 1970 and 1990. This is despite the fact that the proportion of parents in this group has decreased substantially – 60% for the 1958 cohort, 54% for the 1970 cohort and 15% for the 1989/90 cohort (see "Medium-High education vs. Low education" group in Figure 1 below).

Figure 1: Comparing the odds for children of different parental education backgrounds of being in the top 25% of tests scores at age 11 for three successive generations of children

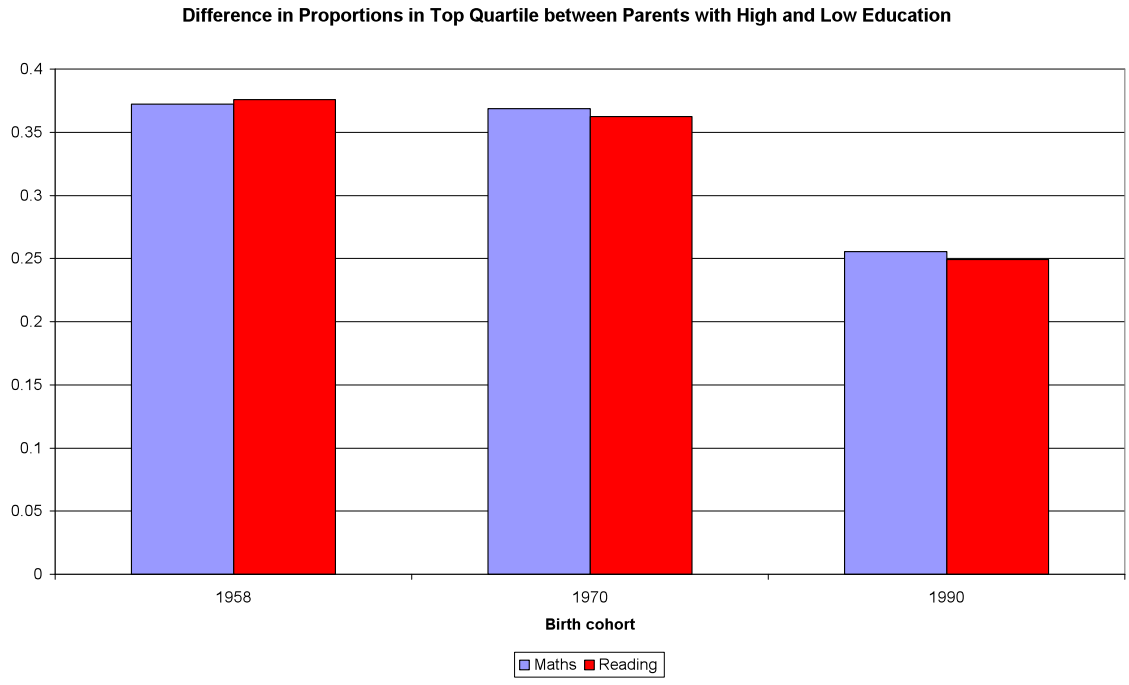


Raw attainment gaps

An alternative way of considering how the intergenerational link in educational outcomes has changed over successive generations is to measure the raw gap in the percentage of children from the low and high educational parent groupings who score in the top 25%, or top quartile, in tests at age 11. A smaller gap indicates higher levels of education mobility. Figure 2 below shows this gap for maths and English tests for the three successive cohorts of children.

The figure shows a significant fall in this education gap for the latest generation of children compared with previous cohorts. Considering children born in 1989/90, 38% of children from degree educated parents were in the top 25% of maths test scores at age 11 compared with 11% of children whose parents left school without any O-levels or equivalent qualifications - a gap of 27 percentage points. This gap is significantly less than the equivalent gaps for children for the 1970 and 1958 cohorts, both at 37 percentage points [15].

Figure 2: **Comparing the percentage of children from the low and high educational parent groupings who score in the top 25% in tests at age 11 for three generations of children**



[15] Again, a caveat to these findings is that they relate to actual school tests for the latest generation of children but cognitive tests undertaken as part of cohort studies for previous generations, so a possible (if unlikely) explanation is that the differences may be due to the different tests. As we shall discuss later they also resonate with trends over the last decade for official achievement gaps between children on Free School Meals and those who are not.

Achievements at age 16

The research then considers the link between the education levels of parents and the achievements of children at ages 15 and 16. The study uses O-level or GCSE results for the successive cohorts of children, in particular whether or not children have at least 5 GCSEs or O-levels with grades of A*-C (the national expectation for children).

Once again, parents are grouped into three education classifications: Low (no qualifications or below GCSEs or O-levels), Medium (A-levels, GCSEs or O-levels), and High (degrees, HE sub-degree level).

Comparing the odds of doing well in GCSEs

The analysis calculates the odds ratio for children obtaining at least 5 GCSEs or O-levels with grades of A*-C between the different groups defined by parental education levels. This quantifies the difference in odds of obtaining the national benchmark for GCSEs at age 16 for children from university educated family backgrounds compared with the remainder of children from households where parents did not obtain degrees (the 'graduate parent advantage'). It is also used to find the difference in odds of performing well in GCSEs for children from parents who left school without O-levels compared with the rest of children with better educated parents (the 'uneducated parent penalty')[16].

The research finds:

o In 2006, the odds of obtaining good GCSE results were still 4 times higher for the current generation of children of degree educated parents than for children whose parents didn't go to university (see "High education vs. Medium-Low education" group in Figure 3 below).

o The relative advantage of having parents with a university education in terms of good GCSE results has declined over time. In 1986, the odds (for children born in 1970) of obtaining good O-level results were 4.6 times higher for children with degree educated parents; in 1974, the odds (for children born in 1958) were 6.5 times higher (see "High education vs. Medium-Low education" group in Figure 3 below).

As for the parallel findings for age 11 tests, this needs to be interpreted in the context of rising educational levels of parents over successive generations. The proportion of children in the 'top educational' grouping has increased significantly - so we might expect the relative advantage of this larger less exclusive grouping of children to diminish over time.

[16] Calculating the odds ratio takes into account the fact that the proportion of children who have got five O-levels or GCSEs with grades A*-C has increased over the successive generations.

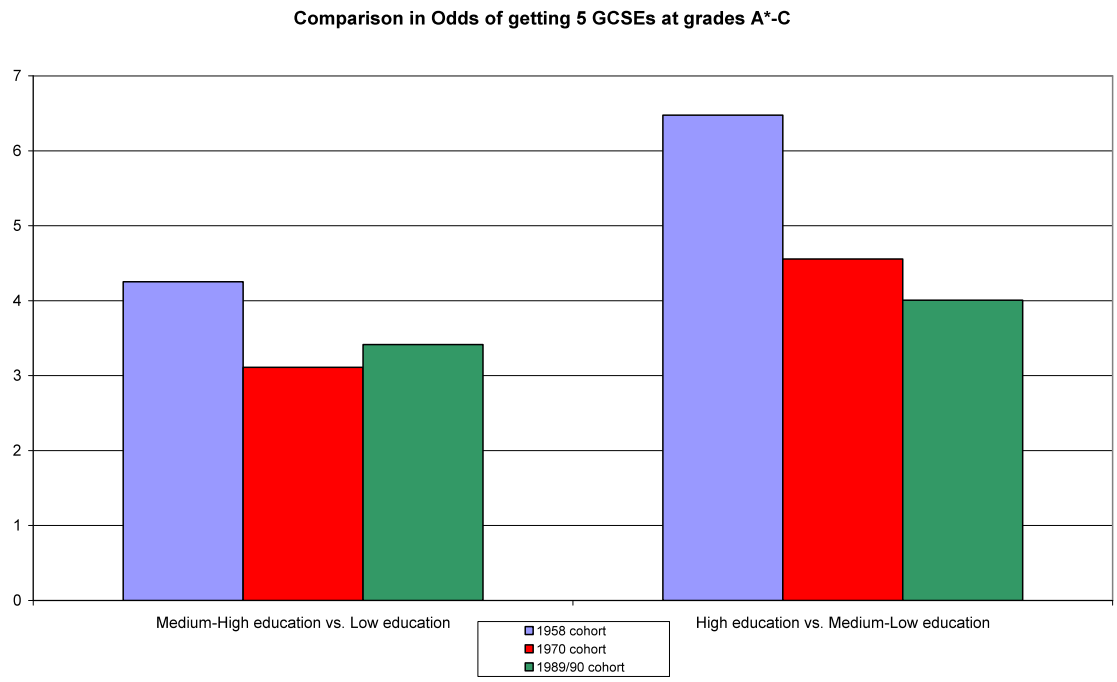
o In 2006, the odds of obtaining good GCSE results for those whose parents left school without any O-levels or equivalent qualifications were 30% of the odds of children whose parents have at least O-levels or GCSEs.

o In 1986, these same odds (for children born in 1970) of obtaining good O-level results were 32% of the odds of children whose parents have at least O-levels or GCSEs; in 1974, (for children born in 1958) they were 24%.

o After declining for the cohort born in 1970 relative to the cohort born in 1958, the disadvantage of having parents with low education in terms of their achievements at age 16 remained broadly the same for children born in 1970 and 1990 (see "Medium-High education vs. Low education" group in Figure 3 below).

It is worth noting that these conclusions, above, are not altered by requiring that the 1990 cohort have grades of A*-C in both English and maths among their five good GCSEs (the current government benchmark).

Figure 3: Comparing the odds for children of different parental education backgrounds of obtaining good GCSE scores for three successive generations of children



Raw attainment gap

Again, an alternative way of presenting these differences is to calculate the achievement gap between children from the different educational parent groupings who meet this benchmark.

Considering children born in 1989/90, 79% of children aged 15 and 16 from degree educated parents obtained at least 5 GCSEs with grades of A*-C (in 2006) compared with 33% of children whose parents left school without any O-levels or equivalent qualifications - a gap of 46 percentage points.

For the 1970 cohort meanwhile, 66% of children from degree educated parents obtained at least 5 O-levels with grades of A*-C (in 1986) compared with 22% of children whose parents left school without any O-levels or equivalent qualifications - a gap of 44 percentage points. The equivalent figures for the 1958 cohort (O-levels taken in 1974) were 55% and 11% - also leaving a gap of 44 percentage points.

Section 2: School effects on the widening education gap between age 11 and age 14 in England

Summary

Longitudinal analysis of the 1989/90 cohort shows that the achievement advantage of children of higher educated parents relative to those of lower educated parents widens throughout the school years, and in particular when moving between primary (age 11) and secondary (age 14) schools.

The widening achievement gap between the ages of 11 and 14 in England is accounted for almost entirely by the fact that children from degree educated parents are far more likely to attend high performing secondary schools and so benefit from a positive school effect. This school impact exists after the individual characteristics of children attending different schools have been taken into account, and is likely to be due to a combination of better resources, teaching, advice and positive peer effects in the schools.

School quality and the adolescent achievement gap

The research investigates how the link between the education achievements of teenagers and the educational levels of their parents in England changes over time from age 11 to age 14 for the cohort of children born in 1989/90[17]. This provides a dynamic picture of how the gap evolves for one cohort of pupils in England, and the factors that might contribute to this gap.

Once again the education measure used is the percentage of children from different types of parental education groupings scoring in the top 25% of test scores in the country. For this part of the analysis, parents are grouped into four education groups: Low (no qualifications or below GCSEs or O-levels), Medium (A-levels, GCSEs or O-levels), Medium-High (sub-degree level) and High (degree or higher degree).

The research calculates a series of odds-ratios quantifying the difference in odds of performing well in tests for children from more highly educated family backgrounds compared with children from households whose parents left school without GCSEs or O-levels. It then investigates what impact a number of individual, parent and school characteristics of the pupils have on the educational gap - exploiting the rich data source provided by the National Pupil Database.

The analysis reveals a widening achievement gap between the end of primary school and the tests taken by children at the end of their third year at secondary school (as demonstrated by figure 4 below).

[17] These children are tracked in the Longitudinal Study of Young People in England

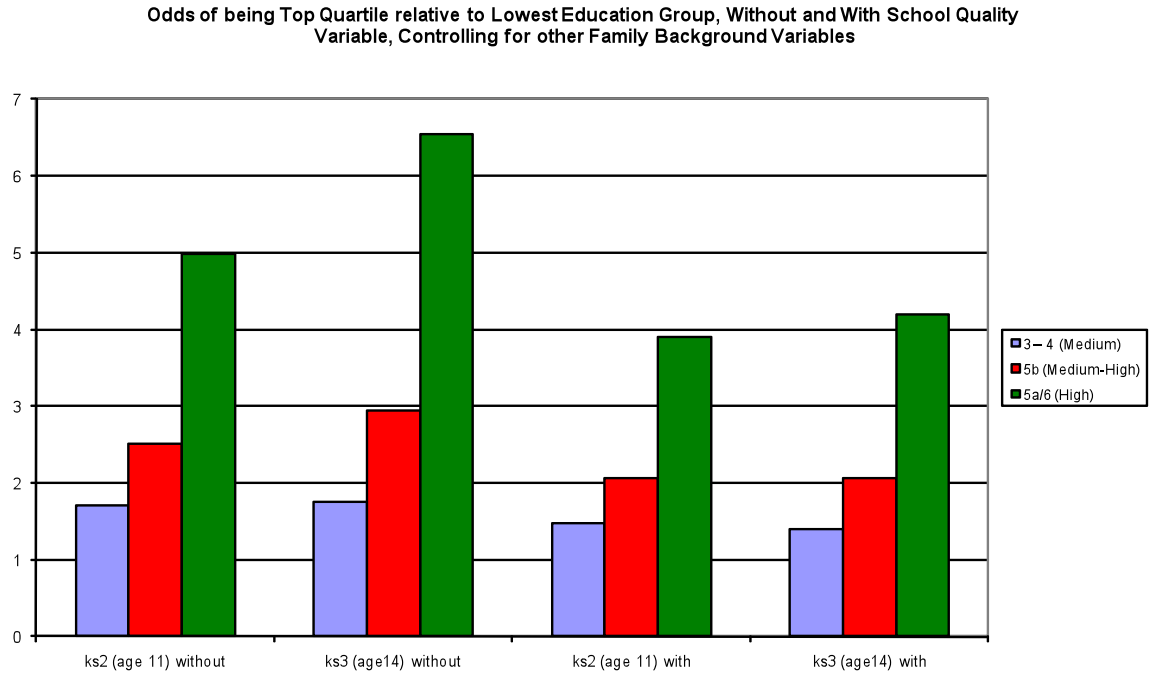
Accounting for the gap

What might explain this widening educational gap between the ages of 11 and 14? First, the research explored the extent to which a host of individual characteristics of children and their parents might contribute to the gap. This included their academic results at age 11, their sex and ethnicity, their parents' educational and income levels, and the characteristics of their family – whether, for example, they had single parents. These factors can account for a significant proportion of the gap up to age 11. However, the widening gap between 11 and 14 was found to largely remain unchanged when these factors were taken into account - effectively comparing pupils with the same individual and parental characteristics.

The first two sets of blocks in Figure 4 below on the left hand side show the findings after controlling for a large number of family background factors - considering the gap in the odds of scoring in the top 25% of test scores in the country for pupils at age 11 and age 14. This shows how the educational gap - defined here by the difference in odds of doing well educationally - still widens for the cohort of children during the first three years of secondary school.

At age 11 the odds of scoring in the top 25% of test scores are 5 times higher for children with degree educated parents (the highest bar in the first group of blocks) compared with children whose parents left school without any O-levels or equivalent qualifications. At age 14, the odds of scoring in the top 25% of test scores are 6.5 times higher for children with degree educated parents (the highest bar in the second group of blocks).

Figure 4: The widening achievement gap between the ages of 11 and 14 – taking into account individual characteristics of children, and then taking into account quality of school attended



School quality

However, there is significant reduction of the education gap between 11 and 14 when one factor - school quality -- is then artificially held constant for every pupil[18]. The two sets of blocks on the right hand side of Figure 4 reveal what happens when this school quality factor is made constant (i.e. 'controlled for').

At age 11 the odds of scoring in the top 25% of test scores are now much reduced – just under 4 times higher for children with degree educated parents compared with children whose parents left school without any O-levels or equivalent qualifications. At age 14, the odds of scoring in the top 25% of test scores are only slightly higher at 4 times higher for children with degree educated parents.

The large increase in the education gap between Key Stage 2 results at age 11 and Key Stage 3 results at age 14 is thus almost entirely accounted for by the sorting of children into higher performing and lower performing schools - even after taking into account the individual backgrounds of children[19].

[18] The research uses factor analysis to combine a series of average test scores at age 14 and 16 to calculate an overall school quality factor at age 14. This includes the average percentages (during 2003-04, when the children were aged 14) who achieved level 5 or higher in maths, English and science at Key Stage 3, the %age who obtained five GCSEs with grades A*-C including English and maths at Key Stage 4, and the school's average KS3 score. At age 11, the percentage in the school achieving level 4 in 2001 (i.e. when they were aged eleven) averaged over English, math and science is taken to be the school factor.

[19] This is not to say that many schools judged to be performing less well in terms of raw attainment are not performing well in terms of contextual value added scores.

In other words, if every child went to a school with similar average tests results, there would be no further widening of the achievement gap (in terms of being among the top 25% of test scores) between children with degree educated parents and children whose parents left school without any O-levels.

Section 3: How education mobility in England compares with other countries

Summary

The latest international comparisons suggest that education mobility for today's teenagers in England is lower than that for children in other developed countries.

The biggest achievement gap is observed for today's teenage children in England when compared with children in three similar countries, the USA, Germany and Australia.

England (and Scotland) emerge as the countries with the strongest link between parental background (when estimated by the number of books in the home) and children's odds of scoring in the top 25% of maths and science tests undertaken in a wide range of countries.

Four-country comparisons

How do the education gaps – and levels of education mobility -- for children in England today compare with those for children in other countries? The research considers the latest international comparisons by first considering education gaps for children calculated from similar cohort studies that have been undertaken in three other countries – the USA, Germany, and Australia[20]. Each cohort study is slightly different, so English children aged 14 are compared with American children aged 13-16, German children aged 17, and Australian children aged 15.

The overall Key Stage 3 results (KS3) are used as the achievement measure for children in England – taken by 14 year olds in 2004. The results for children from other countries are from achievement tests undertaken as part of national cohort studies at a similar time.

Parents are grouped into four education groups: Low (no qualifications or below GCSEs or O-levels), Medium (A-levels, GCSEs or O-levels), Medium-High (HE sub-degree level) and High (degree or higher degree).

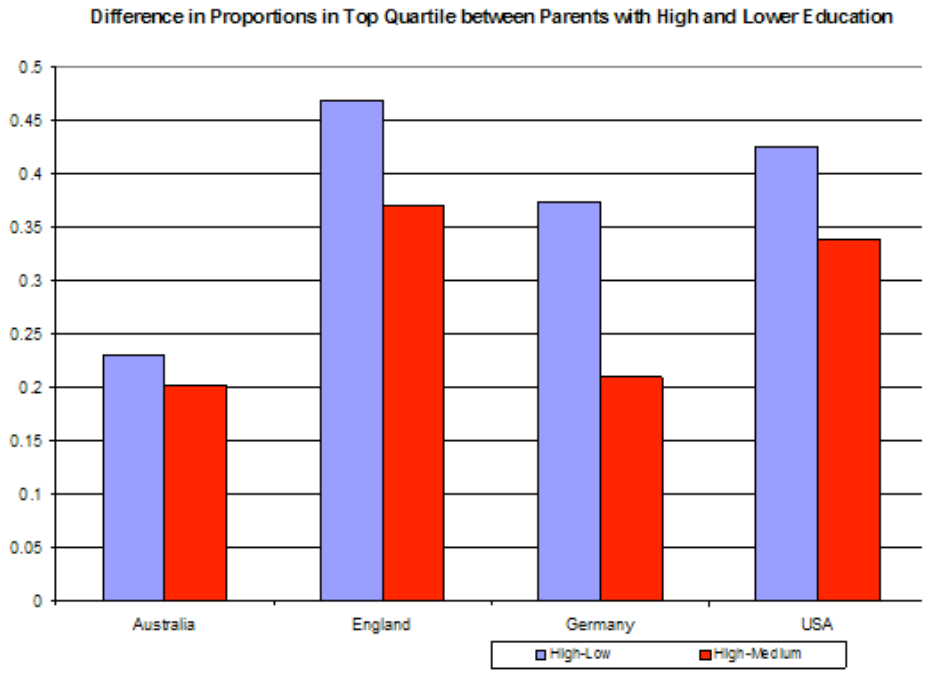
Following the same approach for the time comparisons for England, the study measures the gap in the percentage of children from different educational parent groupings who score in the top 25%, or top quartile, of achievement tests. A smaller gap indicates a weaker intergenerational link and higher levels of education mobility.

Two gaps are presented in Figure 5 below. The first (in blue on the left) is the difference in the percentage of children from degree-educated parents in the top 25% of tests, and the percentage of children in the top 25% whose parents left school without any O-levels (the low education parent grouping). The second (in red on the right) is the difference in the percentage of children from degree-educated

[20] The Trust is grateful to participants in the larger Russell Sage Foundation project for sharing these data with us. They are not of course responsible for the views expressed in this report.

parents in the top 25% of tests, and the percentage of children in the top 25% from parents with A-levels, GCSEs or O-levels (the medium education parent grouping).

Figure 5: The gaps in percentages of children from different educational parent backgrounds who score in the top 25% in tests, in four different countries



As the graph shows, the biggest gaps – and by implication, the lowest education mobility – is observed for England compared with this small set of similar countries, whereas Australia emerges with the smallest gaps (half the size of those for England) – and the highest education mobility.

In England 56% of children from degree-educated parents are in the top 25% of tests at age 14, compared with 9% of children in the top 25% of tests whose parents left school without any O-levels – a gap of 47 percentage points. By contrast, in Australia 38% of children from degree-educated parents are in the top 25% of tests at age 14, compared with 15% of children in the top 25% of tests whose parents left school without the equivalent of O-levels – a gap of 23 percentage points [21].

Meanwhile, just under half of children in England with parents with no or low education qualifications are in the bottom 25% of test scores in their mid teenage years – a lower proportion than Germany and the USA – but higher than that for Australia.

[21] Less than one in ten children with degree educated parents in England and the USA are in the bottom 25% of test scores in their mid teenage years – a lower proportion than in the other three countries considered.

Country comparisons using internationally comparable test scores

The research also considered a wider range of country comparisons of educational mobility using data from an international study - this time based on the same maths and science tests undertaken by a representative sample of 13 year olds in a range of countries, including England.

Previous studies based on the results of the Trends in International Mathematics and Science Study have suggested that education mobility was particularly low in England (and Scotland) for children who took the tests in the 1990s: in no other country were the test scores of children more strongly predicted by the background of parents as indicated by an estimate of the numbers of 'books in the home'[22].

This study produces an updated comparative analysis for children aged 13 in a range of countries using the most recent TIMMS data (from 2003 and 2007). It also offers a different estimate of England's international standing alongside the comparison based on country specific cohort studies.

The research undertook a number of statistical checks to assess the robustness of using the 'books at home' measure as a proxy for parental background – using data gathered from other international comparisons of (reading) tests score in the Progress in International Reading Literacy Study (PIRLS).

These checks show that the indicator has to be interpreted with caution, and not in isolation from the other findings presented in this report. Books-in-the-home is reported by the child in the survey, but this account was found to differ sometimes from the parents' account in similar questions in the PIRLS data. The correlation between this indicator and other family background variables, such as parents' educational and income levels, was also found to vary by country.

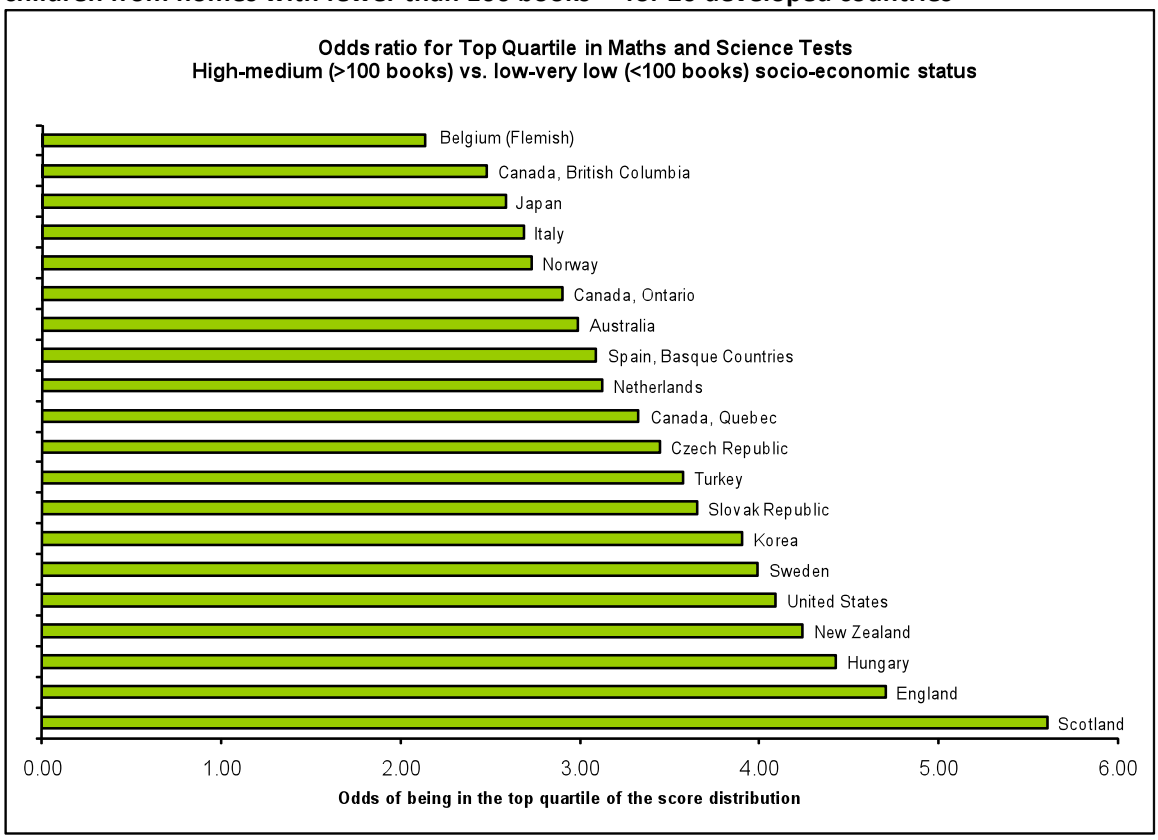
This part of the analysis compares countries by calculating the odds ratio for the odds of children being in the top 25% of the TIMMS test distribution, comparing children from homes with more than 100 books with those from homes with fewer than 100 books.

As the Figure 6 below shows, England (and Scotland) remains bottom of this international ranking, with the USA slightly above. Children with more favourable backgrounds in Scotland, for example, were almost six (5.6) times more likely be amongst the top performers in maths tests than their peers from poorer homes. This figure is almost twice the equivalent in Australia (3), The Netherlands (3.1) and Canada, Ontario (2.9).

[22] A 2006 study *How Equal Are Educational Opportunities? Family Background and Student Achievement in Europe and the United States* by Ludger Woessmann found that England and Scotland were placed at the bottom of the rankings of countries, when estimating the link between test scores in TIMMS and parental background measured by the 'books at home' measure.

In England meanwhile children with more favourable backgrounds were 4.7 times more likely be amongst the top performers in maths tests than their peers from poorer homes.

Figure 6: The difference in odds of children being in the top 25% of internationally comparable tests, comparing children from homes with more than 100 books with children from homes with fewer than 100 books – for 20 developed countries



Section 4: Discussion

Education mobility trends over time

What is the overall judgement on how the link between the educational levels of parents and the achievement of children has changed over time? The picture is a complicated one – there is an apparent weakening of the link between the higher educational levels of parents and the achievement of children, but stark gaps remain and the findings need to be interpreted with caution bearing in mind the changes in the education levels of parents over the three generations considered.

On the positive side, the impact of having degree educated parents on the odds of performing well in tests at age 11 and age 16 diminished for the generation of children educated mostly under the current Government. This finding has to be treated with caution, however, as the proportion of children with degree educated parents has risen over successive generations (from 10% of parents of the 1958 cohort to 32% for the 1990 group), making this grouping far less exclusive. It could be that the same advantages observed for previous cohorts of children persist for an elite sub grouping of children in the current generation - but the data is not available to prove this one way or another.

The disadvantage of having poorly educated parents has remained the same for the current generation of children as the previous generations. As this poorly educated group has become smaller (accounting for 60% of parents of the 1958 cohort, but just 15% in the most recent) the fact that the penalty for being part of it has not increased can, in fact, be interpreted in a positive light.

Official data on achievement gaps

These trends are echoed by those found from official statistics for the achievement gap between children on free school meals (a basic measure of deprivation) and those who are not[23]. One can characterise the progress during the last decade as improving achievement in general for both primary and secondary school children, but a continued under-performance relative to the rest of pupils of poorer children.

Figures reveal a slight narrowing of the (absolute) achievement gap between FSM and non-FSM children at the end of primary school, but a near constant gap at the end of secondary school. In 1998, for example, fewer than four in ten (38%) of pupils on Free School Meals achieved the national expected benchmark for maths at the end of primary school (Level 4 in the Key Stage 2 test). This compared with 63% of children not on FSM - a gap of 25 percentage points. By 2002, 54% of FSM pupils met the benchmark compared with 77% of non-FSM pupils - a gap of 23 percentage points. By 2007, 60% of FSM pupils met the benchmark compared with 80% of non-FSM pupils - a gap of 20 percentage points.

[23] For more on these figures, see: http://publications.teachernet.gov.uk/eOrderingDownload/00357-2009.pdf

The achievement gap between FSM and non-FSM pupils at age 16 has also seen some narrowing, if the benchmark is defined as five GCSEs at grade A*-C. By 2008 40% of FSM pupils gained this benchmark, compared with 67% of non-FSM pupils - a gap of 27 percentage points. The equivalent gap in 2002 was 31 percentage points. There has been less narrowing however when the expected national benchmark of five GCSEs with English and maths at grade A*-C is used. In 2008 26.6% of FSM pupils gained this benchmark, compared with 54.2 % of non-FSM pupils - a gap of 27.6 percentage points. And there are concerns that even this benchmark can be misleading as poorer pupils are far more likely to have taken vocational qualifications alongside English and maths GCSEs: the achievement gap in core academic GCSEs will be even more stark. Nonetheless, it has become increasingly apparent that future gains in overall achievement will now require a narrowing of this achievement gap.

What we will never know of course is how much wider the achievement gaps documented in this report would have been if it were not for the investment and policies of the last decade[24]. Indeed other research suggests that the trend for children during the early 1990s appears to have been a widening of educational inequalities[25]. But what can be said is that the picture from official statistics for the last decade resonates with that provided by this study.

Impact of school segregation on the education gap

A major concern from the perspective of education mobility is that pupil intakes into secondary schools in England remain highly segregated both in terms of the social and academic backgrounds of children at age 11[26]. A significant finding of this study is that the widening education gap between age 11 and age 14 is almost entirely accounted for by the sorting of children into higher performing and lower performing schools (measured in terms of average results at the school) - after the individual characteristics of children and their parents have been taken into account.

In other words, if every child went to a school with similar average tests results, there would be no further widening of the achievement gap that exists at age 11. This confirms that a major obstacle to education mobility, and by implication social mobility, is that pupil intakes into secondary schools in England remain highly segregated both in terms of the social and academic backgrounds of children at age 11.

[24] In general, there has been a lack of robust evaluation of educational policies - it may even be that some policies have had a negative impact.
[25] Similar trends have been observed for university participation. The gap in participation between students from low income backgrounds and high income backgrounds widened during the 1990s. During the last decade however the trend has mirrored the rise in GCSE attainment: increasing rates of university participation for all groups of pupils but a continuing absolute gap in participation between pupils from the poorest areas of the country and the rest. The participation gap for the most academically selective universities remains particularly stark. See: http://www.hefce.ac.uk/pubs/hefce/2010/10_03/
[26] See http://www.suttontrust.com/reports/Worlds_apart.pdf

The analysis does not provide evidence of why the achievement gap widens during secondary school, but attending a higher performing school can boost a child's attainment in a number of ways: from better pupil behaviour to more effective teaching, advice and the 'peer effect' of being educated alongside pupils with higher levels of prior attainment.

The Trust advocates more balanced academic intakes in state schools and, in particular, the use of random allocation, or ballots, as the principal means of deciding school places when schools are over-subscribed. At least then children of all abilities have an equal chance of getting the school place. At the same time the Trust has argued for greater financial incentives to attract effective teachers to poorly performing schools. We are also exploring working with others to pilot more radical school approaches in the UK (such as the 'no excuses' model of Charter Schools from the US) for improving achievement among the most disadvantaged children.

International comparisons

The international comparisons suggest that the intergenerational link in education remains stronger in England than in other similar countries[27].

While comparable national data is only currently available for three similar countries - the USA, Germany and Australia - England emerges with the largest achievement gap for teenage children growing up today. The absolute gap is twice that for children of similar age in Australia. More complete comparisons will be provided when the Russell Sage Foundation research programme publishes its findings later in the year for other similar countries such as Canada, Denmark, Sweden and Finland. But it is unlikely that England's position would be changed markedly, given what we know about the relatively high social mobility levels in these countries.

This low standing in the international comparisons meanwhile is confirmed by the separate analysis of a wider group of countries focusing on the link between parental background (when estimated by the number of books in the home) and children's odds of scoring in the top 25% of maths and science tests undertaken at age 13. There are questions about how robust the 'books in the home' measure is as a proxy for parental background, but the finding that England (and Scotland) emerge as the countries with the strongest intergenerational link (as in the 1990s) appears to corroborate the results from the four country comparisons of national cohorts.

Prospects for social mobility

[27] The generation of children considered in this report were not young enough to experience the expansion of early years support during the last decade. Evidence from the Millennium cohort so far suggests that similar achievement gaps persist, with low income children almost a year behind their middle income counterparts at the start of school. See:
http://www.suttontrust.com/reports/Sutton_Trust_Cognitive_Report.pdf

The strong and persistent link between earlier educational achievement and future life prospects or earnings as adults has been demonstrated by a number of previous studies. So it is fair to assume that the educational mobility trends described in the report provide an indication of future social mobility levels for children growing up in England today.

The concern is that, even if modest gains have been made, if England compares unfavourably in the international comparisons of education mobility now, it may fall even further behind when it comes to future international comparisons of social mobility. The reason is that education has a particularly strong link with life prospects (as measured by increased earnings) in the UK. Stark gaps in achievement for today's children in England will, given past trends, lead to more extreme differences in earnings in adult life. Indeed the gap in life prospects between the education haves and have nots may widen further during the economic downturn over future years.

The future challenge for England, and the UK as a whole, is that greater gains will need to be made in narrowing achievement gaps, otherwise it will be left behind in an increasingly competitive global education race.

Despite the global economic downturn, other countries are investing heavily to boost school results and reduce achievement gaps. In the United States, for example, President Obama has expressed concerns about the relatively poor performance of American school pupils in the international tables – at a time when the emerging economies of the world are improving their performance.

The Sutton Trust's aim to improve the educational opportunities of non-privileged children has been driven by a sense of social injustice that so many of our children's talents remain untapped. Yet there is also a pressing economic imperative to reduce this waste of talent. An analysis by the Boston Consulting Group for the Trust estimates that improving the educational achievements of children from the most disadvantaged homes would contribute between £56 billion and £140 billion to the value of the UK economy each year by 2050 through a combination of increased lifetime earnings and savings in areas like health, crime and welfare[28]. The fear is that without concerted action, these potential gains will be lost to the UK as other countries improve their own education performance.

The Trust believes that we need to think much more radically to address low levels of education mobility - and learn lessons from overseas. Our recently published Mobility Manifesto includes proposals for example for developing US style 'no-excuses' schools in the UK that offer 50% extra learning time to disadvantaged students; summer camps for primary-aged children to stem the loss of learning over the long summer break; individual enrichment sessions for highly able disadvantaged pupils during early secondary school; and increasing numbers of low income children at high performing schools through automatic applications and 'opt outs', rather

[28] See: http://www.suttontrust.com/reports/20100312_mobility_manifesto.pdf

than ‘opt ins’. Many of the schemes proposed could be highly effective but still low cost.

A failure to respond to the challenge of low social mobility now is to condemn our talented children – and our economy - to the bottom of the class in education’s new world order.