

2. The educational gender gap and catch up

Although boys have inferior educational performance in compulsory schooling, it has been claimed that this disadvantage is over-turned at later stages in the educational process, for instance in A Level examinations. In effect, boys catch up with girls. We examine this hypothesis by looking at two measures of success at A Level, the first of which refers to the number of passes achieved, and the second refers to the total points score in all A Level subjects. We find:

- That there is no statistically significant gender difference with respect to the number of A Level passes, which could be because this is too crude a measure of exam performance, where an A grade is treated as equivalent to an E grade.
- That the points score measure showed that the educational gender gap in A Level exams changes from -1.0 of a grade in favour of boys to 0.4 of a grade in favour of girls by 1999. This suggests that over time boys have been slipping further behind girls in their A Level performance, and

that the A Level gap now mirrors the educational gender gap identified at GCSE.

- That focusing upon the educational gender gap in A Levels is itself too narrow a view, given the wide range of vocational qualifications that young people can obtain through further education, employment and government-sponsored youth training programmes. We therefore examine the educational gender gap for all qualifications by first converting these to a NVQ level. It is clear that girls are performing better than boys, especially with respect to NVQ levels 2 to 3. Girls are increasingly likely to obtain NVQ level 3 qualifications, which is unsurprising in the sense that they can build upon their superior school performance.

Thus, the educational advantage that girls have on leaving compulsory schooling is reinforced in their early years in the labour market and during further education.

- That the 'passes gender gap' suggests that boys have higher real hourly wages than girls, although there is some variation over time and by age. For 17 year olds, the passes gender gap favours boys from 1998 onwards, whereas for older youths in later cohorts, there is a decline in the wage advantage for boys who pass their GCSEs.
- That the 'fails gender gap' shows that boys always have higher hourly wages. In fact, this wage gap tends to rise with age and has increased over time, suggesting that the youth labour market for failing boys is buoyant.
- That the 'girls' return' with respect to real hourly wages is positive over time and for all age groups, whereas for boys these are sometimes negative, especially at older ages. As girls get older their returns exceed those of boys. Thus, there is clear evidence that girls who pass their GCSEs receive higher wage returns when compared to their counterparts who fail.
- That the 'conditional gender gap' shows that the wage returns to better-educated girls are almost always higher than the returns to better-educated boys, especially as they get older and over time i.e. from 1994 onwards. This suggests that the improvement in girls' GCSE

exam performance is beginning to pay off in terms of higher wages.

- That the 'passes gender gap' with respect to post-school destinations shows that girls are more likely to enter vocational further education or unskilled employment. The gap with respect to unskilled employment fluctuates over time, perhaps due to the business cycle, and also rises with age. A similar pattern emerges with respect to the 'fails gender gap', although there is less of an age effect.
- That the 'girls' return' shows that there is an advantage to passing GCSEs insofar as they have a higher probability of entering academic further education than equivalent girls who fail. This return swamps that from all other post-school destinations. Moreover, the returns to academic further education and vocational further education are equal and opposite in sign, and have been increasing through time. The same story emerges with respect to the 'boys' return'. Thus, improvements in GCSE performance have had a positive effect for both boys and girls.
- That the 'conditional gender gap' suggests that it is high performing girls who are increasingly likely to stay on for academic further education, which is what one might expect in view of their superior performance in the GCSE exams.



3. The educational gender gap and labour market outcomes

We investigate gender differences in real hourly wages, observed at three points in the young person's career: at the ages of 17, 18 and 19. We define: (i) a 'passes gender gap', the difference in real hourly wages between girls who pass at GCSE and boys who pass at GCSE; (ii) a 'fails gender gap' for those girls and boys who fail their GCSEs; (iii) 'a girls' return', that is, the difference in real hourly wages between girls who pass their GCSEs and those girls who fail; (iv) an equivalent 'boys return'; and

(v) the 'conditional gender gap', which is given by the difference between (iii) and (iv). This approach is repeated with respect to post-school destinations, except that real hourly wages are replaced by differences in the predicted probability of being in a particular state. Young people are categorised into one of six states: unemployment, skilled employment, unskilled employment, youth training, vocational further education and academic further education. We find:

Research

The educational gender gap, catch-up and labour market outcomes

This paper summarises the findings from a recent research project concerned with the educational gap between boys and girls, particularly at GCSE and A Level, and the consequences for subsequent labour

market performance. The research was funded by the Nuffield Foundation and was conducted by Martyn Andrews (University of Manchester), Steve Bradley, Dave Stott and Jim Taylor (Lancaster University).

Context

Throughout the 1990s, the performance of girls in GCSE exams has been superior to boys. Moreover, the gap has widened over time. This issue is clearly of public concern, as evidenced each year by the reaction of the media when GCSE results are announced. There is particular concern for boys at the lower end of the ability distribution, whose poor performance in the GCSE exams has given rise to the allegation of a new culture of 'laddish behaviour'. The first of three parts of our research is concerned with the evolution and determinants of the educational gender gap in compulsory schooling. This part of our research begins by defining various measures of the gender gap, and documents how these gaps have changed over time. A similar analysis is conducted for different subjects, such as Maths and English, and for different stages in the educational process, namely at Key Stage 2 (age 11), Key Stage 3 (age 14), and GCSE (Key Stage 4, age 16). We try to explain how the gender gap alters when controlling for a large number of observable personal, school, family and neighbourhood factors, and when also controlling for factors that are unobserved in our data (e.g. pupil motivation, school discipline, tiering and streaming practices). The second part of our research considers the issue of whether boys catch up with girls at later stages of the educational process. In particular, we address the question of whether boys do better in A Level examinations. However, in recognition of the fact that not all young people stay on after the end

of compulsory schooling, and that there is a wide range of vocational courses available for those who do, we also investigate whether boys catch up with girls in NVQs. An alternative view is that the widening educational gender gap does not matter if this advantage dissipates by the time that youths enter the labour market, where women generally perform worse than men. However, in many areas of gender discrimination in the labour market, the gap is getting narrower, and so one possible explanation, in the UK at least, is that the increasing educational gender gap has had an impact in subsequent labour market outcomes. It is possible that girls work harder at school knowing that they will be discriminated against later on in the labour market. In the final part of our research, we therefore consider whether girls' increasingly superior performance in GCSEs has led to increasing rewards in the labour market. In particular, we investigate whether girls are rewarded with higher wages. We also investigate whether the educational gender gap has impacted upon post-school destinations. Answers to these questions are likely to be of particular interest to teachers, college lecturers and policy makers. We investigate these issues using sample survey data for 10 cohorts of young people, observed between 1986 and 2002 drawn from the Youth Cohort Surveys for England, and from the population of pupils in the National Pupil Database for 2002 and 2003.

Research findings

I. The evolution and determinants of the educational gender gap in England

Our preferred measure of the gender gap is the absolute difference in the examination performance of boys and girls. Several measures of exam performance are constructed – a pass/fail for each GCSE subject (grade C+), the number of A*-C GCSEs in all subjects, whether an individual obtains 5 or more grade A*-C GCSEs or not, and the overall points score achieved at GCSE. We also examine SAT scores between Key Stages 2 to 4 (Key Stage 4 is equivalent to GCSE). Our main findings are:

- We test a large number of hypotheses that have been suggested as 'causes' of the gender gap. This involves estimating econometric models where we control for a large number of observable factors. These factors can be grouped into personal (e.g. ethnicity), family (e.g. socio-economic background), school (e.g. selective school, single sex) and environmental (e.g. local unemployment rate). Controlling for such factors fails to explain the gender gap.
- For instance, selective schools have a very large effect on educational outcomes, whereas single sex schools have a smaller effect, but neither of these observable school-level effects can explain the gender gap.
- Furthermore, there are no observable differences between girls and boys (e.g. family background, poverty), and hence these variables do not explain why there is a gender gap, or why it has risen.
- In the raw data the gender gap widened considerably following the introduction of the GCSE exams in 1987 (see Figure 1). It continued to widen quite rapidly until the early 1990s and eventually stabilised at the end of the 1990s. By 2000, for example, there was a ten percentage point gap between girls and boys in the proportion gaining 5 or more A*-C grades in the GCSE exams.

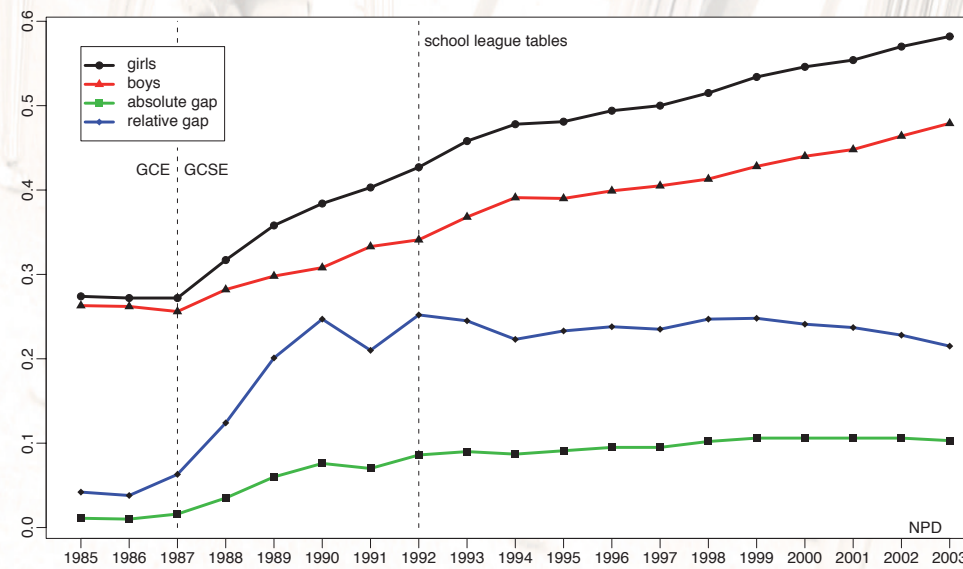


Figure 1: Absolute versus relative gender gaps, Binary 5+ Passes (5+ A*-C GCSEs)

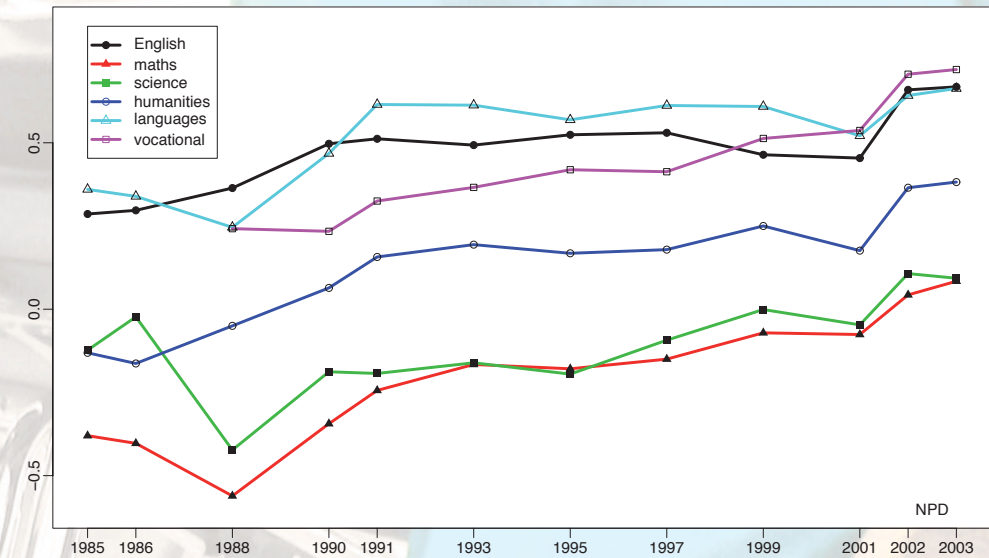


Figure 2: Raw gender differentials, points score, by subject

- In view of these findings, we argue that girls must behave differently to boys prior to the GCSE stage. Consequently, we explore (a) the effect of secondary school choice on the gender gap, (b) subject-level differences in the gap and (c) differences in exam performance between Key Stages 2 and 4. In this part of our research we are also able to control, statistically, for factors that are **unobserved** in our data, such as the school's ethos. Controlling for unobserved factors proves to be important in reducing the size of the gap but does not explain its upward trend. Thus, between 1991 and 2001 one-half of the gender gap can be explained by unobserved differences between schools. Using the data for 2002, for example, the gap falls from 10 percentage points to 4 percentage points when we control for unobserved school effects. We therefore conclude that unobservable differences between schools, which could include variables such as pupil behaviour, tiering and streaming, could well be important explanations of the gender gap even though we have no direct evidence of these effects.
- With respect to the gender gap at subject level, the raw data show that girls substantially outperform boys in languages, English and vocational subjects, such as Business Studies and to a lesser extent in humanities (see Figure 2). Girls have also caught up with boys in Science and Maths after being well behind boys in these subjects at the start of the GCSE exams in 1987. When we control for observable and unobservable (school-level) differences between individuals, the gender gap is reduced by one-tenth of a GCSE grade, so we find that girls are still way ahead of boys in English, languages and vocational subjects, but are slightly behind boys in Maths and Science.
- Our analysis of the changes in test scores between different stages of the educational process shows that by the time that pupils take their GCSE exams, girls are ahead of boys by nearly two thirds of a grade in English, but are only slightly ahead in Maths and Science. However, girls are already well ahead in English by Key Stage 2, but behind in Maths and Science, which means that girls improve relative to boys between Key Stages 3 and 4 in all subjects, but only in English between Key Stages 2 and 3.