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

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ABSTRACT

In this paper, we investigate whether the superior performance of girls in exams taken during compulsory schooling translate into superior performance in the labour market. We also investigate whether boys eventually catch up with girls in terms of their educational attainment. Using the Youth Cohort Surveys for England and Wales for the period 1986 to 2002, we find that the superior performance of girls in exams taken during compulsory schooling are beginning to pay off, insofar as in their early labour market careers there are positive wage returns to girls with better education. A further key finding is that better educated girls are more likely to stay on for further education, especially for academic courses, such as A-levels. Finally, although boys did experience some catch up with respect to A-level performance in the early time period, towards the end of the period girls were again out-performing boys in A-levels, and also with respect to work-based qualifications. (159 words)

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1. Introduction

In a companion paper, we investigate the evolution and determinants of the educational gender gap in Britain (Andrews, Bradley, Stott and Taylor, 2004). The educational gender gap is typically measured as the difference in the proportion of girls who pass five or more GCSEs with Grades A*-C and the same proportion for boys. This issue attracts considerable political and media attention every year when the exam results are published. The raw data show that, over the period 1985 to 2003, girls have out-performed boys, and that this gap has been widening, such that, by the end of the period the gap stood at 10 percentage points. In our own analysis of the educational gender gap, when we control for observable personal, family, school and neighbourhood characteristics this has very little effect on the gap, whereas once we control for school-level unobserved heterogeneity, the gap falls by about one half between 1991-1999.

There is a view that says that this widening of the educational gender gap does not matter if this advantage dissipates by the time the girl enters the labour market, where, of course, women fair worse than men. 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. Moreover, even if the increasing educational gender gap has no effect on the adult gender wage gap, it is still possible that it could close the gender wage gap in the youth labour market because young girls are less likely to interrupt their careers because child-rearing usually happens later on in life. It is well documented that women have less work experience and this increases the adult gender wage gap. Thus, the gender wage gap in the youth labour market gets smaller because the acquisition of more human capital by girls is given greater weight by employers because boys and girls have similar levels of work experience. A countervailing force, however, is the propensity for girls to continue to crowd into low paying ‘female’ occupations, resulting in occupational segregation (Andrews, Bradley and Stott, 2004).

The aims of this paper are therefore threefold. Firstly, we evaluate the impact of the educational gender gap in GCSEs on post-compulsory education and labour market outcomes. The relatively superior performance of girls in GCSEs may have translated into higher wages, or more plausibly, a narrowing of the gender wage gap. Secondly, we investigate whether differences in educational attainment between boys and girls in GCSEs lead to differences in

post-school educational and labour market destinations. For instance, are girls more likely to enter academic Further Education (FE), and subsequently Higher Education (HE)? Thirdly, do boys catch up with girls in terms of A-level performance, or, more generally, attainment in National Vocational Qualifications (NVQ)? To investigate all of these issues we analyse ten sweeps of the bi-annual Youth Cohort Study (YCS), starting in 1986 and finishing in 2001.

Our study adds to the existing literature, surveyed below, on the youth labour market in a number of ways. First, to our knowledge, there has been very little previous work which assesses the effect of the educational gender gap on labour market outcomes, especially for the UK. Furthermore, although there is a massive literature on the school-to-work transition, very few papers explicitly seek to quantify gender differences in outcomes. Most of the previous literature is cross-sectional, examining labour market outcomes in a particular year. Longitudinal studies tend to focus on the time it takes for a young person to acquire their first job. The advantage of our research is that, because it refers to the period 1986 to 2001, we can investigate how the labour market outcomes of boys and girls have changed over time. Lastly, the investigation of 'catch-up' has been investigated by educationalists but this has tended to be descriptive, whereas we adopt a rigorous econometric approach. Also, there is no discussion of the differences between boys and girls when analysing NVQ performance.

The remainder of this paper is structured as follows. In the next section, we review the available literature, which is followed, in Section 3, by a discussion of the changing institutional environment in which young people made choices about whether to leave school or not, for instance. This section also discusses the data we use in our study. Section 4 describes our econometric framework, which is followed by a discussion of our results in Section 5. Section 6 concludes.

2. Literature Review

There is an education literature on A-level performance of boys and girls but very little formal statistical analysis. Tinklin, Croxford, Ducklin and Frame (2001) and Tinklin (2003) are exceptions insofar as they use data for Scotland, and show that girls and boys are equally likely to become ‘high attainers’ (i.e. obtain 4 or more H-levels), but that girls who perform well in compulsory schooling are more likely to stay on. There is a large literature focusing upon the school-to-work transition, which is summarised by Bradley and Nguyen (2004). Although

almost all of this literature investigates the effect of educational attainment, as well as other factors, on post-school destinations, boys and girls are treated separately and so there is no explicit attempt to investigate the impact of the educational gender gap on those destinations. Rice (2000) is an exception because she investigates the role of gender in determining differences in staying-on rates into FE in the UK, which again favours girls. She finds that only part of the gender gap in staying on rates is due to differences in GCSE exam performance at school. An 11 percentage point difference in the predicted probability of white males and females would be reduced to 6 percentage points if the distribution of education attainment between the genders was equalised. School-based work experience has some effect on the gender differences in the probability of staying on. Jacob (2002) investigates the gender gap in attendance at US colleges, which favours girls, focusing on the effects of differences in the returns to college and the impact of poor non-cognitive skills amongst boys (e.g. their inability to pay attention in class, to work with others and to organize and keep track of homework). Higher non-cognitive skills and college premiums among women account for nearly 80 percent of the gender gap in higher education. Other studies are of indirect relevance to our own work. For instance, Graham and Smith (2005) investigate gender differences in the choice of science and engineering careers for US graduates. Turner and Bowen (1999) show that differences in SAT scores, obtained during compulsory schooling, account for a small part of the gender gap in choice of college majors, the main part explained by labour market expectations and gender-specific effects of the college experience.

There is a large literature on the gender wage gap. We concentrate here on those studies that have tried to assess the impact of specific aspects of education on that wage gap. Most of this literature relates to the US and is concerned with adult male-female wage differences. It could be argued that studying adults has the advantage of avoiding transitional labour market effects. However, it is clear that a bad start to one's working life can have detrimental long term consequences (Bradley and Nguyen, 2004), and so it is important to also understand what factors influence early labour market performance.

One strand of the literature investigates the effect of course choice on the gender wage gap. Paglin and Rufolo (1990) show that women earn less because they are less likely to choose degree subjects, and hence occupations, requiring quantitative skills, which are in short supply in the US labour market. Similarly, Brown & Corcoran (1997) argue that differences in degree subject account for a substantial part of the gender gap in adult wages for college graduates,

however, differences in the courses studied account for little of the equally large gender wage gap for the less educated. In the case of the less educated, courses studied at high school account for about one third of the gap, whereas work experience is shown to be much more important. Interestingly, Christie and Shannon (2001) find that gender differences in educational attainment account for virtually none of the gender gap in earnings in 1985 and 1990 in Canada.

A second strand of the literature has analysed the effect of maths skills on the gender wage gap. Murnane, Willett and Levy (1995) show that even basic maths skills have become increasingly important for predicting wages at age 24 between the late 1970s and the mid-1980s in the US. For women the increased wage return to maths accounts for all of the increase over this time period in the wage premium with respect to post-secondary education. Altonji (1995) also finds positive returns to achievement in Maths for the US and Dolton and Vignoles (2002) found that having mathematics A-level boosts earnings significantly in the UK.

In a third strand of the literature the issue of curriculum breadth and its effect on the wages of males and females has been investigated. The hypothesis tested is that employers prefer workers with a broader curriculum, and hence reward them with a higher wage. Altonji (1995) finds that the return to additional academic courses, such as Maths, English, Science and Languages is small, especially when compared to the return to one additional year in high school. Furthermore, Dolton and Vignoles (2002) show that employers do not seem to reward individuals who take a broader curriculum at 16–19 more highly.

The effect of school quality on the gender wage gap has also been analysed. Konstantopoulos and Constant (2005) use US data to examine its effect on the labour market performance of similarly aged individuals observed seven, eight, and fourteen years after high school graduation. School quality is measured by several proxies – the socio-economic composition of the school's pupils, the percentage of pupils who proceed to college and the percentage of teachers with a degree. They show that the socio-economic composition of the school the pupil attended is important for the future wages of Whites and Hispanics, whereas the percent of teachers with graduate degrees is important for the wages of Black pupils. A further finding of interest is that the gender gap in hourly wages is larger in the middle and the upper tails of the distribution. Aralampulam, Booth & Bryan (2004) find similar effects for a cross-section of countries.

In addition to the effects of education on the gender wage gap, other researchers have found that occupational segregation has a large effect (Mumford and Smith, 2004). The size of the wage gap also varies with workplace characteristics and region. Kunze (2005) uses data on German apprentices for the period 1975-90 to analyse the evolution of the gender wage gap for the first 15 years in the labour market. The initial gap of 25% was due primarily to gender segregation in the occupation of the apprenticeship undertaken by males and females. Women tended to enter clerical or receptionist occupations, for instance, whereas males entered motor vehicle or electrical work where returns are higher. This occupational sorting had a persistent effect on the gender wage gap over the 15 year period.

3. Data and Institutional Background

In the UK, young people can leave formal education at the end of the academic year following their sixteenth birthday, and proceed to either post-compulsory full-time education or entry to the labour market.[1] With the collapse of the youth labour market in Britain in the early 1980s, reflected by a dramatic fall in the transition from school to employment (see Andrews and Bradley, 1997), the Conservative government introduced the publicly-funded Youth Training Scheme (YTS). Initially, these schemes were essentially work experience programmes for unemployed youths and lasted only 12 months. However, since then, these schemes have been transformed, increasing the training content and evolving ultimately into Modern Apprenticeships (Bradley, 1995). During the period of this study, the youth labour market in Britain had a highly structured recruitment cycle, with most school leavers being absorbed into employment between July and September of the year in which they left school. It is worth noting that many employer apprenticeship training schemes and the 'good' Youth Training Schemes (YTS) commenced before the start of courses in post compulsory education. Other young people entered YTS programmes that had less formal training content or they became unemployed.

The proportion of young people continuing their study in Further Education, typically 16-19 year-olds, has increased dramatically over the period, with a sharp rise in 1990 (see Figure 2,

[1] Johnson (2004) provides an overview of the funding and organisation of the current education and training system in the UK.

Machin and Stevens, 2004). Those young people who did proceed to post compulsory education could study at a sixth form college (sometimes attached to their school), or attend a college of further education. In both cases, it was possible to pursue either an academic route (e.g. A - levels) or a vocational route (e.g. business, engineering, etc.), the former route typically regarded as the stepping-stone to higher education. Clark, Conlon and Galindo-Rueda (2002) provide a decomposition of the factors that explain staying-on rates between 1981 and 2001, and the two most important factors are prior educational attainment and the unemployment rate. This research does not consider gender differences in staying-on rates, but girls do have a higher propensity to stay on (Rice, 2000). Machin and Stevens (2004) also show that there has been a dramatic rise in participation rates in HE, rising from 1 in 20 of the age group in 1960 to 1 in 3 by 2000. They do not identify how this change in participation varies by gender.

In this paper we analyse the Youth Cohort Surveys of England and Wales, Cohorts 2 to 10, which refer to 1986-2002. Each cohort comprises three sweeps: Sweep 1 is conducted in Year 12 (when respondents are aged 16-17); Sweep 2 refers to Year 13 (aged 17-18) and Sweep 3 refers to Year 14 (aged 18-19). There are some exceptions to this general design of the Survey insofar as YCS10 has only two sweeps, essentially omitting Sweep 2, and YCS3 and YCS8 have a fourth sweep which cover individuals aged 24 and 21, respectively. For each sweep, the young person is asked to reflect back on the previous year in education and the labour market, reporting (in the first sweep) their experiences and achievements at school, and their personal and family characteristics. For young people proceeding to post-compulsory education, employer and government-funded training, the Survey also collects information on the type of course taken, whether or not the young person sits their exams and the grades they achieved. Another important feature of the YCS is that it records the post school destinations of all young people in each of 36 months since the completion of compulsory education.[2]

We take March for each sweep as the point to identify the log of the real hourly wage, w, and post-school destination. Six post school destinations are identified, as follows:

- U Unemployment
- E Employment, with wage w; disaggregated into
    - Skilled ($E1$)
    - Unskilled ($E2$)

[2] The YCS is known to have several problems with the diary information. See Bradley and Lenton, (2005).

– *Y* Government-sponsored training [SB: I deleted *w*]
– *F* Further education, disaggregated into
    - Academic (e.g. A-levels, conventional route to HE) (*F1*)
    - Vocational (*F2*)

For individuals who stay on to further education (*F1*) we are also able to observe the A-level subjects studied and the grades that they achieve, but this can only be observed in Sweep 2. Similarly, since skills and qualifications can be acquired via a variety of routes (*E*, *Y* and *F*) we measure the highest level of qualification achieved at Sweep 2 and convert this to a NVQ-level. This is clearly a broader range of qualifications and is also measured at Sweep 2.

4. Econometric methods

The aim of our analysis, it will be recalled, is to see what effect, if any, the educational gender gap observed in compulsory schooling has on labour market outcomes and subsequent educational outcomes. We model three such outcomes.

The first of these is the log of the real hourly wage, *w*. Equation (1) describes the model that we estimate at each sweep and for each cohort (we omit individual, cohort and sweep subscripts for simplicity):

$$w = x\beta + gx\beta^{'} + \alpha y + \beta g + \gamma gy + u \tag{1}$$

where the vector $x = (x_i, x_r, x_f, x_s)$ distinguishes personal characteristics *i*, neighbourhood characteristics *r*, firm characteristics *f* and school characteristics *s*. The variable *y* refers to exam performance during compulsory schooling, to be defined below. We also include in Equation (1) a girl dummy, *g*. (See Table 1 for a full list of the covariates and their sample means for Sweep 1, YCS9 (1997) for illustration.) During compulsory schooling, a girl can either 'pass' her examinations, in which case her expected log hourly wage is given by:

$$E(w \mid g = 1, pass) = x(\beta + \beta^{'}) + \alpha + \beta + \gamma \tag{2}$$

or, she can fail, in which case the expected wage is given by:

$$E(w \mid g = 1, fail) = x(\beta + \beta^{'}) + \beta \tag{3}$$

Also of interest are two more wage gaps, namely the 'passes gender gap' and the 'fails gender gap', given by Equations 4 and 5:

$$\Delta_p = E(w \mid g = 1, pass) - E(w \mid g = 0, pass) = x\beta^{'} + \beta + \gamma \tag{4}$$

$$\Delta_f = E(w \mid g = 1, fail) - E(w \mid g = 0, fail) = x\beta^{'} + \beta \tag{5}$$

Thus the 'girls' return' is then given by Δ_g :

$$\Delta_g = E(w \mid g = 1, pass) - E(w \mid g = 1, fail) = \alpha + \gamma \tag{6}$$

Exactly the same argument gives the 'boys' return':

$$\Delta_b = E(w \mid g = 0, pass) - E(w \mid g = 0, fail) = \alpha \tag{7}$$

The 'conditional gender gap' (hereafter the gender gap), which is the difference-in-differentials, is then given by:

$$\Delta_g - \Delta_b = \gamma = \Delta_p - \Delta_f \tag{8}$$

If $\gamma>0$, the return is higher for girls than for boys (on average), or, equivalently, the gender gap is positive.

Recall that *y* is educational attainment at GCSE. We adopt two different measure for a 'pass' (*y* = 1). These are either (a) 5+GCSE A*-C or (b) top half of the points score distribution.

Wages can only be measured for those young people who are employed or in government sponsored training. More generally, we need to consider other labour-market outcomes, namely continuing education and unemployment.[3] Hence, we model the post-school destination of each individual, where the six destinations were defined in Section 3, again at each sweep and for each cohort. Specifically, we estimate a multinomial logit model, given:

$$\log \frac{P_j}{P_o} = x\ (\beta_j - \beta_0),\ j = 1,...5, \tag{9}$$

where *j* indexes the six post school destinations. P_j is the probability of observing an individual in the *j*th destination with characteristics *x*. The maximum likelihood estimates of β_j are difficult to interpret, and so we adopt standard practice and report marginal effects. Note that the specification of the *x* vector is identical to that in Equation (1) above. For each destination we use the marginal effects to calculate the gender gaps and returns given by Equations (4) to (8). However, because the parameter of interest in Equation (1) is on the interaction term between *y* and *g*, when we apply the same specification to Equation (9), there is a problem. Interaction terms in non-linear models are almost always incorrectly interpreted (as noted by Norton, Wang and Ai, 2004), and so we follow the approach suggested by Norton *et al* (2004) in computing the 'correct double difference'.

Finally, we seek to address the question of whether boys catch up with girls in terms of educational performance. To test this hypothesis, we construct two measures of post-school educational performance. The first of these measures is a broad one, insofar as it refers to any type of vocational or academic qualification obtained via any route (i.e. continued education, publicly-funded training or employer-provided training), as suggested above. Given the difficulty of comparing the plethora of qualifications, we convert them to a common metric, the National Vocational Qualification level. Appendix A reports the conversion adopted. In our

[3] Note that in our wage regressions we focus solely on young people in employment since wages for those in government-sponsored youth training are set by government and are in general equal for boys and girls.

data, young people can either obtain an NVQ level 1 (qualifications equivalent to less than 5 + GCSE A-C), NVQ level 2 (qualifications equivalent to 5+ GCSE A-C) or an NVQ level 3 (A - level or equivalent). We estimate another multinomial logit model, again following Equation (9), where *j* now indexes the NVQ levels. It is not possible, however, to compute the gender gaps and returns specified in Equations (4) to (8). This is because students who 'fail' at one educational level cannot proceed to the next level i.e. to proceed to NVQ 3 the student must achieve NVQ level 2. We therefore compute the following NVQ gap: $\Delta_N = E(j \mid g = 1) - E(j \mid g = 0)$, where *j* indexes the three NVQ levels.

The second measure of post-school educational performance that we construct is narrower. It refers only to those young people who follow the academic route into Further Education (*F1*) and take A-level qualifications. The rationale for focusing upon this particular group is that A levels are still the main route to higher education, and it is often claimed that boys actually do better at A level than girls. We estimate models of the number of A-levels achieved, using a standard binary logit model, and models for the points score achieved, using an OLS model. Since it is not possible to proceed to A-level study unless the young person has 5 or more GCSEs graded A*-C, we estimate the following A-level gap: $\Delta_A = E(z \mid g = 1) - E(z \mid g = 0)$, where z refers to either the possession of 2 or more A-levels or the points score.

5. Results

5.1 The educational gender gap and the gender wage gap

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. Table 2 reports the estimates from the wage regressions, which are also plotted in Figures 1–3. Notice that the sample sizes for each cohort increase as we move from Sweep 1 to Sweep 3, reflecting the gradual absorption of young people into employment from the other labour market states.[4]

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, Δ_p

[4] This masks the attrition from the YCS survey which is considerable, especially between sweeps 1 and 2. Bradley and Lenton (2005) show that attrition is more severe for those who enter the labour market in sweep 1. This implies that the increase in sample size reflects the absorption of young people from states *F1* and *F2* into *E*.

Equation (4), favours boys from 1998 onwards, whereas for older youths in later cohorts (YCS9-YCS11), there is a decline in the wage advantage for boys who pass their GCSEs. The reverse seems to happen for boys and girls who fail. The fails gender gap, Δ_f Equation (5), shows that boys always have higher hourly wages, regardless of time and age. 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. These trends may reflect the decline of relatively highly paid employer-provided apprenticeships in the 1980s and early 1990s, which were typically entered by 'less' qualified boys. As employers switched to using government subsidised youth training, which took between 1 and 2 years to complete, this would have the effect of compressing male wages, but once the training was complete and employers were forced to pay the going rate for the job (i.e. at ages 18 and 19) then the male wage advantage would re-appear, as column 7 suggests.

The girls' return, Δ_g Equation (6), with respect to real hourly wages is positive over time and for all age groups, whereas for boys, Δ_b Equation (7), these are sometimes negative, especially at older ages. The returns for younger girls (age 17) are only significant up to 1994, whereas for boys they are significant throughout the period, except for the blip in 1996. In general, 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.

The gender gap, γ Equation (8), 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. For instance, compare the point estimates for cohort 2 (i.e. YCS2) which are constant at around 0.05 for Sweeps 1 to 3, whereas for cohort 9 (YCS9) there is a male advantage in Sweep 1 which converts to a female advantage by Sweep 3.[5] There is also some limited evidence for cohorts 3 and 8 that this advantage persists into the early part of adulthood. These findings suggest that the improvement in girls' GCSE exam performance is beginning to pay off in terms of higher wages. Furthermore, for most cohorts and sweeps the inclusion of covariates has very little effect on the differential.

[5] It is also worth noting that the point estimates in column 9, although not always statistically significant, are nevertheless quite large.

5.2. The educational gender gap and gender differences in post-school destinations

The methodology adopted for wages is repeated with respect to post-school destinations, except that real hourly wages are replaced by differences in the probability of being in a particular post-school destination. Recall that young people are categorised into one of six states: unemployment, skilled employment, unskilled employment, youth training, vocational further education and academic further education. Tables 3 to 7 report our findings.

The passes gender gap, Δ_p, with respect to post-school destinations shows that girls are more likely to enter vocational further education or unskilled employment (see Table 3). The gap with respect to unskilled employment fluctuates over time, perhaps due to the business cycle, and also rises with age. These two outcomes are offset by a lower probability of staying on for academic FE and skilled employment, which at first glance is surprising. A similar pattern emerges with respect to the 'fails gender gap', Δ_f, (Table 4), although there is less of an age effect. Thus, young people who fail to achieve 5 or more GCSEs grades A*-C are less likely to undertake academic FE, especially by Sweep 2 and more likely to be in vocational FE or unskilled employment. The probability of entering unskilled employment also increases as those young people who have failed get older, which is a surprising finding given that some of these young people will have moved from vocational FE and Youth training into those states.

The findings with respect to the pass and fail gaps mask considerable gender differences. The girls' return, Δ_g, (Table 5) 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, Δ_b, (see Table 6). Thus, improvements in GCSE performance have had a positive effect for both boys and girls.

Furthermore, the gender gap, γ, (see Table 7) 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.

By Sweep 3 many young people, though by no means all, will have left the further education system and either entered university or the labour market.[6] Of particular interest is whether girls' superior performance in GCSEs translates into a higher probability of progressing to HE. There is little evidence to support this hypothesis in this data.

5.3 The educational gender gap and catch up

Although boys have inferior educational performance in compulsory schooling, it has been claimed that this disadvantage is overturned at later stages in the educational process, for instance in A-level examinations.[7] 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.[8] Table 8 shows 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. The points score measure is therefore preferable. This shows 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.

We argue, however, 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. As suggested earlier, it is necessary to convert all academic and vocational qualifications to a common metric, in our case the NVQ level. Table 9 shows the estimates of the NVQ gaps. It is clear that girls are performing better than boys, especially with respect to NVQ levels 2 to 3.

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[6] Approximately 75% of those young people observed in category F1 are actually in HE by sweep 3. F2 still refers to vocational Further Education.

[7] Up until 2003 students took no more than four A-level subjects between the ages of 16/17 to 18/19, which gave rise to the criticism that young people exiting the education system at this stage were too narrowly focused in their knowledge. As a result the A-level system was reformed so that students take 5 AS-levels in year 1 and 4 A2-levels in year two.

[8] A levels are graded A-E and for our purposes a grade A is equivalent to 5 points and a grade E is equivalent to 1 point.

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.

6. Conclusions

In this paper, we investigate whether the superior performance of girls in exams during compulsory schooling, discussed in detail in Andrews *et al* (2004), has translated into superior performance in the labour market. We look at several outcomes, such as wage returns, post-school destinations and post FE destinations. In addition, our research has also investigated whether boys catch up with girls in terms of educational attainment at later stages of their education, including that provided by employers in the forming of work-related training. To investigate these issues, we analyse the Youth Cohort Survey for England and Wales for the period 1986 to 2002. This was a period during which there were many reforms to compulsory and post-compulsory education, and there were substantial changes in the youth labour market.

Our results are tentative, because, from an econometric point of view, there are a number of technical issues that need to be resolved. In particular, we have made no allowance for non-random selection into post-school destinations or the problem of survey attrition.

Our findings suggest that the superior performance of girls in GCSE exams taken during compulsory schooling are beginning to pay off, insofar as in their early labour market careers there are positive wage returns to girls with better education. A question that we cannot address with these data is whether this advantage persists into adulthood, though there is considerable evidence based on the adult population that this female advantage is reversed at some stage in the adult labour market. A further key finding is that better educated girls are more likely to stay on for further education after completing compulsory schooling, especially for academic courses, such as A-levels. Finally, although boys did experience some catch up with respect to A-level performance in the early time period, towards the end of the period girls were again out-performing boys in A-levels, and also with respect to NVQs acquired via work-based training. These findings support the view that the educational advantage of girls which starts in

compulsory schooling is cumulative. However, there is no convincing evidence from our data that girls are more likely to enter higher education.

Although this research has offered many new insights into the early labour market performance of girls and boys, and in particular the gender differences in performance, there are clearly many questions left unresolved. The big question is when does the gender differential turn in favour of boys and how does this vary by the different cohorts of young people exiting the education system? There is also a need to investigate further what aspects of educational gender gap drive the positive wage returns to girls. Is it that employers reward girls because of their superior performance across a range of GCSE subjects (i.e. curriculum breadth), or is it better performance in Maths or English which is more important. Furthermore, we have ignored the effect of subsequent exam performance on wages: what is the marginal benefit to GCSE versus A-level? Finally, has there been any change in subject choice at university? Are girls as a result of their improved GCSE performance more likely to choose degree subjects that lead to more highly paid jobs?

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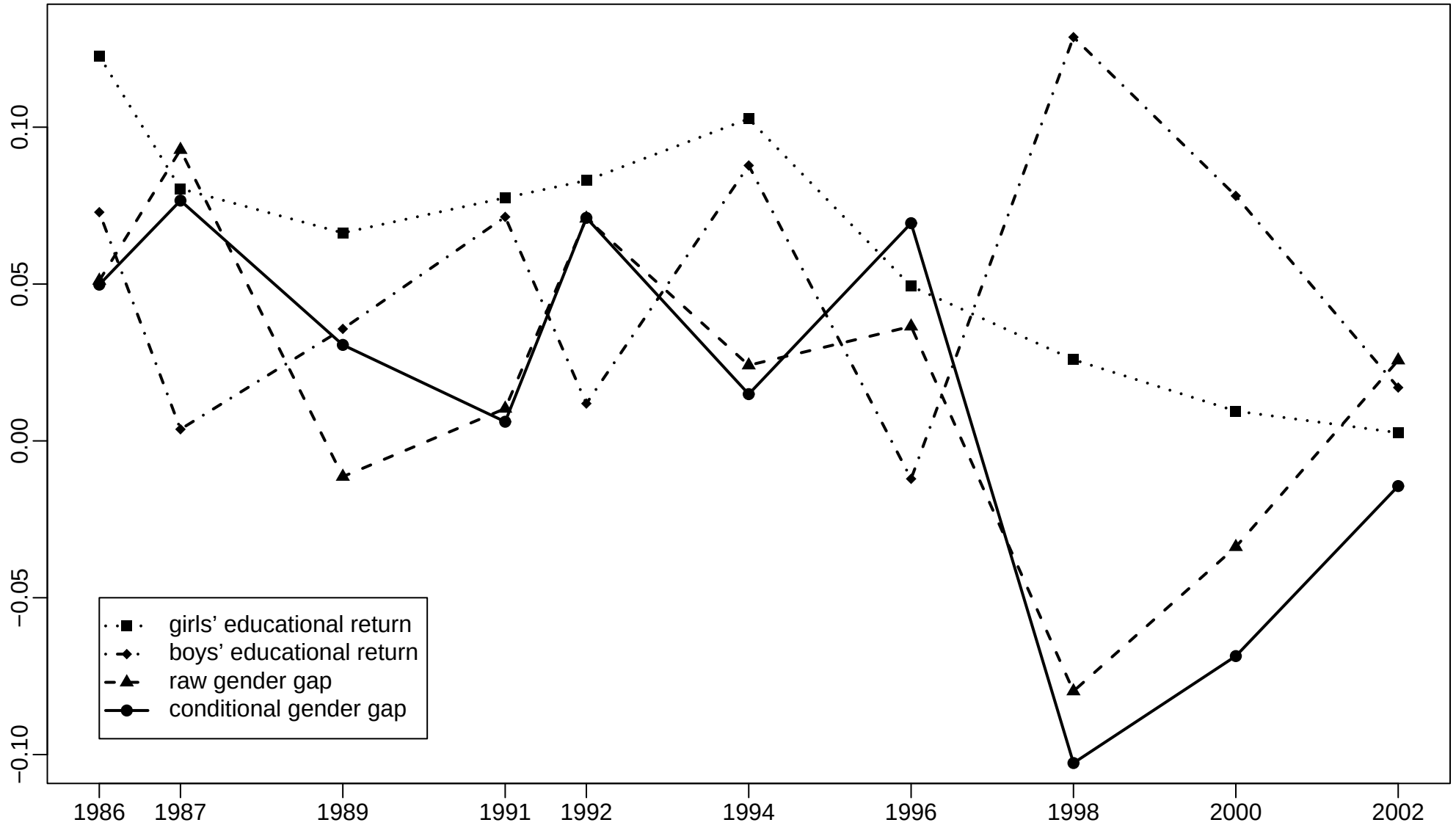

Figure 1: Logged wages for jobs, 16/17 year−olds (sweep 1)

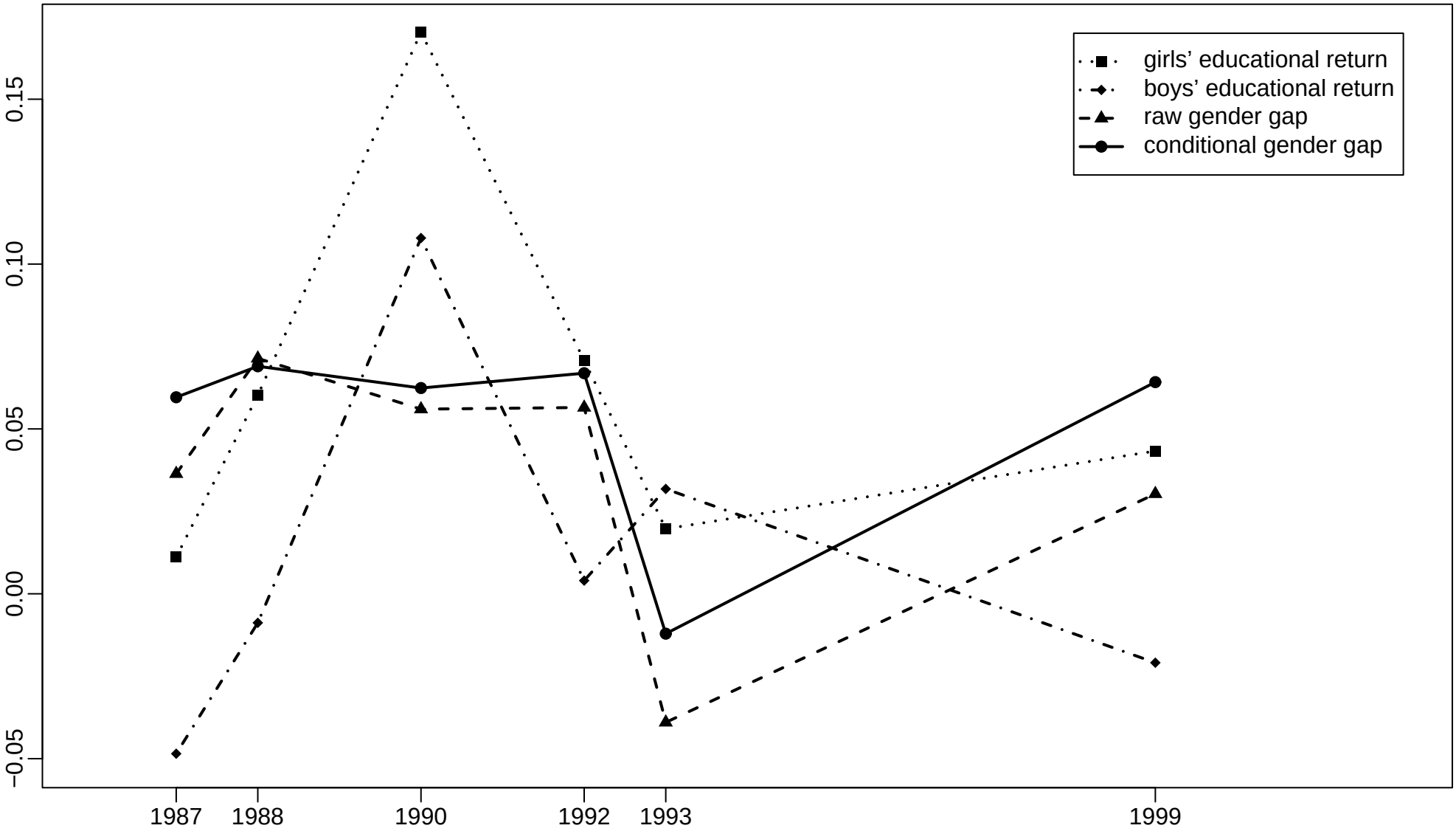

Figure 2: Logged wages for jobs, 17/18 year−olds (sweep 2)

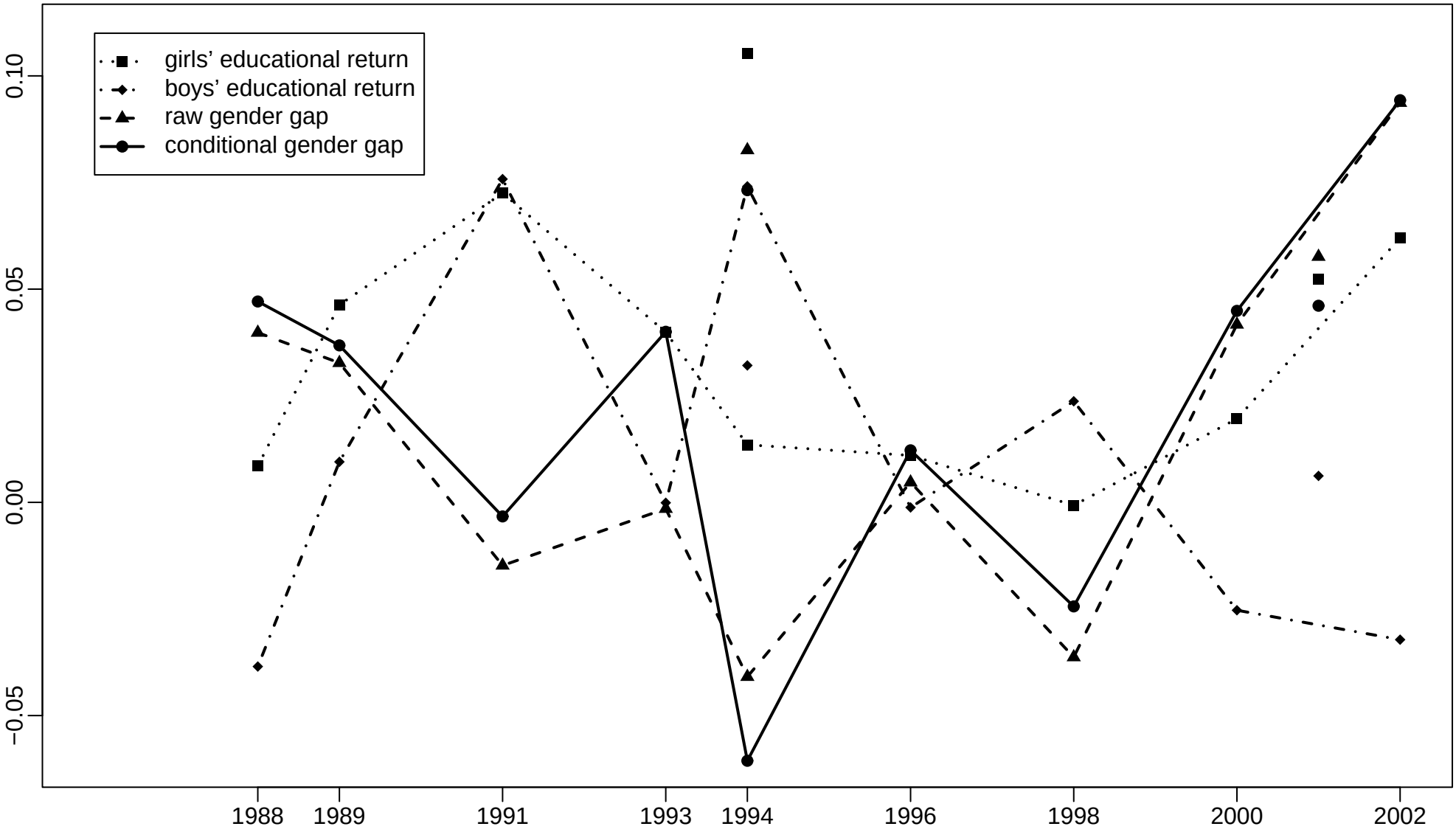

Figure 3: Logged wages for jobs, 18/19 year−olds (sweeps 3,4)

Table 1: Variable definitions and sample means

Variable name	Definition	Sample mean
girldum	girl dummy	0.5353
gcsebin	GCSE pass (5+ A-C)	0.5903
single	single-sex school	0.1155
sel	selective school	0.0528
mod	secondary modern school	0.0342
gm	grant maintained school	0.2122
aided	voluntary assisted school/voluntary controlled school/ special agreement school	0.1382
ppg	school gender mix (proportion of girls in school)	0.5089
mix1	1st quantile of school gender mix	0.1497
mix3	3rd quantile of school gender mix	0.1835
pup	school size	1034.8800
size1	1st quantile of school size	0.2103
size3	3rd quantile of school size	0.4733
pptch	pupil-teacher ratio	16.5027
ptr1	1st quantile of pupil-teacher ratio	0.2877
ptr3	3rd quantile of pupil-teacher ratio	0.3722
exppup	LEA spending per pupil	2.5537
expd1	1st quantile of LEA spending per pupil	0.3588
expd3	3rd quantile of LEA spending per pupil	0.2831
qualst	proportion of qualified staff	0.9858
suphrs	support hours	0.5171
alev	proportion of pupils taking A levels	0.0845
elig	proportion of pupils eligible for free school meals	0.1564
poor1	1st quantile of proportion of pupils eligible for free school meals	0.4087
poor3	3rd quantile of proportion of pupils eligible for free school meals	0.2444
sen	proportion of pupils with special educational needs	0.0219
socialhs	council housing or housing association	0.1227
otherhsg	private rented, hostels and other housing	0.0383
pamanage	father's occupation: manager	0.1777
papro	father's occupation: professional or ass. professional	0.1731
paclsk	father's occupation: clerical or skilled manual	0.2801
mamanag	mother's occupation: manager	0.0559
mapro	mother's occupation: professional or ass. professional	0.1874
maclsk	mother's occupation: clerical or skilled manual	0.2341
paonly	mother absent from household	0.0227
maonly	father absent from household	0.0861
blk	black	0.0149
indian	indian	0.0308
pak	pakistani	0.0199
bangla	bangladeshi	0.0073
chinoth	chinese/other	0.0250
profman	LAD proportion in "AB" employment	0.2462
ulag1	LAD unemployment rate lagged 1 year	5.3837
ladtgcse	LAD proportion of pupils gaining 5+ A-C, excluding the school itself	0.4369

Table 2: Regression on logged real wages for jobs

Cohort	Year	N	Girls' return Δ_g	Boys' return Δ_b	Passes gender gap Δ_p	Fails gender gap Δ_f	Raw gender gap	Cond. gender gap $\gamma = \Delta_g - \Delta_b = \Delta_p - \Delta_f$
					Sweep 1 (age 17)			
YCS2	1986	1257	0.1227 (0.0247)	0.0729 (0.0295)	0.0412 (0.0340)	-0.0087 (0.0194)	0.0511 (0.0358)	0.0498 (0.0365)
YCS3	1987	1058	0.0804 (0.0280)	0.0037 (0.0331)	0.0596 (0.0400)	-0.0170 (0.0222)	0.0928 (0.0442)	0.0766 (0.0413)
YCS4	1989	697	0.0663 (0.0388)	0.0357 (0.0539)	0.0310 (0.0569)	0.0004 (0.0317)	-0.0114 (0.0652)	0.0306 (0.0630)
YCS5	1991	1384	0.0775 (0.0339)	0.0714 (0.0390)	-0.0408 (0.0503)	-0.0469 (0.0238)	0.0103 (0.0545)	0.0061 (0.0514)
YCS6	1992	1292	0.0830 (0.0502)	0.0119 (0.0388)	0.0882 (0.0603)	0.0171 (0.0254)	0.0709 (0.0687)	0.0711 (0.0629)
YCS7	1994	844	0.1027 (0.0517)	0.0878 (0.0539)	-0.0035 (0.0787)	-0.0184 (0.0481)	0.0241 (0.0765)	0.0149 (0.0802)
YCS8	1996	709	0.0493 (0.0643)	-0.0201 (0.0546)	0.0624 (0.0824)	-0.0069 (0.0453)	0.0365 (0.0838)	0.0694 (0.0838)
YCS9	1998	869	0.0259 (0.0442)	0.1287 (0.0626)	-0.1588 (0.0626)	-0.0561 (0.0364)	-0.0798 (0.0702)	-0.1027 (0.0692)
YCS10	2000	437	0.0095 (0.0695)	0.0781 (0.0567)	-0.1098 (0.0740)	-0.0412 (0.0651)	-0.0338 (0.0854)	-0.0686 (0.0887)
YCS11	2002	583	0.0026 (0.0476)	0.0170 (0.0685)	-0.0887 (0.0678)	-0.0744 (0.0495)	0.0257 (0.0791)	-0.0144 (0.0894)
					Sweep 2 (age 18)			
YCS2	1987	2087	0.0111 (0.0254)	-0.0485 (0.0260)	0.0057 (0.0326)	-0.0539 (0.0185)	0.0364 (0.0383)	0.0596 (0.0340)
YCS3	1988	1988	0.0602 (0.0250)	-0.0088 (0.0249)	0.0185 (0.0325)	-0.0504 (0.0155)	0.0714 (0.0375)	0.0690 (0.0341)
YCS4	1990	1114	0.1703 (0.0286)	0.1079 (0.0374)	-0.0250 (0.0423)	-0.0874 (0.0216)	0.0560 (0.0475)	0.0624 (0.0466)
YCS5	1992	1287	0.0708 (0.0275)	0.0040 (0.0318)	0.0047 (0.0369)	-0.0622 (0.0232)	0.0565 (0.0440)	0.0669 (0.0412)
YCS6	1993	976	0.0197 (0.0383)	0.0318 (0.0445)	-0.0190 (0.0583)	-0.0069 (0.0267)	-0.0390 (0.0593)	-0.0121 (0.0583)
YCS9	1999	950	0.0433 (0.0361)	-0.0209 (0.0411)	-0.0214 (0.0422)	-0.0856 (0.0399)	0.0303 (0.0541)	0.0642 (0.0529)
					Sweep 3 (age 19)			
YCS2	1988	2629	0.0085 (0.0172)	-0.0385 (0.0201)	-0.0484 (0.0215)	-0.0955 (0.0147)	0.0398 (0.0270)	0.0471 (0.0243)
YCS3	1989	2569	0.0463 (0.0186)	0.0095 (0.0238)	-0.0378 (0.0233)	-0.0746 (0.0153)	0.0327 (0.0277)	0.0368 (0.0271)
YCS4	1991	1995	0.0725 (0.0193)	0.0758 (0.0239)	-0.0775 (0.0240)	-0.0742 (0.0188)	-0.0148 (0.0293)	-0.0033 (0.0284)
YCS5	1993	1765	0.0399 (0.0211)	-0.0001 (0.0261)	-0.0195 (0.0254)	-0.0595 (0.0201)	-0.0015 (0.0329)	0.0400 (0.0305)
YCS6	1994	1136	0.0135 (0.0305)	0.0741 (0.0329)	-0.0789 (0.0350)	-0.0183 (0.0250)	-0.0409 (0.0410)	-0.0606 (0.0419)
YCS7[a]	1996	1869	0.0110 (0.0186)	-0.0012 (0.0250)	-0.0210 (0.0245)	-0.0333 (0.0198)	0.0047 (0.0301)	0.0122 (0.0290)
YCS8[a]	1998	1443	-0.0007 (0.0286)	0.0237 (0.0319)	-0.0927 (0.0293)	-0.0683 (0.0309)	-0.0363 (0.0401)	-0.0244 (0.0383)
YCS9	2000	1247	0.0196 (0.0284)	-0.0253 (0.0322)	-0.0373 (0.0253)	-0.0821 (0.0349)	0.0417 (0.0405)	0.0449 (0.0414)
YCS10	2002	1359	0.0620 (0.0340)	-0.0322 (0.0325)	-0.0090 (0.0285)	-0.1033 (0.0476)	0.0937 (0.0435)	0.0943 (0.0506)
					Sweep 4			
YCS3[b]	1994	1965	0.1053 (0.0203)	0.0321 (0.0236)	-0.0605 (0.0220)	-0.1337 (0.0195)	0.0826 (0.0284)	0.0732 (0.0283)
YCS8[c]	2001	1849	0.0523 (0.0256)	0.0062 (0.0257)	-0.0593 (0.0182)	-0.1054 (0.0306)	0.0576 (0.0355)	0.0461 (0.0344)

[a] Actually sweep 2, but equivalent to sweep 3 for all other cohorts.
[b] Age 24.
[c] Age 22. Actually sweep 3, but equivalent to sweep 4.

Table 3: Multinomial logit of labour market states, gender gap for passes, Δ_p

Cohort	Year	N	Unemployment	Further education [1]	Further education [2]	Skilled employment	Unskilled employment	Youth training
					Sweep 1 (age 17)			
YCS2	1986	6988	-0.0126 (0.0106)	-0.0243 (0.0103)	0.0264 (0.0087)	0.0099 (0.0175)	0.0021 (0.0147)	-0.0015 (0.0076)
YCS3	1987	5937	-0.0014 (0.0097)	-0.0372 (0.0120)	0.0311 (0.0094)	0.0031 (0.0186)	0.0104 (0.0139)	-0.0059 (0.0103)
YCS4	1989	4465	-0.0020 (0.0022)	-0.0192 (0.0094)	0.0128 (0.0074)	0.0238 (0.0103)	0.0022 (0.0056)	-0.0177 (0.0070)
YCS5	1991	11180	-0.0022 (0.0100)	-0.0192 (0.0104)	0.0192 (0.0096)	-0.0445 (0.0106)	0.0718 (0.0147)	-0.0250 (0.0120)
YCS6	1992	16159	0.0086 (0.0071)	-0.0132 (0.0101)	0.0118 (0.0087)	-0.0371 (0.0074)	0.0240 (0.0096)	0.0059 (0.0091)
YCS7	1994	13511	-0.0007 (0.0063)	-0.0209 (0.0104)	0.0075 (0.0093)	-0.0248 (0.0063)	0.0423 (0.0092)	-0.0033 (0.0069)
YCS8	1996	11102	0.0021 (0.0055)	-0.0183 (0.0108)	0.0150 (0.0093)	-0.0089 (0.0044)	0.0147 (0.0083)	-0.0046 (0.0063)
YCS9	1998	10673	0.0074 (0.0060)	-0.0281 (0.0107)	0.0215 (0.0094)	-0.0133 (0.0049)	0.0187 (0.0095)	-0.0063 (0.0059)
YCS10	2000	7840	-0.0005 (0.0043)	0.0010 (0.0124)	0.0085 (0.0109)	-0.0077 (0.0051)	0.0104 (0.0087)	-0.0117 (0.0063)
YCS11	2002	8433	0.0010 (0.0050)	-0.0227 (0.0111)	0.0183 (0.0090)	-0.0129 (0.0048)	0.0144 (0.0086)	0.0019 (0.0052)
					Sweep 2 (age 18)			
YCS2	1987	5761	-0.0009 (0.0161)	-0.0157 (0.0105)	0.0247 (0.0105)	0.0057 (0.0287)	0.0110 (0.0217)	-0.0249 (0.0188)
YCS3	1988	5923	0.0069 (0.0116)	-0.0284 (0.0107)	0.0211 (0.0098)	0.0094 (0.0257)	0.0194 (0.0182)	-0.0284 (0.0166)
YCS4	1990	4439	-0.0268 (0.1198)	-0.0040 (0.0449)	0.0101 (0.0150)	0.0299 (0.0696)	0.0040 (0.0237)	-0.0132 (0.0354)
YCS5	1992	8466	-0.0001 (0.0117)	0.0030 (0.0112)	0.0161 (0.0121)	-0.0275 (0.0123)	0.0761 (0.0174)	-0.0676 (0.0162)
YCS6	1993	8590	-0.0176 (0.0109)	0.0054 (0.0130)	-0.0172 (0.0157)	-0.0353 (0.0110)	0.0706 (0.0131)	-0.0060 (0.0139)
YCS9	1999	7141	-0.0099 (0.0060)	0.0026 (0.0121)	0.0121 (0.0112)	0.0179 (0.0075)	-0.0055 (0.0129)	-0.0172 (0.0078)
YCS10	2001	6045	0.0023 (0.0046)	-0.0057 (0.0125)	0.0037 (0.0139)	-0.0118 (0.0057)	0.0193 (0.0102)	-0.0077 (0.0075)
					Sweep 3 (age 19)			
YCS2	1988	4559	-0.0120 (0.0132)	-0.0252 (0.0097)	0.0181 (0.0072)	0.0501 (0.0240)	-0.0283 (0.0208)	-0.0026 (0.0087)
YCS3	1989	4495	0.0019 (0.0110)	-0.0224 (0.0108)	0.0085 (0.0085)	0.0345 (0.0261)	-0.0024 (0.0188)	-0.0202 (0.0134)
YCS4	1991	4250	-0.0214 (0.0138)	-0.0116 (0.0117)	0.0074 (0.0093)	-0.1335 (0.0246)	0.1765 (0.0262)	-0.0174 (0.0095)
YCS5	1993	6380	-0.0192 (0.0121)	-0.0287 (0.0122)	0.0202 (0.0116)	-0.0213 (0.0144)	0.0874 (0.0201)	-0.0384 (0.0130)
YCS6	1994	6459	-0.0205 (0.0107)	-0.0211 (0.0122)	-0.0065 (0.0097)	-0.0156 (0.0140)	0.0762 (0.0193)	-0.0124 (0.0098)
YCS7[a]	1996	5990	-0.0016 (0.0092)	-0.0317 (0.0136)	0.0077 (0.0108)	-0.0456 (0.0133)	0.0867 (0.0183)	-0.0155 (0.0078)
YCS8[a]	1998	7070	0.0002 (0.0061)	-0.0165 (0.0124)	0.0108 (0.0093)	-0.0059 (0.0064)	0.0217 (0.0153)	-0.0104 (0.0084)
YCS9	2000	4637	-0.0088 (0.0074)	0.0036 (0.0151)	0.0050 (0.0119)	-0.0080 (0.0131)	0.0215 (0.0170)	-0.0132 (0.0089)
YCS10	2002	4169	-0.0240 (0.0089)	-0.0281 (0.0144)	0.0196 (0.0104)	-0.0070 (0.0131)	0.0557 (0.0187)	-0.0162 (0.0094)

[a]Actually sweep 2, but equivalent to sweep 3 for all other cohorts.

Table 4: Multinomial logit of labour market states, gender gap for fails, Δ_f

Cohort	Year	N	Unemployment	Further education [1]	Further education [2]	Skilled employment	Unskilled employment	Youth training
					Sweep 1 (age 17)			
YCS2	1986	6988	-0.0015 (0.0050)	-0.0161 (0.0111)	0.0143 (0.0121)	-0.0089 (0.0074)	0.0218 (0.0085)	-0.0097 (0.0036)
YCS3	1987	5937	0.0007 (0.0049)	-0.0323 (0.0113)	0.0367 (0.0125)	0.0096 (0.0083)	-0.0011 (0.0092)	-0.0136 (0.0050)
YCS4	1989	4465	-0.0048 (0.0040)	-0.0314 (0.0137)	0.0267 (0.0163)	0.0216 (0.0101)	0.0046 (0.0081)	-0.0167 (0.0057)
YCS5	1991	11180	-0.0028 (0.0052)	-0.0182 (0.0102)	0.0385 (0.0122)	-0.0470 (0.0033)	0.0414 (0.0061)	-0.0119 (0.0046)
YCS6	1992	16159	0.0019 (0.0045)	0.0067 (0.0087)	0.0014 (0.0106)	-0.0270 (0.0023)	0.0229 (0.0049)	-0.0060 (0.0044)
YCS7	1994	13511	0.0054 (0.0049)	0.0010 (0.0102)	-0.0086 (0.0127)	-0.0192 (0.0023)	0.0218 (0.0059)	-0.0004 (0.0045)
YCS8	1996	11102	-0.0025 (0.0053)	0.0157 (0.0125)	-0.0075 (0.0156)	-0.0108 (0.0018)	0.0191 (0.0064)	-0.0140 (0.0045)
YCS9	1998	10673	0.0020 (0.0051)	0.0273 (0.0131)	-0.0076 (0.0163)	-0.0151 (0.0022)	-0.0006 (0.0076)	-0.0060 (0.0045)
YCS10	2000	7840	-0.0029 (0.0058)	0.0027 (0.0178)	0.0097 (0.0221)	-0.0098 (0.0022)	0.0039 (0.0088)	-0.0035 (0.0058)
YCS11	2002	8433	-0.0035 (0.0061)	-0.0290 (0.0194)	0.0509 (0.0226)	-0.0112 (0.0031)	-0.0032 (0.0091)	-0.0040 (0.0056)
					Sweep 2 (age 18)			
YCS2	1987	5761	0.0046 (0.0065)	-0.0493 (0.0139)	0.0478 (0.0166)	0.0046 (0.0116)	0.0023 (0.0111)	-0.0101 (0.0052)
YCS3	1988	5923	0.0119 (0.0063)	-0.0604 (0.0142)	0.0566 (0.0166)	0.0080 (0.0111)	0.0012 (0.0114)	-0.0174 (0.0056)
YCS4	1990	4439	-0.0159 (0.0501)	-0.0628 (0.0268)	0.0684 (0.0435)	0.0198 (0.0545)	0.0091 (0.0332)	-0.0186 (0.0281)
YCS5	1992	8466	0.0065 (0.0067)	-0.0432 (0.0143)	0.0284 (0.0169)	-0.0433 (0.0043)	0.0712 (0.0099)	-0.0196 (0.0057)
YCS6	1993	8590	0.0030 (0.0061)	-0.0130 (0.0141)	0.0022 (0.0169)	-0.0300 (0.0041)	0.0421 (0.0082)	-0.0043 (0.0072)
YCS9	1999	7141	-0.0026 (0.0070)	-0.0381 (0.0186)	0.0360 (0.0228)	0.0126 (0.0068)	0.0024 (0.0142)	-0.0103 (0.0060)
YCS10	2001	6045	0.0007 (0.0064)	-0.0291 (0.0231)	0.0185 (0.0299)	-0.0183 (0.0042)	0.0317 (0.0155)	-0.0034 (0.0092)
					Sweep 3 (age 19)			
YCS2	1988	4559	0.0167 (0.0098)	-0.0252 (0.0142)	-0.0049 (0.0163)	0.0255 (0.0168)	-0.0081 (0.0164)	-0.0041 (0.0039)
YCS3	1989	4495	-0.0096 (0.0066)	-0.0245 (0.0147)	0.0184 (0.0175)	0.0288 (0.0174)	0.0014 (0.0156)	-0.0145 (0.0032)
YCS4	1991	4250	0.0046 (0.0096)	-0.0499 (0.0200)	0.0187 (0.0221)	-0.1226 (0.0133)	0.1569 (0.0193)	-0.0077 (0.0043)
YCS5	1993	6380	0.0005 (0.0087)	-0.0208 (0.0106)	-0.0575 (0.0186)	-0.0398 (0.0086)	0.1385 (0.0182)	-0.0208 (0.0047)
YCS6	1994	6459	0.0111 (0.0097)	-0.0457 (0.0181)	-0.0024 (0.0217)	-0.0280 (0.0099)	0.0881 (0.0182)	-0.0232 (0.0050)
YCS7[a]	1996	5990	0.0045 (0.0105)	-0.0071 (0.0183)	-0.0246 (0.0228)	-0.0423 (0.0097)	0.0833 (0.0190)	-0.0138 (0.0048)
YCS8[a]	1998	7070	0.0055 (0.0091)	-0.0324 (0.0165)	0.0426 (0.0241)	-0.0209 (0.0040)	0.0259 (0.0211)	-0.0207 (0.0075)
YCS9	2000	4637	-0.0050 (0.0091)	-0.0013 (0.0268)	-0.0133 (0.0333)	0.0078 (0.0150)	0.0197 (0.0244)	-0.0079 (0.0086)
YCS10	2002	4169	0.0014 (0.0127)	0.0172 (0.0331)	0.0239 (0.0385)	-0.0354 (0.0137)	0.0175 (0.0271)	-0.0245 (0.0087)

[a]Actually sweep 2, but equivalent to sweep 3 for all other cohorts.

Table 5: Multinomial logit of labour market states, girls' returns, Δ_g

Cohort	Year	N	Unemployment	Further education [1]	Further education [2]	Skilled employment	Unskilled employment	Youth training
					Sweep 1 (age 17)			
YCS2	1986	6988	-0.0130 (0.0087)	0.3102 (0.0125)	-0.3044 (0.0113)	0.0783 (0.0142)	-0.0664 (0.0124)	-0.0047 (0.0066)
YCS3	1987	5937	-0.0063 (0.0063)	0.3552 (0.0120)	-0.3525 (0.0120)	0.0638 (0.0140)	-0.0517 (0.0123)	-0.0086 (0.0068)
YCS4	1989	4465	-0.0094 (0.0044)	0.3884 (0.0145)	-0.3826 (0.0141)	0.0233 (0.0132)	-0.0269 (0.0090)	0.0071 (0.0089)
YCS5	1991	11180	-0.0269 (0.0082)	0.3637 (0.0112)	-0.3547 (0.0116)	-0.0028 (0.0067)	0.0293 (0.0118)	-0.0086 (0.0085)
YCS6	1992	16159	-0.0198 (0.0064)	0.4566 (0.0102)	-0.4307 (0.0100)	0.0020 (0.0046)	-0.0006 (0.0082)	-0.0075 (0.0076)
YCS7	1994	13511	-0.0275 (0.0060)	0.4916 (0.0121)	-0.4584 (0.0122)	0.0064 (0.0043)	0.0055 (0.0088)	-0.0175 (0.0063)
YCS8	1996	11102	-0.0272 (0.0060)	0.5307 (0.0147)	-0.4986 (0.0147)	0.0012 (0.0029)	-0.0052 (0.0078)	-0.0008 (0.0056)
YCS9	1998	10673	-0.0179 (0.0059)	0.5122 (0.0160)	-0.4751 (0.0158)	-0.0027 (0.0031)	-0.0103 (0.0092)	-0.0061 (0.0055)
YCS10	2000	7840	-0.0221 (0.0061)	0.5234 (0.0198)	-0.4835 (0.0199)	0.0069 (0.0039)	-0.0127 (0.0098)	-0.0119 (0.0067)
YCS11	2002	8433	-0.0161 (0.0061)	0.4917 (0.0196)	-0.4480 (0.0198)	-0.0055 (0.0033)	-0.0126 (0.0092)	-0.0095 (0.0057)
					Sweep 2 (age 18)			
YCS2	1987	5761	-0.0188 (0.0125)	0.2212 (0.0147)	-0.2054 (0.0157)	0.1076 (0.0223)	-0.0805 (0.0176)	-0.0240 (0.0134)
YCS3	1988	5923	-0.0111 (0.0102)	0.2178 (0.0146)	-0.1985 (0.0151)	0.0861 (0.0204)	-0.0808 (0.0164)	-0.0135 (0.0119)
YCS4	1990	4439	-0.0073 (0.0374)	0.2720 (0.0427)	-0.2541 (0.0335)	0.0294 (0.0361)	-0.0463 (0.0192)	0.0063 (0.0191)
YCS5	1992	8466	-0.0289 (0.0097)	0.3078 (0.0146)	-0.2538 (0.0163)	0.0092 (0.0083)	-0.0129 (0.0154)	-0.0213 (0.0108)
YCS6	1993	8590	-0.0233 (0.0087)	0.2817 (0.0142)	-0.2378 (0.0163)	0.0029 (0.0071)	-0.0055 (0.0115)	-0.0180 (0.0106)
YCS9	1999	7141	-0.0246 (0.0071)	0.4451 (0.0191)	-0.3809 (0.0201)	0.0034 (0.0073)	-0.0320 (0.0145)	-0.0109 (0.0073)
YCS10	2001	6045	-0.0181 (0.0064)	0.4840 (0.0250)	-0.3876 (0.0277)	-0.0040 (0.0048)	-0.0644 (0.0154)	-0.0100 (0.0093)
					Sweep 3 (age 19)			
YCS2	1988	4559	-0.0114 (0.0119)	0.1016 (0.0136)	-0.1006 (0.0140)	0.1346 (0.0214)	-0.1166 (0.0188)	-0.0076 (0.0068)
YCS3	1989	4495	0.0010 (0.0095)	0.1190 (0.0147)	-0.1215 (0.0152)	0.1267 (0.0226)	-0.1208 (0.0179)	-0.0044 (0.0062)
YCS4	1991	4250	-0.0076 (0.0111)	0.1319 (0.0190)	-0.1261 (0.0187)	0.0104 (0.0185)	0.0037 (0.0236)	-0.0123 (0.0065)
YCS5	1993	6380	-0.0032 (0.0101)	0.2386 (0.0190)	-0.2341 (0.0194)	0.0196 (0.0118)	-0.0216 (0.0194)	0.0008 (0.0086)
YCS6	1994	6459	-0.0216 (0.0097)	0.2381 (0.0175)	-0.2182 (0.0179)	0.0186 (0.0124)	-0.0156 (0.0188)	-0.0013 (0.0073)
YCS7[a]	1996	5990	-0.0323 (0.0104)	0.2579 (0.0190)	-0.2108 (0.0186)	0.0016 (0.0111)	-0.0115 (0.0193)	-0.0049 (0.0066)
YCS8[a]	1998	7070	-0.0250 (0.0082)	0.3164 (0.0199)	-0.2638 (0.0199)	0.0015 (0.0053)	-0.0368 (0.0203)	0.0078 (0.0083)
YCS9	2000	4637	-0.0147 (0.0087)	0.2980 (0.0267)	-0.2665 (0.0268)	0.0088 (0.0144)	-0.0155 (0.0216)	-0.0102 (0.0095)
YCS10	2002	4169	-0.0384 (0.0116)	0.2620 (0.0313)	-0.2400 (0.0325)	0.0132 (0.0146)	-0.0070 (0.0250)	0.0102 (0.0096)

[a]Actually sweep 2, but equivalent to sweep 3 for all other cohorts.

Table 6: Multinomial logit of labour market states, boys' returns, Δ_b

Cohort	Year	N	Unemployment	Further education [1]	Further education [2]	Skilled employment	Unskilled employment	Youth training
					Sweep 1 (age 17)			
YCS2	1986	6988	-0.0018 (0.0081)	0.3184 (0.0084)	-0.3166 (0.0068)	0.0596 (0.0137)	-0.0467 (0.0110)	-0.0129 (0.0056)
YCS3	1987	5937	-0.0041 (0.0088)	0.3602 (0.0099)	-0.3469 (0.0073)	0.0703 (0.0155)	-0.0631 (0.0102)	-0.0164 (0.0098)
YCS4	1989	4465	-0.0122 (0.0037)	0.3763 (0.0083)	-0.3687 (0.0065)	0.0211 (0.0113)	-0.0245 (0.0078)	0.0081 (0.0095)
YCS5	1991	11180	-0.0275 (0.0077)	0.3647 (0.0105)	-0.3354 (0.0094)	-0.0053 (0.0094)	-0.0010 (0.0104)	0.0045 (0.0099)
YCS6	1992	16159	-0.0265 (0.0050)	0.4765 (0.0109)	-0.4411 (0.0092)	0.0122 (0.0065)	-0.0018 (0.0070)	-0.0193 (0.0067)
YCS7	1994	13511	-0.0214 (0.0050)	0.5135 (0.0115)	-0.4745 (0.0102)	0.0121 (0.0057)	-0.0150 (0.0059)	-0.0146 (0.0055)
YCS8	1996	11102	-0.0318 (0.0043)	0.5646 (0.0142)	-0.5211 (0.0117)	-0.0007 (0.0042)	-0.0009 (0.0071)	-0.0102 (0.0054)
YCS9	1998	10673	-0.0234 (0.0046)	0.5676 (0.0152)	-0.5042 (0.0124)	-0.0046 (0.0046)	-0.0296 (0.0082)	-0.0058 (0.0050)
YCS10	2000	7840	-0.0245 (0.0036)	0.5251 (0.0187)	-0.4824 (0.0156)	0.0048 (0.0053)	-0.0192 (0.0080)	-0.0038 (0.0057)
YCS11	2002	8433	-0.0206 (0.0044)	0.4853 (0.0137)	-0.4153 (0.0102)	-0.0038 (0.0050)	-0.0302 (0.0082)	-0.0154 (0.0048)
					Sweep 2 (age 18)			
YCS2	1987	5761	-0.0133 (0.0126)	0.1876 (0.0095)	-0.1823 (0.0078)	0.1065 (0.0224)	-0.0892 (0.0164)	-0.0092 (0.0136)
YCS3	1988	5923	-0.0061 (0.0076)	0.1859 (0.0097)	-0.1630 (0.0081)	0.0847 (0.0191)	-0.0990 (0.0128)	-0.0025 (0.0121)
YCS4	1990	4439	0.0037 (0.0399)	0.2132 (0.0362)	-0.1958 (0.0111)	0.0192 (0.0352)	-0.0411 (0.0146)	0.0009 (0.0250)
YCS5	1992	8466	-0.0223 (0.0092)	0.2616 (0.0122)	-0.2415 (0.0119)	-0.0066 (0.0105)	-0.0179 (0.0118)	0.0267 (0.0120)
YCS6	1993	8590	-0.0027 (0.0090)	0.2633 (0.0184)	-0.2184 (0.0206)	0.0081 (0.0097)	-0.0341 (0.0082)	-0.0163 (0.0115)
YCS9	1999	7141	-0.0173 (0.0057)	0.4043 (0.0187)	-0.3570 (0.0153)	-0.0019 (0.0057)	-0.0242 (0.0124)	-0.0040 (0.0066)
YCS10	2001	6045	-0.0197 (0.0038)	0.4606 (0.0207)	-0.3728 (0.0205)	-0.0105 (0.0058)	-0.0521 (0.0090)	-0.0056 (0.0073)
					Sweep 3 (age 19)			
YCS2	1988	4559	0.0173 (0.0135)	0.1016 (0.0118)	-0.1236 (0.0069)	0.1101 (0.0228)	-0.0964 (0.0192)	-0.0090 (0.0070)
YCS3	1989	4495	-0.0105 (0.0101)	0.1170 (0.0143)	-0.1116 (0.0095)	0.1210 (0.0253)	-0.1171 (0.0165)	0.0013 (0.0132)
YCS4	1991	4250	0.0184 (0.0149)	0.0936 (0.0161)	-0.1149 (0.0110)	0.0213 (0.0251)	-0.0159 (0.0234)	-0.0026 (0.0093)
YCS5	1993	6380	0.0165 (0.0135)	0.2464 (0.0229)	-0.3117 (0.0185)	0.0010 (0.0154)	0.0294 (0.0204)	0.0184 (0.0128)
YCS6	1994	6459	0.0100 (0.0115)	0.2136 (0.0166)	-0.2141 (0.0116)	0.0062 (0.0146)	-0.0036 (0.0182)	-0.0121 (0.0092)
YCS7[a]	1996	5990	-0.0262 (0.0091)	0.2825 (0.0211)	-0.2431 (0.0139)	0.0050 (0.0150)	-0.0150 (0.0188)	-0.0032 (0.0075)
YCS8[a]	1998	7070	-0.0197 (0.0065)	0.3004 (0.0226)	-0.2321 (0.0126)	-0.0135 (0.0062)	-0.0326 (0.0204)	-0.0025 (0.0091)
YCS9	2000	4637	-0.0109 (0.0083)	0.2932 (0.0281)	-0.2848 (0.0176)	0.0247 (0.0166)	-0.0173 (0.0228)	-0.0049 (0.0088)
YCS10	2002	4169	-0.0131 (0.0103)	0.3073 (0.0248)	-0.2356 (0.0126)	-0.0152 (0.0158)	-0.0452 (0.0233)	0.0018 (0.0105)

[a]Actually sweep 2, but equivalent to sweep 3 for all other cohorts.

Table 7: Multinomial logit of labour market states, gender gap, γ

Cohort	Year	N	Unemployment	Further education [1]	Further education [2]	Skilled employment	Unskilled employment	Youth training
					Sweep 1 (age 17)			
YCS2	1986	6988	-0.0112 (0.0123)	-0.0082 (0.0150)	0.0122 (0.0140)	0.0188 (0.0194)	-0.0197 (0.0172)	0.0082 (0.0084)
YCS3	1987	5937	-0.0021 (0.0109)	-0.0050 (0.0162)	-0.0056 (0.0146)	-0.0065 (0.0202)	0.0114 (0.0164)	0.0078 (0.0114)
YCS4	1989	4465	0.0029 (0.0026)	0.0122 (0.0102)	-0.0139 (0.0108)	0.0023 (0.0053)	-0.0024 (0.0034)	-0.0010 (0.0046)
YCS5	1991	11180	0.0006 (0.0114)	-0.0010 (0.0149)	-0.0194 (0.0152)	0.0025 (0.0113)	0.0304 (0.0156)	-0.0131 (0.0130)
YCS6	1992	16159	0.0067 (0.0083)	-0.0199 (0.0137)	0.0104 (0.0134)	-0.0102 (0.0079)	0.0011 (0.0106)	0.0118 (0.0100)
YCS7	1994	13511	-0.0061 (0.0082)	-0.0219 (0.0151)	0.0161 (0.0155)	-0.0056 (0.0068)	0.0205 (0.0103)	-0.0030 (0.0083)
YCS8	1996	11102	0.0046 (0.0078)	-0.0339 (0.0171)	0.0224 (0.0177)	0.0019 (0.0049)	-0.0044 (0.0103)	0.0094 (0.0077)
YCS9	1998	10673	0.0055 (0.0077)	-0.0554 (0.0176)	0.0291 (0.0183)	0.0018 (0.0055)	0.0193 (0.0121)	-0.0003 (0.0075)
YCS10	2000	7840	0.0024 (0.0074)	-0.0017 (0.0230)	-0.0012 (0.0244)	0.0021 (0.0057)	0.0066 (0.0124)	-0.0081 (0.0089)
YCS11	2002	8433	0.0044 (0.0080)	0.0063 (0.0232)	-0.0326 (0.0237)	-0.0017 (0.0062)	0.0176 (0.0124)	0.0059 (0.0076)
					Sweep 2 (age 18)			
YCS2	1987	5761	-0.0055 (0.0178)	0.0336 (0.0180)	-0.0231 (0.0188)	0.0011 (0.0313)	0.0087 (0.0244)	-0.0148 (0.0197)
YCS3	1988	5923	-0.0050 (0.0134)	0.0319 (0.0183)	-0.0356 (0.0185)	0.0015 (0.0279)	0.0182 (0.0214)	-0.0110 (0.0176)
YCS4	1990	4439	-0.0110 (0.0731)	0.0588 (0.0527)	-0.0583 (0.0375)	0.0102 (0.0521)	-0.0051 (0.0264)	0.0054 (0.0313)
YCS5	1992	8466	-0.0066 (0.0139)	0.0462 (0.0193)	-0.0123 (0.0212)	0.0158 (0.0132)	0.0050 (0.0200)	-0.0480 (0.0174)
YCS6	1993	8590	-0.0206 (0.0129)	0.0184 (0.0195)	-0.0194 (0.0233)	-0.0053 (0.0119)	0.0286 (0.0144)	-0.0017 (0.0158)
YCS9	1999	7141	-0.0073 (0.0098)	0.0407 (0.0230)	-0.0239 (0.0249)	0.0053 (0.0091)	-0.0078 (0.0193)	-0.0070 (0.0100)
YCS10	2001	6045	0.0016 (0.0080)	0.0234 (0.0278)	-0.0148 (0.0332)	0.0065 (0.0077)	-0.0123 (0.0189)	-0.0043 (0.0122)
					Sweep 3 (age 19)			
YCS2	1988	4559	-0.0287 (0.0173)	0.0000 (0.0170)	0.0229 (0.0167)	0.0245 (0.0297)	-0.0201 (0.0274)	0.0014 (0.0098)
YCS3	1989	4495	0.0115 (0.0128)	0.0021 (0.0186)	-0.0099 (0.0192)	0.0057 (0.0316)	-0.0037 (0.0248)	-0.0057 (0.0140)
YCS4	1991	4250	-0.0260 (0.0177)	0.0383 (0.0236)	-0.0112 (0.0236)	-0.0109 (0.0291)	0.0196 (0.0314)	-0.0097 (0.0111)
YCS5	1993	6380	-0.0197 (0.0153)	-0.0079 (0.0165)	0.0776 (0.0216)	0.0186 (0.0171)	-0.0510 (0.0258)	-0.0176 (0.0143)
YCS6	1994	6459	-0.0316 (0.0149)	0.0245 (0.0220)	-0.0041 (0.0237)	0.0124 (0.0169)	-0.0119 (0.0246)	0.0108 (0.0110)
YCS7[a]	1996	5990	-0.0061 (0.0140)	-0.0246 (0.0231)	0.0323 (0.0246)	-0.0034 (0.0172)	0.0035 (0.0250)	-0.0017 (0.0094)
YCS8[a]	1998	7070	-0.0053 (0.0108)	0.0160 (0.0207)	-0.0318 (0.0248)	0.0150 (0.0076)	-0.0042 (0.0257)	0.0103 (0.0112)
YCS9	2000	4637	-0.0037 (0.0122)	0.0048 (0.0314)	0.0183 (0.0348)	-0.0159 (0.0200)	0.0018 (0.0292)	-0.0053 (0.0126)
YCS10	2002	4169	-0.0253 (0.0173)	-0.0453 (0.0357)	-0.0043 (0.0380)	0.0284 (0.0190)	0.0382 (0.0318)	0.0084 (0.0132)

[a]Actually sweep 2, but equivalent to sweep 3 for all other cohorts.

Table 8: A-levels, gender gap, Δ_A

		2+ Passes					Points Score[a]	
Cohort	Year	Published[b]	N	Raw	N	Conditional	Raw	Conditional
YCS2	1987		1979	-0.038 (0.018)	1196	-0.028 (0.025)	-0.986 (0.221)	-0.779 (0.296)
YCS3	1988		1727	-0.036 (0.018)	1069	0.004 (0.023)	-1.177 (0.242)	-1.092 (0.315)
YCS4	1990		1958	-0.027 (0.016)	1312	-0.004 (0.016)	-1.198 (0.232)	-1.059 (0.282)
YCS5	1992		2449	-0.006 (0.015)	2208	-0.012 (0.014)	-0.848 (0.201)	-0.864 (0.207)
YCS6	1993		2792	0.035 (0.013)	2631	0.044 (0.014)	-0.457 (0.202)	-0.107 (0.212)
	1994	0.012						
YCS7	1995	0.013	2206	-0.030 (0.015)	1816	-0.037 (0.016)	-0.819 (0.227)	-1.046 (0.257)
	1996	0.015						
YCS8	1997	0.018	3707	-0.005 (0.011)	2983	-0.017 (0.012)	-0.490 (0.177)	-0.322 (0.202)
	1998	0.024						
YCS9	1999	0.021	2579	0.019 (0.012)	1419	0.001 (0.013)	0.418 (0.214)	0.006 (0.297)
	2000	0.026						
YCS10	2001	0.023	2926	0.010 (0.011)	2308	0.007 (0.010)	0.300 (0.200)	0.387 (0.238)
	2002	0.030						
	2003	0.033						
	2004	0.027						

[a]Grade A = 5, grade B = 4, ..., grade E = 1.
[b]Taken from the DfES website

Table 9: NVQ (sweep 3), gender gap, Δ_N

Cohort	Year	N	Level 1	Level 2	Level 3
YCS2	1987	4376	-0.0493 (0.0111)	0.0904 (0.0175)	-0.0411 (0.0123)
YCS3	1988	4262	-0.0229 (0.0102)	0.0693 (0.0173)	-0.0464 (0.0118)
YCS4	1990	4100	-0.0140 (0.0093)	0.0181 (0.0165)	-0.0041 (0.0124)
YCS5	1992	5975	-0.0249 (0.0090)	0.0367 (0.0144)	-0.0118 (0.0119)
YCS6	1993	6512	-0.0132 (0.0084)	-0.0040 (0.0146)	0.0172 (0.0120)
YCS7[a]	1995	5385	-0.0355 (0.0091)	0.0222 (0.0169)	0.0133 (0.0138)
YCS8[a]	1997	6403	-0.0094 (0.0076)	-0.0068 (0.0146)	0.0162 (0.0117)
YCS9	1999	2883	-0.0096 (0.0103)	-0.0189 (0.0215)	0.0285 (0.0174)
YCS10	2001	4470	-0.0086 (0.0081)	-0.0264 (0.0163)	0.0350 (0.0139)

[a] Actually sweep 2, but equivalent to sweep 3 for all other cohorts.

Appendix A Conversion of academic and vocational qualifications to NVQs

NVQ level 5

1. higher degree

NVQ level 4

2. degree
3. diploma
4. teacher training
5. hnd/hnc
6. btec higher/level 4
7. rsa higher/level 4
8. nvq level 4

NVQ level 3

9. a-level, 2+
10. as-level, 4+
11. ond/onc
12. gnvq advanced
13. btec national/level 3
14. rsa advanced/level 3
15. c&g part 4
16. nvq level 3

NVQ level 2

17. a-level, 1
18. as-level, 2 or 3
19. gcse, 5+ a-c
20. gnvq intermediate
21. btec diploma/level 2
22. rsa diploma/level 2
23. c&g part 3
24. other advanced professional/vocational qualifications
25. nvq level 2

NVQ level 1

26. as-level, 1
27. gcse, 1-4 a-c, 1+ d-g
28. gnvq foundation
29. gnvq unknown
30. btec certificate/level 1
31. btec multilevel/unknown
32. rsa certificate/level 1
33. rsa multilevel/unknown
34. c&g part 2

35. c&g part 1
36. c&g multilevel/unknown
37. other non-advanced professional/vocational qualifications
38. other unknown professional/vocational qualifications
39. nvq level 1
40. nvq unknown
41. cpve
42. tvei
43. rsa vocational preparation/basic clerical procedures
44. city and guilds foundation/vocational preparation general
45. regional examining bodies

"gcse" = gcse/16+/o-level/cse/cee
"as-level" = as-level/oa-level/ao-level
"a-level" = a-level/s-level/international baccalaureate