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Where do I go and what should I do?
Routes through further education.

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ABSTRACT

This paper investigates the educational attainment of young people between the ages of sixteen and eighteen after having entered full-time post-compulsory education. In particular we focus on the educational attainment and labour market trajectory of 'underachievers': young people who have chosen to remain in full-time education at age sixteen, despite not gaining the widely recognised U.K. academic benchmark of five GCSE grades A*-C. Our results suggest that the best route to educational success for young people considered as of lower ability at age 16 is through the FE college where they catch-up with their 'more able' counterparts by age 18.

JEL classification: I21, J24

Key words: attainment, vocational education.

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I. INTRODUCTION

The UK witnessed a rapid increase in the proportion of 16 year-olds entering post-compulsory education from the 1980s to the mid 1990s, which increased from 41.7% in the academic year 1979/80 to 72.7% in 1993/4 (DfES 1994). The increase in the staying-on rate was largely the consequence of many government initiatives aimed at encouraging young people to increase their level of education. For example, policies such as the Education Reform Act (1988) introduced the new 'General Certificate of Secondary Education' (GCSE) qualification, which simultaneously replaced both the General Certificate of Education (GCE) and the Certificate of Secondary Education (CSE) qualifications, and thereby eradicated the distinction between young people with different levels of ability.[1] Entrants for the GCSE are assessed on their coursework along with examination performance rather than on their examination performance alone, this claimed by many to have increased the motivation to study, especially for females.[2] The introduction of pre-vocational and foundation courses, which have no academic entry requirements, mean that supply-side constraints in post-compulsory education have also been reduced.

However, the proportion of 16 year-olds entering post compulsory education has levelled off since the early 1990s, rising only minimally, from 73.2% in 1993/94 to 73.8% in 2004 (DfES 2006a). The UK staying-on rate for 16 year olds, at around 70%, is still twenty percentage points lower than our European competitors who all have staying-on rates of over 90% (McIntosh, 2001). This is a cause for concern for the British government, which has set a target of 50% participation of young people into higher education, because to achieve this target the staying-on rate at age 16 needs to increase beyond 70%. The UK lags well behind its international competitors in the proportion of its young adults achieving National Vocational Qualification

(NVQ) levels 2 and 3 (DfES 2006b)[3]. However, the large increase in participation rates in higher education during the 1990s has been accompanied only by a limited increase in access to tertiary education by the lowest socio-economic groups. Both during the phase of rapid growth in post-16 participation and during its subsequent flattening-out, the share of students from socio-economic groups IV and V in *higher* education remained disappointingly low, at a constant level of about 6% between 1980 and 2001 (Greenaway and Haynes, 2001, Figure 3 p F155). However, it seems likely that *further education* (FE) colleges offer a more promising route for improving the educational performance of lower socio-economic groups: Foster (2005) states that 29% of students in further education colleges come from relatively disadvantaged areas. In this paper we assess the determinants of progression in educational achievement between ages 16 and 18, but with a particular focus on the relative efficacy of different strata of the educational system in achieving progression by underachievers. In particular, we compare the effectiveness of further education, higher education and other forms of tertiary education in enhancing the performance of those 16 year olds who are from low socio-economic groups and those who are low achievers (gaining less than 5 grades A*-C at GCSE).

The paper is organised as follows. In the next section we discuss the theoretical framework and highlight the main factors found to influence educational attainment. In section III we discuss our data and econometric methods. We use both ordered logit regressions and a probit model, with sample selection, to analyse those factors that may influence the educational level attained at the age of 18. In section IV we present and discuss our findings. Section V concludes.

II. THEORY AND LITERATURE REVIEW

The theoretical framework that best explains the decision to invest in education is the human capital model (Becker 1964). According to this approach, an individual will invest in education as long as the discounted expected returns to education to the individual are greater than or equal to the costs of the investment. The return to the investment in education is increased lifetime earnings. The cost of education is the earnings foregone whilst studying and the direct costs of tuition and learning materials. The theory also states that there is a consumption benefit from education. We consider that it is this consumption benefit that encourages students in post-compulsory education to succeed in their studies. For example, imagine that a student in compulsory schooling follows the school curriculum. Not all elements of the curriculum may appeal to her and therefore a mismatch occurs between this student and her courses within the curriculum. This may lead to a lack of interest in the subjects and hence to poor examination results, which do not reflect her true ability. Post-compulsory education allows the student to follow a course of her choice, either academic or vocational and in the subject area where she receives her highest consumption benefit. The student is more likely to succeed in this scenario.

Whilst there is a considerable literature on educational attainment, most studies consider the determinants of academic success during compulsory schooling only, not post-compulsory education. The literature on the determinants of academic success at school is wide and studies have been conducted in many differing areas, for example, the effect of the individual's family background, their school background, including the effects of class size, peer groups and competition between schools. Haveman and Wolfe (1995) give an excellent overview of studies of children's

achievements. Here we highlight the main determinants that have been found in the literature.

Higher prior attainment is positively correlated with a higher current level of attainment (Haveman and Wolfe 1995; Mcintosh 2001). Prior attainment is likely to reflect innate ability but may also pick up unobservables, such as motivation and attitudes to education. Lauer (2003), using French and German data, finds a strong correlation between prior attainment and the decision to continue in secondary education. Young people with parents at the top of the socio-economic ranking are found to have high levels of attainment (Carpenter and Hayden 1987; Dolton, Makepeace, Hutton and Audas 1999; Bradley and Taylor 2000). However, this relationship is not as straightforward as it may appear. For example, Currie and Thomas (1999) interact socio-economic status with reading test scores at age 7 and find that an individual from a high socio-economic background with a low test score fares less favourably in terms of educational attainment and labour market outcomes at age 33 than somebody with the same test score but from a lower socio-economic background. Socio-economic status may indicate the level of income in the family or the family's taste for education. Ermisch and Francesconi (2001) find that young adults whose parents are in the bottom quartile of the family income distribution have lower educational attainments than those young adults whose parents are in a higher income quartile. However, Blau (1999) finds that permanent income contributes only a small part toward educational attainment and that family characteristics are more important. Particularly relevant for our story, Lauer (2003) finds that the influence of parental socio-economic status on attainment is not as strong for post-compulsory education as it is for compulsory education.

Some authors have found that parents' gender influences the attainment of their children in differing ways. "The human capital of the mother is usually more closely related to the attainment of the child than is that of the father" (Haveman and Wolfe 1995 p.1855). These authors and others have suggested that the importance of mother's education level may reflect the fact that the mother would be the more likely of the parents to be at home with the child, and helping with homework especially when the child is young. On the other hand Behrman and Rosenweig (2002) argue that a highly educated mother is more likely to continue her career, thereby reducing the time spent in human capital formation for her children. Therefore the positive effect on educational attainment from having a highly educated mother is largely due to the inheritance of ability.

School type and peer groups have also been found to have an influence on attainment levels. However, there is potential endogeneity of peer effects that can occur if parents choose schools on the basis of the quality of the peer group in a school (Bradley and Taylor 2000). The influence of school type will be strong where schools adopt a selection policy. Attendance at a grammar or independent school compared to a comprehensive school is found to increase the probability of gaining good results in GCSE examinations and also increase the probability of staying on (Micklewright 1989; Rice 1999). Staying-on rates for academic courses are also increased where an individual attends a voluntary controlled or voluntary aided school, many of which are single sex schools (Cheng 1995; Andrews and Bradley 1997). Hanushek (2003) provides an overview of problems associated with attempts to identify the effect of schools on individual educational attainment.

Labour market conditions have been considered in the context of modelling participation in post-compulsory education (Rice 1999; Bradley and Taylor 2000:

Clark 2002). Clark (2002) finds the unemployment rate to have a large influence only on the choice of course, academic or vocational, but not on the decision to stay on.

III. ECONOMETRIC METHODS AND DATA

III.1 The data

The data used in this analysis are the Youth Cohort Surveys (YCS) for England and Wales, cohorts 2 to 6. Information from all three sweeps of each cohort is utilized in the analysis, which covers the period from 1986 to 1994. The dataset is identical to that used by Bradley and Lenton (2006) in their analysis of dropping out from post-compulsory education and therefore traces the outcomes for those students who remained in education. The YCS is a panel survey that monitors the educational and labour market decisions of young people as they make the transition from compulsory education at age 16 through to age 19. There are three sweeps for each cohort.[4] The first questionnaire (or sweep) of each cohort is posted in the spring following the end of the young person's compulsory schooling. The same sample of young people is then contacted on two subsequent occasions at intervals of one year. Thus the respondents in each sweep provide a diary of their labour market status over the previous twelve months and their current educational qualifications. The Youth Cohort Surveys also contain personal and demographic information, such as family structure, ethnic background and the type of education institution attended. The dependent variable in our models of educational attainment at age 18 is the National Vocational Qualification (NVQ) equivalence level reached by the individual student and is derived from the information provided on the qualifications gained since the completion of compulsory schooling at age 16. All qualifications gained, whether academic or vocational, can be classified into a NVQ level, thus eliminating potential

bias from subjective judgmental ranking of different qualifications held. For example, holding 5 GCSEs at grades A-C is equivalent to NVQ level 2. The NVQ level ranges from level zero up to level five, the latter referring to a postgraduate qualification. The banding of all qualifications into the appropriate NVQ level equivalence is given in Table A1 in the Appendix.[5]

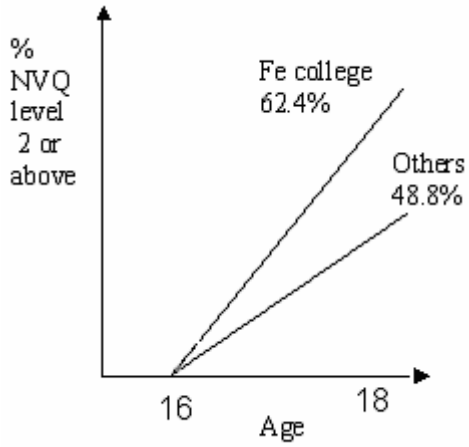
There are 15441 females and 11352 males in our data set at age 18. Tables 1 and 2 report the cross-tabulations of independent variables with the dependent variable for females and males, respectively. The majority of young people who gained a NVQ level 2 equivalent at age 16 gain a NVQ level 3 equivalent by age 18 (69%). The raw data reveals that the proportion of males who attain a qualification equivalent to NVQ level 3 by age 18 is reduced dramatically from 69% to only 21% for those young people whose prior attainment at age 16 was a NVQ level 1. Nearly 8% of males and 7% of females in our sample fall into NVQ level 0, i.e. gaining no qualification at age 16, and of these 28% of each gender do not gain a qualification by age 18. The raw data reveals that over 52% of all individuals entering full-time post-compulsory education gain an NVQ level 3 by age 18. The individuals of particular interest in this paper are those who are classified as being of low ability at age 16, that is those who have not gained a NVQ level 2 at age 16[6], yet who subsequently choose to remain in education and attain at least a NVQ level 2 by age 18. The raw data indicates that of those with no NVQ level at age 16 who remain in education, some 35% of males and 41% of females attain at least a NVQ level 2 at age 18. The proportion of our low ability group present in each of the socio-economic classifications are as reported in the staying-on literature (Lenton 2005; Rice 1987; Whitfield and Wilson 1990), i.e. a larger proportion of these students are from families classified as being lower down the socio-economic rankings.[7] An inspection

of the level of attainment at age 18 of our low ability group for their given route into post-compulsory education is demonstrated in figure 1. The raw data suggests that these young people benefit most from attending the FE college.

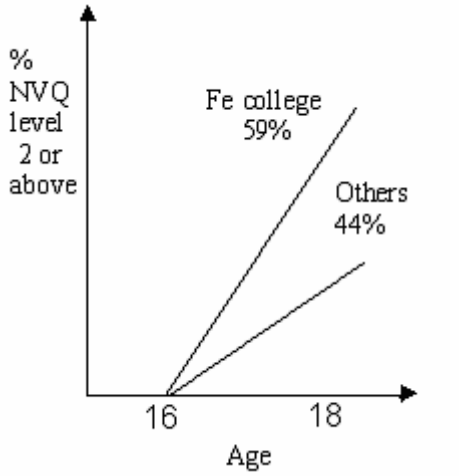
Figure 1. Low ability at 16: Educational progression between 16 and 18, by gender

(a) Males

All Low ability

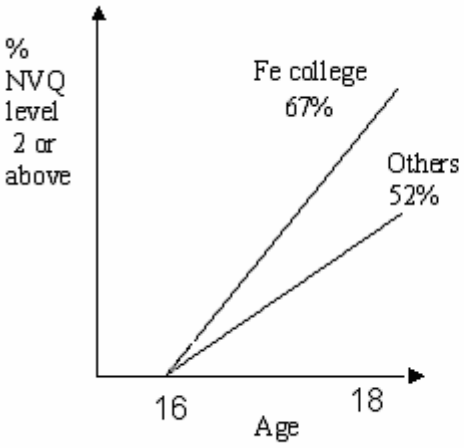


Low ability, Social class D and E only

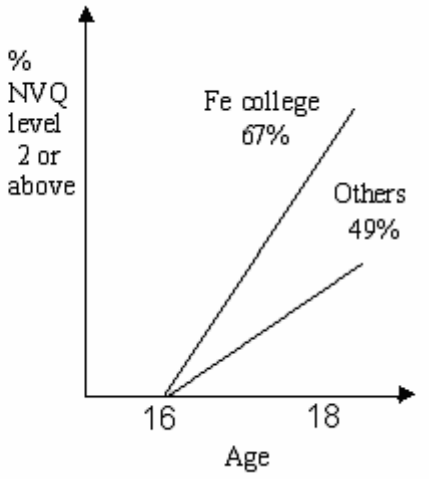


(b) Females

All Low ability



Low ability, Social class D and E only



For both genders there is a much higher unconditional probability of reaching NVQ level 2 where they attend the FE college compared to staying-on at school. Furthermore, this apparent benefit also applies to those of lower ability and from the

lower socio-economic classes. In this paper we investigate whether the benefit from college attendance highlighted in the raw data is still significant once factors that may influence attainment at age 18 are taken into account.

III.2 Econometric Method

We estimate ordered logit models of attainment at age 18. The probability of observing any given category is given as follows:

$$\text{Prob}\ (y = J) = 1 - \mathbf{\Lambda}(\mu_{J-1} - \boldsymbol{\beta}'\mathbf{x}) \qquad (1)$$

where $\mathbf{\Lambda}$ represents the cumulative logistic distribution.

Parameters are obtained using maximum likelihood estimation.

The likelihood function can be written as:

$$L = \prod_{i=1}^{n} \prod_{j=1}^{J} \left[\mathbf{\Lambda}(\mu_j - \boldsymbol{\beta}'\mathbf{x_i}) - \mathbf{\Lambda}(\mu_{j-1} - \boldsymbol{\beta}'\mathbf{x_i})\right]^{y_{ij}} \qquad (2)$$

Our dependent variable is the highest National Vocational Qualification level gained by an individual at age 18. All academic and vocational qualifications can be classified into one of five categories (The banding of these qualifications is given in the appendix). By the age of 18 young people in our data will fall into one of the first four categories[8]. Therefore we define $J + 1 = 4$ educational attainment levels as follows:

No NVQ level ($y = 0$)	$J = 0$
NVQ level 1 ($y = 1$)	$J = 1$
NVQ level 2 ($y = 2$)	$J = 2$
NVQ level 3+ ($y = 3$)	$J = 3$

Our explanatory variables are given as Y = *J* = *f* (prior educational attainment, personal characteristics, family background, socio-economic background, housing tenure, educational institution, course selection). Our preferred measure of prior educational attainment is the NVQ level equivalent gained at the end of compulsory education, at age 16. A measure of the local unemployment rate in the April prior to formal academic examinations is included in the model to examine whether young people are influenced by the local labour market conditions at age 18.

The estimates of $\boldsymbol{\beta}$ from the ordered logit models are not easy to interpret. The model assumes that the effect on the odds of response below category *j* is the same for all *j*. Hence these coefficients are logged odds of the probability of being observed in category *j* compared with categories below. Therefore we follow Greene (2000) and calculate the marginal effects. The marginal effects show the change in the probability for each outcome, *j*, for a change in a given characteristic, $\boldsymbol{x}_i$, when compared to the base group. We estimate separate models for males and females in order to identify any differences by gender.

The possibility of attrition bias in our data has been investigated in a previous paper (Bradley and Lenton 2003) where those individuals from the YCS who enter post-compulsory education were considered. The results are at least suggestive that attrition should not bias our estimates.

There is also the possibility of ability bias in our data because the individuals who attain good grades at age 16 will be most likely to achieve good results at age 18. To check the robustness of our results we estimate a probit model with sample selection (Van de Ven and Van Praag 1981):

$$y^*_j = xj\boldsymbol{\beta} + u_{1j} \qquad (3)$$

where the dependent variable in the selection equation, y*, is defined as not having gained 5 A*-C grades at GCSE when aged 16. x is a vector of personal and family background characteristics. The dependent variable in the probit equation is constructed as the individual having reached a higher NVQ level by age 18 and having reached at least a NVQ level 2. The dependent variable for observation j in the probit model is observed only if:

$$y_j^{select} = (z_j \gamma + u_{2j} > 0) \qquad (4)$$

The model is identified by the inclusion in the selection equation of the type of school attended at age 16[9]. For ease of interpretation we compute the marginal effects of the model, which reveal the effect on achievement at age 18 after the correction for ability.

IV. RESULTS

The marginal effects for attainment at age 18 are reported in Table 3 and Table 4 for all females and all males, respectively.

As we expect from our ability measure, young people who gained a NVQ level 2 at age 16 are most likely to gain NVQ level 3 by age 18. However, our results also reveal that those individuals who have only NVQ level 1 at age 16 but who choose to remain in education are most likely to reach NVQ level 3 compared to level 2 by age 18. These results are all highly significant and indicate that *young people within the FE system who are considered as of lower ability at age 16 can and do catch-up with their 'more able' counterparts by age 18.* Overall, the strong positive and significant marginal effects from belonging to an ethnic group found in studies of attainment at school (Haveman and Wolfe 1995) have disappeared. In fact these effects are negative by age 18, which suggests the catch-up of whites with non-whites.

The marginal effects on the type of course taken reveal that females are as likely to gain a NVQ level 3 by a vocational route as an academic route. Males are most likely to gain a NVQ level 3 by the academic route. However, when we include the interaction term between FE college and course type we find significantly large effects for both genders on attaining the highest level where the individual attends a college and takes a vocational course. In fact the interaction shows that for males, they are now more likely to attain the highest level at the FE college. The estimates clearly reveal that taking any course at a FE college or independent/grammar school sixth form increases the probability of attaining a NVQ level 3 compared to taking a course at state school.

It is interesting to note that the strong influences from most of the family background variables that are found in many studies of attainment at 16 (Ermisch and Francesconi (2001); Dolton, Makepeace, Hutton and Audas 1999; Bradley and Taylor 2000) become insignificant for males at age 18 once the type of course taken at 18 is controlled for. This result, as previously noted, concurs with that of Lauer (2003) who finds the influence from parental socio-economic status on attainment is greatly weakened in models of post-compulsory educational attainment. By contrast to males, females with professional parents and parents in skilled non-manual occupations are most likely to achieve a high NVQ level. Females appear to be influenced by the socioeconomic status of their mother more than that of their father. The finding of Haveman and Wolfe (1995 p1855) that the mother's human capital is more closely related to the attainment of the child than is that of the father, we therefore find true only for females. These results are robust to estimation of the ordered logit models without the course type dummies (the results are not reproduced here but are available from the author on request). Attainment at age 18 is, however, reduced by living in

social housing[10] and by the local unemployment rate for males as well as females. Thus although parental occupation matters for females only, the prevailing social environment matters for both genders.

We now turn to the focus of this paper, the educational attainment and the labour market outcome at age 18 of individuals who were considered of low ability at age 16. The marginal effects of educational attainment for both genders are reported in Table 5. We report only the marginal effects for NVQ levels 2 and level 3.[11] For males, we find positive marginal effects on gaining a NVQ level 2 or level 3 of taking either higher academic and higher vocational courses whilst for females we find positive marginal effects for all vocational courses when compared to low level academic courses, which suggests that low-achieving females at age 16 gain significantly from taking vocational subjects. Comparing their low prior achievement to their subsequent achievement in post-compulsory education begs the question: what has caused this transition? Is it the sudden realization that they need qualifications to obtain a good job in the labour market now facing them or has the change of institution made a difference? For both genders there are significant and strong positive effects on attaining a NVQ level 2 or 3 where they attend a FE college compared to continuing their education at school. Thus it appears that there is a definite advantage to be gained by these students from attending a FE college as highlighted in the raw data. Indeed, we are able in our data to observe these young people in their destination at age 18 and 19 after 2 years post compulsory education. Table 6 shows the proportion of young people in each labour market outcome after attending either a school or FE college for their post-compulsory education. Clearly, the unconditional estimates reveal that both genders benefit from attendance in college, with college students being the most likely to be employed, the least likely to be unemployed and more

importantly from the point of government policy initiatives to widen access to education, more likely to enter into higher education. This is especially true for males, of whom 11% of FE college students entered higher education compared to 7% from school. We are able to investigate this further by including an interaction term to capture the course taken at the FE college, which reveals that there are additional gains to attending a FE college where the course taken is vocational rather than academic.

In order to check the robustness of our findings we estimate a model that takes into account the possible selection bias in our results by individuals of higher ability at age 16. We estimate separate models for each gender. The marginal effects of these models are presented in Table 7. Likelihood ratio tests of these models inform us that the two equations are not independent and so our selection models are preferred. However, the marginal effects are in complete accord with our previous model. It is apparent that at age 18 young people of low ability are not now influenced by their parental background. The selection model reveals that the influence of parental background is significant only during compulsory schooling. Interestingly, for young people of higher ability the influence from parental background is still strong and significant.[12] What is absolutely clear here is the benefit to these young people of attending the FE college, which concurs with the unconditional estimates in our raw data, demonstrated in figure 1. The benefit of attending the FE college appears to be especially strong for males, who enjoy a 12 percentage point increase in the probability of achievement if they attend the local college compared to their school and a further 13 percentage points where they undertake a higher vocational course. Females too increase their probability of reaching NVQ level 2 by attendance at the FE college, particularly where they undertake a lower vocational course. It is beyond

the scope of this analysis to be able to ascertain why the FE college is so successful in transforming the 'underachievers' at age 16 into achievers at age 18 but the evidence is clear.

V. CONCLUDING COMMENTS

The strongest influence on attainment at age eighteen is prior attainment. However, we find evidence that young people who are considered as of lower ability at age 16 can and do catch-up with their 'more able' counterparts by age 18. The influence from family background on educational attainment diminishes by the age of 18, which suggests that young people's personal characteristics and aspirations have a greater influence on educational attainment as they near adulthood. The choice of institution is also relevant: in our sub sample of 'low ability' students we find significant benefits to attending a FE college, in that these students are more likely to either gain employment or to enter higher education courses than their counterparts who chose to continue their education at school. There are further gains in the probability of educational success where the FE college student takes a vocational rather than academic course. This may be due to the wide curriculum available to the prospective college student, which enables a better match of student and course than is offered at school.

Implications for policy

The government's target of a 50% participation rate in higher education can only be achieved if more young people stay on in education at age 16. Thus an increase in participation rates in post-compulsory education will lead to an increase in

participation rates in higher education. Given the British government's intention to increase access to higher education, it makes sense to encourage those young people considered as of lower ability at age 16 to enter post-compulsory education; our main finding is that this approach will be a particularly effective strategy for those attending further education colleges. Given that a large proportion of these young people are from lower down the socioeconomic ladder this will address the issue of equal access to higher education, in that a proportion of these young people will subsequently enrol for higher education courses. O'Connell *et al* (2004) have concluded that there has been a closing in relative social inequalities, partly due to the increased participation of the children of manual workers and the implication of our paper is that this trend can be accelerated if a higher proportion of low achievers at age 16 are directed through the FE college.

A full explanation of the reasons for this apparent advantage of FE colleges in the catch-up process lies beyond the scope of this paper; however, two factors which may be relevant are the existence in FE colleges of a wider curriculum (especially in relation to vocational options) and the relative absence in colleges of ostentatiously high-achieving students whose demeanour and articulateness discourage the self belief of previously low achievers. What is highly probable on the evidence of this paper is that FE colleges have a comparative advantage in persuading many 16 year-olds who had thought themselves to be on the educational scrap-heap that this lack of self-esteem is not justified.

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Table 1 Attainment at age 18 by characteristic, females

	Number in sample	NVQ level 0	NVQ level 1	NVQ level2	NVQ level3+	Column % at 16
Prior educational attainment						
NVQ level 0	1078	28.2	30.7	23.8	17.4	7.0
NVQ level 1	4762	-	36.0	37.5	26.5	30.8
NVQ level 2	9601	-	-	30.8	69.2	62.2
Personal characteristics						
Black African/Caribbean	161	2.5	24.2	38.5	34.8	1.0
Indian	366	3.0	21.6	35.8	39.6	2.4
Bangladeshi/Pakistani	181	6.1	24.9	38.7	30.4	1.2
White	14442	1.9	12.7	32.2	53.3	93.5
Other race	291	2.4	18.9	28.9	49.8	1.9
Route in Further Education 16- 18						
Course low academic	1769	8.2	33.7	39.0	19.2	11.5
Course high academic	9646	0.1	5.1	31.2	63.6	62.5
Course low vocational	2182	5.3	27.3	34.7	32.8	14.1
Course high vocational	1844	1.9	19.6	29.7	48.8	11.9
FE at State school	8499	1.3	11.7	33.7	53.3	55.1
FE at College	4799	2.4	17.4	33.7	46.4	31.1
FE at independent or grammar	1676	0.8	1.9	19.5	77.9	10.9
FE unknown institution	467	13.3	39.2	40.3	7.3	3.0
Dropped out of FE	2016	10.6	37.3	40.9	11.2	13.1
Stayed in full time FE	13425	0.7	9.6	31.1	58.6	86.9
Family background						
lives with both parents	14210	1.9	13.0	32.2	52.9	92.0
lives with mother only	963	1.8	14.8	34.1	49.4	6.2
lives with father only	161	3.7	19.3	33.5	43.5	1.0
lives with neither parent	107	7.5	20.6	37.4	34.6	0.7
Both parents employed	6681	1.7	13.5	33.2	51.6	43.3
Neither parent employed	1177	5.9	18.6	34.4	40.8	7.6
One parent employed	7583	1.6	12.1	31.3	54.9	49.1
Father managerial/professional	3769	0.8	6.3	27.7	65.3	24.4
Father skilled non-manual	3031	0.7	9.4	30.9	58.9	19.6
Father skilled manual	4577	2.8	18.2	34.7	44.4	29.7
Father unskilled non-manual	1222	2.0	12.9	34.8	50.4	7.9
Father unskilled manual	1378	2.5	16.5	36.3	44.7	8.9
Father occupation unknown	1464	4.4	21.1	34.6	40.0	9.5
Mother managerial/professional	1454	0.6	5.9	26.8	66.9	9.4
Mother skilled non-manual	3837	1.0	9.7	31.2	58.0	24.9
Mother skilled manual	1464	3.4	18.2	34.2	44.3	9.5
Mother unskilled non-manual	4247	1.8	13.9	34.9	49.4	27.5
Mother unskilled manual	622	3.5	18.1	37.6	40.8	4.0
Mother occupation unknown	3817	2.9	16.2	31.3	49.6	24.7
lives in social housing	1286	6.8	27.1	33.0	33.1	8.3
lives in private housing	14155	1.5	12.0	32.3	54.2	91.7
Cohort						
Cohort 2	2673	2.5	14.7	31.8	51.0	17.3
Cohort 3	2686	2.0	11.5	33.8	52.7	17.4
Cohort 4	2698	2.3	19.2	33.6	44.9	17.5
Cohort 5	3369	1.4	11.2	29.6	57.8	21.8
Cohort 6	4015	1.9	11.2	33.2	53.7	26.0
Column total	15441	304	2046	4998	8093	
Row percentage		2.0	13.3	32.4	52.4	100

Table 2 Attainment at age 18 by characteristic, males

	Number in sample	NVQ level 0	NVQ level 1	NVQ level2	NVQ level3+	Column % at 16
Prior educational attainment						
NVQ level 0	891	28.4	36.8	23.3	11.5	7.9
NVQ level 1	2968	-	39.8	39.3	20.9	26.2
NVQ level 2	7493	-	-	30.9	69.1	66.0
Personal characteristics						
Black African/Caribbean	102	7.8	23.5	35.3	33.3	0.9
Indian	319	2.8	19.7	32.5	45.0	2.8
Bangladeshi/Pakistani	189	3.7	21.7	33.9	40.7	1.7
White	10534	2.1	12.7	32.4	52.9	92.8
Other race	208	3.8	23.0	35.4	37.8	1.8
Route in Further Education 16- 18						
Course low academic	1615	8.5	34.7	40.3	16.4	14.3
Course high academic	7728	0.1	4.7	30.9	64.3	68.1
Course low vocational	1148	7.5	35.8	32.0	24.7	10.1
Course high vocational	861	2.3	20.3	33.0	44.4	7.6
FE at State school	6788	1.6	12.7	34.2	51.5	59.8
FE at College	2709	3.0	18.9	37.4	40.7	23.9
FE at independent or grammar	1702	0.9	2.1	20.6	76.4	15.0
FE unknown institution	153	32.7	34.3	35.7	7.3	1.3
Dropped out of FE	1377	13.1	35.9	44.2	6.9	12.1
Stayed in full time FE	9975	0.7	10.2	30.9	58.2	87.9
Family background						
lives with both parents	10504	2.2	13.2	32.4	52.2	92.5
lives with mother only	633	1.9	13.1	33.4	51.6	5.6
lives with father only	149	0.7	20.1	36.9	42.3	1.3
lives with neither parent	66	9.1	15.2	33.3	42.4	0.6
Both parents employed	4943	1.9	12.9	32.4	52.8	43.5
Neither parent employed	772	6.1	20.6	33.0	40.4	6.8
One parent employed	5637	2.0	12.7	32.5	52.8	49.7
Father managerial/professional	3033	1.0	6.5	29.5	63.0	26.7
Father skilled non-manual	2536	1.1	11.4	29.0	58.6	22.4
Father skilled manual	2952	3.1	18.0	35.1	43.8	26.0
Father unskilled non-manual	981	1.5	13.2	36.0	49.3	8.6
Father unskilled manual	805	2.6	19.6	37.0	40.8	7.1
Father occupation unknown	1045	6.6	19.5	35.7	38.2	9.2
Mother managerial/professional	1115	0.9	5.6	27.4	66.2	9.8
Mother skilled non-manual	3032	1.1	9.6	30.4	58.9	26.7
Mother skilled manual	892	2.7	20.7	36.5	40.1	7.9
Mother unskilled non-manual	2960	3.0	14.2	34.5	48.3	26.1
Mother unskilled manual	337	3.6	16.9	35.3	44.2	3.0
Mother occupation unknown	3016	2.9	16.4	32.9	47.7	26.6
lives in social housing	745	6.4	23.8	37.3	32.5	6.6
lives in private housing	10607	2.0	12.6	32.2	53.3	93.4
Cohort						
Cohort 2	1882	3.1	15.6	31.7	49.5	16.6
Cohort 3	2154	2.2	13.3	35.1	49.3	19.0
Cohort 4	2022	2.1	17.9	31.2	48.9	17.8
Cohort 5	2427	1.1	10.4	30.2	58.3	21.4
Cohort 6	2867	2.7	11.0	33.9	52.5	25.2
Column total	11352	252	1509	3689	5902	
Row percentage		2.2	13.3	32.5	52.0	100

Table 3 Attainment at age 18, females

Dependent variable = NVQ level equivalent gained by age 18.

	NVQ - level 0		NVQ - level 1		NVQ - level 2		NVQ - level 3+	
Variable	Marginal effect	Prob value	Marginal effect	Prob value	Marginal effect	Prob value	Marginal effect	Prob value
NVQ level 1 age 16	-0.004	0.000	-0.079	0.000	-0.240	0.000	0.323	0.000
NVQ level 2 age 16	-0.028	0.000	-0.348	0.000	-0.275	0.000	0.651	0.000
Black	0.001	0.242	0.016	0.232	0.034	0.169	-0.051	0.190
Indian	0.001	0.010	0.027	0.007	0.054	0.001	-0.082	0.002
Bangladeshi/Pakistani	0.001	0.120	0.022	0.109	0.045	0.051	-0.068	0.069
Other race	0.000	0.612	0.005	0.610	0.012	0.595	-0.016	0.600
Course high academic	-0.005	0.000	-0.082	0.000	-0.162	0.000	0.250	0.000
Course low vocational	-0.001	0.000	-0.020	0.000	-0.055	0.001	0.076	0.001
Course high vocational	-0.003	0.000	-0.053	0.000	-0.191	0.000	0.247	0.000
FE independent/grammar	-0.002	0.000	-0.030	0.000	-0.094	0.000	0.126	0.000
FE at College	-0.001	0.007	-0.017	0.007	-0.046	0.010	0.065	0.009
FE unknown institution	0.002	0.000	0.041	0.000	0.074	0.000	-0.118	0.000
Dropped out of FE	0.017	0.000	0.227	0.000	0.141	0.000	-0.384	0.000
Lives with Mother only	0.000	0.631	0.002	0.629	0.006	0.623	-0.009	0.625
Lives with Father only	0.001	0.379	0.012	0.372	0.026	0.322	-0.038	0.338
Neither parent present	0.002	0.066	0.039	0.053	0.070	0.005	-0.111	0.016
Both parents employed	0.000	0.071	0.005	0.068	0.013	0.066	-0.019	0.067
Both parents unemployed	0.001	0.307	0.005	0.303	0.013	0.283	-0.019	0.289
Father Professional	-0.001	0.045	-0.009	0.044	-0.024	0.053	0.034	0.050
Father skilled non-manual	-0.001	0.122	-0.007	0.122	-0.019	0.137	0.027	0.132
Father skilled manual	0.000	0.383	0.004	0.382	0.010	0.374	-0.014	0.377
Father unskilled non-man’	-0.000	0.816	-0.001	0.816	0.003	0.814	0.004	0.815
Occupation unknown	0.001	0.060	0.012	0.056	0.028	0.036	-0.040	0.042
Mother Professional	-0.001	0.007	-0.017	0.007	-0.047	0.017	0.065	0.014
Mother skilled non-manual	-0.001	0.103	-0.010	0.103	-0.026	0.118	0.036	0.113
Mother skilled manual	-0.001	0.127	-0.010	0.129	-0.027	0.157	0.037	0.149
Mother unskilled non-man’	-0.001	0.123	-0.009	0.123	-0.024	0.137	0.034	0.133
Occupation unknown	-0.000	0.226	-0.007	0.226	-0.019	0.241	0.027	0.237
Lives in social housing	0.001	0.000	0.020	0.000	0.043	0.000	-0.065	0.000
Unemployment rate	0.001	0.035	0.008	0.033	0.019	0.033	-0.027	0.033
Cohort 3	0.000	0.407	0.004	0.405	0.009	0.394	-0.013	0.398
Cohort 4	0.001	0.000	0.078	0.000	0.125	0.000	-0.209	0.000
Cohort 5	0.001	0.000	0.019	0.000	0.043	0.000	-0.064	0.000
Cohort 6	0.002	0.000	0.030	0.000	0.066	0.000	-0.098	0.000
College*high academic	0.002	0.004	0.032	0.003	0.064	0.000	-0.098	0.000
College*low vocational	-0.002	0.000	-0.041	0.000	-0.138	0.000	0.181	0.000
College*high vocational	-0.001	0.070	-0.018	0.072	-0.050	0.111	0.069	0.100

Diagnostics	
Log likelihood	-12288.349
LR chi2	7813.84
Pseudo R2	0.2412
observations	15441

Table 4 Attainment at age 18, all males

Dependent variable = NVQ level equivalent gained by age 18.

	NVQ - level 0		NVQ - level 1		NVQ - level 2		NVQ - level 3+	
Variable	Marginal effect	Prob value	Marginal effect	Prob value	Marginal effect	Prob value	Marginal effect	Prob value
NVQ level 1 age 16	-0.003	0.000	-0.072	0.000	-0.270	0.000	0.346	0.000
NVQ level 2 age 16	-0.027	0.000	-0.379	0.000	-0.241	0.000	0.647	0.000
Black	0.001	0.270	0.019	0.258	0.045	0.167	-0.065	0.196
Indian	-0.000	0.740	-0.003	0.739	0.007	0.733	-0.010	0.734
Bangladeshi/Pakistani	-0.001	0.280	-0.010	0.283	-0.030	0.329	0.040	0.318
Other race	0.002	0.019	0.032	0.013	0.067	0.001	-0.100	0.002
Course high academic	-0.004	0.000	-0.079	0.000	-0.163	0.000	0.246	0.000
Course low vocational	0.001	0.006	0.026	0.004	0.060	0.000	-0.087	0.001
Course high vocational	-0.001	0.195	-0.014	0.199	-0.047	0.256	0.062	0.242
FE independent/grammar	-0.001	0.000	-0.025	0.000	-0.087	0.000	0.113	0.000
FE at College	-0.000	0.017	-0.013	0.017	-0.041	0.025	0.055	0.023
FE unknown institution	0.011	0.000	0.185	0.000	0.109	0.000	-0.306	0.000
Dropped out of FE	0.014	0.000	0.224	0.000	0.138	0.000	-0.375	0.000
Lives with Mother only	-0.000	0.272	-0.006	0.273	-0.018	0.299	0.024	0.292
Lives with Father only	0.001	0.226	0.016	0.215	0.039	0.144	-0.056	0.166
Neither parent present	0.001	0.782	0.005	0.780	0.014	0.769	-0.019	0.772
Both parents employed	0.000	0.848	0.001	0.848	0.002	0.848	-0.002	0.848
Both parents unemployed	0.000	0.560	0.003	0.558	0.009	0.546	-0.012	0.549
Father Professional	-0.001	0.049	-0.010	0.047	-0.031	0.058	0.041	0.055
Father skilled non-manual	-0.001	0.020	-0.012	0.019	-0.037	0.028	0.050	0.025
Father skilled manual	-0.000	0.567	-0.003	0.568	-0.009	0.573	0.012	0.572
Father unskilled non-man’	-0.000	0.647	-0.003	0.648	-0.008	0.655	0.011	0.653
Father occupation unknown	0.000	0.466	0.005	0.464	0.014	0.445	-0.019	0.450
Mother Professional	-0.000	0.578	-0.005	0.579	-0.014	0.593	0.018	0.590
Mother skilled non-manual	0.000	0.654	0.004	0.653	0.010	0.647	-0.014	0.649
Mother skilled manual	0.001	0.082	0.019	0.073	0.047	0.033	-0.067	0.044
Unskilled non-manual	0.001	0.212	0.011	0.206	0.029	0.181	-0.040	0.188
Occupation unknown	0.000	0.298	0.009	0.294	0.024	0.272	-0.033	0.278
Lives in social housing	0.001	0.042	0.013	0.038	0.032	0.020	-0.045	0.024
Unemployment rate	0.001	0.011	0.010	0.010	0.028	0.010	-0.038	0.010
Cohort 3	0.001	0.012	0.013	0.009	0.035	0.004	-0.050	0.005
Cohort 4	0.003	0.000	0.054	0.000	0.108	0.000	-0.165	0.000
Cohort 5	0.000	0.733	0.002	0.732	0.005	0.730	-0.006	0.730
Cohort 6	0.001	0.001	0.017	0.001	0.044	0.000	-0.062	0.000
College*high academic	0.001	0.090	0.017	0.083	0.041	0.043	-0.058	0.054
College*low vocational	-0.002	0.000	-0.046	0.000	-0.208	0.000	0.256	0.000
College*high vocational	-0.002	0.000	-0.040	0.000	-0.170	0.000	0.212	0.000

Diagnostics	
Log likelihood	-8675.4424
LR chi2(37)	6672.55
Pseudo R2	0.2778
N	11352

Table 5. Attainment at age18 of those individuals classified as less able at age16.

Dependent variable = the NVQ level equivalent gained by age 18.

	FEMALES				MALES			
	NVQ - level 2		NVQ - level 3		NVQ - level 2		NVQ - level 3+	
Variable	Marginal effect	Prob value	Marginal effect	Prob value	Marginal effect	Prob value	Marginal effect	Prob value
NVQ level 1 age 16	0.158	0.000	0.153	0.000	0.196	0.000	0.117	0.000
Course high academic	0.041	0.000	0.172	0.000	0.105	0.000	0.141	0.000
Course low vocational	0.032	0.000	0.073	0.000	-0.018	0.072	-0.014	0.079
Course high vocational	0.033	0.000	0.234	0.000	0.031	0.258	0.029	0.329
FE independent/grammar	-0.024	0.276	-0.035	0.175	-0.088	0.012	-0.052	0.001
FE at College	0.034	0.000	0.063	0.000	0.060	0.000	0.054	0.000
FE unknown institution	-0.066	0.001	-0.074	0.000	-0.241	0.000	-0.106	0.000
Dropped out of FE	-0.191	0.000	-0.191	0.000	-0.227	0.000	-0.134	0.000
Both parents employed	-0.006	0.290	-0.010	0.283	0.007	0.461	0.006	0.464
Both parents unemployed	-0.006	0.504	-0.010	0.481	-0.029	0.105	-0.022	0.072
Lives in social housing	-0.023	0.005	-0.035	0.001	-0.034	0.028	-0.025	0.013
Unemployment rate	-0.013	0.034	-0.024	0.033	-0.022	0.070	-0.019	0.070
College*high academic	-0.032	0.116	-0.043	0.044	-0.062	0.050	-0.041	0.014
College*low vocational	0.031	0.000	0.092	0.000	0.067	0.000	0.084	0.001
College*high vocational	0.004	0.777	0.008	0.785	0.080	0.000	0.128	0.006
	Diagnostics				Diagnostics			
	Log likelihood		-6205.4735		Log likelihood		-4025.1004	
	LR chi2(36)		2007.92		LR chi2(36)		1418.43	
	Pseudo R2		0.1393		Pseudo R2		0.1498	
	N		5840		N		3859	

Table 6. Destination after 2 years post-compulsory education at school or FE college

	unemployed	employed	Higher education	Further education	N
MALES					
FE school	15.1	42.2	6.7	36.0	2036
FE college	12.8	44.6	10.7	31.9	1520
FEMALES					
FE school	17.2	47.5	4.6	30.7	2866
FE college	13.0	61.9	6.5	18.5	2563

Table 7. Determinants of achievement at age 18 of 'underachievers' at age 16

Dependent variable = NVQ level equivalent gained by age 18.

	FEMALES		MALES	
Variable	Marginal effect	Prob value	Marginal effect	Prob value
Black	-0.039	0.468	-0.036	0.581
Indian	-0.080	0.047	-0.045	0.294
Bangladeshi/Pakistani	-0.037	0.485	0.047	0.335
Other race	-0.064	0.174	-0.098	0.072
Course high academic	0.236	0.000	0.217	0.000
Course low vocational	0.053	0.030	0.065	0.031
Course high vocational	0.219	0.000	-0.017	0.751
FE independent/grammar	-0.097	0.123	-0.055	0.395
FE at College	0.061	0.029	0.124	0.000
Dropped out of FE	-0.375	0.000	-0.372	0.000
Father Professional	-0.022	0.543	0.052	0.130
Father skilled non-manual	-0.009	0.783	0.013	0.693
Father skilled manual	-0.033	0.165	0.023	0.409
Father unskilled non-manual	-0.032	0.345	0.034	0.348
Father occupation unknown	-0.052	0.075	-0.011	0.745
Mother Professional	-0.019	0.705	0.019	0.723
Mother skilled non-manual	-0.012	0.750	-0.011	0.813
Mother skilled manual	0.023	0.521	-0.039	0.425
Unskilled non-manual	0.027	0.417	-0.019	0.658
Occupation unknown	-0.004	0.901	-0.026	0.540
Lives in social housing	-0.060	0.022	-0.058	0.046
Unemployment rate	-0.050	0.010	-0.033	0.141
Lives with Mother only	-0.005	0.871	0.037	0.249
Lives with Father only	-0.038	0.531	-0.047	0.484
Neither parent present	-0.082	0.261	0.046	0.591
Both parents employed	-0.003	0.843	0.007	0.706
Both parents unemployed	0.009	0.716	-0.039	0.196
Cohort 3	0.031	0.147	0.012	0.613
Cohort 4	-0.315	0.000	-0.254	0.000
Cohort 5	-0.102	0.000	0.028	0.275
Cohort 6	-0.095	0.000	-0.025	0.330
College*high academic	-0.018	0.699	-0.108	0.054
College*low vocational	0.096	0.004	0.060	0.115
College*high vocational	0.056	0.256	0.132	0.010
	Diagnostics		Diagnostics	
	Log likelihood	-12267.85	Log likelihood	-8743.979
	Wald(34)	987.73	Wald(34)	647.10
	Prob>chi2	0.0000	Prob>chi2	0.0000
	N	15467	N	11372
	uncensored	5840	uncensored	3859
	Rho	0.167	Rho	-0.76

APPENDIX

TABLE 1.

The banding of qualifications into NVQ levels follows the guidelines from the National Advisory Council for Education and Training Targets. The banding is as follows:

NVQ level 5	-	1	Higher Degree
NVQ level 4	-	2	First Degree
		3	Other Degree
		4	Diploma in Higher Education
		5	HNC, HND, Higher BTEC, SCOTVEC
		6	Teaching:
			further
			secondary
			primary
			not stated
		7	Nursing
		8	Other higher qualification below degree level
		9	RSA higher diploma
NVQ level 3	-	11	RSA Advanced diploma
		12	BTEC National/ONC/OND etc
		13	City and Guilds advanced craft
		10	A level (those with more than one)
		15	SCE Highers (67%)
		14	Scottish Certificate of 6th year studies (67%)
			Trade apprenticeships (50%)
		27	other professional/vocational qualification (10%)
NVQ level 2	-	17	RSA Diploma
		18	City and Guilds craft
		19	BTEC etc. first diploma
			Trade apprenticeships (50%)
		20	GCSEs A-C and equivalents (those with 5 or more)
		27	Other professional/vocational qualification (35%)
		15	SCE Highers (33%)
		14	Scottish Certificate of 6th year studies (33%)
		10	A level (those with one A level)
		16	AS level (11%)
NVQ level 1	-	21	GCSEs, CSEs not yet mentioned
		22	BTEC etc. general certificate
		23	YT Certificate
		25	RSA other qualifications
		26	City and Guilds other qualification
		16	AS level (89%)
		20	GCSE A-C and equivalents (those with less than four)
		27	other professional/vocational qualification (55%)
No level	-	24	SCOTVEC module

[1] Previously the more able students were entered for the GCE qualification whilst the less able sat the CSE. The top grade, grade 1, in the CSE is equivalent to a grade C in the GCE examination.
[2] Dolton *et al* (1999) note that 'Males are good at cramming for exams and working under pressure. Females are better at researching and co-operating.'
[3] The NVQ is a national metric for attainment levels of both academic and vocational qualifications. See Table 1 in the appendix for details of the attainment bands within the NVQ classification.
[4] There has been a fourth sweep of cohorts 3 and 6.
[5] Guidelines kindly supplied by the National Advisory Council for Education and Training Targets.
[6] The more able student will have achieved this level by gaining a minimum of 5 grades A*-C at GCSE
[7] For example, in our low ability sub-sample one third of all students have a father who is in an occupation that is classified as unskilled and only 27% of females have a father who is in a managerial or professional occupation compared to 44% in the full sample.
[8] At age eighteen there are no observations within NVQ level 4 as this represents higher educational qualifications.
[9] We acknowledge that school type may be endogenous but it is our best available measure.
[10] On the results reported in Table 3 and Table 4 young people who live in social housing are least likely to attain a NVQ level 3 and are most likely to gain a NVQ level 2. For a female who lives in social housing the probability of gaining a NVQ level 3 is reduced by 6 percentage points.
[11] Full results are available from the author upon request.
[12] These models are not reported here but are available from the author upon request.