Better qualified but a lower acceptance rate: does Higher Education discriminate against women?

by

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Abstract:

Women still suffer discrimination in the UK labour market, and the question arises how pre-labour market discrimination contributes to this. Using a sample of around 2.3 million observations on applications to UK Higher Education institutions over a six year period from 1996-2001, the paper explores whether the selection process into Higher Education is discriminatory. This is an important question given the target of 50% of 18-30 year-olds to enter Higher Education by 2010. The firm answer is no discrimination, even though women are better qualified and less likely to be offered a Higher Education place. The lower tier Higher National Diploma sector is a key issue because women are less likely to undertake these courses, which are `male orientated'. The policy conclusion is that to encourage less well-qualified females to undertake Higher Education, more appropriate provision is necessary that recognizes the reality of subject gender segregation.

Keywords: gender, discrimination, Higher Education

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1. Introduction

Women still face disadvantage in the UK labour market, even though its extent has diminished considerably since the 1970 Equal Pay Act and the 1975 Sex Discrimination Act. It is also evident discrimination exists in the UK academic labour market, albeit for complex reasons.[1] The question explored here is one important gateway into the labour market for women, namely entry into Higher Education (HE). So the focus is pre-labour market discrimination or what Stiglitz (1973) refers to as `cumulative causation'. What might appear as a characteristic difference in the labour market (i.e. be thought to be non-discriminatory) might actually be the consequence of earlier discrimination or choices that are the consequence of gender stereotyping.

Around 30% of 18-30 year-olds currently enter the HE sector and because the government has set an ambitious target (more recently downgraded to an `aspiration') of 50% by the year 2010, this will represent an increasing part of women's pre-labour market experience. Blackaby *et al.* (2001) show that the earnings gap is widest at the upper tail of the earnings distribution and Belfield *et al.* (1997), in a survey of over 18,000 graduates, showed that male graduates earned 13% more that female graduates 11 years after graduation. The Barclays fifth annual Graduate Survey in 1998 showed that male graduate starting salaries were 19% higher than females. These figures are significantly lower than an earlier figure of 27% male advantage in 1977 for 1970 graduates reported by Dolton and Makepeace (1986), but are still large. So is this

[1] See Blackaby *et al.* (1997); Swaffield (2000); Joshi and Paci (1998); Makepeace *et al.* (1999) provide evidence. Booth *et al.* (2000) and Booth *et al.* (2002) present evidence of discrimination in the academic labour market with a gender pay gap of around 9.4%. The latter suggest that institutions can exploit women because they are less mobile than men.

purely post HE discrimination, or is there something about the HE experience itself that pre-conditions these less favourable outcomes?

From 1996-2001, which is the data period for this study, 78.42% of male applicants to HE were accepted, in contrast to 76.77% of female applicants. This is despite the fact that women applicants were generally better qualified. So this provides a *prima facie* case for discrimination at the entry level. In fact, the small difference in the acceptance rates will be shown to have a non-discrimination explanation. Ethnic differences are larger, as an example 73.24% of non-whites were accepted compared with 78.68% for whites. Leslie *et al.* (2002) argued that the far larger ethnic differences are also not evidence of discrimination, and a comparative illustration of this will be shown later. Non-white applicants tend to be older, have poorer qualifications and have a different social background, whereas gender differences are much smaller across all characteristics.

All this makes good sense, because HE is a merit based system. Discrimination, if it exists, could only arise for subtle and indirect reasons. Consequently, HE entry cannot readily be identified as one source of Stiglitz's `cumulative causation'. HE (at the entry level) does not discriminate against women just as there is no evidence for discrimination against ethnic minorities – though not all would accept the latter claim (see Modood and Shiner, 1994). Not all organizations are institutionally racist and gender biased. The HE sector has nothing to be ashamed of or to apologise for on these issues.

This study does not comment greatly on the possibility of gender bias of the post entry HE experience, which might contribute to future labour market disadvantage. But one such post entry factor is bound to be important and explains a lot of the acceptance differences, which is subject choice. Considerable segregation is apparent in subject choices. This opens a whole area as to whether these differences reflect taste or discrimination. Subject choices to some extent reflect deeply held prejudices about the type of job to which women are best suited – and many will go along with society's views concerning their pre-assigned roles (Wajcman, 1998). Thus 92.3% of those entering nursing degrees are women, whereas only 8.2% opt for mechanical engineering. However, it would be unfair to hold HE admission officers directly responsible for subject choice patterns and to label such outcomes as discrimination.

Clearly, these large differences in subject choices will have a major impact on career patterns and in a truly `nongendered' labour market such differences would not arise. Nevertheless, it is something that should be borne in mind when discussing academic discrimination. Bebbington (2002), as an example, draws attention to the issue of the underrepresentation of women in academia, especially sciences, but this is less surprising given the smaller numbers that study sciences.

A second key factor, which is strongly related to subject segregation, is Higher National Diploma (HND) provision.[2] This largely explains the lower overall female acceptance rates and the paper suggests that the reason for its relative unpopularity among female applicants is that the range of subjects on offer tends to be male

[2] For those unfamiliar with the British HE system, there is a broad split between degree level courses, which generally last for three years (four in the case of Scotland) and Higher National Diploma (HND) courses, which usually last for two years. HND courses are less demanding and the qualification

orientated. Once the HND sector is stripped away, female acceptances onto degree level courses are higher. Better qualifications account for this.

2. The data

Full-time UK undergraduates apply via the Universities College Admissions Service (UCAS), and as a result a comprehensive dataset of the characteristics of applicants and whether they are accepted is available.[3] Here data over a six year period 1996-2001 are explored, where only UK domiciled applicants are considered. This gives 1,099,786 male applicants and 1,230,441 female applications – so there are a larger number of female applicants. Acceptances of 862,469 males and 944,613 females also reflect this imbalance. This imbalance is also found among the ethnic minorities, where proportionately far more apply and are accepted. One reason is the perception of discrimination and that an HE qualification might be a way of reducing its impact – a type of discouraged worker effect. However, unlike ethic minorities, female applicants are better qualified despite their larger numbers.

Table 1 compares male and female qualifications averaged over the 1996-2001 period. A-levels are still the Gold Standard core qualification taken by 54.7% of applicants. These are given a point score, with 30 representing the highest possible score. The typical applicant sits 3 A-levels; UCAS records the best three for those with four or more. There are five passing A-level grades, from A (highest) to E (lowest). Grade A earns 10 points; B earns 8 down to E, which scores 2. It can be seen that the acceptance rate is very much linked to the point score. `Highers' are the Scottish equivalent of A-levels because Scotland has always had a considerable degree of independence in the

standard is lower. Many traditional universities will not offer any HND level courses, whereas many of the `new' post 1992 universities offer a mixture of HND and degree level courses.

organization of its education. As with the traditional A-level, it can be seen that the acceptance rate works in the expected way; a greater number of Highers means a greater chance of acceptance. Notice, however, that there is far from a 100% acceptance rate, even for those with the best qualifications among A-levels and Highers.

Access/Foundation course are a miscellaneous group of qualifications usually taken by mature students in the Further Education sector without formal qualifications looking to enter the HE sector. The Baccalaureate is an international qualification taken by 7156 of applicants. BTEC and its Scottish equivalent SCOTVEC are vocational qualifications, usually offered within the Further Education sector and by employers. The three grades (distinction, merit, pass) of GNVQ (General National Vocational Qualifications) are distinguished – once again the better the GNVQ score, the better are the chances of success. These are mainly vocation-related qualifications. `Other' refers to qualifications, which do not readily fit into any of the listed categories.[4]

At first sight the high acceptance rate of the `none or unrecorded' category seems somewhat implausible. The reason is that this category includes a lot of missing information, not only failures. For example, late registrants do not always record the qualification actually achieved – only a minimal return is sent to UCAS for the purpose of record keeping.[5]

It can be seen that female applicants are generally better qualified, and later a more precise measure of this quality difference will be discussed. The quality difference is

[3] A description of the UCAS application process is given in Leslie (2002b). Abbott and Leslie (2001) explore an aggregate model of applications and acceptances by HE institution. The data used are available at www.ucas.ac.uk.
[4] Details of specific qualifications are in *UK Qualifications for Entry to Higher Education*, published annually by UCAS (see UCAS, 2001).
[5] Subsequently confirmed in conversations with Jim Wilkins of UCAS.

actually small, but this should be set against the much larger number of female applicants. The key factor that accounts for the higher overall male acceptance rate is that the male acceptance rate for poor qualifications is considerably higher than that for females. As an example, the female acceptance rate for 0-5 A-level points is around 4% lower and the GNVQ qualifications show a similar pattern. An explanation will be provided later.

Table 2 gives a year-by-year breakdown of the female data (the male pattern is the same). One interesting point to note is grade inflation – the percentage of people with top A-level grades increases inexorably over time – and given the scandals concerning the 2002 round this is an interesting fact. `Grade inflation' is a somewhat pejorative term, as no doubt some would claim that this reflects a real improvement in quality. The second feature, apparent from the second part of the table, is the marked increase in the acceptance rate from 72.34% in 1996 to 80.78% in 2001.

So which effect is the main cause of the rise in acceptance rates, grade inflation or higher acceptance rates for a given grade? One way to tell is to do the following counterfactual experiment. Take the 1996 acceptance rates for each qualification and then use these to predict what the acceptance rate would be in each year if each qualification had the 1996 acceptance rate. If it was all a question of grade inflation, then the predicted acceptance rate would be close to the actual acceptance rate. The results of this experiment are shown in the last row of the table and it is clear that grade inflation only accounts for a very small part of the rise in the average acceptance rates over time. A lowering of acceptance standards has largely driven the rising acceptance rate. It is apparent that it is the dramatic rise in acceptance rates for those with lower qualifications that is accounting for this upward trend. This is evidence of widening access to HE.

3. Measuring applicant and acceptance quality

Clearly, it would be uncontroversial that the A-level point score ranks quality and that the three types of GNVQ qualification and number of Highers also reflect quality differences. It should also be noticed from Table 1 that the higher the A-level point score the greater the proportion accepted. This ranking also carries through with GNVQ qualifications and Highers. It would, however, be useful to have an overall quality measure whereby average quality of men and women could be compared overall with a mapping from all 19 qualifications into one single scale. Leslie (2002) has developed such a measure, which is based on the particular institutional setting of the UCAS system.

Individual applicants are assumed to be expected utility maximisers. Briefly, the typical applicant is allowed to select two offers prior to the result of examinations – commonly known as the firm and the insurance offer. In choosing which to go for, each applicant will have an idea of likely examination performance. Likely performance will be a noisy signal of the actual outcome and those who expect to do well will seek out better HE institutions. So it can easily turn out that unlucky applicants who made ambitious choices and under-performed could end up with no place.

There are two countervailing forces at play in selecting offers. A better institution, given ability, means a lower acceptance chance and higher ability means a greater acceptance chance, given institution. If applicants maximize utility it turns out that higher ability applicants are more likely to seek out better institutions, but will also

allow themselves to have a greater probability of acceptance. Those who have disappointing outcomes may very well find themselves without an acceptance, even though they may have better qualifications than someone who is accepted. Utility maximisation will mean that applicants with higher qualifications will have a higher probability of acceptance. In this way it can be shown that the proportion of those accepted with a particular qualification will be a measure of its quality. This is a brief description of a complex reality – Leslie (2002) offers more detail.

Over and above the theoretical justification, the measure has a strong intuitive appeal. A qualification, which has a greater success rate in a competitive system, is plausibly a better qualification. The measure of quality will be the weighted average of qualifications success proportion. Thus $\sum_{i=1}^{19} \alpha_i \overline{p}_i$ is calculated for the group of interest, where α_i is the relevant proportion among the 19 possible qualifications and $\overline{p}_i$ is the proportion that successfully gain an acceptance with the *i*th qualification level. This is the overall success rate for everyone averaged over the whole period 1996-2001. These numbers are then normalised to lie between 1 (the score if everyone in the group had the top ranked qualification) to zero (the score if everyone in the group had the bottom ranked qualification).

As well as measuring average quality, another question of interest is the spread of quality. Arulampalam *et al.* (2002) argue that the spread as well as average ability influences student drop-out rates. Spread can be measured using the standard Gini coefficient inequality measure, with higher values indicating a more spread-out distribution of quality. The Gini coefficient is calculated by ranking qualifications from lowest to highest and the cumulative proportion of the total scores is plotted against the cumulative

proportion of individuals. If everyone had the same qualification these cumulative proportions would be the same and the plot would be a 45-degree line from 0 to 1. The more unequal the distribution of qualifications, the further would the plotted line be from this 45 degree equality line. The greater the area between the equality line and the plotted line indicates a more unequal distribution of quality. The Gini coefficient is the ratio of this area to the area of maximum inequality, which would be the triangle directly below the equality line. The Gini coefficient is therefore bounded between 0 (everyone in the group has the same quality) and 1.[6]

Table 3 shows qualification quality for males and females separately for various categories by year. The associated Gini coefficient is shown below the measure of average quality. Focussing first on average quality, two key features are immediately apparent. First is the improvement in applicant quality over time – this is the grade inflation effect that has been alluded to earlier. However, the quality improvement is actually rather small compared with other differences and degree acceptance quality has not noticeably changed. One reason is that more with poorer qualifications are being accepted, which offsets the grade inflation effect. The second feature is the generally better qualifications of females, although once again these differences are not particularly large.

The bigger differences are found, not unexpectedly, in the selection process itself. The filtering process leads to the largest jumps in quality, though it should be noted that female and male degree acceptance quality become much closer as a result of selection. Given that fewer females are accepted, this seems somewhat counterintuitive. In fact,

[6] Mathematically, the Gini coefficient is $1-2\int_0^1 f(p)dp$, where *f(p)* describes the cumulative

there is a very simple explanation, which will be given shortly. Finally, note that HND acceptance quality is far below degree acceptance quality. This all makes good sense.

The Gini coefficients do not change significantly through time, and the only real difference between men and women is HND acceptances. Women, although better qualified on average, also have a larger range of qualifications. Another feature is that the selection process, by generally knocking out those with lower qualifications, means a lower Gini coefficient for those accepted onto degree schemes. HND courses do not have such strict acceptance criteria and the Gini coefficients are similar to applicants.

4. Key gender differences

So far, qualification quality has been identified as one, albeit small, gender difference. There are two other key differences between men and women in the admissions' process. First is subject choice. There is a huge difference in tastes across the 170 subjects that are distinguished in the UCAS data.

Table 4 shows those twelve subjects with the least concentration of females and the twelve with the largest concentration of females. This segregation is summarized in Figure 1, which arranges all 170 subjects from the lowest to highest proportion of females. The cumulative proportion of females is then plotted against the cumulative proportion of males. If the distribution of women reflected the 1.09 to 1 ratio of acceptances equally across all subjects, then the cumulative proportions would lie along the 45 degree line.[7] The actual line shows a considerable difference – and the

proportions. See Lambert (1985, chap.1).

[7] This method has a long history as a measure of the degree of segregation among US ethnic minorities, see Duncan and Duncan (1955).

Gini coefficient turns out to be 0.465. This indicates a very high degree of subject segregation.

Given this heterogeneity, one should not necessarily be so surprised if there are gender differences in the graduate premium. Elias (1999, p. 46) shows that different degrees command different salaries. As an example mathematics and computing commands the largest graduate premium by far at around 26% three and a half years after graduation. This broad subject group attracts only 22.1% women, compared with the average representation across all subjects of 53.4%. Engineering also has a substantial premium of 15%, which attracts 14.3% women. Over-represented female groups such as Arts have a negative premium. This evidence is suggestive that subject choice contributes to lower female graduate earnings – but clearly this is by far the whole story. Naylor *et al.* (2000) show that specific graduate occupations attract significant male premiums.

Even though there are differences in subject choices, the qualifications of men and women for particular subject choices are very similar. Subjects which are under-represented with women do not therefore attempt to increase numbers by operating a `dual standard' admissions criterion. A regression of male qualifications against female qualifications (using the measure described) gives the following result:

$$\text{Male grade} = \underset{(0.17)}{-0.006} + \underset{(26.23)}{0.983}\ \text{female grade} \qquad R^2 = 0.75,\ \text{obs} = 170 \qquad (1)$$

The t-stats (in parentheses) indicate that the intercept is not significantly different from zero, and the slope is not significantly different from one.[8] However, female grades are on average a little higher than males with an unweighted difference across the 170 subject groups of 0.018. So although proportions differ considerably, there are no significant gender differences in average quality across subjects. Furthermore, the spread of qualifications is very similar. A regression of the male Gini against the female Gini gave the following:

$$\begin{array}{lll} \text{Male Gini} = 0.012 + 0.820 \text{ female Gini} & R^2 = 0.58 & (2) \\ \quad\quad\quad\quad (2.35) \quad (10.19) & \text{obs} = 170 & \end{array}$$

Once again, it is subject differences that dominate, rather than gender difference within subjects. One strong feature is that average subject quality and the subject Gini have a strong negative correlation, as seen below:

$$\begin{array}{lll} \text{Grade (M+F)} = 1.022 - 4.829 \text{ Gini (M+F)} & R^2 = 0.72 & (3) \\ \quad\quad\quad\quad (21.71) \quad (72.43) & \text{obs} = 170 & \end{array}$$

Subjects that have low average quality also have a long tail of poorly qualified people, but this is true for both men and women.

The second major gender difference is acceptances on degree level courses and HND courses. Proportionately more men than women are admitted onto HND courses and this fact accounts for many of the apparent advantages of men over women. Table 5 shows this difference. On average 10.70 % of men overall are accepted onto HND courses, compared with 6.59% of women. Once this fact is taken into consideration it can be seen that the advantage men enjoyed in terms of acceptances disappears when

[8] The t-stats in all reported results are heteroscedastic adjusted using the procedure of White (1980).

the percentage accepted onto degree level courses alone is considered. The bottom part of Table 5 shows that women on average now enjoy a 1.68% advantage over men.

The HND issue explains why acceptance rates for poorly qualified men are higher than poorly qualified women, which was noted in the discussion of Table 1. Poorly qualified women are not taking up HND places to the same extent as men. So is this evidence of discrimination at the low ability level? The heart of the matter seems to be subject segregation. HND provision is much smaller than degree level provision – only 114 out of the 170 subjects are covered at HND level. The subjects that are covered are `male dominated'. This can be confirmed by taking the proportion of women in degree level courses for each subject and then use these numbers to predict what proportion of women might be expected in HND courses, if HND provision mirrored the pattern of segregation found at degree level. It turns out that the predicted proportion of women is 7.33%, which is only slightly above the actual value of 6.59%. So this suggests that HND provision is not well suited for low ability women and that many are dropping out of HE as a consequence. The importance of this finding is the 2010 aspiration for 50% of young people to undertake HE. Necessarily, this will require a greater provision of `lower tier' courses. If these merely duplicate what is currently on offer, this will further exacerbate the problem of recruiting lower ability women.

5. Decomposition analysis

Decomposition analysis, independently developed by Blinder (1973) and Oaxaca (1973) and subsequently used and refined by many others, offers a way of

determining the extent to which any observed difference is a consequence of a characteristic difference (e.g. women are better qualified) or the consequence of discrimination, i.e. men with similar characteristics as women receive more favourable treatment.

Gomulka and Stern (1990) demonstrated how decomposition analysis could be applied to probit and logit models. The logit model offers some advantages and is based on the following estimated function for females:

$$P(\hat{\alpha}^F X_i^F) = \frac{1}{1+\exp(-\hat{\alpha}^F X_i^F)} \tag{4}$$

where $P(\hat{\alpha}^F X_i^F)$ is the probability of the *i*th female being accepted onto a degree and where $\hat{\alpha}^F$ is a vector of estimated coefficients and X_i^F is an associated vector of characteristics that explain the acceptance probability. These characteristics need not only include qualifications, which has been the main focus of attention here, but also other factors such as social background, ethnicity and so on. A second logit model using the same characteristics is fitted for males. A second set of coefficients will then be obtained for males. A likelihood ratio test can then be performed to test the hypothesis that the coefficients in the male and female equations are the same. It turns out that the likelihood ratio test easily rejects the hypothesis of coefficient equality. However, given the enormous number of observations, this is not altogether surprising because standard errors in the fitted equations are typically small, so the smallest difference in coefficients will show up as significant. So really it is a matter of the quantitative significance of the overall coefficient effect, rather than immediately asserting some discriminatory process.

The next stage is to determine how much of any difference in the mean acceptance rate is due to differences in characteristics and how much is due to differences in how particular characteristics are rewarded - the coefficient effect. The initial focus will be to explain admission onto degree schemes, exclusive of any HND offer. Women, enjoy a small overall acceptance advantage, but even so this does not rule out discrimination. Counteracting characteristic and coefficient effects could still mean that women face discrimination.

From eq.(4), construct the probability of acceptance for each individual and then find the average probability for the male and female groups. The difference in these average probabilities is then

$$\bar{\Delta}^F - \bar{\Delta}^M = \bar{P}(\hat{\alpha}^F X^F) - \bar{P}(\alpha^M X^M) \quad (5)$$

In the logit equation this is the same as the difference in the mean sample acceptance rates.[9] This difference can then be decomposed into the two components as follows:

$$\bar{\Delta}^F - \bar{\Delta}^M = [\bar{P}(\hat{\alpha}^F X^F) - \bar{P}(\hat{\alpha}^M X^F)] + [\bar{P}(\hat{\alpha}^M X^F) - \bar{P}(\hat{\alpha}^M X^M)] \quad (6)$$

Here the male coefficients are used to predict the female average probability using female characteristics – the $\bar{P}(\hat{\alpha}^M X^F)$ term. The first term in square brackets is the coefficient contribution and the second part is the characteristics contribution to the total difference. A second decomposition uses the female equation to predict male probabilities.

$$\bar{\Delta}^F - \bar{\Delta}^M = [\bar{P}(\hat{\alpha}^F X^M) - \bar{P}(\hat{\alpha}^M X^M)] + [\bar{P}(\hat{\alpha}^F X^F) - \bar{P}(\hat{\alpha}^F X^M)] \quad (7)$$

In principle, each can give a different answer, but in practice they are usually fairly close.[10] Typically in decomposition analysis it is possible to further decompose the

[9] In probit analysis this is not necessarily true, so logit analysis offers an advantage in this respect.

total characteristics effect into the separate components of the characteristics used in the logit model.[11] However, since the logit model is non-linear it is not possible to do this directly as in a standard OLS regression model. The log odds form of eq.(4) is linear in the explanatory variables, as below

$$\ln \frac{P(\hat{\alpha}^F X_i^F)}{1 - P(\hat{\alpha}^F X_i^F)} = \hat{\alpha}^F X_i^F \qquad (8)$$

Here the characteristics component can be split into its various categories and this will form the basis of the finer level decomposition of characteristics.

Table 6 reports the estimated logit equation for females.[12] The male equation is qualitatively similar and is not reported. Altogether seven groups of characteristics are used to explain the acceptance probability and these are all self-explanatory. It turns out that each characteristic group makes a significant contribution, but the most important by far are qualifications, which is exactly what one might expect in a merit based competitive system that characterizes HE in the UK.[13]

Turning briefly to the other characteristic groups, there are ethnic differences in acceptance rates, with the Black groups seemingly disadvantaged. Overall, however, members of the ethnic communities enjoy a slight acceptance advantage. The year effects show the steady upward trend in acceptance rates and the social class variables all have the expected sign – but note that these effects are tiny compared with other coefficients. The educational establishment variables are split into a 1996-97 group

[10] Others have sought a unique measure – see Neumark (1988) and Oaxaca and Ransom(1994).
[11] Jones(1983) has shown that it is not possible to further decompose the coefficients effect.
[12] A small number of observations was excluded, consisting of those applying to HE from the prison service.
[13] Leslie *et al.* (2002) explain this in more detail.

and a post 98 group. This simply reflects the way the data are presented with a broader breakdown after 1998.

Table 7 reports the decomposition analysis, shown in eqs (6) and (7), and the results are very telling. Characteristics, not coefficients are the main cause of the difference in the acceptance proportion – and both methods of decomposition show this. The bottom half of the table shows the contribution of the individual components. It is qualifications that once again are the dominant component. So on this basis there is no discrimination; more women are accepted onto degree schemes because they have better characteristics – where those characteristic differences are exclusively in having better qualifications.

Table 8 undertakes exactly the same decomposition analysis, but this time compares white females with non-white females. This is useful because there are larger overall acceptance differences – at 6.9% compared with 1.69%, so the potential for a significant discriminatory effect is greater. The striking feature is the similarity with Table 7 and the same is true for a white male non-white male decomposition. Effectively, it is qualifications that are once again the dominant influence in explaining the acceptance difference. The coefficient effect indicates a small favourable treatment for ethnic communities, but this more likely reflects a greater determination among the ethnic communities to have an HE experience rather than positive discrimination.

It is interesting to repeat the male/female decomposition to include HND admissions, in view of the key role played by the HND sector alluded to earlier. Now it is men

that enjoy a slight acceptance advantage. Table 9 reports this alternative decomposition. Characteristics still point to women being more likely to being accepted, and the individual components once again confirm that it is better female qualifications that is driving this. However, characteristics are now dominated by an unfavourable coefficients effect, roughly in a two to one ratio. This confirms the major impact of the relatively small HND sector. It demonstrates that the HND sector is the key to explaining the lower female acceptance rate, but it would be too strong to ascribe this as discrimination. It is the unfavourable (male dominated) subject mix that seems to be driving the unfavourable coefficient effect.

6. Concluding comments

It has been shown that there is no direct discrimination against women at the entry level into HE, in contrast to their labour market experience as a whole. The key factor is to distinguish the two tiers of HE provision, degree level courses and HND provision. The latter accounts for about 8.6% of total HE provision. Men are disproportionately represented at the HND level and this accounts for why more poorly qualified men are accepted into HE as a whole. This does not demonstrate discrimination at the HND level because it was found that it was subject segregation that was largely driving this difference. HND level courses are male orientated, so the lower female participation rate reflects a lack of suitable provision. This has important policy implications given the intention to widen access to HE. Widening access would require the provision of more lower tier HND style courses. If these continue to be male dominated, then the small gender difference in acceptance rates is likely to widen.

HE is still dominated by degree level courses. Over the 1996-2001 period 882,402 women were accepted into full-time undergraduate degrees compared with 770,150 men. The female acceptance rate was also1.68% higher on average. Females being on average better qualified largely explain this higher success rate. So overall, apart from the issues arising out of HND provision, there is no evidence of any serious gender issues at the entry level into HE. Nor is there any credible evidence of discrimination against ethnic minorities at the entry level.

Table 1

Qualifications 1996-2001

Qualification	% female with this qualification	female acceptance rate	% male with this qualification	Male acceptance rate
0 to 5 A level pts	1.01	64.43	1.09	68.88
6 to 10 A level pts	8.81	73.74	9.08	77.30
11 to 15 A level pts	9.16	81.37	8.92	83.66
16 to 20 A level pts	14.86	86.63	13.45	88.27
21 to 25 A level pts	9.50	89.42	8.32	90.64
26 to 30 A level pts	12.71	91.41	12.36	91.86
Access/Foundation	7.16	68.51	5.01	67.75
Baccalaureate	0.34	74.75	0.27	75.12
BTEC/SCOTVEC	8.72	66.65	11.14	69.86
Deg/Partial Degree Credits	1.59	55.65	1.25	53.61
GNVQ Distinction	2.03	82.11	1.41	87.39
GNVQ Merit	2.43	75.87	2.73	82.89
GNVQ Pass	3.27	53.05	4.61	57.25
Highers 3 or less	1.20	44.26	1.23	54.67
Highers 4	1.16	77.82	1.05	81.95
Highers 5	1.56	86.88	1.48	89.99
Highers 6 or more	1.75	94.24	1.44	94.78
None or unrecorded	5.43	70.67	7.68	74.38
Other qualificaton	7.30	52.07	7.48	57.46
All applicants		76.77		78.42

Table 2

Qualifications by year (females)

Qualification	1996	1997	1998	1999	2000	2001
0 to 5 A level pts	1.34	1.17	1.04	0.93	0.86	0.76
6 to 10 A level pts	10.36	9.77	9.01	8.44	7.93	7.53
11 to 15 A level pts	9.68	9.55	9.25	8.98	8.89	8.66
16 to 20 A level pts	14.46	14.56	14.96	15.14	15.06	14.97
21 to 25 A level pts	8.73	9.06	9.59	9.78	9.79	10.00
26 to 30 A level pts	11.28	11.35	12.57	13.22	13.61	14.05
Access/Foundation	8.26	7.84	7.12	6.72	6.74	6.42
Baccalaureate	0.39	0.35	0.39	0.38	0.28	0.25
BTEC/SCOTVEC	8.58	8.81	8.57	8.54	8.77	9.02
Deg/Partial Degree Credits	1.26	1.29	1.49	1.66	1.87	1.96
GNVQ Distinction	1.52	1.71	1.99	2.21	2.34	2.36
GNVQ Merit	2.18	2.21	2.43	2.47	2.69	2.60
GNVQ Pass	2.44	3.17	3.47	3.37	3.45	3.64
Highers 3 or less	1.44	1.18	1.26	1.23	1.04	1.10
Highers 4	1.27	1.13	1.16	1.18	1.11	1.10
Highers 5	1.60	1.54	1.50	1.57	1.58	1.60
Highers 6 or more	1.73	1.71	1.70	1.73	1.74	1.87
None or unrecorded	4.57	5.71	5.35	5.71	5.54	5.60
Other qualification	8.93	7.90	7.17	6.76	6.69	6.51
Acceptance rate						
0 to 5 A level pts	58.65	63.43	64.87	67.31	66.16	69.06
6 to 10 A level pts	69.62	73.87	73.16	72.98	75.53	78.29
11 to 15 A level pts	78.08	80.74	80.52	81.32	82.9	84.67
16 to 20 A level pts	84.51	86.62	85.7	86.44	87.37	88.79
21 to 25 A level pts	87.85	89.05	88.36	89.42	90.30	91.11
26 to 30 A level pts	90.74	91.66	90.79	90.95	91.90	92.16
Access/Foundation	67.07	68.84	68.20	68.12	68.56	70.46
Baccalaureate	71.78	72.67	70.45	75.39	78.62	82.87
BTEC/SCOTVEC	62.53	63.72	65.06	67.72	69.15	71.06
Deg/Partial Degree Credits	50.80	50.30	50.98	57.12	57.30	62.52
GNVQ Distinction	79.24	79.61	81.88	82.58	83.36	84.07
GNVQ Merit	69.66	71.70	74.43	77.55	78.63	80.92
GNVQ Pass	41.67	49.06	51.04	53.57	57.05	60.91
Highers 3 or less	40.48	40.05	44.38	45.16	49.49	47.20
Highers 4	76.13	76.98	76.18	77.79	79.05	80.91
Highers 5	86.11	85.45	87.00	87.51	87.29	87.78
Highers 6 or more	94.44	94.29	93.86	93.60	94.54	94.66
None or unrecorded	48.81	67.12	67.79	75.19	77.96	81.20
Other qualification	48.36	51.17	49.79	51.14	53.62	59.43
Overall acceptance rate	72.34	75.31	75.62	77.29	78.78	80.78
Expected acceptance rate Using 1996 acceptance rates	72.34	72.28	72.82	73.08	73.18	73.26

Table 3

Applicant and acceptance quality by year

	Year						
	1996	1997	1998	1999	2000	2001	Average 1996-01
Male applicant quality	0.602	0.607	0.615	0.622	0.623	0.625	0.616
Gini coefficient	0.092	0.090	0.090	0.089	0.090	0.090	0.090
Female applicant quality	0.621	0.625	0.635	0.641	0.642	0.644	0.635
Gini coefficient	0.090	0.088	0.088	0.087	0.087	0.088	0.088
Male degree acceptance quality	0.682	0.686	0.692	0.696	0.695	0.690	0.690
Gini coefficient	0.076	0.075	0.074	0.073	0.074	0.076	0.075
Female degree acceptance quality	0.694	0.694	0.703	0.705	0.704	0.700	0.700
Gini coefficient	0.074	0.074	0.072	0.072	0.073	0.075	0.073
Male HND acceptance quality	0.363	0.383	0.384	0.389	0.396	0.394	0.385
Gini coefficient	0.082	0.081	0.083	0.083	0.081	0.082	0.082
Female HND acceptance quality	0.393	0.403	0.405	0.412	0.420	0.420	0.410
Gini coefficient	0.090	0.087	0.088	0.087	0.084	0.085	0.087

Table 4

Subject segregation

Subject (bottom twelve)	Male grade	Female grade	Female proportion
H3 Mechanical engineering	0.718	0.795	0.082
J6 Maritime technology	0.646	0.645	0.083
HJ Combinations	0.656	0.705	0.089
H4 Aeronautical engineering	0.748	0.807	0.097
H5 Electrical engineering	0.688	0.771	0.103
H6 Electronic engineering	0.626	0.625	0.103
G6 Computer systems engineering	0.551	0.559	0.111
D3 Forestry	0.580	0.585	0.115
K2 Building/Construction	0.560	0.590	0.117
J1 Minerals technology	0.584	0.618	0.120
H1 General engineering	0.588	0.663	0.132
G8 Artificial intelligence (see also C8 and H6)	0.699	0.690	0.134
Subject (top twelve)			
L7 Psychology	0.649	0.665	0.809
L5 Social work	0.425	0.452	0.811
K9 Other architectural studies	0.657	0.684	0.833
J4 Polymers and textiles	0.592	0.611	0.836
X9 Other topics in education	0.551	0.535	0.839
W6 Craft	0.513	0.597	0.851
X5 Primary all ages (upper and lower primary)	0.605	0.641	0.891
B4 Nutrition	0.539	0.655	0.916
B7 Nursing	0.489	0.586	0.923
X2 Nursery and infants (nursery and lower primary)	0.606	0.636	0.936
W8 Creative therapies	0.509	0.533	0.944
X3 Infants only (lower primary)	0.574	0.614	0.955

Figure 1

Subject segregation

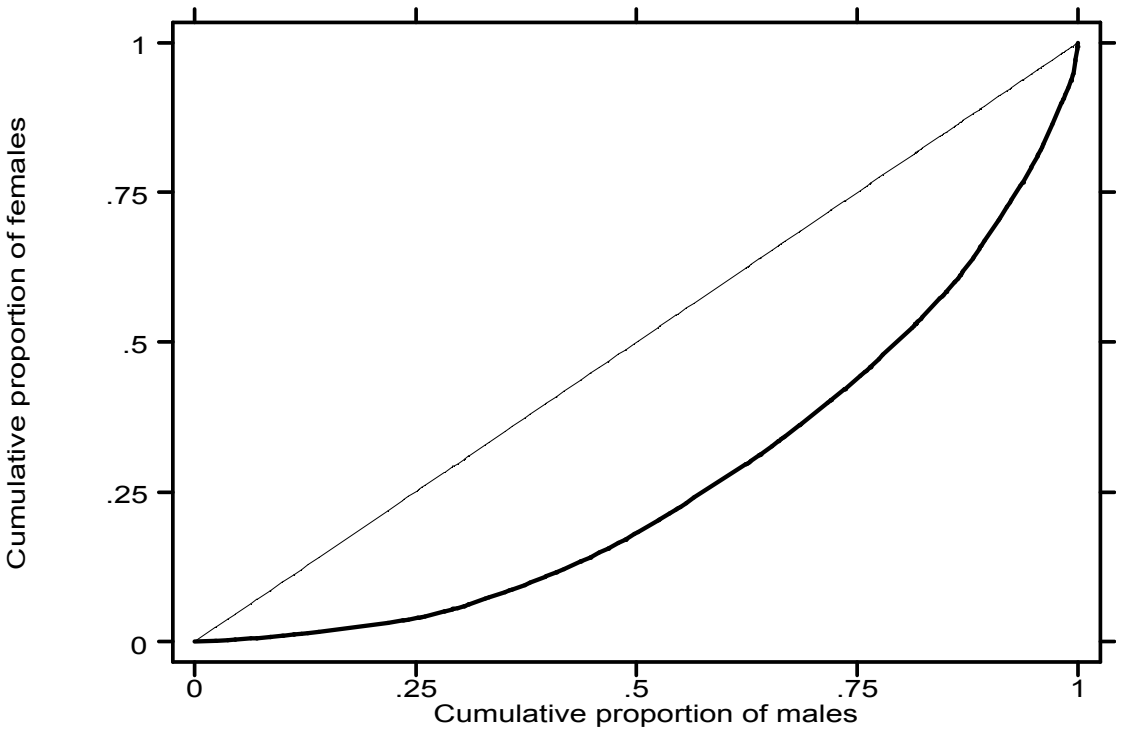

Table 5

HND gender differences

	Year						
	1996	1997	1998	1999	2000	2001	Average 1996-01
% HND acceptances to total acceptances (males)	10.29	11.04	10.88	10.60	10.80	10.59	10.70
% HND acceptances to total acceptances (females)	6.04	6.79	6.66	6.59	6.87	6.49	6.59
% male accepted onto degrees	67.11	68.56	69.14	70.40	71.35	73.49	70.03
% female accepted onto degrees	67.97	70.19	70.59	72.20	73.37	75.53	71.71

Table 6

Female logit (dependent variable = 1 if accepted onto a degree, 0 otherwise)

	Coefficient	t-stat
Constant	-0.37	(7.83)
Ethnic group (default White)		
Asian Bangladeshi	0.01	(0.52)
Asian Chinese	0.19	(7.85)
Asian Indian	0.15	(13.98)
Asian Other Asian	0.01	(0.34)
Asian Pakistani	0	(0.23)
Black African	-0.11	(7.54)
Black Caribbean	-0.1	(6.37)
Black Other	-0.09	(3.80)
X Other	-0.01	(0.88)
Time effects (default 1996)		
Year 1997	0.11	(15.04)
Year 1998	0.54	(8.00)
Year 1999	0.61	(9.04)
Year 2000	0.67	(9.97)
Year 2001	0.82	(12.18)
Social class (default professional)		
II Intermediate	-0.05	(5.65)
IIIM Skilled Manual	-0.15	(16.63)
IIIN Skilled non-Manual	-0.06	(5.90)
IV Partly Skilled	-0.13	(12.72)
V Unskilled	-0.17	(9.71)
X Unknown	-0.07	(7.67)
Education institution(96&97) (default A Other Maintained)		
A Comprehensive	0.38	(8.69)
A Grammar	0.16	(3.51)
A Sixth Form Centre	0.24	(4.36)
B Independent	0.27	(5.93)
C Other FE	0.27	(6.28)
C Sixth Form College	0.32	(7.10)
C Technical	0.16	(2.35)
D Higher Education	0.41	(8.67)
E Other	0.38	(7.93)
F Not known	0.66	(14.96)

	Coefficient	t-stat
Education institution (98 onwards) (default City Tech College)		
Adult College and Centre	0.2	(2.25)
Agric. & Hort. College	-0.72	(9.38)
Art Design & Perf. Art	-0.1	(1.93)
Comprehensive School	-0.07	(1.40)
Further Education	-0.2	(3.78)
Grammar School	-0.39	(7.34)
Grant Maintained (Spec Schl)	-0.03	(0.26)
Grant Maintained (Former Ind)	0.17	(1.65)
Grant Maintained Sec (State)	-0.09	(1.76)
Higher Education	0.22	(3.46)
Independent School	-0.22	(4.23)
Language School	0.51	(1.89)
Other Secondary School	-0.54	(9.04)
Sixth Form Centre	-0.08	(1.41)
Sixth Form College	-0.11	(2.07)
Special School	-0.56	(2.38)
Technical College	-0.35	(2.66)
Tertiary College	-0.16	(3.04)
Unknown	0.2	(3.83)
Further/Higher Education (2001 only)	-0.18	(3.48)
Qualification level (default 5 pts or less)		
10 to 6 pts	0.67	(34.83)
15 to 11 pts	1.27	(64.78)
20 to 16 pts	1.73	(89.53)
25 to 21 pts	2.04	(99.64)
30 to 26 pts	2.3	(112.38)
BTEC/SCOTVEC	0.21	(10.84)
Baccalaureate	0.88	(22.04)
Deg/Partial Degree Credit	-0.21	(8.74)
Foundation/Access	0.59	(29.93)
GNVQ Distinction	1.02	(43.99)
GNVQ Merit	0.37	(17.25)
Highers 3 or less	-0.69	(27.53)
Highers 4	0.91	(32.90)
Highers 5	1.52	(50.60)
Highers 6 or more	2.34	(62.98)
None	0	(0.25)
Other	-0.64	(32.80)
GNVQ Pass	-0.65	(31.24)
Additions to main qualification		
AS level	0.02	(2.42)
CSYS	0.58	(20.23)
Pseudo R^2		0.14
obs		1230438

Table 7

Decomposition analysis (females compared with males) – acceptance onto degrees

Decomposition around female characteristics	Absolute amount	%	Decomposition around male characteristics	Absolute amount	%
Total difference (Average female acceptance rate – male acceptance rate)	0.0169		Total difference (Average female acceptance rate – male acceptance rate)	0.0169	
Characteristics effect	0.0184	109.42	Characteristics effect	0.0169	100.50
Coefficients effect	-0.0016	-9.42	Coefficients effect	-0.0001	-0.50
Contribution of characteristic components			Contribution of characteristic components		
Ethnicity		-1.81	Ethnicity		-2.26
Time		7.13	Time		5.87
Social Class		0.07	Social Class		-0.17
Educational Establishment		-9.41	Educational Establishment		-6.15
Qualifications		102.93	Qualifications		101.48
Additional Quals		1.08	Additional Quals		1.23
Total		100.00			100.00

Table 8

Decomposition analysis (white females compared with non-white females) – acceptance onto degrees

Decomposition around non-white characteristics	Absolute difference	% contribution
Total difference (Average white acceptance rate – non-white acceptance rate	0.069	
Characteristics effect	0.075	108.43
Coefficients effect	-0.006	-8.43
% Contribution of characteristic components		
Time		-4.33
Social Class		4.28
Educational Establishment		0.34
Qualifications		96.70
Additional Quals		3.02
Total		100.00

Decomposition around white characteristics	Absolute difference	% contribution
Total difference (Average white acceptance rate – non-white acceptance rate	0.069	
Characteristics effect	0.079	114.62
Coefficients effect	-0.010	-14.62
% Contribution of characteristic components		
Time		-3.07
Social Class		2.34
Educational Establishment		-1.38
Qualifications		98.60
Additional Quals		3.50
Total		100.00

Table 9

Decomposition analysis – acceptance into degree and HND

Decomposition around female characteristics	Absolute amount	%	Decomposition around male characteristics	Absolute amount	%
Total difference (Average female acceptance rate – male acceptance rate)	-0.0165		Total difference (Average female acceptance rate – male acceptance rate)	-0.0165	
Characteristics effect	0.0087	-52.49	Characteristics effect	0.0102	-61.60
Coefficients effect	-0.0267	152.49	Coefficients effect	-0.0267	161.60
Contribution of characteristic components			Contribution of characteristic components		
Ethnicity		-2.72	Ethnicity		-0.96
Time		10.97	Time		9.96
Social Class		-0.89	Social Class		-1.27
Educational Establishment		-12.34	Educational Establishment		-9.46
Qualifications		103.62	Qualifications		100.07
Additional Quals		1.35	Additional Quals		1.66
Total		100.00			100.00

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