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May 2022 No: 1410

Warwick Economics Research Papers

ISSN 2059-4283 (online)

ISSN 0083-7350 (print)

# Awarding gaps in higher education by ethnicity, schooling and family background

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May 2022

*Abstract:* Previous research has established that undergraduate students in the UK who had attended private schools perform less well at university, on average, than equivalent students who had been educated at a state school prior to university (Smith and Naylor, 2001 and 2005; Crawford, 2014a). This well-known result has provided an evidence base for the use of contextualised offers in admissions across the sector (Schwartz Report, 2004; Hubble and Bolton, 2020) as an instrument for enhancing social mobility. In the current paper, we use a rich dataset for a particular university to examine whether the negative association between private schooling and class of degree awarded holds across all students, independent of ethnicity: we find that it does not. For White students, we obtain the standard result that private schooling is associated *negatively* with class of degree. However, in stark contrast, among students whose ethnicity is self-reported as either Black, Asian or Mixed Ethnicity, attendance at a private school prior to university is, on average, associated *positively* with the class of degree awarded. On further exploration, we find this is driven by a strong positive association among Black students and students of Mixed Ethnicity; the overarching category of Black, Asian and Minority Ethnicity conceals substantive differences within the category. Among Asian students, the absence of any association between private schooling and degree class, on average, masks a very strong negative association for those from lower socioeconomic status backgrounds. We discuss and interpret our results in the context of hypotheses within the literatures on schooling effects and on the ethnicity awarding gap in higher education.

*Acknowledgments*: We are grateful for helpful comments and suggestions from students, colleagues and seminar participants and, in particular, to Anil Awesti, Clive Fraser, Jamelia Harris and Meleisa Ono-George.

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## 1. Introduction

It is a well-established statistical finding that undergraduate students in the UK who had previously attended private schools perform less well at university than do students who had been educated at a state school prior to university, other things equal: in particular, for a given level of prior attainment, such as A-level grades. Smith and Naylor (2001) showed this for entire populations of UK students graduating in the early 1990s. Their calibrations showed that the average privately-educated student would have had to have achieved 2-3 grades higher in their pre-university A-level examinations in order to perform as well academically at university as an otherwise observationally-equivalent student who had attended a state comprehensive school. The result was shown to hold across the sector and across separate academic disciplines. The robustness of the result has been confirmed in a variety of subsequent studies conducted both by independent academic researchers and in official reports (HEFCE 2003, 2005; Crawford, 2014a; Thiele, Singleton, Pope & Stanistreet, 2015; Thiele *et al*., 2016; Rodeiro and Zanini, 2015, and Boliver, 2021). Motivated by the findings, the practice of taking into account the prior schooling circumstances of university applicants through 'contextualised offers' has become widespread since the Schwartz Report (2004) on fair admissions in UK higher education as the sector attempts to play a role in enhancing social mobility.

The analysis conducted by Smith and Naylor (2001) did not examine differences by ethnicity as the Universities Statistical Records (USR) dataset did not include data on student ethnicity.[1] In the current paper, we use a rich dataset for a particular university in order to analyse student characteristics associated with class of degree awarded to graduates, with a specific focus on previous schooling, student ethnicity and the intersection of the two. We also explore intersectionalities between previous schooling, ethnicity and other student characteristics, such as gender, socioeconomic status (based on family background and neighbourhood characteristics), and prior qualifications, such as A-level grades awarded prior to university admission.

An important issue in this field concerns the interpretation of any association between previous schooling and university degree class. A critical point to emphasise is that invariably

[1] The USR was the predecessor or the Higher Educations Statistics Agency (HESA) as the depository for administrative data on all university students in UK higher education institutions.

the data used in this literature cover university students only; we are not aware of any relevant research which models the selection of students into university. Hence, estimates of statistical relationships between student characteristics, including previous schooling, are to be interpreted as conditional on individuals having been admitted into university. Selection of students into university is, of course, non-random, being based largely on measures of attainment at the point of admission and this is likely to vary systematically by various student characteristics, including by the type and nature of pre-university schooling. This fact provides the basis for the standard hypothesis used to explain the negative association between attendance at a private school and class of degree.

The 'latent' or 'potential' ability hypothesis has the following key elements. First, that pre-university qualifications (e.g., A-level grades) reflect two factors, which are potentially complementary: (i) school inputs and (ii) underlying or potential ability of the pupil. Ability is typically interpreted as a complex mix of cognitive and non-cognitive traits which might be either innate or related to family or neighbourhood environment and is assumed not to be perfectly observable – either by the HE admissions officers or within the dataset available to the econometrician. The second element of the hypothesis posits that attendance at a private school is likely to enable a pupil to gain higher A-level grades than an otherwise identical individual with the same underlying ability but educated at a state school – for example, because of additional resources per pupil in the private sector. Third, therefore, comparing two individuals with *the same A-level grades* and identical observed characteristics, the one who had attended a state school would have higher expected underlying academic potential than the individual who had attended a private school. Fourth, if underlying potential is a significant driver of degree class, then on average the university student from the state school will outperform the student who has attended a private school, other things equal.

In reality, many factors will impact on the class of degree awarded to a student and these will interact with pre-university schooling and with each other in a variety of ways. We can distinguish between two sets of hypotheses: those which, like the potential ability argument, predict a negative effect of private schooling on degree class and those which imply a positive impact. The 'CV-incentive' hypothesis suggests that students educated in private schools who have achieved high A-level grades and have consequently been admitted to higher ranked university courses have already acquired such a strong curriculum vitae that they have a

weakened incentive to obtain a higher class of degree. They will therefore study less hard and will be likely to graduate with a lower class of degree. The incentive to study is further reduced if attendance at a private school also opens up better graduate labour market prospects (Crawford and Vignoles, 2014; Green *et al*., 2012; and Stanley *et al*., 2019). Naylor *et al*. (2002) report that graduate employment outcomes are better for those educated privately, but find no evidence that, on average, the link between degree class and graduate labour market prospects is weaker for those who had attended private schools – implying that the incentives to study do not differ by previous school type. Additionally, from the incentive-based hypothesis one might expect that the link between private schooling and degree class would be strongest in more highly-ranked universities where the temptation to "rest on ones' laurels" might be at its greatest. But there is no evidence of this; the negative private school effect is found to be broadly common across higher education institutions, independent of institution rank (Smith and Naylor, 2001 and 2005). An exception to this is the Oxbridge group of universities, for which Naylor and Smith (2001, 2005) find no clear evidence of a negative association between private schooling and degree class award (see also Parkes, 2011), a finding counter to the prediction of the CV-incentive hypothesis.

The 'over-placement' hypothesis is similar to the underlying ability argument and is based on the idea that private schools might have an advantage in placing their pupils in more highly ranked universities than their prior qualifications alone might warrant through access to resources such as application coaching, networking and support and guidance in the production of personal statements and letters of recommendation. Once placed at university, performance might then be expected to be inferior to that of other students who have not so benefitted. Finally, the 'study-style' hypothesis is based on the idea that while private schooling might, on average, raise the A-level grades achieved by pupils, the nature of teaching and learning which gives rise to this does not necessarily represent an appropriate preparation for higher educational study.

Running counter to the 'study-style' hypothesis, is the 'developmental hypothesis' that private schooling, through greater resourcing, will enhance the capacity of pupils not only to achieve better A-level grades but also their capacity to study and learn in ways which will live on beyond A-levels and into higher education, enabling the privately-educated to perform better than the state-educated once at university. It seems incontrovertible that there is likely

to be some positive association between the knowledge and learning methods acquired in school and those required at university. This advantage is potentially augmented by greater self-confidence or other non-cognitive attributes which might be associated with private schooling, for example the sense of familiarity and belonging generated within a community in which higher education is the norm. Green *et al*. (2017, 2018) find evidence of private schooling raising pupils' internal locus of control and their aspirations as well as enhancing access to networks.

The concept of 'belonging' and how this might vary across students by ethnicity is central to much discussion around the existence of awarding gaps by ethnicity in degree classification in higher education and could contribute to the understanding of differences by ethnicity in the association between schooling and degree class (see UUK-NUS, 2019). The 'ethnicity awarding gap' refers to the difference by ethnicity in the proportions of students awarded particular degree classes and is most typically referred to as the 'B.A.M.E' (or 'BAME') awarding gap, being the difference in proportions by degree class between White students and those of Black, Asian or Minority Ethnicities. As the Commission on Race and Ethnic Disparities (2021) has emphasised, however, individuals within the overarching categorisation BAME should not be regarded as a single homogeneous population. In our work, we find that results based on comparisons between BAME and White students conceal important differences by finer disaggregations of ethnicity.

The net effect of private schooling on university student outcomes will depend on the relative strength of the sorts of mechanisms described above. That the net effect is negative, on average, indicates that while it is plausible that some of any educational enhancement associated with private schooling might be complementary with higher educational study, this is more than offset by countervailing forces such as that described by the latent or potential ability hypothesis. But it is important to emphasise that the overall negative effect is true *on average*. There will be individuals and characteristics of individuals for which the weight of influences varies and for whom the net private schooling effect is therefore positive and it is plausible that the relative strengths of these influences might vary by ethnicity.

Schools differ in many regards other than simply by whether or not fees are charged. The literature has focused on this distinction but has also considered variations in student degree performance according to factors such as the level of fees charged, in the case of private

schools (Smith and Naylor, 2005) and school league table measures in the case of state schools (Crawford, 2014a, and Smith and Naylor, 2001). Universities' contextualised offer policies typically allow admissions officers to set lower A-level grade requirements to applicants who meet various criteria. These include factors such as parental education and occupation, neighbourhood and school characteristics, and other personal circumstances. It is not legitimate to make offers which discriminate directly on the basis of type of school. Instead, offers tend to be based on measures of school characteristics such as the proportion of pupils in receipt of free school meals and the proportions of pupils attaining certain levels of attainment at ages 16 (e.g., GCSE subject grades) and 18 (typically, A-level grades). The underlying argument is that if a university applicant achieves relatively high grades in a school environment in which only small proportions of pupils achieve high grades, then this indicates greater underlying potential than were those grades achieved in a school characterised by a greater proportion of high achieving pupils. In our empirical work, we consider differences in class of degree awarded by school characteristics, such as free school meal eligibility, as well as by school type.

Our analysis also contributes to the understanding of the ethnicity awarding gap in HE in the UK. Across the HE sector, the BAME awarding gap in the award of First Class degrees is *circa* 10 percentage points (10pp): 31% of White students were awarded Firsts compared with 21% of BAME students, based on sector level data for students graduating in 2018/19 (see https://www.hesa.ac.uk/data-and-analysis/students/outcomes#classifications). Degree class awards in the UK typically comprise Firsts, Upper Seconds, Lower Seconds, Thirds and Pass degrees. Summary statistics of classes by ethnicity and other variables are presented in Tables 1-7 below. The gap in relation to the award of Firsts and Upper Seconds combined is approximately 14pp: this is the more conventional measure of the BAME awarding gap. The awarding gap relative to White students tends to be greater among Black students than among Asian or Mixed Ethnicity students. The analysis conducted in this paper aims to show the extent to which ethnicity awarding gaps might vary across groups of students according to characteristics such as previous schooling, family background and their intersection.

In the next section of the paper, we describe the data and our statistical methodology. Section 3 presents the results of the statistical analysis of the relationship between schooling and degree class outcomes at a particular university, with a focus on variations by ethnicity and

other student characteristics including gender, family background, prior qualifications and the intersectionalities between these. Section 4 closes the paper with a summary of key findings and further remarks.

## 2. Data and methodology

We exploit administrative data for a series of cohorts of UK undergraduate students graduating from a particular university across the academic years 2013/14 to 2018/19, yielding a population of 12,815 students. We do not include international students in the analysis for two reasons: first, in order to make comparisons between students as like-for-like as possible and, second, because information on previous schooling, ethnicity, and family background is not always required of international students and is relatively sparse. We also note that the roles and characteristics of private schools vary hugely across countries. In addition, our analysis is motivated in part by the development of contextualised offer policies and these apply only to home students. We do not include those graduating in 2019/20 or 2020/21 as these cohorts were affected by substantial changes in teaching, learning and assessment as a result of the impact of the Covid-19 pandemic. In future work, it will be interesting to analyse differences before, during and after the implementation of such changes.

For UK students, the dataset is rich, containing detailed information on ethnicity, gender, prior qualifications (based on UCAS tariff points), previous school type (and other school characteristics), and socioeconomic status (SES) in relation to the student's background. UCAS tariff points are a measure of post-16 qualification attainment, based on grades awarded in A-levels or equivalent. In our analysis, we employ the UCAS New Tariff points system introduced from September 2017, applying it retrospectively to students in all of the cohorts in our dataset. We adopt the customary definition of a private school as a school which has fee-paying pupils; we term all other schools as state schools. SES is assessed by taking into account parental occupation and area-based 'proxy' measures of disadvantage that link individuals to a domicile location by geo-coding home postcode (Thiele *et al*., 2016). Parental occupation is measured using the National Statistics Socio-Economic Classification (NS-SEC), which is self-reported by students during the university admissions process, and classifies students into seven socioeconomic groups (Singleton, 2010; Thiele *et al*., 2016). Area-based disadvantage is assessed using two indicators of locational context: the

Participation of Local Areas (POLAR 4) measure, which estimates how likely young people are to go to HE based on where they live, and the Index of Multiple Deprivation, a composite measure of deprivation that covers different dimensions of disadvantage (Jerrim, 2021). In our empirical work, we define the lowest quintile on this SES measure as characterised by a 'lower SES' background.

Ethnicity information is available at a very detailed level. We have aggregated up to BAME and White ethnicity groups for the initial part of our analysis in order to maximise sample sizes. However, our sharper focus is to uncover evidence on how the association between schooling and degree class varies across students according to whether they are Black, White, Asian (non-Chinese), Chinese, or of Mixed ethnicity and, in addition, how these associations vary by family background at this more disaggregated level of ethnicity grouping. A breakdown of ethnicity by disaggregated sub-groupings is reported in an Appendix.

***Summary Statistics***

From Table 1, we see that 22% of students at this university had previously attended a private school and that the percentage is essentially the same for BAME and for White students.

**Table 1 Previous School type by Ethnicity**

| School type | Ethnicity summary | | |
|---|---|---|---|
| | BAME | White | Total |
| | % | % | % |
| State | 78.24 | 78.59 | 78.49 |
| Private | 21.76 | 21.41 | 21.51 |
| Total | 3552 | 9263 | 12,815 |

In contrast, there is considerable variation among BAME students by specific ethnicity grouping, as shown in Table 2.

**Table 2 Previous School type by Ethnicity Group**

| School type | Ethnicity Group | | | | | |
|---|---|---|---|---|---|---|
| | Asian | Black | Chinese | Mixed | White | Total |
| | % | % | % | % | % | % |
| State | 76.72 | 84.57 | 82.77 | 73.78 | 78.59 | 78.49 |
| Private | 23.28 | 15.43 | 17.23 | 26.22 | 21.41 | 21.51 |
| Total | 1,770 | 687 | 325 | 637 | 9,263 | 12,815 |

Asian and students of Mixed ethnicity are more likely to have attended a private school than are either Black, Chinese or White students. Black students are the least likely.

Table 3 reports that 23% of all BAME students were awarded a First Class and 60% an Upper Second: hence, a total of 83% were awarded a First or Upper Second, typically referred to as an 'upper honours degree class'. In contrast, 38% of White students were awarded a First Class and 52% an Upper Second: i.e., a total of 90% were awarded an upper honours degree class. Hence, in the raw data (that is, without controlling for the effects of any confounding factors) the BAME awarding gap is 15 percentage points (15pp) in relation to the rate at which Firsts are awarded and 7pp in relation to the award of upper honours degrees. From Table 3, we also see how the awarding gap varies by more disaggregated ethnicity groups. The Black student awarding gap, relative to White students, is 22pp for Firsts, considerably greater than the average of 15pp across all BAME groups, calculated as the percentage of White students awarded Firsts (=37.88%) minus the percentage of Black students awarded Firsts (=15.43%)..

**Table 3 Degree class awards by Ethnicity Groups**

| | Ethnicity Groups | | | | | | |
|---|---|---|---|---|---|---|---|
| Degree Class | Asian | Black | Chinese | Mixed | All BAME | White | Total |
| | % | % | % | % | % | % | % |
| First | 22.66 | 15.43 | 28.00 | 28.10 | 23.31 | 37.88 | 33.69 |
| Upper Second | 60.06 | 63.32 | 55.38 | 58.08 | 60.15 | 52.24 | 54.37 |
| Lower Second | 15.03 | 19.21 | 14.46 | 11.77 | 13.53 | 8.68 | 10.47 |
| Third | 2.26 | 2.04 | 2.15 | 2.04 | 3.01 | 1.20 | 1.47 |
| Total | 1,770 | 687 | 325 | 637 | 133 | 9,263 | 12,815 |

As very small percentages of students at this institution are awarded lower degree classes (i.e., below an Upper Second) – only 12% of students, as can be calculated from the final column of Table 3 – in the analysis set out in Section 3 of the paper we restrict ourselves to the gap in the award of Firsts relative to all other degree classes (i.e., non-Firsts) as this gives a better balance across the population under analysis.

Table 4 reports the frequency of Firsts and non-Firsts by previous schooling. 34% of students educated at state schools were awarded Firsts compared to 31% of those who had attended private schools. This raw difference is consistent with the well-established finding across the

sector of a negative association between private schooling and degree class; on average at this institution, a student who had attended a private school is 3pp less likely to be awarded a First than are other students, before controls are included to allow for the influence of confounding factors and to explore variations by ethnicity and other characteristics.

**Table 4 Degree award (Firsts versus non-Firsts) by previous School type**

| | School type | | |
|---|---|---|---|
| Degree Class | State | Private | Total |
| | % | % | % |
| First | 34.29 | 31.49 | 33.69 |
| Non-First | 65.71 | 68.51 | 66.31 |
| Total | 10,059 | 2,756 | 12,815 |

Family background is a potential influence on degree class awards (see Smith and Naylor, 2001, Crawford 2014b), with effects which potentially vary by ethnicity. Table 5 reports frequencies by ethnicity by family background measured according to whether this is categorised as lower socioeconomic status ('Lower SES') – that is, within the lowest SES quintile – or not (labelled 'Higher SES'). We see that 20% of BAME students come from a lower SES family background but only 14% of White students do so. In subsequent analysis exploring the relationships between previous schooling, ethnicity and degree class, we will allow for the possible role of family background, both in its own right and in its intersection with schooling and ethnicity.

**Table 5 Family background (SES) by Ethnicity**

| | Ethnicity Summary | | |
|---|---|---|---|
| Family background | BAME % | White % | Total % |
| Higher SES | 79.73 | 86.47 | 84.60 |
| Lower SES | 20.27 | 13.53 | 15.40 |
| Total | 3,552 | 9,263 | 12,815 |

An important confounding factor to take into account is the student's prior qualifications, defined as UCAS tariff points which measure grades achieved at age 18 in A-levels or equivalent qualifications. As discussed above, the evidence-base for contextualised admissions policies is rooted in findings showing a negative association between private schooling and degree class, for given levels of prior attainment as measured by A-level points

or equivalent. Table 6 shows that at the particular university the average UCAS points score is 187 both for students previously attending a private school and for those from state schools.

**Table 6 UCAS tariff points by previous School type**

| School type | Obs | mean | sd |
|---|---|---|---|
| State | 9,350 | 187.19 | 39.63 |
| Private | 2,713 | 186.51 | 38.57 |

Table 7 shows that the average UCAS score of BAME students admitted to this institution was 182: 7 points lower than the average of 189 for White students. By way of calibration, under the UCAS tariff points system, a gap of this magnitude is approximately equal to a difference of one A-level grade in one A-level subject. For example, a profile of A*A*A* would score 168 UCAS points while a profile of A*A*A would score 160 UCAS points. That the average UCAS tariff scores are so high (in excess of the 168 points associated with A*A*A*) indicates that the typical student at this institution has high scores in more than 3 A-level subjects.

**Table 7 UCAS tariff points by Ethnicity**

| Ethnicity Summary | Obs | mean | sd |
|---|---|---|---|
| BAME | 3,387 | 182.36 | 38.11 |
| White | 8,676 | 188.86 | 39.74 |

The next section of the paper presents empirical results based on regression analysis in which the degree class awarded to students is regressed against sets of regressors, including schooling, ethnicity, gender, UCAS tariff points and family background, along with specific interaction terms to explore possible intersectionalities in the relationships between degree award, schooling, ethnicity and other attributes.

## 3. Empirical Results

This section presents results of regressions based on a linear probability model in which the dependent variable is dichotomous: 1 if a First, 0 otherwise. The key regressors are (i) a dummy variable for having attended a private school prior to university and (ii) variables capturing the student's ethnicity (for example, a dummy variable indicating that their

ethnicity is classified as BAME). Different specifications of the model incorporate successively more control variables to estimate the influence of various confounding factors, such as gender, family background, prior qualifications and intersectionalities between sets of regressors.

The baseline regression equation can be written as:

$$F_i = \alpha + \beta_1 P_i + \beta_2 E_i + \beta_3 [P_i * E_i] + X_i' \gamma + \varepsilon_i \quad [1]$$

where,

$F_i = 1$ if student $i$ was awarded a First class degree; $F_i = 0$ if not

$P_i = 1$ if student $i$ attended a Private school prior to university; $P_i = 0$ if not

$E_i = 1$ if student $i$'s ethnicity is recorded as BAME; $E_i = 0$ if ethnicity is White

$X_i$ is a vector of other student characteristics.

$\beta_j$ $(j = 1, 2, 3)$ and the vector $\gamma$ represent the associated coefficients in regression [1] and $\varepsilon_i$ is the regression error term. The interaction term $[P_i * E_i]$ allows us to explore whether the association between previous schooling and degree class awarded varies with the student's ethnicity. The default case in the regression analysis refers to an individual of White ethnicity who attended a state school: $P_i = 0$, $E_i = 0$. Inserting these values into equation [1], we write the probability of a First for a state educated student, identified with the superscript $S$ in equation [2], with ethnicity White (superscript $W$) as:

$$F_i^{SW} = \alpha + X_i' \gamma \quad [2]$$

where $F_i^{SW}$ is shorthand for $\text{prob}(F_i = 1)$. We note that the probability of a First, that is the probability that $F_i = 1$, is the same as the conditional expectation of $F_i$. Thus, from equation [1], assuming that the zero conditional mean assumption holds, the conditional probability is given by: $\text{prob}(F_i = 1) = \alpha + \beta_1 P_i + \beta_2 E_i + \beta_3 [P_i * E_i] + X_i' \gamma$.

For a privately educated student (superscript $P$) with ethnicity White, $P_i = 1$, $E_i = 0$, we have:

$$F_i^{PW} = \alpha + \beta_1 + X_i' \gamma \quad [3]$$

For a state educated student with ethnicity BAME (superscript $B$), $P_i = 0$, $E_i = 1$, the probability of a First class degree is given by:

$$F_i^{SB} = \alpha + \beta_2 + X_i' \gamma \quad [4]$$

And for a privately educated student with ethnicity BAME, $P_i = 1$, $E_i = 1$, the probability of a First is:

$$F_i^{PB} = \alpha + \beta_1 + \beta_2 + \beta_3 + X_i'\gamma \quad [5]$$

From comparison of [2] and [3], it follows that for White students the difference in the probability of the award of a First between those attending a private school and those from a state school is given by:

$$F_i^{PW} - F_i^{SW} = \beta_1 \quad [6]$$

Similarly, from [4] and [5], for students with ethnicity BAME, the difference in probability between the private and the state school educated is given by:

$$F_i^{PB} - F_i^{SB} = \beta_1 + \beta_3 \quad [7]$$

Estimated coefficients, $\hat{\beta}_j$ and $\hat{\gamma}$, are reported in Table 8, in which each column represents a different specification of the linear probability model as additional control variables, including interaction terms, are successively incorporated. As the errors of the linear probability model are inherently heteroskedastic, results reported in each of our tables are based on robust standard errors.

**Table 8 Regression of linear probability model for award of First Class degree**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Private school $[P_i = 1]$ | -0.0279*** | -0.0273*** | -0.0521*** | -0.0577*** | -0.0581*** | -0.0640*** |
| | (0.0100) | (0.0100) | (0.0121) | (0.0121) | (0.0121) | (0.0132) |
| BAME $[E_i = 1]$ | | -0.1512*** | -0.1705*** | -0.1582*** | -0.1578*** | -0.1497*** |
| | | (0.0087) | (0.0097) | (0.0101) | (0.0101) | (0.0111) |
| Private*BAME $[P_i = E_i = 1]$ | | | 0.0887*** | 0.0756*** | 0.0754*** | 0.0835*** |
| | | | (0.0213) | (0.0212) | (0.0212) | (0.0233) |
| UCAS pts | | | | 0.0022*** | 0.0022*** | 0.0023*** |
| | | | | (0.0001) | (0.0001) | (0.0001) |
| Female | | | | | -0.0143* | -0.0118 |
| | | | | | (0.0085) | (0.0093) |
| Lower SES | | | | | | -0.0249** |
| | | | | | | (0.0116) |
| Constant | 0.3429*** | 0.3847*** | 0.3900*** | -0.0204 | -0.0100 | -0.0278 |
| | (0.0047) | (0.0055) | (0.0057) | (0.0212) | (0.0222) | (0.0246) |
| *N* | 12,815 | 12,815 | 12,815 | 12,063 | 12,063 | 10,112 |
| $R^2$ | 0.001 | 0.021 | 0.022 | 0.058 | 0.059 | 0.060 |

Robust standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Column 1 of Table 8 reports the estimated coefficient of –0.0279 on the Private school variable, which implies that, *on average across all students*, a student who attended a Private school is 3pp less likely to be awarded a First class degree than is a student who had attended a State school. The estimated coefficient in specification (1) is statistically significantly different from zero at the 1% level of significance – as it continues to be across all of the specifications reported in the table. From Column 2, we see that, relative to White students, BAME students are 15pp less likely to be awarded a First. This is the BAME awarding gap and is the same as that reported in Table 3 based on the raw difference.

The key finding from Table 8 concerns the impact of the inclusion of the interaction term between previous schooling and ethnicity, Private*BAME or $P_i * E_i$, introduced in Column 3, which allows the association between private schooling and degree class to vary between BAME and White students. The default case refers to a state educated student of ethnicity White [ $P_i = 0$ , $E_i = 0$ ]. From Row 1 of Column 3, we see that a White student from a private school is 5pp less likely to be awarded a First than is a White student from a state school: this follows from equation [6], which shows that $F_i^{PW} - F_i^{SW} = \beta_1$. This result conforms with research evidence on the negative association between private school and degree class award, noting that the existing research literature fails to distinguish by ethnicity and so is based on the majority of students in the sector – amongst whom the median student has ethnicity White. We note that with the inclusion of the interaction term, the absolute magnitude of the estimated coefficient has jumped from –3pp to –5pp between Columns 2 and 3: in other words, the negative association between private schooling and degree class is especially large when we consider White students specifically.

Now consider the difference between the private and state educated in the probability of the award of a First among BAME students as shown in Column 3 of Table 8: this difference is given by the sum of the estimated coefficients on the Private variable (equal to –5pp) and on the Private*BAME variable interaction (equal to 9pp), based on $F_i^{PB} - F_i^{SB} = \beta_1 + \beta_3$, as shown in equation [7] above. It follows that, among BAME students, those educated in private schools prior to university are 4pp *more likely* to be awarded a First than those educated in state schools, on average: this probability difference of 4pp can be shown to be statistically significantly different from zero at the 5% level of significance. This runs counter to our result

for White students and to the standard finding in the sector for the average difference across all students, indicating that conventional wisdom does not necessarily hold beyond students of White ethnicity. We are not aware of previous evidence of this difference by ethnicity in the association between schooling and degree class awarded.

Regarding the influence of the controls introduced in Columns 4 through 6, we note that the estimated coefficients on the dummy variables for private school, for BAME ethnicity and for their interaction remain highly statistically significant with the successive inclusion of controls for gender, for UCAS tariff points, and for family background. In our preferred specification, shown in Column 6, the magnitude of the association between private schooling and degree class is –6pp (from the estimated coefficient of –0.0640) among White students and 2pp (the sum of –0.0640 and 0.0835) among students with ethnicity BAME. We note that the number of observations falls by 752 and by 1,951 on the inclusion of the controls for UCAS pts and for Lower SES background, respectively, because of cases with missing information on these variables. Results are unchanged if instead of dropping such cases, dummy variables are included to account for missing information. In other specifications, we interact ethnicity with gender and with UCAS points but find the estimated coefficients on the interaction terms not to be statistically significantly different from zero.

We conclude from the results presented in Table 8 that while for White students there is the usual strong negative association between attendance at a private school prior to university and subsequent degree class award, for BAME students there is no such evidence of a negative association: instead, the evidence points to a small positive association, on average. In Section 3.1, we explore whether this is true for all BAME ethnicity groups.

We also note from Table 8 that the estimated coefficient on the BAME variable is quite robust and highly statistically significant, implying a BAME awarding gap of around 15pp relative to White students. The consistent and highly significant estimate of 0.0022 for the estimated coefficient on the UCAS tariff score indicates that an increase of 10 points in the score is associated with an increase in the probability of a First of around 2pp. The estimated coefficient on the dummy variable female indicates that, once we have controlled for other confounding factors incorporated in our model, female students are about 1pp less likely to be awarded a First than male students, on average, though this association is, at most, only weakly significant. From Column 6, we note that the probability of a student being awarded

a First is around 2pp lower for students from a low SES background: this result is significant at the 5% level of statistical significance and is consistent with findings reported in Smith and Naylor (2001) and in Crawford (2014b).

### *3.1 Results for specific ethnicity groups*

Table 9 reports estimated coefficients from the linear probability regression of the probability of a First class degree by a finer ethnicity classification than was considered in Table 8. Columns 1 and 2 present results for Black students and students of Mixed Ethnicity while Columns 3 and 4 refer to results for all Asian students, a category which includes Chinese students for the purpose of the analysis reported in Table 9: we note that results are unchanged if Chinese students are excluded from the analysis.

**Table 9 Regression of linear probability model for award of First Class degree by disaggregated BAME groups.**

| | Black and Mixed Ethnicity students (1) | Black and Mixed Ethnicity students (2) | Asian students (3) | Asian students (4) |
|---|---|---|---|---|
| Private school | 0.0611** | 0.0610* | 0.0168 | -0.0071 |
| | (0.0294) | (0.0331) | (0.0225) | (0.0247) |
| UCAS pts | | 0.0027*** | | 0.0023*** |
| | | (0.0004) | | (0.0003) |
| Female | | 0.0030 | | -0.0248 |
| | | (0.0259) | | (0.0211) |
| Low SES | | -0.0498 | | -0.0098 |
| | | (0.0312) | | (0.0230) |
| Constant | 0.2027*** | -0.2566*** | 0.2311*** | -0.1635*** |
| | (0.0124) | (0.0673) | (0.0105) | (0.0551) |
| *N* | 1324 | 1002 | 2095 | 1684 |
| $R^2$ | 0.004 | 0.064 | 0.000 | 0.044 |

Robust standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

From Column 1 of Table 9, we see that among Black and Mixed Ethnicity students, there is a very sizeable positive association between having attended a private school prior to university and the subsequent likelihood of being awarded a First class degree. The magnitude is around 6pp and is statistically significantly different from zero at the 5% level of significance. Column 2 shows that the magnitude remains the same but the precision falls marginally (to a p-value of 0.065) when controls are introduced for the influence of confounding factors for which

there are missing cases. The estimate of a 6pp difference among Black and Mixed Ethnicity students between those from private and those from state schools is much greater than the average difference of around 2pp reported for all BAME students in Column 6 of Table 8. The result for Black and Mixed Ethnicity students is clearly responsible for driving the overall BAME result reported in Table 8 – and this is underlined in Columns 3 and 4 of Table 9, which show that among Asian students there is, on average, no statistical association between prior schooling and university degree class awarded. Black students and students of Mixed Ethnicity are grouped together in Table 9 because estimated coefficients were very similar for the two groups.

From the evidence of Tables 8 and 9, therefore, we conclude that compared to students who attended a state school, those who had attended a private school were: (i) among White students, 6pp *less likely* to be awarded a First, (ii) among Black and Mixed Ethnicity students, 6pp *more likely* to be awarded a First and (iii) among Asian students, *equally likely* to be awarded a First, on average.

What might lie behind our surprising finding that for Black students and students of Mixed Ethnicity attendance at a private school prior to university is *positively* associated with the probability of being awarded a First class degree, in stark contrast to the evidence for White students? One approach to this question is to draw on the related literature focusing on the BAME awarding gap. A widely-accepted set of factors contributing to BAME gaps in higher education relates to the concept of the student's sense of 'belonging' (see, for example, UUK-NUS, 2019). The key idea is that students will be better able to reach their academic potential at university the greater is their sense of belonging within their course and within their student community and this is likely to vary by ethnicity, among other characteristics. The evidence we have uncovered is consistent with the hypothesis that Black and Mixed Ethnicity students might, on average, have a weaker sense of belonging than White students as this would be consistent with our finding of an overall BAME awarding gap (of around 15pp) in the probability of the award of a First class degree, relative to White students. We speculate that our evidence is also consistent with the hypothesis that for Black and for Mixed Ethnicity students the sense of belonging or preparedness for the life and study at university might be stronger among those who attended private schools prior to university. One might then ask, however, why this mechanism would not equally apply among White students. Our answer

would be that, for some, it probably does – though not sufficiently strongly to counteract the influences of those factors which drive a negative association between private schooling and degree class, such as described in the potential ability hypothesis.

More specifically, we note that the concept of belonging is one which has been developed in the particular context of the BAME awarding gap at university and hence we view this as a particularly plausible basis for an explanation of the differences by ethnicity we have uncovered in the association between prior school type and degree class awards. We also note that a range of factors are likely to be impacting on the relationships between degree class, schooling, ethnicity and family background, including the impacts of conscious and unconscious biases at various stages within and beyond the educational context. More general than the notion of belonging is the concept of 'institutional habitus', which refers to social and cultural biases within education which interact with class and race with potentially significant impacts on students' behaviours and outcomes in higher education (see Reay *et al.*, 2001, and Thomas, 2002). An implication of our findings is that any contextualised admissions policy which takes account of school background should not be administered without also taking ethnicity into consideration.

### *3.2 Results for the intersection of ethnicity and family background*

We now turn to the exploration of possible intersectionalities between schooling, ethnicity and socioeconomic background in their association with degree class awarded to students. Inevitably, in cutting the data by so many intersecting categories, we are analysing some cases with relatively small samples – especially as, in addition to the overall BAME ethnicity classification, we also examine more disaggregated sub-groups. For each ethnicity grouping analysed, the regressions include the dichotomous variables both for private schooling and for a lower SES background and also an interaction term (Private*Lower SES) in order to allow the association between private schooling and degree class awarded to differ according to the SES family background measure. In each column of Table 10, the default case refers to a student who attended a state school and was from a SES background ranked above the lowest SES quintile.

The key result emerging from Table 10 concerns the findings for Asian students (reported in Column 2) and how these contrast with results for students of other ethnicities. First,

however, we set the context by describing the evidence presented in Column 1 for all BAME students. The estimated coefficient on the private school variable in Row 1 indicates that among BAME students from higher SES backgrounds, a student who had attended a private school is 3pp more likely to be awarded a First class degree than is a counterpart who had attended a state school before university, on average. The association, however, is not statistically significantly different from zero at the 10% significance level (with a p-value of 0.158). Among BAME students from lower SES backgrounds, the evidence suggests that any association between private schooling and class of degree award is negative: summing the estimated coefficients on the private school variable (0.0304) and on its interaction with Lower SES (–0.0851) produces an association of –5pp, though we note that the estimated coefficient on the interaction term is not statistically significant at the 10% level (it has a p-value of 0.106). The findings presented in Columns 2 and 3 distinguish between ethnicity groups within the BAME overall grouping and yield more precise results: analysis at the overarching BAME level are masking associations revealed at a finer level of ethnicity breakdown, as was also the case with results reported in Table 9.

**Table 10 Regression of linear probability model for award of First Class degree by ethnicity, schooling and family background (SES).**

| | All BAME students (1) | Asian students (2) | Black and Mixed Ethnicity students (3) | White students (4) |
|---|---|---|---|---|
| Private school | 0.0304 | 0.0209 | 0.0587* | -0.0624*** |
| | (0.0215) | (0.0288) | (0.0348) | (0.0140) |
| Lower SES | -0.0058 | 0.0186 | -0.0522 | -0.0241 |
| | (0.0197) | (0.0276) | (0.0326) | (0.0161) |
| Private*Lower SES | -0.0851 | -0.1824*** | 0.0175 | -0.0137 |
| | (0.0526) | (0.0623) | (0.1048) | (0.0442) |
| UCAS pts | 0.0025*** | 0.0024*** | 0.0027*** | 0.0023*** |
| | (0.0002) | (0.0003) | (0.0004) | (0.0001) |
| Constant | -0.2159*** | -0.2091*** | -0.2534*** | -0.0365 |
| | (0.0403) | (0.0564) | (0.0649) | (0.0277) |
| *N* | 2686 | 1419 | 1002 | 7326 |
| $R^2$ | 0.050 | 0.049 | 0.064 | 0.040 |

Robust standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results reported in Table 9 demonstrated substantive differences between Asian and other BAME students in the relationship between schooling and degree class awarded. The positive association between private schooling and the probability of the award of a First applied to Black and to Mixed Ethnicity students but not to Asian students, for whom the hypothesis of no association could not be rejected. In Columns 2 and 3 of Table 10 we address the related questions as to (i) whether the absence of any association, on average, between schooling and degree class among Asian students disguises differences within this group by SES of family background and (ii) whether the positive association among Black and Mixed Ethnicity students holds independent of SES background.

From Column 2 of Table 10, we see that the estimated coefficient on the private school variable in Row 1 is not statistically significantly different from zero indicating that among Asian students from higher SES backgrounds, a student who had attended a private school is just as likely to be awarded a First class degree as is a counterpart who had attended a state school before university. This is consistent with results for all Asian students presented in Table 9. In contrast, among Asian students from lower SES backgrounds, the evidence suggests a substantial negative association between private schooling and the probability of the award of a First: adding the estimated coefficients on the private school variable (effectively equal to zero) and on the interaction with Lower SES (–0.1824) implies that those Asian students from lower SES backgrounds and educated at private schools are 18pp less likely to be awarded a First. The estimated coefficient on the interaction term is statistically significant at the 1% level.

For Black and Mixed Ethnicity students, Column 3 confirms the result reported in Table 9 concerning the positive association of 6pp between the probability of a First and attendance at a private school and reveals in addition that there is no statistically significant difference in this positive association by SES background: the estimated coefficient on the interaction term Private*LowSES is effectively zero with a p-value of 0.86.

Column 4 of Table 10 reports results for White students. From Row 1, we see that among White students from the higher SES backgrounds, a student who had attended a private school is 6pp less likely to be awarded a First class degree than is a counterpart who had attended a state school before university: this is the same as the figure reported for White students based on the pooled analysis reported in Column 6 of Table 8. The association is

again statistically significantly different from zero at the 1% significance level. We note that the estimated coefficients on the Lower SES variable and on its interaction with the Private schooling variable are not statistically significantly different from zero: among White students the negative association between private schooling and class of degree award holds for those from low SES backgrounds as much as it does for those from higher SES backgrounds.

Results reported in Columns 3 and 4 of Table 10 confirm (i) that results reported in Tables 8 and 9 concerning the negative association between private schooling and class of degree for White students and the positive association for students of Black or Mixed ethnicities and (ii) that these associations hold regardless of SES backgrounds of these students of non-Asian ethnicity. In contrast, from Column 2 we find that for Asian students, there is a statistically significant non-zero association only among those from lower SES backgrounds and that the magnitude of this negative effect is substantial. We now consider why this negative association between private schooling and the likelihood of a First class degree might be so pronounced among Asian students from lower SES backgrounds.

A possible answer to this question is to look further into differences in school characteristics (and not solely in school type) by ethnicity. We find that among state-educated students from lower SES backgrounds, while only 7% of White students had attended schools classified by the university as meeting the criterion of disadvantage in relation to pupil free school meals (FSM) eligibility, the equivalent figure for Asian students was 21%. We recall that the potential ability hypothesis, described in Section 1 to explain differences in degree class by school type, is based on the idea that the less advantaged is the student's previous schooling, the greater is their potential to do well at university, for a given level of prior attainment, other things equal. A number of papers have shown that academic attainment at university is greater among students from less advantaged school backgrounds such as those from schools with lower average attainment rates or with higher rates of FSM eligibility: see, for example, Smith and Naylor, 2001; Crawford, 2014a; and Thiele *et al*., 2015.

High rates of FSM eligibility are indications of relative disadvantage prior to university. Students who had attended schools with higher FSM rates might therefore be expected to have higher probabilities of First class degree awards under the potential ability hypothesis. We conclude that the greater likelihood of attending schools with high FSM rates is a plausible candidate to explain our finding of a greater magnitude in the negative association between

private schooling and degree class award for Asian students from lower SES backgrounds than for their White counterparts. The interpretation of our result is that the Asian students from lower SES backgrounds and educated at state schools are particularly likely to have significant unrealised potential to perform academically at university, compared to their White counterparts, and hence are the more likely to benefit from contextualised offer policies in HE. Hence, such policies have the capacity to promote opportunity and social mobility along a variety of dimensions, including by ethnicity.

### *3.3 Variation in awarding gaps by ethnicity by previous school type*

Our analysis has focused on the association between degree class award and previous schooling and how this association differs by ethnicity. We can also interpret our results explicitly through the prism of the ethnicity awarding gap and how this differs by previous schooling. From equations [2] and [4], it follows that among those educated in state schools the BAME awarding gap in relation to First class degrees is given by:

$$F_i^{SW} - F_i^{SB} = \beta_2 \quad [8]$$

where $\beta_2$ refers to the coefficient on the ethnicity variable $[E_i]$ in the regression equation [1]. Based on the results reported in Column 6 of Table 8, the BAME gap in Firsts among those educated in state schools, $F_i^{SW} - F_i^{SB}$, is therefore estimated by:

$$\hat{\beta}_2 = 15\text{pp} \quad [9]$$

For those educated in private schools, the BAME gap in Firsts, $F_i^{PW} - F_i^{PB}$, is estimated by:

$$\hat{\beta}_2 + \hat{\beta}_3 = 7\text{pp} \quad [10]$$

based on Table 8, where $\hat{\beta}_3$ refers to the estimated coefficient on the interaction term $[P_i * E_i]$ in regression equation [1]: based on the evidence from Column 6 of Table 8 that $\hat{\beta}_2 = -0.1497$ and $\hat{\beta}_3 = 0.0835$. Hence, a corollary of our findings is that the BAME awarding gap is lower among those educated in private schools [at 7pp] than among those educated in state schools [at 15pp].

## 4. Conclusions and further remarks

Previous literature has established that, on average, students who attend private schools prior to university have a lower probability of being awarded First class degrees than students who were educated in state schools, other things constant. The typical explanation for this is

that state educated students who have achieved the same prior qualifications as their counterparts educated in typically better resourced private schools are likely to have greater 'latent' academic potential and this lies behind their greater likelihood of First class degree awards. In the current paper, we analyse the extent to which the nature of the association between prior schooling and class of degree awarded varies by student ethnicity. We also explore intersectionalities between ethnicity, schooling and family background in their relationships with degree classification.

Our key finding is that the association between degree class and the type of school attended prior to university differs fundamentally by ethnicity. For the institution on which our analysis is based, we find that the standard negative association between private schooling and degree class holds only for White students: among BAME students the association is positive, on average. In terms of the magnitudes of our estimates, we find that among White students those educated privately are approximately 6pp *less* likely to be awarded a First class degree than those from state schools. Among BAME students, the privately educated are about 2pp *more* likely to be awarded a First – though this modest difference disguises substantial variation within the overall BAME ethnicity classification. We find that among Black students and students of Mixed Ethnicity the privately educated are about 6pp more likely to be awarded a First than those from state schools: an association equal in magnitude but opposite in direction to that of White students. We also note that a corollary of our findings is that the average BAME awarding gap is substantially lower among those educated in private schools [at 7pp] than among those educated in state schools [at 15pp].

In contrast to our results for Black students and students of Mixed Ethnicity, we find no statistically significant association between previous schooling and degree class awarded among Asian students, on average. However, we identify a specific sub-group of Asian students for whom there is a very strong negative association between having attended a private school and the probability of the award of a First class degree; Asian students from lower SES family backgrounds who attended private schools are 18pp less likely to be awarded a First than are their state school educated counterparts. Hence, the direction of this association is the same as among White students, on average, but is much greater in magnitude. We have hypothesised how this could be related to the fact that in our data, compared to otherwise equivalent White students, state-educated Asian students from lower

SES backgrounds are more likely to have attended less advantaged schools, as measured by rates of eligibility for free school meals. Under the latent ability hypothesis, this is likely to indicate that, on average, these students will have greater potential to 'outperform' their privately educated Asian counterparts at university, other things equal. It also indicates that among those from lower SES backgrounds, the gap in potential between the state and the privately educated Asian students is greater than that among White students. An implication of our findings is that contextualised offer policies at the point of university admission are likely to be particularly beneficial for relatively less advantaged Asian students.

In speculating about possible explanations for our finding that Black students and students of Mixed Ethnicity who attended private schools are substantially *more* likely than are their state school-educated counterparts to be awarded First class degrees, we suggest that the concept of belonging is one plausible explanatory factor. The literature concerning the BAME awarding gap identifies the importance of belonging and it seems plausible that attendance at a private school prior to university might provide a comparative advantage – at least socially – in preparing students for the institutional context of university life and study, especially in contexts in which the sense of belonging might otherwise be challenged. We leave further exploration of hypotheses regarding the mechanisms underlying our findings for future research, noting that it will be interesting to see whether the results we have obtained for one particular institution also hold at the sector level or at different universities by type or according to institutional characteristics.

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## Appendix

### Ethnicity breakdown

| | *Freq* | *Percent* | *Cum.* |
|---|---|---|---|
| *Asian* | | | |
| Asian or Asian British - Bangladeshi | 100 | 0.78 | 0.78 |
| Asian or Asian British – Indian | 1,099 | 8.58 | 9.36 |
| Asian or Asian British – Pakistani | 282 | 2.20 | 11.56 |
| Other Asian Background | 289 | 2.26 | 13.81 |
| *Black* | | | |
| Black or Black British – African | 547 | 4.27 | 18.08 |
| Black or Black British – Caribbean | 122 | 0.95 | 19.03 |
| Other Black Background | 18 | 0.14 | 19.17 |
| *Mixed* | | | |
| Mixed - White and Asian | 280 | 2.18 | 21.39 |
| Mixed - White and Black African | 66 | 0.51 | 21.90 |
| Mixed - White and Black Caribbean | 85 | 0.66 | 22.56 |
| Other Mixed Background | 206 | 1.61 | 24.17 |
| *Chinese* | 325 | 2.54 | 26.71 |
| *Other Non-White* | 133 | 1.04 | 27.75 |
| *White* | 9,263 | 72.28 | 100 |
| Total | 12,815 | 100 | |