Oxford Review of Education

ISSN: 0305-4985 (Print) 1465-3915 (Online) Journal homepage: http://www.tandfonline.com/loi/core20

The relationship between A-level subject choice and league table score of university attended: the ‘facilitating’, the ‘less suitable’, and the counter-intuitive

Catherine Dilnot

To cite this article: Catherine Dilnot (2018) The relationship between A-level subject choice and league table score of university attended: the ‘facilitating’, the ‘less suitable’, and the counter-intuitive, Oxford Review of Education, 44:1, 118-137, DOI: 10.1080/03054985.2018.1409976

To link to this article: https://doi.org/10.1080/03054985.2018.1409976

Published online: 12 Feb 2018.

OXFORD REVIEW OF EDUCATION, 2018
VOL. 44, NO. 1, 118–137
https://doi.org/10.1080/03054985.2018.1409976

Routledge
Taylor & Francis Group

OPEN ACCESS Check for updates

The relationship between A-level subject choice and league table score of university attended: the 'facilitating', the 'less suitable', and the counter-intuitive

Catherine Dilnot

Oxford Brookes University, UK

ABSTRACT

English students from less privileged backgrounds and state, rather than private, schools remain significantly under-represented at high-status universities. There has been little work to date on the role of A-level subject choice, as opposed to attainment, in access to university. Using linked administrative data for three recent cohorts of English entrants to UK universities, I examine the relationship between league table score of university attended and A-level subject choices, using a taxonomy of A-levels categorised according to their published efficacy for Russell Group university admission as 'facilitating', 'useful', or 'less suitable'. I further examine the relationship of three 'less suitable' A-levels with league table score of university for related degree courses commonly leading to professional business careers (accountancy, business, and law). Holding more facilitating A-levels is associated with attending a higher ranked university overall, even controlling for degree subject, and the converse is true for 'less suitable' subjects. The heterogeneous relationships of professionally-related A-level subjects with university ranking make decision-making for aspirational 16-year-olds problematic: an apparently sensible subject choice for students wishing to prepare for a professional career may, in fact, put them at a disadvantage.

KEYWORDS
A-level subject choice; facilitating subjects; fair access; university league tables

Introduction

University participation for English school students has increased over recent decades, but among university entrants young people from less privileged backgrounds continue to be particularly under-represented at high-status universities (Anders, 2012; Chowdry, Crawford, Dearden, Goodman, & Vignoles, 2013; Sullivan, Parsons, Wiggins, Heath, & Green, 2014), as do students from state, rather than private, schools (Sullivan et al., 2014; Sutton Trust, 2011). This matters to social mobility because it is well-established that higher returns are associated with attending high-status universities (Britton, Dearden, Shephard, & Vignoles, 2016; Chevalier, 2014; Chevalier & Conlon, 2003; Hussain, McNally, & Telhaj, 2009) and particular degrees (Britton et al., 2016; Walker & Zhu, 2011). For example, large professional service

CONTACT Catherine Dilnot cdilnot@brookes.ac.uk

firms, recruiters of large numbers of relatively highly paid graduates, have been identified as socially exclusive (Ashley, Duberley, Sommerlad, & Scholarios, 2015; Cook, Faulconbridge, & Muzio, 2012; Milburn, 2009, 2012) with some authors laying at least part of the blame for their social homogeneity on their recruiting from a narrow range of high-status universities (Ashley et al., 2015; Cook et al., 2012; Sutton Trust, 2009). Research for the Social Mobility Commission found that at leading accountancy firms, 40–50% of applicants and 60–70% of those receiving job offers were educated at Russell Group[1] universities (Ashley et al., 2015). Increasing participation of less privileged students who aspire to careers in areas such as law, accounting, finance, and consultancy at the universities from which these employers recruit might therefore be an effective tool in increasing social mobility.

Why are there these differences in high-status university attendance by social background and school type? The most significant reason seems to be prior attainment (Anders, 2012; Chowdry et al., 2013; Marcenaro-Gutierrez, Galindo-Rueda, & Vignoles, 2007), but there is evidence that apparently equally well qualified applicants receive differential offer rates from universities according to their social background (UCAS, 2016b) and schooling (Boliver, 2013) conditional on having applied in the first place. The Russell Group has suggested that part of the reason for this is that students from less privileged backgrounds apply to university with the 'wrong' subjects and qualifications for the courses for which they apply (Russell Group, 2015). This begs the question of which are the 'right' subjects and qualifications.

A-levels are much the most widely held qualifications amongst English-domiciled university applicants; in 2015, 73% of English 18-year-olds applying to UK university did so with just A-levels and 9% had mixed A-level and BTEC qualifications. Fifteen percent applied with only BTECs (UCAS, 2016a). At age 16+, students following the academic A-level path typically choose four subjects to study at AS-level during Year 12, continuing with three of them to A2-level in Year 13. Until 2015, some 96 A-levels (including double awards) were available for teaching in England, although 27 will no longer be delivered under present reforms. But that still gives a wide variety of subjects from which students may choose, and these choices may make a difference to their chances of acceptance at university in general, and high-status university in particular. As discussed elsewhere in this issue, schools may constrain choices at age 14 (Anders, Henderson, Moulton, & Sullivan, 2018) which has a knock-on effect on A-level choices (Dilnot, 2016). Most students applying to university do so during Year 13 with grades predicted by their schools in each of their A-levels, and offers of places from universities are made in terms of both the A-level subjects being followed and the required grade to be obtained.

Many university courses require particular A-levels to be offered by applicants, because of the importance of subject content to the degree course. The Russell Group has, since 2011, published an annual guide to A-level subject choice for 16-year-olds known as *Informed choices*. This guidance classifies A-levels in science, mathematics, languages, history, and geography as facilitating of highly selective university entry, in that the more of these subjects taken, the more degree courses at their member universities will be available. It suggests that students should take at least two such subjects to keep open options for degree courses requiring specific subject preparation. In addition to the benefit derived from their specific content, Russell Group guidance also suggests that some facilitating subjects are good general preparation for university because of the academic skills they foster. Whether these subjects are facilitating of entry to highly selective university because of their subject content or because of skills they demonstrate (or perhaps signal), is a question that has not yet been explored.

A related question is whether the remaining 63 subjects (pre-reform) are all equally unhelpful in contrast with facilitating subjects. A study of *Informed choices* and the general admissions guidance of Russell Group universities suggests that some subjects are considered less suitable preparation by some universities. This has led to the production of a taxonomy of A-levels, dividing them into 'facilitating', 'useful', 'less suitable',[2] and 'non-counting' in the context of highly selective university entry (Dilnot, 2015). There is little evidence to date on how the number of these subjects offered at A-level is related to the status of university attended. The taxonomy is reproduced in Appendix 1.

Many of the 'less suitable' A-level subjects have a vocational bent; they include law, accounting, and business. A student making A-level choices at age 16 who aspires to a career in a professional services firm might think that taking an A-level in law, accounting, or business would be helpful in achieving that goal through facilitating admission to a high-status university to read the corresponding subject. But none of these A-levels is described as essential for the corresponding degree in *Informed choices*, and given that some Russell Group universities at least consider them not good preparation for university study, it may be that choosing these subjects is actually unhelpful in high-status university admission.

A further question is whether all facilitating A-levels are equally facilitating. The very large difference between those entering Russell Group universities rather than non-Russell Group with maths A-level (over 50% compared with less than half that for those with three A-levels entering university in 2012/13) compared with any other subject (Dilnot, 2015) suggests that there may be a ranking premium associated with holding maths A-level, perhaps unrelated to its subject content. Attending a higher ranked university may be part of the reason for the large observed wage premium associated with having A-level maths, after taking into account initial ability observed by Dolton and Vignoles (2002).

This paper uses linked administrative data for three recent cohorts of English school students entering UK universities to examine the relationship between status of university attended and subject choice at A-level using a newly devised taxonomy. Previous studies have not examined the detail of A-level choices and used facilitating subjects only as controls (Boliver, 2013; Crawford, 2014). The relationship of 'less suitable' A-levels and university attended has not previously been examined. Using these linked data does not allow comparative offer rates to be computed in the absence of further linkage to UCAS applications data, which are unavailable at the time of this analysis (Machin, 2015), but does allow the role of GCSE[3] performance to be taken into account, which has been shown to be very important in university entry (Crawford, 2014).

I further shed light on the previously unexamined association with university status of vocational A-level subjects related to professional careers in law, accounting, and business. Two of these related A-levels (law and accounting) are taken disproportionately by students from lower SES backgrounds and are rarely offered at private schools. While no causal claims as to their efficacy (or not) in helping students to gain places on accounting, business, and law degrees at highly ranked universities can be made in the absence of linked applications data, this work will provide information about associations to students making A-level choices at age 16 and those who guide them. I proceed by discussing the literature on A-level subject choice and university admission, then set out methods and data. In the last section I discuss results, conclusions, and directions for further research.

Previous literature on A-level subject choices and university admissions

Subject choice, social background, and school type

A-level subject choice can only be part of the explanation for differential participation by SES and school type at high-status universities if choices differ by these variables, and there is a body of evidence that suggests that this is the case. Young people from more privileged homes are more likely to take facilitating A-levels (Dilnot, 2016; Toth, Sammons, & Sylva, 2015; Vidal Rodeiro, 2007), particularly maths and sciences (Gill & Bell, 2013; Gorard & See, 2009). This is in part because facilitating subjects tend to be taken by students with higher attainment, which is related to social background, but is also a result of subject choices they have made earlier in their school careers (Dilnot, 2016). Students at private and grammar schools tend to have higher proportions of facilitating subjects at higher grades than their peers at sixth form and FE colleges (Dilnot, 2016; Office of the Deputy Prime Minister, 2015; Sutton Trust, 2011). Conversely, students from lower SES backgrounds are more likely to take at least two 'less suitable' A-level subjects (Dilnot, 2016), and more of these subjects are offered by schools and colleges with lower mean attainment (Gill, 2015a).

Facilitating subjects—specific content versus general university preparation

Having A-level subjects from particular content-based groups is associated with taking university courses from related subject areas as one might expect, with particularly strong relationships for STEM subjects (Vidal Rodeiro, Sutch, & Zanini, 2013). Clearly for many students the content of their STEM A-level is necessary preparation for entry to a higher-status university.

Informed choices sets out 'essential' and 'useful' A-level subjects for some 60 popular Russell Group degree courses, where the 'essential' subjects are always content related. The majority of the courses listed do have 'essential' requirements, and those A-level subjects described as 'essential' for any of these degree courses effectively make up the 'facilitating' list (Russell Group, 2016). But some very popular courses (for example accounting, business/management, and law) do not have 'essential' requirements. It is not clear whether having facilitating, rather than other, A-level subjects might be an advantage in admission to such courses because of their perceived value as good general preparation for university, rather than because of their content.

On average, facilitating subjects are relatively difficult compared with other A-level subjects (Coe, Searle, Barmby, Jones, & Higgins, 2008), and offering more difficult A-level subjects is positively associated with gaining an offer of a place at a high-status university (Noden, Shiner, & Modood, 2014), even when the degree subject is controlled for. This would suggest that it is not only the content of facilitating A-levels that is important, but some additional value for preparation for university study. Having maths A-level is associated with high odds of attending a high-status university (Boliver, 2013; Chowdry et al., 2013). It is not clear in work done to date whether the ranking advantage associated with having maths A-level is just a result of its specific content (because of the balance of STEM degree courses at higher ranking compared with other universities), or also because of its perceived general preparation value.

'Less suitable' subjects

The 41 subjects categorised as 'less suitable' in the taxonomy are ones where at least one Russell Group university has expressed reservations about the subject as university preparation and the subject is never required for even related university courses. The 20 'useful' subjects are those which appear on at least one Russell Group university approved list of A-levels and are absent from all non-preferred lists. 'Less suitable' subjects are more likely to be taken by students from lower SES backgrounds (Dilnot, 2016) and at non-selective state schools and colleges rather than private or grammar schools (Dilnot, 2016; Gill, 2015b).

Work by Vidal Rodeiro et al. (2013) suggests that doing at least two 'applied' or 'expressive' A-level subjects (most of which are in the 'less suitable' category of the taxonomy) is associated with reduced odds of being at a Russell Group university. Their analysis is based on HESA data for those at university in 2011/12, but not linked to attainment other than A-level results.

Accounting, business, and law A-levels, all of which might be expected to be helpful preparation for university courses in their disciplines, are categorised as 'less suitable' in the taxonomy of A-levels because of published reservations by the relatively small number of Russell Group universities publishing general approved lists, and other highly selective universities either remaining silent or stating neutrality about their usefulness. Evidence as to their effectiveness as preparation is largely anecdotal, although Rowbottom (2013) finds that accounting students at a Russell Group university with an accounting A-level perform somewhat worse than those without, by the time they graduate. Fazackerley and Chant (2008) note that while many highly selective universities publicly say law A-level is welcome or do not rule it out, in practice only a handful of applicants at such universities out of cohorts of several hundred are admitted with it. They suggest it seems particularly harsh for most Russell Group universities not to be explicit about what seems to be treated by admissions tutors as a 'less suitable' A-level. The extent to which selective universities hold this view of law A-level is unclear, but a qualitative study quotes admissions tutors as saying law A-level results in students with 'the wrong type of understanding and complacency' (Higton et al., 2012, p. 38). There is little evidence in the literature about the efficacy of business A-level for admission to university, although the earliest version of *Informed choices* (Russell Group, 2011) includes business in a list of 'soft subjects' (along with media studies, art and design, and photography).

Data

Three cohorts of all English students taking GCSEs (KS4) from National Pupil Database (NPD) data in 2008–2010 were matched to those taking at least three 'counting' A-levels from 2010 to 2012 (KS5 data), and then linked to Higher Education Statistics Agency (HESA) data for starters in 2010–2012. Students were matched not just for 'normal' progression, but where possible when taking an extra year in the sixth form, and for taking one or two gap years before university. Students found only in the HESA and KS5 data (i.e. not at school in England at KS4 or otherwise unmatched) were retained in the dataset. Where students had more than one university instance in the dataset (because they left a university course and subsequently started again), their first instance only was included, as it was to this course that their A-levels would first have admitted them. Some 474,526 observations of students entering UK university with at least three 'counting' A-levels were matched to their school records at KS5, and of these, 451,491 were at universities included in the Times rankings. Of these, 6.5% had some missing demographic or GCSE data, leaving 421,836 complete cases for analysis.

Most previous work on high-status university entry has used dichotomous outcome variables (such as Russell Group attendance or not) to examine relationships between high-status participation and variables of interest. It is desirable, though, to use an interval-level variable, both because of the improved tractability of statistical analysis methods and because it avoids the somewhat arbitrary cut off between universities of different types and because traditional groupings of universities may be over-simplified (Boliver, 2015). Such a variable is available in the UK, in the form of several published rankings based on computed quality scores for universities, and for departments within universities. Three rankings of UK universities are produced annually to guide students in making applications: The Times/Sunday Times Good University Guide,[4] the Guardian University Guide, and the Complete University Guide (CUG). Each organisation produces both subject-level tables and an overall table. The Guardian rankings differ from the Times in that components are weighted differently and do not include a measure of research quality. Guardian scores for individual subjects are available, but only ranks rather than scores are available at university level. The Complete University Guide uses a similar methodology to the Times guide, covers the same number of universities and ranks Russell Group universities almost the same as the Times guide. The Times scores were chosen for use in analysis rather than the Guardian rankings because scores (rather than just ranks) are available for universities overall and including research is likely to be important to status. The Times guide is also the longest running provider (Chevalier, 2014), and arguably the most widely respected.

Scores were used rather than ranks in the analysis because they better capture the distance between universities. The analysis was repeated using ranks and the results footnoted.[5] Overall university scores from the Times are given in Appendix 2. Scores are those published in 2012 for students making applications for 2013, and are based on data from 2008 to 2011, coterminous with the cohorts examined. This approach is preferred to that adopted by Chevalier (2014) of deriving a quality measure from the individual indicators in the Times Good University Guide for ease of interpretation of results. Robustness checks were performed using a derived quality measure and results footnoted. Overall scores for the institution rather than those relating to departments were used as future employers are likely to have knowledge of overall university prestige but not of individual departments (Chevalier, 2014). For the period relevant to these entrants, the Times guide covered 116 UK universities, and excluded very small and specialist institutions.

The number of facilitating, useful, and 'less suitable' A-levels attempted by each student, and whether they had attempted A-levels in maths, accounting, business, or law, was calculated from KS5 data. Lists of facilitating, useful, and 'less suitable' subjects were taken from the taxonomy (Dilnot, 2015).

Prima facie evidence of the relationships between A-levels from the different categories and score of university attended is set out in Figure 1. Students in the sample were split into quintiles according to the score of university attended, and the mean number of A-levels from different categories computed by quintile.

Figure 1 shows that for the quintile of students at lowest scoring universities, on average students had around one from each category of A-levels. As the scores of university attended

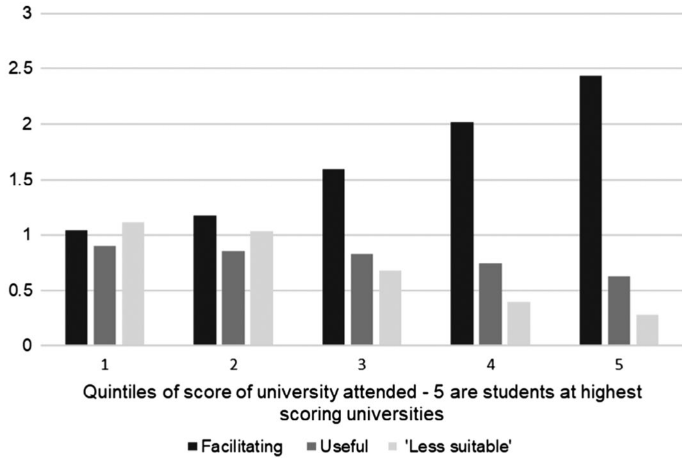

Figure 1. Mean number of A-levels from each category by quintile of score of university attended.

increase, the mean number of facilitating subjects per student increases, whilst the number of 'less suitable' A-levels per student decreases, and the number of 'useful' A-levels stays relatively stable.

The total number of 'counting' A-levels (i.e. excluding general studies and critical thinking) was calculated for each student at KS5, enabling the association with subjects from particular groups to be disentangled from the association with the total number of subjects offered.

The results from the best three 'counting' A-levels, were computed for each student, with an A* worth 300 Qualifications and Curriculum Authority (QCA) points, an A 270, and so on in downward steps to an E at 150 points. Ungraded attempts were given zero points.

Capped GCSE and equivalent point scores were used to control for attainment at age 16. The cap is at the equivalent of eight A*s at GCSE (464 points). One A* is 58 points, with each successive grade worth six points fewer than the previous one.

The HESA data contain variables for parental education, and parents' National Statistics Socio-Economic Classification (NSSEC), but both measures have significant amounts of missing data (19.4% and 18.2% respectively). I therefore follow Chowdry et al. (2013) and construct a measure of SES from KS4 data using principal component analysis from the attributes of local and very local areas and free school meal (FSM) eligibility. Quintiles were constructed for the whole cohort at KS4. FSM and local area data are not observable for students in private schools. These students, again following Chowdry et al. (2013), are assumed to be from families of higher SES than most maintained school and college students, and were therefore included in the top SES quintile. Dealing with the private school students in this way left only 4.1% missing data. Robustness checks on a common dataset for observations with non-missing data for all three measures show negligible differences in the coefficients of subject choice variables.

Descriptive statistics are given in Table 1, for all students in the sample split by school type, and for the three degree course subjects of accounting, business, and law. The mean score of university attended of students from private school is 690 (so Birmingham or Reading would be 'mean universities' for these students) and grammar schools 659 (Manchester or Kent). The mean score of university attended for students from non-selective state schools and colleges is much lower (581 for non-selective state schools, 574 for sixth form colleges,

Table 1. Descriptive statistics for sample.

	All	By school type					By degree subject		
		Non selective state	Selective state	Sixth form college	FE college	Private	Accounting	Business	Law
Number of students	421,836	198,110	48,402	80,281	30,275	64,768	8761	32,287	20,588
Mean Times score (out of 1000)	603	581	659	574	544	690	554	531	591
Percentage female	54.9%	55.0%	53.0%	58.0%	60.0%	50.0%	38.7%	51.0%	65.5%
Mean SES quintile (of KS4 cohort)	3.9	3.8	4.0	3.5	3.3	4.9	3.5	4.0	3.5
Mean number facilitating subjects	1.6	1.6	2.1	1.3	1.1	2.1	1.4	0.8	1.2
Mean number 'useful' subjects	0.8	0.8	0.7	0.9	1.0	0.7	0.7	0.8	1.1
Mean number 'less suitable' subjects	0.7	0.8	0.4	0.9	1.0	0.4	1.0	1.4	0.8
Mean number of counting A-levels	3.1	3.1	3.2	3.1	3.1	3.2	3.1	3.1	3.1
Points from best three A-levels	711	693	749	699	676	767	676	667	717
Percentage with maths A-level	33.0%	31.5%	42.7%	28.7%	23.8%	40.0%	67.0%	17.5%	16.8%
Percentage with accounting A-level	1.0%	0.5%	0.1%	2.8%	3.4%	0.1%	21.7%	2.8%	0.8%
Percentage with business A-level	9.6%	8.8%	7.9%	11.2%	14.4%	9.2%	31.5%	46.4%	11.1%
Percentage with law A-level	5.3%	3.6%	1.4%	12.6%	13.9%	0.3%	5.8%	6.0%	42.4%

and 544 for FE). These scores follow the pattern of average SES quintile by school type, as well as points held in the best three A-levels by school type, with the highest being those from private schools (767 points) and the lowest from FE colleges (676 points). Accounting and business students are, on average, at lower scoring universities than all students taken together, with mean scores of 554 and 531 respectively. Law students are, on average, at higher scored institutions, although still slightly below the mean for all degree courses.

Subject choice patterns vary considerably by school type, with grammar and private school students holding almost twice as many facilitating subjects, on average, as those at FE colleges (2.1 compared with 1.1) and sixth form college and non-selective state school students having 1.3 and 1.6 respectively. Maths accounts for some of this difference, held by 40% plus of grammar and private school students, but less than a third of students from other school types, and less than a quarter of FE college students. FE students conversely hold more than twice the proportion of 'less suitable' subjects than grammar and private school students. Very few private and grammar school students take law or accounting A-level, which contrasts strongly with the proportions for law at FE and sixth form colleges of 13.9% and 12.6% of students. The proportions of those doing business are much more similar across school type.

Subject choices also vary considerably by the three degree courses examined, despite none generally having A-level pre-requisites. Maths is held by 67% of accounting degree students, whilst for business and law students the proportions are 17.5% and 16.8% respectively. Business A-level is held by almost half of students studying for business degrees, and almost a third of those reading accounting. Law A-level is also extremely popular among those doing law degrees (held by 42.4%). Accounting is held by 21.7% of accounting degree students, a rather less popular choice than either business or maths.

Methods

Previous work (Boliver, 2013; Chowdry et al., 2013; Noden et al., 2014; Shiner & Noden, 2015; Vidal Rodeiro et al., 2013) suggests that prior academic attainment, social background, gender, school type, prior application attempts, and university course group are all important in university participation, and for the rank of university attended. These factors are therefore all controlled for in investigating the role of A-level subjects.

The measure of best three A-levels is the single best predictor of rank of university attended, as might be expected. A squared term is included for the observed non-linearity of the data.[6] Both capped GCSE score and capped GCSE score squared were significant predictors and included in prior attainment controls. Having a gap year is used as a proxy for having made a prior attempt.

Observations in the dataset are clustered within schools, where unobservable factors such as the quality of information, advice, and guidance on university applications are likely to differ. Whilst using school fixed effects would deal with such unobservable factors and the nested structure of the data, this approach is problematic in this case because school-level variables such as school type cannot be included in the analysis, and are of intrinsic interest. Random effect estimators, on the other hand, allow for the 'effects' of such school-invariant variables to be measured. An additional advantage of using the random effects estimator is that it is more efficient, and has less sampling variability than fixed effects estimators. A Hausman specification test suggests that between and within effects differ: for example, the relationship between university score and number of facilitating subjects found by comparing two students in the same school (the within effect) is different from that between two otherwise similar students who are at schools with different mean numbers of facilitating subjects taken (the between effect). Including the school mean of each level 1 (individual) variable in the model allows the within and between effects to differ, and effectively relaxes the assumption that there is no correlation between the level 2 error and the level 1 variables.

The models to be estimated are of the form:

$$\begin{aligned} Y_{ij} =& \beta_0 + \beta_{1w}x_{1ij} + \left(\beta_{1b} - \beta_{1w}\right)\bar{x}_{1j} + \beta_{2w}x_{2ij} + \left(\beta_{2b} - \beta_{2w}\right)\bar{x}_{2j} \\ & + \ldots + \beta_{nw}x_{nij} + \left(\beta_{nb} - \beta_{nw}\right)\bar{x}_{nj} + \gamma z_j + u_j + \varepsilon_{ij} \end{aligned} \tag{1}$$

where Y_{ij} is the score of university attended by individual *i* from school *j*.

Using the random coefficients estimator means that the β_{nw} are the within (fixed effect) coefficients for the individual level variables. A positive coefficient on the 'within' subject choice variable is interpreted as an increase in mean score of university attended by students with a particular subject, or one from a particular group, rather than any other subject, or one from any other group, compared with other students at the same school. The coefficient term (β_{nb}–β_{nw}) of the school mean of each variable is the difference between the within and the between effects, and is known as the contextual effect.

The coefficient γ shows the relationship between university score and school type, the only term in the model which only varies at school level. The elements u_j+ε_{ij} are the school-level and individual error terms respectively.

Effectively fully interacted models with university subject are run for students reading accounting, business, and law at university, by running the models separately for each course.

Results

Table 2 gives the results for all three cohorts across all university courses. Model 1 shows that each additional facilitating A-level held by someone at a comprehensive school is associated with being at a university 13.9 points higher in Times scores (the within effect) compared with an otherwise similar student at the same school. Although having extra A-levels for a given number of facilitating subjects and best three A-level points compared with a student's school mean is positively associated with score, there is a significant negative relationship of university score with school mean number of A-levels, once the school mean

Table 2. Association of Times league table score with A-level subject choice across all university subjects.

All students	Model 1	Model 2	Model 3
Number facilitating A-levels	13.861***	12.578***	
	(0.170)	(0.184)	
Contextual effect—facilitating	1.719	0.049	
	(1.129)	(1.321)	
Maths		7.110***	
		(0.385)	
Contextual effect—maths		8.638*	
		(3.534)	
Number 'less suitable' A-levels			−15.641***
			(0.197)
Contextual effect—'less suitable'			−0.798
			(1.215)
Total counting A-levels	5.689***	5.590***	18.447***
	(0.428)	(0.427)	(0.407)
Contextual effect—counting A-levels	−12.469***	−11.960***	−8.788**
	(3.001)	(2.951)	(2.951)
Grammar school (baseline comprehensive)	4.522***	4.874***	4.279***
	(1.173)	(1.153)	(1.173)
Sixth form college (baseline comprehensive)	−5.155***	−5.591***	−7.714***
	(1.273)	(1.249)	(1.233)
FE college (baseline comprehensive)	−6.528***	−7.093***	−10.808***
	(1.300)	(1.285)	(1.244)
Private school (baseline comprehensive)	3.983***	4.533***	5.069***
	(1.095)	(1.082)	(1.086)
Observations	421,836	421,836	421,836
Number of schools	2719	2719	2719
R-squared	0.6238	0.6242	0.6235

Notes: *** p<0.001; ** p<0.01; * p<0.05; + p<0.10. Standard errors in parentheses.
All models control for prior attainment, demographics, cohort, and school means for all individual level variables.

number of facilitating A-levels, school mean marks from best three A-levels, and all else in the model are controlled for. This 'between' effect suggests that each increase of one in school mean number of non-facilitating A-levels not adding to its mean A-level score from best three subjects is associated with being at a university scoring seven points lower. Doing A-level maths (model 2) compared with someone in the same school with the same number of facilitating subjects but not doing maths is associated with a seven-point premium. The 'between' effect of schools is also important. Students at hypothetical schools where everyone does maths are on average at universities scoring 16 points higher than those at schools where no-one does maths, at 5% confidence. Being at a grammar school or private school rather than a comprehensive is associated with a premium of around four or five points on average. A negative relationship of slightly larger magnitude is observed for those at FE and sixth form colleges.

Model 3 shows that the number of 'less suitable' subjects chosen is significantly negatively correlated with score of university attended, with a slightly larger magnitude than that for facilitating subjects (–15.6 compared with +13.9). A similar advantage is seen here as when controlling for facilitating subjects for those at grammar and private schools compared with comprehensives, but students at sixth form and FE colleges are even further down the university scores when the number of 'less suitable' subjects is controlled for, at –7.7 and –10.8 respectively.

Controlling for A-level points from the best three A-levels, and number of 'less suitable' A-levels, having an extra A-level is significantly positively associated with university score, suggesting that having more facilitating or useful subjects is a good thing. The 'between' effect of the mean number of A-levels per person by school is somewhat smaller, at around 10 points.[7]

The relationship between facilitating subjects and university scores for students studying accounting, business, and law is shown in models 1 and 2 of Table 3. Despite none of these courses having pre-requisite A-level subjects, each facilitating subject is associated with attending universities with a score of between around 6 and 11 points higher, with maths conveying a further premium, particularly for business (14 points). Even for law students, having maths is associated with a premium over other facilitating subjects (six points). For neither of these models is there a significant contextual (between minus within) effect of mean number of facilitating subjects for the school.

Model 3 shows the negative association of university score with 'less suitable' subjects; it is slightly smaller for these three degree courses than for all students together, although still negative and significant, and largest for law students (–13 points). For all three subjects FE college students are at lower scoring universities than comprehensive school students (at 5% confidence).

All three models show large, positive differences in score of university attended between private and comprehensive school students (around 18 points for accounting and 13 for business), although not for law, and grammar school students studying business have a score advantage over comprehensive school students of around 10 points.

Models 4–7 in Table 4 investigate the relationship between holding a related A-level and score of university attended for those taking accounting, business, and law degrees. Model 4 holds fixed the total number of A-level subjects, the number of useful subjects, and 'less suitable' subjects other than the related one. The coefficient on the related A-level thus shows the effect of swapping the related A-level (for example, accounting) with a facilitating

Table 3. Association of Times league table score with A-level subject choice for students studying accounting, business, and law at university.

	Accounting students			Business students			Law students		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Number facilitating A-levels	5.973***	3.420**		10.737***	8.107***		10.864***	9.961***	
	(1.043)	(1.226)		(0.592)	(0.641)		(0.736)	(0.775)	
Maths		8.970***			14.201***			6.418***	
		(2.263)			(1.311)			(1.754)	
Number 'less suitable' A-levels			−7.043***			−10.970***			−12.629***
			(1.092)			(0.538)			(0.871)
Total counting A-levels	2.624	3.367	8.156**	−1.068	−1.721	8.399***	12.686***	12.291***	22.014***
	(2.986)	(2.990)	(2.895)	(1.956)	(1.953)	(1.922)	(1.791)	(1.794)	(1.717)
Grammar school (baseline comprehensive)	4.827	4.740	4.242	9.487***	10.197***	9.008***	4.975+	4.837+	4.803+
	(4.202)	(4.202)	(4.198)	(2.251)	(2.259)	(2.261)	(2.869)	(2.881)	(2.914)
Sixth form college (baseline comprehensive)	−5.542	−5.349	−4.658	−5.869**	−6.556**	−7.098***	−0.471	−0.341	−1.471
	(3.588)	(3.589)	(3.346)	(2.043)	(2.051)	(1.955)	(2.322)	(2.340)	(2.253)
FE college (baseline comprehensive)	−10.535*	−10.410*	−9.303*	−2.542	−3.273	−4.920*	−3.971	−3.813	−5.843*
	(4.491)	(4.495)	(4.225)	(2.510)	(2.521)	(2.404)	(2.858)	(2.874)	(2.719)
Private school (baseline comprehensive)	18.209***	18.598***	17.698***	12.015***	13.019***	13.317***	−3.369	−3.296	−2.771
	(4.638)	(4.640)	(4.607)	(2.146)	(2.156)	(2.141)	(3.138)	(3.158)	(3.157)
Observations	8761	8761	8761	32,287	32,287	32,287	20,588	20,588	20,588
Number of schools	1852	1852	1852	2375	2375	2375	2278	2278	2278
R-squared	0.581	0.582	0.582	0.495	0.497	0.497	0.674	0.675	0.674

Notes: *** $p<0.001$; ** $p<0.01$; * $p<0.05$; + $p<0.10$. Standard errors in parentheses.
All models control for prior attainment, demographics, cohort, and school means for all individual level variables.

Table 4. Association of Times league table score with choosing the course-related A-level rather than an A-level from another category for students studying accounting, business, and law at university.

	Model 4	Model 5	Model 6	Model 7
Accounting students (*n*=8761)				
Accounting A-level	−1.093	0.744	4.141	8.398**
	(2.814)	(2.765)	(2.819)	(2.961)
Business students (*n*=32,287)				
Business A-level	−5.569***	2.205*	6.063***	10.116***
	(1.056)	(0.988)	(1.005)	(1.045)
Law students (*n*=20,588)				
Law A-level	−19.289***	−15.485***	−9.687***	−4.896*
	(1.745)	(1.722)	(1.769)	(1.939)
A-level subject controls				
Other non-facilitating and total	Yes			
Total		Yes		
Facilitating and total			Yes	
'Less suitable' and total				Yes

Notes: *** $p<0.001$; ** $p<0.01$; * $p<0.05$; + $p<0.10$. Standard errors in parentheses.
All models control for prior attainment, demographics, cohort, and school means for all individual level variables.

A-level—the only remaining type of A-level not held fixed in the model. In model 5 only the total number of A-levels is held fixed, thus showing the effect of swapping the related A-level for any other. Model 6 controls for total number and for number of facilitating subjects, so the coefficient on the related A-level represents a comparison of the related A-level with any non-facilitating A-level, and finally model 7 controls for the total number of 'less suitable' A-levels, so showing the relationship with ranking if the related A-level is swapped with any other 'less suitable' subject.

The results show considerable differences for the three subjects examined. For accounting students, having accounting A-level is associated with no significant difference in score compared with a facilitating subject, any other subject, and any other non-facilitating subject. It is associated with an increase in score of eight points compared with holding other 'less suitable' subjects. On the other hand, business A-level seems more helpful for admission to higher ranked university to read business than accounting is for accounting degrees. Although swapping business for a facilitating subject is associated with being at a university with six fewer points and swapping it for any other subject shows a very small relationship, swapping it for any non-facilitating subject and any other 'less suitable' subject shows significant positive relationships (6 and 10 points respectively).

Models 4–7 of Table 4 tell a different story for A-level law. Law students are at lower scoring universities, on average, if they take law A-level rather than any facilitating subject (−19 points), any other subject (−15 points), and any other non-facilitating subject (−10 points). It even appears to be worse than having any other 'less suitable' subject, at 1% confidence (−5 points). Full regression tables for these models are available on request.

Discussion and conclusions

Across all university subjects together, each additional facilitating subject is associated with being at a university with a Times Good University Guide score 14 points higher, even when degree course group, A-level grades, other prior attainment, and school type is controlled for. For two students with otherwise similar characteristics, one with three facilitating subjects and one with none, this difference equates to being at Bristol rather than Leicester, or

Oxford Brookes rather than Gloucestershire in 2013 rankings. This is consistent with previous literature and given that university subject group is controlled for seems not just to be an artefact of the way degree courses with facilitating pre-requisites are distributed through the rankings.

Using a random effects model allows for the investigation of the role of school-level variables in the models. School type was seen to be significant for all three models across all university subjects, with FE and sixth form college students being at lower scoring universities compared with comprehensive schools overall, and private and grammar school students at higher scoring ones, even after controlling for prior attainment and subject choice groups. This could, of course, be a result of selection (where those students have chosen to apply) but whether the reason is a lack of aspirational applications or acceptance rates varying systematically by school type, there is still a gap.

The answer to the question of whether there is something especially facilitating about maths A-level appears to be 'yes'. On average, having maths rather than any other facilitating subject is associated with a seven-point premium across all subjects. There is likely to be wide variation in this premium by degree course[8] but the overall relationship is significantly positive.

The number of 'less suitable' A-level subjects taken is shown to be significantly negatively related to the score of university, even after attainment and degree course are controlled for. This is consistent with the advice given by the small number of Russell Group universities that publish such information (Dilnot, 2015), and suggests that more transparency from universities which do not currently do so might be useful.

For all three of accounting, business, and law degree courses, having more facilitating subjects is associated with a university score premium, suggesting that facilitating subjects may convey an admissions benefit independent of their subject content. Whether this is a signalling effect, a reflection of the relative difficulty of facilitating A-levels, or a result of the human capital acquired in gaining particular transferable skills is beyond the scope of this paper, but is worth further study. The converse (and somewhat larger) effect is seen for 'less suitable' A-levels for all three of these course areas. This, too, could be a result of a combination of signalling and relative 'ease' of these subjects. The role of specific subject A-levels varies considerably between these three degree courses. Accounting A-level is done by relatively few students. It is not associated with a significantly lower ranking than facilitating subjects, on average, but neither is it helpful, except compared with other 'less suitable' subjects. Business, on the other hand, seems a relatively helpful choice compared with all but facilitating subjects. It is noteworthy that it is done by a much larger proportion of private school students than accounting or law.

The results for law students are consistent with the anecdotal evidence that higher ranking universities 'don't like' law A-level. Having law A-level is associated with a score discount of 19 points compared with swapping it for a facilitating A-level and 10 points compared with any non-facilitating one. Students taking it, of whom much the highest proportions are at sixth form and FE colleges, are apparently not putting themselves at the advantage that they might reasonably have expected.

Before dismissing law (or indeed any other A-level) as potentially unhelpful for university entry, it is important to consider both the aspirations of students taking it, and the context of their other subjects. Students may be unconcerned about the ranking of university they attend. But given that 42% of those reading law with at least three A-levels have law A-level, it is likely some students will have taken it to aid them to get into a high-ranking university, and the results described here are likely to be counter-intuitive for these students. The context matters too: if a student is choosing between law and another 'less suitable' subject, then it might be entirely sensible to choose law to see whether it is a subject they enjoy. On the other hand, if the choice is between law or a facilitating subject, a student making aspirational university applications might do better to choose the latter. It is possible, although relatively rare, to be admitted as a solicitor without gaining a degree, and it may be that for those using this route, having law A-level is helpful. Gaining one of the recently introduced legal apprenticeships may also be helped by having law A-level, but as yet the picture is unclear.

This work shows clear relationships between A-levels of different categories, and the league table scores of university attended. While no causal link can be claimed because of unobserved covariates determining A-level choices and both university applied for and likelihood of acceptance, it does suggest that doing facilitating subjects, particularly maths, may be a sensible choice of A-level for those aspiring to high-ranking university, even if the content is not required for the intended course, and care should be taken in choosing 'less suitable' A-levels, even if they seem to relate to the degree course eventually followed. Using university application data to link to NPD and HESA data at the individual applicant level will help further understand these relationships.

Notes

1. A group of 24 high-status research-intensive UK universities.
2. 'Less suitable' subjects are those where reservations are expressed by at least one Russell Group university as to appropriateness for university study. The original taxonomy further split this category according to whether or not subjects are ever described as useful for the related degree course at a Russell Group university. Most of the subjects never so described have been discontinued in current reforms. The aggregated version of the taxonomy is therefore used in this analysis.
3. High stakes examinations taken at age 16.
4. The Times overall university rankings are a weighted linear function of eight standardised indicators: student satisfaction, research quality, services and facilities spend, completion rates, entry standards, student–staff ratio, good honours, and graduate prospects. The first two have a weighting of 1.5 each, and the remainder 1 each. The last four indicators are adjusted for subject mix at the university. The top university is then given 1000 points and the others scaled accordingly (O'Leary, 2012).
5. All analyses are also performed with ranks, rather than scores. The relationships observed are substantively unchanged.
6. Plotting lowess curves for a random sample of the data suggests that the relationship of A-level score with score of university attended is non-linear, with a flat line between university score and best three A-level scores until a little above 500 QCA points (the equivalent of DDE at A-level), and an increasing gradient thereafter.
7. Repeating the analysis for a quality ranking following Chevalier (2014) based on a principal components analysis of university scores excluding student satisfaction and proportion of good degrees yields substantially unchanged results.
8. Running the model for students taking only languages, literature, history, and philosophy courses at university (*n*=62,993), for which maths is unlikely to be a pre-requisite, shows a significant premium for maths A-level of five points, a little lower than for all students together.

Acknowledgements

I am grateful to Alissa Goodman, Lindsey Macmillan, and Morag Henderson for their advice, and to the two anonymous referees for very helpful feedback. National Pupil Database and Higher Education Statistics Agency data were kindly provided by the Department for Education but I am responsible for the analysis and interpretation of results.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This wok was supported by the Economics and Social Research Council [grant number ES/J500021/1].

Notes on contributor

Catherine Dilnot is a Senior Lecturer at Oxford Brookes University. Her research interest is in fair access to university and to leading professions, particularly the accounting profession, concentrating on the role of subject choice. She qualified as a chartered accountant before embarking on her career in teaching and research.

ORCID

Catherine Dilnot http://orcid.org/0000-0002-3952-347X

References

Anders, J. (2012). The link between household income, university applications and university attendance. *Fiscal Studies, 33*, 185–210.

Anders, J., Henderson, M., Moulton, V., & Sullivan, A. (2018). The role of schools in explaining individuals' subject choices at age 14. *Oxford Review of Education, 44*(1).

Ashley, L., Duberley, J., Sommerlad, H., & Scholarios, D. (2015). *A qualitative evaluation of non-educational barriers to the elite professions*. London: Social Mobility and Child Poverty Commission. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/434791/A_qualitative_evaluation_of_non-educational_barriers_to_the_elite_professions.pdf.

Boliver, V. (2013). How fair is access to more prestigious UK universities? *The British Journal of Sociology, 64*, 344–364.

Boliver, V. (2015). Are there distinctive clusters of higher and lower status universities in the UK? *Oxford Review of Education, 41*, 608–627.

Britton, J., Dearden, L., Shephard, N., & Vignoles, A. (2016). *How English domiciled graduate earnings vary with gender, institution attended, subject and socio-economic background*. London: Institute for Fiscal Studies. Retrieved from http://www.ifs.org.uk/publications/8233.

Chevalier, A. (2014). Does higher education quality matter in the UK? *Research in Labor Economics, 40*, 257–292.

Chevalier, A., & Conlon, G. (2003). *Does it pay to attend a prestigious university?*. London: Centre for the Economics of Education, London School of Economics. Retrieved from http://cee.lse.ac.uk/ceedps/ceedp33.pdf.

Chowdry, H., Crawford, C., Dearden, L., Goodman, A., & Vignoles, A. (2013). Widening participation in higher education: Analysis using linked administrative data. *Journal of the Royal Statistical Society: Series A (Statistics in Society), 176*, 431–457.

Coe, R., Searle, J., Barmby, P., Jones, K., & Higgins, S. (2008). *Relative difficulty of examinations in different subjects*. Durham: Centre for Evaluation and Monitoring, Durham University. Retrieved from http://www.cem.org/attachments/SCORE2008report.pdf.

Cook, A. C., Faulconbridge, J. R., & Muzio, D. (2012). London's legal elite: Recruitment through cultural capital and the reproduction of social exclusivity in City professional service fields. *Environment and Planning A, 44*, 1744–1762.

Crawford, C. (2014). *The link between secondary school characteristics and university participation and outcomes*. London: Department for Education. Retrieved from http://www.ifs.org.uk/publications/7235.

Dilnot, C. (2015). *A taxonomy of A-level subjects according to the expressed preferences of Russell Group universities: Who does what?* (DoQSS Working Papers). Retrieved from http://repec.ioe.ac.uk/REPEc/pdf/qsswp1512.pdf

Dilnot, C. (2016). How does the choice of A-level subjects vary with students' socio-economic status in English state schools? *British Educational Research Journal, 42*, 1081–1106.

Dolton, P. J., & Vignoles, A. (2002). The return on post-compulsory school mathematics study. *Economica, 69*(273), 113–142.

Fazackerley, A., & Chant, J. (2008). *The hard truth about 'soft' subjects*. London: Policy Exchange. Retrieved from https://policyexchange.org.uk/publication/the-hard-truth-about-soft-subjects/.

Gill, T. (2015a). *Provision of GCE A level subjects 2014*. Cambridge: Cambridge Assessment. Retrieved from http://www.cambridgeassessment.org.uk/Images/222146-provision-of-gce-a-level-subjects-2014.pdf.

Gill, T. (2015b). *Uptake of GCE A level subjects 2014*. Cambridge: Cambridge Assessment. Retrieved from http://www.cambridgeassessment.org.uk/Images/222143-uptake-of-gcse-subjects-2014.pdf.

Gill, T., & Bell, J. F. (2013). What factors determine the uptake of A-level physics? *International Journal of Science Education, 35*, 753–772.

Gorard, S., & See, B. H. (2009). The impact of socio-economic status on participation and attainment in science. *Studies in Science Education, 45*, 93–129.

Higton, J., Noble, J., Pope, S., Boal, N., Ginnis, S., Donaldson, R., & Greevy, H. (2012). *Fit for purpose?: The view of the higher education sector, teachers and employers on the suitability of A levels*. Coventry: Office of Qualifications and Examinations Regulation. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377930/2012-04-03-fit-for-purpose-a-levels.pdf.

Hussain, I., McNally, S., & Telhaj, S. (2009). *University quality and graduate wages in the UK* (CEE Discussion Papers). Retrieved from http://eprints.lse.ac.uk/25486/

Machin, S. (2015). *Data and public policy: Trying to make social progress blindfolded*. London: Social Mobility and Child Poverty Commission. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414645/Data_and_public_policy_trying_to_make_social_progress_blindfolded_report.pdf.

Marcenaro-Gutierrez, O., Galindo-Rueda, F., & Vignoles, A. (2007). Who actually goes to university? *Empirical Economics, 32*, 333–357.

Milburn, A. (2009). *Unleashing aspiration: The final report of the Panel on Fair Access to the Professions*. Retrieved from http://www.ukipg.org.uk/meetings/further_and_higher_education_working_party/Unleashing-Aspiration_Govt_Response.pdf

Milburn, A. (2012). *Fair access to professional careers: A progress report by the independent reviewer on social mobility and child poverty*. London: Cabinet Office. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61090/IR_FairAccess_acc2.pdf.

Noden, P., Shiner, M., & Modood, T. (2014). University offer rates for candidates from different ethnic categories. *Oxford Review of Education, 40*, 349–369.

O'Leary, J. (2012). *Good university guide 2013*. London: Times Books.

Office of the Deputy Prime Minister. (2015). *Social mobility indicators*. Retrieved from www.gov.uk/government/publications/social-mobility-indicators

Rowbottom, N. (2013). A-level subject choice, systematic bias and university performance in the UK: The case of accounting. *Accounting Education, 22*, 248–267.

Russell Group. (2011). *Informed choices*. London: The Russell Group.

Russell Group. (2015). *Opening doors: Understanding and overcoming the barriers to university access*. London: Russell Group. Retrieved from https://www.russellgroup.ac.uk/media/5034/opening-doors-understanding-and-overcoming-the-barriers-to-university-access.pdf.

Russell Group. (2016). *Informed choices*. London: The Russell Group. Retrieved from http://russellgroup.ac.uk/media/5457/informed-choices-2016.pdf.

Shiner, M., & Noden, P. (2015). 'Why are you applying there?': 'Race', class and the construction of higher education 'choice' in the United Kingdom. *British Journal of Sociology of Education, 36*, 1170–1191.

Sullivan, A., Parsons, S., Wiggins, R., Heath, A., & Green, F. (2014). Social origins, school type and higher education destinations. *Oxford Review of Education, 40*, 739–763.

Sutton Trust. (2009). *The educational background of leading lawyers, journalists, vice chancellors, politicians, medics and chief executives: Submission to the Milburn Commission on access to the professions*. London: Sutton Trust. Retrieved from http://www.suttontrust.com/wp-content/uploads/2009/04/ST_MilburnSubmission.pdf.

Sutton Trust. (2011). *Degrees of success: University chances by individual school*. London: Sutton Trust. Retrieved from http://www.suttontrust.com/public/documents/sutton-trust-he-destination-report-final.pdf.

Toth, K., Sammons, P., & Sylva, K. (2015). *Subject to background*. London: Sutton Trust. Retrieved from http://www.suttontrust.com/researcharchive/subject-to-background/.

UCAS. (2016a). *Applicants and acceptances by groups of applicants 2015*. Cheltenham: UCAS. Retrieved from https://www.ucas.com/corporate/data-and-analysis/ucas-undergraduate-releases/ucas-undergraduate-end-cycle-data-resource-4.

UCAS. (2016b). *UCAS undergraduate reports by sex, area background, and ethnic group*. Cheltenham: UCAS. Retrieved from www.ucas.com/corporate/data-and-analysis/ucas-undergraduate-releases/ucas-undergraduate-reports-sex-area.

Vidal Rodeiro, C. (2007). *A level subject choice in England: Patterns of uptake and factors affecting subject preferences*. Cambridge: Cambridge Assessment. Retrieved from http://www.cambridgeassessment.org.uk/images/111069-a-level-subject-choice-in-england-patterns-of-uptake-and-factors-affecting-subject-preferences.pdf.

Vidal Rodeiro, C., Sutch, T., & Zanini, N. (2013). *Prior learning of undergraduates in UK higher education institutions*. Cambridge: University of Cambridge Local Examinations Syndicate. Retrieved from http://www.cambridgeassessment.org.uk/Images/230030-prior-learning-of-undergraduates-in-uk-higher-education-institutions.pdf.

Walker, I., & Zhu, Y. (2011). Differences by degree: Evidence of the net financial rates of return to undergraduate study for England and Wales. *Economics of Education Review, 30*, 1177–1186.

Appendix 1

Table A1. Taxonomy of A-levels available for teaching 2014/15.[1]

Facilitating	Useful	More limited suitability	Less effective preparation	Non-counting
		Combined as 'less suitable'—all for which reservations as to suitability for RG university entry are expressed		
Arabic	Ancient history	Art and design[2]	Accounting	Critical thinking[d]
Bengali	Archaeology	Business studies	Anthropology[dn]	General studies[d]
Biblical Hebrew[n]	Classical civilisation	DT: product design (3-D design)	Applied art and design (double award)[*d]	
Biology	Classics	DT: product design (textiles)[n]	Applied art and design[*d]	
Chemistry	Computing	DT: systems and control technology	Applied business (double award)[*d]	
Chinese	Cymraig iaith gyntaf, Welsh first language[n]	Drama and theatre studies	Applied business[*d]	
Classical Greek	Economics	Electronics	Applied ICT (double award)[*d]	
Cymraig ail iaith, Welsh second language[n3c]	Economics and business[d]	Film studies	Applied ICT[*d]	
Dutch	English language and literature	ICT[3]	Applied science (double award)[*d]	
English literature	English language	Law	Applied science[*d]	
French	Environmental science	Media studies	Citizenship studies[d]	
Further mathematics	Geology	Music technology	Communication and culture[d]	
Geography	Government and politics	Physical education	Creative writing[dn]	
German	History of art	World development[d]	Dance	
Greek (modern)	Music		DT: food technology	
Gujarati	Philosophy		Engineering[*d]	
History	Psychology		Health and social care (double)[*d]	
Human biology[dn]	Religious studies		Health and social care[*d]	
Italian	Sociology		Humanities[dn]	
Japanese	Statistics		Leisure studies (double award)[*d]	
Latin			Leisure studies[*d]	
Mathematics			Media: comm'n and production[*d]	
Modern Hebrew			Performances studies[d]	
Panjabi			Performing arts[*d]	
Persian			Science in society[dn]	
Physics			Travel and tourism (double award)[*d]	
Polish			Travel and tourism[*d]	
Portuguese				
Pure mathematics[d]				
Russian				
Spanish				
Turkish				
Urdu				

Notes: [1]Subjects with no entries in England/combined with other subject in National Pupil Database are marked 'n'; those to be discontinued are marked 'd'; applied A-levels are marked '*'.
[2]Includes six additional endorsements/pathways
[3]Information and communication technology.

Appendix 2

Table A2. The Times Good University Guide scores 2013.

Oxford	1000	Essex	620	Cardiff Met	478
Cambridge	990	Buckingham	618	York St John	475
LSE	911	Heriot-Watt	613	Bournemouth	474
Imperial College	835	Brunel	612	Glasgow Caledonian	474
Durham	834	Dundee	609	Queen Margaret	470
St Andrews	814	Keele	607	Edinburgh Napier	468
UCL	811	City	597	Canterbury Christ Church	467
Warwick	789	Aberystwyth	576	Roehampton	463
Bath	767	Goldsmiths	561	Teesside	461
Exeter	764	Hull	558	Bedfordshire	458
Bristol	762	Stirling	556	Derby	456
Lancaster	759	Robert Gordon	555	Middlesex	453
York	749	Oxford Brookes	549	Salford	452
Edinburgh	735	Swansea	549	Greenwich	452
Glasgow	734	Lincoln	549	Liverpool John Moores	451
Loughborough	727	Coventry	548	Worcester	451
Leicester	724	Bangor	544	Westminster	447
Southampton	717	Huddersfield	540	Glamorgan	447
Sussex	717	Northumbria	538	Cumbria	446
Nottingham	715	Chester	527	Glyndwr	446
Sheffield	714	Univ of the Arts London	524	Northampton	438
King's College London	710	Chichester	522	Staffordshire	437
Newcastle	702	UWE Bristol	510	Kingston	435
Birmingham	690	Portsmouth	509	Manchester Met	434
Reading	690	Plymouth	508	Univ for the Creative Arts	430
Surrey	688	Ulster	506	Leeds Met	429
Royal Holloway	680	Gloucestershire	506	Trinity Saint David	428
UEA	675	Bradford	504	Buckinghamshire New	413
Liverpool	673	Hertfordshire	500	Anglia Ruskin	410
Leeds	672	Brighton	499	Newport	392
SOAS	662	Bath Spa	497	West of Scotland	387
Cardiff	661	Central Lancashire	492	West London	380
Manchester	660	De Montfort	488	London South Bank	378
Kent	657	Sheffield Hallam	487	Abertay Dundee	366
Queen's, Belfast	653	Edge Hill	487	Southampton Solent	363
Aston	646	Birmingham City	486	Bolton	328
Strathclyde	646	Winchester	486	London Met	327
Queen Mary	638	Sunderland	482	East London	327
Aberdeen	630	Nottingham Trent	478		