

UCAS briefing on the feasibility and practicality of applying an attainment threshold for access to student finance in England - Supporting information

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Annex A: Contextualisation procedure

The attainment of an applicant is contextualised by adjusting their attainment based on their modelled likelihood of entering HE, as calculated in the MEM modelling process (see Annex B). An applicant with a lower modelled likelihood of entering HE is considered more disadvantaged, and so will typically receive an increase to their attainment. For the purposes of the report, the contextualisation is applied asymmetrically, such that only those applicants whose attainment would be increased by the contextualisation process will be adjusted.

The assumption underlying the adjusted grade profile is of attainment as a relative, rather than absolute, measure of potential. An applicant who achieves AAA in the context of a disadvantaged background is assumed to be at a higher relative level of attainment than an applicant who achieves the same grades but is from an advantaged background.

The adjustment is calculated as follows:

- For each applicant, their percentile of attainment within their specific level of disadvantage (based on their modelled likelihood of entering HE) is found. This percentile is used to map the individual to the overall attainment distribution for the national school student population in England. The attainment from the national population, at that percentile, is the applicant's adjusted attainment
- Applicants from disadvantaged backgrounds have generally lower attainment than the population as a
 whole. As such, a disadvantaged applicant with a given grade profile (e.g. ABB) will sit at a higher percentile
 of their specific background group population (e.g. 97th percentile) than an advantaged applicant at the
 same attainment level (e.g. 87th percentile). As a result, the adjusted attainment of a disadvantaged
 applicant is typically higher than their actual attainment.

There are a few aspects to note around the contextualisation procedure used for this report:

- The contextualisation is only applicable for English 18 year old students, with A level or BTEC qualifications. The methodology is, however, generalisable to all UK applicants with Tariff-attracting qualifications.
- In the calculation of the overall attainment distribution, it is assumed that every pupil who does **not** apply to HE through UCAS has no Tariff-attracting attainment. Consequently, for those applicants from disadvantaged backgrounds, with low HE application rates (and so low modelled likelihoods of entering HE), any level of attainment places them at a high attainment percentile within their background. As such, the attainment adjustments made to these applicants can be significant (e.g. 5 grades).
- The use of the modelled likelihood of entering HE in the calculation of the attainment adjustment means that the adjustments made are continuous in nature. As mentioned in Annex B, pupils within each MEM group have a range of modelled likelihoods of entering HE, and so will have a range of attainment adjustments. It is not the case that every person in (say) MEM group 1 has the same attainment adjustment, because the adjustment is calculated at the individual level of the modelled likelihood of entering HE, not at

the level of MEM group. Further, the adjustment is attainment-dependent, meaning that two applicants at same level of disadvantage may receive different adjustments if their attainments are different. This is a consequence of the non-linear shape of the attainment distribution of the national school student population

Annex B: The UCAS multiple equality measure (MEM)

The multiple equality measure (MEM) is an equality metric for higher education (HE), combining the effects of many of the measures currently used in the analysis of equality in HE into a single value. It is based on statistical modelling techniques, using UCAS' data on progression to HE, linked with National Pupil Database (NPD) data on English school student characteristics, to produce an evidence-based measure of equality at either individual or aggregate-level. The MEM takes the form of a one to five group value. An individual who is in MEM group one is among the most disadvantaged in terms of their likelihood to enter higher education, based on their set of background characteristics. Conversely, an individual in MEM group five is among the most advantaged.

A logistic regression model is run on a base dataset of students in English schools who were aged 18 between 2012 and 2017 (source: National Pupil Database and School Census, Department for Education), linked to UCAS' data on the progression of these students to HE. The model predicts the likelihood of each student to enter HE through UCAS, based on that student's set of equality variables (sex, POLAR3 quintile, school type and Index of Multiple Deprivation (IMD)). The equality variables selected are those in which there should, in theory, be no differential in the likelihood of entering university (i.e. they should not alter an individual's likelihood of entering), but where the analysis of aggregate groups show that there is, in practice, a differential. All students are then aggregated into groups based on these modelled likelihoods of entering HE, where group one contains the 20 percent of students with the lowest modelled likelihoods of entering higher education ('most disadvantaged' in this context), and group five contains the 20 percent of students with the highest modelled likelihoods of entering higher education ('most advantaged' in this context).

It is important to note that each MEM group contains, within itself, students with a range of modelled likelihoods of entering HE. The boundaries of MEM groups (see **table 1**) result from the splitting of the English school population into five equally-sized groups, such that each group contains approximately 20 percent of that population. While each MEM group therefore contains students at *similar* level of disadvantage, there is still variation in level of disadvantage among students within the same MEM group.

MEM group Range of modelled likelihood of entering HE within MEM group (%) MEM group 1 0 - < 19.7</td> MEM group 2 19.7 - < 26.0</td> MEM group 3 26.0 - < 32.7</td> MEM group 4 32.0 - < 41.5</td> MEM group 5 41.5 - < 100</td>

Table 1: MEM group boundaries

This benefits of this methodology for the task of measuring equality are threefold:

- Accuracy the MEM is specific to higher education. It defines disadvantage in terms of the likelihood to enter HE, and as such, only those effects relevant to equality in HE will be accounted for. The modelling approach allows analysis of multiple equality characteristics simultaneously.
- Data-driven the model is constructed from a robust, individual-level dataset, and so will only identify effects that are genuinely significantly present in the data.
- Individual-level the use of the individual-level dataset means the model produces modelled likelihoods for each individual in that dataset. The modelling approach allows for the inclusion of multiple equality characteristics, ensuring a high degree of individual specificity in the result.

The version of the MEM used in the analysis for this report accounts for the following background characteristics:

- POLAR3 quintile
- sex
- Index of Multiple Deprivation (IMD)
- school type

This is a smaller set of equality variables than are accounted for in the version of MEM reported in the <u>UCAS</u> <u>Undergraduate End of Cycle Report 2017</u>, and in the updated version of MEM outlined in the <u>MEM technical report</u>, which included both free school meals status, and ethnic group. This is because the use of MEM in the context of this report would involve affecting individual-level decisions, and as such can only contain those equality characteristics that are suitable for use at an individual-level, as per GDPR regulations.

The version of MEM used in this report also involves an additional modelling step, wherein the MEM groups and modelled likelihoods of entering HE produced from the linked UCAS-NPD data are re-modelled using UCAS applicant data. This is to allow the expansion of MEM to all UK applicants, rather than just the English school pupils covered in the NPD. The assumption underlying this expansion is that effect of the equality variables on the likelihood of a pupil entering university is the same across Scotland, Northern Ireland and Wales, as it is in England.

Annex C: The UCAS Tariff

The UCAS Tariff is a numerical score allocated to regulated Level 3/SCQF Level 6 qualifications. It was first introduced in 2001 and only includes qualifications delivered after this date.

The new UCAS Tariff was introduced for the 2017 entry cycle and is a broad metric based on a qualifications size and grading structure, providing a more transparent and robust methodology than its predecessor. Tariff scores are determined as follows:

- Qualifications are allocated a size band of 1 to 4, based on their guided learning hours (GLH). An additional multiplication occurs for qualifications that are significantly larger than size band 4.
- Qualifications are allocated a grade band of 3 to 14. These grade bands spread across the breadth of Level 3/SCQF Level 6, unless there is specific, regulated information to suggest a different alignment, such as a statement from a qualification regulator.
- The size band and grade band are then multiplied to form the overall Tariff score.

When designing the methodology for the new Tariff, UCAS commissioned the Fischer Family Trust to undertake external testing to provide assurance over the robustness of the methodology. If the Tariff were to be used to as part of a process to determine eligibility for student finance, we assume that the Government would wish to revisit this testing to provide additional assurances.

The Tariff contains both UK and a small number of international qualifications. At present, there are 12,528 qualifications listed on the Ofqual register (including historic qualifications), of which 26% attract UCAS Tariff points. Of the 4,283 Level 3 qualifications that are currently operational, 32% attract UCAS Tariff points. In addition to this, the Tariff has a large coverage of SQA qualifications. Under the current methodology UCAS is confident that all regulated qualifications could be allocated Tariff points.

At least 98.9% of English domiciled 18 year old UK domiciled applicants hold one or more qualification on the UCAS Tariff, with 96.3% having a complete profile of qualifications that are allocated Tariff points.