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Appendix A:
Survey methodology

1. Summary of methodology

- Purposive (not random) sample of universities.
- Full-time, home, final year students were surveyed.
- Data was collected using a paper self-completion survey, supplemented by focus group discussions.

2. Sampling

2.1. *Respondent eligibility*

The survey targeted a specific group of first degree students; full-time, home, final-year students on first degree programmes at UK universities.

2.2. Sample design

2.2.1. Sample requirements

The aim was to achieve a sample of 1,500 students. A (primarily) random selection of the students within the institutions was undertaken. However, the sample of universities was not randomly selected.

2.2.2. Sampling frame

Universities were used as the primary sampling points. Seven universities were selected, of which three were old (pre-1992) universities and four were new (post-1992) universities. Criteria for selection included type of institution (old/new), type of first degree provision (subject spread and vocational/ non-vocational mix), and type of location and region (inner London; urban areas; rural areas) and included universities in England, Wales and Scotland.

	Urban/inner London	Urban/ regional	Rural/regional
New	1	1	2
Old	1	1	1

The research team anticipated a response rate of about 30 per cent for a self-completion questionnaire. Hence, the aim was to distribute 1,000 questionnaires per university.

2.2.3. Gaining co-operation of sampled institutions

Initially letters were sent to 10 universities inviting them to take part in the study. Once agreement had been received in principle, follow-up visits were made to discuss the study methods in more detail, in particular the feasibility of gaining access to final year students' course marks and final degree results. The possibility of organising focus group discussions with students and with staff was also discussed. Seven universities were finally selected for inclusion in the sample.

2.2.4. Sampling within institutions

Five of the seven institutions were asked to: i) identify/isolate full-time, home, final year students, ii) make a random selection of them, and iii) distribute the survey among their students: where the whole cohort of full-time, home, final year degree students amounted to about 1,000 students, the whole cohort was targeted. Initial distribution of the questionnaire to students was by either the institution's own internal mail system, or by posting to students' term-time addresses.

In the sixth institution, full-time final year students were invited to take part in the study as they registered for their final semester modules. Those agreeing were then sent a questionnaire from CHERI. However, this process did not result in a sufficient number of cases, so a supplementary, random selection of full-time, final year, home students was undertaken by the university, and questionnaires sent to their home addresses. In the seventh institution the questionnaires were handed out in class for self-completion out of class.

In all cases (i.e. external mail, internal mail, in-class distribution of questionnaire) the students also received a cover letter explaining the purpose of the study and an envelope labelled with CHERI's freepost address for the return of questionnaires.

All faculties and departments were targeted within each institution, except in the case of University F, in which only the departments with a large enough number of students attending final year courses were selected, since the questionnaires were distributed in class.

Where possible, questionnaires were distributed to students before the Easter break. A reminder and further questionnaire were sent to all students two to three weeks after the initial distribution (except for University F where questionnaires had been handed out in class).

3. Response rate

Of the 6,772 questionnaires distributed, 1,751 were returned, a response rate of 26 per cent. The response rate varied by institution (see Table A1). Although universities had been asked to try and isolate full-time, home, final year degree students to whom questionnaires would be distributed, some of the questionnaires returned did not pass the filter questions designed to eliminate those students that did not match the target group. As a result, the final number of valid questionnaires received was 1,500. The majority of completed questionnaires that did not pass the filters were from students who were not home students (i.e. they had not been ordinarily resident in the UK for three years before the start of their degree course), which seems to suggest that isolating home students was the most difficult task for the institutions.

Table TA1: Questionnaire response rates by institution

Institution	Total received	Total valid received	Total permission given	Response rate over total quests.	Response rate over valid quests.	Permission rate over valid quests.
A	*182*	*140*	*74*	*19%*	*14%*	53%
B	*267*	*218*	*164*	*27%*	*22%*	75%
C	*330*	*313*	*227*	*33%*	*31%*	72%
D	*345*	*307*	*243*	*35%*	*31%*	79%
E	*233*	*213*	*144*	*23%*	*21%*	68%
F	*173*	*117*	*75*	*17%*	*12%*	64%
G	*221*	*190*	*161*	*28%*	*24%*	85%
TOTAL	**1,751**	**1,500**	**1,086**	**26%**	**22%**	**72%**

An important aspect of the study was to obtain data on students' final marks and final degree results; consequently a permission form was included in the questionnaire. A total of 1,086 students gave permission for their university to provide the research team with data on their academic performance – an overall permission rate over valid questionnaires of 72 per cent. The sub-sample of students giving such permission was compared to the whole sample for each institution. There was little variation in student characteristics between those giving, and those not giving, permission.

4. Student characteristics of the sample

The following tables show the socio-biographic characteristics of students by entry qualifications, A level point score, subject of study and type of institution.

Table TA2: Socio-biographic characteristics of the sample

		Overall	Male	Female	Under 25	25+	White	Minority ethnic
Entry qualifications	**A Levels**	74	73	75	82	30	73	79
	Highers	7	7	7	7	3	7	1
	Other	19	21	18	11	67	19	20
A Level points	**High (BBC+)**	36	32	38	37	19	35	44
	Other	64	69	62	63	81	66	56
Subject	**Science Vocational**	18	27	13	16	28	15	37
	Science Non-Vocational	8	11	8	9	7	10	4
	Arts Vocational	27	26	29	29	20	28	27
	Arts Non-Vocational	44	35	49	45	44	47	32
University Type	**Old**	43	44	42	46	22	41	54
	New	57	56	57	54	78	59	46

Table TA3: Characteristics of sample, by social class

		All	Manual/ Professional	Intermediate	Routine/ Manual	Never worked/ Long-term unemployed
Entry qualifications	**A Levels**	74	79	74	68	66
	Highers	7	8	7	6	2
	Other	19	13	19	26	33
A Level points	**High (BBC+)**	36	41	34	33	24
	Other	64	59	66	67	76
Subject	**Science Vocational**	18	16	19	19	22
	Science Non-Vocational	8	8	10	8	7
	Arts Vocational	27	29	27	27	24
	Arts Non-Vocational	44	45	43	45	43
University Type	**Old**	43	51	41	36	30
	New	57	49	59	64	70

Although the initial information on subject studied was much more detailed, viz. the 17 main categories used by HESA, these were grouped into four major categories. Allocation of the subjects in these four groups was as follows:

I. Science vocational: medicine and dentistry; engineering and technology; subjects allied to medicine; mathematical sciences and informatics; architecture; applied science.
II. Science non-vocational: biological sciences; physical sciences
III. Arts vocational: mass communication and documentation; education and leisure; business and administrative studies; law
IV. Arts non-vocational: social studies; humanities; languages; creative arts; combined studies

Table TA4 presents the key student characteristics of the sample, by institution.

Table TA4: Key student characteristics by university, column percentage

Overall, %	Univ A	Univ B	Univ C	Univ D	Univ E	Univ F	Univ G
GENDER							
Male (34)	*36*	*28*	*36*	*33*	*42*	*26*	*32*
Female (65)	*63*	*70*	*63*	*66*	*57*	*72*	*67*
AGE							
Under 25 (83)	*88*	*77*	*94*	*81*	*82*	*68*	*91*
25 and over (13)	*12*	*23*	*6*	*19*	*18*	*32*	*9*
ETHNIC ORIGIN							
White (85)	*51*	*94*	*87*	*95*	*90*	*52*	*96*
Minority ethnic (14)	*47*	*4*	*13*	*4*	*9*	*44*	*2*
Not stated (1)	*1*	*2*		*1*	*1*	*3*	*2*
SOCIAL CLASS							
Manual/professional (39)	*44*	*27*	*49*	*39*	*36*	*30*	*45*
Intermediate (26)	*24*	*27*	*24*	*24*	*33*	*30*	*28*
Routine/manual (27)	*21*	*35*	*23*	*29*	*27*	*28*	*23*
Never worked/l-t Unemployed (4)	*5*	*7*	*2*	*5*	*1*	*9*	*3*
Missing (4)	*5*	*4*	*2*	*4*	*2*	*3*	*1*
FAMILY TYPE							
Single, no children	*95*	*88*	*99*	*91*	*89*	*85*	*97*
Couple, no children	*0*	*0*	*1*	*1*	*0*	*1*	*1*
Single living with children	*4*	*9*	*0*	*5*	*9*	*10*	*1*
Couple living with children	*1*	*2*	*0*	*3*	*1*	*4*	*1*
LIVING ARRANGEMENTS							
With parents/family in their house	*48*	*30*	*10*	*14*	*18*	*37*	*17*
With other students/friends	*40*	*49*	*85*	*75*	*64*	*38*	*73*
With partner and/or dependent children	*11*	*19*	*4*	*10*	*16*	*21*	*8*
HIGHEST ENTRY QUALIFICATION							
A levels/Scottish Highers	*89*	*67*	*97*	*76*	*75*	*66*	*84*
GNVQ/ other vocational	*2*	*9*	*1*	*8*	*6*	*12*	*9*
Access course	*1*	*2*	*0*	*6*	*6*	*4*	*1*
Other	*6*	*22*	*2*	*10*	*13*	*17*	*5*
A LEVEL POINT SCORE							
280+ (BBC)	*54*	*10*	*67*	*16*	*22*	*7*	*47*
less than 280	*46*	*90*	*33*	*84*	*78*	*93*	*53*

4.2 Typicality of samples by institution

When we compared the characteristics of our sample by institution with the characteristics of the 'population' at each institution (using data supplied by HESA) we found the following:

Table TA5: Comparison of sample and population student characteristics, by institution

Characteristic	Univ A	Univ B	Univ C	Univ D	Univ E	Univ F	Univ G
Gender – women	+	+	+	+	=	++	+
Age – young students	-	-	-	-	-	+	=
Ethnicity - white	+	=	=	=	=	+	n/a
A level/equiv. entry qual.	=	=	=	-	-	=	=
Subject – science	=	=	=	-	-	-	=
Living arrangements – parental home	=	=	=	=	n/a	=	n/a
Degree class awarded 1st/2:1	n/a	=	+	+	+	+	+

Key:
= little difference in sample and population
\- slight under-representation in sample
\+ slight over-representation in sample
n/a insufficient data available

5. Management of data on attainment

Institutions were asked to provide the full transcripts of those students who had explicitly given permission, including final degree classification obtained and also marks in each course unit in each year of study. From the information supplied, an aggregate mark for 2000-01 (year two) and for 2001-02 (year three /final year) was calculated for each student. The aggregate average mark for each year was calculated using the actual marks for each unit and the number of credits for that unit.

The process was successful except in the case of two institutions. For one institution, only degree class and marks for the final year were supplied. The other institution (which had a low response rate) did not have a centralised system for recording data on student achievement and, in the time available, it was not possible to obtain the relevant data from the individual departments.

This led to a slight reduction in the number of cases for which information on academic attainment was available, compared to the total number of students who gave permission to access their records. Thus, the analysis was carried out with 945 cases containing information on degree class. The case numbers for aggregate mark in 2000-01 and 2001-02 were 732 and 897 respectively.

Appendix B:
Survey Questionnaire

CENTRE FOR HIGHER EDUCATION RESEARCH & INFORMATION

SOUTH BANK UNIVERSITY LONDON

UNIVERSITY STUDENTS' ATTITUDES TO DEBT AND TERM-TIME WORKING

This survey of students' attitudes to debt and term-time working is being carried out by the Open University's Centre for Higher Education Research and Information (CHERI) and South Bank University, on behalf of Universities UK and the Higher Education Funding Council for England.

It covers your views on money and debt, and on term-time working. It also asks for information about you and your family. This will be used to analyse differences of opinion amongst students from different backgrounds.

To answer the questions, please tick the appropriate boxes, or write in your answers where necessary. Your answers will be treated in the strictest of confidence, and will not be attributed to you in any analysis.

1 Introduction

1.1 Were you ordinarily resident in the UK for the three years before the start of your degree course?
(i.e. not living overseas, in mainland Europe, the Channel Islands or the Isle of Man)

Yes ☐ No ☐ **We are sorry to have troubled you! Please, do NOT continue with the questionnaire but return it to CHERI in the envelope provided**

1.2 Is your course full time?

Yes ☐ No ☐ **We are sorry to have troubled you! Please, do NOT continue with the questionnaire but return it to CHERI in the envelope provided**

1.3 Are you in your final year of undergraduate study?

Yes ☐ No ☐ **We are sorry to have troubled you! Please, do NOT continue with the questionnaire but return it to CHERI in the envelope provided**

2 Before going to university

2.1 Which of these was your highest qualification before going to university

A levels ☐ Grades achieved: .....
Scottish Highers ☐ Grades achieved: .....
GNVQ/NVQ/SVQ Level 3/AVCEs ☐
GCSEs/GCE O Levels ☐
BTEC national diploma ☐
Qualification from Access course ☐
Other (specify) ☐

2.2 How were you offered a place at your university?

Through the UCAS application ☐ Through clearing ☐ Through a direct application to your university (excluding clearing) ☐

3 ABOUT YOUR COURSE

3.1 What is the main subject of your course?

Medicine and dentistry	☐	Subjects allied to medicine (anatomy, nursing)	☐
Biological sciences (biology, zoology)	☐	Agriculture and related subjects	☐
Physical sciences (chemistry, physics)	☐	Mathematical sciences and informatics (maths, statistics, computer science, IT)	☐
Engineering and technology	☐	Architecture	☐
Social studies (economics, sociology, social policy, and psychology)	☐	Business and administrative studies	☐
Mass communication and documentation (media studies)	☐	Languages and related disciplines	☐
Humanities (English, history, geography, philosophy)	☐	Creative arts (art, drama, music, design)	☐
Education and leisure	☐	Unsure *(please specify department/course name)*	☐

.....

3.2 How is your degree course assessed?
(Please tell us for last academic year and this academic year)

	Last year Sept 00 - July 01	**This year** Sept 01 - July 02
How many course units or modules did/will you have to take? *(Enter the number)*	☐☐	☐☐
How many pieces of **assessed** coursework did/will you have completed? *(Enter the number)*	☐☐	☐☐
How many examinations did/will you have taken? *(Enter the number)*	☐☐	☐☐

3.3 During term-time, roughly how many hours a week do you normally spend on:
(Please tell us for last year and this year)

	Last year Sept 00 - July 01	**This year** Sept 01 - July 02
Attending lectures/seminars/tutorials/practicals	☐☐	☐☐
Independent and private study	☐☐	☐☐

4 YOUR ATTITUDES TO MONEY AND DEBT

4.1 To what extent do you agree with each of the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
There is no excuse for borrowing money	☐	☐	☐	☐	☐
Students have to go into debt	☐	☐	☐	☐	☐
I would rather be in debt than change my lifestyle	☐	☐	☐	☐	☐
You should always save up first before buying something	☐	☐	☐	☐	☐

Debt is a normal part of today's lifestyle	☐	☐	☐	☐	☐
Financial difficulties have negatively affected how well I do at university	☐	☐	☐	☐	☐
It is okay to be in debt if you can pay it off	☐	☐	☐	☐	☐
Once you are in debt it is very difficult to get out of it	☐	☐	☐	☐	☐
It is better to have something now and pay for it later	☐	☐	☐	☐	☐
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Borrowing money for a university education is a good investment	☐	☐	☐	☐	☐
I am seriously worried about the debts I am building up while at university	☐	☐	☐	☐	☐
Student debt puts off people going to university	☐	☐	☐	☐	☐
I am not worried about my debt at university because I know I will get a well-paid job when I graduate	☐	☐	☐	☐	☐
Owing money is basically wrong	☐	☐	☐	☐	☐
Student loans are a cheap/tax efficient way to borrow money	☐	☐	☐	☐	☐

5 YOUR FINANCIAL SITUATION

5.1 Have you taken out a loan from the Student Loans Company while at university?

Yes ☐ No ☐

5.2 Are you or your parents required to pay university tuition fees?

Yes – required to pay the full amount of tuition fees (£1,075) ☐
Yes – required to pay part of the tuition fees but not the full amount ☐
No – not required to pay fees ☐
Don't know ☐
Not applicable/Scottish student ☐

5.3 What is your total income for this academic year, that is, from September 2001 to July 2002?

Please include money received from your family; social security benefits; student loan; income from paid work; other allowances and grants from the student support system; hardship funds and other bursaries from your university or charitable foundations.

Enter amount. A rough estimate is fine **£** ☐☐☐☐☐

5.4 By the end of your time at university, roughly how much money in savings, if any, do you think you will have?

Enter amount **£** ☐☐☐☐☐ None ☐

5.5 By the end of your time at university, roughly how much money do you think you will owe as a result of being at university?
(Exclude any money owed on a mortgage)

	Enter amount owed £
All loans from the Student Loans Company **£**	☐☐☐☐☐
Bank/Building society overdraft **£**	☐☐☐☐☐

Outstanding payments on credit cards, store cards	**£**	☐☐☐☐☐
Outstanding payments bank loans	**£**	☐☐☐☐☐
Outstanding payments HP, catalogues	**£**	☐☐☐☐☐
Unpaid bills	**£**	☐☐☐☐☐
Other	**£**	☐☐☐☐☐
No debts at all		☐

5.6 Which of the following statements best describes how you are managing financially at the moment? **(Tick one box only)**

I am keeping up with all my bills and credit commitments without any difficulties ☐
I am keeping up with all my bills and credit commitments, but struggle from time to time ☐
I am keeping up with all my bills and credit commitments, but it is a constant struggle ☐
I am falling seriously behind with some of my bills and credit commitments ☐
I am having real financial problems and have fallen behind with many bills and credit commitments ☐
My parents/guardians/other family cover all expenses ☐

6 PAID WORK

(Excluding work placements which are part of your course)

6.1 Last academic year, between September 2000 and July 2001 – did you work?

Not at all	☐	**GO TO QUESTION 6.4**
Vacations only	☐	**GO TO QUESTION 6.4**
Term-time only	☐	**GO TO NEXT QUESTION**
Both vacations and term-time	☐	**GO TO NEXT QUESTION**

6.2 When did you work during term-time last year?

Semester 1 ☐ Semester 2 ☐

6.3 Thinking about your term-time jobs last academic year:

a) How many weeks in the semester did you work?
b) How many hours did you work each week, on average?
(Please include the total number of hours worked if you had more than one job)
c) How much did you earn an hour, on average?

	Semester 1	Semester 2
Enter number of weeks worked	☐☐	☐☐
Enter number of hours worked each week	☐☐	☐☐
Enter hourly pay **£**	☐☐	**£** ☐☐

6.4 This academic year, since September 2001, have you worked?

Not at all	☐	**GO TO QUESTION 6.7**
Vacations only	☐	**GO TO QUESTION 6.7**
Term-time only	☐	**GO TO NEXT QUESTION**
Both vacations and term-time	☐	**GO TO NEXT QUESTION**

6.5 When have you worked during term-time this year?

Semester 1 ☐ Semester 2 ☐

6.6 Thinking about your term-time job/s this academic year:

(a) How many weeks in the semester have you worked?
(b) How many hours have you worked each week, on average?
(Please include the total number of hours worked if you had more than one job)
(c) How much have you earned an hour, on average?

	Semester 1	Semester 2
Enter number of weeks worked	☐☐	☐☐
Enter number of hours worked each week	☐☐	☐☐
Enter hourly pay **£**	☐☐	**£** ☐☐

6.7 Can we just check, did you work during term-time last year?

Yes	☐	**GO TO SECTION 8**
No	☐	**GO TO SECTION 7**

7 REASONS FOR NOT WORKING DURING TERM-TIME

Answer if you have *never* worked during term time.

7.1 How important were each of the following factors in your decision not to work during term time?

	Very important	Fairly important	Not very important	Not at all important	Not applicable
I prefer to take out a student loan than work during term-time	☐	☐	☐	☐	☐
I do not need to work because my family gives me all the money I need	☐	☐	☐	☐	☐
I want to concentrate on my studies	☐	☐	☐	☐	☐
I have been unable to find a job/suitable job	☐	☐	☐	☐	☐
I can manage financially on my student loan	☐	☐	☐	☐	☐
I prefer to do other things with my time	☐	☐	☐	☐	☐
My academic work would suffer if I had a term-time job	☐	☐	☐	☐	☐

I cannot cope with juggling my studies, work and family commitments	☐	☐	☐	☐	☐
I am under a lot of pressure from my family to do well	☐	☐	☐	☐	☐
I do not need the money because I can rely on my savings	☐	☐	☐	☐	☐
I have already done/ am currently doing a work placement as part of my studies	☐	☐	☐	☐	☐
Other *(please write in)*	☐	☐	☐	☐	☐

NOW GO TO **SECTION 11**

8 REASONS FOR WORKING DURING TERM-TIME

Answer if you have worked during term-time. If you have not worked during term-time go to SECTION 11.

8.1 How important were each of the following factors in your decision to work during term time?

	Very important	Fairly important	Not very important	Not at all important	Not applicable
I can't manage just on my student loan	☐	☐	☐	☐	☐
I need the money for basic essentials	☐	☐	☐	☐	☐
I have no choice, my family cannot help me financially	☐	☐	☐	☐	☐
I wanted to buy a particular item	☐	☐	☐	☐	☐
I want to reduce the amount I borrow from the Student Loans Company	☐	☐	☐	☐	☐
I want the experience	☐	☐	☐	☐	☐
To avoid taking out a student loan	☐	☐	☐	☐	☐
My family encouraged me to take a job	☐	☐	☐	☐	☐
I thought the work would help me get a job when I graduate	☐	☐	☐	☐	☐
Other *(please write in)*	☐	☐	☐	☐	☐

9 DETAILS OF YOUR WORK DURING TERM-TIME

Please answer the following questions about your current or most recent term-time job. If you have/had more than one term-time job, please answer the questions in relation to your main job.

9.1 What sort of job do/did you have? (Please tick one box only)

Call Centre work	☐	Retail/sales (e.g. in a shop, supermarket)	☐
Catering (e.g. bars/pubs/restaurants/cafe)	☐	Protective services (e.g. night security)	☐
Clerical or administrative/office work	☐	Care work, nursing, childcare	☐
Cleaning, domestic work	☐	Factory work	☐
Construction – building site	☐	Other *(please write in)*	☐

9.2 Who is/was your employer?

Your university ☐ Another employer ☐

***9.3 How did you first hear about your job?* (Please tick one box only)**

Family and friends	☐	Word of mouth	☐
The university job shop	☐	The local job centre	☐
Advertisement in the local paper/local shop window	☐	Direct approach to an employer	☐
Other	☐		

9.4 For how many weeks in the semester did you do the job?

Enter number of weeks ☐☐

9.5 How many hours did you work each week on average?

Enter number of hours ☐☐

9.6 How much do/did you earn an hour?

Enter hourly pay **£** ☐☐

9.7 Thinking about your current or most recent term-time job, how important are/were each of the following in determining how many hours you worked a week?

	Very important	Fairly important	Not very important	Not at all important	Not applicable
The size of my debts	☐	☐	☐	☐	☐
When I have a deadline for my course	☐	☐	☐	☐	☐
Exams	☐	☐	☐	☐	☐
The demands of my course	☐	☐	☐	☐	☐
My hours of work are dictated by my employer	☐	☐	☐	☐	☐
My social commitments	☐	☐	☐	☐	☐
The money I need	☐	☐	☐	☐	☐
My desire to do well in my course	☐	☐	☐	☐	☐
Other *(please specify)*	☐	☐	☐	☐	☐

***9.8 When do/did you usually work, and how often do/did you work these times?* (Tick any that apply)**

	Every week during term-time	Most weeks during term-time	Only occasionally during term-time
Mornings	☐	☐	☐
Afternoons	☐	☐	☐
Early evening	☐	☐	☐
Nights	☐	☐	☐
Late nights	☐	☐	☐

9.9 Do you usually work on weekdays, weekends or both, and how often do/did you work these times?

	Every week during term-time	Most weeks during term-time	Only occasionally during term-time
Weekdays	☐	☐	☐
Weekends	☐	☐	☐

9.10 Did you do any of the following to help you combine the demands of your studies and term-time job?
(Tick any that apply)

Negotiate how many hours I worked each week	☐
Reduce or increase my hours of work at short notice	☐
Negotiate the time of the day I worked	☐
Negotiate the days of the week I worked	☐
Get time off work to do an assessed piece of course work	☐
Get time off work to revise for my exams	☐
Get time off work to take my exams	☐
None of the above	☐

9.11 What proportion of your earnings from your term-time job do you normally spend on each of the following?

	Most	Around a half	A little	None
Basic necessities such as food and rent	☐	☐	☐	☐
Books/equipment for my course	☐	☐	☐	☐
Things such as clothes, CDs, DVDs, a car and other consumer goods	☐	☐	☐	☐
My social life and entertainment	☐	☐	☐	☐
Financing a certain lifestyle	☐	☐	☐	☐
Holidays	☐	☐	☐	☐
Paying off existing debts	☐	☐	☐	☐
Tuition fees	☐	☐	☐	☐
Helping to support my family financially	☐	☐	☐	☐

10 THE IMPACT OF WORKING DURING TERM-TIME

Please answer the following questions about your term-time job/s this academic year and last academic year.

10.1 How often has your term-time job/s meant that you have:

	Frequently	Occasionally	Never
Missed lectures	☐	☐	☐
Missed seminars/tutorials/classes	☐	☐	☐
Missed deadlines for assignments and course work	☐	☐	☐
Had difficulty accessing the university's computing facilities/library/learning resources	☐	☐	☐
Produced poor quality assignments	☐	☐	☐

10.2 To what extent has your term-time job/s affected the time you spend on:

	A lot	A little	Not at all
Studying independently	☐	☐	☐
Reading	☐	☐	☐
Preparing/writing assignments and course work	☐	☐	☐
Revising for exams	☐	☐	☐
Using my university's library/learning resources	☐	☐	☐
Using my university's computing facilities	☐	☐	☐
Leisure and sports	☐	☐	☐
Socialising and relaxing	☐	☐	☐
Sleeping	☐	☐	☐
Seeing my family	☐	☐	☐

10.3 To what extent do you agree with the following statements about your term-time job/s

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I feel constantly overloaded because of my job and the demands of my academic work	☐	☐	☐	☐	☐
My job is related to my studies	☐	☐	☐	☐	☐
I find it difficult to juggle the demands of my job and the demands of my course	☐	☐	☐	☐	☐
My job gives me opportunities to apply knowledge and skills from my studies	☐	☐	☐	☐	☐
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
My job helps me develop useful skills	☐	☐	☐	☐	☐
Overall, my job has negatively affected my time at university	☐	☐	☐	☐	☐
Overall, my job has positively affected my time at university	☐	☐	☐	☐	☐
My university actually makes it possible to combine term-time work and study (e.g. through late night access to resources; time-tabling)	☐	☐	☐	☐	☐
My job helps me use my time better	☐	☐	☐	☐	☐
My job gives me opportunities to access resources that I can use for my studies	☐	☐	☐	☐	☐

***10.4 To what extent do you think your term-time job affected your course work and exam marks last year and this year?* (Tick one box in each row)**

	Significantly lower	Slightly lower	No impact	Slightly higher	Significantly higher'	Not applicable – did not have a term-time job in that academic year
Last year: Sept 2000-July 2001						
Coursework	☐	☐	☐	☐	☐	☐
Examinations	☐	☐	☐	☐	☐	☐
This year: Sept 2001 until now						
Coursework	☐	☐	☐	☐	☐	☐
Examinations	☐	☐	☐	☐	☐	☐

10.5 Is your term-time job accredited in any way or can you get any credits for your term-time job?

Yes ☐ No ☐

11 YOU AND YOUR FAMILY

Everybody to answer this section

These questions are extremely important. They will help us analyse whether students from different backgrounds have different attitudes towards debt and term-time work. We realise that some of these questions may seem quite personal. Please be assured that your answers are totally confidential. The information will be used only for statistical analysis and your personal details will not be attributed in any reporting.

11.1 Who did you live with most of last academic year, and most of this academic year?

	Last year Sept 00 - July 01	**This year** Sept 01 - July 02
With other students/friends or by myself	☐	☐
With my parents/family in their house	☐	☐
With my partner and/or dependent children	☐	☐

11.2 Are you…?

Male ☐ Female ☐

11.3 What is your date of birth?

Month ☐☐ Year 19

11.4 Are you ...?

Single, never married ☐ Married or living with a partner ☐ Divorced/separated/widowed ☐

11.5 Do you have any dependent children in the following age groups?

None ☐ Under 5 ☐ 5-10 ☐ 11-16 ☐ 17+ ☐

11.6 To which of the following ethnic groups do you consider that you belong?

White British ☐	White Irish ☐	White Other ☐
Black African ☐	Black Caribbean ☐	Black other ☐
Bangladeshi ☐	Chinese ☐	Indian ☐
Pakistani ☐	Mixed ethnic group ☐	Other ethnic group ☐

11.7 What is your religion?

None ☐	Christian ☐	(including Church of England, Catholic, Protestant, and all other Christian denominations)
Buddhist ☐	Hindu ☐	
Jewish ☐	Muslim ☐	
Sikh ☐	Other religion ☐	

11.8 Do you have a disability or health problem that affects your ability to carry out normal day-to-day activities?

Yes ☐ No ☐

11.9 Have any members of your family studied at university?
(Please include any family members who are currently at university.)

	Yes	No	Not applicable
Father	☐	☐	☐
Mother	☐	☐	☐
Brother/sister	☐	☐	☐
Son/daughter	☐	☐	☐
Partner or spouse	☐	☐	☐

11.10 For most of your childhood, were you brought up by…?

Two parents (including step parents) ☐ One parent alone ☐ Other ☐

11.11 In the three years leading up to the start of your university degree course, were you living mainly with….?

Your parents/partner/children/other relatives ☐ **GO TO QUESTION 11.12**

Independently of your parents, either alone or with friends (but not with your partner/ children) ☐ **GO TO QUESTION 11.14b**

11.12 Who is the main income earner in your family?
(By "Main Income Earner" we mean the person with the largest income, whether from employment, student support, pensions, state benefits, investments or any other source)

Father/male guardian ☐ Mother/female guardian ☐ Brother or sister ☐
Partner/spouse ☐ Yourself ☐ Other (*specify*) ☐

.....

11.13 Please tell us about the main income earner in your family. Is he/she/you …?

Working	☐	**GO TO QUESTION 11.14a**
Studying full-time	☐	**GO TO QUESTION 11.14b**
Retired	☐	**GO TO QUESTION 11.14b**
Unemployed less than 6 months	☐	**GO TO QUESTION 11.14b**
Unemployed more than 6 months	☐	**GO TO SECTION 12**
Other *(specify)*	☐	**GO TO QUESTION 11.14b**

11.13a - If main income earner is WORKING what is the name or title of the main earner's current job?

11.13b - If main income earner is STUDYING FULL-TIME, RETIRED or UNEMPLOYED less than 6 months what was the name or title of the main income earner's most recent job, before becoming a full-time student/retiring/becoming unemployed?

11.14 What is, or was, the industry or business of the main income earner's employer? (e.g. 'making shoes', 'repairing cars', 'primary school', 'food wholesale', 'clothing retail', 'doctor's surgery')

11.15 Please describe what kind of work the main income earner does (or did)

11.16 Does/did the main income earner supervise other people at work?

Yes ☐ No ☐ Don't know ☐

11.17 Is/was the main income earner self-employed?

Yes ☐ No ☐ Don't know ☐

12 FINAL SECTION

Thank you for your help so far

12.1 Everybody to answer

To develop this research further we would like to know your actual grades while at university. This is vital for our understanding of the issues raised in this questionnaire. The information will be strictly confidential and will only be used by us for research purposes. No individuals and their grades will be identified in our study. The information will not be passed on to anyone else. We would like your permission for your university to give us this information, in confidence. May we have your permission to access this information, or would you prefer us not to?

Permission given ☐ Permission refused ☐

If permission given, please write your name in full and your university ID number, if known.

Name	
University ID number	

12.2 We may want to do some more research in this area. Would you be willing to help us again?

Yes ☐ No ☐

If you are willing to help us again:
To help us do this, please write your full name and your **long-term** address where we could contact you in the future. Your details will be treated confidentially by us and will **not** be passed on to anyone else. They will only be used by us for research purposes.

Name		
Address		
	Postcode	
Tel no		
Email address		

Thank you for taking the time to complete this questionnaire. Please return your completed questionnaire direct to CHERI using the reply-paid envelope provided, or post to:

CHERI, The Open University,
344-354 Grays Inn Road
London WC1X 8BP

Appendix C: Modelling the effects of term-time work

Introduction

1. In this appendix the assessment of the effect of term-time working on a student's higher education (HE) achievement is described.

2. The effect of term-time working on three measures of a student's HE achievement was examined using:

a. Marks achieved in the third year of the degree course.
b. Marks achieved in the second year of the degree course.
c. Degree classification achieved by the student at the end of his/her course.

Factors associated with HE achievement

3. In the modelling of different measures of HE achievement, before assessing the effect of term-time working, the following variables were taken into account:

a. Institutional effects.
b. Qualifications on entry to HE.
c. Gender.
d. Subject area of HE study.
e. Age on entry.

4. The age on entry is treated as a continuous variable in the modelling. In all cases, its relationship with HE achievement is assumed to be linear. Non-linear relationships were tested for but found to be insignificant.

5. Other factors were considered including a student's ethnicity and their living arrangements but for this data their effect on HE achievement, if any, was undetectable. The variables used in the models to define these and other characteristics are set out below.

<u>Variables used in the analysis</u>

AGE0	Age
UNIVERSITY	HEI attended
Q112	Gender
MARK2	Mark achieved in second year
MARK3	Mark achieved in third year
AGWKH1	Term-time hours worked in second year
AGWKH2	Term-time hours worked in third year

ASCORE	Tariff points for A-level students
DEGCLASS	Degree classification achieved
Q21	Entry qualifications
Q31	Subject of study
Q111a	Living arrangements
ETHNIC	Ethnicity
Q1114c	Social class

Models of marks achieved in the second and third years

Standardisation of marks

6. There are six HEIs that have student information which can be used. These six HEIs do not all have the same marking schemes for their degree courses. Two of the institutions were using an alpha-numeric system, which was transferred onto a 30-point scale at one institution, and onto a 12-point scale at the other institution. The remaining four institutions used a percentage scale, but as Table S1 shows there is variation in institutional marks.

Table SA1: Variation in institutional marks based on percentage scales

HEI	Year 2		Year 3	
	Mean	SD	Mean	SD
University C	60.1	7.1	62.9	6.5
University D	58.1	6.3	59.5	6.8
University F	57.7	6.7	59.4	7.5
University E	N/A	N/A	59.4	6.7

7. It is clear that institutions are using different scales, and there is a need to standardise these scores. Also, we should not assume that the standard is the same within each institution, particularly as the proportions of students working during term-time varies by institution.

8. Two approaches to standardisation were adopted. In the first we assume a constant variability of scores, as measured by the standard deviation, within each institution. In the second approach we relax this assumption. The assumptions of the models can be described in terms of an unobserved underlying standard measure of achievement (y) and the observed scores (x_j) in institution j.

Equal standard deviation (SD) models

9. We first convert the scores so that each mean mark at each institution is 0 and the standard deviation is 1.

$$x'_j = ((x_j - \text{mean}(x_j)) / (\text{SD}(x_j))$$

We then take the standard level of achievement to be given by:-

$$y = a_j + x'_j$$

Where:

y = underlying standard marks

x'_j = the transposed observed marks, (x_j), for institution j

a_j = the parameters estimated for each institution

Varying range models

10. We can create models that allow institutions to have differing levels and different variation of student achievements. To do this, we assume that there is an institutional dependent function that converts a student's institutional mark into what they would have to be awarded if all students had been marked using the same standards and rules.

11. Let M_{ij} be the mark awarded to student j at institution i. Let M'_{ij} be the mark that would have been awarded to student j at institution i if the mark scheme had been consistent across all institutions. Under our assumptions, there exists an institution dependent function $F_i( )$ such that $M'_{ij} = F_i(M_{ij})$. Therefore, rather than fitting a regression model with the marks at each institution being the outcome of interest, we fit a regression model where the marks on a consistent across-institution mark scheme are the outcome of interest. So the regression equation looks like this:

$$M'_{ij} = (\text{constant} + \text{explanatory variable terms})_{ij} + \text{error}_{ij}$$

but making a substitution for M'_{ij} gives:

$$F_i(M_{ij}) = (\text{constant} + \text{explanatory variable terms})_{ij} + \text{error}_{ij}$$

12. Let us assume that $F_i( )$ is a linear function, with the form $F_i (x) = A_i x + B_i$. Let us also define α_{ij} = constant + explanatory variable terms$_{ij}$ + error$_{ij}$. So, the regression equation now changes to look like the following:

$$A_i M_{ij} + B_i = \alpha_{ij}$$

Rearranging this to leave M_{ij} as the outcome of interest gives:

$$M_{ij} = 1/A_i * (\alpha_{ij} – B_i)$$

Rebasing the constants gives us:

$$M_{ij} = A_i * (\alpha_{ij} + B_i)$$

13. The coefficients in the model can be calculated using non-linear regression techniques. A_i relates to the range of abilities within institution i, and B_i allows for different levels of average abilities within each institution. For each of the models, University B (institution 1) is the baseline institution i.e. $A_1 = 1$ and $B_1 = 0$. This is to ensure that there is no linear dependency between the A_i and B_i coefficients for institutions.

14. These models require two variables per institution to be fitted. It is conceivable that the marking schemes in different institutions differ in a way that is not captured by this relationship, and in theory

we could add further terms to see if this were the case. In practice, given the amount of data available, this is not possible since it would lead to over fitting.

Marks in the third year – equal SD assumption

15. To begin with, we use the equal SD assumption and standard linear regression to model third year marks using the five variables described above.

16. Table S2 shows that a student's entry qualification has the strongest relationship with a student's HE achievement. In particular for those students with a valid A-level tariff score, there is a linear increasing relationship between the score and his/her third year marks: the higher the tariff score achieved, the better the student is expected to do. Both sex and age also have strong effects. Males tend to achieve lower marks than their female counterparts. The age effect is similar to the tariff score effect; older students tend to achieve better results than similar younger students.

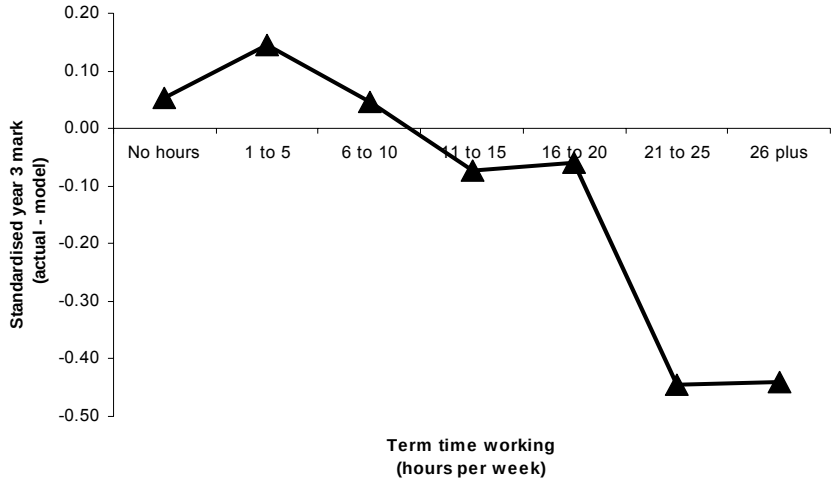
17. Additionally there are some institutional and subject area effects. University B, University C, University D, University F and University G are identifying categorical variables at institutional level. University B is used as the baseline university and so its HEI effect parameter is set to zero. For subject area effects, social studies is the baseline subject area.

Table SA2: Parameter estimates for third year mark model

Category	Parameter	Without term-time working			With term-time working		
		Estimate	SD	P-value	Estimate	SD	P-value
	Intercept	-2.093	0.28	0.000	-1.915	0.28	0.000
HEI effects	University C	-0.499	0.13	0.000	-0.535	0.13	0.000
	University D	-0.044	0.11	0.696	-0.076	0.11	0.497
	University F	-0.016	0.15	0.916	0.038	0.15	0.797
	University G	-0.147	0.14	0.280	-0.127	0.14	0.348
	University E	-0.083	0.14	0.540	-0.118	0.14	0.384
Qualification on entry	BTEC, GCSE, GNVQ	1.048	0.20	0.000	0.999	0.19	0.000
	Access, Degree, Other	1.289	0.23	0.000	1.247	0.22	0.000
	HNC/D, Scottish Highers	1.359	0.20	0.000	1.314	0.20	0.000
	Tariff score effect	0.006	0.00	0.000	0.006	0.00	0.000
Gender	Male	-0.196	0.07	0.008	-0.188	0.07	0.010
Age	Age effect	0.035	0.01	0.000	0.034	0.01	0.000
Subject area	Business	-0.013	0.11	0.906	-0.042	0.11	0.709
	Humanities	0.149	0.11	0.170	0.124	0.11	0.252
	Law	0.028	0.16	0.858	0.017	0.16	0.915
	Physical sciences	0.256	0.16	0.114	0.244	0.16	0.129
	Combined studies	0.175	0.15	0.256	0.157	0.15	0.306
	Maths	0.522	0.19	0.006	0.481	0.19	0.011
	Creative arts	-0.027	0.18	0.878	-0.058	0.18	0.742
	Medicine	0.170	0.14	0.228	0.146	0.14	0.298
	Education	-0.002	0.20	0.991	-0.013	0.20	0.950
	Mass communication	-0.018	0.18	0.921	-0.021	0.18	0.905
	Engineering	0.827	0.21	0.000	0.803	0.21	0.000
Term-time working	Hrs worked in year 3	N/A	N/A	N/A	-0.014	0.00	0.000

18. The difference between what the model predicts after taking these effects into account, and what marks the student actually achieved, is variation that cannot be explained by what has already been taken into account. We are particularly interested in whether the amount of term-time working in the third year can describe some of this unexplained variation in third year marks. We can look at the relationship between these two using a residual plot (Figure 1) from the model.

Figure 1: Residual plot of model for third year marks without taking term-time working into account

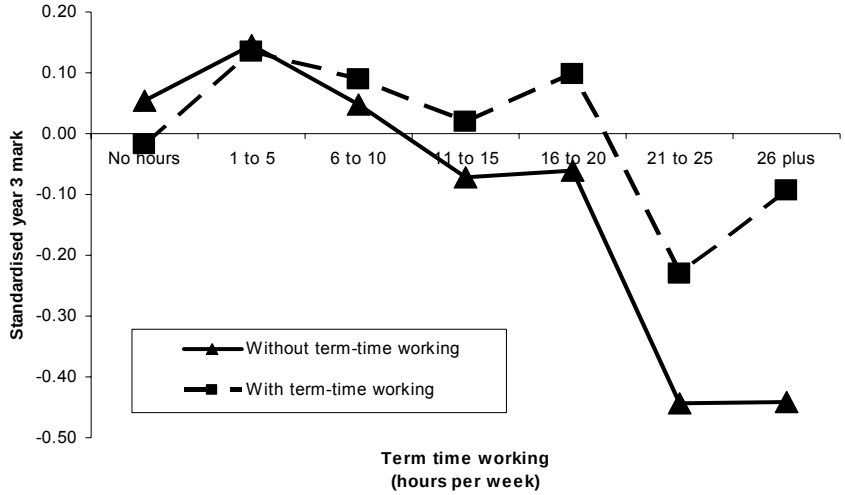


19. Figure 1 shows that there appears to be a negative relationship between the unexplained variation in the model and term-time working, i.e. the more hours a student works during his/her third year, the lower the third year mark they will achieve.

20. We can fit an additional term into our modelling that takes term-time working into account. The new model parameter estimates are given in Table S2. The results confirm that there is a negative term-time working effect, as the coefficient of the estimate is both highly statistically significant (p-value of less than 0.001) and negative.

21. Figure 2 shows the effect on the unexplained variation in marks by taking term-time working into account.

Figure 2: Residual plot of models with and without taking term-time working taken into account



22. The trend in the unexplained variation has been minimised when term-time working has been accounted for. Any apparent remaining trend is not statistically significant.

23. We have also tested to see if there is a non-linear relationship between HE achievement and the number of hours worked during term-time, and, in particular, whether there is a positive effect for low levels of working compared to not working at all. Though, as can be seen from Figure 2, there is a suggestion of such positive effects, when tested, this was found not to be significant compared to a simple monotonically decreasing linear relationship. There is also a suggestion that very high levels of term-time working may have a greater effect on HE achievement than expected from a linear model. However, this too, is not sufficient to be statistically significant.

24. The co-linearity between second and third year working was deemed to be too high to allow both variables to be included in the class of degree models.

Marks in the second year - equal SD assumption

25. For the marks in the second year, the data comes from five institutions. Data was not available for University E. The parameter estimates for the second year mark model are given in Table S3.

Table SA3: Parameter estimates for second year mark model

Category	Parameter	Without term-time working			With term-time working		
		Estimate	SD	P-value	Estimate	SD	P-value
	Intercept	-2.258	0.30	0.000	-2.137	0.30	0.000
HEI effects	University C	-0.353	0.14	0.013	-0.367	0.14	0.010
	University D	-0.018	0.12	0.880	-0.033	0.12	0.784
	University F	0.082	0.16	0.612	0.120	0.16	0.461
	University G	-0.090	0.15	0.542	-0.077	0.15	0.603
Qualification on entry	BTEC, GCSE, GNVQ	1.047	0.22	0.000	1.020	0.22	0.000
	Access, Degree, Other	1.515	0.26	0.000	1.481	0.26	0.000
	HNC/D, Scottish Highers	1.412	0.23	0.000	1.381	0.23	0.000
	A-level score effect	0.006	0.00	0.000	0.006	0.00	0.000
Gender	Male	-0.145	0.08	0.079	-0.148	0.08	0.074
Age	Age effect	0.037	0.01	0.000	0.036	0.01	0.000
Subject area	Business	0.016	0.13	0.896	0.006	0.13	0.960
	Humanities	0.272	0.12	0.019	0.249	0.12	0.033
	Law	-0.208	0.17	0.222	-0.226	0.17	0.186
	Physical sciences	0.244	0.16	0.136	0.252	0.16	0.123
	Combined studies	0.203	0.17	0.225	0.196	0.17	0.240
	Maths	0.474	0.22	0.035	0.461	0.22	0.040
	Creative arts	0.676	0.20	0.001	0.643	0.20	0.001
	Medicine	0.270	0.16	0.093	0.265	0.16	0.099
	Education	0.043	0.33	0.895	0.019	0.33	0.953
	Mass communication	0.041	0.21	0.841	0.046	0.21	0.821
	Engineering	0.448	0.24	0.065	0.422	0.24	0.083
Term-time working	Hrs worked in year 2	N/A	N/A	N/A	-0.008	0.00	0.064

26. Similar results are found when second year marks and amount of hours worked during the second year are used rather than third year marks and hours worked during the third year. However, using the second year model, the term-time working effect is only significant at the 10 per cent level (p-value less than 0.10).

27. There is no detectable or significant non-linear relationship between term-time working and HE achievement for these models. This does not indicate that one does not exist but this data does not provide strong evidence of such an effect.

Marks in the third and second year - equal SD assumption
Random effect and coefficient models

28. In the standard linear regression models we have described, the effect of term-time working was assumed to be constant regardless of which institution the student attended. It is possible that apparent effects seen for term-time working may actually be caused by not fully modelling the different institutional effects. To take institutional variation effects into account, we need to fit random effects

and coefficients to allow the data to express any institutional variation. The model (third year marks) is shown below.

Random effect/coefficient model

$$\text{smark3}_{ij} \sim \text{N}(XB,\ \Omega)$$

$$\begin{aligned}\text{smark3}_{ij} = {} & \beta_{0ij}\text{cons} + \beta_1 \text{q1}_{ij} + \beta_2 \text{q2}_{ij} + \beta_3 \text{q3}_{ij} + \beta_4 \text{q4.nascore}_{ij} + \beta_5 \text{male}_{ij} + \\ & \beta_6 \text{nage}_{ij} + \beta_7 \text{sg2}_{ij} + \beta_8 \text{sg3}_{ij} + \beta_9 \text{sg4}_{ij} + \beta_{10} \text{sg5}_{ij} + \beta_{11} \text{sg6}_{ij} + \\ & \beta_{12} \text{sg7}_{ij} + \beta_{13} \text{sg8}_{ij} + \beta_{14} \text{sg9}_{ij} + \beta_{15} \text{sg10}_{ij} + \beta_{16} \text{sg11}_{ij} + \beta_{17} \text{sg12}_{ij} + \\ & \beta_{18j} \text{ttw}_{ij}\end{aligned}$$

$$\beta_{0ij} = \beta_0 + u_{0j} + e_{0ij}$$

$$\beta_{18j} = \beta_{18} + u_{18j}$$

$$\begin{bmatrix} u_{0j} \\ u_{18j} \end{bmatrix} \sim \text{N}(0,\ \Omega_u) \ :\ \Omega_u = \begin{bmatrix} \sigma^2_{u0} & \\ \sigma_{u180} & \sigma^2_{u18} \end{bmatrix}$$

$$\begin{bmatrix} e_{0ij} \end{bmatrix} \sim \text{N}(0,\ \Omega_e) \ :\ \Omega_e = \begin{bmatrix} \sigma^2_{e0} \end{bmatrix}$$

$$\textit{Deviance(MCMC)} = 1781.892 (655 \text{ of } 655 \text{ cases in use})$$

where:

- smark3_i is the mark achieved in the third year by student i.
- q1, q2, q3 are indicator variables for student i's entry qualifications with: q1_i = 1 if the qualification is a BTEC, GCSE and GNVQ; q2_i = 1 if it is an access qualification, degree-level or similar; q3_i = 1 if the student has a HNC/D or Scottish Highers; and q4_i = 1 if the qualifications are A-levels.
- nascore_i is student i's A-level tariff score if his/her highest qualification on entry was A-level points.
- male_i is 1 if the student was male and 0 if they are female.
- nage_i is the student's age on entry.
- sg2_i - sg12_i represent subject area effects.
- ttw_i is the amount of term-time worked by student i.

29. The results for this modelling and the equivalent model for second year working are given in Table S4. The results show that allowing differing institutional effects does not dramatically change the estimate of the effect of term-time working. Additionally, there is no strong evidence to suggest differing effects at different institutions for term-time working.

Table SA4: Parameter estimates for the random effect/coefficient model

Category	Parameter	Second year marks			Third year marks		
		Estimate	SD	P-value	Estimate	SD	P-value
	Intercept	-2.144	0.32	0.000	-1.977	0.30	0.000
HEI effects	University B	0.061	0.12	0.608	0.122	0.15	0.400
	University C	-0.141	0.13	0.271	-0.322	0.15	0.031
	University D	0.046	0.11	0.679	0.115	0.14	0.401
	University F	0.057	0.13	0.666	0.143	0.17	0.389
	University G	-0.032	0.12	0.790	-0.120	0.15	0.424
	University E	N/A	N/A	N/A	0.014	0.15	0.924
Qualification on entry	BTEC, GCSE, GNVQ	0.937	0.23	0.000	0.930	0.20	0.000
	Access, Degree, Other	1.380	0.27	0.000	1.176	0.22	0.000
	HNC/D, Scottish Highers	1.244	0.23	0.000	1.222	0.20	0.000
	A-level score effect	0.005	0.00	0.000	0.005	0.00	0.000
Gender	Male	-0.153	0.08	0.065	-0.196	0.07	0.007
Age	Age effect	0.037	0.01	0.000	0.034	0.01	0.000
Subject area	Business	0.023	0.13	0.854	-0.013	0.11	0.908
	Humanities	0.247	0.12	0.033	0.129	0.11	0.232
	Law	-0.222	0.17	0.192	0.030	0.16	0.847
	Physical sciences	0.246	0.17	0.136	0.265	0.16	0.098
	Combined studies	0.196	0.17	0.238	0.182	0.15	0.231
	Maths	0.408	0.23	0.070	0.489	0.19	0.009
	Creative arts	0.669	0.20	0.001	-0.036	0.18	0.837
	Medicine	0.244	0.16	0.132	0.157	0.14	0.259
	Education	0.030	0.33	0.927	0.021	0.20	0.915
	Mass communication	0.083	0.21	0.687	0.033	0.18	0.851
	Engineering	0.410	0.24	0.092	0.809	0.21	0.000
Term-time working	Hrs worked	No institutional variation			No institutional variation		
		-0.007	0.004	0.080	-0.014	0.01	0.080

Marks in the third and second year – varying ranges

30. As we have described, we can construct models in which we allow the range of marks, as well as the mean, to vary between institutions.

31. Table S5 shows the estimates for models using this approach.

Table SA5: Parameter estimates for varying range scheme models

Category	Parameter	Second year marks			Third year marks		
		Estimate	SD	P-value	Estimate	SD	P-value
	Intercept	9.832	2.35	0.000	9.866	2.10	0.000
Institution's range of student abilities	$A_{University\ C}$	2.282	0.87	0.009	1.629	0.55	0.003
	$A_{University\ D}$	2.063	0.76	0.007	1.947	0.58	0.001
	$A_{University\ F}$	2.392	0.98	0.014	2.531	0.79	0.001
	$A_{University\ G}$	-0.157	0.36	0.667	-0.097	0.28	0.730
	$A_{University\ E}$	N/A	N/A	N/A	1.542	0.55	0.005
Institution's average student ability	$B_{University\ C}$	20.184	14.44	0.162	31.789	9.69	0.001
	$B_{University\ D}$	24.361	12.42	0.050	25.892	9.85	0.009
	$B_{University\ F}$	20.626	15.68	0.188	18.209	13.28	0.170
	$B_{University\ G}$	9.531	5.89	0.106	9.187	4.75	0.053
	$B_{University\ E}$	N/A	N/A	N/A	32.533	9.44	0.001
Qualification on entry	BTEC, GCSE, GNVQ	3.048	1.22	0.013	3.338	1.09	0.002
	Access, Degree, Other	4.820	1.78	0.007	4.279	1.35	0.001
	HNC/D, Scottish Highers	3.855	1.46	0.008	4.092	1.27	0.001
	A-level score effect	0.018	0.01	0.005	0.021	0.01	0.000
Gender	Male	-0.418	0.31	0.173	-0.756	0.34	0.028
Age	Age effect	0.111	0.05	0.015	0.142	0.05	0.003
Subject area	Business	-0.588	0.48	0.222	-0.476	0.43	0.272
	Humanities	0.617	0.43	0.150	0.468	0.43	0.278
	Law	-0.931	0.58	0.108	0.220	0.56	0.693
	Physical sciences	0.691	0.54	0.198	1.204	0.69	0.081
	Combined studies	-1.053	0.65	0.107	-0.996	0.63	0.114
	Maths	1.284	0.81	0.111	2.169	0.94	0.021
	Creative arts	2.074	0.93	0.025	0.003	0.69	0.997
	Medicine	0.710	0.56	0.201	0.874	0.60	0.148
	Education	2.881	2.18	0.185	0.073	0.93	0.937
	Mass communication	-0.307	0.74	0.677	-0.535	0.68	0.432
	Engineering	0.926	0.83	0.264	2.812	1.09	0.010
Term-time working	Hrs worked in associated year	-0.033	0.02	0.056	-0.080	0.03	0.002

32. The results for standard regression models using marks in year two and year three in a similar fashion to the original models using equal score ranges are given in Table S5. The evidence for a term-time working effect is approximately the same as in previous model results.

33. All the models described here make the assumption that all institutions have the same variability in student abilities. In this section we describe the results using a standardisation which allows the range of marks to vary between institutions.

34. The modelling shows that University F has the widest range of abilities for students. University G has the smallest range.

35. We did not attempt to construct a random effects model with the variable score ranges. This would be difficult to do with currently available software, and, in any case, the data were almost certainly insufficient to carry out such estimation.

Models of class of degree

36. The models of class of degree, like the models for third year marks, only include term-time working for the third year. The explanatory variables are the same as those used for the models based on marks obtained. The co-linearity between second and third year working was again deemed to be too high to allow both variables to be included in the class of degree models.

37. In modelling degree class we have characterised HE achievement with the binary outcome: 'good degree' and 'other'. For the results presented here we have defined a 'good degree' as a first or upper second. A number of other binary outcome variables have been considered and they give similar results to those described.

Standardisation of degree class

38. Recent studies[1] suggest that the standards of degrees at different institutions are similar, but in this analysis we did not make that assumption. By using logistic regression we have assumed that the probability of getting a good degree is determined by a latent variable, which is a linear combination of various explanatory variables. By including categorical variables identifying each institution among these explanatory variables, we are, in effect, allowing the standard required by each institution to make a 'good degree' award to vary.

39. With the binary characterisation of HE achievement, with the assumptions of the logistic regression modelling used, the issue of the variability in achievement does not arise, since the estimation of the variance is a direct consequence of estimating the mean. The parameters of the degree classification models are shown in Table S6.

[1] For example, HEFCE 2003/32 "Schooling effects on higher education achievement' July 2003

Table SA6: Parameter estimates for the degree classification models

Category	Parameter	Simple logistic			Random coefficient		
		Estimate	SD	P-value	Estimate	SD	P-value
	Intercept	-2.316	0.76	0.002	-2.111	0.77	0.006
HEI effects	University B	0.000	N/A	N/A	-0.092	0.21	0.657
	University C	0.116	0.32	0.716	-0.053	0.22	0.812
	University D	-0.015	0.26	0.953	-0.039	0.24	0.870
	University F	0.096	0.34	0.777	-0.129	0.22	0.552
	University G	0.764	0.32	0.018	0.278	0.24	0.243
	University E	0.278	0.30	0.356	0.031	0.22	0.886
Qualification on entry	BTEC, GCSE, GNVQ	1.543	0.47	0.001	1.585	0.47	0.001
	Access, Degree, Other	2.922	0.56	0.000	3.138	0.57	0.000
	HNC/D, Scottish Highers	2.347	0.49	0.000	2.555	0.48	0.000
	Tariff score effect	0.012	0.00	0.000	0.013	0.00	0.000
Gender	Male	-2.372	0.95	0.013	-2.778	0.99	0.005
Age	Age effect	0.024	0.02	0.313	0.018	0.02	0.453
Interaction	Male and Age effect	0.089	0.04	0.025	0.107	0.04	0.009
Subject area	Business	-0.452	0.26	0.086	-0.427	0.27	0.111
	Humanities	0.227	0.28	0.416	0.223	0.28	0.421
	Law	-0.420	0.39	0.279	-0.466	0.39	0.233
	Physical sciences	0.134	0.39	0.733	0.190	0.40	0.636
	Combined studies	-0.541	0.36	0.134	-0.510	0.36	0.160
	Maths	-0.027	0.42	0.948	0.017	0.42	0.967
	Creative arts	0.113	0.41	0.783	0.092	0.42	0.826
	Medicine	-0.682	0.33	0.038	-0.679	0.33	0.041
	Education	-0.567	0.46	0.216	-0.509	0.46	0.263
	Mass communication	0.235	0.43	0.583	0.289	0.44	0.509
	Engineering	-0.136	0.49	0.781	-0.145	0.50	0.771
Term-time working	Hrs worked in year 3				No institutional variation		
		-0.033	0.01	0.000	-0.032	0.01	0.014

Simple logistic regression

40. The logistic model used is similar to the standard regression models for marks with equal score assumptions. The parameter estimates for this model are given in Table S6. They show that the relationship between term-time working and the probability of achieving an upper second or higher is linear and negative. There is strong evidence that this relationship exists (p-value < 0.001) but there is still no evidence that the relationship is non-linear. The association between term-time working and degree classification is stronger than the relationship between term-time working and degree marks.

Logistic regression with random effects

Model details

$$\left.\begin{aligned}&\text{firstup}_{ij} \sim \text{Binomial}(\text{denom}_{ij}, \pi_{ij})\\&\text{firstup}_{ij} = \pi_{ij} + e_{0ij}\text{bcons}^{*}\end{aligned}\right\}$$

$$\begin{aligned}\text{logit}(\pi_{ij}) = {} & \beta_{1j}\text{cons} + \beta_2\text{q1}_{ij} + \beta_3\text{q2}_{ij} + \beta_4\text{q3}_{ij} + \beta_5\text{q4.nascore}_{ij} + \beta_6\text{male}_{ij} + \beta_7\text{nage}_{ij} + \\ & \beta_8\text{male.nage}_{ij} + \beta_9\text{sg2}_{ij} + \beta_{10}\text{sg3}_{ij} + \beta_{11}\text{sg4}_{ij} + \beta_{12}\text{sg5}_{ij} + \beta_{13}\text{sg6}_{ij} + \\ & \beta_{14}\text{sg7}_{ij} + \beta_{15}\text{sg8}_{ij} + \beta_{16}\text{sg9}_{ij} + \beta_{17}\text{sg10}_{ij} + \beta_{18}\text{sg11}_{ij} + \beta_{19}\text{sg12}_{ij} + \\ & \beta_{20j}\text{ttw}_{ij}\end{aligned}$$

$$\beta_{1j} = \beta_1 + u_{1j}$$

$$\beta_{20j} = \beta_{20} + u_{20j}$$

$$\begin{bmatrix} u_{1j} \\ u_{20j} \end{bmatrix} \sim \text{N}(0,\ \Omega_u)\ :\ \Omega_u = \begin{bmatrix} \sigma^2_{u\,1} & \\ \sigma_{u\,20\,1} & \sigma^2_{u\,20} \end{bmatrix}$$

$$\text{bcons}^{*} = \text{bcons}[\pi_{ij}(1 - \pi_{ij})/\text{denom}_{ij}]^{0.5}$$

$$\begin{bmatrix} e_{0ij} \end{bmatrix} \sim (0,\ \Omega_e)\ :\ \Omega_e = \begin{bmatrix} 1 \end{bmatrix}$$

$$\textit{Deviance(MCMC)} = 980.989 (855 \text{ of } 855 \text{ cases in use})$$

The variable definitions are the same as given at paragraph 28.

41. The model set out above shows the equivalent random effects/coefficient model for the probability of gaining an upper second or higher. The coefficients relating to the effect of term-time working are allowed to vary from institution to institution (in the form of a random coefficient). The fixed institutional effects are replaced by an institutional random effect. The parameter estimates for this modelling are given in Table S6 alongside the original simple logistic model.

42. The random coefficient model results are similar to those derived from simple logistic regression, with strong evidence that term-time working has a linear negative relationship with degree classification. The random coefficient model also indicates that there is no evidence to suggest that there are variable effects of term-time working depending on the institution attended, i.e. the term-time working effect is consistent across institutions.