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THE FAIREST OF THEM ALL?

Comparing the reproduction of inequality in student funding in Scotland and Wales

Lucy Blackburn

Doctorate of Philosophy
University of Edinburgh

2021
Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification.

Some material included in chapter 2 on policy development in Wales has previously been published as a book chapter (Hunter Blackburn 2018, as detailed in the references section). The remainder of this thesis is unpublished. Where the background analysis draws on work I published prior to undertaking this research, it is referenced, as is a thesis I submitted for the award of an MSC in 2016 (Hunter Blackburn 2016a).

Data was provided for this research by the Student Awards Agency Scotland and the Student Loans Company. The use of statistical data from the SLC and SAAS in this thesis does not imply the endorsement of either organisation of the interpretation or analysis of the information. This author bears full responsibility for the approach to extracting and analysing the data, any conclusions drawn and any recommendations made.

Lucy Blackburn
ABSTRACT

This research is concerned with how ideas of fairness are applied to student funding systems. The background to the research is the adoption of student loans in many countries in recent years. The argument is made that in judging whether student funding systems which make use of loans are fair, more use should be made of the concept of the reproduction of economic inequality and that greater attention should therefore be paid to how such systems distribute their direct financial benefits and costs according to students' initial family income. The research makes use of the devolution of student finance in the UK to compare the short-term and expected long-term distributional effects of divergent policy choices in Scotland and Wales in relation to the targeting by income of repayable and non-repayable types of funding. It draws on individual administrative records held for Scotland by the Student Awards Agency Scotland (N=28,503) and for Wales by the Student Loan Company (N=12,557), covering a complete recent cohort of full-time first-time undergraduate leavers in each nation. Such records have not been used before in the United Kingdom for the purpose of examining the detailed operation of student funding systems. The research makes a new contribution to the literature on student funding by using these records to establish how such funding is taken up in practice. It makes innovative use of concentration curves and indices, commonly used in empirical welfare literature. These are used to compare the short-term and long-term distributional outcomes of student funding policies in the two nations studied. The findings show that while both systems skewed the distribution of total initial benefits, in the form of loans and grants combined, towards those from lower incomes, initial borrowing was skewed towards those from lower family incomes for Scotland and towards those from higher ones for Wales. While this was predictable from the design of each system, differences in the take-up of student loan by income are also shown to be relevant; loan take-up was lower among students from Scotland than those from Wales and inversely related to income. Average marginal effects estimated from logistic regression models are compared to show that differences between the two nations in the relationship between borrowing behaviour and income
persisted after taking differences between the two student populations into account. Turning to costs, in the form of loan repayments, a range of earnings scenarios are developed for the populations studied to examine the expected distribution of these. For Wales these are shown to be highly predictably skewed towards those originally from higher income families. The distribution of costs relative to initial family income is more unpredictable for Scotland, and depends on assumptions made about the level of the loan repayment threshold and the operation of the labour market. For young degree-level students, a recent increase in the threshold is predicted to make it less likely than before that repayments will reproduce the skew of initial borrowing towards those from lower incomes. Costs are also predicted to be less likely to skew towards this group, the more closely higher initial family income predicts higher later earnings. “Nil income”, largely independent (mature), Scottish students are however expected to face higher average repayments relative to others under all assumptions examined; repayments are also predicted in all circumstances to skew towards those from lower family incomes within the Scottish sub-degree graduate population. The results suggest that the political claims made for both systems tend to concentrate on government inputs rather than outcomes for graduates and that expected outcomes are more dislocated from political claims in Scotland. The research raises normative questions about what redistributive effects student funding systems should be expected to have and the relevance of students’ initial family circumstances to their later repayments, and also offers insights into the wider unused potential of national administrative student funding data sets as a research resource. The results further provide the basis for theorising more generally about the conditions under which student loans systems might be expected to increase or decrease the reproduction of economic inequality within the graduate population over the life course, and under what conditions predictions of long-term effects can be most securely made.
LAY SUMMARY

This thesis is concerned with fairness in student funding. Its focus is how student funding systems which use student loans redistribute resources among those who take part in higher education, according to differences in their families' level of income at the time they study. It compares the choices made in policy for funding first-time, full-time undergraduates from Scotland and Wales in the middle of the last decade, to consider how ideas of fairness and equality were used by governments in explaining their choices and how far these ideas were reflected in the outcomes of each system in practice. From this, it draws more general conclusions about the conditions under which student loans systems can be expected to have particular long-term distributional effects.

This research draws on the idea of the “reproduction of economic inequality”: the reproduction of economic inequality is concerned with how far financial advantages or disadvantages people grow up with stay with them into later life. It is used here to examine how far the distribution of student loan repayments among graduates was expected to reinforce differences in initial family incomes.

The research draws on anonymised information about students from Scotland who left full-time undergraduate higher education in 2016-17 (28,503 cases) and from Wales in 2015-16 (12,557 cases) provided by the organisations which run the national system of student support in each nation. The research compares how the governments in each case decided to share out funding that did not need to be repaid (grants) and funding which did (loans), how much of each was means-tested and how much was not, what that meant for the share of overall funding students from different incomes received while they studied and what they were expected to pay back later. It also looks at how much use students from different incomes made of the student loan system in each nation, whether this contributed to differences in how much debt students from different incomes acquired, and how far any difference might be explained by differences between the two student populations.
The research found that for Wales compared to Scotland a larger proportion of grant funding was targeted on those from lower income families. In Scotland, more of the available grant funding was distributed on relatively equal terms to fund fees; grant funding in total still skewed towards those at lower incomes but less so than for Wales. By contrast, student loan borrowing was skewed towards those from higher family incomes from Wales and towards those from lower incomes from Scotland. The take-up of loan was higher by students from Wales; very few of these had no loans. There was slight evidence a small “squeezed middle” effect, with those from middle income families most likely to take out all their loans. Loan take-up was lower in Scotland and students became less likely to use loans as their family income rose. Differences in loan-take-up therefore contributed to the skewing of student loan debt towards those from lower incomes in Scotland. Differences in the nature of the two student populations did not explain why higher income Scottish students made less use of loans than those from Wales. When the research looked at how loan repayments were expected to be distributed it found that for Wales these were strongly predicted to skew towards those starting from higher incomes, but for Scotland it was more difficult to predict what the outcome would be and whether repayments would be relatively equal across graduates or skew more towards those originally from higher or lower income families. The distribution of repayments was more dependent on where the earnings threshold for repaying loans was set and how far those from lower income families were then expected to go on to earn less than others. Under any circumstances, students from Scotland who were assessed as having no income when they studied, mainly mature students, were always expected to repay more than others, as a result of having the highest initial debt.

Both governments used a combination of means-testing and “universal” (equally shared) funding, provided students with support to meet all their fee costs in the short term and gave lower income students more help with living cost than ones from higher income families. The research demonstrates that the Welsh system avoided a risk of skewing later costs, in the form of loan repayments, towards students who started from lower incomes by using grants rather than loans to
provide lower-income students with additional support. The Scottish system's reliance on loans to provide additional support to students from lower incomes left it more vulnerable to outcomes which would reproduce economic inequality within the graduate population. In neither nation was the long-term distribution of costs discussed explicitly when policy decisions were justified but the outcome in Scotland was more at odds with the claims made about the system in relation to fairness and equality.

The research argues that the reproduction of inequality should be more widely recognised as a form of fairness student funding systems should aim for, discusses some of the wider questions that raises and makes a range of suggestions for further research and policy development related to its findings. It also provides a basis for making more general statements about the conditions under which student loan systems can be expected to reproduce or reduce inequality within the graduate population over graduates' lifetimes.
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Both my parents fostered my interest in critical inquiry, fairness and educational inequality for as long as I can recall. I know my mother, Pat Hunter, will be delighted if I mention here her father, William Tate, a fearless and creative campaigner for the interests of the working class children he taught between the wars. He eventually went to university in middle age, becoming a researcher in education at the University of Leeds. Somewhere along the way he wrote an article on student loans, I am told; sadly, its contents are unknown. I am grateful to my surviving sister, Liz Watts, a knowledgeable campaigner in this area in her own right, for her interest in my research and her patience when it took me away from family commitments.

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## Table of contents

List of tables and figures .......................... xiv
Abbreviations ........................................ xvi

### Chapter 1  Research origins and aims ........................................ 1

1.1 The research focus: student funding as both a short-term and long-term distributional mechanism .................................................. 1
1.2 The background to conducting this research .................................. 2
1.3 Theoretical framework .................................................................. 3
1.4 The choice of Scotland and Wales ................................................ 5
1.5 Structure of thesis ........................................................................ 6

### Chapter 2  Political Justification and Policy Content In Scotland And Wales ... 13

2.1 Introduction .................................................................................. 13
2.2 The case of England: unobserved continuities .................................. 15
  2.2.1 Constraints on the devolved administrations ............................... 15
  2.2.2 The changing position in England ............................................ 16
  2.2.3 Interpreting the changes in England ........................................ 17
2.3 Rationalising policy choices in Scotland and Wales ......................... 20
  2.3.1 The nature of policy and the documentation of policy thinking ...... 20
  2.3.2 Policy rationales in Scotland: the egalitarian narrative encounters loans ...... 21
  2.3.3 Policy rationales in Wales: “progressive universalism” and divergence within constraint ................................................................. 35
  2.3.4 Interpretations of student funding as an aspect of welfare policy in the devolved administrations ......................................................... 43
2.4 Policy content compared ............................................................... 45
  2.4.1 Scotland .................................................................................. 46
  2.4.2 Wales ...................................................................................... 48
  2.4.3 The overall distribution of resources: cross-national comparison .... 51
2.5 The evidence on access in Scotland and Wales .................................. 56
2.6 Conclusion: Policy divergence and internal coherence ....................... 61
Chapter 3  Student funding as a redistributive system: the existing research... 66

3.1 Introduction .................................................................................................................................... 66
3.2 Inequality over the life course and the contribution of higher education....... 68
3.3 Fairness in student funding: a matter of benefits and costs......................... 72
3.4 Student funding in the literature on welfare and redistribution .................... 76
3.5 The direct distributive effect of student funding systems.............................. 78
  3.5.1 Descriptive reports of students’ use of government funding..................... 78
  3.5.2 Studies of gainers and losers from policy change................................ 79
  3.5.3 Studies linking effects during and after study......................................... 81
  3.5.4 Students’ engagement with the national funding systems...................... 85
  3.5.5 Studies of the devolved administrations.............................................. 88
  3.5.6 The contribution of this research....................................................... 88
3.6 The evidence for indirect redistributive effects.............................................. 89
  3.6.1 The relationship between student funding and entry to higher education .... 90
  3.6.2 Student funding as an influence on decisions about how to participate ...... 94
  3.6.3 Other possible long-term detriments from debt.................................... 97
3.7 Conclusion: Student support as a redistributive mechanism......................... 98

Chapter 4  Methodology: Data Choices And Analytic Strategy ....................... 102

4.1 Introduction .................................................................................................................................... 102
4.2 Data sources .................................................................................................................................. 102
  4.2.1 The choice of administrative data ........................................................................ 102
  4.2.2 Data limitations.............................................................................................................. 103
  4.2.3 Data providers............................................................................................................... 104
  4.2.4 Ethical consideration and data security................................................................. 104
4.3 Relevant cases............................................................................................................................... 106
  4.3.1 Groups excluded ............................................................................................... 106
  4.3.2 Defining a cohort.............................................................................................. 107
  4.3.3 Leaving Year and Period Covered..................................................................... 108
  4.3.4 The finalised study population ...................................................................... 111
4.4 Financial variables......................................................................................................................... 113
  4.4.1 Income ............................................................................................................... 113
  4.4.2 Borrowing........................................................................................................... 118
  4.4.3 Non-repayable benefits .................................................................................. 119
4.4.4 Loan repayments ................................................................. 121
4.5 Non-financial variables.......................................................... 123
  4.5.1 Demographic variables...................................................... 123
  4.5.2 Variables related to study................................................. 126
4.6 Analytic strategies.................................................................. 130
  4.6.1 Descriptive statistics ......................................................... 130
  4.6.2 Regression analysis ......................................................... 130
  4.6.3 Concentration indices and curves ...................................... 132
  4.6.4 Approach to statistical significance .................................... 136
4.7 Conclusion............................................................................. 136

Chapter 5 Introducing the study populations ......................... 138
  5.1 Introduction ......................................................................... 138
  5.2 Level of study and study history ......................................... 138
  5.3 Socio-economic factors....................................................... 143
    5.3.1 Family income ............................................................. 143
    5.3.2 Indices of Multiple Deprivation (IMD) ............................ 147
  5.4 Living arrangements........................................................... 148
    5.4.1 Living arrangements by region ...................................... 150
  5.5 Demographic factors........................................................... 151
    5.5.1 Sex ............................................................................. 151
    5.5.2 Independent status ....................................................... 152
    5.5.3 Regional variation ........................................................ 155
  5.6 Further study-related factors ............................................... 155
    5.6.1 Study in and out of country (Wales only) ....................... 155
    5.6.2 Institution type ............................................................ 156
    5.6.3 Field of study .............................................................. 157
  5.7 Conclusion............................................................................. 158

Chapter 6 The Distribution of Student Funding In Practice ............. 160
  6.1 Introduction ......................................................................... 160
  6.2 Scotland and Wales: total borrowing by value ....................... 161
  6.3 Distribution of total borrowing by family income ......... 166
  6.4 The distribution of loan by income relative to equality .......... 171
    6.4.1 Using the research data to calculate concentration curves and indices...... 172
6.4.2 The skew of loan distribution by income ........................................ 174
6.5 The distribution of non-repayable funding ........................................ 177
  6.5.1 Elements and take-up of non-repayable funding.............................. 177
  6.5.2 The distribution of non-repayable funding ....................................... 181
6.6 Conclusion ....................................................................................... 188

Chapter 7 Students’ Borrowing Behaviour ............................................. 190
  7.1 The nature of borrowing choices ....................................................... 191
  7.2 Borrowing behaviour: differences by nation, level of study and income ... 193
    7.2.1 Borrowing behaviour by level of study ........................................ 193
    7.2.2 Borrowing behaviour by income .............................................. 194
    7.2.3 Wales: living cost and fee loans compared ................................... 198
  7.3 Taking account of further factors ..................................................... 200
    7.3.1 The approach to modelling ..................................................... 200
    7.3.2 The relationship between borrowing and nation, level of study and income revisited .............................................................. 202
    7.3.3 Introducing further factors: modelling by nation and level of study ...... 208
  7.4 Conclusion ....................................................................................... 227

Chapter 8 The distribution of repayments and overview of the two systems .. 231
  8.1 Introduction ...................................................................................... 231
  8.2 Predicting future repayments .......................................................... 232
    8.2.1 Anticipating future earnings .................................................... 232
    8.2.2 Adding further characteristics .................................................. 235
    8.2.3 Development of further repayment scenarios ............................... 238
    8.2.4 Converting loan into repayment ................................................ 243
  8.3 The distribution of repayments by income ....................................... 246
    8.3.1 Effects across the income range ............................................... 254
    8.3.2 Variation within income groups ................................................ 258
  8.4 Repayment results: discussion .......................................................... 261
  8.5 Systems in overview ................................................................. 264
    8.5.1 Living cost support: the scope for invisible costs ......................... 264
    8.5.2 Total spending on tuition: invisible savings? ............................... 267
    8.5.3 Scotland and Wales: student funding in summary ....................... 269
# Chapter 9 Conclusion: fair shares in student funding

9.1 Comparing student funding in Scotland and Wales ................................. 275
  9.1.1 Responding to the research questions.................................................. 276
  9.1.2 Scotland and Wales as redistributive systems: rhetoric and reality .......... 278
9.2 Theoretical contribution........................................................................... 280
  9.2.1 Student loans as a contributor to the reproduction of economic inequality over the life course ................................................................. 280
  9.2.2 The reproduction of inequality as an issue of fairness in student funding.. 283
  9.2.3 Loans as both a cost and a benefit ....................................................... 287
9.3 Empirical contribution............................................................................. 288
9.4 Methodological contribution .................................................................. 291
9.5 Limitations .............................................................................................. 292
9.6 Policy implications .................................................................................. 294
  9.6.1 Avoiding the reproduction of economic inequality: the skew of final debt.. 295
  9.6.2 Scotland: Policy implications and recommendations ............................ 296
  9.6.3 Wales: Policy implications and recommendations ............................... 300
  9.6.4 Policy implications for other parts of the U.K. ...................................... 302
9.7 Areas for further research ........................................................................ 303
9.8 Conclusion ............................................................................................... 305

Bibliography ............................................................................................... 308

Appendices ................................................................................................. 328
List of Tables

TABLE 4-1 Examples of expected study periods in Scotland and Wales ................................................. 109
TABLE 5-1 Scotland and Wales: Distribution of cases by level of study at end of course and by study
pattern (degree only) .......................................................................................................................... 140
TABLE 5-2 Scotland and Wales: Mean number of years students recorded as receiving support .......... 143
TABLE 5-3 Scotland: Distribution of cases by family income, with composition of £35,000+ group by SIMD
ED quintile shown further .................................................................................................................. 145
TABLE 5-4 Wales: Distribution of cases by family income ....................................................................... 145
TABLE 5-5 Scotland and Wales: Distribution of cases by family income and level of study ................. 147
TABLE 5-6 Scotland and Wales: Living arrangements in first year, all students and young students only
(row percentages) ............................................................................................................................ 149
TABLE 5-7 Scotland and Wales: Distribution of students by sex ................................................................. 151
TABLE 5-8 Scotland and Wales: Independent students as a percentage of all cases .................................. 153
TABLE 5-9 Scotland: Distribution of cases by institution type ................................................................. 156
TABLE 5-10 Wales: Distribution of cases by institution type ..................................................................... 156
TABLE 6-1 Scotland and Wales: Average debt on entering repayment (figures in bold are the relevant years
for comparison with the leaver cohorts studied) .................................................................................. 162
TABLE 6-2 Scotland and Wales: all, degree and sub-degree students, concentration indices for total loan
.............................................................................................................................................................. 175
TABLE 6-3 Scotland and Wales: all, degree and sub-degree cases, take-up of non-repayable living cost and
fee grants ................................................................................................................................................ 180
TABLE 6-4 Scotland and Wales: all, degree and sub-degree students, non-repayable support, mean value
............................................................................................................................................................... 181
TABLE 6-5 Scotland and Wales: all, degree and sub-degree cases, mean total nominal value of
components of non-repayable support paid in each cohort of leavers ..................................................... 187
TABLE 7-1 Scotland and Wales: all, degree and sub-degree students, percentage of students taking out
all their possible loans, some but less than all possible loans, or no loans (row percentages) ....... 193
TABLE 7-2 Wales, all cases (N=12,557): Models with income, level of qualification and independent
status, probability full borrower vs not full borrower (AMEs), all, living cost and fee loans ... 204
TABLE 7-3 Scotland, all cases (N=28,503): Models with income, level of qualification and independent
status, probability of borrower type (borrower vs non-borrower and full borrower vs not full
broadr (AMEs) .................................................................................................................................. 205
TABLE 7-4 Scotland degree and sub-degree students: first and final model, probability (AMES) of
borrowing behaviour; degree students all loans vs not all loans and any loans vs no loans, sub-
degree students all loans vs not all loans ......................................................................................... 214
TABLE 7-5 Wales: degree students: first and final model, probability (AMES) of borrowing behaviour;
taking all loans vs not all loans .......................................................................................................... 224
TABLE 7-6 Wales: sub-degree students: first and final model, probability (AMES) of borrowing behaviour;
taking all loans vs not all loans ........................................................................................................ 225
TABLE 8-1 Scotland and Wales: factors included in repayment scenarios ................................................. 239
TABLE 8-2 Scotland: Earnings adjustment for Scottish resident graduates included in FAI model by
graduate earning decile ...................................................................................................................... 244
TABLE 8-3 Wales: Concentration indices for all repayment scenarios, using 7 income groups, lower-
income skewed results highlighted, results with no significant departure from zero (equality) in
bold ...................................................................................................................................................... 247
Table 8.4 Scotland: Concentration indices for all repayment scenarios, using 7 income groups, lower-income skewed results highlighted, results with no significant departure from zero (equality) in bold .......................................................... 250

Table 8.5 Scotland and Wales: Concentration indices average living nominal cost support per year (grants and loans combined) .................................................................................. 267

Table 8.6 Scotland and Wales: Mean nominal value of total and annual funding paid to institutions per student ........................................................................................................... 268

Table 8.7 Wales: Overview of core distributive elements of student funding (concentration indices), results at equality in bold ................................................................................... 271

Table 8.8 Scotland: Overview of core distributive elements of student funding (concentration indices), results reproducing economic inequality shaded, results at equality in bold ........................................... 272

List of Figures

Figure 2-1 Scotland: Value of Young Student Bursary in 2012-13 and 2013-14 ........................................ 28

Figure 2-2 Scotland: Young Student Bursary (YSB) and Independent Student Bursary (ISB) annual entitlements by income 2013-14 ........................................................................ 46

Figure 2-3 Scotland: Annual loan entitlements young and independent students in 2013-14 ................... 47

Figure 2-4 Wales: Welsh Learning Grant annual entitlements by income 2013-14 to 2015-16 .............. 49

Figure 2-5 Wales: Living cost loan entitlements 2012-13 to 2015-16 by income (living away, not London) ......................................................................................................................... 50

Figure 2-6 Wales: Non-repayable funding by income, living away from home, 2015-16 ..................... 52

Figure 2-7 Scotland: Non-repayable support by income (any living arrangements) 2015-16 ............... 52

Figure 2-8 Wales: Repayable funding by income, living away from home, 2015-16 .......................... 54

Figure 2-9 Scotland: Repayable support by income (any living arrangements) 2015-16 ...................... 54

Figure 2-10 Scotland and Wales: Total living cost support by income in 2015-16 ............................... 56

Figure 3-1 Estimated NPV of debt repayments in England by parental income before and after 2012 from Chowdry et al. (2012b) ......................................................................................... 84

Figure 4-1 Entry cohorts by period of study and course type, and changes to student funding systems, assuming no breaks of study .................................................................................. 112

Figure 4-2 Concentration curve (C) and concentration index (F(C)): “pro-poor” distribution ............ 134

Figure 4-3 Concentration curve (C) and concentration index (F(C)): “pro-rich” distribution ............ 134

Figure 5-1 Scotland and Wales: All cases, independent students by family income group ................. 154

Figure 6-1 Scotland and Wales: All cases, total average nominal borrowing; median with upper and lower quartile boundaries, mean shown in columns, for all students, by level, and by loan type (Wales only) ........................................................................................................ 163

Figure 6-2 Scotland and Wales: All, degree and sub-degree cases: mean total nominal borrowing by income (with lowest and highest values in each group) ........................................ 167

Figure 6-3 Scotland: All cases (N=28,503), distribution of total loan by family income ...................... 168

Figure 6-4 Scotland: Degree cases (N=18,694), distribution of total loan by family income ............... 168

Figure 6-5 Scotland: Sub-degree cases (N=9,809), distribution of total loan by family income .......... 168

Figure 6-6 Wales: All cases (N=12,557), distribution of total loan by family income ....................... 169

Figure 6-7 Wales: Degree cases (N=9,809), distribution of total loan by family income ................... 169

Figure 6-8 Wales: Sub-degree cases (N=950), distribution of total loan by family income .............. 169

Figure 6-9 Scotland and Wales: All, degree and sub-degree cases, concentration curves for total repayable (loan) funding .................................................................................................. 176
Figure 6-10 Scotland: Concentration curves for components of non-repayable support: Living cost grants (Young Student Bursary and Independent Student Bursary) and fee grants and payments from funding bodies (SFC, SAAS) ........................................... 182

Figure 6-11 Wales: Concentration curves for components of non-repayable support: Living cost grant (Welsh Learning Grant) and fee grant (Tuition Fee Grant) ........................................... 183

Figure 6-12 Scotland and Wales: All, degree and sub-degree students, concentration curves for all non-repayable resources to students (living costs and tuition support) ........................................... 184

Figure 7-1 Scotland and Wales, all, degree and sub-degree students, borrower type by income .......... 196

Figure 7-2 Wales, degree students (N=11,607): fee and living cost loan use ........................................... 199

Figure 7-3 Wales, sub-degree students (N=950): fee and living cost loan use ........................................... 199

Figure 7-4 Scotland: Degree students, results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not taking out all loans, by income group, compared to students from family incomes of £35,000 or more .......... 211

Figure 7-5 Scotland: Degree students, results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out any loans vs taking out no loans, by income group, compared to students from family incomes of £35,000 or more .......... 212

Figure 7-6 Scotland: Sub degree students, results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not taking out all loans by income group, compared to students from family incomes of £35,000 or more .......... 213

Figure 7-7 Wales: Degree students, results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not all loans, by income group, compared to students from family incomes of £50,000 or more .......... 221

Figure 7-8 Wales: Sub-degree students, results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not all loans by income group, compared to students from family incomes of £50,000 or more .......... 222

Figure 8-1 Distribution of cases included in the BIS model across lifetime earnings deciles separated by age at entry and sex ................................................................. 234

Figure 8-2 Expected value of repayments for given amounts of final total borrowing at 2018 prices at each earnings decile (£25,000 repayment threshold, UK earnings, Scottish interest assumption) 241

Figure 8-3 Scotland: degree students, concentration curves for repayments, Scenarios 2 and 3, UK and Scottish earnings assumption for repayment threshold of £25,000, Scottish earnings assumption only assumption for repayment threshold of £19,000, with 95% confidence interval ............... 255

Figure 8-4 Scotland: Sub-degree students, concentration curves for repayments, Scenarios 2 and 3, UK and Scottish earnings assumption for repayment threshold of £25,000, Scottish earnings assumption only assumption for repayment threshold of £19,000, with 95% confidence interval shown for lowest and highest values only ......................................................... 256

Figure 8-5 Wales: Degree students, concentration curves for repayments, Scenarios 2 and 3, UK and lower earnings assumption, low interest models only, for repayment threshold of £25,000, with 95% confidence interval ................................................................. 257

Figure 8-6 Wales, sub-degree students: concentration curves for repayments, Scenarios 2 and 3, UK and lower earnings assumption, low interest models only, for repayment threshold of £25,000, with 95% confidence interval shown for lowest and highest values only ......................................................... 258

Figure 8-7 Wales: Degree students, median expected total repayments (2018 prices) with lower and upper quartile boundaries and mean, by family income: Scenario 2 assumptions, £25,000 repayment threshold, UK earnings ................................................................................................. 259
FIGURE 8-8 SCOTLAND, DEGREE STUDENTS: MEDIAN EXPECTED TOTAL REPAYMENTS (2018 PRICES) SHOWN AS COLUMNS, WITH LOWER AND UPPER QUARTILE BOUNDARIES AND MEAN, BY FAMILY INCOME: SCOTTISH SCENARIO 2 ASSUMPTIONS, £25,000 REPAYMENT THRESHOLD, UK EARNINGS ......................................................... 260

FIGURE 8-9 SCOTLAND AND WALES: ANNUAL AVERAGE TOTAL LIVING COST SUPPORT (LOAN AND GRANT) RECEIVED BY STUDENTS LIVING AWAY AND IN THE PARENTAL HOME .................................................................................. 266
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>Department for Business, Innovation and Skills</td>
</tr>
<tr>
<td>CI</td>
<td>Concentration index</td>
</tr>
<tr>
<td>FAI</td>
<td>Fraser of Allander Institute</td>
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<tr>
<td>HE</td>
<td>Higher education</td>
</tr>
<tr>
<td>HEFCW</td>
<td>Higher Education Funding Council for Wales</td>
</tr>
<tr>
<td>HESA</td>
<td>Higher Education Statistics Agency</td>
</tr>
<tr>
<td>HNC/D</td>
<td>Higher National Certificate/Diploma</td>
</tr>
<tr>
<td>ISB</td>
<td>Independent Student Bursary</td>
</tr>
<tr>
<td>LEM</td>
<td>Law, Economics and Management</td>
</tr>
<tr>
<td>LEO</td>
<td>Longitudinal Earnings Outcomes</td>
</tr>
<tr>
<td>SAAS</td>
<td>Student Awards Agency Scotland</td>
</tr>
<tr>
<td>SFC</td>
<td>Scottish Funding Council</td>
</tr>
<tr>
<td>SIMD</td>
<td>Scottish Index of Multiple Deprivation</td>
</tr>
<tr>
<td>SLC</td>
<td>Student Loans Company</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, Technology, Engineering and Medicine</td>
</tr>
<tr>
<td>WIMD</td>
<td>Welsh Index of Multiple Deprivation</td>
</tr>
<tr>
<td>WLG</td>
<td>Welsh Learning Grant</td>
</tr>
<tr>
<td>YSB</td>
<td>Young Student Bursary</td>
</tr>
</tbody>
</table>
Chapter 1 Research origins and aims

This thesis is concerned with how student funding is thought about as a mechanism for addressing inequality, and how student funding systems work in practice to redistribute resources, when they involve student loans. This chapter explains the background to the research and why the question explored here matters. I discuss how my own background in this subject led me to this topic. I then set out the theoretical framework for the research and identify the gap this thesis seeks to fill, before considering why a comparison of Scotland and Wales was chosen. The chapter concludes with a summary of the structure of the thesis.

1.1 The research focus: student funding as both a short-term and long-term distributional mechanism

Student funding is at an interesting point. After an international debate over the later twentieth century about the use of loans as a possible method of funding higher education, over the past several decades forms of repayable funding have been introduced in many countries (Woodhall 2002, Johnstone and Marcucci 2010, Chapman, Higgins and Stiglitz 2014). They may be used to provide immediate assistance with tuition costs, living costs or both, and may or may not be used alongside non-repayable forms of support, such as living cost grants and fee subsidies, with or without means-testing. Student loans have been adopted by countries which fit a variety of welfare typologies. In many jurisdictions, including all four of the U.K. nations, taking out a student loan has become an ordinary aspect of undergraduate study and a growing proportion of the population will have one at some point. Despite this, their use remains politically sensitive and their legitimacy as a means of funding students continues to be questioned. The choices governments make about student loans therefore tend to be subject to close scrutiny, often bound up with wider concerns about increasing or decreasing socio-economic inequality.
As loans carry a potential future cost to individuals, they introduce long-term formalised financial effects into student funding for participants. Yet despite the political profile of student funding as an issue in the U.K. and beyond, often tied to concerns about inequality, the potential for policy on student loans to create unequal future financial burdens according to family income at the time of study is relatively under-discussed. In turn, when the outcomes from student funding systems are discussed in the context of social justice, fairness or inequality, the connection between short-term policies and overall long-term effects tends to be overlooked. The purpose of the research is to address that gap.

1.2 *The background to conducting this research*

Although I first worked on aspects of student funding policy in the early 1990s, my current interest is rooted in a period spent as head of higher education in the Scottish government\(^1\) in the early years of devolution. As touched on in chapter 2, decisions on student funding were one of the most sensitive and controversial policy areas in Scotland in that period. Sometime after leaving the Scottish government\(^2\) I noticed planned changes to the use of grants and loans which I expected would have similar practical effects to those which had been heavily criticised a decade before, but which were attracting none of the same publicity or controversy. In explaining the change, the Scottish government elided the difference between loan and grant, previously a highly sensitive distinction, and relied on comparing its new arrangements with those in all other parts of the UK. This encouraged me to look further at how student funding systems had diverged across the UK over the previous decade, which led in turn to writing up the comparisons, and drawing attention to aspects of the changes in Scotland which were financially detrimental to those entering from lower incomes, from which came blogs, media articles and

---

\(^1\) In that period (2000-04; student funding fell within my responsibilities 2000-02) the organisation was called the Scottish Executive, only later adopting "Scottish Government" after the 2007 elections. The devolved government in Wales has also had some constitutional and name changes since 1999. The terms Scottish government and Welsh government are used throughout this thesis, for simplicity.

\(^2\) I chose to take voluntary redundancy from the civil service in February 2011.
contributions to more formal publications. Some of this work is cited in chapter 2, in providing the policy background: that chapter also includes material from a book chapter (Hunter Blackburn 2018) examining developments in Wales, written as part of this research. One policy area I raised in my early interventions has already been addressed by the Scottish government: the lower level of the loan repayment threshold for students from Scotland after 2012, compared to those from England and Wales. NUS Scotland subsequently campaigned for this to raised, which led to a commitment to do so being included in the manifestos of several political parties for elections to the Scottish Parliament in 2016. The higher loan repayment threshold was eventually adopted in April 2021, during the later stages of this research; this change proved to have a substantial impact on the findings here, as shown in chapter 8, and I should therefore place on the record that I was not a disinterested observer in it taking place.

The research presented here therefore grows out of my interest in the way student funding systems have diverged across the U.K. over the past twenty years, how different policies have been justified in each jurisdiction and how far they have worked differently in practice. It goes beyond a concern with policy development in the U.K., however, treating this as the starting point for addressing a larger question. This is what type of redistributive effects governments and wider society might regard as fair from a student funding system, relative to students’ original family income.

1.3 Theoretical framework

At the theoretical level, this research explores how ideas broadly related to fairness and social justice might be framed for student funding systems which use loans. It is interested in how such concepts can be applied in this area of higher education, when short term benefits are balanced by long term costs. In pursuing these points, it belongs within the body of work concerned with the reproduction of inequality in higher education more generally, which in turn forms part of the larger literature on the intergenerational transmission of inequality over the life course. It differs from
most such studies in higher education by being concerned specifically with the transmission of economic inequalities.

The literature considering how students’ living and tuition costs are underwritten by the state often has a normative quality, invoking ideas about what is fair or just, either implicitly or explicitly. One strand, drawing most heavily on sociology, starts from a critique of loans as an unjust funding mechanism. A first set of criticisms objects to the imposition of later costs on graduates from any background, positioning higher education as a common rather than private good (Marginson 2011, Bathmaker et al 2016). It tends to treat unfairness between participants and non-participants in HE as a matter to be dealt with through taxation, insofar as it is regarded as relevant. This critique sometimes contains an argument also about inter-generational injustice, between those participating before and after policy changes. A further set of criticisms (Callender 2012) relate to the concern that loans may deter participation by groups under-represented in higher education and so is focused on unfairness in who benefits from higher education.

A separate body of work, drawn largely from economics (such as Barr 2004), argues for the use of loans as a mechanism for creating greater intra-generational fairness, based on assumptions about the continuing superior earning potential of graduates. Thus, for example, Walker and Zhu (2013) argue that earnings differentials between graduates and non-graduates can be predicted to be substantial and sustained, despite an increase in graduate numbers. Studies in this area either argue explicitly that higher earning graduates should in principle repay some or all of the cost of their higher education or at least take the existence of loan schemes as a given, and repayments as susceptible to analysis on grounds of greater or lesser distributive fairness, which is generally taken to mean how far these skew away from lower earners and towards higher ones. This literature explores how loans affect the availability of resources in the short-term for students from different backgrounds and separately how repayments are likely to be distributed according to earnings. It tends to focus on achieving just outcomes through the design of the repayment system and treats the principle of ability to pay after graduation as providing all that is
required to produce a fair framework for the distribution of costs. It presents loans as a mechanism which have made possible a large expansion of opportunities.

Despite the first including expressions of concern at unequal sharing of debt by income as a point of principle, neither body of literature tends to address directly how student funding systems may themselves contribute to fairness or unfairness within the population taking part in HE: specifically how these systems may or may not work to reproduce inequality within that population, through their direct distribution of cost and benefits. This research starts from the theoretical position that graduates’ unequal financial starting points are relevant beyond the point of participation and therefore it matters what redistributive effects a student funding system has within the graduate population, relative to those unequal starting points. It further assumes that the direct redistributive effects of student funding systems are increasingly of wider relevance, as levels of participation in HE rise; around half of those leaving school in all parts of the U.K. can now expect to take part in HE at some point. The existing literature on student funding does not provide a theoretical framework for examining the impact of decisions taken about the use of student funding in short-term on the long-term redistributive financial effects. This thesis seeks to fill that gap by exploring how the concept of the reproduction of economic inequality may provide that missing framework. Adopting that perspective, it examines how student funding systems for full-time first-time students played out in practice in two similar but different systems in the middle of the last decade which made different choices about the short-term use of funding. Its theoretical concern is therefore with questions of redistributive financial fairness or justice within the population taking part in HE and how student funding systems are seen to perform, when avoiding the reproduction of economic inequality is taken to be a fundamental principle.

1.4 **The choice of Scotland and Wales**

The research makes use of the devolution of student finance in the UK to consider what different political choices and justifications reveal about how concepts related to social justice, fairness and equality might be applied in a context where initial policy
interventions can have a variety of lasting direct financial effects. Scotland and Wales provide a useful pair of comparators for exploring this question. As considered further in chapter 2, both devolved governments have used their ability to make locally distinctive choices about student funding to differentiate themselves from the U.K. government, which retains responsibility for students from England. In both nations that differentiation has been expressed both in the detail of policy in relation to the level, purpose and distribution of grants and loans by income, and in the assertion that different principles lie behind these choices. Both systems have developed from a common U.K.-wide origin and retain many common technical features, and share a common wider political environment, allowing specific areas of divergence in policy content and justification to be more easily compared, and are similarly constrained by the way they are funded under the U.K.’s devolution settlements. In the period studied, and still, both nations also provided some element of their non-repayable support direct to individual students without means-testing, so that there was an incentive for students of all backgrounds to engage with their student funding agencies. The existence of wider substantial economic inequalities within both nations, and mechanisms for reproducing these, is well evidenced (for example Davies et al. 2011, Scottish Government 2020).

1.5 Structure of thesis

Chapter 2 sets out how policy on student funding has developed and diverged in Scotland and Wales, and how the choices in each have been rationalised. Both nations have formed policy in response to changes in England, out of a desire to create a distinctive political identity, even in periods when political control rested with the same party both in London and Cardiff or Edinburgh. In justifying their decisions, both governments have drawn on language associated with “social democratic” welfare models and in the case of Scotland also on local narratives of educational egalitarianism. In Scotland, the political narrative has focussed on free tuition. In Wales, a more overtly technical policy making process, driven by the range of practical constraints, has led to more emphasis on means-tested living cost grants,
with the concept of “progressive universalism” invoked to describe the mix of income-targeted and universal benefits to students. Thus, the two nations have diverged in policy content not only from England but from each other. Only in Scotland, however, has this process resulted in a significant tension emerging between the rhetoric related to the system and its detailed design. Student loans, vigorously rejected for funding tuition fees, have been embraced increasingly to support living costs, and targeted more at those from lower incomes. Both nations justify their approaches as encouraging wider participation in higher education.

Chapter 2 therefore also considers what evidence exists to support the view that the decisions taken in Scotland and Wales have contributed to widening participation, concluding that the claims made for this are not matched by the evidence available.

Chapter 3 considers first what can be drawn from the existing literature on higher education to inform the theoretical framework for this research. It considers the context provided for the research by the wider study of the reproduction of inequality in higher education and the case for considering economic inequality as a specific topic within that. Also considered briefly here is how the empirical literature on the relationship between targeting and income redistribution largely overlooks student funding. Student loans in particular present a challenge to any analysis of the effects of welfare interventions, as a benefit and a potential cost. A further body of literature on devolution in the U.K. and welfare policy is noted as touching on student funding, but generally in relatively superficial ways. There follows a review of the existing empirical literature on the distributional effects of student funding, mainly from the U.K. This work has concentrated on England, where the distribution of loan repayments has been the subject of considerable attention, but any examination of this relative to initial family income is rare; the implication for the distribution of costs of students having different levels of borrowing by family background has been little considered. Research findings on the possible indirect distributional effects of funding systems, through deterring entry or influencing forms of participation, is also considered. As in the literature for Scotland and Wales, there is not persuasive evidence that changes in the design of student funding systems in England have
affected the entry of full-time, first time students from more disadvantaged backgrounds. There is clearer evidence that funding may have some effect on aspects of participation, such as the level of study and whether to live at home, although it is less clear whether debt avoidance or a lack of overall funding is more influential here.

The comparison of policy content and justification and the empirical literature leads to the construction of the overarching research question which brings together issues of short-term distribution and longer term redistributive effects. This is:

Using Scotland and Wales as comparators, how far do different approaches to targeting the repayable and non-repayable elements of undergraduate funding have different implications for the reproduction of economic inequality within the graduate population?

Three supporting research questions are developed from this. The first examines the initial distribution by family income of repayable and non-repayable benefits. The second addresses the extent and nature of any variation in the take-up of student loans at different incomes between the two nations. The third considers how far the loan repayment system can be expected to mean final repayments will be distributed differently from initial debt. The empirical analysis is structured around these.

Chapter 4 explains the methodological choices made in the research. The data chosen for use were drawn from the administrative records held by the Student Awards Agency Scotland and the Student Loan Company (SLC) for Wales, to allow complete student populations to be examined, sampling only by time. As the systems studied were for full-time undergraduate students on the main package of support, only data for this group were obtained: degree and sub-degree students were considered. A cohort leaving in a particular year in each nation (2015-16 for Wales, 2016-17 for Scotland) was examined. The data provided information on family income, and on grant and loan payments made under the main scheme every year to or on behalf of each student. Data were also provided on a range of other characteristics, with some differences in the form and nature of what each data provider could supply. The analytic approach taken is discussed. This involved the
use of descriptive and inferential statistics. The concepts of the concentration index and curve are introduced. Drawn from the literature on the redistribution in welfare systems, these allow the distribution of the various dimensions of upfront benefits and long-term costs by income to be compared in terms of their departure from an equal share per head.

A summary description and comparison of the general characteristics of the two student populations is provided in Chapter 5. This provides background to the presentation of the empirical findings in Chapters 6 to 9. The student populations are shown to vary on three measures expected to be of particular salience to this research. In comparison with Wales, the Scottish population is drawn more from higher incomes, Scotland has a substantially higher proportion of students completing at sub-degree level and students are more likely in Scotland to live at home, as measured at the start of their course.

The first research question, concerned with the distribution of student loan in each population by income and its relationship with non-repayable forms of support, is addressed in Chapter 6. This provides descriptive statistics on the distribution of various forms of funding by income. Student loan debt is shown to be skewed towards those from lower incomes for Scotland and towards those from higher incomes for Wales. The chapter then compares the distribution of repayable and non-repayable funding in each nation, using concentration curves to examine how far the distribution of different elements departed from an equal distribution per head to be lower- or higher-income skewed. Living cost grants are shown to have been skewed towards those from lower incomes in both nations. Non-repayable funding for teaching costs had a closer to equal distribution per head in both cases, although this partly reflects an assumption made in estimating these figures for Scotland. When all non-repayable funding was combined, the distribution again skewed towards those at lower incomes within each level of study. The skew was stronger for Wales than for Scotland. The difference is shown to be due to the much greater value of non-repayable funding paid for fee support relative to living cost support in Scotland, compared to the more even split in the value of funding received for each purpose by
students from Wales. A further difference between the two nations emerged when all students and all forms of non-repayable funding were combined. Here, a greater concentration of non-repayable funding on those from lower incomes from Wales contrasted with a skew towards those from higher family incomes from Scotland. This followed from the larger percentage of students from Scotland on shorter sub-degree courses and their concentration in lower income groups.

The effects found in chapter 6 were consistent with and thus predictable from the design of the funding schemes. The analysis relating to loans also however suggested that student borrowing behaviour was also relevant to the distribution of loans and differed by nation. The second research question is concerned with how far borrowing behaviour differed by income between the two nations and how far this might be explained by differences between the two student populations. Chapter 7 therefore examines further the relationship between loan take-up, family income and other factors. Take-up of fee and living cost loans was high across all income groups from Wales, compared to Scotland, where non-borrowing was far more prevalent; students from higher incomes or on sub-degree courses were especially likely to make less use of loans. The relationship between income, borrowing and other factors is further explored using binomial logistic regression. The different relationship with income in each nation persisted even after other factors were introduced. Differences in the make-up of the two student populations therefore did not explain the different relationship between income and the take-up of loans between Scotland and Wales, although one substantial similar effect is seen; in both nations living at home substantially increased the likelihood that students would not make full use of the loan system.

The final research question asks how far the loan repayment system may be expected to create in each nation a distribution of repayments different from the original distribution of student debt. Chapter 8 therefore examines the pattern of expected repayment relative to family income, based on a range of different assumptions, using descriptive statistics. This was the most challenging part of the analysis, due to the limited precedents for the methodology. A group of scenarios is
provided to illustrate under what conditions each system might be expected to have particular distributional effects for repayments relative to initial family income. This allows the range of effects each system might be predicted to have to be compared, rather than providing any single estimate of how repayments will be distributed in either nation. Concentration indices and curves are again used to examine the expected skew of repayments away from or towards those starting from lower family incomes. The repayment system functions under all predictions to skew repayments away from those starting from lower incomes and towards those starting from higher ones, compared to the initial distribution of loans. For Wales this means that under any likely conditions repayments are predicted to have a progressive effect on the reproduction of income inequality, that is to result in higher repayments on average by graduates who started from families with higher incomes. Under the lower repayment threshold in place at the time students studied, the Scottish system would have been expected to have the opposite effect: the repayment system was not a sufficient intervention to offset the initial distribution of debt. However, the recent increase in the repayment threshold applied to Scottish students, bringing it more closely into line with that use in Wales (and England), creates a more varied set of results in which the distribution of repayments is expected move close to equality by initial income. That effect is stronger the closer the relationship is between initial family income and earnings. Under the increased threshold, the achievement of more progressive outcomes from the Scottish student funding system therefore is expected to depend in part on more regressive effects in the labour market. In Scotland, students in the nil family income group emerge as a group of particular interest. They are shown in earlier chapters to be the most indebted and the highest users of loans; even with a higher repayment threshold under all scenarios this group is expected to repay a larger amount on average than other groups. Within the sub-degree population, repayments are always expected to skew towards those from lower incomes.

The conclusion to chapter 8 uses concentration indices to examine how far the distribution of costs and benefits varied from an equal distribution in each nation, and
in what way, and how this related to the distribution of repayable and non-repayable funding. To this comparison is added for context the average annual living cost support, as an indicator of how the nations varied in their expectations of students’ ability to supplement their state support at different incomes. Also provided as context is a comparison of the total value of funding students received towards their tuition costs. These results show a set of results for Wales which consistently skew benefits towards those from lower income families, and costs away from them. Scotland presents a similar picture for benefits but a more mixed and unpredictable picture for costs.

In Chapter 9, the responses to the research questions are summarised. The theoretical, empirical and methodological contribution of the research is discussed, and the limitations on the findings. Policy implications and areas for further research suggested by the findings are considered. I argue that more attention requires to be paid to the potential for student funding systems to reproduce economic inequality and that this requires some rethinking of how student funding systems are usually conceptualised. I propose that how student funding systems distribute their total benefits and costs, relative to students’ original family backgrounds, should become one of the standard ways in which these systems are analysed. The thesis concludes by arguing that policy making in this area in each of the devolved nations needs not only to have its own evidence base but also to escape a conceptual framework for student funding which centres on what is being done in England. I argue that this has to date been more fully achieved in Wales, even while dealing with a more closely entangled system. The stronger focus in Scotland on defining policy by its difference from developments in England has by contrast been an obstacle to appreciating the full distributional effects of the policies pursued there, to the relative financial detriment of Scottish students entering HE from lower incomes and placing the system more at risk of unfairly reproducing economic inequality in the graduate population.
Chapter 2  Political Justification and Policy Content In Scotland And Wales

2.1  Introduction

Since the late 1990’s, policy on student funding across the United Kingdom has been in a state of flux. A series of policy developments in England has prompted further divergent responses in the three devolved nations of Northern Ireland, Scotland and Wales. The varied reaction to changes in England reflects the different political and practical circumstances of each. This chapter considers and compares how the rationale for policy on undergraduate student funding developed after devolution in the two nations chosen as the focus for this research, Scotland and Wales, how the detail of the systems evolved in each, and how well the content of policy cohered with the rationale governments presented for it. Northern Ireland has also diverged from England but was excluded from this analysis. It has a more limited record of creating distinctive policy in this area, probably due in part to interruptions to devolution.\(^3\) A detailed three nation comparison was also assumed to be too large a project to attempt in the time available. Bringing Northern Ireland within future detailed studies would be desirable: as the only part of the U.K. which is a large-scale net exporter of undergraduates (Whittaker 2017) policies there raise distinctive questions about the role and effect of student funding.

The chapter begins by setting out how student funding policy developed in England over the first decade and a half after devolution. It considers how far these developments were continuous and discontinuous from the models they succeeded. It then considers how diverging policy responses to developments in England were rationalised by the governments in Scotland and Wales, based on publicly available official sources. The chapter describes how governments in both nations invoked in different ways concepts related to the welfare state and equality to explain their policy

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\(^3\) The longest of these was the period of direct rule by the UK government between 2002 and 2007 (Torrance 2020).
choices. In Wales living cost support was regarded as equally relevant to the discussion as support for tuition costs and a positive role for targeting support through means-testing was more strongly argued. In Scotland fee support dominated discussion, and there was greater emphasis on universal equal support. The chapter then describes the specific arrangements applying in the period covered by this research and compares their effects for individuals from different levels of family income. In both nations, supporting wider participation was an important stated aim of student funding policy. What evidence is available on the impact of policy decisions here on widening participation is therefore also considered.

The chapter concludes with a discussion of how the two nations compare for how closely the content of funding policy aligned with the rationale presented for it in each. How different political and practical pressures may have influenced this is considered. The outcome for Wales was strongly influenced by the need to address the practical and political considerations raised by the large proportion of Welsh students who study outside Wales, as well as to the more limited powers initially available to the Welsh government. By contrast, politicians in Scotland, where cross-border flows with England are smaller, had more freedom to diverge in the treatment of students, and to use student funding as symbolic in the larger narrative of political difference; this became particularly important in Scottish politics after the Scottish National Party entered government in 2007. In consequence, in Scotland, student funding had a more powerful rhetorical function, relatively detached from specific financial effects. In this context a conceptual tension over student loans emerged, in which loans for fees were treated as a cost but for loans living costs as a benefit, creating a dislocation between the rhetoric used to describe the system and how entitlements to different forms of support were distributed by income. This was avoided in Wales, which saw a more technical debate in which the combined detailed impact of fee and living cost support policy was given more weight.
2.2 The case of England: unobserved continuities

A discussion of student funding policy in Scotland and Wales after 1999 has to begin with a discussion of “the elephant in the room of the devolved HE systems” (Raffe 2013). As Raffe notes, policy changes in England imposed changes on the devolved nations, for several reasons, of which the most relevant here are how the devolved administrations are funded and student movement.

2.2.1 Constraints on the devolved administrations

Student funding falls within the Barnett formula, under which the total cash funding made available for the devolved nations depends on what is spent on particular services in England; the devolved administrations are then free to decide how this should be used, subject to some exceptions which do not affect the cash budget for student funding (Mclean et al. 2009). A separate but similar system operates in relation to funding for student loans; the funding provided for these is far more constrained in its use. The large shift in England over time from cash spending on students to student loans did not strictly require the devolved administrations to follow suit, but it created a strong incentive for them to do so (Gallacher and Raffe 2012).

Students move to study in England from Scotland and from Wales, but in much larger proportions and absolute numbers from Wales. The proportions have fluctuated over the period since 1999 but the broad picture has not changed substantially. At the start of the period studied here, around 40% of Welsh full-time undergraduates moved to England, while fewer than 5% of Scottish full-time undergraduates did so (Whittaker 2017). Welsh students were therefore far more directly affected by changes to fee policy in England and the Welsh government under more pressure to act in relation to that.

Student movement from England provided further context for policy-making. In 2012-13 around 15% of U.K. full-time undergraduates in Scotland and half of those in Wales were from other parts of the UK, almost all from England in the case of Wales.
Neither administration was obliged to fund these incoming students. Their relevance to policy-making rested on their taking places in local institutions, their capacity to generate income and the practical and political implications of having different charging regimes in place for home students and students from other parts of the UK.

Also relevant to Wales initially was a lack of legal powers. The Scottish Parliament had full powers over the funding of students domiciled in Scotland and over the fees charged to students attending publicly-funded institutions in Scotland, from any location, from its inception. In Wales, the equivalent powers were only available from 2006. Prior to that year, the Welsh government had responsibility for funding Welsh-domiciled students, but no powers over fees and limited powers to supplement living cost support using grant, meaning it was tied to arrangements made by the U.K. government for England (Hunter Blackburn 2016c).

2.2.2 The changing position in England

In 1998, a year before the first elections to the Scottish Parliament and the Welsh Assembly, the U.K. government altered the funding arrangements for full-time domestic undergraduates studying for their first degree across the UK. Prior to 1998, full-time undergraduate students in the U.K. made no contribution to their fees, and received living cost support as mixture of grant (only available at lower incomes) and loan (available at all incomes), with students from lower incomes entitled to a higher total value of living cost support (Hillman 2013). In 1998, living cost support was moved entirely onto loan and a means-tested contribution of up to £1,000 towards tuition costs introduced, the intention being that around one-third of students would pay this in full, one-third in part and one-third not at all. The fee contribution had to be met from students’ private resources; however, the level of assistance with living costs was increased, in a move intended to compensate for that effect (Gallacher and

4 Student domicile in all U.K. nations is determined by the U.K. nation in which a student is resident immediately prior to the start of the course, for reasons other than education.
Raffe 2012). The repayment terms for loans were changed to provide better protection for lower earning graduates, by linking repayment more closely to earnings.

In 2004 the U.K. government reintroduced means-tested living cost grants in England, at a lower level than before, as an addition to the loans in place (Dearden et al. 2014). In 2006, universities were permitted to charge a non-means-tested fee of up to £3,000: most immediately moved to that maximum amount. For the first time, students were able to take out a student loan specifically to meet the immediate cost in full (Dearden et al. 2014). In 2012, the maximum fee amount was raised to £9,000 (again, set as a maximum but becoming a de facto system-wide charge) and the fee loan raised in line with this; universities continued to receive some additional funding for more expensive courses, while part of the fee income had to be recycled by institutions into support for disadvantaged students (Chowdry et al. 2012). The loan repayment threshold was substantially raised. In 2016, the U.K. government abolished living cost grants for new students, replacing these with loan, as in 1998.

2.2.3 Interpreting the changes in England

Looked at as a series of changes to the transfers between the state and individuals, policy in England can be seen a series of moves that had limited impact on the level of support available from national government at the time of study but increasing consequences after graduation. Throughout the period, upfront fee support remained comprehensive and universal, except for the period from 1998 to 2005, when a relatively small element of the total average fee was means-tested for new entrants. Upfront living cost support was means-tested throughout the period, albeit with a minimum (universal) amount available to all students: the value of total support and the universal element generally increased over time (Belfield et al. 2017). What changed far more was the long-term consequence of taking out this support, for fees in particular. For living costs, the principle of a long-term consequence of taking support had already been established with introduction of student loans for living costs in the U.K. in 1990. Policy changes also affected how these long-term costs
were distributed. The loan scheme as reconfigured from 1998 provided more
effective protection for lower earners than before. This protection increased
substantially from 2012: the increase in the level of earnings at which loans became
repayable (“the repayment threshold”) for entrants from that year had a large
redistributive effect on loan repayments, even after taking into account the increase
in the amount of loan students were expected to take out, with the value of
repayments projected to fall in absolute terms for those in the lowest earning deciles
entering after 2012 (Belfield et al. 2017).

Recounted this way, criticism of changes in England in this period, especially
following the reintroduction of means-tested grants in 2004, might have focussed on
the substantial rise in the long-term cost of participation to middle to higher earners,
which was the source of actual change directly affecting individuals’ finances. In
practice, criticism focussed on the introduction of the principle of charging for tuition,
and the more “marketised” model of institutional funding which flowed from that
(Marginson 2011, Nixon 2011), and on the possible deterrent effect on students from
under-represented groups of rising debt (Callender 2012). The relative continuity with
past regimes in the availability of upfront support (universal for fees, mainly means-
tested for living costs) was little discussed, even when that discussion concentrated
on short-term impacts (Hunter Blackburn 2016b). Successive U.K. governments
meantime justified the changes by asserting a fairer distribution of the costs of
providing higher education, greater accountability to students and additional funding
for the sector (BIS 2011). For government and critics alike, the emphasis was
therefore on the break with the past and this perhaps explains why the substantial
continuity in the short-term financial treatment of students tended to receive less
attention.

Discussion explicitly concerned with short-term effects on students also tended not
to dwell on the relative stability, and even increased availability, of upfront funding.
Instead, possible behavioural effects, specifically of assumed greater debt aversion in
students from non-traditional backgrounds, informed much of the political criticism
(for example, Milliband 2010) and academic studies (such as Callender 2012). Higher
debt was argued to be likely to deter students from under-represented groups from entering higher education: these arguments were present before the introduction of fee debt in 2006, but after that date the higher debt specifically associated with fees tended to dominate discussion (Hunter Blackburn 2016c).

The changes made in 1998 were controversial across the U.K. (Gallacher and Raffe 2012, Hunter Blackburn 2016b). The newly-elected Labour government was accused of betraying the principle of free higher education, meaning higher education for which any fee levied by institutions was fully met by the state. Means-tested fee contributions had a recent precedent, having been expected until the late 1970's: however, this aspect of student funding history appeared to have been forgotten and was lost in the reaction to the changes in 1998 (Hillman 2013). Invoking concepts about expectations of the welfare state, criticism focussed on the withdrawal of universal non-repayable cash support for fee costs. Despite often being expressed as fears about effects on those from lower incomes, criticism of the changes tended to ignore the previous exclusion of those from lower incomes from fee charges and the better protection for lower earners in the new loans scheme. Criticisms of the fee change can be read least charitably as a concern about financial impacts on the better off disguised as concern for those at lower incomes, even though that group was unaffected (Hunter Blackburn 2016b). However, critics could also be described as responding to a perceived breach of a valued welfare principle, related specifically to charging for public services previously provided for free. Some worried that though the change was limited, it opened the way to more extensive charging in future: these concerns were of course borne out. The focus of the debate on support for fees rather than living costs was repeated in later changes in England and in debates in other parts of the U.K. and is also seen in other jurisdictions.

The subsequent changes in 2006 and 2012 were also strongly criticised. As before, critical reactions included concerns about the introduction of charging for a previously free service, but now with a stronger critique of “marketisation” (McGettigan 2013), meaning both the construction of students as consumers and the loss of centrally-planned funding, especially after 2012. Although from 2006 there
was a return to universal upfront support, the changes were not received as a return to previous principles of universality. The short-run reversal was overshadowed by the prospect of at least partial repayment later, while the return of student grants (from 2004, but increased from 2006) reducing living cost debt at lower incomes and off-setting increased fee debt for this group was less commented on. In the political discussion of student funding, the introduction of new costs for tuition was persistently regarded as a more fundamental change than alterations to the level and type of support for living costs (Hunter Blackburn 2016b).

2.3 **Rationalising policy choices in Scotland and Wales**

The governments in Cardiff and Edinburgh would have been obliged to respond to the changes in England after 1999 onwards for practical reasons, given cross-border movements and impacts on the Barnett formula. However, the controversy surrounding the changes in 1998 meant that student funding was quickly established as an issue against which differences in wider political values could be measured (Hunter Blackburn 2016b). Unsurprisingly, the Scottish and Welsh governments therefore often explained their policy choices in this area using language evoking ideas of fairness or equality and drew on terms used in broader debates related to the role of the welfare that state.

2.3.1 **The nature of policy and the documentation of policy thinking**

“Policy” is taken here to mean the rules governing students’ funding entitlements. The critique that policy is better understood as being constructed between actors than the content of documents (Ball 1993) is rejected at this stage of the analysis, as national student funding rules operate with very limited discretion for the agencies involved. The systems studied here will have been applied by those agencies almost entirely as designed, in contrast to the more subjective conditions under which schools’ policy, for example, functions. However, that the “practice and effect of policy cannot simply be read-off from texts” and “actors are making meaning” (Ball 1993; 13, 14) are observations of central importance to the later parts of this
analysis, which explore how the overall outcome of funding policies was influenced by how students chose to interact with funding systems.

In identifying policy justifications, I concentrate on those texts forming part of the official record. For Wales, the main source used is the remits and reports of official reviews, where these have been influential in decision-making. For Scotland such sources are more limited and the analysis relies on a more varied group of documents including government consultation papers and conclusions from those, formal statements and submissions to parliament and news releases related to specific announcements. Ministerial speeches which have been press released by government are also considered. Insights into policy thinking from other types of publicly available source are also referred to, where they provide the only available explanation for a decision or became incorporated into the official account. These further sources include comments made in parliament or reported in the press, manifestos and party conference speeches. A further set of explanations for decisions might be obtained through seeking access to unpublished internal government documents, and yet another through interviewees with key informants.

The purpose of this research was not, however, to track the decision-making process, but to relate the outcomes of policy to the way governments chose to explain that policy to the public. Those other sources therefore have not been exploited here.

2.3.2 Policy rationales in Scotland: the egalitarian narrative encounters loans

The policy process in Scotland from 1999 onwards falls into two phases, divided by the SNP election victory in 2007. From 2007 onwards policy was formed and presented as a reaction both to previous decisions in Scotland and to further developments in England. The period from 2007 is the more relevant to the systems affecting the students studied here and is considered below in most detail. Developments before that date and how they were rationalised, are described more briefly as necessary background.
1997 to 2007: pressure to diverge

Between 1999 and 2007, a Labour-Liberal Democrat coalition controlled the Scottish Parliament and formed the Scottish government. The two parties entered government in 1999 with conflicting manifesto policies on tuition fees which threatened the survival of the coalition (Hunter Blackburn 2016b), a problem addressed by remitting the issue to an independently chaired review, the Independent Committee of Inquiry into Student Finance (Cubie 2000). The Committee rejected the upfront means-tested fee introduced in 1998 but accepted the principle that those who benefitted from higher education should make some contribution to the state, rather than to institutions, arguing for introduction of a post-graduation contribution, the “graduate endowment”, to be paid relative to later earnings and to be ring-fenced to support student grants. In its description and design, there was a clear intention to differentiate the payment from the previous regime of tuition fee payments. The Committee also recommended the reintroduction of means-tested grants towards living cost support. The committee endorsed the view that resources should be targeted on those most in need of assistance and on those most under-represented in higher and further education.

The targeting of resources was a strong theme in the Scottish Executive response which noted that:

> In drawing up our proposals to improve student finance for higher education, we have focused spending on where it is most needed. We have avoided across the board increases and targeted improved funding at the students in greatest need (Scottish Government 2000, 3).

The government therefore accepted the proposal to reintroduce grants, at national level for young students (the Young Student Bursary) and a locally-administered bursary fund for independent (mature) students. It also accepted the proposed graduate endowment (setting it at £2,000 rather than the Committee’s recommended £3,000). Liability was not directly related to earnings, but graduates could defer it by taking out of a student loan, repayment of which was earnings-related. Certain
groups, mainly those qualifying only at HN level, mature students and disabled students, were exempt from liability.

Both Cubie and the government response were concerned about the short-term effect of fee and living costs policies on individuals. However, they applied a different logic to each, without explanation. The upfront payment for fees from students from middle and higher incomes required in the system introduced in 1998 was treated as fundamentally problematic, while upfront contributions towards living costs from the same group were not: these were in fact deliberately increased. As a result, direct fee support became full value and non-means-tested but living cost support became more targeted (Hunter Blackburn 2016b).

The abolition of the Graduate Endowment

The SNP entered government in 2007, first as a minority government and from 2011 until 2016 with a majority. From this point on, a limitation of the public record in Scotland is a relative lack of detailed formal statements about major changes in student funding. No further external reviews of student funding were conducted which affected the period of interest for this research, although there was one relevant consultation, as well legislation introduced early in the SNP’s period in office. For living cost support, the Scottish government was able to make changes using administrative powers requiring no parliamentary consent. For one substantial change, a reduction of around one-third in the value of living cost grants in 2013, even the fact of the change was never explicitly acknowledged in any official statement (Hunter Blackburn 2016b).

A systematic word search of the Scottish government website, a snowball search from documents found by that route, and the use of general web searches (using Google) where no other document explaining a particular change could be located, supplemented by a small number of documents already held by this author, produced a list of just over 50 official documents which it appeared might include some policy explanation for decisions on student support since 1999. The documents considered are listed in Appendix A (Table A1). Few of these contained sustained discussion of
student funding policy, although, as discussed below, the repeated inclusion of tuition fee policy in broader policy narratives is significant.

Soon after the 2007 election, the SNP introduced legislation to abolish the graduate endowment, in fulfilment of a manifesto commitment. This generated a Policy Memorandum for the necessary primary legislation (Scottish Government 2007) which made clear that the rationale for policy in Scotland had undergone a major shift. Opposition to the principle of any graduate contribution, either to the state or to institutions for teaching costs, became central to the government’s justification for its policy decisions on student funding. Continuing with a form of words developed by the SNP in opposition, the Policy Memorandum referred to the “graduate endowment fee”, as a rhetorical device tying the endowment to previous fee regimes.

The Policy Memorandum to The Graduate Endowment (Abolition) Bill argued that the endowment had failed in its aim of “removing barriers to widening access and participation” (Scottish Government 2007, 2) and that it “has burdened many graduates and their families with additional debt and has acted as a disincentive to accessing higher education”. The document cited research “that young people from disadvantaged backgrounds are often deterred from both entering full-time education and from continuing in it long enough to reach their full academic potential because of economic hardships they suffer, particularly as a result of the accumulation of debt” (ibid 3). The ability to defer the impact of paying the endowment through a loan was thus presented as a problem. The exemption of certain groups was similarly not seen as a sufficient protection.

A broad concept of equality was invoked. As with the changes made in response to Cubie, the commitment to funding the full cost of fees was not explicitly linked to arguments against means-testing, but to more general claims about access. Abolishing the graduate endowment was as

“a step towards ensuring that in a modern Scotland … everyone who has the ability has the opportunity to be involved in the higher education experience, by removing the barriers which may prevent them from doing so … The abolition of the GE should therefore be a contributing factor in opening up
access to higher education on a more equitable basis” (Scottish Government 2007, 3).

While the document also argued that it was “essential … that students are not presented with a financial bill from government for their participation in higher education” ibid, 1), it was silent on the government’s plans for living costs loans, which already at that point constituted the bulk of student borrowing. The nearest the document came to acknowledging other aspects of student funding was in its note that “Abolishing the GE is the first step for this Scottish Government towards its aspiration of having a higher education system in Scotland that is free for all.” (ibid 3).

**Living cost support: the acceptance of loans**

The SNP manifesto had included a commitment to replace all student debt with grant (SNP 2007). This was abandoned and eventually reversed. First, a consultation paper on the government’s plans for living cost support was published in late 2008 (Scottish Government 2008), repeating the government’s continued wish to replace loan with grant but expressing doubts about its ability to do so (Hunter Blackburn 2016b). It was followed by a further “options paper” in late 2010 (Scottish Government 2010). Few of the most significant decisions made subsequently were explicitly discussed in either of these documents, although both contain some discussion of broad principles.

The tension in the conceptualisation of contributions to individual living cost support and contributions towards the costs of the wider system is evident in the 2008 consultation paper. This recognised that both types of contribution constituted a cost to students:

> By charging for education, either through fees, or through contributions to living costs, you are effectively making graduates pay twice for the benefits that they are receiving. We do not believe that this is fair. (Scottish Government 2008, 23).

It also appeared to recognise the case for targeting support:
It is possible though that resources within the system could also be reviewed to ensure that current support is being targeted where it is needed most. We believe that there are some areas where further thought should be given to our funding priorities and where possible changes could be made to re-allocate resources to ensure that entitlement to support is fairer for all. (ibid, 19)

However, the discussion then considered living cost support in isolation from investment in fees, and appeared to leave open the use of student loans as a mechanism for targeting support on those from lower incomes:

> While many see debt as a significant barrier to participation, many also consider student hardship and the lack of resources while studying to be the main issue. There is clearly evidence available to support both sides of this argument. This leaves the question of how we design a system that can recognise and genuinely target those who need support most while doing what we can to make higher education truly accessible to all. (24)

Following this consultation, £30 million (equivalent to just over one-quarter of all spending on non-repayable grants) was used to increase means-tested support through a mixture of grant and loan. The inclusion of loans was justified by a commitment to targeting support on those most in need and the larger volume of support that could be made available if loans were used. The changes were presented without reference to the arguments about the deterrent effect of debt, which had justified the abolition of the graduate endowment in 2007 (Hunter Blackburn 2016b).

A further shift towards loan, targeted at those from lower incomes, was made in 2011-12, when long-standing arrangements for travel grant were ended and the funds released used to increase the value of the means-tested part of living cost loans. Although not means-tested, the travel grant was claimed in practice disproportionately by lower income, especially independent, students5 and accounted for 16% of all SAAS non-repayable grants in its final year (SAAS 2012), having a total value of £20.6m in 2010-11. This was not formally announced; in a comment made to the Parliament's Education, Lifelong learning and Culture Committee the relevant

5 Data provided to the author by the Student Awards Agency.
government minister described the effect as “very small”. The amount of loan involved was similar in scale to the annual amount of loan the government had previously identified as associated with the graduate endowment (£21.7m). The context in which debt was incurred had therefore by this point become critical to the associated rhetoric.

In a further consultation in 2010, targeting for living cost support became more prominent in the rhetoric, now linked to financial pressure on the Scottish budget as a result of the recession:

In these difficult economic times, we must make sure that the money we provide goes as far as possible and is targeted at improving income levels of the poorest students at a time when other sources of finance are more limited (Scottish Government 2010, 27)

Some ambivalence about targeting living cost support was also evident, however.

Another possibility within existing budgets would be to target more of the existing resource at the least well off. With a limited budget this would mean removing support for those from higher income backgrounds. This would see students from less well-off backgrounds come closer to a £7,000 income limit but would potentially leave those from middle and high income families worse off. (ibid, 28)

The 2010 paper also marks the only point after 2007 at which the commitment to maintaining free tuition appeared to be in question (Hunter Blackburn 2016b). The paper set out the government’s opposition to seeking graduate contributions, but also sought views on introducing these, based on arguments made to it by NUS Scotland and Universities Scotland, both of which were by this point concerned about a lack of resources for students and universities, respectively. The government suggested that it might be willing to implement some change although it was opposed to it in principle. This ambiguity was short-lived, however. In a speech to the SNP’s Spring conference in 2011, the then First Minister Alex Salmond MSP set out his absolute opposition to charging tuition fees to (full-time, first time) Scottish undergraduate students (BBC 2011). This set the tone for all discussion of this topic by the Scottish government thereafter.
In 2013, for the first time since 1998 anywhere in the U.K. targeted living cost grants were reduced for students from Scotland, by around one-third in total value, with the difference met by increased loan.\(^6\) Figure 2-1 compares the living cost grant rates applying for young Scottish-domiciled students, as Young Student Bursary, in 2012-13 and 2013-14. As well reducing in value, and the income threshold for maximum grant reducing from around £19,000 to £17,000, grant entitlements changed from tapering to £0 from a particular income point (around £36,000) to becoming flat-rate at three income bands (Hunter Blackburn 2016b).

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Figure 2-1 Scotland: Value of Young Student Bursary in 2012-13 and 2013-14

![Graph showing the value of Young Student Bursary in 2012-13 and 2013-14.](image)

**Source:** Author’s calculations from Student Awards Agency Scotland website 2013-14

The change was smaller for students who were over 25, married or in a civil partnership, had dependent children or had been self-supporting for at least three years, who were entitled instead to the already lower Independent Student Bursary (ISB) (Hunter Blackburn 2016b).

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\(^6\) The net effect of these changes was to reduce total spending on all means-tested grants from £89.4m in 2012-13 to £52.9m in 2013-14: the average YSB payment fell from £2,103 in 2012-13 to £1,225 in 2013-14. The average ISB payment fell from £927 to £707. Annual student borrowing rose by 69% between 2012-13 and 2013-14 (SAAS 2014).
Large changes were also made to loan entitlements, which were increased at all incomes (other than for some students studying in London whose entitlement reduced). From 2013-14, a single loan entitlement applied, regardless of living arrangements, for new and continuing students. The 2013-14 changes also substantially increased the minimum, non-means-tested loan, from £940 to £4,500, so that entitlements became more similar at all incomes, as illustrated in section 2.4.1. The net effect of these changes increased total living cost support, particularly for those at higher incomes.

These changes were announced only in broad terms which concentrated on the increase in the total amount of living cost support and omitted reference to the detail of grant and loan changes: the Scottish government resisted attempts to provide an account of its detailed decision-making, in parliament or under media questioning (Hunter Blackburn 2016b). The announcement simply drew attention to elements that it argued specifically benefitted those at lower incomes and all students regardless of family income. The Cabinet Secretary for Education, Michael Russell MSP commented that:

> We know that studying at university costs money and that this can put some people off from applying. … While improved availability of loans and equal support for part-time students, alongside free tuition, will help ensure that all those with potential can go to university and achieve their goals, in turn playing a key role in improving our economy in years to come.” (Scottish Government 2012)

In a further shift from 2008, there was no recognition or discussion of the much larger amount of lending now anticipated for all students, including those from lower incomes. Loan and grant were now discussed as interchangeable forms of “support”, in the context of living costs, while any loan for fees continued to be perceived as a potential barrier to access. By this stage, there was a clear conceptual tension in Scottish policy-making. In the official Scottish literature after 2010, there is no discussion of the ideological or practical consequences of using loans rather than grants to fund student living costs.
“Ability to learn, not ability to pay”: rationalising policy choices since 2007

Over 2013 and 2014 in particular, “free tuition” was routinely invoked in broader policy statements as symbolic of a long-standing distinctive Scottish commitment to “fairness”, “equality” and, in particular, “progressive” values. In the White Paper produced before the independence referendum in 2014, the Scottish government argued that,

Free education for those able to benefit from it is a core part of Scotland’s educational tradition and the values that underpin our educational system. One of the major achievements of devolved government in Scotland has been to restore this right to Scottish domiciled undergraduate students. (Scottish Government 2013, 198)

The divorce of fee funding from other aspects of student funding was absolute by the time of the White Paper analysis, which did not repeat the aspirations of the SNP’s 2007 manifesto or the 2008 consultation to abolish student debt (Hunter Blackburn 2016b). The only reference in the document to students’ living costs funding was a commitment that the government would “continue to provide appropriate support for living costs” (Scottish Government 2013, 182).

In this period comparisons with policy in England formed an important part of the justification of policy in Scotland (Hunter Blackburn 2016c), which would “save Scottish students up to £9,000 a year compared to the cost of studying in England” (Scottish Government 2013, 198). The Scottish government argued that in contrast “the Westminster Government has pursued an increasingly market-driven approach to higher education” and no longer enabled “access to university based on the ability to learn, not the ability to pay” (ibid, 200).

The association of the policy with the principle that entry should be based on “ability to learn, not ability to pay” and the implication that this was only true in systems characterised by free tuition was first used by the SNP at Westminster in 1997 (Hunter Blackburn 2016b). As fees were first means-tested and then later still fully funded upfront, albeit partly or completely by loan, it had always been open to challenge how far the critique of other systems as based on “ability to pay” for tuition
was well-founded (ibid). This remained a persistent line, however, in an otherwise shifting set of arguments, peaking in use in the run-up to the referendum on independence in 2014. The use of this phrase might have suggested a policy imperative to target funding on those least able to find funds from private sources while they studied. However, “ability to learn, not ability to pay” was used rather as an argument specifically to defend a system of flat-rate full support for tuition.

Immediately before and after the 2014 referendum, the language of universalism also became more common, sometimes now coupled with references to “the social wage”. In 2013 the then First Minister, Alex Salmond said of several policy areas from which the government had removed charges:

> These advances are what we like to call the social wage – services are available to everyone, because everyone contributes to society. … They say these social gains are not sustainable. I say what makes them sustainable is that they are universal, part of a social wage. If they weren’t universal then then those in receipt of the social benefit would be separated and stigmatised - exactly as is happening with the U.K. government's welfare agenda. (Salmond 2013)

In 2014, in a speech emphasising Scotland as a “pioneer of … universal free school education”, he commented:

> I mentioned Scotland’s view of education as a social good. This Government has re-established free university and college tuition precisely to preserve that principle. (Salmond 2014a)

“Universal” here was used to mean not only that all relevant members of the population can gain access to some support, but specifically that no contribution from any user was involved, ruling out any degree of means-testing or top-up contribution and to apply only to those qualifying for entry to higher education.

The sense of the policy on fees as the continuation of a specifically Scottish tradition was a repeated theme in this period

> .. we were the first society anywhere in the world to introduce free universal education, from the 16th century. … That's why one of the proudest achievements of this Scottish Government was to restore the principle of free tuition for university education (Salmond 2014b)
The same argument persisted with the change of First Minister, after the result of the 2014 referendum on independence was a vote in favour of remaining in the U.K. Nicola Sturgeon as First Minister stated in 2015 “We pioneered the idea of universal access to school education and sparked the Enlightenment”, adding, 

Free higher education tuition has become a touchstone of this government’s commitment to equality of opportunity. As someone who benefited hugely from it, I am determined to preserve the principle that access to university is decided by your ability to learn; not your ability to pay. (Sturgeon 2015)

**Fairness, equality and contradiction: the politics of student loans in Scotland**

Over time, therefore, the arguments used to defend student funding policy varied. An earlier emphasis on free tuition as necessary to support wider access shifted towards a stronger emphasis on language recognisable from broader welfare debates prominent around the period of the 2014 referendum, aligning Scotland with social democratic models popularly associated with Scandinavian countries. As McEwan and Parry (2005) argue, Scotland, Wales and Northern Ireland had long been regarded as having a more “welfarist” political culture than England), although the most heavily funded elements of the public services, such as school-level education and most forms of medical treatment, continue to be fully subsidised across the U.K. Equally while arguments that Scotland was distinctively a social democratic and politically closer to Scandinavia pre-dated the 2014 referendum (Arnott and Ozga 2010), they assumed increased importance over time (Keating 2017). As argued by Hilson and Newby, “interest in the region is not new but the construction and rhetorical use of the ‘Nordic model’ is a phenomenon with its own history ... For both sides in the Scottish independence debate … Norden is a pliable entity that can be used either to support or to undermine specific visions of the future of Scotland.’ (2015, 226).

In the context of student funding Scottish policy used the language of universalism in contradictory ways, requiring the absence of fee borrowing by undergraduates, yet allowing it more recently to extend to loan-based fee subsidies for postgraduates. The provision of non-means-tested loans for postgraduates for fees as well as living costs was described in 2016 as “universal” (Scottish Government 2016c, Scottish
Government 2017b), with the Minister for Further Education, Higher Education and Science, Shirley-Anne Somerville MSP suggesting this made postgraduate study “more affordable and more accessible” (Scottish Government 2017b). Similarly, while seeking undergraduate fee contributions through repaying loans was regarded as unacceptable, for living costs loans became a form of support interchangeable with grant, which could be targeted on those from lower incomes. Further, means-testing for fees was rejected for full-time students, but throughout this period remained acceptable for those studying part-time.7

No single underlying philosophy of student funding or welfare therefore united these various positions: specifically, the language and arguments used to defend non-means-tested full cash subsidies for undergraduate fees was inconsistent with the treatment of living costs, part-time undergraduate fees and taught post-graduate student fees. The perception of fee and living cost investment as entirely separate funding strands was well illustrated in the remit of independent review of student funding commissioned by the Scottish government in autumn 2016, which was instructed to produce a “fairer” system for funding living cost support for students. This was encouraged to consider the greater use of loans to achieve this but fee policy, and any therefore movement of cash subsidies between fees and living costs, was placed unambiguously outside its remit (Scottish Government 2017a).

The defence of the policy as based “ability to learn, not ability to pay” provided a more persistent, if questionably accurate, description from 1997 onwards, intended to differentiate Scotland from other parts of the U.K. It drew on another and even older narrative of national distinction, related specifically to education. The importance of the “Scottish educational myth” (Gray et al. 1983) of an open and egalitarian education system as a way of expressing Scottish identity and difference

7 Fee support for part-time students was only available throughout this period to those from households with incomes below a certain level (£25,000 from 2013-14).

8 High debt for students leaving Scotland to study was sometimes described as a matter of regret (Sturgeon 2014) but beyond the Scottish government’s control: the portable fee arrangements that operated for Wales were treated as irrelevant
has been widely discussed, in relation to its assertion of a system open to the talents (Arnott and Ozga 2016). Gray et al. suggest myths matter,

“as expressions of what people think they are doing and therefore as partial explanations for their actions: they must be regarded as accounts or explanations of the world which may be wholly correspond to it, but which may also be inaccurate or incomplete.” (1983, xv)

which provides a plausible description of the function “ability to learn, not to pay ability” as a rhetorical phrase. The phrase formed part of a wider political approach in which Scots were “invited to see themselves ‘as inheritors’” (Arnott and Ozga 2016) of a system of values which embraced access and equality, without comprising educational excellence. Keating and Liñeira (2017) argue that “more effort has been putting into challenging this [myth] than ever went into promoting it” (130): however, it is evident that considerable political effort went into promoting it in the period studied here.

The discussion of student funding by the Scottish government after 2007 therefore matches well with Arnott and Ozga’s (2010a) thesis of a political discourse that reaches to “inward” to ideas of “fairness and equality” and “outward” to presumed Nordic models, which they suggest was useful both for shaping policy content and for creating what they term a “‘new imaginary’ of Scotland”. A senior member of the administration described to them the importance given to “crafting the narrative” of the SNP as a government. They identify education policy in general as a central element of this. Their study examines only the period from 2007 to 2009, but the developing rhetoric around student funding policy in later years lends support to their thesis. Their further analysis (Arnott and Ozga 2010b), which finds a tendency to move away from England as a comparator, is less relevant here, however. Comparisons with England were fundamental to the political defence of free tuition: the £27,000 three-year cost of fees to students south of the border was repeatedly cited in speeches, news release and official documents.
2.3.3 Policy rationales in Wales: “progressive universalism” and divergence within constraint

Tying the high-level explanations of student funding policy to specific decisions made in Wales presents less of a challenge than in Scotland. There, student funding policy was a less dominant issue in the early years of devolution, attributable in part to the Welsh government’s more limited powers. Assessing challenges for the new devolved government in Wales, chief among which they argue was establishing its legitimacy after a narrower vote in favour of devolution on a lower turn out than in Scotland, Chaney et al. (2001) did not identify student funding as a relevant topic.

The reliance on reviews

The policy process in Wales instead evolved more steadily than in Scotland, with Labour-led administrations throughout the period. In contrast to Scotland, policy-making on student finance was dominated by the use of government-commissioned arms-length reviews. There have been four such exercises since 1999, three of which were significant in shaping the system as it applied to the students studied here. The fourth is considered here as a source for post hoc reflections on the rationale for earlier decisions. The reviews are:

2001-02 Independent Investigation Group on Student Hardship and Funding in Wales, chaired by Professor Theresa Rees (Rees 1)

2004-05 Independent Study into the Devolution of the Student Support System and Tuition Fee Regime in Wales, also chaired by Professor Theresa Rees (Rees 2)

2008 Review of Higher Education in Wales Phase 1: Student Finance Arrangements: Task and Finish Group, chaired by Merfyn Jones (Jones)
The recommendations of all four reviews relating to undergraduate funding were largely accepted. In consequence the government’s policy parameters, as expressed in the terms of reference for each review, and the rationale behind policy, as described in review reports, are available in more detail than is usually the case when decisions are made solely within government, and more easily tracked than in Scotland. That does not mean, of course, that other considerations were influential which were not stated, whether by review groups or by governments in the act of acceptance. Recognising that limitation, this analysis is nonetheless able to draw on a coherent body of material than in Scotland to examine how far any particular ideology of welfare has been explicitly influential in the design of the various student funding schemes for full-time undergraduates adopted by the Welsh government since 1999.

The value of external reviews in providing extended discussion of rationales becomes clear not only in comparison with Scotland but also when examining the one major change undertaken as decision taken without an external review, which was the Welsh government’s immediate response to changes in England from 2012. Far less explanatory material was published related to this decision.

The remits set for Rees 1, Rees 2 and Jones, other formal statements made around the time of their establishment, the reviews’ reports and the government’s formal response therefore are the main texts treated as relevant here, together with formal statements made by the Welsh government in relation to the introduction of the 2012 arrangements. Although the work of the Diamond Review did not affect the systems examined in this research, in the processing of establishing the review and responding to it, the Welsh government reflected on its general principles for student funding, and this material has also been considered here.

Both Rees reviews were asked by government to consider how changes to funding systems could help to address a range of problems, including widening access, and
the funding gap between universities in Wales and England, without being given specific principles to follow. In establishing the first Rees review, the new devolved administration deliberately followed the approach in Scotland in 1999, using the opportunity of devolution to show willingness depart from the model adopted across the U.K. in 1998, which had also been controversial in Wales. However, the issue was less dominant in the first elections to the Welsh Assembly, which had fewer powers in this area (Hunter Blackburn 2016b). Of relevance here may be that, as the analysis in later chapters shows, the Welsh student population is generally skewed more towards lower incomes than that from Scotland: while around one-third of students in England were expected to be wholly exempt from fee payments by 2002-03, 48% of Welsh-domiciled students continued to pay nothing, a further 17% paid less than £1,000 and 35% paid the full amount (Rees 2005, 25).

The second Rees review was established to advise on the use of full powers over the setting of fees and funding of students which were passed to the Welsh Assembly from 2006. The terms of reference for Rees 2 in particular include open instructions, such as “to advise on the applicability of devolved tuition fee powers to Wales” (Rees 2005, 3). Thus, the task in both cases was framed in terms of pragmatic problem-solving, and this is reflected in how the reviews present their findings. These are “firmly rooted in our listening and learning” (Rees 2001, Foreword) or “rooted in evidence” (Rees 2005, xii). The members of the first Rees review “came to the task with no preconceived ideas about what we would find or recommend” (Rees 2001, Executive Summary).

The first Rees review took as one of several starting principles that student support should be “based on fairness” (Rees 2001, 2) and fairness is also referred to as an important concept in the report of the second review. However, neither report defined that term; nor did either discuss in terms the choice between targeting and universalism. Both advocated targeting living cost grants on those at low incomes, based on the evidence submitted to them about student hardship and attitudes to debt. The first Rees review also contained an implicit criticism of universal provision,
expressing concern that the scale of the non-means-tested living cost loan meant that

the families of learners in HE from wealthier backgrounds now contribute less to the education of their offspring under the fees and loans system than they did under the means-tested living costs grant and no fees … for HE students from wealthier backgrounds, the student loan system provides a welcome but unneeded publicly subsidised source of income (Rees 2001, 19).

However, while both reviews advocated more targeting for living costs, both accepted de facto an approach to the funding of tuition costs which took no account of family income, advocating a mixture of substantial continuing government subsidy and a smaller contribution pro rata post-graduation earnings, either as a “graduate endowment” on the model adopted in Scotland in the early part of the decade (Rees 1) or a modest fee which can be deferred using a loan (Rees 2). Both reports note that some members of the review group began with an objection in principle to tuition fees but concluded after lengthy evidence-gathering that such models were the best available “given the constraints under which the Assembly operates” (Rees 2005, xiv). The argument of principle given in both reports for the adoption of some form of contribution is the shared private and public benefit from higher education: competitive market philosophies are rejected, and no arguments are made about equity between graduates and non-graduates. It is implied rather than stated that the public benefits of HE mean that all students should receive the same cash subsidy towards teaching costs, regardless of family income. At the point Rees 1 reported, the Welsh administration could only take action on living costs, introducing means-tested living costs grants with a maximum value of £1,500 in 2004-5, and retaining living costs loan as an additional source of support. The review’s suggestions relating to fees were only relevant as inputs into the administration’s successful lobbying of the U.K. government to be given greater powers in this area, which it gained under the Higher Education Act 2004.

Rees 2 was established to provide advice on using these new powers. The review was operating in a less restricted political environment than the Cubie committee, other than a short-term government commitment not to raise fees before the next
Assembly elections in 2007. The group made an explicit decision not to be bound by a vote in the Welsh Assembly in 2004 against tuition fees. After Rees 2, Wales followed England in moving to a £3,000 fee regime in 2007, although students staying in Wales to study were also provided with a non-means-tested fee grant, which had the effect of keeping the fee liability at its previous maximum level (around £1,200).

The second Rees review did not close the debate on student and institutional funding in Wales, leading to a further review in 2008. Unlike either Rees review, the Jones review was asked by the Welsh government specifically to consider the use of targeting “to widen access and encourage take-up of priority subjects” (Jones 2008, 4). The review took a position strongly in favour of greater targeting from the outset. In developing its “framework of priorities”, the group agreed that a student support system should

provide value for money by targeting support to reduce the cost and debt associated with HE for those students and households who would benefit most at the time they would benefit most, i.e., support those in need when they most need it. (ibid, 11)

Starting from an agreement that “on balance, funding needed to be targeted to those from lowest income households”(ibid, 16), it concluded that “any student finance support which is not carefully targeted should be discontinued” and noted that its members

“were very much in agreement that the key criterion for targeting statutory support should be that of household income, so that full-time students entering higher education form the poorest households receive higher levels of living costs support which they will not be required to repay” (ibid, 19).

The report observed that the universal fee grant used to reduce the cost of in-country study was provided “irrespective of [students’] household income and does not help those from low income households studying outside Wales” (ibid, 10). The report argued that increased living costs grants for low-income students would be “the most progressive way to offer extra assistance with student debt”, along with index-linking the income threshold for loan repayment (ibid, 20): the maximum means-tested living
cost grant was increased from £1,500 to £5,000 on the review’s recommendation. However, despite its preference for targeting and opposition to the universal fee grant, then worth around £1,800 a year to those who studied in Wales, like Rees, Jones did not question the continuation of a substantial indirect investment in tuition costs through the funding council, or the availability of fee loans without means-testing. The Welsh government accepted Jones’ recommendation for increasing means-tested living cost grants and ending the additional fee subsidy for those studying in Wales.

In presenting several years later the Welsh government’s proposals for responding to the changes planned in England from 2012, the principle of continuing large indirect non-means-tested cash subsidy for tuition was explicitly defended by Leighton Andrews AM (Welsh Assembly 2010), citing the public benefits of higher education. In 2012, Wales followed England in allowing institutions to charge fees of up to £9,000 a year but re-introduced a non-means-tested fee grant to off-set the impact: the structure for fee subsidies therefore altered, but the net effect of that subsidy remained the same. The system applying to Welsh-domiciled students entering from 2010 onwards therefore saw very little change in terms of its underlying financial effects.

In 2014, the Diamond Review (Diamond 2016) was stimulated by continuing negative reaction amongst university leaders in Wales to the Welsh government’s response to the changes introduced in England from 2012: sector leaders argued that the ability of Welsh students to take a fee grant to institutions elsewhere in the U.K. meant that funding was being unfairly lost from Welsh institutions. Although that characterisation of the effect is open to question (Hunter Blackburn 2015), it had sufficient political impact to stimulate a fourth review of student funding in Wales in barely more than a decade. Presenting his review’s final report in 2016, Sir Ian Diamond described its recommendations as “consistent with the principle of progressive universalism that has been an important tenet of policy-making in Wales since devolution” (Diamond 2016, 5). It was not stated explicitly in the Diamond report that previous models of student funding in Wales were among the country’s examples of progressive
universalism: but the report at no point suggests that its findings represented a radical departure from previous approaches, so that implication might be taken. He described his own review's recommendations as “progressive and, therefore, provide the greatest support to individuals who have the greatest need while maintaining an element of universality that reflects the shared investment citizens make in education as taxpayers” (Diamond 2016, 16).

**A case of progressive universalism?**

The argument that progressive universalism has been influential in policy-making in Wales can be traced back at least a decade. In 2006, the then First Minister Rhodri Morgan described progressive universalism as “a policy approach in which the benefits of universal services are retained, but where extra resources and policy attention is paid to those whose needs are greatest” (quoted in Scourfield et al. 2008). Mark Drakeford, then an adviser to the Welsh government on health and social policy, listed progressive universalism as one of several “distinctive and internally coherent principles [which] can be seen in operation across the responsibilities which the Assembly discharges” (Drakeford 2007, 171). He described this as a model in which

universal services are preferred … The progressive part of universalism comes in providing … additional help for those who need it most… The resulting services combine “the advantages of the classic welfare state … with some of the benefits which can be claimed for targeting. (ibid, 173-174)

As Williams and Mooney (2008) observe, it may be open to debate how far the devolved government in Wales has in practice pursued a coherent and substantially different approach to welfare compared to that in England, particularly during the period of Labour government at Westminster, where the phrase “progressive universalism” was also occasionally used (Balls 2007). However, as they also note, the more “collectivist aspirations” the term embodies have undoubtedly been rhetorically more important in Wales than in England. All four Welsh reviews placed a strong emphasis on the adequate funding of living cost support. That the Welsh system moved more than any other in the U.K. towards the return of grants has not
been accidental, therefore: it was the product of repeated information-gathering exercises in which living costs support for low-income students emerged as a critical issue and universal provision was not positioned in political rhetoric as superior in principle to targeted support.

Fee policy in Wales since 2006 has meanwhile consisted largely of attempts to resist following increases in England, but eventually doing so. In contrast to Scotland, none of the independent commissions established by the Welsh government were given a specific steer as to how they should approach fee policy, other than Rees 2 being constrained by a short-term government commitment not to raise fees before the next Assembly elections in 2007. The various review reports make it clear that the driving forces towards policy convergence here have persistently been the scale of cross-border movement in both directions, and concerns about the funding of Welsh universities falling too far behind that of universities in England. Together these, and broader pressures on the Welsh budget, have made it difficult for separate policies to be pursued on tuition fees in Wales. Thus, Welsh policy on fees has only been distinctive from that in England in its timing. The most substantial differences were between 2012 and 2017, when Welsh-domiciled students had much lower fee liabilities than those from England, and between 2006 and 2009, when students studying in Wales received a higher fee subsidy than those who did not.

Arguments and policies did change over the period in Wales: in contrast to Scotland these changes are presented more clearly as arguments about the technical design of the system rather than changes of rhetorical emphasis. Views varied between reviews over how much access young people from the highest incomes should have to subsidised loans. Rees and Jones disagreed over the case for any preferential treatment for in-country study. Until the Diamond Review, a substantial universal cash subsidy for tuition was taken as a given, and its removal was accompanied with the introduction of a smaller non-means-tested minimum living cost grant. The ideological coherence of policy-making in Wales on student funding might therefore be easily over-stated. The attitude to means-testing in Rees 1, Rees 2 and Jones is contradictory. While the much larger indirect teaching subsidy was treated as
unproblematic, non-means-tested forms of direct support to individuals for living costs were subject to arguments for minimisation or abolition. Therefore, although the debate in Wales took a more obviously holistic approach to the development of student funding, some of the same separation of thinking about the principles which should underpin tuition and living cost funding was nevertheless evident.

2.3.4 **Interpretations of student funding as an aspect of welfare policy in the devolved administrations**

In the large literature considering the extent to which social policy in Scotland and Wales has diverged from that in England over the past two decades, references to student funding occur, but tend to be limited in their analysis. For Scotland, this literature concentrates on those elements where policy is regarded as being more generous than in England and therefore is mainly concerned with the treatment of tuition fees (see for example, McEwen 2002, Keating 2005, Trench 2009, Keating 2009, Mooney and Scott 2012, Keating 2017). Not uncommon here is the expression of caution by Mooney and Scott (2012) about the extent of social welfare policy divergence but the assumption that fee policy is a positive example: “it is important not to deny that the absence of fees for Scottish students [and certain policies in other areas] … are socially progressive in as far as they go”. McEwen and Parry (2005) are unusual in highlighting both fee and grant policy divergence in both Scotland and Wales. None of this literature provides any detailed empirical analysis of how student funding resources are distributed in practice. This research therefore fills a gap by supplementing this work a more complete analysis of student funding policy and detailed evidence on its short-term and long-term distributive effects.

Student funding is a particularly surprising omission from certain discussions of post-devolution social policy making. Greer and Matzke’s (2009) thoughtful discussion of how devolution has introduced a more territorial dimension into what they term “citizenship rights" asserts “a much greater elite consensus on the values and structure of the welfare state in Scotland and Wales than was seen in England" (9), noting that although public opinion polling does not suggest substantial differences in
attitudes across the three nations “elite discourse is much more prone to articulate strong communitarian, redistributive, pro-welfare values.” (9). They suggest welfare policy as a means by which different levels of government compete for citizens' loyalty. These points, taken with their interest in the effects of greater territorial relationship with entitlements and the fact of student mobility, suggest student funding as interesting case study within their framework, with developments in some areas of policy on student funding offering support to their position, while others might be argued to contradict it. Similarly, Bell et al.'s (2017) detailed critical analysis of the impact of welfare policy decisions in Scotland on inter- and intra-generational inequality touches only briefly on two aspects of student funding: fee policy, suggested as relevant if it increases participation from those from lower income backgrounds, the evidence for which is discussed further below; and that the cost of writing-off some student loans will fall on future generations. In overlooking student funding, the literature on welfare systems in the devolved administrations reflects a larger gap, considered further in the following chapter.

The wider welfare literature still provides observations which are helpful in interpreting the political claims discussed above, such as that “concepts of universalism and selectivity are often used as entries to different ideological perspectives on welfare policies rather than as useful analytic tools.” (Kildal and Kuhnle 2005, 17). Similarly helpful is Gugushvili and Hirsch's (2014b) observation from an overview of multiple studies that “from the point of view of policy effectiveness, neither universalism nor means-testing is always the ideal solution.” (7). Universalism, they argue, functions conceptually in at least two distinct ways: as a technical definition of the construction of benefit systems, and as a normative or ideological concept, and authors may move between these two types of definition. The ideological quality of positions taken on universalism in some of the academic literature relating to the devolved administrations is apparent when Keating (2009) describes critics of free tuition and of other policies extending non-means-tested benefits as being driven by “New Labour acolytes”, arguing that criticisms of such policies as a matter of principle are “bogus and hypocritical” because they do not, for
example, follow their arguments through into advocating charging for secondary education. Keating suggests that were criticism genuinely pragmatically concerned with the best use of resources “it would give rise to a calm debate and careful study of how rival systems work in practice” (105).

By providing a detailed comparative analysis of the operations of the Scottish and Welsh student funding systems, this research seeks to fill an empirical gap in the literature on welfare policy in the devolved administrations, and to provide the analysis lacking to date of how well policies on student funding in both nations have fulfilled the rhetorical claims made for them. Elements of the policy content were discussed above. The next section provides a direct comparison of the arrangements in place in each nation during the period studied, as context to examining how these system operated in practice in the period studied.

2.4 Policy content compared

The students studied here were those subject to the main package of student support who were domiciled in Wales and completed their studies in 2015-16 and who were domiciled in Scotland and competed in 2016-17, drawing on a maximum of five years’ data in each nation. The reason for choosing these periods is set out in chapter 4.

For students from Scotland, the arrangements were subject to one major change over the period covered by the data. This was the reduction in the size of means-tested grants available at particular incomes, and the large extension of loan entitlements for living costs at most incomes, from 2013-14 onwards for new and continuing students. A number of cases studied here were present in 2012-13 and spent one year under the previous arrangements. The description below concentrates on the arrangements in place from 2013-14. For students from Wales, there was a technical difference in how the fee subsidy was provided for those who entered in 2011-12, but the net effect on borrowing was the same. The description below therefore concentrates on the arrangements from 2012-13 onwards.
2.4.1 Scotland

The Scottish system for living cost support was characterised from 2013-14 by flat rate entitlements in income-related bands, which did not vary according to whether a student lived at home or away. After 2013-14, there were small changes in the value of grant in 2015-16 and a larger increase in the “household income” threshold for maximum grant in 2016-17. Figure 2-2 shows the amounts available in 2013-14 and 2014-15. In 2015-16 £125 was added to all entitlements, other than the £500 band for YSB. In 2016-17 the income threshold for maximum support for both YSB and ISB was increased to £18,999: other thresholds remained as before.

Figure 2-2 Scotland: Young Student Bursary (YSB) and Independent Student Bursary (ISB) annual entitlements by income 2013-14

Source: Author’s calculations from Student Awards Agency Scotland website 2013-14

Loan entitlements were also banded: the rates applying in 2013-14 are shown in Figure 2-3. The lower grant entitlement for independent students was compensated for by a higher loan. Entitlements changed only slightly over the period. An increase of £250 was applied to all bands for both student groups in 2014-15: as for grants, household (i.e. family) income threshold for maximum entitlement was raised to £18,999 in 2016-17.
Figure 2-3 Scotland: Annual loan entitlements young and independent students in 2013-14

Source: Author’s calculations from Student Awards Agency Scotland website 2013-14

At the time they studied, students who made use of student loans were in the Student Loan Company’s Plan 1 scheme. This collected repayments from the financial year following graduation, as 9% of gross income above a threshold. For students whose final year was 2016-17, the first year in which repayments were due was 2017-18, at an earnings threshold of £17,775. In 2016, the Scottish government committed itself to raising the threshold to the same level as in England by 2021 (then £21,000, later increased to £25,000 in 2018-19 and uprated by RPI thereafter). The threshold in Scotland for all those previously on Plan 1 rose to £25,000 from April 2021. Interest on Plan 1 loans was designed to maintain the value of unpaid loan roughly constant in real terms: in practice, it is the lower of the Retail Price Index or the Bank of England base rate plus 1%.

Throughout this period, Scottish domiciled students studying in Scotland were liable for a degree-level fee of £1,820 and the HN-level fee of £1,285. These amounts did not change over the period. Fees were fully funded for full-time, first-time students by the Student Awards Agency Scotland (SAAS). In certain circumstances (such as sandwich years and years abroad) a reduced fee was payable: this was still covered by SAAS. The individual fee accounted for around one-quarter of the total cost of
tuition: the remainder was met by a block grant to institutions from the Scottish Funding Council. A small number of students studying at certain private institutions in Scotland were entitled to an alternative level of fee support which was not guaranteed to cover the whole amount. No loan was available for any shortfall between the amount supported by SAAS and the full cost. Students leaving Scotland to study are outside the scope of this study: they were liable for the fee charged by the institution (up to £9,000 between 2012-13 and 2016-17), for which they were entitled to take out a student loan from SAAS. They were not able to claim the flat fee element provided by SAAS to those studying at institutions in Scotland.

2.4.2 Wales

The Welsh living cost system used a tapered model of income-related entitlements. For students entering in 2012-13 the maximum Welsh Assembly Learning Grant was £5,000, increasing to £5,161 to 2013-14 and then staying at the level throughout the period\(^9\). It was available at its full value for students of all ages from households with an income of up to around £18,000, with entitlements tapering to zero at just over £50,000, again for all years from 2012-13 to 2015-16 inclusive. Unlike Scotland, there was no distinction in the entitlements for young and independent students. Figure 2-4 shows living costs grant entitlements by income from 2013-14 onwards.

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\(^9\) The small number of students studied here who entered in 2011-12 were entitled to a maximum grant of £5,600.
Living cost loans were provided to Welsh students at all incomes, with students living at home receiving around £1,000 less and those living in London around £1,000 more. Increases in total living cost support over the period were achieved through increases in the loan entitlement, so loan entitlements rose.

Figure 2-5 compares the living cost loan entitlements at different incomes for students living away (not London) over the period. Loan entitlements varied more than in Scotland and were lowest at the lowest incomes.
In 2012-13 the Welsh government fee grant was set at the level required to bring the fee loan down from £9,000 to around its previous rate, allowing for a 5% increase\(^{10}\). Grant was calculated in any particular case so that the residual fee loan in 2012-13 was £3,465. This had risen to £3,810 by 2015-16.

From 2012-13 new entrants from Wales took out loans under the Student Loans Company Plan 2, as also introduced for English students. As noted above, this applied a higher repayment threshold than applied to students from Scotland (£21,000 from 2017-18, which was increased to £25,000 in 2018-19); it also applied a higher interest rate at the time of study (RPI +3%) and a tiered interest rate after graduation which related to how much a student was earning, with the lowest earners charged RPI, rising on a sliding scale to RPI +3% for those earnings over £47,835 (in 2020-21).

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\(^{10}\) In 2011-12, Welsh domiciled students were charged a fee of up to £3,290, whether studying in Wales or England. A non-means-tested student loan was available to cover this.
The Welsh government also provided a “partial cancellation” of loan debt, worth up to £1,500, deducted from a student’s first year of living costs loan at the point the first repayment was made. This was available to all students regardless of family income. No official explanation for this element is readily available, but it had roughly the effect of cancelling out the effect of the higher interest rate charged during three years of study, introduced from 2012-13. The implications of this element are considered where relevant in the analysis below.

Institutions were also expected to provide additional support in some form to those from the lowest incomes. This research cannot identify where institutional grants were being paid to individuals, a point considered further in later chapters.

2.4.3 The overall distribution of resources: cross-national comparison

The difference in effect between the Scottish and Welsh funding systems studied here becomes clear when the overall distribution of repayable and non-repayable funding by income is compared: figures 2.6 to 2.9 below. Figures for 2015-16 are used here, as the last year common to both cohorts of leavers studied, but the general comparison would hold for any year from 2013-14 onwards. Figure 2-6 and 2-7 compare the distribution of entitlements to all non-repayable funding, including funds paid direct to institutions. The estimated institutional funding in the figures below is provided for degree-level students. Fee subsidies are estimated based on the maximum fee payable by a Welsh student in 2015-16, and the average value of a funded university place in Scotland, based on an estimate by Audit Scotland of the average funding of full-time undergraduate place in Scotland (Audit Scotland 2016). The figures do not take into account that some additional funding was available for institutions for certain subjects in both nations: the issues raised in estimating institutional funding for students in Scotland in this research are considered further in later chapters.
Figure 2-6 Wales: Non-repayable funding by income, living away from home, 2015-16

Source: Calculated by the author from figures taken from Student Finance Wales online calculator in 2015-16

Figure 2-7 Scotland: Non-repayable support by income (any living arrangements) 2015-16

Source: Calculated by the author from figures taken from the Student Awards Agency Scotland website in 2015-16
Both systems skewed non-repayable support towards lower incomes using living cost support, but the cumulative effect of decisions in Scottish system is shown still to be a relatively uniform effect by income, particularly for independent students. Even at the lowest incomes, only around one-fifth of support was means-tested for young students and one-tenth for independent students. The cumulative effect of policy decisions in Wales by contrast was to distribute a lower amount of non-repayable support at a flat rate, and to skew entitlements more towards the lower end of the income range, so that at the lowest incomes, around half their cash support came from means-tested sources. The total value of such support at the lowest incomes was also greater than in Scotland.

Figure 2-8 and Figure 2-9 show the distribution of entitlements to repayable (loan) support by income. Again, entitlements are shown to be more uniform for students from Scotland than for those from Wales, and are also differently skewed, with Scottish loan entitlements following the same general pattern of non-repayable entitlements, while loan entitlements for Welsh students tend to rise with family income.
Figure 2-8 Wales: Repayable funding by income, living away from home, 2015-16

Source: Calculated by the author from figures taken from Student Finance Wales online calculator in 2015-16

Figure 2-9 Scotland: Repayable support by income (any living arrangements) 2015-16

Source: Calculated by the author from figures taken from the Student Awards Agency Scotland website in 2015-16
Both systems could be said to have a clear universal element, by providing substantial non-repayable and repayable support to students at all incomes. In both, fee support was not subject to means-testing: entitlements were uniform across the income range and funded in whole or part from non-repayable sources. The main difference between the two in relation to fees lay in the proportion of the Welsh fee subsidy being given as repayable student loan. The approach to living cost support drove the variation by income.

The Scottish system was therefore relatively uniform in its entitlements, but with a distribution of debt skewed towards low incomes. The Welsh arrangements were more variable by income, with non-repayable and total funding more targeted on those at low incomes, and a distribution of debt skewed towards higher incomes.

Figure 2-10 shows total living cost support by income in 2015-16, for a Welsh student living at home and students living away from home (not London), and young Scottish students. The large differences observed above are replaced by much more similar distributions of total support. At incomes below £53,000, the Scottish figures applying to all students fell between the home and away rates for Wales, except where the effects of the stepped system place them at around the same as one or other of these. At incomes over around £53,000, the Scottish system provided more total support than was provided under the Welsh system at either the home or away rate. For students living away from home, who will tend to face the highest costs, the stepped system adopted in Scotland from 2013-14 assumed a more substantial amount of self-funding for living costs through family contributions, employment or from other sources particularly at family incomes around £18,000 and just over and between £34,000 and around £50,000. The largest difference between the two systems was for students living at home at family incomes of £55,000 or more. In both nations, this led to a similar expectation that students would finance more of their living costs privately, as family income rises, although total living cost support in all forms varied less by income in Scotland. All Scottish students received at least 62% of the maximum. For the Welsh, the equivalent figure was 51% (46%, if living at home).
The different loan schemes adopted in Scotland and Wales under these schemes at the time they were in operation meant that Welsh undergraduates paid more interest while studying, although the Welsh partial cancellation scheme could be expected to offset much of this effect, but received more protection as low earners later. The practical effect of the loan repayment threshold increase in Scotland is considered further in chapter 8.

2.5 **The evidence on access in Scotland and Wales**

As seen above, the argument that tuition fees deterred those from lower incomes for entering higher education played an important role in the rationale for policy choices in Scotland. This argument is not unique to Scotland (or Wales) and so the natural experiment of divergent policy change in the four nations of the United Kingdom from 1999 might have been expected to be a focus of research attention. In practice, little such research has been undertaken.
In a cross-national study undertaken for the Sutton Trust (Hunter Blackburn et al. 2016), an analysis of application and entry rates covering the decade from 2006 for younger entrants from the university admissions body UCAS using area-based measures of disadvantage failed to identify a clear improvement in demand for or entry to university-level higher education by young people from more disadvantaged areas in Scotland, compared to England, with some evidence of faster growth in England by this group. Wales saw lower increases in applications and entry rates than either England or Scotland.

In what appears to be a unique quantitative time series analysis of participation data for Scotland only, McInally (2018) considers changes in a form of age participation index (API) in higher education in Scotland over the early years of devolution and argues that the results show participation was increased by the abolition of tuition fees in this period. Comparing Scotland with England and Wales between 1998-99 and 2001-02 using a “difference-in-difference” analysis, McInally finds a positive effect on the API for those aged 17 to 20 (the data do not distinguish between students by background). However, the analysis has some substantial limitations which call the conclusions into question.11 Principally, McInally’s analysis takes no account of the re-introduction of bursaries in 2001, which is not discussed, nor of the

11 The means-tested nature of the fee introduced across the U.K. in 1998, and subsequently abolished in Scotland, is relevant particularly if HN-level students are included in the Scottish data (this is not clear) and where figures for independent students are discussed, as these would have been mostly exempt. The analysis does not explain why the introduction of the graduate endowment in the same period is treated as neutral in effect. The data for a longer period also covering the endowment’s abolition is also presented and appear to show no effect, but this is not discussed. The age participation rate used (the number under 20, or 21 and over, entering as a proportion of the number aged 17, in any year) was generated specifically for the research and appears vulnerable to differential changes in the size of the age groups used in each country. It is not clear if this was considered. Increases in entry only are considered, and not in applications, which may be a function of increased supply (this is a limitation of all studies which use actual participation as a proxy for demand). McInally also notes that the effects she identifies were relatively short-lived for younger students, with any significant differences removed after three years, but does not discuss what this means for the conclusion that abolishing fees increased participation. A slower but larger difference over time in the enrolments for those age 21 and over between the two comparator areas is also attributed to the fee change exclusively, although very few independent students will have been liable for the means-tested fee.
means-testing of fees prior to their abolition. The argument for an effect specifically from the abolition of fees is therefore not persuasively made.

The Scottish government has not published or sponsored any cross-border studies of data on access to higher education. The White Paper on Scottish independence did not include any information on widening access over time or comparing the U.K. nations. Appearing to feel some vulnerability over the lack of clear evidence for a beneficial effect on access, in late 2014 the Scottish government announced its intention to establish a ‘Commission on Widening Access’ to higher education, stating

Our commitment to free university education tuition remains… Right now, those from the poorest backgrounds are significantly under-represented amongst university entrants. We recognise this is a complex issue to address and we will therefore set up a Commission on Widening Access to advise us on critical steps and milestones. (Scottish Government 2014, 4).

The willingness to look at widening access as an issue in its own right, rather than treat it as a likely beneficial effect of fee policy marked a shift. This fits with a shift in emphasis by the Scottish government observed by Arnott and Ozga (2016) after the referendum, and the change of First Minister, to more direct engagement with issues arising from poverty and deprivation. The report of the Commission, titled A Blueprint for Fairness, included no cross-national comparison of data on access, but observed in relation to student funding “policymakers, and institutions, would benefit from a significantly more robust evidence base to inform future decision making” (Scottish Government 2016a, 49). The Commission recommended that a proposed new Commissioner for Fair Access should commission research urgently on appointment “to assess how student finance impacts on the participation of disadvantaged learners in higher education” (20). This recommendation was not taken forward: it was initially agreed with government to be overtaken by the Scottish government’s review of student finance announced in 2016. That review however undertook no systematic analysis of data on this point, comparative or otherwise.

The Commissioner subsequently produced only a limited commentary on funding and access in his first annual report (Scottish Government 2017c). He noted that “there
have been claims that faster progress has been made towards fair access in England than in Scotland” but then argued that if differences between the two systems could be taken properly into account, particularly the much larger role in Scotland of short-cycle HE provided by colleges, “differences in the progress towards fair access would likely disappear (and, arguably, would be reversed)” (Scottish Government 2017c, 16). The statement appears to confirm that the Commissioner accepted that the available data showed England performing more strongly on access, prompting him to rely on assumed trends in data which were (and remain) unavailable on participation rates in college HE, and the treatment of that as strictly comparable with degree-level HE, to off-set that. Elsewhere, the Commissioner relied mainly on university-only data to describe change over time in Scotland. He added, “the extent to which the current high-fee funding regime in England is genuinely more access-friendly remains a matter of controversy, both academic and political”, adding that recent research had “produced starkly opposite conclusions “(Scottish Government 2017c, 18). However the single item cited as supporting concern about access is a summary blog post (Leach, 2017) which concluded that changes in England had damaged the recruitment of part-time independent students but that there had been improvements in participation from disadvantaged areas among young people, and full-time students. The piece cited as putting the opposite view (Wyness et al. 2017) is a brief online summary of a substantial longitudinal study (Murphy et al 2018), which argues that

“students from the poorest backgrounds have experienced the fastest increases in participation, with the gap between rich and poor students stabilising, or even slightly declining since the reforms … the English experience suggests that making university completely free can actually come at a cost.” (para.13)

In his second annual report the Commissioner speculated that a review of student funding underway in England might “vindicate Scotland’s policy of free tuition” (Scottish Government 2019). The commentary that followed however considered only the financial sustainability of the English system, not any comparisons of performance on access. Speaking to a Cross-Party Group in the Scottish parliament
in 2019 the Commissioner claimed, “the rate of advance south of the border has been significantly slower” (Scott 2019). The source for this claim is unclear: however, it appears most likely to be based on a comparison only over the period since 2016, when new access targets were introduced for Scotland. Commenting on entrance statistics for 2017, the Commissioner had noted that improvement in that year “follow three years when there was little improvement in the proportion of full-time first degree entrants from the most deprived areas” (Scottish Government 2019).

For Wales, by contrast, a detailed comparative study of data for Wales using linked administrative data allowed participants and non-participants to be compared (WISERD 2015), and comparisons to be made with a pre-existing study in England. The authors concluded that the relationship between the relevant characteristics they were able to study (socio-economic background, educational attainment and ethnic background) and whether a person entered higher education was “broadly similar” in the two countries, despite differences in policies, including policies on student funding. From this and other sources, the Diamond Review concluded there was no evidence that policy divergence had brought about any major differences in participation in HE. While finding “some positive signs”, it noted that participation rates in HE were lower in Wales than other parts of the U.K., and considered that student funding should not “be seen in isolation”: general widening access policies were also relevant. It argued that “much of the relationship between socio-economic background and HE participation is accounted for by previous educational attainment, which is the most important single factor, when all others are taken into account”. (Diamond, 33). That position is long-standing; examining participation by social class in Wales a decade earlier, Gorard (2005) concluded that participation matched levels of school attainment, and that unequal attainment at that stage was the main barrier to further widening participation. The limited role played by student funding on absolute levels of participation in Wales is supported by Evans and Donnelly’s (2018) qualitative study in Welsh schools, discussed further in chapter 3, which found “students' views on debt largely contradict these popular ‘debt-as-deterrent’
narratives” (Abstract) and no evidence that working class students’ decisions on whether to enter higher education were negatively affected by concerns about debt, although keeping costs down affected choices about where to study.

A similar effect was found for Scotland by Minty (2016) who found that debt aversion appeared to be higher among students from disadvantaged backgrounds in Scotland than in England, due partly to less accurate understanding of the student loan system, and that this appeared mainly to affect how they chose to participate, rather than whether they did so. As with Evans and Donnelly’s interviewees, some chose courses based on “being affordable”, with educational factors a secondary consideration. This echoed a finding of the Scottish Commission on Widening Access that “while there is some evidence to suggest that levels of student finance do influence the participation of disadvantaged learners; the evidence suggests that, overall, other factors are likely to matter more” (19). School attainment in particular has been consistently linked to social class in Scotland, Wales and England, regardless of differences in educational policy (Paterson and Iannelli 2007) and indeed as changes to participation failed to accompany changes to student funding policy in Scotland, access policies which more directly address the difficulty this by reducing entry requirements through contextualised admissions (Boliver 2017) became more of a focus of attention.

2.6 Conclusion: Policy divergence and internal coherence

The discussion above suggests that Scotland and Wales can be compared on several dimensions: the content of policy, the justifications offered and the coherence between policy content and its description within each nation, as well as evidence for effects on participation. In each case, the differences observed are in the context of substantial similarities. Thus, both nations used a mixture of loans and grants and much of this support was not targeted by income. Both rejected the narrative in England of cost-sharing as a good in its own right yet relied increasingly on student loans to fund some aspect of the cost of higher education. In both nations, statements that student funding policies which diverged from those in England
contributed to widening access were not clearly borne out by the limited available evidence. A difference between the two which emerges from the account above is that, in diverging from England, Wales managed to maintain a greater consistency between policy content and political justification, through avoiding the tension evident in Scotland in the approach to student loans. That point is explored further here, as final issue contributing to the framing of an over-arching research question.

The defining symbolic role given to free tuition in Scotland most obviously explains the increasing divergence in the priority given to means-tested living cost grants in each nation after 2007. Withdrawing cash from fee subsidies to improve grants became politically unthinkable in Scotland, with references to the policy of free tuition peaking in the period around the referendum on independence, but important from 2011 onwards. This drove policy choice on student support in Scotland. This does not mean that policy development in Wales lacked its own political drivers, however.

The volume of cross-border movement made any policy creating large financial differences in treatment according to where a student studied far more politically difficult there than in Scotland and instead created a strong political incentive to maximise the portability of cash subsidies. Investment in the more traditionally portable form of student support, living cost grants, therefore made greater political sense, even after the Welsh government acquired more powers. Portable fee subsidies proved considerably more controversial with university leaders and opposition parties (Hunter Blackburn 2015), whose opposition to these played the major part in provoking the establishment of the Diamond Review, the recommendations of which ended the regime of portable fee grants considered in this research.

It is further arguable that in both nations the interests of higher-income households were protected. This is more obvious in Scotland, where the political emphasis on avoiding means-testing in various contexts has been described by some commentators as a form “retail politics”, designed to appeal to higher-income voters (Monteith 2014). Over the period studied here, higher income households from Scotland also received more assistance towards living costs than their counterparts
from Wales (or any other U.K. nation), provided through loans with a higher interest rate subsidy than applied for Wales or England. The same group however would have been more adversely affected, had identical fee policies to those in Scotland been implemented in Wales. Students leaving Wales in much larger numbers than do so from Scotland are drawn disproportionately from more advantaged households (Whittaker 2017). The attempt to offer higher fee support to those studying within Wales was noticeably short-lived.

Thus, both governments might be said to have been engaged in “welfare state nationalism” (McEwen, 2006) in ways specific to their political and practical context. In 2017 the Deputy First Minister and Cabinet Secretary for Education John Swinney MSP claimed that the Scottish government was “the only (sic) progressive government in the UK” (Swinney 2017), citing its continuing commitment to free tuition. While the Scottish system had an element of rhetorical consistency, between the greater emphasis on equal treatment and its relatively flat distribution of non-repayable cash, the treatment of student loan in Scotland for living costs was evidently at odds with the broader rhetoric applied to student debt. The covert handing of the grant reductions made in 2013 suggests the Scottish government understood and was uncomfortable with defending the effects of targeting of living cost loan on those at lower incomes, although not to the extent that caused it to question the prioritisation of free tuition (Hunter Blackburn 2016b). In Wales, establishing political difference from England as more “progressive” also mattered, albeit in a context of less acute constitutional tension. Progressive universalism, with its greater acceptance of a role for targeting, not only fitted a local narrative of different values, but also offered a more workable model for differentiating policy in this area. It could contain multiple pressures, serving both a practical and political purpose, leading to more investment in the more traditionally portable element of support, income-targeted living cost grants. This enabled a better match between design and description.

The Scottish government’s symbolic use of tuition fees led by contrast to the emergence of a conceptual tension around the use of student loans, where the
government’s attitude towards these became sharply different, depending on whether they were used for living cost or fee support. The Welsh government’s reliance on a more technocratic policy-making approach to assist with the political handling of larger practical challenges than faced in Scotland appears to have allowed more easily for an interplay of principle and pragmatism, and a system whose contents were more coherent with the general rhetoric surrounding it.

The divergence in approach towards student funding between Scotland and other parts of the U.K. is most often described in terms of fee policy. However, the analysis above shows that this conceals another difference, in the approach to the targeting of repayable and non-repayable forms of support and, within that, in the cogency of attitudes towards student loans. Of the U.K. nations, Wales provides the most interesting comparator to Scotland, as it also sought to differentiate itself from England as having a more “social democratic” approach to welfare and social policy but came to different conclusions about what this meant for the detail of student funding, and unlike Northern Ireland engaged in a considerable amount of devolved policy development in this area.

In the context of theoretical framework for this research, it lastly bears noting how when faced with the complexities of student funding, policy-makers and advisers in both nations studied here reached for the simple principle of “fairness”. Fairness was a persistent point of reference, visible in the reports of the various reviews over two decades. The Cubie Committee chose *Fairness for the Future* and the second Rees review’ *Fair and Flexible Funding*. Eighteen years after Cubie, the Scottish student funding review which took place after the period studied here titled their report *A New Social Contract for Students: Fairness, Parity and Clarity*, reflecting in turn that the remit provided to that review was specific that it should recommend a “fairer” system. What fairness might mean in the context of student funding was not consistently defined, if it was defined at all, but the understanding that it mattered was pervasive.
The observations above lead to the over-arching research question addressed here:

Using Scotland and Wales as comparators, how far do different approaches to targeting the repayable and non-repayable elements of undergraduate funding by family income have different implications for the reproduction of economic inequality within the graduate population?

The next chapter considers which bodies of literature already address aspects of this question.
Chapter 3  Student funding as a redistributive system: the existing research

3.1 Introduction

This chapter considers the literature relevant to considering student funding as a redistributive system. It begins at Section 3.2 with a discussion of how the general context for this research is provided by the literature concerned with the transmission of inequality between generations over the life course, and within that studies on the reproduction of inequality in higher education. It then moves on to a discussion of what theoretical models are available to provide a framework for assessing how a loan-based student funding system works as a redistributive mechanism in both the short and long term. Section 3.3 discusses how concepts related to fairness have been brought into the discussion of student funding, noting that while the idea of the reproduction of inequality has been applied to higher education more generally, it has been more rarely applied in relation to aspects of student funding. Section 3.4 notes that student funding is largely absent from studies of welfare and redistribution and that there appears to be no developed framework for bringing loan-based forms of support into such analyses.

The discussion then moves to consider the body of quantitative work, produced largely by economists, on the distributive effect of student funding systems, which has as a main concern the long-term relationship between loan repayments and earnings. It tends to take as paradigmatic that repayments should follow similar principles as are applied to income tax, and be related to earnings. The discussion here draws mainly on studies undertaken in England over the past two decades. The large body of research from the U.S. on what is often termed “student aid” (Dearden et al. 2014) is not examined here, as substantial differences in the repayment arrangements for student loans (Barr et al. 2019) call into question its transferability, before taking any other differences into account. The other body of work considered here emerges mainly from sociology and is quantitative and qualitative. It considers the wider evidence for whether student funding systems may have an indirect
redistributive effect, by influencing whether students enter higher education, and what type of study they undertake. Such effects could matter more than direct financial effects. Consistent with the material considered in the previous chapter for Scotland and Wales, little evidence is found for a relationship between the detail of funding systems and levels of participation by those from more disadvantaged backgrounds in full-time, first-time higher education. How students participate appears more capable of being affected by financial considerations, but it is less clear how particular effects may be related directly to specific elements of student funding.

In the U.K., English studies dominate. Relatively few detailed studies are available for Scotland or Wales separately. This is partly a function of scale, but also reflects that much of the recent research on England has been commissioned by the U.K. Government, under pressure to defend a series of controversial changes and by other bodies, most prominently the Institute for Fiscal Studies, wishing to contribute to the debate about those changes. As described in chapter 2, under these changes England has seen the largest movement of any part of the U.K. away from funding HE through the cash budget and doing so instead through student loans (Hunter Blackburn 2016b), so that a larger element of the cost of participating in HE falls on participants after graduation, justified by reference to graduates' higher earnings. Much of the literature on direct distributional effects examines how successive changes to the loan repayment regimes in England have moved repayments away from lower earning graduates and towards higher ones, although there is some dispute about how far the highest burden now falls on middle-to-high earners, due to the interaction of different elements of the system (Conlon and Halterbeck 2017). The literature on access effects is conversely often rooted in a critique of the policy of moving costs from the state to the individual. Uniting both bodies of research is an interest in concepts of fairness and inequality, whether explicitly stated or not.

There is a lack of studies which look at the operation of student funding systems at detail in the devolved administrations of the U.K. Pugsley (2004) observes, considering the literature on school-level education, that Wales is often treated as a subset of England. In the case of higher education, there is some justice in this: the
large cross-border flows in both directions mean that considering the data for Welsh institutions would not represent the experience of many Welsh-domiciled students. The Welsh government has played some role in stimulating research in this area, for example by continuing to fund coverage of Wales in the periodic Student Income Expenditure Survey (SIES), discussed further below. Work undertaken for the Diamond Commission (Diamond 2016) reflected political pressures on the Welsh government due to the direct impact on Welsh students and institutions of changes in England. The Scottish government has not faced the same political imperatives to fund research in this area, even in the period where a formal review of student funding, other than fee policy, was being undertaken (Scottish Government 2017a). A substantial source of material was last publicly funded in Scotland during the period of controversy which gave rise to the report of the Cubie Committee (Cubie 2000). Funding for the SIES in Scotland was discontinued after its 2007 iteration (Warhurst et al. 2009). The research therefore fills a gap in recent empirical studies on student funding in Scotland and supplements the limited recent material available for Wales. Its use of data taken directly from student funding administrative systems to do this is unique in the U.K.

3.2 Inequality over the life course and the contribution of higher education

The broader theoretical framework for this research draws on the literature concerned with how inequality unfolds over a person’s lifetime, and the relationship of that to family origins. That literature is based on the concept of the “life course” (Cain 1964) as a focus of study to argue that measures of inequality taken at a single point in time provide an insufficient account of how inequality is experienced. Within this literature, how far the experience of inequality is transmitted between generations is often examined in terms of “social mobility” (Sorokin 1959). As Bukodi and Goldthorpe (2018) discuss, studies concerned with inequality over the life course have explored how improvements in individual mobility into higher status occupations, relative to parents, and a more general increase in access to certain types of resource, including higher education, can co-exist with continuing inequality
in the distribution of resources and do not prevent family of origin continuing to predict how likely a person is to obtain higher earning and higher status roles. Related to this, they argue for greater awareness of inequality as a concept with absolute and relative dimensions, and that the choice of how much emphasis to place on each of these is normative.

The broader literature on inequalities in higher education demonstrates the potential for social mobility and continuing unequal access to resources to co-exist. Thus Galindo-Rueda et al. (2004) found that over the 1990s entry rates to higher education in the UK increased substantially for those from disadvantaged backgrounds, even while differences in the likelihood of entering higher education between those from wealthier and poorer neighbourhoods widened. Similarly, the link between family income and later income strengthened, comparing cohorts born in 1958 and 1970, at the same time as access to higher education greatly expanded (Machin and Vignoles 2004). As these patterns have become more apparent, so interest in the role of higher education in reproducing inequality has grown. As Bathmaker et al. (2016) argue, “HE can be viewed as an instrument of social justice, or conversely as a tool for elite reproduction” (2). Much of this literature, such as Reay et al. (2005), is framed in terms of cultural as well as financial barriers related to socio-economic class. Summarising the argument in her title, “Misplaced optimism: how higher education reproduces rather than reduces social inequality”, Boliver (2017) argues “optimism about the power of education to promote social mobility has been seriously misplaced” (424). A review of a selection of international literature leads Boliver to conclude that working class entrants are disadvantaged at every stage of participation, from prior to application, during the application process and then while they study.

This analysis has recently been extended into post-graduate education in the U.K. (Mateos-Gonzalez and Wakeling 2022). Further studies have identified school-level educational attainment, shown to be strongly linked to class within the U.K. (Paterson and Iannelli 2007), as the critical mechanism at present by which initial access to
higher education is unequally distributed (Gorard 2005). This is the context within which any long-term tendency of the student finance system either to reinforce or to counteract initial differences in family access to financial resources operates.

Not at issue here is the existence of absolute benefits on average to those individuals who do enter higher education from disadvantaged backgrounds. Instead, the discussion of the reproduction of inequality in higher education is concerned with the absence of change over time in relative inequality, both in the population as a whole and among graduates more specifically (Henretta et al. 2012). Some studies, such as Paterson and Iannelli (2007) do explicitly invite reflection on the potential for a tension between reducing absolute and relative inequality. That is, that those measures that most effectively improve the opportunities and material circumstances of students from the most disadvantaged backgrounds in absolute terms may benefit more advantaged students to the same extent or even more, thus maintaining unaltered or even increasing relative inequalities. Paterson and Iannelli (2007) argue the possibility that greater relative inequality may be a stage in a longer-term trend to a reduction in absolute inequality, on the grounds that more advantaged groups should be expected to be quickest to make use of opportunities offered by the expansion of the higher education system, but that this does not preclude that differences in participation will narrow over time. Observing that participation rates in higher education are higher in Scotland than elsewhere in the UK, due to a greater take up of sub-degree level programmes by those from lower social class families, Iannelli (2007) argues for considering the positive aspect of lower absolute inequality in access to HE for working-class students, but also the less positive outcomes linked to the acquisition of sub-degree qualifications such as a more limited earnings premium. Here, the theories of maximally maintained inequality (MMI) (Raferty and Hout 1993), and effectively maintained inequality (EMI) (Lucas 2001) become relevant. The quantitative argument, that educational expansion only works to reduce inequality once more advantaged groups have maximised their own access (MMI) and the qualitative argument, developed by Lucas to supplement it, that more advantaged groups will continue to find ways beyond simple access to obtain relative
advantages within the education system (EMI) are both potentially relevant in looking at the context within which student funding systems work to distribute costs over the long-term. It will be relevant how far HE systems have reached the point of saturation of take-up by more advantaged young people, and would therefore under MMI alone be expected to be working to reduce earnings gap by family background, and what evidence there is in such case of other sorts of advantage being found, in line with the thesis of EMI, for example linked to type of institutions attended, type of HE programme or field of study. How far Scotland and Wales differ here will be relevant.

By taking as its concern the reproduction of economic inequalities among graduates, this research belongs within the wider body of work on the reproduction of inequality in higher education. By focussing on financial differences between students’ families at the time they enter higher education, and on later repayments, it does not engage with the broader analysis of social class and attainment more usual in this literature. This is not a rejection of that analysis, or an assertion that income data and later repayments provide the basis for a superior account of inequality. I take seriously Bukodi and Goldthorpe’s (2018) observation that studies of social mobility more generally may be over-reliant on income mobility as a measure of social movement. This research nonetheless starts from the position that financial differences between individuals are meaningful in their own right and relevant to an assessment of inequality over the life course. Although school leavers’ university participation rates are more rarely studied by income, as opposed to other measures of advantage or disadvantage, where they have been they repeat findings for social class more generally (Anders 2012). Notwithstanding its limitations, discussed further in Chapter 4, family income at the time of entering higher education provides the best available information on differences in family access to financial resources, differences in which are material to students, prior to taking part in higher education, while studying and afterwards. Lower income constrains opportunities to supplement experiences and education provided at no cost by the state through the education system prior to entering higher education (Chevalier et al. 2005), limits families’ availability to assist students while studying (Antonucci 2016, Vigurs et al. 2018) and is likely to be
associated with lower levels of later financial transfers and the accrual of fewer assets that can be passed on to children later (Nolan et al. 2020, Davenport et al. 2021). There is merit therefore in looking at how the student finance system affects economic inequality over the life course as a discrete topic. In doing so, this research aims to contribute to the understanding of how inequality over the life course manifests in populations with a large number of graduates holding income-contingent student loans, by exploring the conditions under which such loans may be predicted to reinforce or off-set initial differences between participants in family financial circumstances.

Returning to the distinction between relative and absolute inequality brought out in the wider literature on inequality over the life course, the findings here must be read against a background of sustained inequalities in financial and other outcomes between graduates and non-graduates; that is, the study population can be expected as a whole to be relatively advantaged over their lives, compared to those who do not take part in higher education. The evidence on the earnings advantages associated with taking part in higher education is noted in Chapter 8. The question of how far that broader context limits the significance of the findings, that is how far the absolute gains for participants might be expected to outweigh any relative disadvantage some participants experience compared to others, must therefore be kept in mind in assessing the conclusions of this research.

### 3.3 Fairness in student funding: a matter of benefits and costs

In their discussion of what principles lie behind conceptualisations of social justice in disability policy, Goodlad and Riddell (2005) identify three ideas which inform thinking about the distribution of resources: desert or merit, need and equality. These distinctions are also relevant in analysing discussions of fairness or justice in access to higher education and its funding.

Merit is taken largely for granted as a starting point for admission to the student population, before any other considerations. What constitutes merit and how it is measured are subject to discussion, as is how those abilities rewarded by access to
HE should be valued compared to other sorts, but the relevance of a merit-based criterion to the construction of the HE student population is rarely disputed in the literature; the idea that access to universities should be on the same universal terms as school is not entertained as a substantial point. The persistence of the Scottish government’s use of “ability to learn” as a foundational principle in its policy on free tuition is rooted in popular support for this understanding. The discussion here therefore begins from the acceptance that it is fair to identify a sub-set of the population who should receive higher education based on some form of assessment of merit or desert, and be funded in some distinctive way for that.

Merit, need and equality may all then inform the distribution of resources between students. In the national systems within the U.K. for full-time first-time undergraduate students need and equality are both identifiable as guiding principles, although at the institutional level, for research postgraduates and in other jurisdictions merit is also used to inform choices about who gets support. Ideas related both to need, mainly for living costs, and equality, mainly for fees, have a long history in the U.K. of driving the initial distribution of national support (Hillman 2013). Need here is defined in relation to a student’s family circumstances at the time of participation.

The perspective shifts in the dominant conceptualisation of fairness found in the literature on student loans, where the financial relationship of graduates to the state is assumed to function independently of their family situation at the time they studied. This is the central rationale of income-contingent loan schemes (Barr 2007). Theories of a graduate tax, such as Glennester et al.’s (1968), also take this view. Such systems may recognise differences in need during study, and therefore also have some element of redistribution according to that (Barr 2007), but thereafter graduates are theorised as individuals wholly independent of their original family circumstances, from whom costs should be recovered according to some further theory of fairness, usually ability to pay, in a reversed version of a needs criterion. There is an element of the desert argument in some critiques of a graduate tax; thus, Barr (2007) objects to an unfairness of a graduate tax in recovering from higher earners more than their original benefit and positions income-contingent loans as
fairer, by limiting what any individual person may repay relative to what they originally borrowed. His argument relies throughout on students entering the loan repayment system equally indebted, in order to achieve its fairness-related outcome of repayment related to ability to pay. As seen in chapter 2, the assumption of equal indebtedness does not fit either of the systems studied here. It may hold more securely in systems in which students are more likely to be treated independently of their families, but even in those unequal access to family resources remains relevant to students' financial experience (Antonucci 2016).

Observable here is a distinction between how individuals are conceptualised at different stages, both in funding systems and the associated literature. At the point of participation students are conceptualised for some, but not all, purposes as being situated in their immediate background, being socially and economically defined by their family of origin, meaning their parents, if still judged to be dependent, or their partner if not. As repayers, graduates are then considered as individual earners independent of all others, with no regard to past or current family income. Usher and Burroughs (2018) refer to this as applying “pre-hoc” and “post-hoc” logic.

The difference is rational within the terms of distributing benefits at one stage and costs at another, but leaves a disjoint when the outcomes of the second stage, repayment, are influenced by decisions taken in relation to the first. This disjoint is an obstacle to applying a coherent theoretical approach to what constitutes fairness or justice in the outcomes from the student funding system and is the focus of this research.

An approach more grounded in marrying students' study and post-study experience is concerned instead with the reproduction of socio-economic inequality in higher education, discussed in Section 3.2 above. In this approach, a just system is conceived as one which would produce outcomes which are more equal among students than their starting points; graduates' backgrounds before entry are therefore taken as relevant to assessing the fairness of longer term outcomes from HE. The reproduction of inequality as a concept can also be applied more narrowly to the
financial effects of student funding systems, although has this less often been done. Henretta et al. (2012) refer to the concept in discussing students’ differential access to family financial support according to family structure. Houle (2014) refers to the “the reproduction of advantage” in his study of differences in borrowing by income and SES in the U.S. Antonucci (2016) makes the link directly between the national arrangements for funding students and the exacerbation of inequalities within the student body, although her comparative analysis is stronger on short-term than longer-term effects and suffers from a lack of explanation as to why loan debt accumulated for fees as well as living costs (as in England) is treated as having more detrimental effects than debt accumulated for living costs only in Sweden, despite less generous repayment subsidies in the second case. Unequal initial debt by income has been identified as an undesirable feature of the English student funding system in periods when it has relied on loan only for living cost support, for example by Callender and Jackson (2005), but with a focus on deterrence from participation as a short-term effect. De Gayardon et al. (2019), in their study of student loan take-up in England, do not refer directly to the reproduction of inequality, but do observe that, “those who manage to study without borrowing enjoy significant advantages both during and after their studies … student loan take-up has potential implications for policies on educational inequality and social mobility” (980). Dorling (2017), in a short blog post, draws attention to the potential of unequal student borrowing by income in England to reinforce pre-existing inequalities, referring to findings by Britton et al. (2016) on the proportion of non-borrowers in England; his principal concern is again with an assumed link between non-borrowing and coming from a wealthier family background. As discussed further below, absent are studies which apply the idea of the reproduction of inequality to the whole effect of how costs and benefits are distributed through national student funding arrangements.

A theoretical approach to student funding based on a concern about the reproduction of inequality takes a different view of fairness from that more usually applied to loan repayments, and assesses those systems on how they may directly contributed to, or offset, the reproduction of economic inequality among participants in HE the short
and longer term, and not only how repayments are distributed by earnings. It brings together consideration of the distribution of payments made to the student population at the time of study and the distribution of repayments on a common basis. It overcomes the distinction Usher and Burroughs (2018) identify as a limitation of political discussion in relation to fee policy, but which is also present in the literature, that, “at present, the political discussion is entirely between those who favour full, equal subsidisation, and those who want various modifications of a post-hoc subsidy scheme” (55, 2018).

This research therefore takes as its theoretical starting point the application of the reproduction of economic inequality as a principle in judging the fairness of student funding systems. It identifies this as an approach which can consider the distribution both of costs to students, in the form of loan repayments, and benefits, in the form of upfront payments, and the overall effect of applying need and equality principles to different elements of student support at different stages. Specifically, it argues for this as a framework which can take into account inequalities in the initial distribution of loans which are due to the application of needs-based principles in their distribution, by not losing sight of graduates’ circumstances at the time of participation. It further draws also on the empirical work on redistribution in welfare systems undertaken from Korpi and Palme (1998) onwards, by making use of measures developed there for assessing how far welfare policies generate outcomes which are “pro rich” or “pro poor”: these are discussed further in section 4.6.3.

3.4 Student funding in the literature on welfare and redistribution

Although Antonucci (2016) argues convincingly that student support should be conceived as a form of welfare spending, playing an important role in supporting the transition of an increasing number of young people from dependency on their families to full economic independence, as an aspect of state income support it is largely missing from studies of the welfare state. It is most notably absent from the body of empirical work on the outcome of welfare systems stimulated by Korpi and Palme’s (1998) assertion of a “paradox of redistribution”. This addresses the
contested question of the effectiveness of means-testing, as against more universalist, approaches, as a method of reducing inequality. It is directly inspired by Esping-Andersen’s (1990) work on welfare typologies, to which can be attributed, as seen in chapter 2, elements of the rhetorical claiming in both Scotland and Wales and the holding up of Nordic social democratic models as exemplars for devolved policy making.

Student funding has not been considered in depth in this literature. Although Jacques and Noel (2018) state that several studies have concluded that free universal university tuition funding acts as a benefit targeted on the better off, they are unable to cite any studies which consider this. Bergh (2007) calculated that university tuition subsidies in Sweden benefited the children of graduates more than non-graduates (and the middle class users of local institutions more than young people from higher incomes who are more likely to leave Sweden to study). Sefton’s (2002) empirical analysis of the English welfare system included all spending on higher education, including student funding, concluding that it was “pro-rich” if allocated to parents on gross income, but that this did not hold if other income measures were used. These studies are however the exception. The exclusion of higher education may be due to the origins of this work in a period where access to it was more restricted and the effect of financial transfers in that system therefore being more marginal to the redistribution of resources across the wider population. It may not have helped that more universal forms of education have tended not to involve directly measurable financial transfers.

A limitation of the wider welfare state literature in providing a general framework for considering the questions it raises in the context of many contemporary student funding systems is its treatment of upfront cash benefits as isolated from any potential future costs. It thus provides no theoretical framework for conceptualising loans within the discussion of redistribution. This is notwithstanding attempts by some authors writing from a specialist higher education background to make the link between loans and welfare: Chapman, Higgins and Stiglitz (2014) describes income contingent loans as a potential “new paradigm for the welfare state” (2).
3.5 The direct distributive effect of student funding systems

In the UK, a body of quantitative work focussed on England, much of it sponsored by the U.K. government has examined the distributive effect of successive changes to non-repayable (grants) and repayable (loan) forms of funding by income. Far fewer studies which have examined students’ use in practice of available national funding. Not considered here are those studies, such as OFFA (2014), which consider the operation of bursaries and fee waivers individual institutions in England were required by government to provide from 2006 onwards. How these affect the take-up of national support is unclear, as they may either substitute for or supplement this, and are offered unevenly across different institutions (Vigurs et al. 2018). Such schemes were not mandated by the Scottish or Welsh governments in the period studied, although some Scottish and Welsh students studying in England will have obtained additional benefits this way.

3.5.1 Descriptive reports of students’ use of government funding

Published information on how students from different incomes use government funding in practice is limited. Reports of the periodic government-funded Student Income and Expenditure Surveys undertaken in different parts of the U.K. over more than 30 years provide some information on the distribution of student funding in practice, including on cumulative borrowing. The most recent surveys reported for England and for Wales were conducted in 2014-15 (Maher et al. 2018a, Maher et al. 2018b), and for Scotland in 2006-07 (Warhurst et al. 2009). The results are drawn from a randomly-sampled survey of full-time and part-time students (N = 1,376 for Welsh full-time students in the most recently available). The reports include information on non-state provided income, from institutions, earnings, family and commercial debt, providing useful context for the study of centrally provided funds.

The most recent SIES reports contain descriptive and inferential statistics, exploring multiple aspects of the relationship between student income, expenditure and other factors. These include students’ socio-economic background and parental experience of higher education, although not family income. For students from Wales,
those from the routine occupational category are reported to have received on average more total support from forms of student finance than those in higher occupational categories, but little difference is reported by background in the amounts borrowed or likelihood of borrowing (Maher et al. 2018b). The survey includes a comparison between its figures for borrowing and data held by the SLC, suggesting its sample of borrowers borrowed less on average than the total population of Welsh student borrowers, or under-reported their borrowing. The lack of more recent reports for Scotland prevents these reports being used for cross-UK comparative analysis or to examine recent effects in Scotland. The SIES reports are a rich source of data and the absence of equivalent information for Scotland is a loss.

Annual official statistics for Scotland on student support (for example, SAAS 2016), unlike the official data for England and Wales, provide information on the distribution of funds received by family income bracket and since 2016-17 have also included data based on area deprivation measures. These figures show borrowing is higher per head for those at the lowest incomes, and those from the most deprived postcode areas (SAAS 2017a). These figures provide annual aggregate data for each form of support, which does not allow effects to be considered across students’ whole time in higher education or analysis of multiple variables together, beyond what is provided in cross-tabulations.

3.5.2 Studies of gainers and losers from policy change

Several studies have sought to identify the groups gaining and losing financially from reforms in England, in the short-term and the long-term: they are therefore directly concerned with the distributive effects of systems. With one exception, discussed in the following section, in this literature participants in higher education are treated as two separate groups, so that effects during study are reported on by family income and effects afterwards only by graduate earnings.

The examination by Dearden et al. (2008) of Labour’s 2006 reforms in England was one of the first to look in depth both at the upfront and long-term effects of these changes for different groups, providing a model for later similar studies. It
considered the upfront alterations in grants, loans and fee charges by family income, likely changes in repayments by graduate earning decile and, unusually in this literature, the possible effects on total public and private borrowing costs for students from different levels of family background of changes in total upfront support. Based on the scheme’s design, Dearden et al. model the redistribution of all forms of state subsidy, assuming full take-up of entitlements. This is a limitation on the findings, as variation in take-up has potential to introduce substantial differences between groups. The estimated value of the loan subsidy is included in this calculation, but not the face value of the loan. Differences in loan subsidy by income are derived by applying to all cases the government’s predicted “average loan subsidy”, as a percentage of the face value of the expected average loan at six different income points. This offers a straightforward way to compare repayment effects at different incomes, but as the authors note there is no basis for estimating what further influence differences in average earnings may have: it therefore underestimates the subsidy for lower earners and overestimates it for higher ones.

The authors also consider the distribution of loan repayments by earnings decile, constructing a synthetic graduate earner population. They enter into this model the lowest predicted loan amount, taken to be what is expected for those with incomes below £35,000, arguing that the predicted variation in student loan borrowing by income under the post-2006 scheme is small enough to be of limited effect (the highest expected loan, for students from families with incomes around £60,000, was 18% larger than the lowest). This appears likely to be true as regards the general relationship between earnings and repayment, but it is a limitation that they do not test and report the scale of difference if the largest loan is used instead. The various limitations in Dearden et al.’s analysis are not sufficient to undermine their conclusion that the English system from 2006 could be expected to be more progressive than before, within the graduate population considered solely as earners, as it shifted borrowing more towards those from higher incomes, and repayment more towards those who would be higher earners. It does however mean that their detailed calculations come with significant caveats.
The study also attempts to model how changes in all forms of support, including total upfront living cost support, may reduce the cost of all borrowing, including private borrowing, for what it describes as the “poorest” and “richest” students, and relates this to their later earnings deciles. To do this, the authors assume that all costs not met by the state would instead be met by private borrowing, which they admit is likely to be incorrect. Indeed, it can be shown to be so by empirical evidence from the SIES. However, the recognition that for some students public loans will substitute in part for more expensive private ones, and the attempt to quantify the effect, is a dimension often overlooked and their modelling suggests the long term financial benefit of increasing living cost support, if only through loans, could be substantial in at least some cases. This point is revisited in the conclusion to chapter 8.

A more recent examination of the impact of the further changes in England in 2016 on the distribution of loans, grants, and total support by family income, and repayments and the cost of government subsidy by earning decile, is provided by Belfield et al. (2017). They note a larger variation in debt than under the system examined by Dearden et al. (2008), caused by the replacement of remaining living cost grant with loan. This is described and discussed, but for the purpose of estimating repayments a single average final estimated debt figure is calculated for the cohort. Full take-up of all support is assumed, except for one model which considers the additional cost to government in which a proportion of the highest earners are assumed to be non-borrowers.

**3.5.3 Studies linking effects during and after study**

Where studies do seek to embed variable estimates of borrowing by income into their models, the impact of this variation on the results tends not to be discussed and the results only reported by graduate earning deciles (see for example Britton, van der Erve and Higgins 2019, Barr et al. 2019\textsuperscript{12}). Unusual in making a direct link between

\textsuperscript{12} Barr et al. present a model to which they input an average loan with an assumed normal distribution, with a value set for its standard deviation.
loan level and repayment, reporting some repayment results by reference to income, is Chowdry et al. (2012).

Examining the same question of gainers and losers from policy change as Dearden et al. (2008) and others, Chowdry et al. (2012) considered the upfront and long-term distributive impact of policy change in England in 2012. As in other studies, take-up of available support is assumed to be comprehensive. Unusually, they included adjustments for the estimated effect of institutional level support to students, a more significant element of the system in England than elsewhere in the UK, and for whether or not institutions attract the higher loan rate for London. Most relevant here, their methodology allowed them to include results for later effects according to initial family income, albeit without any discussion of these.

In constructing a simulated cohort of graduate earners, the researchers assigned to each case a family income, by fitting the cases to a distribution of income from Family Resources Survey, using only households with a child in full-time education living away from home. From this they imputed the value of upfront grants and loans received by each case. They then assumed a relatively weak correlation between family income and graduate earnings, based on the 1958 birth cohort of the National Child Development Survey. As they recognised that that risked under-estimating the relationship between family income and later earnings in later cohorts, they then tested the sensitivity of their results to making different assumption, comparing the results for the total value repayments by original family income, rather than earnings (Chowdry et al. 2012b). Their approach appears to be unique in the literature. Given the multiple assumptions involved in the construction of their model, Chowdry et al. are careful to stress that their results are not forecasts but only “serve to highlight the varying distributive implications of different HE funding policies” (222). Even so, this offers the only available assessment of any recent system in the UK of how students’ post-graduation repayments might relate to their initial family income.

Chowdry et al.’s results for expected debt repayment by parental income is reproduced here as Figure 3:1. As in their results generally, the assumption of a
maximum take-up of student loan debt at all incomes introduces an unknown degree of potential error. Even so, their calculations show that the degree of assumed correlation between family income and earnings is influential in how repayments will be distributed. The least variation is seen with an assumed correlation of 0, where repayments broadly reflect the original limited non-linear variation in student loan borrowing in both systems: the relationship between family income and repayment becomes more positive as the correlation increases. Despite its limitations, Chowdry et al. (2012) appears to be uniquely valuable in the UK literature in modelling student funding as both a benefit and cost which varies by family income.
Studies that attempt to link borrowing and repayment by students’ family background appear to be rare even beyond the U.K. In the large volume of U.S. literature, Houle (2014) is unusual in highlighting the potential long-term effects from unequal initial borrowing by background. Even more unusually, possibly exceptionally, he draws on empirical data both for borrowing and repayments, using results from a large-scale survey at age 25 (N=4,746). Given the exceptional nature of his research, it is also
considered briefly here. Houle found that in the U.S. while low SES predicted greater likelihood of entering into debt, it was less relevant to the amount borrowed: students from middle income families borrowed larger sums than those from lower or higher income ones. In consequence, students from high incomes and high SES were therefore relatively protected from taking out debt. The reliability of the figures provided is limited by graduates’ recall, as Houle notes, while its validity as a comparative measure is limited by how far graduates will have begun to make repayments at different rates. The data did not permit Houle to distinguish between different types of loan. Although as Houle notes, the study cannot provide any indication of what costs will be associated with these debts over time, it remains valuable for its use of empirical loan data, which allowed it to show that borrowing may not be linear with income. Houle found that income and SES status do not necessarily function identically for borrowers. He speculated that this might be because students from the lowest incomes in his sample had had access to higher value targeted upfront assistance compared to those from middle income students and also that they might be keeping their debt down by choosing forms of participation which reduced these, a point considered further in this chapter.

Elsewhere in the international literature, it is common to find the disjoint between borrowing and repayment disregarded. In an otherwise exceptionally thorough and wide ranging discussion of the use of student loans globally, Ziderman’s (2013) approving discussion of these as a benefit targeted on students from lower incomes fails to acknowledge that, even under subsidised repayment terms, such schemes may be expected to visit greater costs in the longer term on any group so targeted. Usher’s (2005) caution that there can be an over-concentration in politics and research on loan levels at the expense of repayment systems only stands insofar as repayment systems provide can be relied on to off-set such effects.

3.5.4 Students’ engagement with the national funding systems

Beyond the limited descriptive material summarised in 3.5.1, and my own work based on aggregate data published or made available by SAAS (Hunter Blackburn 2016b),
there is almost no of quantitative literature in the U.K. examining in detail students’ use of national funding systems. In their study of determinants of loan take-up De Gayardon et al. (2019) demonstrate in their survey of the literature that this has received only limited attention in the UK, citing mainly past reports of the SIES for England, and studies using data from the early years of the U.K. student loan scheme, in one case from a single institution (Johnes 1994, Payne and Callender 1997).

Using the SIES, De Gayardon et al. (2019) observe that loan take-up has increased over time in England, and as it has done so, the correlation with other demographic factors has decreased. Their main analysis draws on the Next Steps survey, a large scale longitudinal study in which a sample (N=4,368) of young people in England who started higher education in 2009 and 2010 were asked questions about how they financed their study. The analysis therefore only considers the position at a single point, early in the period of study and excludes independent students, who the authors suggest will be less likely to take out loans, an assumption challenged by the findings reported in chapter 7 here.

De Gayardon et al.’s questions are relevant to this study, as they relate to the relationship between indicators of wealth and loan take-up, in total and for living costs and tuition loans separately, the relationship between debt aversion and loan take-up, and debt avoidance mechanisms. They examined patterns of take-up by income by a range of factors available in the Next Steps data, including family income, home ownership and previous use of private education. Loan take-up was found to be generally high: 89% of female and 92% of male students took out a loan. Even so, a significant negative association was found between take-up and indicators of family wealth, as measured by outright housing ownership, private schooling and having higher income. This effect was stronger for living costs loans. Living at home had a substantial (-11.5 percentage points) negative effect on loan take-up, after applying controls for other factors, from which the authors concluded that this was an important means of debt avoidance, although they also note that their data did not allow inferences to be drawn about the direction of causality.
A feature of De Gayardon et al.’s account also relevant to this research is their treatment of student loan as being largely a cost, even during study, citing Baker et al. (2017) as finding “student loans are positively associated with drop-out and negatively associated with graduation”. Further investigation shows however that Baker et al.’s review of the literature, mainly from the U.S., reports mixed findings on this point, and notes that studies in this area often fail to control for factors other than borrowing. The case for treating loan as a cost rather than a benefit during study therefore remains unmade in Gayardon et al. (2019), although the argument that it should be can be noted.

The analysis presented by De Gayardon et al. (2019) pays valuable attention to students’ interaction with the loan system in practice and is able to draw on information on multiple measures of economic advantage. It is limited by using data from a single point before the end the course, by excluding independent students, and is unable to include any analysis of how the total amount of borrowing compares between groups. It is also unable to examine not only whether students had borrowed, but what proportion of their total possible borrowing they took up. This research fills these gaps, examining borrowing behaviour across the full-time student population in the context of the actual amounts borrowed, and across the whole of the period of study.

The take-up of national grants has received relatively little attention. Gugushvili and Hirsch (2014) refer briefly to student grants in their discussion of means-testing, asserting that contrary to arguments about the stigma attached to means-tested support deterring individuals from making use of it, the take-up of fully means-tested student grants in the U.K. in the 1980’s was “almost universal”, although they do not provide a source for this claim. They consider that participation in higher education is a “merit” and speculate that student grant is therefore “potentially less stigmatising than many other forms of means-testing” (44), especially if not too tightly targeted. The use of merit here ties back to idea of individual merit determining access to institutions and therefore access to supporting resources.
3.5.5 Studies of the devolved administrations

There is no comparable literature for the devolved administrations. My previous work has included some examination of the distribution of different elements of funding by income in each part of the U.K., based on the design of student funding schemes, and take-up in practice in Scotland (Hunter Blackburn 2014, Hunter Blackburn 2016c), using published data from SAAS. Findings based on that source are however subject to the limitations considered at 3.5.1. The implications of the pre-2012 loan repayment regime persisting in Scotland after that date (until April 2021) was not subject to the same degree of analysis as the new arrangements in England and Wales. The only detailed analysis considering the distribution of repayments under the different repayment thresholds and repayment periods used in Scotland compared to England and Wales has been produced by the Fraser of Allander Institute (FAI 2018), although a more limited exercise was undertaken by the Scottish Parliament Information Centre (Macpherson and Liddell 2013). The FAI used an average level of debt and reported the result only by graduate earnings decile, using technical adjustments to the existing repayment models used in the U.K to take account of expected lower graduate earnings and differences in the repayment regime. For Wales, the Report of the Diamond Committee (Diamond 2016) made its assessment of distributive effects of current and proposed policy for Wales based on system design, assuming full take-up.

3.5.6 The contribution of this research

This research will fill a number of gaps in the literature on the distribution of costs and benefits of participation in higher education. It will be being the first for any part of the U.K. to draw on large-scale empirical data to examine how students from different incomes engage with national student funding systems in practice across their course, what upfront support they received as a result, and the consequent accumulation of debt to government over the course of study, according to income. It will be unique in using actual accumulated debt, and therefore variation in the actual take-up of loans by income, as the starting point for estimating the potential
distribution of the cost of student loan repayments across the graduate population. It will provide what appears to be the only analysis in the UK which seeks to link participants' experiences of the student funding system while in higher education with their experiences of that system afterwards, and so is able to examine the expected costs by original family income, other than Chowdry et al.'s (2012). The research will therefore fill an existing gap by examining the assumption implicit in most work on loan repayment, that the effect of loan schemes should be discussed and compared solely in terms of their repayment terms and the distribution of repayments relative to earnings, and that the initial distribution of loan debt within the graduate population is a marginal issue. It will also be the first to enable comparisons to be made of how student behaviour differs in two systems which take different approaches to the distribution of grant and loan resources by income.

3.6 The evidence for indirect redistributive effects

Student funding systems may have indirect redistributive effects if they have an impact on the scale and nature of participation. The literature on that point is considered here as providing essential context to this research: if such effects were clearly demonstrable, then they would be relevant to any consideration of how student funding systems function to reinforce or challenge inequality.

The literature on graduate earnings is considered further in chapter 8, where it is used to inform decisions about how to predict the future earnings of the cases studied for this research. Here, the principal relevant observation is that the evidence suggests a continuing positive effect on earnings from completing degree-level higher education within the UK (Walker and Zhu 2011, Walker and Zhu 2013), despite concerns that the expansion of higher education would reduce this and growing evidence that earnings benefits vary considerably within the graduate population (Britton et al. 2016). This suggests that if a system which distributes costs unequally can nonetheless be shown be better at attracting and retaining students from lower income backgrounds, then that would be a reason for regarding its direct distribution of costs and benefits as less important. Similarly, how far the funding system
influences choices and behaviours within the system which might have a bearing on future earning potential is also relevant. Whether funding systems playing a major role in affecting aspects of student behaviour is therefore a relevant question. Evidence specific to the Scottish and Welsh systems, relative to other parts of the UK, was considered in the previous chapter and found to provide little support for differences in funding system on scale which exist in the U.K. being relevant. What the more general literature suggests is considered here.

3.6.1 The relationship between student funding and entry to higher education

The impact of student debt on the participation of students from lower-income backgrounds is one of the more contested areas of research in student funding (Johnstone and Marcucci 2010). One of the most widely cited studies, Callender and Jackson (2005) uses quantitative methods to examine the relationship between debt aversion, interest in higher education and level of socio-economic disadvantage. The authors highlight a substantial and significant negative relationship between general debt aversion and interest in applying for higher education for those in a “lower class” group only. They did not however give equal weight to a further finding, that a negative attitude towards borrowing specifically for higher education, separately measured, showed no such effect. This is relevant to the concluding policy discussion: the findings together might imply a case for increasing student loans to reduce commercial debt, rather than, as argued, a particular risk to applications from the most disadvantaged groups from greater use of student loans.

In an updated analysis (Callender and Mason 2017), using a repeat wave of the same survey in 2015, the authors found a statistically significant relationship between general debt aversion and likelihood of application to higher education for the most disadvantaged group, and not for the others. The size of the effect is however hard to judge from the results presented. The study found that attitudes towards incurring student loan debt, specifically, were more positive in the 2015 cohort than in 2002, due largely to an improvement in women’s attitudes. The results were not broken
down by class. As in the 2005 study, there is some tendency to over-claim, even while accepting that it is not possible to make any causal inferences or assumptions about how attitudes influence actual participation. Callender and Mason concluded that “England’s student funding system, predicated on the accumulation of student loan debt, potentially undermines widening participation policies rather than broadening and equalizing HE participation” (43) but this does not follow obviously from their findings.

By contrast Evans and Donnelly (2018) refer to “a burgeoning body of research which has questioned the notion that the escalating costs of HE is a deterrent to university study” (12). To this they add their own findings, based on semi-structured interviews with young people aged 16 to 18 in a selection of Welsh secondary schools between 2009 and 2011, which found “little evidence to suggest that that [their working class interviewees] they are ‘put off’ university by the prospect of financial debt” (12). Interest in entering higher education tended to have been established over time and for those not planning to attend, lack of relevant qualifications was most influential. Evans and Donnelly also found that teachers had a far more negative attitude towards the funding arrangements than young people, who were largely unaffected by the attitudes of staff. That students in England have accommodated to the use of available student debt is given further support by Harrison et al. (2015) and Minty (2015).

In a systematic review of the literature on the impact of the student funding system on the participation, experience and outcomes of disadvantaged young people, especially in the UK, Pollard et al. (2019) found substantial evidence of concern about finance and more specifically debt, but that this had not manifested as reduced participation, noting that a variety of explanations have been offered for this, relating to expected future earnings, absence of alternatives to HE, awareness of protections in the repayment system for lower earners and normalisation of borrowing both for living costs and fees, even if this sometimes constitutes “grudging acceptance”. Rather than an effect on those from lower incomes, the findings they reviewed suggested instead a small negative effect on those from more advantaged
backgrounds, which had contributed to closing the gap in participation rates by background.

On the specific topic of fees, Marcucci (2013) asserts that research shows that “in many countries increases in tuition fee levels have a greater (and negative) effect on the participation of low-income and minority students” (62). However, the sources she cites, from the UK, US, Canada, Australia and China, do not support this claim, with one (Chapman and Ryan 2002) explicitly concluding that policy change in Australia had no such effect. De Gayardon’s (2019) examination of the multiple interpretations of free tuition in different countries, and the association of such policies with widening participation, led her to conclude “there is no indication that free tuition systems are performing exceptionally well in guaranteeing access to all and fostering student success” (502).

Considering the evidence from England over two decades in which fees and loans rose, but enrolments from students from more disadvantaged backgrounds continued to grow, Murphy et al. (2018) drew attention to the interaction of all the elements of student funding and suggested policy makers should pay attention to students’ total liquidity, more than to individual components of policy. They also highlighted the difficulty of making any direct claims of any sort about participation effects due to financial interventions or the absence of these, given the confounding factor of the effects of static or changing number controls. Dearden et al. (2014) sought to overcome obstacles to isolating the effect of particular interventions by a carefully designed difference-in-difference study making use of the natural experiment in England in 2004, where the only change was an increase in grants for living cost support, at lower incomes only. They found a positive association (a £1000 increase in grant increasing participation rates by 3.95 percentage points) which they describe as consistent with findings from other jurisdictions, but noted that they were unable to say how far effects were due to students using grants to spend more or to borrow less, a problem Usher (2005b) also identifies for researchers in this field.
The finding of a limited direct impact of funding systems on the choice to enter higher education for those from low income backgrounds is consistent with the more general literature, which persistently finds school attainment and social factors to be strongly influential (Reay et al. 2005, Christie 2007). Evans and Donnelly (2018) noted that for their non-participants “University was not so much actively rejected, it was never considered; it had fallen outside the boundaries of what they expected to obtain given their attainment levels.” (13).

Further, knowledge of student finance appears likely to be limited at the point decisions are taken to apply, and students may assume they will be better able to avoid borrowing than is the case (Davies et al. 2008, Minty 2015, Evans and Donnelly 2018). Pollard et al.’s (2019) literature review also found low levels of understanding of student funding among potential applicants to be a persistent theme.

Most studies here consider young students entering full-time higher education. Large falls in the number of independent students in England after 2012 have been attributed to the introduction of higher fees and with those, much higher borrowing, but also have been concentrated in those undertaking part-time study (Callender and Thompson 2018). The fall in numbers in this group has been attributed to a “perfect storm” of changes not limited to student funding (Hubble and Bolton 2021). It is not possible to tell how far the fall in numbers was influenced by fewer students undertaking a second undergraduate course: these students were already restricted in their access student funding under “previous study” rules, and with the changes made in 2012 therefore faced much higher costs and more limited to financial support to defer these than first-time undergraduates. Other recent work has considered the effects of introducing loans for taught post-graduate study on access: Mateos-Gonzalez and Wakeling (2020) found a strong positive effect on increasing participation by previously under-represented groups.

There has been a tendency in politics and some of the literature to assume strong causal links between funding policies and whether students from more disadvantaged backgrounds, especially younger students, will enter full-time, first-time

93
undergraduate higher education, and within that to assume that borrowing, either in general or for fees in particular, will be a deterrent. That position appears at odds with the available evidence, however.

3.6.2 Student funding as an influence on decisions about how to participate

There is clearer evidence that funding influences students’ choices about the type of participation, with those from lower-incomes more likely to adopt strategies which reduce the overall cost. This is relevant to the question of the role of student funding in the reproduction of economic inequality if these strategies are likely to reduce the earnings benefits of taking part in higher education.

As noted in chapter 8, the level of higher education pursued is one of the clearest determinants of earnings benefits. In a study of a large group of West of Scotland school-leavers, Forsyth and Furlong (2000) identified cases of high-achieving young people from low-income backgrounds who were qualified for degree-level study but chose to undertake shorter, college-base courses; a desire to avoid higher costs influenced choices. Also in Scotland, Hunter Blackburn (2016a) found that non-borrowers who were entitled to an income-targeted grant were more likely to be on shorter college courses, although the direction of causality here could not be deduced. Callender and Jackson (2008) found no impact of attitudes to debt on qualification level, but this may reflect the relative absence of shorter alternatives to degrees in England.

Depending on a student’s location, living at home may also limit choice of institution and course, and so constrain the potential to increase earnings. For this research, that issue would appear to be most acute for Welsh students, with only one Russell Group institution in Wales. It is also relevant in Scotland, where the more selective institutions tend not to recruit heavily from their local area, with Glasgow being an exception (Donnelly and Gamsu 2018). Pollard et al. (2019) find evidence in the literature of “increasing localisation of university study brought about by a desire to reduce costs or manage finances by living at home or reducing travel costs” (7).
Minty’s (2015) comparison of small samples of school leavers in Scotland and the North of England found that young people were less debt averse in England than Scotland, but that those from working class backgrounds were more so, and that this affected their choice about how to take part, with living at home identified as a strategy for reducing cost and thus debt. Evans and Donnelly (2018) also found living at home described as a strategy to reduce cost. Davies et al. (2008), based on responses to a questionnaire administered to final year students in a group of schools and colleges in England in 2007, found avoiding debt affected the decision where to study for 31% of respondents, while 72% of those intending to live at home identified minimising debt as an important reason. Yet no significant relationship was found between being from a low income family and regarding “debt minimisation” as a “very important” reason to live at home, adding weight to the argument that for socio-economically disadvantaged students living at home is a choice which may also be strongly influenced by non-financial factors (Christie 2007). Donnelly and Gamsu (2018) did not find any increase in localisation of study in England among young students from disadvantaged backgrounds after 2012 but did find some evidence of this in older students.

A relevant issue for researchers here is that students’ own accounts of their decision-making processes may also be influenced by how they wish their choices to be perceived, or discomfort at admitting certain influences. It is therefore not always straightforward to isolate funding from other influences, such as a preference to remain close to home (Christie 2007). A countervailing effect is also identified by Pollard et al. (2019) as related to funding concerns, which is “an increase in the importance of institution reputation, quality and proven employment prospects in making choices about universities in order for students to feel they can maximise the return on their investment” (7).

A large amount of paid employment, particularly in term-time, has been identified in many studies as a means by which students cope with having little or no access to family cash support, with the capacity for negative effects (Leonard 1995, Curtis and Shani 2002, Metcalf 2003, Callender 2008). This speaks most directly to the question
of students’ total liquidity, but could also reflect debt aversion. Employment may be used either to supplement or replace government debt, depending on students’ attitudes to borrowing. Thus, as a mechanism for reproducing inequality, a relationship could plausibly exist between term-time working, negative impact on academic studies, poorer outcomes and lower earnings. Pollard et al. (2019) argue that “The more robust studies show that, on average, HE students from disadvantaged backgrounds are not more likely to work longer hours compared with students from more advantaged backgrounds but for those that do work longer hours research shows it is linked with poorer wellbeing” (11). A related point of potentially increasing importance is that the need for paid employment in the vacations may restrict students’ ability to undertake low-paid or unpaid internships while studying. This has a theoretical ability to disadvantage graduates entering the labour market, through more limited relevant experience and contacts. No U.K. research appears yet to be available examining this, although in the U.S. Gault et al. (2000) found a relationship between undertaking undergraduate internships and later labour market success.

The amount and type of student funding may also limit the participation of students from lower incomes in extra-curricular activity. The impact of this on later employment is hard to assess but in theory could explain some of the earnings gap between students from different incomes. Antonucci’s (2016) cross-country study found subjects’ access to financial resources while they studied had a substantial impact on their ability to take part in academic and non-academic activities. Vigurs et al. (2018) reached a similar conclusion, identifying students in institutions less able to provide additional bursary support as being especially negatively affected. Bathmaker et al.’s (2016) “paired peers” study at two U.K. universities provides further evidence consistent with these studies.

One further question is how far finance influences the likelihood of non-completion, if leaving a course early adversely may adversely affect future earning benefits. Financial problems are one of several factors associated with non-completion, although the extent of their impact is open to question (Christie et al. 2004). Pollard
et al. (2019) summarise the literature as mixed and concentrate mainly on findings related to additional financial support provided to students by institutions.

A limitation of much of this research is that it can be difficult to tell from the findings how far problems reported to have a funding-related element, with excess levels of employment, limited ability to take part in other activities, or non-completion, are related to inadequate total upfront support, in any form, or a desire to avoid or reduce debt for living costs. To the extent that debt reduction strategies do influence the nature of participation, the questions raised would relate to the use of loans in place of living cost grants rather than fee subsidies, as fee loans cannot be reduced in the same way.

3.6.3 Other possible long-term detriments from debt

One further area of research relevant here concerns the impact of student loan debt on later life. A comprehensive review of the available literature for the U.S. and the U.K. (De Gayardon et al. 2018) draws mainly on U.S. sources: the analysis would benefit from separating findings from the two countries, given some important differences in the loan repayment terms applying in each. In several of the areas it considers, including entry into post-graduate study, employment choices and family formation, it finds conflicting results. It however describes as “a unanimous consensus throughout the literature that student loan debt is negatively related to wealth throughout the lifetime, including such varied outcomes as net worth, financial distress, and savings – including retirement savings” (34). It similarly finds that homeownership is negatively associated with holding student debt. That student debt repayment reduces the capacity for wealth and asset accumulation is not a surprising finding, and evidently relevant to this research and its concern with the reproduction of inequality.

This research cannot add to the literature on the relationship between funding and entry to higher education, which it does not explore. The existing literature suggests that it would be unwise to attribute differences to overall entry rates between Scotland and Wales in the period studied to differences in their funding systems.
However, for two dimensions of participation where the evidence for some funding influence is stronger (level of study, living at home) the data examined do allow the strength of the association between prevalence, family income and loan take-up to be compared across two different systems which vary in their use of grants and loans at lower incomes. This adds to the extremely limited empirical comparative evidence here, even if no causal relationships can be inferred from the data being used.

### 3.7 Conclusion: Student support as a redistributive mechanism

The study of the reproduction of inequality in higher education has tended to be less concerned with the reproduction of economic than other inequalities, leaving the long term effect of student loan repayments in this context little considered. As the proportion of the graduate population, and the population more generally, with student loans rises in many jurisdictions, their capacity to have effects on the reproduction of inequality over the life course will increase. This research seeks to provide a stronger theoretical understanding of how and when student loans may contribute to this process. In addition, the existing literature considering the distribution of student funding does not contain an extended discussion of how fairness should be conceptualised in this area of public policy when it is conceived a distributor both of benefits and costs, although the analysis of different elements is often informed by normative positions on how such systems should work, which at different point invoke the concepts of merit, equality and need. Again, this research seeks to fill that gap.

When the initial distribution of funding is discussed it is generally taken as axiomatic that those entering from lower incomes should receive more support in general, or at minimum receive more of that support in grant, than those from higher income families, drawing on concepts related to need. The literature considering the risk of loans having a dissuasive effect starts from a strong assumption that a fair system facilitates access for under-represented or non-traditional students, relating to ideas of equality and merit. The discussion of loan repayments tends to share the assumption that repayments are more fairly distributed when lower earning graduates
pay less relative to higher earning ones, also invoking a mixture of need and desert. In the political discourse but more rarely the academic literature, as discussed in chapter 2, ideas drawn from the wider literature on welfare related to targeting and universalism are invoked in relation to the initial distribution of support for living costs and fees, creating a tension between need and equality as principles, although in practice systems which combine some elements of both are common: student funding in all parts of the U.K. is one such.

The start of a challenge to the application of the principle of need to living cost support is apparent in the literature, in Antonucci’s (2016) argument for dispensing with, rather than reconfiguring, the assumption of a parental contribution to address hardship among students from middle incomes. In practice, the Welsh government’s implementation in 2018 of the Diamond Committee’s recommendation of a uniform amount for total living cost support, means-tested only for the balance between grant and loan, partially dispenses with need. In Scotland the 2017 review of student funding argued for adopting a similar model, although there is no indication this is planned. How much further traction this thinking will gain is unclear, however.

That different concepts of fairness should apply to different elements of student funding is not itself problematic: in theory arguments may be made for differences in the treatment of different interventions. The difficulty comes with the introduction of student loans, where the application of one set of principles at the stage when students participate in HE has long term consequences not taken into account at the point of repayment and which then interfere with principles applied there. The compartmentalisation of the literature on student funding, or at best the reconceptualisation of students between stages as products of a time and place to free-standing participants in the labour market, leaves a gap in which the implications of one stage for another is under-discussed and under-theorised. This thesis seeks to fill that gap.

In the wider literature on participation in higher education a precedent for retaining more interest in students’ origins after they leave higher education is found in the
concept of the reproduction of inequality. The idea is used in relation to the occupation of social and economic roles, but is also capable of being applied to financial effects, through examining how student funding systems, from beginning to end, act to reduce or amplify initial differences in access to income. Its usefulness as a conceptual model for looking at student funding as an end to end system is therefore explored here.

The argument against such an approach would be that it treats student funding systems as neutral in their indirect economic effects. A review of the literature shows the case has not been made within the U.K. for a relationship existing between entry into higher education and the detail of student funding; there may be subtler effects on forms of participation from how schemes are designed but how such mechanisms work, and which elements have what effect, is still debateable. The argument therefore stands for examining student funding systems as ones which may in their own right exaggerate, challenge or leave untouched the initial distribution of economic resources between participants in HE. The potential for further detrimental effects on later asset accumulation reinforces the case for such an examination.

The research presented in this thesis also seeks to fill a gap in the empirical literature on how students from different incomes use student funding systems in practice, and how far this is persistent across different contexts, treating differences in the approach to targeting (meeting need) and universalism (meaning here equal treatment within a group, not population-wide access) as the salient distinction. In doing so it also seeks to fill a gap in the literature discussed in chapter 2 related specifically to Scotland and Wales in how far student funding arrangements in practice corresponded with the rhetorical claims made for them.

From the analysis of the policy background and the existing literature an overarching research question was framed:

Using Scotland and Wales as comparators, how far do different approaches to targeting the repayable and non-repayable elements of undergraduate funding by family income have different implications for the reproduction of economic inequality within the graduate population?
To shape the detailed response to this question, and taking account of previous research in the broad area and its limitations, three further sub-questions were devised:

RQ1  How is total student loan debt distributed relative to students' initial economic background, as known through reported family income at the point of participation in HE, in the systems in Wales and Scotland, and how does this compare with the distribution of non-repayable benefits in each?

RQ2  How does the likelihood of taking out a student loan relate to family income in both systems, and how far may any differences be accounted for by variation between the two student populations in other characteristics expected to affect borrowing behaviour?

RQ3  To what extent should the protection for low earners in the loan repayment regime applying in each nation be expected to limit how far differences in the distribution of debt will be reflected in actual repayments?

The following chapter considers in the detail the approach taken to answering these questions.
Chapter 4  Methodology: Data Choices And Analytic Strategy

4.1  Introduction

This chapter describes how the over-arching research question and sub-questions were addressed. Reflecting the nature of the research questions and that the nature of the literature this research was intended to supplement, it was designed as a quantitative study, taking advantage of the existence of administrative data covering the whole population of students engaged with national public funding in the two nations studied. The study of student funding effects using the longitudinal analysis of individual administrative records is a new contribution of this research. The first part of this chapter explains what information was requested from the student funding bodies and how cases were chosen for analysis. Acquiring and preparing the data proved to be a substantial task. The nature and limitations of the variables analysed is discussed and then the approach taken to analysing the data in order to respond to the three research sub-questions. This was done using a mix of descriptive statistics, binary logistic regression and concentration curves and indices. The application of the last of these to student funding is a further new contribution of this research. Supporting material is provided in Appendix B.

4.2  Data sources

4.2.1  The choice of administrative data

The preferred data source for studying the research questions was identified at an early stage as the administrative data covering the whole population of students receiving relevant forms of support in Scotland and Wales. Other than summary annual aggregate statistics, referred to in the previous chapters, these data have not been used in the U.K. as a source for studying how student funding systems work in practice, and not used for any purpose in Scotland or Wales. Although limited in the information they contain, they are uniquely useful as sources of information on the actual funding dispersed to students, removing reliance on students’ recall of their
funding. This also overcomes a problem identified by Minty (2015) that students themselves may not think of grant and loan as separate sources of immediate support. The smaller caseloads in the devolved nations further make it easier to use this source without sampling. The only precedent for use of individual administrative records from the student support agencies in the U.K. appears to be Britton et al.’s (2016) sophisticated model of earnings predictions. This used linked administrative datasets, including a 10% sample of borrowers from England taken from the records of the SLC, to predict likely variation in future earnings by institution, subject and other characteristics. Britton et al. made some use of data on students’ borrowing, but their focus was not the operation of the student funding system.

4.2.2 Data limitations

The strength of using administrative data was the ability to obtain comprehensive information on support received by individuals under student funding systems over their period of study. The challenges of using administrative data sources can be related back to their production for purposes other than research (Connolly et al. 2016). In this case the principal limitations were: the restricted range of variables available and therefore a lack of information about individuals which other research suggests might be relevant to their use of loans (educational attainment and family history of higher education, for example); the limited information gathered for particular variables, particularly income above the level at which means-tested support is available, discussed further below; the loss of information required to maintain case anonymity, also discussed below; the possibility of unidentifiable processing error (Groves et al. 2011); and the coverage only of that part of student funding provided centrally. This was a novel data exercise for both providers, so some issues arose over the detailed interpretation of the request. For SAAS, which had not undertaken any similar exercise, it took several iterations of data extraction to address areas of unanticipated ambiguity in the data request. Given other demands on the providers, there was also limited scope to request further information about and clarification of data received, although both were supportive and helpful within
their capacities. In the conclusion to this thesis, I reflect on what this exercise revealed about the value and limitations of the data held by the student funding bodies as a resource for research and policy development.

4.2.3 Data providers

The Student Loans Company (SLC) holds all the relevant data for Wales, as it administers all forms of student support on behalf of the Welsh government. The Student Awards Agency for Scotland (SAAS) holds the equivalent data for Scottish students, with the exception of one dimension of loans. Scottish students submit their student funding application to SAAS. If the student applies for a loan, SAAS assesses what amount of loan the student is entitled to and passes the loan application to the SLC, from whom the student then takes out the loan. SLC does not inform SAAS whether a student has proceeded with their application. In consequence, only the SLC holds data on the amount of loan students took out in practice. There is therefore no single complete source of information on student support for Scottish students. However, a previous data matching exercise between SAAS and the SLC showed that actual borrowing was around 99% of borrowing authorised (SAAS 2016). The SAAS data were therefore taken to be sufficiently complete as a source for this research. The possibility of requesting a further data matching exercise between SAAS and the SLC for the records analysed here was considered but rejected as likely to be a disproportionate extra call on resources for the bodies concerned. Informal discussion confirmed this. As the purpose of the research was to consider and compare the full financial implications for individual students of their engagement with student support, multiple years of data for individual cases were required.

4.2.4 Ethical consideration and data security

Both bodies agreed to release individual records which could be linked over years, under separate formal data sharing agreements. The sharing of individual data containing sensitive personal financial information raised ethical issues about the
privacy of the subjects; the use of administrative data for research purposes also raised a question about consent (ICO 2012). In these circumstances privacy and consent issues under the General Data Protection Regulation (GDPR) in force in the U.K. under the Data Protection Act 2018 can be met by data anonymisation (ICO 2012). Both providers supplied the data with no direct identifying details and some variables either grouped or suppressed to meet their assessment of data protection requirements.

An unexpected result was that the providers diverged in their approach to anonymisation, which only emerged as the data were extracted. SAAS preferred to group variables, whereas the SLC preferred to provide individual case detail and suppress certain results in some cases, to avoid cases becoming identifiable. For Scotland, by agreement SAAS grouped information on income in bands of £5,000, provided institution by type (as discussed below) and location by region (also discussed below), with no suppressed cases. For Wales, the SLC provided by agreement detailed income data, but rather than grouping institution, subject and area data, preferred to provide these at the level of full detail held in its system, and to achieve anonymisation instead by suppressing data both on institution and subject group where necessary. The data for Wales were therefore more detailed for income, and more detailed but less complete on institution, compared to that for Scotland. It was more detailed on subject than Scotland, where subject data was largely unavailable, but still incomplete. This imposed limitations on the comparisons which could be made.

The sharing of administrative data also necessitated data handling protocols. The data were transferred electronically under data sharing agreements which allowed the analysis to be conducted off premise from the providers, subject to meeting certain security requirements. The data were held on a server used by the University of Edinburgh for storing sensitive research data, with password protection limiting direct

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13 The SLC specified that their approach had been that no combination of variables in either case identified more than five cases.
access to the author. Britton et al. (2016) by contrast worked with complete individual records in a secure environment.

4.3 Relevant cases

The aim of this research was to compare the effects on final debt of funding choices made in the main schemes provided for full-time first-time Welsh-domiciled and Scottish-domiciled undergraduate students as discussed in chapter 2. The relevant population for study was identified as full-time students entitled to the main elements of undergraduate fee and living costs support domiciled in Scotland and Wales at the most recent possible point for which data could be obtained.

4.3.1 Groups excluded

EU-domiciled students were excluded as they were ineligible for living costs support, with extremely limited exceptions. The study also excluded part-time students and those covered by post-graduate funding arrangements, who were not covered by the main undergraduate scheme. Nursing and midwifery students were also funded under different arrangements in both nations and were therefore excluded from the analysis. Unlike Welsh students leaving to study elsewhere in the U.K., Scottish students studying elsewhere were excluded from the study, as these were outside the main package of support, not being entitled to the cash subsidy of their fees: this group accounted for 3% of all Scottish-domiciled students receiving support from the Student Awards Agency Scotland each year from 2013-14 to 2016-17 (SAAS 2017a). From Whittaker (2017), it can be assumed this group was likely to be drawn more from higher income households than average, and their debt would be higher, as it would include tuition fee debt. The full population of Scottish undergraduates would therefore be expected to have more debt at higher family incomes than the population on the main package of support for Scottish students in Scotland.
4.3.2 Defining a cohort

To take advantage of the ability to study the whole population but limit the size of the request made to the data suppliers and keep the scale of analysis manageable within the available time, a single cohort of students was chosen for study in each nation. The limited available aggregate data published on student funding spending by government for Scotland and Wales suggested that year-to-year student behaviour in relation to funding was unlikely to vary substantially.

A cohort with a shared leaving point was preferred over one with a shared starting date, as it allowed repayments to be calculated on a common basis and the data were potentially comparable with information the SLC already gathers and publishes on total borrowing by leaver cohort. This therefore offered an established source against which the results of this novel research could be compared. Leavers from higher education were defined as those identified by the SLC as theoretically liable for repayment from the April following the final year of funding, whether or not they borrowed in practice. SAAS was not able to identify cases on the same criterion. It provided instead data on those recorded in its system as having had a formal leaving date from their funded course in the given year, excluding those who were known to have returned for further SAAS funding in the following year. This approach was the best available to identify two cohorts of students completing under similar circumstances in each nation, given the differences in record-keeping. Limitations on the findings due to which cases were selected for study are considered in the conclusions.
4.3.3 Leaving Year and Period Covered

At the point of negotiating data access, data transfer was expected to take place in the year 2017-18. At that point, using data for the cohort of leavers in 2015-16 was identified in discussion with the SLC as giving access to the most recent finalised data for a leaver cohort.

The data request required the data providers to retrieve records over several years: agreement was needed on the number of years back for which this should be done, as a small number of students stay in the system for an extended period. In discussion with the funding bodies, a period of five years was identified as manageable and sufficient not to exclude the period covered by any common course: see Table 4-1. Extending to six or more years would have brought in more cases, principally those on longer courses and those, mainly in Scotland, who had studied for a two year HND and then undertaken a full four year degree. However, it was not clear that the additional information from these would be proportionate to the additional work required by the data providers. A five year period for data collection of 2011-12 to 2015-16 was therefore initially agreed with both data providers.

For Welsh cases, an end-point of 2015-16 was expected to mean that conventional study on most courses would have been covered by the rules introduced in 2012-13, other than for a small number on longer courses, notably medicine, veterinary medicine and dentistry (see Table 4-1). However, the Welsh system applying to new entrants in 2011-12 was very similar in its effect on students to the post-2012 arrangements (see section 2.4.2): the changes were essentially administrative. Data for Welsh students entering in 2011 were therefore treated as being able to provide valid information for this research.
<table>
<thead>
<tr>
<th>Years of study</th>
<th>Scotland</th>
<th>Wales</th>
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<tbody>
<tr>
<td>1</td>
<td>HNC and equivalent</td>
<td>HNC and equivalent</td>
</tr>
<tr>
<td>2</td>
<td>HND and equivalent</td>
<td>HND and equivalent</td>
</tr>
<tr>
<td>3</td>
<td>Ordinary degree</td>
<td>Most ordinary and honours degrees</td>
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<tr>
<td>4</td>
<td>Honour’s degree</td>
<td>Some honours: most languages, some others</td>
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<td></td>
<td>Ordinary with repeat year or year of absence</td>
<td>Honours/ordinary with repeat year or year of absence</td>
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<td></td>
<td>HNC + full ordinary (1+3)</td>
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<tr>
<td>5</td>
<td>Medicine</td>
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<td>HND + full ordinary (2+3)</td>
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<td>6+</td>
<td>Intercalated medics</td>
<td>Intercalated medics</td>
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<tr>
<td></td>
<td>HND + full honours (2+4)</td>
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Students in Scotland studying to degree level were typically expected to remain in the system longer, as shown at Table 4-1, principally because an honours degree typically requires four years’ study compared to three years in Wales. Scotland also has a larger number of students who move from a short-cycle HE course in college to degree-level study at a university. Around half of these students are required to repeat at least one year, lengthening the time taken to achieve their final qualification (SFC 2020). The change in student funding arrangements described in chapter 2 between 2012-2013 and 2013-14 involved large increases in loan entitlements and decreases in grants, although no change to tuition fee policy. Against that, the 2013-14 change was applied to all students, new and continuing.

To maintain consistency of timing, data for Scotland was also initially sought for 2015-16 leaver cohort. However, in the summer of 2018 it became apparent that there were technical obstacles to including records for Scotland for years prior to 2012-1314 but that data for 2016-17 could be made available, to allow a five year period still to be covered. This had the advantage of four out of five years of data being under the new arrangements introduced in 2013, which applied to continuing as well as new students, but meant that the data for Scotland would be for a cohort leaving a year later than for Wales. At this stage work on data retrieval for Wales had begun and I decided against seeking an alteration to the terms of the finalised data request. The later period was agreed for Scotland, with the advantages regarded as outweighing the year difference in leaver cohorts.

The rhetorical claims discussed in chapter 2 were focussed on students fully funded for a complete first undergraduate qualification. The data provided included information on the level of study in the final year only (Wales) and in all years (Scotland). The decision was taken to include at degree level only those who had received at least three years of fee support over the period for which information was

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14 Earlier years had no archived copy and could only be retrieved from the live administrative system. SAAS advised this made the task of linking records more complex and introduced potential inconsistencies in the data between years.
available. Comparing the outcomes of the two systems for all the students who used them, including those who left early or studied for shorter periods, for example on single year teacher education courses, would be a valid strategy. However, it would have introduced into the comparison factors unrelated to how the systems were designed to function for those for whom they were primarily intended, the effect of which could not assumed to be identical in the two nations. A specific difficulty with including these cases for any separate analysis was the inability of SAAS to separate early leavers and those on short courses funded at degree level, mainly teacher education. In both nations all the sub-degree cases provided were used, as a year’s study at this level might still lead to an award.

4.3.4 The finalised study population

The finalised the study population was therefore:

Full-time first-time undergraduate students entitled to the main package of undergraduate fee and living costs support, who were domiciled in Scotland or Wales, whose final year of funding was the academic year 2015-16 (Wales) or 2016-17 (Scotland), and who had received at least three years of fee support, in the case of those recorded as studying at degree level in their final year.

For this group, all financial support received in the five year period prior to leaving was considered.

The relationship between the finalised study cohorts and changes to the funding systems in each nation is summarised at Figure 4-1. From this it can be easily seen that using a later leaver cohort for Scotland means that the groups which would be expected to make up the largest number of degree cases (on 4 year degree courses if from Scotland and 3 year courses if from Wales) shared an entry year of 2013-14. The 1+3, 2+2 and 2+3 HN/degree examples in Scotland may have qualified for either an ordinary or an honours degree, depending on whether they received full credit for previous study, and whether they repeated any degree years; the 1+4 groups should have qualified for an honours degree (assuming no repeat years after entering the degree programme).
Figure 4-1 Entry cohorts by period of study and course type, and changes to student funding systems, assuming no breaks of study.

- **2011**: 5 years (Medicine)
- **2012**: 4 years (longer degrees)
- **2013**: 5 years (most Welsh degrees)
  - **2014**: 2 years (sub-degree)
  - **2015**: 1 yr (sub)
- **2012**: 5 years (Medicine); 1+4 or 2+3 HN/degree
- **2013**: 4 years (Scottish honours); 1+3 or 2+2 HN/degree
  - **2014**: 3 years (Scottish ordinary)
- **2015**: 2 years (HND)
- **2016**: 1 yr (HNC)

- **2016 leavers (Wales)**
- **2017 leavers (Scotland)**

New entrants in Wales see no net change to fees debt, but fee subsidy now provided as a direct personal fee grant. Maximum living cost grant reduced by £500.

New and continuing students above inflation increases in living cost loan entitlements, largest at lower incomes.


4.4 Financial variables

The research questions consider the distribution of funding: the dependent variables provided for this research were therefore those recording what payments were made to, or repayments expected from, individuals who made use of government funding. One further financial variable, income, is the independent variable of central concern to the research questions.

4.4.1 Income

How the funding bodies measured income, how the income data were supplied, and how the data were then treated for the purpose of analysis are considered here.

Measurement of family income

In both nations, family income was assessed following a common approach based closely on the model used prior to devolution across the UK, with a small number of differences. In discussion with data providers, it was agreed that the “household income” recorded for the student’s first year should be provided, as most likely to represent the student’s family circumstances on entry into higher education, although this would not necessarily be the one on which support was based throughout the period of study, if family circumstances later changed.\(^{15}\) In both nations, the assessment of family income in most cases represented the family’s income two years prior to entry.\(^{16}\) The term “family income” is used in this thesis to distinguish this measure clearly from students’ later earned income.

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\(^{15}\) The exception was for cases starting in 2012-13 in Scotland, for which it was not possible to provide income for that year for whom income was inferred from their use of means-tested support.

\(^{16}\) So for a student seeking support for the academic year 2013/14, an application would have been made based on “household income” in 2011/12 (Welsh Government 2014, SAAS 2013). The only exception to this would be cases where an estimate of the student’s unearned income in the year of study was relevant (earned income during study was not included) or where a large change of family income entitled the student to a recalculation on more recent figures.
For dependent students the relevant “household income” was that of the student and the parent(s) with whom they were resident, and any resident partner of a parent; for independent students, relevant income was that of the student and any spouse, civil partner or cohabiting partner (in the last case, for Welsh students only if the student was 25 or over).

“Household income” as used in both nations is a measure of gross (pre-tax) income. Non-taxable benefits were excluded, so households more reliant on these would have a smaller proportion of their income recorded. Comparisons within the lower income groups therefore need to be treated with some caution, but this element is treated here as unlikely to affect substantially the broader comparisons between lower income and higher income groups.

In both nations the providers made certain deductions and allowances to assess “residual household income”, which was the form of income data provided for this research. There were some differences in approach, for example in the living costs payments and certain pension contributions. Given the overall similarity of approach used in each nation, income data held by the two student funding bodies was assumed here to function similarly enough to allow reliable comparisons of distributional effects by income across the student population. Direct comparisons between specific income categories in each nation should be treated with more caution, however. In practice, this issue arose most clearly however with the nil income group for whom these timing differences were not relevant.

A limitation of students’ family income data is its susceptibility to manipulation, most straightforwardly through the timing of declaration of self-employed earnings and residency declarations for the children of separated parents. There does not appear to be any recent assessment of the scale of under-declaration of income in Scotland or Wales. A review of “income-related fraud in the student support system” in 2008/09 (BBC 2008) estimated a rate of “error and fraud” of between 1% and 4% (Lammy 2009). The SLC has more recently identified income fraud as one of the forms most often encountered (SLC 2015). Both agencies required the provision of
supporting evidence on income (Welsh Government 2014) and had in place arrangements for the active identification of fraudulent cases (SLC 2014, SAAS 2017b). In 2015-16, SAAS reported 215 cases of fraud (SAAS 2016b) representing around 0.1% of its caseload, including false claims of residency and status. Not all under-declaration would be easily identified as fraud, however, and this is a limitation in the income data held by the funding bodies.

A related critique of student funding income data is raised by Finnie et al. (2004), who argue in the context of similar systems operated in Canada that classifying students as independent of their parents risks wrongly treating some students from high income households as low income students. The 2014-15 Student Income and Expenditure Survey for Wales found a substantial and significant difference in the amount of income independent students derived from family members and friends, compared to dependent students (Maher et al. 2018b, Table A3.23), with independent students receiving around one-quarter the amount of dependent students. This suggests at least that in Wales this group was typically not still receiving parental support, although they may still have originated in higher income families. Using U.K. wide data, Duta et al. (2021) found evidence that those entering HE from lower social class backgrounds tended to graduate at a later age. Finnie et al.’s (2004) argument requires attention as likely to apply to some members of the nil income group, but given the information available from the U.K. is not treated here as a substantial limitation.

As only taxable income is considered for student funding purposes, the figures used here take no account of differences in access to other forms of wealth. In this respect they are comparable with income measures commonly used in inequalities research, such as net equivalised household income. Such measures do however conventionally consider disposable income net of tax, and sometimes housing costs, and may include some benefits excluded here (see for example, Joyce and Sibieta 2013). Such adjustments can take into account that single-parent tax-paying households will benefit less from personal allowances than couples and the number of people supported by the income in the household. The income figures used in this
research therefore should not be directly compared with those used in other contexts and are limited in not providing information on household disposable income and household size.

Despite its limitations, residual household remains the best available set of figures on the differences between students receiving state support, according to their family’s financial situation. The points above are accepted to limit its validity as a general income measure but it remains the sole measure of what governments know about the relative family income of students while they study. There is therefore a logic in using this measure to examine the distributional outcome of policies which include an element of income assessment.

**Reporting and grouping**

The data providers met the income data request inconsistently, due in part to differences in the administrative requirements of the two systems, in part to varying preferences in each case regarding how to maintain subject anonymity, and in part to different decisions about how to structure the response to the request in detail. This led to differences in how the income data was provided for the two nations.

The most substantial limitation was the absence of income data in cases where none had been required by the funding body. The incentive to declare income varied, with those above the threshold for means-tested non-repayable support prima facie less likely to derive a benefit from engaging with the process. In Scotland from 2013-14, all students with family incomes of £34,000 or more were entitled to identical support. For Wales in all years, means-tested living costs grant was available at incomes up to around £50,000, and additional means-tested loan up to around £57,000.

Where information on income was available, this was provided to the nearest £100 for Welsh cases and grouped in £5,000 bands for Scotland. A set of income groups was developed for each nation as described at 5.3.1 to deal with the lack of detailed income data for higher income cases, in particular. These groups were used as the
basis for comparative descriptive statistics on borrowing (chapter 6), to provide
categorical variables for use in the regression analysis of loan take-up by income
(chapter 7) and to include family income as a contributing factor in the prediction of
future earnings (chapter 8). For the calculation of concentration indices (chapters 6
and 8), advantage was taken of the ability to rank most Welsh cases individually by
income.

Timing of income recording

Using a leaver cohort with income recorded at the point of entry in different years
opened the way to income relativities being affected by changes in the value of
income over the period. In practice, for most degree students from Scotland (60.0%)
entered in 2013-14. The 38.6% who entered in the previous year had their income
inferred from the level of living cost support received (see footnote 15), leaving a
very small number entering in 2014-15 (Appendix B, table B-1). The large majority
(67.2%) of degree students from Wales also entered in 2013-14, with most of the
remainder (27.0%) entering in the previous year (Appendix B, Table B-1). In most
cases in both nations therefore income was assessed relating to the tax year 2011-
12, and in most other Welsh cases 2010-11. The use of grouped income data for
most purposes (except when used for measures of concentration for Wales) meant
that the classification only of those cases close to the income group boundaries was
affected. The effect of timing differences for income was treated here as marginal in
effect for degree cases.

For Scottish sub-degree cases, most cases (76.6%, Appendix B Table B-1) entered in
2016-17, with the remainder entering a year earlier. The small number of Welsh sub-
degree cases in the data were more widely distributed by timing of income
assessment; however 86.5% entered in either 2014-15 or 2015-16 (Appendix B, table
B-1).

The timing differences in income measurement were therefore expected to have the
largest effect on any results which combined degree and sub-degree cases. For
Wales, the much smaller proportion of sub-degree cases meant that the effect on
overall results was again taken to be de minimis. In Scotland, there were a larger number of sub-degree cases, although again only those close to the income boundary between groups would be affected. In the following chapters, a more general question is raised about the value of combined results for Scotland for degree and sub-degree cases. The effect of income sampling across a five year period is a further limitation on any such results presented below.

4.4.2 Borrowing

Both data providers were able to provide the nominal amount borrowed each year for each case as a continuous variable, before interest. For Welsh domiciled students, the SLC was able to split the borrowing between fee loans and living cost loans. For Scottish students in Scotland, loans were for living costs only. Interest effects were introduced into the comparisons at the point of calculating repayments, as explained in chapter 8.

There were no issues of reliability of the Welsh loan data as these were drawn directly from the records of the lender. Given the SLC is a long-standing organisation, subject to annual external audit and which has performed the specific task of administering student support for many years, I assumed that it was very unlikely that errors in the administrative records would be on a scale likely to affect the results of this research. As noted above, SAAS records what loan students applied for but not what they borrowed. Based on past matching exercises, cited above, I assumed that the SAAS records were a reliable measure of actual borrowing. For the same reasons as for the SLC data, I deemed the likelihood of errors in the record too low to affect the results.

The largest limitation to the validity of these figures as a measure of borrowing and its long-term costs is that they cannot include any private or commercial debt students incur. This research is specifically concerned with the distribution of debt to the state, as an immediate consequence of policy decisions. However, lower state debt may conceal higher total borrowing (Dearden et al. 2008), which would be
relevant to the research’s concern with how policy decisions affect the distribution of long-term costs.

Information on non-state borrowing cannot be obtained from the sources used here. However, it is possible to calculate how systems compare in respect of the total funding they provide towards immediate costs, and therefore how far one may create more pressure than another to borrow privately, at different incomes. The total value of upfront living support at different incomes as an under-appreciated aspect of student funding systems (Dearden et al. 2008, Murphy et al. 2018) providing the context for judging the distribution of funding from the state. Both systems provided full fee support upfront for those studying at publicly-funded institutions and therefore for fees no notional funding gap existed in either nation for students attending these.17 Both however assumed some level of private contributions towards living costs. A comparison of the value and distribution of total average living cost support per year is therefore provided in chapter 8, as part of the final comparative summary of the two systems.

4.4.3 Non-repayable benefits

Three forms of government cash funding in Scotland and Wales were identified as relevant to this research.

- Living cost (maintenance) grant payments to students,
- Tuition fee grants and payments made to institutions on behalf of individuals,
- General cash funding to institutions to support undergraduate teaching.

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17 Students attending private institutions in Scotland were eligible for a non-means-tested cash contribution to their fee (£1,205) and were required to self-fund any remainder. Students attending private institutions from Wales were entitled to a non-means-tested fee loan but no fee grant. It was not possible to estimate from date the size or distribution by income of any difference between fees charged and available funding for these cases. These cases represented less than 1% of degree level cases in both nations. They were a larger proportion of sub-degree cases (8.4% for Wales and 9.5% for Scotland).
How payments to institutions were accounted for in this research is considered in more detail at section 6.5.1.

In both nations, means-tested general living cost grants accounted for most nationally-provided non-repayable non-tuition related funding, in 2015-16, these accounted for around 88% of such funding for students from Wales and 80% for those from Scotland (SLC 2016, SAAS 2016).

Both jurisdictions also provide a range of supplementary grants intended to support exceptional student needs, such as Disabled Students Allowance (DSA), grants for student parents and for students with adult dependants. In 2015-16, DSA, which is not means-tested, accounted for 6% of all non-repayable non-tuition funding for Wales and 11% for Scotland. Some supplementary grants are means-tested but constitute a relatively small part of total means-tested grants (around 6% in both nations). As these supplementary grants are intended to meet specific additional costs, they were excluded from this analysis.

The non-repayable living cost grants examined here were Young Student Bursary (YSB) and Independent Student Bursary (ISB), for Scotland, and Welsh Learning Grant (WLG), all provided as continuous variables, separately for each year of payment. For some Welsh students eligible for benefits WLG was titled Special Support Grant (SSG): in these cases a higher loan entitlement was attached. It became apparent during the analysis that SSG appeared to have been omitted from the data provided on living cost grant for a small number of cases. This affected only the analysis of non-repayable funding for the lowest income independent students; the expected effect on the results is discussed below where relevant.

The results cannot take into account amounts of bursary funding students received from institutions towards their living costs, which are not recorded in the administrative data. Institutional bursary represented a relatively limited form of
funding for Scottish students in Scotland\textsuperscript{18}, as there was no government requirement to provide it. Welsh-domiciled students overwhelmingly attended institutions in Wales and in England, where institutional bursaries were mandated by government. The 2014-15 Student Income and Expenditure Survey (Maher et al. 2018b) provides information on the value of institutional bursaries received in that year: 23\% of full-time Welsh-domiciled students received an institutional bursary with a mean value of £1,255. Those attending HEIs in England received more on average than those in Wales (£1,492 compared to £1,188) but there was no significant difference in the rates of receipt (21\% in England, 23\% in Wales). Maher et al. (2018b) did not have income data for their cases but found no significant relationship between the likelihood of receiving an institutional bursary and parental occupation. This is unexpected as government bursary rules required some targeting on low incomes, and the previous survey (Pollard et al. 2014) had found that students from routine and manual backgrounds were significantly more likely to receive a bursary than those from other backgrounds. It may be relevant here that Vigurs et al.’s (2018) qualitative study found that the bursaries received by lower income students in post-1992 English HEIs were considerably lower in value than those in Russell Group universities, that is, the HEIs most used by these students were able to provide less support to them. Based on the later survey, which is the one relevant to the study cohort here, it appears possible that institutional bursaries may have had a neutral effect by income, although they were intended to direct non-repayable resources towards those from lower incomes. The analysis of take-up of loan in chapter 7 returns to this point.

\subsection*{4.4.4 Loan repayments}

Expected loan repayments had to be constructed as a variable drawing on the data provided. Echoing the comments from Chowdry et al. (2012) quoted in the previous chapter, the results for expected repayment here should be regarded not as exact  

\textsuperscript{18} There does not appear to be any source of information on the spending on such bursaries by Scottish HEIs on Scottish-domiciled students.
predictions but as providing a range of results which illustrate the conditions under which particular distributional outcomes would be expected and how sensitive these outcomes will be to stronger or weaker associations existing between earnings and initial family income. The focus on income reflected previous findings on the sensitivity of repayments to altering assumptions related to that (Chowdry et al. 2012) and the centrality of income as a determining factor to this research.

The prediction of repayment was straightforward for non-borrowers who would by definition have no repayments. Estimating a range of repayments for students with any borrowing was however considerably more challenging, as it required the introduction of judgements about future earnings in each case. There was no exact precedent which could be easily followed given the data available to me, although considerable work has been done on modelling the outcome of the English student loan system across the population, on which this research was able to draw.

A detailed account of the approach taken is provided in chapter 8. A number of different scenarios were developed for each nation, making different assumptions about the influence of income. This stage drew on a model which provided expected repayments at any given graduate earnings decile for any given amount of borrowing, developed by the Fraser of Allander Institute (FAI) at the University of Strathclyde and kindly shared with the author. The FAI model was itself developed from the main U.K. Government model developed for estimating outcomes from the student loan repayment system (BIS 2015b). The final debt figure used for each case was the sum of the face value of borrowing. As considered further at chapter 8, the FAI model introduced a calculation for interest accrued over the period of study. For Welsh cases, an allowance was made at this stage for the value of the partial cancellation available to those students at the time of their first repayment, noted in chapter 2. This was calculated individually for each case, to take into account that the entitlement might be less than £1,500 in some cases.19

19 Where a student’s first year of borrowing for living costs was less than £1,500, it was capped at that figure.
4.5 Non-financial variables

The remaining variables sought from the providers were of interest for their further explanatory value in understanding the distribution of funding within each nation and how it compared between the two. They are discussed here in two groups: those which relate to characteristics of the student population independently of their participation in higher education, and those which reflect aspects of their participation.

4.5.1 Demographic variables

Sex

Data on sex were obtained from both providers. Women have previously been identified as more debt averse and less likely to take out a loan, although this relationship appears to have weakened over time (Callender and Mason 2017, Maher et al. 2018a, Maher et al. 2018b). Sex is well-established as having a strong and persistent relationship with earnings (Dolton and Makepeace 1986, Machin and Puhani 2003, Britton et al 2016).

Independent (mature student) status

Independent students were identified as a group of interest, due to differences in their treatment during study and in their expected earnings (Conlon and Patrignani 2011). In Scotland only, their living cost funding relied more on loan, as described in chapter 2.

In both nations, students were deemed to be independent of their parents if they were over the age of 24 at the start of the relevant academic year. This status also applied to those who were married or in a civil partnership, or had care of children, and to those who had had three years of self-support before starting the course. This status could change during study, for example if a student’s 25 birthday fell during their course.
For Wales data on independent status at start of course was provided. The equivalent variable was not available for Scotland. The Scottish data provided were instead for whether a person was over 24 in their final year. This had the advantage of including all students subject to the separate arrangements for independent students due to their age at any point, but was not directly comparable to the Welsh measure, as it captured those who changed status during their course by reaching the age of 25. The Scottish measure therefore included some who the Welsh one did not cover. It also excluded cases qualifying other than on grounds of age, covered by the Welsh one. The decision was taken not to create a hybrid variable using data both on age and take-up of forms of means-tested support in forms only available to independent students, as this would have systematically biased the measure towards lower income cases. The term “independent student” is used therefore in the following chapters to refer concisely to the different two groups in Scotland and Wales, expected to have largely overlapping but non-identical characteristics.

Indices of Multiple Deprivation

As the available income data had recognised limitations, the availability of other variables which could be used to examine the relationship between socio-economic background and borrowing patterns was explored.

No direct individual measures were available other than income. However, a measure of localised disadvantage by post code area was available through the Scottish and Welsh Indices of Multiple Deprivation (SIMD and WIMD), both in general and for education specifically. The SLC was able to provide both, but SAAS was only able to provide one, due to its approach to anonymisation.

The validity of area measures as a means of identifying individual disadvantage is open to question (Paterson et al. 2019). In Scotland, it has been established that a large proportion of students reporting the lowest incomes do not live in the areas of

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20 Some data on age was also provided for earlier years: however, detailed examination and comparison with other variables, particularly for forms of support offered to independent students, suggested that the age marker for years before 2016-17 was likely to be substantially incomplete. The measure reliably covering all Scottish cases was therefore the age marker in the final year.
greatest general disadvantage. Only half of those on the highest rate of Young Student Bursary were within the lowest 40% of SIMD postcode areas in 2014-15 (Hunter Blackburn 2016a). The Scottish government reports that two-thirds of people who are income deprived do not live in the 15% of most deprived areas, as measured by SIMD, and just below one-third of people in those areas are income deprived (Scottish Government 2016b). For this reason, the overall IMD was judged likely to be to a limited proxy for income specifically. For Scotland, and therefore for comparative purposes, the education IMD was preferred for its closer link to educational attainment: the link between educational attainment and socio-economic advantage is well-established (Croxford and Raffe 2015). Some comparison of the relationship of the overall and education IMDs was possible for Wales only.

Both data providers were able to provide IMD education data as quintiles, using postcode at the point of application as the agreed best available indicator of the student’s pre-HE place of residence. There are substantial similarities but also some differences between the construction of IMD education measure in the two nations. Most clearly, the Welsh measure includes attainment at the end of the primary phase (Level 2) which is not available in Scotland, and the post-compulsory school measure for Scotland examines non-participation in any form of employment, education or training (NEET), while that for Wales considers school leavers’ absence of progression to higher education.

Home region

The literature did not suggest a clear theoretical basis for examining regional patterns of use of student funding, distinct from living at home; although Donnelly and Gamsu (2018) identified localised patterns of participation, these were not assumed to be intrinsically territorial but related to other factors. However, in the absence of a direct measure of living at home for Scotland, students’ home location provided a direct measure available in the data which might be expected to show variation in loan take-up according to the how far higher education was locally available at different levels. SAAS was prepared to provide data at a level less detailed than individual local
authorities; groupings were agreed which clustered the data to reflect the travel to work areas related to the main centres of provision of degree-level higher education in Scotland, as described in more detail at Appendix B (Note 1). As this information was being obtained for Scotland, the decision was taken to obtain it also for Wales: the SLC provided the data for home local authority area. This was grouped for analysis to create a smaller number of units, again based on the nature of local access to degree-level provision, again as shown in the appendix. For Wales this introduced the possibility of examining whether there was any evidence of localised differences patterns of use of support which could not be explained by differences in living at home.

4.5.2 Variables related to study

Level of study

Level of study was obtained to identify those students studying on shorter sub-degree courses who would be entitled to fewer years of support, and whose lower level of qualification might be expected to reduce their post-graduation earnings relative to degree students (Gasteen and Houston 2007, Walker and Zhu 2008).

Information on level of study was available in the Scottish data through the provision of data on the level of fee paid on behalf of students each year. Students were classed as sub-degree leavers if they received the lower fee level in 2016-17. For Wales, the SLC provided information on the final qualification obtained: HNC/Ds, foundation degrees, DipHE and CertHE were classified here as sub-degree. In both cases, sub-degree students may have returned to study at a higher level after an interval of at least one year, so some of these cases may go on to further use of student funding and potentially higher earnings than assumed here.

Previous sub-degree study

More students transfer from college-based sub-degree study to university in Scotland, and they are more likely to come from more disadvantaged households (SFC 2020). As for Scotland only, the data included the level of course fee paid by
SAAS each year, it was possible to create a binary variable, which identified whether a student whose final year was supported by the degree-level fee payment had had previous years at sub-degree level.

**Institution type**

The socio-economic stratification of institution type within the university sector is well-established (Raffe and Croxford 2013). In considering how far institutional differences might contribute to the reproduction of inequality, Croxford and Raffe (2015) examined the educational, social, ethnic and demographic characteristics of students entering different institutions across the UK, finding clear status distinctions between institutions in the Russell Group (a membership organisation of large ‘research-intensive’ universities), the remaining “pre-1992” universities and the newer “post-1992” universities. In their separate study examining the stability of institutional stratification, Raffe and Croxford (2013) used a similar categorisation, but with the most selective institutions among the pre-1992 universities separated. This classification was adopted here, with colleges and other HE providers as a separate category, giving six categories:

- Golden Triangle or Ancient (very selective university)
- Other Pre-1992 universities, plus art/music/drama specialist HEIs (moderately selective university)
- Post-1992 universities and other HEIs (less selective university)
- Other (mainly private providers)
- Colleges (institutions not classed as HEIs)

The classification of institutions was undertaken for the Scottish data by SAAS, according to a list supplied to the agency, which then provided a variable of institution type. The SLC preferred instead to provide institution name, but with the data suppressed for 24.8% of cases: the grouped institutional variable for Wales was

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21 For England they included a category for the “Golden Triangle” (Cambridge, Oxford, Imperial, LSE, UCL, KCL) and for Scotland “Ancient” (Aberdeen, Edinburgh, Glasgow, St Andrews).
then created from this, with a further “suppressed” category. The classification was based on the institution attended by the student in their final year in both nations. Appendix B (Tables B-2 and B-3) provides the list of institutions in each category for each nation.

Boliver’s (2015) study of institutional clusters by status was also considered but rejected. Boliver included three indicators of the socioeconomic mix of universities. Also examined was the Sutton Trust’s group of 30 most-selective institutions, based on combination of UCAS average tariff on entry and university rankings in various commercial league tables. The Russell Group was also considered, as a widely-perceived group of high-status universities. Croxford and Raffe’s classification was preferred to create a categorical variable, as it allowed more differentiation at the higher end of the pre-1992 group than the alternatives and was most clearly based on measures related to social status of the intake.

Field of study

The literature suggested data on subject of study would be of interest for its relationship with earnings (Britton et al. 2016). This information was mostly unavailable for Scotland, as the records held by SAAS hold course information only as a string variable, entered by the case worker, which may not be identical for students on the same course. Only simple word searching could be used to identify cases. The agency agreed to search for medical, veterinary and dental students, as the highest earning group and reasonably easily identified. The SLC holds UCAS subject code data and provided this in 23 groups. However, it used the suppression of subject and institutional data to anonymise cases and the same 24.8% of cases as for institutional data therefore had these data suppressed. The cases for which the information was provided were simplified into three groups for field of study suggested by Britton et al.’s (2016) earnings analysis: science, technology and maths (STEM), law, economics and management (LEM) and other. Appendix B (Table B-4) shows the mapping of JACS codes into these groups.
Living at home

A relationship between living at home with family and borrowing was expected, due to different amounts available to those living at home under the Welsh system throughout the period\textsuperscript{22}, and findings in the literature of an association between whether students lived at home and borrowing behaviour (De Gayardon et al. 2019). Some care is needed in making assumptions about the impact of living at home on costs. Students living away from the parental home may be living at little or no cost with extended family members. Conversely, a student living at home may be contributing to household expenses or incurring substantial daily travel expenses (Christie 2007, Donnelly and Gamsu 2018).

The SLC was able to provide information for Wales on whether a student lived with their parent, away or away in London in term-time in their first year. For Scotland, where there was no difference in funding according to living arrangements, this information was not recorded, and a proxy variable was developed with the assistance of SAAS. The approach adopted required access to detailed information on institutions and so the Agency agreed to calculate this as an additional variable from their records before transferring the data. Cases were provided by SAAS with a low, medium or high likelihood of living at home with parents in term-time. Students known to be over 24 and those in receipt of ISB were all assumed to have a low likelihood of living with parents. Young students attending a college rather than an HEI were all assumed to have a high likelihood, in the absence of any source of data that could be used to form another judgement. For young students at other institutions, likelihood was estimated based on their home address and place of study, together with institutional patterns of students living arrangements and commuting (Donnelly and Gamsu 2018) and travel to work areas. The assumptions used are provided in Appendix B (Table B-5). Reliance on a proxy variable for the Scottish cases means that findings related to living at home are valid for Wales but

\textsuperscript{22} Different levels of loan were also available to the Scottish cases present in 2012-13 depending on whether they lived alone or away, for that year only. It was not possible to identify reliably from the data provided whether the home or away rates applied to cases making use of loans in that year.
have more limitations for Scotland. In both nations, the measure was based on a single year of data and therefore changing patterns of living arrangements could not be taken into account.

4.6 Analytic strategies

To address the research questions required a combination of descriptive and inferential statistics.

4.6.1 Descriptive statistics

Descriptive statistics were used to examine the characteristics of the study population, as a novel data set, reported in chapter 5, and to provide part of the response to RQ1, which is concerned with the distribution of repayable and non-repayable funding by income, which is addressed in chapter 6, and the first part of RQ2, which concerns the likelihood of borrowing by income, addressed in chapter 7. They were also one approach used to investigate the outcome of the repayment scenarios by income, to respond to RQ3, reported in chapter 8. Measures of central tendency (median, mean) and dispersion (upper and lower quartile boundaries, standard deviation) are reported. Associations between variables were examined using Chi-squared for significance and Cramer’s V, calculated in SPSS, as the appropriate measure for categorical variables with more than two values. Following Rea and Parker (2014), a weak association is treated here as <0.2, moderate 0.2<0.4, relatively strong 0.4<0.6, strong 0.6<0.8 and very strong >0.8.

4.6.2 Regression analysis

Regression analysis was used to address the second part of RQ2, which considers how far the relationship between income and borrowing behaviour in each nation may be explained by other factors. Initial analysis of the data showed that loan take-up would require to be analysed as a categorical variable. For reasons discussed further in chapter 7, borrowing behaviour was examined as a binary variable, and therefore binary logistic regression was chosen. Logistic regression is an inferential method
for examining the relative strength of the relationship between variables where the dependent variable is categorical (Field 2005). Its value here as a supplement to the previous descriptive statistics is in allowing a dependent variable’s relationship with multiple independent variables to be examined simultaneously. A development of linear regression, it predicts the likelihood of a dependent variable taking one of two outcomes due to a unit change in value of an independent variable. The logistic regression equation produces likelihoods measured as log odds. The logarithmic transformation is required to create an unbounded linear output for the chance of an event occurring, using the formula

\[
\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_m x_m
\]

(Sperandei 2014, 15) in which \(\pi\) represents the probability of an event occurring and \(\beta_m x_m\) are the values for each variable compared to the reference group. The logit may then be converted into a more easily understood odds ratio, \(\text{Exp}(B)\), by exponentiation.

The coefficients produced by a logistic regression are not comparable outside a single model, due to the scale on which the logit coefficients are calculated being specific to individual models (Mood 2010). As the primary purpose of the regression analysis used here was to compare the results for income between models the results are reported using average marginal effects (AMEs). An AME is derived by calculating a marginal effect for every observation in the sample or population and then averaging these effects (Mize, 2019). The results show the difference between the predicted likelihood of an event occurring (here, for example, borrowing rather than not borrowing) for the category of interest versus the reference group, with zero showing no difference in likelihood, a positive value indicating higher likelihood in the category of interest, and a negative one a lower likelihood, compared to the reference group. Results are commonly shown multiplied by 100, expressing the outcome in percentage points. Thus an AME of 0.2 predicts that an event is 20 percentage points more likely to occur in the category of interest than in the
reference group. As explained in chapter 7, for the purpose of the cross-national comparisons below, the highest income group provided the point of reference and AMEs were calculated for the difference in the probability of loan take-up between this group and students in other income groups. AMEs arguably have the further advantage of being more intuitive to interpret and are easily presented graphically than odds ratios (Long and Mustillo 2018). AMEs were calculated in Stata using the command “margins”. Further discussion of the approach taken to the modelling is included in chapter 7.

4.6.3 Concentration indices and curves

To address RQ1 and RQ3, which consider respectively the relationship between the distribution of borrowing and the distribution of non-repayable funding and the distribution of repayments, concentration indices and curves (O'Donnell et al. 2016) were used. Concentration indices and curves are commonly used in the literature on redistribution in welfare systems (see for example, Korpi and Palme 1998, Kenworthy 2011, Marx et al. 2013, Jenkins 1988). Much of the literature derives from their use to analyse health inequalities but they are less frequently used in the context of education and do not appear to have been previously used as a method for analysing student funding systems. The concentration index provides a simple single figure representation of whether a distribution departs significantly from an equal distribution in a way which is “pro rich” or “pro poor”, in the language commonly used in welfare literature, and the size of any such effect. Concentration indices are derived from concentration curves: these are presented in addition, as they convey more detailed information about differing effects across the income range than does the single associated CI figure, giving a graphical representation of the distributional questions central to this research.

The concentration index follows the logic of the Gini coefficient, measuring the cumulative distribution of a variable in the population as income rises: the concentration curve is similarly related to the Lorenz curve (O'Donnell et al. 2016). Figure 4-3 below illustrate how the concentration curve is calculated. Income values
(here variable X) are transformed into fractional rankings from lowest to highest producing a distribution F(x) with a highest value of 1, which is placed on the x-axis. The cumulative value of the second variable of interest Y (such as final student loan borrowing) is then calculated, as the proportion of the total value of that variable. This gives F(y) which again has a maximum value of 1. The relationship between F(x) and F(y) is expressed as a concentration curve C, similar to the Lorenz curve (Jenkins 1988). Analogous to the Gini coefficient, the concentration index can then be calculated as twice the area between the curve and a 45 degree diagonal line representing the cumulative distribution of Y if every member of the population received an identical amount. The standard concentration index is therefore a single figure which summarises the departure of a distribution from an equal distribution per unit (usually either per head or per household), (O'Donnell et al. 2008). Unlike the Lorenz curve, the concentration curve may be below or above the diagonal. Figure 4-2 illustrates a concentration curve C showing a “pro-poor” distribution, with a concentration co-efficient with value F(c). Figure 4-3 shows a “pro-rich” distribution. The associated concentration index may take any value between -1 and 1, with a negative value being used to indicate that the second variable is concentrated more at lower incomes. The co-efficient in Figure 4-2 is therefore negative. Figure 4-3 has a positive co-efficient.

Curves of different shapes, indicating differences in the detail of distribution, can produce the same CI result, and CI results alone therefore lose some information (O'Donnell et al. 2008). For this research, the CIs for total loan, non-repayable funding and expected repayments are therefore supplemented by concentration curves, to aid interpretation of the results.

The most commonly used formula for calculating the concentration index is as the covariance between the second variable (here, the element of the student funding system of interest, for example total student loan) and the fractional rank in the income distribution, giving for the figure above

\[ F(c) = 2 \cdot \text{cov}(f(y), f(x)) \]
where $\mu$ is the mean value of variable $y$ (Jenkins 1988, O'Donnell et al. 2008).

To produce concentration curves and the associated CIs, the conindex command (O'Donnell et al. 2016) was used. Conindex is a user-written command for Stata which allows the calculation of a variety of concentration indices and the production of the associated concentration curve. The syntax for the command is published and free to use with citation (O'Donnell et al. 2015). The conindex command also produces robust standard errors (O'Donnell et al. 2016).

Figure 4-2 Concentration curve (C) and concentration index ($F(c)$): “pro-poor” distribution

Figure 4-3 Concentration curve (C) and concentration index ($F(c)$): “pro-rich” distribution
The concentration index can be calculated in a variety of ways, depending on the nature of the data available, the nature of the variables for which inequality is being measured and the aspect of inequality of interest (O’Donnell et al. 2016). The standard CI measures purely the degree of departure from an equal distribution, without regard to the absolute value of the costs or benefits being distributed, while the generalised CI introduces consideration of the value attached to the commodity of interest, enabling absolute inequality to be considered. As O’Donnell et al. (2016) argue, the choice of whether to consider relative or absolute inequality is normative. For this research, the standard CI is used, as the point of interest is the relative degree of departure from an equal distribution, rather than a comparison of the absolute scale. Comparisons of absolute scale would have been further limited by the data covering different periods for each nation. The total value of amounts received by students in different forms is instead presented separately below where needed, to provide general context for interpreting the results.

The CI has been criticised for providing results in a unit measure which is not easily understood (Koolman, Xander and Doorslaer, Eddy 2004). For this research, CI results were valuable as they allowed the results of multiple investigations, in particular those related to repayments, to be summarised and compared easily. For the examination in more detail of particular examples of distributions, concentration curves are also used.
There are separate methods for testing for significant differences in concentration between data sets (O'Donnell et al. 2008). Khaled et al. (2018) argue that some comparisons of concentration curves may give misleading results by only examining differences at set points along the curve, rather than at all points. The debate brings out the complexity of testing for significant differences in concentration curves and by extension in CIs, including how to compare curves of different shapes which may nonetheless result in similar CIs. For this research, the decision was taken to consider initially how the relevant CIs and their associated concentration curves compared for the two nations in relation to the existence of any significant deviation from equality and, if relevant, the direction of that, before undertaking further tests. In practice, for none of the elements of funding examined here were further statistical tests in relation to differences only of effect size judged necessary to address the questions.

4.6.4 Approach to statistical significance

Although the data used were not randomly sampled, but covered the entire relevant population in each cohort for Scotland and Wales, statistical significance is treated here as theoretically relevant, as the cases were sampled by time. As small size differences can easily produce $p$ values indicating statistical significance in the large volume of cases provided by administrative data, tests of significance need to be treated cautiously when using such data (Connelly et al. 2016). I therefore follow Connelly et al. in considering effect sizes and directions to be the appropriate focus, where statistical significance is achieved, rather than significance alone.

4.7 Conclusion

Working with these data sets bore out the observations made by Connelly et al. (2016) regarding the investment of time and attention required to convert administrative records into a resource for analysis, and that this typically involves a larger number of decisions about the treatment of the data than does working with data collected for research purposes. The exercise also demonstrated the limitation
imposed on available variables by using secondary data, compounded by the
providers' need to anonymise before sharing. However, having access individual
records allowed the detailed analysis of relationships between variables which would
not otherwise have been possible. It also allowed the construction of longitudinal data
capturing individual students’ whole experience of national funding over their period
of study, something which has rarely, if ever, been done. Using administrative
records also reduced the reliance on students' recall of the detail of their funding.
Although challenging, the use of administrative data therefore created new
possibilities for understanding and describing how student funding systems operate
in practice. The more provisional results in this research are those related to loan
repayments, where the analysis moves from directly reporting the original data to
producing a range of expected outcomes under different conditions. The restrictions
on what was possible there when drawing only on student support records show the
value of access to more elaborate data linkage models, which have yet to be used to
link actual borrowing to repayment. The results provided here should help inform
decisions about whether that would be a worthwhile further development. The
introduction of the construction of concentration curves and indices, not previously
used as a means to examine for student funding, was prompted by the over-arching
research question's focus on the existence and nature of inequalities in the
distribution of costs and benefits: these analytic tools are ideally suited for
considering and comparing student funding systems as redistributive mechanisms.

The presentation of findings begins in chapter 5 with a descriptive overview and
comparison of the characteristics of the relevant student populations in Scotland and
Wales, prior to addressing each research question in chapters 6 to 8.
Chapter 5  Introducing the study populations

5.1  Introduction

This chapter provides context for the later chapters, by providing a brief description and comparison of the characteristics of these two novel study populations. Level of study and study history is discussed first, drawing on information which emerged from linking data over time. The chapter then considers and compares the income profile of the two study populations, before turning to living arrangements and then considering other characteristics more briefly; further background material is provided in Appendix C.

Some substantial differences emerged between the two populations. The Welsh study population was typically drawn more from lower incomes and, to a lesser extent, from more disadvantaged areas than its Scottish counterpart. As would be expected from other sources, more Scottish students were studying on sub-degree courses. Scottish students also appeared more likely to be living at home with their parents.

Where possible, the results here were compared with information available from other relevant sources. Differences in scope of sources limit how directly comparable these are (Appendix C, Note 1): even so, comparing the data against other sources at minimum provides some insight into how the study populations vary from those already known. The discussion below highlights where salient differences emerged.

5.2  Level of study and study history

As described at 4.3.4, relevant students for this study were taken to be those finishing their supported study in 2016-17 (Scotland) or 2015-16 (Wales), who had received fee support for at least three years (degree-level students) and who were liable to loan repayment the April after their final year (Wales) or were recorded as being in their final year and not recorded as returning for further supported study in the following year (Scotland). Differences in the available data mean that any Scottish students who were funded at degree level in their final year but awarded a
sub-degree qualification cannot be identified and are therefore included as degree students; any Welsh equivalents would be in the sub-degree group.

The distribution of cases in each nation by level of study and, for the degree group, further characteristics of study, are shown at Table 5-1. In both nations, the number of degree cases equated to around 80% of the relevant cohort for that nation recorded by HESA (2017) (Appendix C, Note 2). The difference appears consistent with the more limited coverage of this data set; further detail on this is provided in the Appendix C (Section 2). The Scottish study population contained a much larger proportion of sub-degree cases (34.4%, N=9,809) than the Welsh (7.6%, N=950), as would be expected from well-established differences in the structure of higher education in Scotland and other parts of the UK (Riddell 2016). For Wales the difference was larger for sub-degree than for degree cases in the study population when compared with the figures provided in published sources. This difference may be related to the presence of cases in the published data who continued directly into further undergraduate study, but even so suggests treating the Welsh sub-degree results with more caution than others; the relatively small size of this group also limits the analysis possible for it.
### Table 5-1 Scotland and Wales: Distribution of cases by level of study at end of course and by study pattern (degree only)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Scotland</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All cases</td>
<td>All cases</td>
</tr>
<tr>
<td>All cases</td>
<td></td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>9,809</td>
<td>34.4</td>
<td>950</td>
</tr>
<tr>
<td>Degree</td>
<td>18,694</td>
<td>65.6</td>
<td>11,607</td>
</tr>
<tr>
<td><strong>Degree cases, further detail:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous study for standard honours</td>
<td>10,751</td>
<td>37.7</td>
<td>7,846</td>
</tr>
<tr>
<td>As above, degree level all years</td>
<td>9,243</td>
<td>32.4</td>
<td>n/a</td>
</tr>
<tr>
<td>Shorter continuous study</td>
<td>393</td>
<td>1.1</td>
<td>0</td>
</tr>
<tr>
<td>Longer continuous study</td>
<td>5,453</td>
<td>19.1</td>
<td>3,509</td>
</tr>
<tr>
<td>Broken study</td>
<td>2,099</td>
<td>7.4</td>
<td>1,254</td>
</tr>
<tr>
<td>Some sub-degree study</td>
<td>3,816</td>
<td>13.4</td>
<td>n/a</td>
</tr>
<tr>
<td>Continuous study for standard honours with sub-degree study</td>
<td>1,508</td>
<td>5.3</td>
<td>n/a</td>
</tr>
<tr>
<td>Shorter continuous study with sub-degree study</td>
<td>43</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Longer continuous study with sub-degree study</td>
<td>1,726</td>
<td>6.1</td>
<td>9.2</td>
</tr>
<tr>
<td>Broken study with sub-degree study</td>
<td>539</td>
<td>18.9</td>
<td>2.9</td>
</tr>
</tbody>
</table>
Further investigation of the data, as shown at Table 5-1, showed that within the degree-level group the most common model was receipt of support continuously for the standard period normally assumed for an honours study in each nation (three years in Wales, four years in Scotland). Even so in Scotland only 57.5% of cases (N=10,751) completing at degree level had studied continuously for four years: fewer than half of degree leavers (49.4%, N=9,243) had studied for four years continuously with no years of sub-degree study. For Wales, 67.2% (N=7,844) of degree completers had studied continuously at degree level for three years (no information of years of sub-degree study was available).

In both nations a similar percentage of degree students had studied continuously for longer than the standard period (29.2% for Scotland, 30.2% for Wales). Additional years of study might be on a longer course or as repeat years: the data available on subject of study in each nation were too limited to be used to investigate that further. A smaller number of cases studying for longer might have been expected in Scotland, given that courses requiring an additional year in Wales (for example, languages) would be expected to fit within the standard four year model in Scotland.

In Scotland it was possible to identify those degree students who had had at least one year of fee support for sub-degree study (13.4%, N=3,816). Previous sub-degree support was not available in the Welsh data, though the much lower sub-degree numbers there overall would suggest any effects were unlikely to be on the same scale. Repeat years for articulating students appeared to contribute substantially to the number of Scottish degree students taking longer than four years.

A small proportion of Scottish degree students (1.4%, N=393) were present for only three years, less time than required for an honours degree: they may have left with no qualification, with a sub-degree qualification, obtained an ordinary degree, or have entered with some credit from a previous study and gained an honours degree. There is no way to distinguish between such cases from the data. Students qualifying with
ordinary degrees have been shown to be drawn disproportionately from more postcodes with the highest level of area disadvantage (CFA 2018).

A much larger proportion of Scottish degree cases (11.2%) than Welsh (2.6%) had years without support between entry and leaving. Sandwich years and years abroad still attract some fee support, albeit sometimes at a reduced level (SAAS 2020), and therefore a break in support mid-course is most likely to indicate absence from the course. It would be premature to draw any cross-national conclusions, as it was not feasible within the constraints of this research to investigate how far any technical difference in the way the data request was put into effect by each provider might account for any of the difference, or more generally to investigate this group further. The figures here however suggest an area deserving more attention, for Scotland and possibly also for Wales. Periods of absence may be theorised as likely to be due to ill-health, other changes in personal circumstances, changes of institution, and other study-related issues, among other possibilities. The volume of such cases reported for Scotland is consistent with initial data provided by SAAS, which implied that an unexpectedly high proportion of students altered their anticipated completion date once or more after starting their course.  

The association between level of study and income was tested in each nation and was significant in both. It was moderate for Scotland (Cramer’s V= 0.30*** ) and weak for Wales (Cramer’s V=0.16***) (Appendix C, Table C-1).

The average number of years students received support is shown in Table 5-2: the distribution of cases by years receiving support is included Appendix C (Table C-2). Although the degree figure for Scotland is a year more than for Wales, as would be predicted by the difference in length of honours courses, the overall national averages are almost identical, as the total for Scotland is more affected by the

23 The original data set provided data on every case in each year covered by the research which SAAS had recorded in that year as having an expected leaving date of 2016-17, whether or not they left in that year. The mismatch in coverage between this data set and cases in the final data set suggests that there is scope for further research into how students’ study plans change, that was beyond the scope of this research.
presence of sub-degree students on short courses. In Scotland 76.6% (N=7,514) of sub-degree students were only present for a single year (Appendix B, Table B-1), and the remainder for two. Welsh sub-degree students were more evenly distributed across one (45.8%) and two (40.7%) years, with 13.5% studying for longer: the Welsh sub-degree group is likely to contain students who studied on degree-level courses but completed with a sub-degree qualification, who were not separately identifiable in the Scottish degree-level group examined here. The association between income and years of study was significant but weak for Scotland and for Wales, for all students and for degree and sub-degree students (Appendix C, Table C-1). It was weaker within each level of study than for the student population as a whole in Scotland, weaker for students from Wales than those from Scotland, and within the Welsh group, weaker for degree students than sub-degree students. The differences were however modest.

Table 5.2 Scotland and Wales: Mean number of years students recorded as receiving support

<table>
<thead>
<tr>
<th></th>
<th>Scotland</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean years</td>
<td>S.D.</td>
</tr>
<tr>
<td>All</td>
<td>3.20</td>
<td>1.51</td>
</tr>
<tr>
<td>Degree</td>
<td>4.24</td>
<td>0.54</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>1.23</td>
<td>0.42</td>
</tr>
</tbody>
</table>

5.3 Socio-economic factors

5.3.1 Family income

Family income is the principal independent variable of interest for this research.

For Wales, 19.2% (N=2,441) of cases were provided without income data. These could be reliably treated as falling at an income over £50,000, as all cases up to this level were entitled to some non-repayable living cost grant, and all cases treated as nil income were recorded as such. For Scotland, the absence of income data was a larger limitation, affecting 63.5% of cases (N=18,014) covering cases both at lower

24 A range of further checks against variables confirmed that this group was strongly characterised by measures of relative advantage.
and higher incomes, due to some nil income cases being recorded as missing income. Information on levels of support received for means-tested elements of grant and loan was used to assign cases missing income data to an income band; 15.4% of cases were deemed nil income, mainly at sub-degree level, and 78.9% to be from families with incomes of £35,000 or more, mainly at degree level, with the remainder assigned to incomes in between. The distribution of cases assigned an income by this method is provided in Appendix C (Table C-3), with a further note setting out why this process led to a decision to group cases between £5,000 and £35,000 in three income bands of £10,000 for further analysis. These income bands are used for the comparisons below.

Table 5-3 and Table 5-4 below provide the total distribution of cases by income in each nation, together with the distribution by income within each level of study. The breadth of the highest income category in Scotland limits the information available and cases in the highest income bracket Scotland are therefore shown further subdivided to separate those cases in the highest SIMD Education quintile. Missing SIMD data affects the sub-degree group more, but the proportion of cases affected was judged not to affect the usefulness of this measure across the population as a whole or within the degree group. Table 5-3 shows that the 61.8% of Scottish cases from family incomes above £35,000 split between 33.9% from SIMD1 to 4 and 26.9% from SIMD5. Therefore, over two-fifths (43.5% of the group with incomes £35,000 or more, N =5,031) of all degree cases from the highest income group were also from the highest SIMD Education quintile.
Table 5-3 Scotland: Distribution of cases by family income, with composition of £35,000+ group by SIMD ED quintile shown further

<table>
<thead>
<tr>
<th>Family income</th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Nil</td>
<td>10.1</td>
<td>5.8</td>
<td>18.4</td>
</tr>
<tr>
<td>to £4,999</td>
<td>3.8</td>
<td>2.0</td>
<td>7.3</td>
</tr>
<tr>
<td>£5,000 to £14,999</td>
<td>14.5</td>
<td>12.8</td>
<td>17.8</td>
</tr>
<tr>
<td>£15,000 to £25,000</td>
<td>10.9</td>
<td>9.7</td>
<td>13.3</td>
</tr>
<tr>
<td>£25,000 to £35,000</td>
<td>7.8</td>
<td>7.9</td>
<td>7.5</td>
</tr>
<tr>
<td>£35,000+</td>
<td>52.8</td>
<td>61.8</td>
<td>35.7</td>
</tr>
<tr>
<td>All</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>N</td>
<td>28,503</td>
<td>18,694</td>
<td>9,809</td>
</tr>
<tr>
<td>£35,000+, SIMD ED 1-4</td>
<td>30.3</td>
<td>33.9</td>
<td>23.6</td>
</tr>
<tr>
<td>£35,000+, SIMD ED 5</td>
<td>20.2</td>
<td>26.9</td>
<td>7.3</td>
</tr>
<tr>
<td>£35,000+, SIMD ED missing</td>
<td>2.3</td>
<td>1.1</td>
<td>4.7</td>
</tr>
<tr>
<td>All £35,000+</td>
<td>52.8</td>
<td>61.8</td>
<td>35.7</td>
</tr>
</tbody>
</table>

Note: figures may not add to 100 due to rounding

Table 5-4 Wales: Distribution of cases by family income

<table>
<thead>
<tr>
<th>Family income</th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Nil</td>
<td>13.3</td>
<td>29.6</td>
<td>12.0</td>
</tr>
<tr>
<td>to £4,999</td>
<td>6.0</td>
<td>8.4</td>
<td>5.8</td>
</tr>
<tr>
<td>£5,000 to £14,999</td>
<td>15.8</td>
<td>17.1</td>
<td>15.6</td>
</tr>
<tr>
<td>£15,000 to £25,000</td>
<td>12.7</td>
<td>10.4</td>
<td>12.8</td>
</tr>
<tr>
<td>£25,000 to £35,000</td>
<td>10.8</td>
<td>6.4</td>
<td>11.1</td>
</tr>
<tr>
<td>£35,000 to £50,000</td>
<td>13.0</td>
<td>7.4</td>
<td>13.5</td>
</tr>
<tr>
<td>£50,000+</td>
<td>28.4</td>
<td>20.8</td>
<td>29.1</td>
</tr>
<tr>
<td>All</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>N</td>
<td>12,557</td>
<td>11,607</td>
<td>950</td>
</tr>
</tbody>
</table>

Note: figures may not add to 100 due to rounding

There was a substantial difference in the family income levels reported by students in each nation. For Wales 58.6% of cases fell below £35,000: for Scotland the comparable figure is 47.2%. Differences in the two income assessment systems do not readily explain this. Any Scottish students from incomes below £34,000 who were entitled to claim means-tested support but did not do so will have been included
in the higher income group. It is possible that the lowest grant rate in Scotland of £500, in particular, may have provided too little incentive for some families to engage with the system of mean-testing; however, the assumption made here is that any such cases will have been limited in number. The results appear most likely to reflect large population-wide differences in income between the two nations: in 2015, the GDP per capita of Scotland was £28,900 compared to £21,900 for Wales (figures in relative purchasing power) (Eurostat 2017). For degree level cases the difference was larger again, with 38.2% of such cases for Scotland falling below £35,000, compared to 71.9% for Wales. The larger proportion of lower-income students in Scotland on sub-degree courses explains this effect.

Table 5-5 reorders the data in the previous two tables to show how students within each income band were distributed by level of study: sub-degree study was more common at all incomes in Scotland, but the differences were also larger between income bands; 37% of the Scottish nil income students completed at degree level, compared to 76% of those from family incomes of £35,000 or more. For Wales, 83% of the nil income group completed at degree level compared to 95% in the highest income group.
Table 5-5 Scotland and Wales: distribution of cases by family income and level of study

<table>
<thead>
<tr>
<th></th>
<th>Scotland</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sub-degree</td>
<td>Degree</td>
</tr>
<tr>
<td>Nil</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>£1 to £4,999</td>
<td>66%</td>
<td>34%</td>
</tr>
<tr>
<td>£5,000 to £14,999</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>£15,000 to £24,999</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>£25,000 to £34,999</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>£35,000+</td>
<td>23%</td>
<td>76%</td>
</tr>
<tr>
<td>£35,000 to £49,999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>£50,000+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>£35,000+ Not SIMD5</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>£35,000+ SIMD5</td>
<td>13%</td>
<td>88%</td>
</tr>
</tbody>
</table>

Note: figures may not add to 100 due to rounding

5.3.2 Indices of Multiple Deprivation (IMD)

The distribution of cases by WIMD and SIMD Education quintile is shown in the Appendix C (Table C-5; Note 4 for comparisons with other data). IMDs are relative measures within each nation, and therefore comparisons across the nations need to be treated cautiously. Students from Scotland at degree level were somewhat more likely than those from Wales to be drawn from higher IMD Education quintiles, particularly those completing at degree level: for Scotland 57.5% of degree cases came from the least disadvantaged 40% of areas, (34.2% from the highest quintile) compared to 52.3% for Wales (29.3% in the highest quintile).

The association between income and IMD Education quintile was significant but weak and similar in both nations, for degree and sub-degree students (Appendix C, Table C-1). The association with the overall IMD quintile for Wales was the same as that for the education quintile. The absence of a stronger relationship suggested that in both nations the IMD quintiles, both for education and for Wales overall, were
measuring factors distinct from income and not merely duplicating this. The use of SIMD Education quintile to identify a relatively advantaged group within the Scottish highest income band was retained in the light of this finding, as the best available measure, but its limitations for this purpose should be noted.

5.4 Living arrangements

As discussed at Section 4.5.2, a direct measure of living arrangements was available for students from Wales, but for those from Scotland a likelihood of living in the parental home or away from that could only be inferred from data on home address, place of study and dependency status.

Table 5-6 shows the distribution of students for Scotland and Wales by living arrangements by the best available measure, for all students and then for young students only, for all, degree and sub-degree students. For Wales, 17.6% of degree students lived at home compared to an estimated 39.9% for Scotland. Sub-degree students were more likely to live at home in both nations. The most recent UK-wide comprehensive analysis of living arrangements, Donnelly and Gamsu (2018), obtained a closely similar result for Wales: their results also suggested higher rates of living at home in Scotland than Wales, but with a smaller difference than shown here (Appendix C, Note 5) The estimate made here for Scotland may therefore overstate rates of living at home.

---

25 The HESA data provided to them however reported no local commuting students at the University of Strathclyde, which is not a plausible result: this is likely to mean that any estimate of living at home in Scotland drawn from their data will give a figures several percentage points too low, and that this is likely to account for some but not all of the gap with the figures here.
Table 5-6 Scotland and Wales: Living arrangements in first year, all students and young students only (row percentages)

<table>
<thead>
<tr>
<th>Living arrangement</th>
<th>Likelihood of living at home</th>
<th>All students</th>
<th>Scotland</th>
<th>Wales</th>
<th>Young students only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Away (London)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Away</td>
<td>43.9</td>
<td>7.9</td>
<td>48.2</td>
<td>28,503</td>
<td></td>
</tr>
<tr>
<td>Away (London)</td>
<td>49.0</td>
<td>11.1</td>
<td>39.9</td>
<td>18,694</td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>34.2</td>
<td>1.8</td>
<td>63.9</td>
<td>9,809</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>43.9</td>
<td>7.9</td>
<td>48.2</td>
<td>28,503</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>49.0</td>
<td>11.1</td>
<td>39.9</td>
<td>18,694</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>34.2</td>
<td>1.8</td>
<td>63.9</td>
<td>9,809</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scotland</th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>76.7</td>
<td>3.9</td>
<td>19.3</td>
</tr>
<tr>
<td>Degree</td>
<td>78.3</td>
<td>4.2</td>
<td>17.6</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>57.9</td>
<td>0.9</td>
<td>41.2</td>
</tr>
<tr>
<td>Wales</td>
<td>All</td>
<td>Degree</td>
<td>Sub-degree</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>74.5</td>
<td>4.2</td>
<td>21.2</td>
</tr>
<tr>
<td>Degree</td>
<td>76.7</td>
<td>4.4</td>
<td>18.9</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>41.5</td>
<td>1.3</td>
<td>57.2</td>
</tr>
</tbody>
</table>

Note: figures may not add to 100 due to rounding

The Scottish variable included a general assumption about independent students (low likelihood of living at home) and young students attending college (high likelihood living at home). The assumptions made in constructing the Scottish variable about these students were therefore compared with the Welsh data. Of the Welsh degree students classified as independent, 2.9% (N=29) and of sub-degree students, 0.5% (N=2) were classed as living at home. At degree level, 68% (N=94) of young college students lived at home and 76% (N=122) did so at sub-degree level. Allowing for existing evidence of greater general mobility in the Welsh student population, the general assumptions made in constructing the Scottish variable appeared reasonable for independent students, but more likely to over-estimate levels of living at home at sub-degree level.
Even allowing for some possible over-estimation of living at home in Scotland, higher rates of living away appear likely to hold for Welsh students, and for degree students compared to sub-degree students in both nations. It was unexpected that removing independent students had little effect on the degree-level figures for Wales, given their concentration in the group living away: their relatively low share of the group accounts for this. The removal of this group had more effect at sub-degree level in both nations, due to the larger number of independent students in that group.

For degree students, the association between living arrangements and income was weak in both nations. For Welsh sub-degree students the association was moderate (Cramer’s $V=0.38^{***}$ including independent students, $0.22^{***}$ without these) (Appendix C, Table C-1): students were more likely to combine sub-degree study and living at home at lower incomes. The association with income for Scottish sub-degree students was strong (Cramer’s $V=0.51^{***}$ with independent students, $0.54^{***}$ without): further examination showed this group was split largely between young students with a high predicted likelihood of living at home and older ones with a low one, which in turn reflected general assumptions made in the variable about both groups.

The data were investigated for any relationship between the number of years young degree students were present and their living arrangements in their first year, to examine whether living at home was also associated with studying for a shorter period for this group, as a combined strategy for reducing costs. There was no evidence of any relationship in Scotland, where the mean number of years present was the same (4.22 years) for those with low and high likelihoods of living at home, and only marginally higher for those with a medium likelihood (4.25 years): for Wales, there was a modest difference between those students living at home (3.25 years) and away (3.39 years).

5.4.1 Living arrangements by region

The opportunity was taken to examine the variation in living arrangements by region. The results are shown in Appendix C (Figures C-1 and C-2).
For Wales the percentage of students living away from the parental home was high in all regions for degree students, ranging from 77.7% (Urban South area) to 89.6% (Rural area). The results were similar for the Rural and North East and Border areas. This is consistent with the assumption made for Scotland that greater local supply of HE and transport links would be associated with higher levels of living at home. At sub-degree level, rates of living away were lower, but more than half of students did so in each case, from 56.0% in the South Urban area to 66.1% in the Rural area.

Among all Scottish students, students from the Urban West were least expected to live away, with little difference by level of study, around one-third of students from this area were expected to have a low likelihood of living in the parental home. Those most expected to live away were degree students from the Outer Rural area (81.3%), a similar result to the rural area for Wales. The assumptions included in the construction of the Scottish variable have to be taken into account in interpreting these results. The sub-degree results vary less and will mainly reflect the age balance in that population, due the assumptions made.

5.5 **Demographic factors**

5.5.1 **Sex**

The distribution of students by sex in each nation is shown in Table 5-7.

*Table 5-7 Scotland and Wales: distribution of students by sex*

<table>
<thead>
<tr>
<th></th>
<th>Scotland</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>All</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Degree</td>
<td>57.5</td>
<td>42.5</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>61.0</td>
<td>39.0</td>
</tr>
</tbody>
</table>
There was little variation by sex between the two populations at the total and degree level: female students were the majority in both nations, although the difference was small for Welsh sub-degree students. There was a weak relationship between sex and family income in both nations, which was slightly stronger for sub-degree than for degree students, to a similar extent in both cases (Appendix C, Table C-1).

Female students accounted for 56% of all Scottish students supported in 2016-17 through the main scheme of support, in all years, as reported by SAAS (SAAS, 2017). The SLC does not publish data on sex. HESA (2017) figures give a higher proportion of female degree level qualifiers in the relevant years: 59% for Scottish students, 60% for Wales. The exclusion of nursing and midwifery students from the study populations is the likeliest explanation for this. Separate data published by SAAS shows that 91.5% of students on its nursing and midwifery scheme in 2016-17 were female (SAAS, 2017).

5.5.2 Independent status

The distribution of cases according the best available measure in each nation for being an independent (mature) student is shown in Table 5-8. As discussed at section 4.5.1, the Scottish measure was expected to exclude some types of case included in the Welsh one, and to include some which the Welsh one excluded: the term “independent student” as used here therefore covers two groups with overlapping but non-identical characteristics.

Although the two populations cannot be compared directly, in both such cases were more prevalent at sub-degree level. This led to a higher proportion of students in Scotland who would not be treated as financially dependent on their parents, and therefore would be expected to rely more on public support, albeit for a shorter period.
Table 5-8  Scotland and Wales: independent students as a percentage of all cases

<table>
<thead>
<tr>
<th></th>
<th>Scotland</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Over 24 in final year</td>
<td>Independent in first year</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>All</td>
<td>16.7</td>
<td>4,758</td>
</tr>
<tr>
<td>Degree</td>
<td>11.5</td>
<td>2,142</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>26.7</td>
<td>2,615</td>
</tr>
</tbody>
</table>

The relationship between being over 24 at the end of the course and family income as assessed at entrance was borderline between relatively strong and strong for students in Scotland as a whole. It was slightly stronger for degree students (Cramer’s V=0.64***) than for sub-degree students (Cramer’s V =0.53***) (Appendix C, Table C-1). The relationship between income and independent status at the start of the course for Wales was similar to Scotland for the student population as a whole but in contrast to Scotland stronger for sub-degree students (Cramer’s V= 0.61***) than degree ones (Cramer’s V=0.53***) (Appendix C, Table C-1)

To examine this relationship further, Figure 5-1 (supporting data in Appendix C, Table C-6) shows the distribution of independent students in each nation by income. Independent students were concentrated in the lowest income groups in both nations, for degree and sub-degree students. The figures appeared comparable with data held by SAAS: there was not a straightforward comparable data set for Wales (Appendix C, Note 6).
Students identified as independent for this research were concentrated in the nil income group; in both nations they also constituted the majority of cases in that group (Scotland 77.7%, Wales 75.5%) (comparison with Tables 5-3 and 5-4). The 16% of these students for Scotland who were recorded as in the highest income group (N=722) appeared likely to include students who had reached the age of 25 after entry into HE, as income and independent status were measured at different points; the group also included sub-degree students entering for short courses, for whom the measure will have recorded partners’ income falling into this range.
5.5.3 Regional variation

In both nations the majority of students were drawn from what might be broadly described as city regions, within the travel to work area of a city with choice of types of higher education provider, reflecting the general pattern of population distribution. The distribution of cases by region is shown in Appendix C (Tables C-7 and C-8). There were a large minority (12.4%) of missing cases at sub-degree level for Scotland (1.6% degree level, none for Wales), which appeared likely to be mainly from the Aberdeen and Edinburgh areas (Appendix C, Note 7).

The strength of association between income and region was weak, for degree and sub-degree students in both nations (Appendix C, Table C-1). Further examination nevertheless showed substantial differences within Scotland by region in the proportion of students from different levels of family income (Appendix C, Table C-10); 74.4% of cases from the Aberdeen city region were from families with incomes of £35,000 or more compared to 44.0% in Ayrshire. For students from Wales (Appendix C, Table C-11), the income differences between the areas examined were smaller than for those from Scotland. The lower number of groups used for Wales would however be expected to reduce differences: the degree of variation between smaller areas cannot be inferred from these results.

5.6 Further study-related factors

5.6.1 Study in and out of country (Wales only)

Whether Welsh students studied in Wales or England could in theory be derived from the data. However, relatively few cases were known to be at English institutions: 58.7% of cases were at an institution in Wales, and 16.5% at one in England, with a further 24.8% suppressed. Of the suppressed cases, 94.5% were at degree level and 95.4% lived away from home. As reported by Whittaker (2017), in 2012-13 41.8% of Welsh domiciled young full-time undergraduates entered higher education in England. From the data on living arrangements 12.2% of the suppressed cases (N=380, 2.7% of all cases) could be identified as studying in London, which attracted a higher rate
of loan support. As outward migration is more concentrated in more advantaged groups (Whittaker 2017) study in London will have increased average borrowing in the higher income groups for Wales. No further examination was done by nation of study, given the limitations of the data.

5.6.2 Institution type

As institutional data were suppressed for 24.8% of Welsh cases, the scope for cross-national comparison was limited. The distribution of students in each nation by institution type is shown in Table 5-10 and 5-11 below.

Table 5-9 Scotland: Distribution of cases by institution type

<table>
<thead>
<tr>
<th>Family income</th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Ancient</td>
<td>19.0</td>
<td>28.9</td>
<td>-</td>
</tr>
<tr>
<td>Pre-92</td>
<td>20.6</td>
<td>31.5</td>
<td>-</td>
</tr>
<tr>
<td>Post-92</td>
<td>28.9</td>
<td>38.4</td>
<td>11.0</td>
</tr>
<tr>
<td>College</td>
<td>27.9</td>
<td>0.8</td>
<td>79.4</td>
</tr>
<tr>
<td>Other</td>
<td>3.6</td>
<td>0.8</td>
<td>9.5</td>
</tr>
<tr>
<td>All</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

N 28,503 18,694 9,809

Note: figures may not add to 100 due to rounding

Table 5-10 Wales: Distribution of cases by institution type

<table>
<thead>
<tr>
<th>Family income</th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Golden Triangle</td>
<td>0.3</td>
<td>0.3</td>
<td>-</td>
</tr>
<tr>
<td>Other Pre-92</td>
<td>35.0</td>
<td>37.1</td>
<td>9.3</td>
</tr>
<tr>
<td>Post-92</td>
<td>35.1</td>
<td>34.5</td>
<td>42.1</td>
</tr>
<tr>
<td>College</td>
<td>3.9</td>
<td>2.1</td>
<td>25.3</td>
</tr>
<tr>
<td>Other</td>
<td>1.0</td>
<td>0.3</td>
<td>8.4</td>
</tr>
<tr>
<td>Suppressed</td>
<td>24.8</td>
<td>25.6</td>
<td>14.9</td>
</tr>
<tr>
<td>All</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

N 12,557 11,607 950

Note: figures may not add to 100 due to rounding

The finding that Scottish students were more likely to attend a college appears reliable, given the available data on sub-degree study (SFC 2019) and that
suppressed cases from Wales were numerically mostly at degree level. At degree level Scottish students appeared to be more concentrated in more selective institutions, consistent with the comparative analysis in Hunter Blackburn et al. (2016) of Scottish and English data, although, in the absence of more complete data for Wales, this comparison has to be made cautiously. Further examination of the data showed that the income and WIMD Education quintile profile of the suppressed cases most closely resembled that of those in the pre-92 group, with a somewhat heavier concentration in the highest income group and highest IMD quintile. The small number of Golden Triangle cases (0.3%, N=33) suggests that this category appears likely to have been affected by missing cases. Sub-degree students from Wales were more likely to attend a post-92 institution (49.5% of known cases) than a college (29.7% of known cases). Although most Scottish sub-degree students attended a college (79.4%), a substantial minority were at a post-1992 HEI (11.0%) or other institutions (9.5%).

A weak association was found in both nations between institution type and income for all, degree and sub-degree students (Appendix C, Table C-1). For Scotland the effect across all students was slightly larger than for each level separately, as would be expected from the association already seen between income and level of study. Appendix C, Note 8 notes the limited availability of comparable data.

5.6.3 Field of study

Information on field of study was limited for Scottish students to whether or not a student was studying medicine, dentistry or veterinary science: 5.5% of degree cases (N=646) fell into this group. 78.0% came from incomes over £35,000, compared to 61.8% in total degree-level student population, consistent with other findings that students on these courses are disproportionately drawn from relatively advantaged backgrounds.

For cases from Wales, 24.8% of cases were also suppressed for institution were suppressed for subject, and the data were therefore incomplete and most likely to be so for students studying outside Wales. The distribution of cases once the groupings
discussed at 4.5.2 was applied is shown in Appendix C (Table C-13). At degree level “Other” subjects accounted for just under half of known cases (46.2%), STEM around one-third (35.2%) and LEM around one fifth (18.4%), with modest differences for sub-degree students. The association with income was tested and was weak with and without the inclusion of the suppressed cases (Appendix C, Table C-1).

5.7 Conclusion

Differences between the study populations in each nation would be expected to affect their use of student funding, and therefore to be relevant to any cross-national comparison of outcomes between the two systems, as well as creating different contexts for policy making in the two nations.

Sub-degree students, who will typically require fewer years of support, were drawn disproportionately from lower incomes than degree students and made up a substantially larger proportion of the Scottish cases. Previous research has shown that in Scotland being on a sub-degree level course is of itself associated with being less likely to take out a student loan (Hunter Blackburn 2016a). While the average period of degree study in Scotland was longer, the greater uptake of sub-degree courses led to the average length of time spent in receipt of student support being similar across the two nations for all undergraduate study. Results which combine sub-degree and degree students would therefore be expected to obscure substantial differences between students studying at different levels, in their needs, characteristics and their behaviours, and more so for Scotland than Wales. The analysis in the following chapters provides results separating students by level of study, as well as by country, explores the differences between these groups and considers how this affects cross-national comparisons.

The Scottish student population as a whole was drawn from higher income families than was the case for Wales, and would therefore be expected to have had greater access to private resources than the Welsh cohort. A limitation of the data is being unable to differentiate further within the £35,000 or more group for Scotland. At the same time, the greater likelihood of living at home in Scotland, including for degree
students, would be expected to have led to lower annual costs on average. At first sight, therefore, the Scottish students studied here as a group would be expected to have had less need of support towards living costs and therefore to have made less use of student loans, than their counterparts from Wales. In the absence of any direct measure of living at home in the Scottish data, limitations on findings on that point were however unavoidable.

Examination of results below national level suggests that effects related to income and living patterns, and differences due to level of study, varied by area to a greater extent for Scotland than Wales, although the degree of variation for Wales on those aspects may have been greater than the results here suggest. Rates of living away for the most rural area in Scotland were similar to those for the rural area in Wales. Substantial differences between the urban west area in Scotland and other city regions, including Edinburgh, and between all the more urban parts of Scotland and urban south Wales, indicate that factors other proximity to institutions were influential, within Scotland and between the two nations.

Differences between the student populations had implications for the cost of policy decisions. All other things being equal, the lower income and more likely to live away Welsh student population would have been more expensive to support. As shown in chapter 2, the approach taken in Wales further involved more targeting of support at lower incomes. Policy in Wales therefore required a larger financial commitment relative to Scotland than is apparent from the differences in the design of the systems alone.

Chapter 6 builds on this introductory analysis, and begins to answer the research questions directly, by considering and comparing how funding for the different elements of student support was distributed in practice. It starts by looking at the relationship between income and the distribution of student loans, before comparing this with the distribution of non-repayable funding.
Chapter 6  The Distribution of Student Funding In Practice

6.1  Introduction

This chapter considers how entitlements to student funding on paper were turned into actual payments, giving most attention to student loans. This chapter therefore uses the administrative data to examine RQ1:

How is total student loan debt distributed relative to students’ initial economic background, as known through reported family income at the point of participation in HE, in the systems in Wales and Scotland, and how does this compare with the distribution of non-repayable benefits in each?

The research question was prompted by evidence from data already available that student debt for Scotland was falling more heavily on those from lower incomes than higher ones. Two mechanisms causing this effect were evident from the published Scottish data: those from higher incomes appeared less likely to borrow and formal loan entitlements were higher at lower incomes. The structure of loan entitlements in each nation was discussed in Chapter 2, which showed that an opposite structure of loan entitlements applied under the Welsh system, where loan entitlements increased with income.

This chapter turns to the outcome in practice of the funding rules applied in each nation. The first section compares average student borrowing by nation, level of study and, for Wales, loan type, as context for examining the distribution of borrowing in each group and for each type of loan. This shows a large difference in the dispersion of borrowing across nations, levels and types.

The distribution of student borrowing for Scotland and Wales is then compared by income, separating results by level of study, to answer the first part of RQ1. From this initial analysis of student borrowing, it emerges as that how far students from different incomes made use of the student loan scheme plays a critical role in differences between the two nations; this point is addressed in the following chapter. The distribution of non-repayable funding by income is then considered, to complete the response to the question. To bring these results together, concentration curves
and indices, as discussed at section 4.6.3, are introduced, as a means of summarising and comparing the distribution of resources by income.

6.2 **Scotland and Wales: total borrowing by value**

As set out in section 2.4, the Scottish and Welsh student funding systems both relied substantially on student loans to support living costs and, for Wales only, fees. Loan entitlements in both nations varied by income, dependency status (Scotland only) and living location (Wales only). Loan entitlements under the Scottish system were relatively flat-rate by income, and fell as income rose; for Wales entitlements for fee loans were flat-rate, but for living costs loan entitlements varied more according to income and tended to rise as income rose.

The focus of this research is the distributional character of the two systems, not the overall amounts of borrowing in each. Where figures are provided for the total value of borrowing, comparisons of these between the two nations are limited by the difference in the years students left. The aggregate published data from the SLC for the average debt of those entering repayment each year suggest that had data from the same year been used for both, differences in absolute levels of borrowing between Scotland and Wales would have been greater: see Table 6-1. The comparisons of the absolute value of borrowing below are therefore most useful in showing how the scale of difference between the two nations changes, depending on which students are considered, and the broad relativities in borrowing; they should be used more cautiously to make comparisons about the absolute level of borrowing by students in each nation.
Table 6-1 Scotland and Wales: Average debt on entering repayment (figures in bold are the relevant years for comparison with the leaver cohorts studied)

<table>
<thead>
<tr>
<th>Entering repayment</th>
<th>1 April 2017</th>
<th>1 April 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final academic year</td>
<td>2015-16</td>
<td>2016-17</td>
</tr>
<tr>
<td>Scotland</td>
<td>£11,650</td>
<td>£13,230</td>
</tr>
<tr>
<td>Wales</td>
<td>£19,280</td>
<td>£21,520</td>
</tr>
</tbody>
</table>


As a first step, to establish the context for comparing borrowing by income across the nations and in order to compare the research data with existing published figures, total average borrowing and its distribution for all, degree and sub-degree students was compared across the two cohorts. The full figures for median and mean borrowing, with measures of dispersion are provided in Appendix D (Table D-1). Borrowing for fees and living costs were also considered separately for Wales.

Figure 6-1 shows mean and median total loan across the different combinations of nation, level of study and loan type, with the lower and upper quartile boundaries, illustrating how the overall figures for Scotland are more affected by the grouping together of students at different levels, the figures for Wales were more closely gathered around the median and, for Wales, fee loan showed very little variation, particularly at degree level. The lower quartile boundary was further from the median at both levels of study for Scotland than for Wales, compared to the upper quartile boundary: it fell to zero for Scottish sub-degree students, indicative of a large proportion of relatively low or nil borrowers.
Median borrowing for the Welsh cohort was over twice that for Scottish cases. A similar scale of effect applied at the mean, which for the Welsh cohort was £21,599 (+/- £6,428) and £11,416 (+/- £8,868) for Scottish students. Within each level of study, however, median and mean values were closer: for degree students, mean borrowing was £22,583 (+/- £5,411) for Wales and £14,900 (+/- £8,752) for Scotland. There was also evidence of a substantial overlap in levels of borrowing between the two cohorts: both for degree and sub-degree students there was a difference of less than £1,000 in the value of the Scottish median and the Welsh lower quartile.
boundary. The comparison also shows that Welsh student borrowing fell evenly between fees and living costs. The median and mean values were close for degree and sub-degree students. At degree level, the mean value for living cost loan was £11,077 (+/- £4,237) and for fee loan £11,506 (+/-2,265).

Although the Welsh cases were more tightly grouped around the median, they were also more widely dispersed: the highest figure for borrowing for Wales was £46,622, compared to £33,895 for Scotland (not shown). A small number of Welsh cases were classifiable as outliers26 at each level of study: no such cases were observed for Scotland. Further investigation of these cases showed that outlying low values (N=167, 1.4% of degree cases; no sub-degree cases) were most likely to be due to the absence of fee loan: 81.0% had none. The highest borrowers (N=169, 1.5% degree cases; N=26, 2.7% sub-degree cases) displayed no clear pattern, showing combinations of study on longer courses, courses at private institutions charging higher fees, study in London and living cost loans well above the usual rate, which were available to certain small numbers of students in special circumstances, including those on Special Support Grant. The wider inter-quartile range partly accounts for the lack of Scottish outliers, but the Welsh system also had a wider variety of entitlements, so that a more uniform effect across the majority of students was accompanied by greater variation at the margins.

The same figures were calculated only for those students who made any use of the student loan scheme during their studies. Considering borrowers only had little effect on the Welsh figures; (0.7%, N=79) degree and 0.9% (N=9) sub-degree students were removed as non-borrowers throughout their course. This is a much lower figure for non-borrowing than the 15% estimated by Britton, Shephard and Vignoles (2019) for English leavers in the period between 1998 to 2011, although how that figure was derived is unclear. It is also well below the levels reported by De Gayardon et al. (2019) for students in England in 2010, although this relates only to borrowing among young students by age 20; 11% of women and 8% of men had no student

26 Outliers were identified in SPSS, as those cases falling outside the interquartile range by more than 1.5 times its value, assessed separately for degree and sub-degree cases.
loan at that point. The high level of loan take-up found here for Wales is however consistent with SLC estimates of maintenance loan take-up by Welsh students, discussed at further 7.2.3 (no equivalent estimate is available for England). The Scottish figures were closer to previous estimates for England: 21.3% (N=6.074) of all students (15.9% degree, 31.6% sub-degree) were excluded as having no debt at completion. In this research, I assume that the non-means-tested grants for fees available for students from Scotland and Wales provided a strong incentive to engage with the student funding system in both nation and therefore that providing robust population-wide figures for non-borrowing across the whole course of study for students of all ages in two U.K. student populations is a new contribution of this research.

A comparison between the figures for the whole population and for borrowers only showed that non-borrowing played an important role in reducing overall student debt for Scotland, but not for Wales, a point explored further in the following chapter. The effect of removing borrowers was limited for Wales: median, mean and quartile boundary values increased by no more than £155 (0 to 3%). The median for Scottish students rose by £4,711 (47.1%). The previous variation at sub-degree level for Scotland was shown to be almost wholly due to non-borrowers. For Scottish degree students, the median was unchanged, but the mean increased by £2,973 (18.9%) and the interquartile range reduced by £3,325 (28.1%).

The figures for borrowers only are the most comparable with the figures published by the SLC on average debt at the point students enter repayment (shown at Table 6-1 above). The average total loan for borrowers in the research was above the relevant SLC published figure in both nations. For Wales the mean loan in the research data of £21,752 was £2,472 above that of the published average. For Scotland, the difference was smaller: the mean of £14,507 for total borrowing in the research was £1,277 above that of the SLC’s published figure. Relative to the figures shown above, those published by the SLC will have been increased by the inclusion of interest, but decreased by voluntary early repayment, and the inclusion of students with lower average borrowing (degree-level students present for less than 3 years, including
those attending only for single year teacher training courses, and of lower-borrowing cases which completed their undergraduate study some years earlier and who had deferred liability through further study). There was limited scope to explore these differences further within the constraints of this research. Further data provided by the SLC showed that 40.1% (N=5,081) of Welsh students had benefitted from the Welsh partial cancellation scheme (see section 2.4.2), and therefore had already made a first repayment. At the average level, early repayment plus partial cancellation appeared likely to have off-set the effect of interest charges during study at the point Welsh students entered repayment, but to have had limited further effect.27

6.3 Distribution of total borrowing by family income

To address the first part of RQ1, which asks how student loan debt was distributed by family income under the Welsh and Scottish systems, the distribution of borrowing by income group in the two nations for all, degree and sub-degree students was examined: full figures for the median and lower and upper quartile boundaries, and the mean and standard deviation, for each income group, are provided in Appendix D (Table D-2).

The results at the mean are summarised at Figure 6-2, with the highest and lowest value in each group provided. Those for the median and the distribution around it are shown for each nation and level of study in Figures 6-3 to 6-8. The results at the mean provide a clear representation of the differences in the patterns of borrowing by income across the nations at each level of study. The distribution around the median illustrates the differences in the dispersion of borrowing within each income group.

27 The outstanding balance of debt recorded against each account at the point of entering repayment was also provided by the SLC as an additional variable for Welsh students. Its mean value was £1,744 lower than the mean of the value of total borrowing for these cases. That difference should represent the net effect of interest accrued, the face value of voluntary repayments and the partial cancellation allowance, worth £1,500 in most cases. Calculations by the author suggest that interest accrued on the average level of borrowing by students from Wales at the point of entering repayment would be expected to be around £3,000 and therefore the implied face value of early repayments made by students was below £500.
Figure 6-2 Scotland and Wales: all, degree and sub-degree cases: mean total nominal borrowing by income (with lowest and highest values in each group)

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<th>Total loan (£s)</th>
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<th>Wales</th>
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<td>19650</td>
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<table>
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<table>
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<th>Wales</th>
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Figure 6-3 Scotland: all cases (N=28,503), distribution of total loan by family income

Figure 6-4 Scotland: degree cases (N=18,694), distribution of total loan by family income

Figure 6-5 Scotland: sub-degree cases (N=9,809), distribution of total loan by family income
Figure 6-6 Wales: all cases (N=12,557), distribution of total loan by family income

Figure 6-7 Wales: degree cases (N=11,607), distribution of total loan by family income

Figure 6-8 Wales: sub-degree cases (N=950), distribution of total loan by family income
For Scotland, considering degree and sub-degree cases together showed a wide dispersion and a mixed pattern of borrowing by income; the highest median total loan was for the groups from families with incomes between £5,000 and £35,000, comprising largely younger lower income students, but the highest mean value was in the nil income group, principally comprising independent students. Separating cases by level of study produced a clearer pattern of borrowing by income, in line with the loan entitlements available to students, falling as income rose within each level; the nil income group had the highest median and mean total loan within each level of study and the group with incomes of £35,000 and above the lowest. Figures 6-3 to 6-5 show that dispersion increased as income rose; given the flat rate allowances in the Scottish system (see section 2.4.1) this was strongly suggestive of greater variation in loan take-up as family income increased. Splitting the high income group by whether or not cases were in the highest SIMD Education quintile showed that students in this group from the least disadvantaged quintile had a slightly higher average loan (£10,205 +/- £7,983) compared to the rest (£9,768 +/- £8,033). These students were more likely to be studying at degree level; at that level, among those in the highest income band and also in the highest SIMD Education quintile borrowed an average of £11,174 (+/- £7,967) compared to £12,595 (+/- £7,795) for the remaining highest income cases. The weak association between SIMD Education quintile and income makes it likely however that this separation does not reflect the full range of difference by income within the higher income group.

The Welsh overall figure was less affected by combining students from each level of study. The pattern of borrowing by income showed the average value rising as income increased, subject to the highest income group borrowing less on average the next nearest, reflecting loan entitlements at each level of income (see section 2.4.2). Among students as a whole the group with incomes above £50,000 therefore borrowed less on average than those in the group just below (£23,050 +/- £5,751 compared to £25,378 +/- £6,028) and a similar amount to those with incomes between £25,000 and £34,999 (who took on average £23,339 +/- £5,786); the same pattern was seen in the degree level group. The pattern by income was less clear in
the sub-degree group: in this those from the highest incomes had mean borrowing higher than those with incomes below £25,000 but the lowest median borrowing. Within each level of study the nil income group borrowed more than other low income groups, likely to reflect the additional level of loan available to those entitled to receive their grant as Special Support Grant.

In both nations median borrowing followed the pattern that would be predicted by the structure of formal entitlements. This was also true for the mean for students from Wales. For Scotland a broader dispersion for degree students as income rose and among sub-degree students more generally, led to a different distribution to the mean, explicable by less than full take-up of loans being most marked among students other than lower income degree students.

Across the two cohorts total mean levels of borrowing were most similar at incomes below £25,000 at degree level, with a distribution between £18,749 and £21,695 for Wales, and £18,516 and £25,460 for Scotland. The nil income group had the highest average figure in both these ranges, and their borrowing was therefore highest in absolute terms in the Scottish cohort. Allowing for the limitations of the data as a source of absolute borrowing comparisons, it nevertheless seems reasonable to conclude that borrowing levels for nil income degree students in Scotland were at minimum comparable with those from Wales, and more generally that absolute borrowing levels for degree students from lower incomes was relatively similar in the two nations. Differences were largest at higher incomes.

6.4 The distribution of loan by income relative to equality

The results presented in section 6.3 respond to first part of RQ1 and show a clear difference between Scotland and Wales both in the direction of the skew of lending to students by income and the degree of dispersion of amounts borrowed within income groups.

To respond to the second part of RQ1 requires the findings for borrowing to be compared directly with those for non-repayable funding. For this purpose,
representing the same data on loans as concentration curves and indices provides a single directly comparable measure of distributional effects across the income range, bringing the results back to the question of what constitutes distributional equity across a population in this context. Non-repayable funding is then considered on the same terms, and the distribution of repayable and non-repayable forms of funding compared, to assess whether these resources were lower- or higher-income skewed, or neither, compared to a notional equal distribution per head.

6.4.1 Using the research data to calculate concentration curves and indices

Section 4.6.3 provided the theory behind concentration curves and indices, explaining them as a development of the Lorenz curve and the Gini coefficient, which describe how far the distribution of a commodity departs from an equal share per head by income, and whether the distribution is “pro rich” or “pro poor”, or neither. These are technical not normative terms that describe which way a distribution skews: a pro rich distribution may advantage or disadvantage those at higher incomes, depending on whether the distribution is of a cost or a benefit. To avoid “pro rich” and “pro poor” being misinterpreted as normative terms, and as they are not terms used in student funding literature, in the discussion below I use “higher-income skewed” and “lower-income skewed” in their place. Applying this approach to the research data raised several technical points.

The calculation of these measures in theory requires every member of a population to be individually ranked in order by income. In practice it is common to calculate concentration indices (CIs) and concentration curves using grouped data. For such data, conindex, the programme used for this research, takes the approach of calculating the group mean\(^{28}\) and fractional ranks for members of the group, weighted for the size of the group, so that no judgement is made about how members of group

\(^{28}\) In this case, the Scottish income groups above nil had no mean income value, but assigning each group a number in sequence had the same effect in of ordering the cases: the absolute value of the mean of each group is not relevant to the sequencing of cases. A comparison of the ungrouped results for Wales and results using the same approach to grouping confirmed this.
rank relative to one another or about variation within the group. This approach also deals with tied observations.

Grouping income data will tend to underestimate the degree of divergence from equality, by taking no account of variation within groups (Wodon and Yitzhaki 2002, Clarke and Van Oorti 2009). Results derived from group means are improved by increasing the number of groups (Lyon et al. 2016). For Wales individual income figures available for 80.8% of cases were used. Cases with no income data provided were placed on a specific income point: the median of all those cases (5% of the total) which had declared an income over £50,000 was used (£67,000). Results for Scotland could only be obtained by using grouped income data, including one very large higher income group. For this purpose the seven Scottish income groups were used, which placed those in the highest income group and also in the highest SIMD education in a new top band. Ranking all the cases in the higher income group by SIMD Education quintile was considered but rejected, on the grounds that a stronger, more general assumption about the relationship between income and SIMD within the group was less justifiable than a more simple assumption than an association between being from the least disadvantaged quintile and being on average from a higher income household within the group.

The sensitivity of the results for the distribution of student loan to using different income groups for Wales was examined, to establish if the grouped data for Scotland were suitable for use for calculating CIs and concentration curves. The results for using 6 and 7 income groups for Scotland were also compared. The results for the sensitivity tests are reported in Appendix D (Table D-4). The results for Wales for the ungrouped data and seven groups were close to identical (to .001 decimal places). The six group model showed only slightly larger differences. The differences between the results for the 6 and 7 groups for Scotland were modest. The largest difference was for degree students, where the smaller number of groups produced a result somewhat closer to equality (CI -.132*** compared to CI -.141***), as would be predicted by Lyon at al.'s (2016) thesis, discussed above. I concluded from this that this approach was suitable for use with the Scottish data, banded in 7 groups.
Extensions are available in conindex to the CI calculation, which allow for more weight to be placed on the treatment of those at the lowest incomes (Kakwani 1980) or to concentrate on inequalities at the extremity of the income distribution (Erreygers, Clarke and Van Ourti 2012). These were not used here. There is an argument for paying particular attention to the treatment of income extremes in the student support system. However, for this research there was limited detailed information available for incomes at the extremes, particularly the upper extreme for Scotland, ruling out such approaches.

The CI reports on the actual distribution of a commodity in a particular population. How concentrated the population itself is at points on the income range will influence the distribution of resources in practice. The results here are therefore influenced not only by the design of systems and students’ use of them, but also by the populations they serve. The smaller proportion of Scottish student population with incomes below £35,000 was noted in chapter 5. If the same rules and behaviours applied in both nations, the resulting measures of concentration would still differ. For example, a grant targeted on those with family incomes below £35,000 for Scotland would be concentrated on a smaller proportion of students than it would be for Wales, where its distribution would cover a larger proportion of students and its distribution would therefore be less unequal. The results here therefore provide information on the operation of each system in its own context.

6.4.2 The skew of loan distribution by income

Figure 6-9 provides the concentration curve for each nation for total loan for degree students, sub-degree and all students. The associated concentration indices are shown in Table 6-2.

29 In cases like this, each nation’s Gini coefficient can be used as a point of comparison, so that a distribution can be identified, for example, as pro rich but less so than the underlying income distribution. How far this is a useful further concept in the context of student funding is returned to in the conclusion. In practice, without income as a continuous variable for both nations, or the data for Scotland allowing a group mean to be calculated, it was not possible to quantify the difference between the two nations in the income distribution of the student population for comparison.
The 95% confidence interval is illustrated in the figures, but in most cases was too small to be clearly visible. As set out at section 4.6.3, the CI can take any value between -1/1: a negative value is associated with a curve below the line which marks equality per head, and indicates the distribution is “pro rich”, i.e. skews the commodity towards those at higher incomes. A positive CI is associated with a curve above the line and indicates the distribution is “pro poor”. The curves for degree and sub-degree students in each nation and for fee and living costs loans for Wales, are superimposed for easier comparison of their distributional shape: it should be borne in mind each curve represents the distribution of a different total amount of resource and for degree and sub-degree students across different populations. The “all cases” line is omitted from (b) as it is very close to the degree line for Wales.

Table 6-2 Scotland and Wales: all, degree and sub-degree students, concentration indices for total loan

<table>
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<th>All</th>
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<th>Sub-degree</th>
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<td>.066***</td>
<td>-.141***</td>
<td>-.148***</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.002)</td>
<td>(.004)</td>
</tr>
<tr>
<td>Wales</td>
<td>.049***</td>
<td>.039***</td>
<td>.024***</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.011)</td>
</tr>
<tr>
<td>Living cost</td>
<td>.091***</td>
<td>.083***</td>
<td>.030*</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.002)</td>
<td>(.013)</td>
</tr>
<tr>
<td>Fee</td>
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<td>-.003***</td>
<td>.019</td>
</tr>
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<td></td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.011)</td>
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\( p<0.05 \), \( p<0.01 \), \( p<0.001 \)

For degree and sub-degree students, consistent with the previous results the concentration curve is higher-income skewed for Wales (.049*** all cases, .039** degree cases) and lower-income skewed for Scotland (-.066*** all cases, -.141*** degree cases), with the difference from equality significant in each case. The departure from an equal distribution is larger for Scotland. As before, combining all cases produces a result for Scotland different from that for either level of study in isolation, with a smaller difference from equality. Living cost and fee loans are also shown for degree students from Wales, illustrating the higher-income skewed for loans in total is due to living cost loans: although the fee loan line appears very close
to equality, the difference is significant and skewed towards lower incomes with small effect for degree students.

Figure 6-9 Scotland and Wales: all, degree and sub-degree cases, concentration curves for total repayable (loan) funding

(a) Scotland

(b) Wales
6.5 The distribution of non-repayable funding

6.5.1 Elements and take-up of non-repayable funding

Non-repayable funding represents the total amount of benefit distributed to students which carries no long term cost to them. The discussion begins with a discussion of how institutional funding amounts were calculated, given the limitations of the data for Scotland, followed by examination of the take-up of non-repayable funding. The distributional results are then discussed and compared with those for loans.

Non-repayable institutional funding

The value of annual tuition grant payments paid by the SLC on behalf of Welsh students was provided as a continuous variable. From 2012-13, almost all Welsh tuition funding was provided to institutions as personal fee grants or loans, paid through the SLC. The only entrants to Welsh institutions since 2012 to benefit from additional teaching grant funding paid to institutions in Wales by HEFCW were medical and dentistry students and those on “conservatoire performance” courses (HEFCW
A broader range of subjects were eligible for additional funding from HEFCE in English HEIs, although this was not at the expense of the Welsh government; the cases missing subject data appear likely to have been mainly in institutions in England (see chapter 5). For the small number of Welsh cases entering in 2011-12, the institutional funding in the data only represented the element paid as a per capita fee and total institutional funding will be underestimated.

By contrast, only around one-quarter of institutional funding was available in the research data for Scotland, for the limited amount provided as a per capita fee payment by SAAS to institutions. Throughout the period this was £1,820 for students studying at degree level and £1,285 for sub-degree students. A figure of £2,895 applied for medicine degrees that commenced in 2011-2012 or earlier, which applied to some students in this study. The remainder of grant support for teaching was provided through the SFC. The amount of funding council support reflected an institution's subject mix and varied by whether an institution was an HEI or a college. Audit Scotland (Audit Scotland 2016) has calculated that the average annual value of fee support for degree students in 2016-17 was £7,500, and that this figure had changed little over previous years. It was more difficult to obtain an estimate for the amount provided for teaching sub-degree students, as they were not treated separately in the allocation process to colleges. Material published by the SFC (SFC 2014) showed a range of payments for full-time college students at all levels between £2,775 and £7,200 in 2015-16, depending on the subject and intensity of the course. It was possible to calculate the annual amount received by HN students in the Welsh study cohort (£5,100 HND, £3,100 HNC); three-quarters of Scottish sub-degree group comprised single year (HNC) students. A notional figure of £5,000 per year was used for this research for Scottish sub-degree cases as an approximation to the average payment. Following Sefton (2002) an amount was imputed for the SFC element, by calculating the difference between the SFC average payment and per capita payment, at degree or sub-degree level as appropriate in any year.

The figures do not take taking account of subject differences, given the limited subject data on Welsh students in England, and the lack of subject data for almost all
Scottish students, other than a single category for students in medicine, veterinary science and dentistry. The results here will therefore conceal any income effects in the distribution of resources to HEIs due to patterns of subject choice. The limited analysis possible in the Welsh data suggested that this was unlikely to be substantive in effect. Looking at measures of disadvantage other than income, Croxford and Raffe (2015) found that “subject differences in status are relatively small” with the strongest relationship between social advantage and subject area in medicine, dentistry and veterinary medicine. Including a higher centrally-provided allowance for the known medicine (with veterinary science and dentistry) cases was however rejected, given the small numbers and in the absence of any other subject data for most Scottish cases and many Welsh ones.

**Take-up of non-repayable grants**

The take-up of loan was identified above as likely to be salient to the overall distribution of debt and is discussed further in chapter 7. It is harder to assess the take-up of grants and therefore to identify how far this may be relevant to their distribution in practice. For means-tested support, changing levels of family income could affect entitlement to apply for such funding over the period of study. A limited assessment was made of whether cases with family incomes below the threshold for income-targeted living cost grants in each nation\(^{30}\) had received any during their course. Fee grants were not means-tested; however for Scotland the receipt of non-repayable fee support had been used to identify students funded under the main undergraduate scheme, making it unusable as a measure for distinguishing between cases. For Wales students could be included in the research if they had taken only a fee loan, allowing the take-up of fee grant among those receiving fee support to be examined. The results are shown in Table 6-3.

\(^{30}\) The £35,000 income band boundary for Scotland will have included some cases with incomes over £33,999 which were ineligible for living cost grant. In Scotland independent student grants were available up to a lower amount, so young and independent students were examined separately.
Allowing for the limitations of this approach, these results suggested higher take-up of at least some non-repayable support than held for loans for Scotland, although not for Wales. The exclusion of Special Support Grant from this analysis, discussed in section 4.4.3, will however have been relevant there. How far differences in the take-up of non-repayable funding in and across the two nations influenced the distribution of these by income was not investigated further here as a potential contributor to the distribution of resources, given the limitations of the analysis possible.
6.5.2 The distribution of non-repayable funding

The distribution of non-repayable funding is examined on the same terms as loans in the previous section, using concentration indices and curves. Figure 6-10 (a) and (b) and Figure 6-11 (a) and (b) show the distribution in each nation of each part of non-repayable funding for degree, sub-degree and all students. As before, the 95% confidence interval is shown in the figures: with the exception of one result for the small Welsh sub-degree group, this was so narrow that it is barely visible; in no case does it affect the interpretation below. Figure 6-12 shows the distribution by income when both forms of non-repayable support are combined. The associated CIs are provided in Table 6-4. As noted in section 4.4.3., living cost funding here is treated as covering the general grant to support those costs available to all students in the main funded scheme, excluding grants provided for specific purposes.

Table 6-4 Scotland and Wales: all, degree and sub-degree students, non-repayable support, mean value

<table>
<thead>
<tr>
<th></th>
<th>Living cost grant</th>
<th>Fee grants and payments</th>
<th>All non-repayable funding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CI (SE)</td>
<td>CI (SE)</td>
<td>CI (SE)</td>
</tr>
<tr>
<td>Scotland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>-.485*** (.004)</td>
<td>.096*** (.002)</td>
<td>.063*** (.002)</td>
</tr>
<tr>
<td>Degree</td>
<td>-.601*** (.004)</td>
<td>.003*** (.001)</td>
<td>-.028*** (.001)</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>-.345*** (.005)</td>
<td>.015** (.002)</td>
<td>-.026*** (.002)</td>
</tr>
<tr>
<td>Wales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>-.400*** (.003)</td>
<td>.035*** (.002)</td>
<td>-.125*** (.002)</td>
</tr>
<tr>
<td>Degree</td>
<td>-.421*** (.003)</td>
<td>.022*** (.002)</td>
<td>-.139*** (.002)</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>-.218*** (.019)</td>
<td>.034*** (.012)</td>
<td>-.089*** (.014)</td>
</tr>
</tbody>
</table>

p<0.05 *, p<0.01 **, p<0.001 ***
Figure 6-10 Scotland: concentration curves for components of non-repayable support: living cost grants (Young Student Bursary and Independent Student Bursary) and fee grants and payments from funding bodies (SFC, SAAS)

(a) Living cost grant (YSB, ISB)

(b) Fee grants (SAAS actual, SFC imputed)
Figure 6-11 Wales: concentration curves for components of non-repayable support: living cost grant (Welsh Learning Grant) and fee grant (Tuition Fee Grant)

(a) Living cost grant (WLG)

(b) Fee grant (TFG)
Figure 6-12 Scotland and Wales: all, degree and sub-degree students, concentration curves for all non-repayable resources to students (living costs and tuition support)

(a) Scotland

(b) Wales
Living cost grant had a strongly pro-poor distribution in both nations: the effect was greater for Scotland (−.485***, as against −.400*** for Wales), where these grants were targeted more tightly by income, and stronger in both nations for degree than sub-degree students, reflecting that lower income students comprised a smaller proportion of cases at that level. The effect is most obvious for Scotland, where the concentration of living cost grants at degree level was 0.601***. In Figure 6-10 (a) and Figure 6-11 (a) the curve for living cost grant flattens at around the income point in the population where entitlement to income-targeted support ceased. Figure 6-10 (a) therefore shows the difference in family income between sub-degree and degree students for Scotland: the point where grant entitlement ceased was reached at around the 60th centile of the population by income for sub-degree students, compared to around the 30th for those at completing at degree level, consistent with the distribution of cases by income. The smaller difference is seen in the concentration curves for Wales, where the income distribution of the two populations was more similar.

In both nations the concentration curves show that for sub-degree students, in contrast to degree students, the lower-income skew was only realised around the middle of the income range, with the distribution of resources being at or around formal equality at lower incomes. The effect was stronger for Wales and again is most likely to be an effect of the omission of some or all cases where living cost grant was paid as Special Support Grant (SSG) from the data provided; the total average living cost grant paid at nil incomes at sub-degree level was £1,332 (12.3%) less than for the group largely composed of young students entitled to full WLG.31 The difference between the groups was smaller (£1,181, -4.9%) in the degree group, likely to reflect that students entitled to SSG, linked to entitlement to social security benefits, were less common at degree level. For Scotland the same shape of curve is likely to reflect the lower rate of grant payable to independent students concentrated

31 The group with incomes between £5,000 and £14,999.
in the nil income group, who made up a larger share of lower income cases at sub-degree level (Table 5-3),

Fee payments had a small significant higher-income skew for the Scottish degree and sub-degree groups, but were more clearly higher-income skewed when both were combined, reflecting that lower income students were more concentrated on shorter, lower-fee sub-degree courses. For Wales degree and sub-degree students had a slightly larger though still small higher-income skew: the combined effect departed slightly less from equality than in Scotland, reflecting the lower proportion of lower income students on shorter courses.

For Wales the figures were based on the amount of grant needed in each case to meet the gap between the flat rate fee loan and the actual fee charged to the student; the effect of students from lower incomes sorting more into courses charging less than the maximum £9,000 allowed in this period was therefore reflected in the results. As the Scottish figures used an assumed flat-rate, no sorting effect could be detected, beyond sorting by level and to lesser degree length of course. The question of how resources for teaching costs are distributed according to students' family incomes would benefit from a more thorough treatment than was possible here. The effect of combining degree and sub-degree students for Scotland gives a preliminary indication that systems which are equal in their theoretical design may have more unequal effects in practice.

For non-repayable funding ideas related to need and equality were reflected in very similar ways for Scotland and Wales, when each component was considered separately. The combined results show systems in which the distribution of investment from the cash budget was also skewed towards those from lower incomes in both nations within each level. Although the skew of living cost grants seen above was stronger for Scotland, for overall nonrepayable funding the lower-income skew was stronger for Wales. The difference derives from the difference in levels of spending on each element. Table 6-5 compares the average value of payments of each element in each jurisdiction for all students and by level of study.
For Scotland 5.8% (5.2% degree level) of non-repayable funding received by students was targeted by income, compared to 36.4% (36.0% degree-level) for Wales. The stronger lower-income skew in the distribution of living cost grant for Scotland therefore had limited effect on the overall redistribution of non-repayable resources, because it was a small proportion of all non-repayable funding.

Table 6-5 Scotland and Wales: all, degree and sub-degree cases, mean total nominal value of components of non-repayable support paid in each cohort of leavers

<table>
<thead>
<tr>
<th></th>
<th>Living cost grant (income-targeted)</th>
<th>Tuition grants (not income-targeted)</th>
<th>Income-targeted element as percentage total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD) £</td>
<td>Mean (SD) £</td>
<td>%</td>
</tr>
<tr>
<td>Scotland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>1,397 (2,201)</td>
<td>22,775 (12,537)</td>
<td>5.8</td>
</tr>
<tr>
<td>Degree</td>
<td>1,715 (2,584)</td>
<td>31,486 (4,096)</td>
<td>5.2</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>790 (885)</td>
<td>6,172 (2,118)</td>
<td>11.3</td>
</tr>
<tr>
<td>Wales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>7,670 (7,356)</td>
<td>13,423 (5,024)</td>
<td>36.4</td>
</tr>
<tr>
<td>Degree</td>
<td>7,956 (7,467)</td>
<td>14,163 (4,399)</td>
<td>36.0</td>
</tr>
<tr>
<td>Sub-degree</td>
<td>4,184 (4,573)</td>
<td>4,386 (2,986)</td>
<td>48.8</td>
</tr>
</tbody>
</table>

When all cases were combined, Wales retained its lower-income skew, but for Scotland the overall distribution of non-repayable resources became higher-income skewed. As with loans, combining the smaller sums associated with sub-degree study with those for degree students reduced the extent of the lower-income skew; in contrast to loans, for total non-repayable funding this changed the direction of the distribution.
6.6 Conclusion

That Scotland and Wales were similar but different systems is well-illustrated in the comparisons above. In response to RQ1:

How is total student loan debt distributed relative to students' initial economic background, as known through reported family income at the point of participation in HE, in the systems in Wales and Scotland, and how does this compare with the distribution of non-repayable benefits in each?

the comparison of Scottish and Welsh systems showed:

− a lower-income skew of repayable (loan) funding within each level of study and overall for Scotland, and an opposite, smaller higher-income skew of this funding for Wales, again within each level and overall. The effect for Wales was shown to be due to the distribution of living cost loans; fee loans were relatively equally distributed by income.

− a lower-income skew of non-repayable funding within each level in each nation. The effect was smaller for Scotland than Wales, despite its stronger skew of living cost grants, due to the relatively small proportion of funding distributed in that form, compared to funding for fees, distributed as for Wales on relatively equal terms. Spending on living cost and fee grants was more evenly balanced for Wales. Combining cases across levels made little difference for Wales, but for Scotland created a higher-income skew, due the concentration of lower-income students on shorter sub-degree courses.

The difference between the nations was shown not to be related to whether spending for living costs or fees was distributed based on need or equality: similar thinking informed the approach to both in both nations, with total living cost support (grants and loans) lower-income skewed and grants and loans for fees distributed on close to equal terms in both, within each level of study. Instead, the systems differed in how far non-repayable funding was distributed on equal terms or targeted on those from lower incomes; the distribution of living cost loans then took a different shape in each nation.
The lower income skew of loans for Scotland was associated with limited use of non-repayable funding to meet for the needs-based (living cost) element of student support, compared to the equal (fee) element. The higher-income skew of loans for Wales was associated with a more equal distribution of non-repayable resources between the elements of student support distributed based on need and equality principles.

The difference in the skewing of loans was sufficient to mean that for the nil income group at degree level, even allowing for differences in the period over which the figures applied, the value of average borrowing appeared likely to be at least similar in the Scottish cohort to the Welsh one. The difference in borrowing in absolute terms was largest for those from the highest income group.

The results provide a starting point for the development of a theoretical framework for assessing the impact of student loan systems on the reproduction of economic inequality within the graduate population, providing two contrasting study populations. They further show the importance of considering how systems are used in practice as well as designed to function in theory. Both nations' systems functioned in ways which were only partially predictable from the design of their schemes. When the results were combined by level, the distribution of all resources was affected by the sorting of students into different levels of study lasting for different periods and attracting different amounts of support for tuition, most clearly for Scotland. There was no immediate evidence that the distribution of non-repayable grants was strongly influenced by differences in take-up in either nation. However, from the comparison of results for all students and borrowers only, and differences in mean borrowing and in the dispersion of results between income groups, discussed in section 6.3, the concentration of loans among students from Scotland appeared likely to be more lower-income skewed than would be the case were the scheme to have full take-up. Loan take-up was therefore an issue relevant to considering questions of fairness in distributive effect of the Scottish and Welsh student funding systems and is considered in the next chapter.
Chapter 7  Students’ Borrowing Behaviour

This chapter addresses research question RQ2

How does the likelihood of taking out a student loan relate to family income in both systems, and how far may any differences be accounted for by variation between the two student populations in other characteristics expected to affect borrowing behaviour?

The chapter starts with a discussion of the nature of student borrowing, using an examination of the research data to identify that borrowing functioned largely as a binary choice for each loan available: there was little evidence that students took out less than the whole value of any loan available to them in any given year. Based on this, borrowing behaviour was analysed here by the take up of loans.

Borrowing behaviour was analysed first using descriptive statistics, separating cases by nation and level of study. This confirmed that the take-up of loans was substantially lower for Scotland than for Wales and that this varied by level of study and within those levels by income. The data were then further analysed using inferential statistics to examine how far differences in borrowing behaviour by income between the two nations could be explained by other differences in the student population, identified in chapter 5. The rationale and choices made in applying regression analysis for this are discussed. The outcome of the resulting models is considered. At each stage the strong inverse relationship between loan take-up and income persisted for Scotland, while for Wales the relationship with income was weak, often not significant and followed a different pattern. Given the novelty of the data, there is also some discussion of the relationship between other characteristics and borrowing behaviour. This suggested that there were likely to be income effects within the highest income group for Scotland which could not be observed in this research but were influential in how the student funding system worked in practice. The analysis adds to the limited literature on loan use in the U.K., drawing uniquely on empirical data for a whole student population over their whole course of study.
The chapter concludes by arguing that differences in student borrowing behaviour by income between the two nations were not explained by differences in the student population, that borrowing behaviour contributed to a lower-income skewed distribution of debt for Scotland but not for Wales and therefore borrowing behaviour was relevant to differences in how far each system contributed to the reproduction of economic inequality.

7.1 The nature of borrowing choices

An initial examination of the distribution of borrowing by value for a sample year suggested that relatively few students taking a loan borrowed less than their whole entitlement. Examining further years confirmed this pattern. This appears to be a new finding. The nearest equivalent observation appears to be Britton et al.'s (2016) identification of a cluster of cases at the value of the minimum non-means-tested loan in England.

This effect was most clearly evident for Scotland, where loan entitlements were set as a series of flat-rate amounts from 2013-14 onwards. The Scottish data showed that in 2016-17, only 5% of Scottish students who took out a loan took out a sum other than one of the set amounts available: any other amounts tended to be in round thousands of pounds. Little of the variation in the Scottish borrowing data was therefore accounted for by students making choices about drawing down an amount less than their full entitlement to available loan.

For students from Wales, the distribution of fee loan borrowing followed a similar pattern. In 2015-16 the majority of cases (85.8% of fee borrowers, N= 10,595) were at the level where fee borrowing was capped in this period. The majority of remaining cases were at other values used for sub-groups of students (such as those liable for a reduced fee, or those who had entered under earlier arrangements).

For Welsh-domiciled students living cost loan entitlements at certain incomes were determined on a sliding scale and therefore whether students were taking their full entitlement was less immediately clear. It was possible however to show that within
different residency groups (home, away, away in London), the distribution was bimodal, one peak value taking in most cases at incomes entitled to a flat rate of support due to low income and the other including most cases entitled to an alternative flat rate of support due to high income. There was no evidence of cases clustering round specific round thousand values, as for Scotland.

When raised with SAAS, the agency drew attention to the design of the application form, which presented students with the choice of ticking a box to apply for their maximum entitlement, whatever that was calculated by the Agency to be, or else writing in a fixed amount. They believed students would be more inclined to tick the box than consider an alternative sum. The SLC used an identical form for Welsh students. In referring here to students’ choices or decisions, no assumption is made about the process behind applications for financial support; as argued by Minty (2018), the background to financial decision making is complex, and young people cannot be assumed to be making decisions independently of their parents, at least in their initial years.

From these findings, it was determined that the focus of a comparative analysis of borrowing behaviour between the two nations and by income should be on borrowing as a binary choice made in each year and, for students from Wales, separately for each type of loan. Each student was assumed to be entitled to take out a loan for living costs and, if from Wales, also one separately for fees, for each year they were present. It would have been possible for a student to be present and in receipt of fee support (the basis on which cases were included in this research selected) but ineligible for loans, but such cases should be rare. Students over the age of 60 at the start of the course could not obtain living costs loans in either nation; loans could also be refused if a person had broken any obligation to repay any previous student loan.
7.2 Borrowing behaviour: differences by nation, level of study and income

7.2.1 Borrowing behaviour by level of study

What proportion of all possible loans was taken up was initially examined by nation and level of study: the full results are included in Appendix E (Table E-1). For Wales, 95.9% of possible loans were taken up, with loans used slightly more by degree (96.2%) than sub-degree (92.6%) students. For Scotland by comparison 70.4% of loans which might in theory have been issued were taken; take-up was also higher at degree (72.4%) than sub-degree (66.5%) level.

Students were then classified into borrower types, according to whether they took out all, some or none of the total number of loans available to them over their period of study, as shown in Table 7-1. Also shown is the percentage who took out over half, but not all, their loans, to allow some comparison of the nature of partial borrowing across nations and levels.

Table 7-1 Scotland and Wales: All, degree and sub-degree students, percentage of students taking out all their possible loans, some but less than all possible loans, or no loans (row percentages)

<table>
<thead>
<tr>
<th>Nation</th>
<th>Level of study</th>
<th>Borrower type</th>
<th>All cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No loan</td>
<td>Some loan (over 50%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Scotland</td>
<td>All</td>
<td>21.3</td>
<td>19.9 (11.0)</td>
</tr>
<tr>
<td></td>
<td>Degree</td>
<td>15.9</td>
<td>28.4 (16.8)</td>
</tr>
<tr>
<td></td>
<td>Degree years only</td>
<td>16.7</td>
<td>26.0 (14.8)</td>
</tr>
<tr>
<td></td>
<td>Degree with sub-degree years</td>
<td>12.9</td>
<td>37.7 (24.8)</td>
</tr>
<tr>
<td></td>
<td>Sub-degree</td>
<td>31.6</td>
<td>3.7 (0)</td>
</tr>
<tr>
<td>Wales</td>
<td>All</td>
<td>0.7</td>
<td>12.7 (9.7)</td>
</tr>
<tr>
<td></td>
<td>Degree</td>
<td>0.7</td>
<td>12.2 (9.8)</td>
</tr>
<tr>
<td></td>
<td>Sub-degree</td>
<td>0.9</td>
<td>17.7 (8.4)</td>
</tr>
</tbody>
</table>

Note: figures may not add to 100 due to rounding.

The majority of students in all groups except degree students from Scotland with some sub-degree study took out all their possible loans. Use of the loan scheme was
higher by students from Wales, consistent with the findings in 6.2. As already seen there, 0.7% of cases from Wales were non-borrowers over their entire course of study, with minimal variation between levels of study. Being a partial borrower was more common among sub-degree than degree students. Students from Wales who were partial borrowers were more likely to take out over half of their possible loans at both levels of study than those from Scotland. Of the 12.7% who were partial borrowers, 9.7% took out over half their possible loans, meaning that only a further 3.0% of this group took out half or fewer of the loans that they could.

As already seen, a much larger proportion of Scottish students (21.3%) took out no loan over their period of study. A further 8.9% of Scottish students borrowed half or fewer of their loans, and a further 11.0% took out over half of their possible loans, but not all. Sub-degree students were more likely to borrow nothing. Those on two year courses mostly borrowed in both years or neither; only 16% (N=377 from the table above) of those studying for two years (N=2,229) took a loan in one year only. Sub-degree students from Scotland therefore fell almost wholly between being full or non-borrowers. Degree students were less likely to be non-borrowers, but more likely to be partial borrowers, so that only just over half of Scottish degree students (55.7%) took out all their loans.

The influence on these figures of the group of degree students who had had some period of sub-degree study was examined. Those with at least one year of funding at sub-degree level were more likely than those who studied at degree level throughout to be partial borrowers (37.7%, compared to 26.6%), but less likely to be non-borrowers (12.9%, compared to 16.7% of those studying at degree level throughout).

7.2.2 Borrowing behaviour by income

The distribution of borrower types by income for each level of study, including Scottish degree cases with some prior sub-degree study, group, is shown in Figure 7-1. The supporting figures are provided in Appendix E (Table E-2 and E-3).
As would be expected from the distribution of borrowing (section 6.3), variation by income for Wales was more limited than for Scotland: across all cases, in no income group was the percentage of non-borrowers more than 1.1%. In every income group at least 85.4% of students took out all their loans. When the findings were separated for degree and sub-degree students, among sub-degree students there was more evidence of non-borrowing at lower incomes, but still at low levels: partial borrowing was more common, with the effect greatest in some middle income groups. At degree level borrowing was slightly higher in the top three income groups (86.6% to 89.4% full borrowers) compared to the lower four (85.9% to 86.5% full borrowers). Take-up of loans was highest at income between £25,000 and £49,999, suggesting the possibility of a “squeezed middle” effect similar to that observed by Houle (2014), discussed in chapter 3, but here affecting loan use rather than amounts, but inconsistent with the inverse relationship with income observed in England by De Gayardon et al. (2019). For Wales, the association between income and borrower type was weak for degree and all students (Cramer’s V = 0.04** in both cases), and not significant for sub-degree students.
Figure 7-1 Scotland and Wales, all, degree and sub-degree students, borrower type by income

<table>
<thead>
<tr>
<th>Nation, level of study and family income</th>
<th>Percentage of income group</th>
</tr>
</thead>
<tbody>
<tr>
<td>All loans (full borrower)</td>
<td>0% 20% 40% 60% 80% 100%</td>
</tr>
<tr>
<td>Some loans (partial borrower)</td>
<td>0% 20% 40% 60% 80% 100%</td>
</tr>
<tr>
<td>No loans (nil borrower)</td>
<td>0% 20% 40% 60% 80% 100%</td>
</tr>
</tbody>
</table>

- **Scotland**
  - Degree (with prior sub-degree)
  - Sub-degree
  - Degree (all cases)
  - All

- **Wales**
  - Degree
  - Sub-degree
  - All loans (full borrower)
  - Some loans (partial borrower)
  - No loans (nil borrower)
For Scotland, students became less likely to take out all their loans and more likely to take out none as income rose, consistent with the greater dispersion of loan amounts in higher income groups seen at section 6.3. Re[eating the pattern seen at Table 7-1, partial borrowing was more likely, and non-borrowing less likely, at degree level, while sub-degree students were more likely to borrow all or nothing, in all income groups. As a result, while around half of degree (48.7%) and sub-degree (50.7%) of students from the highest income group took out no loans, non-borrowing was more than twice as likely at that income level in the sub-degree group than the degree group (45.0%, compared to 21.3%). Further analysis showed that within the highest income group, being in SIMD Education quintile 5 increased the likelihood of being a non-borrower; 24.4% of such degree students were non-borrowers and 45.1% of sub-degree students, compared to 18.9% and 44.9% of those in the highest income group but not in SIMD5. The differences within the group measured on this variable were smaller than its difference with other income groups. Full borrowers were most prevalent at the lowest incomes, comprising 81.8% of the nil income group across all cases. At degree level, this led to the proportion of nil income students from Scotland who were full borrowers (84.7%) being similar to that for Wales (86.2%). Nil income degree students were also the least likely to have no debt: 1.9% were non-borrowers (compared to 0.9% of the same group for Wales). These results were consistent with De Gayardon et al.’s (2019) finding on the relationship between income and borrowing in England, and with Houle’s (2014) finding in the U.S. that loan take-up fell as income rose.

A period of sub-degree study prior to degree had very little effect for Scotland on the likelihood of being a non-borrower. Partial borrowing was much more common in this group, however, compared to degree students as a whole and this effect differed by income. In the nil income group, these students were 2.9 percentage points more likely to be partial borrowers compared to degree students in general: they were 15.2 percentage points more likely to be partial borrowers in the highest income groups. Students with a period of sub-degree study were the only group for which the association between borrower type and income was moderate (Cramer’s V= 0.25***,
compared to results in the range 0.15*** to 0.17*** for the remaining groups). Further examination of the data confirmed that students in this group were more likely not to borrow in those years when they were funded for sub-degree study.

The analysis by borrower type demonstrated that for Scotland high rates of non-borrowing at higher incomes, and lower non-borrowing and partial borrowing at the lower ones, could be predicted to make a substantial contribution to the distribution of borrowing by income for Scotland. For students from Wales the variation in borrowing behaviour by income was far more limited and followed a different pattern, and therefore had less scope to affect the distribution of debt.

7.2.3 Wales: living cost and fee loans compared

As a first step in examining whether the overall figures for borrowing behaviour masked differences between loan types, the proportion of loans taken for each purpose was cross-tabulated for degree and sub-degree students separately: the results are summarised at Figure 7-2 and Figure 7-3: the full figures are provided in Appendix E (Tables E-4 and E-5).

As already shown at Table 7-1, 87.1% of degree and 81.4% of sub-degree students were full borrowers, taking out both types of loan throughout their course. This was similar to De Gayardon et al.’s (2019) finding that 84% of English students took out both types of loan. Further examination of the data showed that degree students who did not use all their loans were most likely to take out all of one type of loan and some of the other, split relatively even between fee and living cost loan as the main form of borrowing. Most commonly in these cases, only one year of borrowing of one type of loan was lost. Partial borrowers from Wales were most likely to borrow one type of loan throughout their course and therefore to take out at least half of their available loans in total.

The figures here are comparable with estimates produced by the SLC for the proportion of all Welsh students taking out a living cost loan in each of 2013-14 (95.2%) and 2014-15 (95.3%) (HESA 2016, Table 18f). These single years figures are
consistent with the full course ones here; in the Welsh research cohort 1.9% (N=220) of degree students never took out a living cost loan, 92.7% (N=10,761) took one in every year and 5.4% used them only in some years (Appendix E, Table E-4).

Figure 7-2 Wales, degree students (N=11,607): fee and living cost loan use

Figure 7-3 Wales, sub-degree students (N=950): fee and living cost loan use
There was no significant association with income for borrower type for either loan type for sub-degree students. The association was very weak despite being statistically significant with a very small corresponding p-value (p<0.001***) for both types for degree students (Cramer’s V = 0.04*** fees, 0.05*** living costs). Borrowing behaviour by loan type and income was considered in the regression modelling discussed below.

Welsh students therefore exercised some choice between living cost and fee borrowing, although the take-up of both was high and the association with income limited. As discussed further below, different forms of fee waiver and bursary support provided by institutions may have been influential here.

7.3 Taking account of further factors

7.3.1 The approach to modelling

The analysis in section 7.2 addressed the first part of RQ2, which was concerned with how the likelihood of taking out a student loan related to income in each system. The second part of the question asks how far any differences might be accounted for by variation between the two student populations in other characteristics. To explore this further, inferential statistics were chosen, as explained in section 4.6.2, for their ability to examine the relationship of income and borrowing behaviour while taking a range of other factors into account. As borrowing behaviour was measured as a categorical variable, this led to the choice of logistic regression.

In this case the primary purpose of the modelling was not to find the models of best fit to explain borrowing behaviour, but to analyse the relationship between the key independent variable, income, and the dependent one, loan take-up, across models, as further possible explanatory variables were added. As the purpose of the modelling was to compare outcomes for income across models, as explained in section 4.6.2 the results are reported as average marginal effects (AMEs). These provide the differences in the probability of an event occurring in one group relative
to a reference category, where a value of zero indicates no difference: differences in probability are reported in the text below as percentage points. Regression coefficients were also examined where differential effects within categories of an independent variable were of interest and interactions therefore tested (Field 2005). The full results are reported, with standard errors and significance, in Appendix E.

The number of non-borrowers from Wales (0.7%) was too low to permit regression analysis using borrower/non-borrower as a dependent variable. For Wales, therefore, a two-category dependent variable was used which measured whether or not a student took out all the loans they could over the period of study. A comparable measure was developed for living cost and fee loans separately. For Scotland, the same binary measure of borrowing was used to produce results on comparable terms. However, as a larger minority (21.3%) of Scottish students borrowed nothing, a further set of models was developed, testing whether or not a student was a borrower or a non-borrower; the influences on non-borrowing were of particular interest in addressing the research question, as non-borrowers can be securely predicted to make no repayments. The reference group used in each model was the highest income category, to allow the borrowing behaviour of students from the most economically advantaged group to be compared with that of the remaining groups.

A first set of models using combined data for both nations replicated earlier findings on the difference between Scotland and Wales in the relationship between income, study level and borrowing behaviour. The results are discussed only briefly here; the full results are included in Appendix E, Tables E-6 and E-7. In the model which included only ‘nation’, the probability of a student from Wales taking out all their loans, before taking any other factors into account, was 27.9 percentage points higher (SE 0.4pp) than for Scotland (significance p<.001). Adding income barely changed this (26.6 percentage points, SE 0.4pp); examining the interaction between income and nation showed, as expected, that the differences between the two nations decreased as income fell. Welsh students were 27.4 percentage points (SE
more likely to be full borrowers than students from Scotland when both income and level of study were taken into account.

7.3.2 The relationship between borrowing and nation, level of study and income revisited

To explore further the relationships above, separate models were developed for Scotland and Wales. For Wales, this allowed additional separate analyses for fee and living cost loans: the results discussed at section 7.2.3 suggested that students who were not full borrowers made different decisions in relation to these. As Scottish loans were all for living costs, this also allowed the take-up of all living cost loans to be directly compared across the two nations. This approach also allowed the more detailed income groupings available for Welsh students to be used. The model with income only was also run for Wales using the same income groupings as for Scotland; the results as AMEs are included in Appendix E (Table E-8). This gave a significant difference for loan use between the £35,000 or more group and those below £25,000, but not those above that level. Compared to the results below, it therefore produced a clear difference between those at higher and lower incomes, but did not give such a clear account of differences within the group above £25,000. For this reason, using the larger number of groups available for Wales was preferred. For Scotland, where non-borrowing was more prevalent, the effects could also be examined comparing non-borrowers with borrowers of any sort. This stage also allowed the relationship between independent status and borrowing behaviour to be examined further in each nation, using the non-identical measures for that, prompted by earlier findings for the nil income group. The full results for the models are provided at Appendix E, Tables E-9 to E-13.

In both nations the gross effect for income alone on borrowing behaviour was established first (model 1). Level of study was then taken into account (model 2). Independent status was then added in both nations, to examine how far independent students explained effects for the nil income group and allow some cross-national comparison of these effects (model 3). Models testing the interaction of each of
study level and independent status with income were also run, as the previous results suggested the relationship of each with income would be different in each nation (models 4 and 5). The tables below show the results for the first three models, to concentrate on how taking each additional factor into account changed the results for income. The results for testing interactions are also discussed below.

The difference already seen in the relationship between income and borrowing behaviour was evident in the gross results for income in each nation (model 1 in tables 7.2 and 7.3). For students from Wales, there was a limited relationship between loan use and income, with no significant difference between the lowest and highest income groups. Consistent with the results at Figure 7-1, middle income groups were significantly more likely to use all their loans, although the differences were small (2.0*** to 2.5*** percentage points). For Scotland by contrast significant and substantial differences with the highest income group increased as income fell, for whether or not a student was a full borrower. For whether a student was a borrower at all in Scotland, the highest income group were also significantly less likely to take out all loans compared to other groups, with the difference largest with the nil income group, although there was a less clear pattern in the groups between. For Scotland differences in the likelihood between the highest income group and others were larger for whether or not a student took out all their loans (32.7 percentage points difference with nil income group) than for whether they borrowed at all (15.1 percentage point difference), again consistent with the descriptive statistics above.
Table 7-2 Wales, all cases (N=12,557): Models with income, level of qualification and independent status, probability full borrower vs not full borrower (AMEs), all, living cost and fee loans

<table>
<thead>
<tr>
<th>Income (ref: £50,000+)</th>
<th>Full borrower (ref: not full borrower)</th>
<th>Fee loans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All loans</td>
<td>Living cost loans</td>
</tr>
<tr>
<td></td>
<td>Model 1 Income</td>
<td>Model 2 Level of study</td>
</tr>
<tr>
<td>Nil income</td>
<td>AME (SE)</td>
<td>AME (SE)</td>
</tr>
<tr>
<td>(ref: £50,000+)</td>
<td>-.008</td>
<td>-.002</td>
</tr>
<tr>
<td></td>
<td>(.010)</td>
<td>(.010)</td>
</tr>
<tr>
<td>£1-4,999</td>
<td>-.008</td>
<td>-.005</td>
</tr>
<tr>
<td></td>
<td>(.14)</td>
<td>(.14)</td>
</tr>
<tr>
<td>£5,000-14,999</td>
<td>-.011</td>
<td>-.009</td>
</tr>
<tr>
<td></td>
<td>(.09)</td>
<td>(.10)</td>
</tr>
<tr>
<td>£15,000-24,999</td>
<td>-.008</td>
<td>-.007</td>
</tr>
<tr>
<td></td>
<td>(.10)</td>
<td>(.11)</td>
</tr>
<tr>
<td>£25,000-34,999</td>
<td>.025*</td>
<td>.025*</td>
</tr>
<tr>
<td></td>
<td>(.10)</td>
<td>(.10)</td>
</tr>
<tr>
<td>£35,000-49,999</td>
<td>.020*</td>
<td>.020*</td>
</tr>
<tr>
<td></td>
<td>(.10)</td>
<td>(.10)</td>
</tr>
<tr>
<td>Sub-degree (ref: degree)</td>
<td>-.053***</td>
<td>-.057***</td>
</tr>
<tr>
<td>Independent (ref: young)</td>
<td>(.013)</td>
<td>(.013)</td>
</tr>
<tr>
<td></td>
<td>.022*</td>
<td>.022*</td>
</tr>
<tr>
<td></td>
<td>(.010)</td>
<td>(.010)</td>
</tr>
</tbody>
</table>

p<0.05 *, p<0.01 **, p<0.001 ***
Table 7-3 Scotland, all cases (N=28,503): Models with income, level of qualification and independent status, probability of borrower type (borrower vs non-borrower and full borrower vs not full borrower (AMEs))

<table>
<thead>
<tr>
<th></th>
<th>Full borrower (ref: not full borrower)</th>
<th>Borrower (ref: non-borrower)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>Income (AME (SE))</td>
<td>Income (AME (SE))</td>
</tr>
<tr>
<td>Income:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotland</td>
<td>ref: £35,000+</td>
<td></td>
</tr>
<tr>
<td>Assessed as nil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>£1–£4,999</td>
<td>.032*** (.008)</td>
<td>.151*** (.007)</td>
</tr>
<tr>
<td>£5,000–£14,999</td>
<td>.241*** (.014)</td>
<td>.097*** (.012)</td>
</tr>
<tr>
<td>£15,000–£24,999</td>
<td>.176*** (.008)</td>
<td>.114*** (.007)</td>
</tr>
<tr>
<td>£25,000–£34,999</td>
<td>.140*** (.011)</td>
<td>.118*** (.008)</td>
</tr>
<tr>
<td>Sub-degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ref: degree)</td>
<td>.024*** (.006)</td>
<td>-.217*** (.006)</td>
</tr>
<tr>
<td>Independent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ref: young)</td>
<td>.093*** (.010)</td>
<td>.067*** (.007)</td>
</tr>
</tbody>
</table>

p<0.05 *, p<0.01 **, p<0.001 ***
For Wales (table 7.2) this stage of the modelling allowed the first examination of the relationship between income and the take-up of living cost and fee loans, revealing that students in income groups below £25,000 had a small but significant lower probability of taking out all their living cost loans compared to the highest income group; there was no significant difference between the highest income group and other income groups over £25,000. For fee loans, by contrast, those from incomes below £25,000 had no significant difference from the highest income group, while other groups with incomes over £25,000 had a small but significant higher probability of taking out all these loans, again compared the highest income group: the relationship was strongest at incomes between £25,000 and £34,999 (4.0 percentage points). This generated the outcome discussed above for all loans, where those at incomes between £25,000 and £50,000 were the group most likely to use all their loans, although the differences were small. This persisted in the detailed modelling below, discussed at section 7.3.1, where the possible reasons for it are also discussed. Adding level of study (model 2) and independent status (model 3) had no effect on the significance or direction of the results for income.

The results for Scotland showed as expected significant and substantial differences in loan take-up by income. Level of study had limited impact on the results for income for Scotland for whether a student was a full borrower (table 7.3, model 2, Full borrower). The relationship between income and the alternative measure of being a borrower at all changed more after accounting for level of study (table 7.3, model 2, Borrower); once level of study was taken into account, students from the highest income group became even less likely than those in lower income groups to be borrowers. The difference with the nil income group rose from 15.1 percentage points to 21.1 percentage points. Accounting for level of study also made the pattern of relationship with income within both measures of borrowing behaviour more similar, with differences with the highest income group increasing as income fell on both measures in all groups with incomes below £25,000.
While taking into account in addition whether or not students were independent (model 3) barely altered the relationship between income and borrowing for students from Wales, it explained some of the difference between the highest income group and those in the lowest two income groups from Scotland, on both borrowing measures. The nil income group’s 22.1 percentage point higher likelihood of being a borrower compared to those in the highest income group fell to 18.1 percentage points when independent status was considered as a separate factor (table 7:3, model 3, Borrower); their higher probability of taking all loans fell from 31.9 percentage points to 26.7 percentage points (table 7:3, model 3, Full borrower). That the measure for independent status incompletely captured all cases with that status is a limitation on the findings here. The relationship between independent status and the results for the nil income group is considered further in the separate modelling by level below.

The separate models for Scotland and Wales illustrated again that the relationship between borrowing behaviour and level of study varied between the two nations. Welsh sub-degree students were significantly less likely to take out all their living cost loans than degree students: the difference was slightly larger after adding independent status to the model, from -5.3 to -5.7 percentage points (table 7.2). This difference was due to behaviour in relation to living cost loans rather than fee loans. For Scotland, by contrast, sub-degree students were significantly more likely to use all their loans, compared to degree students, although the effect was small (2.0 percentage points, rising to 2.4 pp when independent students were taken into account). They were however significantly and substantially less likely than degree students to use loans at all (-21.7 to -22.0 percentage points across the models). There was no significant interaction between level of study and income for students from Wales (Appendix E, Tables E-9 to E-11, Model 4). For Scotland there were such effects, most clearly for whether a student borrowed at all (Appendix E, Tables E12 and E-13, Model 4), with the nil income group showing the largest difference, supporting the case for examining the relationship between income and borrowing behaviour separately at each level of study on each borrowing measure, as below.
Independent students were significantly more likely to take out all their loans than young ones in both nations: the difference was smaller for students from Wales (2.2 percentage points) than for those from Scotland (9.3 percentage points for being a full borrower, 6.7pp for being a borrower at all). There was no significant relationship for fee borrowing. There was no significant interaction between independent status and income for students from Wales (Appendix E, Tables E-9 to E-11, Model 5). For Scotland there a significant interaction between income and independent status on both measures of borrowing, with independent status making least difference to whether or not students made use of the loan scheme at nil incomes and a greater difference in other lower income groups (Appendix E, Tables E-12 and E-13, Model 5). After taking the interaction between independent status and income into account for whether or not students borrowed at all, independent status ceased to be significant (Appendix E, Table E-13, Model 5); the interaction with income therefore explained differences between young and independent students in whether or not they used the loan scheme at all.

While the relationship between income and borrowing behaviour altered in each nation once level of study and independent status were taken into account, the different broad pattern seen at the start of the modelling persisted. A strong inverse relationship between the take-up of loans and income became clearer for Scottish students once level of study was added to the model and continued to contrast with the lack of any similar pattern for those from Wales.

7.3.3 Introducing further factors: modelling by nation and level of study

To explore whether income effects persisted as other factors were taken into account, separate models were developed by level of study in each nation. The new variables considered here were living arrangements, the Scottish and Welsh indices of multiple deprivation (IMD) for education, sex, region, institution, previous sub-
degree study (Scotland only) and field of study (Wales only). Independent status was also included in the modelling here again.

**Borrowing behaviour by level of study: Scotland**

The association between the non-income variables was examined separately for degree and sub-degree students using Cramer’s V: the full table of results is at Appendix E (Tables E-14 and E-15). As a result, certain combinations of variables were ruled out as unsuitable to combine in a single model.

For degree and sub-degree students, the same cases were missing for SIMD Education and for region, creating a degree of collinearity if the version of each variable was included with the missing cases coded. To avoid this and minimise data loss, for degree students the first of these variables was entered into the model in a version with the missing cases included; the second excluded the missing cases. This results in models 7 and 8 for degree students are therefore missing the cases not included in the regional variable (N=305, 1.6% of degree cases): these cases were mainly in the highest income group. For sub-degree students a further model including region without the missing cases was run but is not reported as the final model in the comparisons below, given the scale of missing cases (N=1,217, 12.4% all sub-degree cases). The results are available in Appendix E and commented on briefly in relation to evidence of regional effects for this group. For sub-degree students there was a strong correlation between region and institution type (Cramer’s V =0.74***); institution type was treated as more relevant to explore for this group. The association between independent status and likelihood of living in the parental home (Cramer’s V= 0.76*** ) for was also strong for the sub-degree group. Living arrangements were added only after other factors.

After taking account of sex as a general demographic variable, the further factors were introduced one at a time. In the absence of an alternative theoretical basis, the variables were introduced in an order taking into account the analysis of the strength of their individual relationship with borrowing behaviour (Appendix E, Tables E-16 and
E-17). There were therefore differences both in the models for sub-degree and degree students. The AME results for family income produced by each model are summarised in the figures below. Full results for all models, including AMEs not shown in Tables 7-4 and 7-5 below, are included in Appendix E, at Tables E-18 to E-23.

The results for models for both measures of borrowing for degree students are discussed below. Figure 7-4 shows the results for degree students for taking all their loans (being a full borrower), Figure 7-5 for degree students for taking any loans (being a borrower). Figure 7-6 shows the results for sub-degree students for taking any loans. For sub-degree students, the effect of introducing further factors was nearly identical for the two borrowing variables, repeating the earlier finding that for this group the two measures are close to being functions of each other; only the results for taking all loans are therefore reported below. Table 7-4 provides the average marginal effects for all the factors included in the first and final models at each level. How the relationship between borrowing behaviour and income changed as other factors were introduced is discussed first. The relationship between borrowing behaviour and other factors is then considered, partly as in some cases this suggested limitations in the income data available, and also due to the novelty of having any information on these relationships.

For both types of borrowing at both levels of study taking further factors into account reduced the effect of income. However, in all the models being in a family income group below £35,000 continued to have a significant positive effect on the probability of taking out all or any loans, for degree and sub-degree students, compared to those from a higher family income. As expected from previous findings, there was less variation by income within the degree group for the take-up of any loans (therefore, whether a student was a borrower at all), than for whether students were full borrowers (and therefore borrowed in every year).
Figure 7-4 Scotland: degree students. Results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not taking out all loans, by income group, compared to students from family incomes of £35,000 or more.

Although the relationship between the different lower income groups varied across the models, the lowest income group always had the largest difference with the highest income group, even after taking independent status into account, and other low income groups continued to have a higher probability of borrowing compared to those in the highest income group. As discussed in chapter 4, the measure for independent students for Scotland excluded those who had attained it on grounds other than age; these cases are likely to explain some of the residual effect at the lowest incomes.
Within the lower income groups containing fewer independent students, with incomes over £5,000, the modelling for whether or not degree students took any loan (i.e. whether they borrowed at all) in Figure 7-5 showed an effect not seen for taking all loans in Figure 7-4. For the groups with incomes between £5,000 and £34,999 the likelihood of simply being a borrower compared to students in the highest income group increased with income, an effect which persisted and became more distinct as other factors were taken into account. The substantial drop in the value of living cost
grant for young students not entitled to full amount at £16,999\textsuperscript{32} and at £23,999, noted in chapter 2, may be relevant here, possibly increasing the incentive to make use of loans. But why this would affect one borrowing measure more than the other is not immediately clear. The results suggest that borrowing behaviour within the young lower income population, and perhaps the relationship with levels of living cost grant, would merit further investigation, including qualitative research, that was beyond the scope of this exercise.

\textit{Figure 7-6 Scotland: sub degree students, results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not taking out all loans by income group, compared to students from family incomes of £35,000 or more.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7-6.png}
\caption{Model number and elements.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7-6.png}
\caption{Probability of taking all loans compared to not taking all loans. (percentage points)}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7-6.png}
\caption{Model number and elements.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7-6.png}
\caption{Probability of taking all loans compared to not taking all loans. (percentage points)}
\end{figure}

\textsuperscript{32} £18,999 from 2016-17.
### Table 7.4 Scotland degree and sub-degree students: first and final model, probability (AMES) of borrowing behaviour; degree students all loans vs not all loans and any loans vs no loans, sub-degree students all loans vs not all loans

<table>
<thead>
<tr>
<th>Factor</th>
<th></th>
<th>Degree (N=18,694)</th>
<th>Sub-degree (N=9,809)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Taking all loans (vs not taking all loans)</td>
<td>Taking any loans (vs no loans)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Model 1</td>
<td>Model 8</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ref: £35,000+</td>
<td></td>
<td>.360***</td>
<td>.293***</td>
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<td>.197***</td>
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<td></td>
<td>.148***</td>
<td>.139***</td>
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<td>£5,000-£15,000</td>
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<td>Sex</td>
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<tr>
<td>Ref: Male</td>
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<td>.035***</td>
<td>.025***</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>.052***</td>
<td>.040***</td>
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<tr>
<td>Independent</td>
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<tr>
<td>Ref: not indpt</td>
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<td>Independent</td>
<td></td>
<td>.052***</td>
<td>.040***</td>
</tr>
<tr>
<td>Living arrangements</td>
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</tr>
<tr>
<td>Ref: low likelihood at home</td>
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</tr>
<tr>
<td>High</td>
<td></td>
<td>-.148***</td>
<td>-.065***</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>-.068**</td>
<td>-.029*</td>
</tr>
<tr>
<td>Sub-degree study</td>
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<td>Sub-degree years</td>
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<td>-.006</td>
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</tr>
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<td>.037***</td>
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</tr>
<tr>
<td>Ref: Urban West</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aberdeen city region</td>
<td></td>
<td>-.098***</td>
<td>-.097***</td>
</tr>
<tr>
<td>Ayrshire</td>
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<td>.017</td>
</tr>
<tr>
<td>Central Urban area</td>
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<td>.054***</td>
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<td>Dundee city region</td>
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<td>-.133</td>
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<tr>
<td>Edinburgh city region</td>
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<td>-.004</td>
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<tr>
<td>Outer Rural</td>
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<td>.082***</td>
<td>.004</td>
</tr>
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<tr>
<td>Ref: College (sub)</td>
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<td>.034</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>.149**</td>
<td>.088*</td>
</tr>
</tbody>
</table>

p <0.05 *, p<0.01 **, p<0.001 ***
Separating the data by level of study showed that taking additional factors into account reduced the gap between the income groups for sub-degree students more than for degree students. The further factors therefore explained more of the income-related differences at sub-degree level than at degree level. The nil income group nevertheless remained more likely to use loans than others. The results for the two groups between £15,000 and £35,000 were very close in every model at this level of study.

For the non-income variables, the final models and the comparison with the gross effects and effects after taking income into account, shown in Table 7-4, provided new information on their relationship with borrowing and also in some cases suggested limitations on the income data used here.

Whether it is conceptually coherent to treat independent status separately in modelling effects related to income could be questioned. Independent students were deemed as a policy position to have no family income other than their partner’s; adjusting for their presence in the nil income group could therefore be argued to be misleading in reducing income-related differences. However, being able to assess how far the different experience of independent students explained the effect at nil incomes was judged useful here and the larger limitation to be the inability to identify all such cases accurately.

The approach to modelling demonstrated that independent students were significantly more likely to borrow than young students even after taking all other available factors into account (Table 7-4); the difference was larger at sub-degree level (6.9 percentage points), and at degree level greater for taking all loans (5.2 percentage points) than being a borrower (4.0 percentage points). These results can be compared to the larger gross effects (Appendix E, Tables E-16 and E-17), and show that taking other factors into account did much more to reduce the large difference

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33 At degree level, for taking all loans the difference was 20.7 percentage points and for being a borrower 11.3 percentage points; at sub-degree level independent students were 18.2 percentage points more likely than young ones to take all loans.
between independent students and others in whether they were full borrowers, but had much less effect on the already smaller difference in whether they borrowed at all.

As discussed in chapter 4, living arrangements were measured as the likelihood of a student living at home in the first year of study. Due to assumptions made in its construction,\textsuperscript{34} for the sub-degree group only the results for living arrangements for degree students are discussed here, therefore, and concentrate on the difference between those expected to have a low or high likelihood of living at home. In the final model, the difference between those with a high and low likelihood remained significant, -14.8 percentage points for taking all loans and -6.5 percentage points for taking out any (Table 7-4). Living at home therefore continued to have a significant and substantial relationship with whether or not student used all their loans, even after other factors were taken into account; it retained a smaller significant relationship for whether or not students borrowed at all. The results are comparable with those found by De Gayardon et al. (2019) for the relationship with living at home (-11.5 percentage points).

Considering whether or not degree students used all their loans, the addition of previous sub-degree study to the model was the only stage at which income differences increased (Figure 7:4, model 5), implying that a period of sub-degree study did more to reduce borrowing at higher incomes. The same effect was not seen for whether students borrowed at all. Consistent with this, there was a significant difference between those with and without a period of sub-degree study for being a full borrower (-14.8 percentage points) but not for whether or not they borrowed at all (Table 7-4).

The relationship between borrowing behaviour and SIMD Education quintiles was different for sub-degree and degree students. Significant gross effects seen for this

\textsuperscript{34} All independent students were assumed to have a high likelihood of living away from the family home; all young college students were assumed to have a low likelihood of living away.
in the sub-degree group (Appendix E, Table E-17) were not seen when it was included in the model. For degree students by contrast, there was a substantial and significant positive association between loan take-up and being in a lower SIMD Education quintile, on both borrowing measures, before introducing other factors (Appendix E, Table 16) and after. The difference in the likelihood of borrowing compared to those in the highest quintile was always largest in the lowest quintiles. In the final model students from SIMD1 Education quintile (most disadvantaged) were 11.2 percentage points more likely to be a full borrower and 7.5 percentage points more likely to borrow at all (Table 7-4), compared to those from SIMD5. The relationship of SIMD Education quintile to loan use found here is at first sight relevant to assumptions about debt and socio-economic advantage discussed in chapter 3; it runs counter to De Gayardon et al.’s (2019) finding that social class had no effect independent of income and also appears at first sight at odds with their finding that the children of parents with higher education were more likely to borrow. However, it is also possible that in this research the SIMD Education quintile was providing some information related either to income or wealth for degree students (but not for the sub-degree students) for Scotland.

A similar effect may explain some of the residual relationship with region evident at degree level after taking other factors into account. A clear picture emerged of students from the Aberdeen city region being significantly and substantially less likely than those from any other area to use loans on any measure, even after accounting for other factors (- 9.8 percentage points full borrower, - 9.7 percentage points borrower, compared to the Urban West: Table 7-4). Further, in the additional sub-degree model run with region (Appendix E, Table 23, not shown in Figure 7-6) a significant result was obtained only for the Aberdeen and Edinburgh city regions, where sub-degree students were 13.5 and 6.1 percentage points less likely respectively to take out all their loans compared to those from the Urban West, after allowing for other factors. These results appear very likely to be linked to the evidence provided in chapter 5 that for degree students those from the Aberdeen city region were disproportionately drawn from higher incomes. Among the
remaining areas, after introducing further factors no significant differences remained between the Urban West and other areas for whether or not students borrowed at all. However, significant distinctions remained between it and other areas for whether or not students took out all their loans. Differences between the Urban West and Dundee city region were removed, but continued with others, being smaller with the Edinburgh city region and Central Urban regions (5.0 and 5.4 percentage points) and larger with the Outer Rural region and Ayrshire (8.2 and 9.4 percentage points). Some of this continuing difference may be accounted for by limitations in the measurement for living at home, as well as income. The extent to which loan use varies within Scotland and why it does so could not be considered further here, but would benefit from more attention, as discussed in the conclusion.

At degree level institutional effects were only significant for using all loans as a gross effect and in the final model for the small (N=78, 0.4%) of degree students attending “other” institutions (Table 7-4). These were often private institutions, for which fee costs were not fully met by public funds, so that living cost loans may have been used to assist with fees. Also at degree level, a significant lower likelihood of taking out any loans was seen as a gross difference between those at ancient universities and all others, but was removed for post92 and college students in the final model and reduced from 3.1 to 1.6 percentage points in the pre 92 group. Institutional differences in borrowing behaviour were therefore largely explained by other factors, including income and living arrangements. For sub-degree students, the 11% of cases at post-1992 institutions were significantly less likely to take out a loan after taking other factors into account (-8.2 percentage points). This appears most likely to be a hidden income effect. The 9.5% of sub-degree students who attended “other” institutions were significantly more likely to use all their loans than those attending college (4.6 percentage points); again, some of these students may also have been using their living cost loan to fund fees.

In contrast with De Gayardon et al.’s (2019) finding of a significantly lower use of loans by women in England, in the Scottish cohort studied here women students were significantly more likely than men to take up loans both before and after
introducing other factors, with little reduction in the gross effect shown at degree level (4.2 percentage points reduced to 3.5 percentage points in the final model for taking all loans; 2.7 percentage points to 2.5 percentage points for being a borrower at all). Differences by sex were much larger for sub-degree students at all stages of comparison (for taking all loans a gross effect of 10.3 percentage points fell 7.6 percentage points in the final model). The substantially larger use of loans by women students from Scotland shown here, particularly at sub-degree level, was unexpected and does not appear to have been identified in any other study. In the absence of an income effect, the reasons for this relationship between sex and borrowing behaviour for Scotland are not considered further here, but again might merit further attention. No similar effect was seen for Welsh students (Table 7-5).

**Borrowing behaviour by level of study for students from Wales**

As for Scotland, a series of models were run to test the relationship between family income and loan take-up, after taking the other available factors into account. Models were also run for fee and for living cost loans, separately for degree and sub-degree students.

The associations between non-income variables for degree and sub-degree students were examined (Appendix E, Tables E-24 and E-25). The same 24.8% of cases were suppressed for field of study and institution type, predicting a degree of collinearity which was treated as preventing these variables from being included in the same model. Field of study was preferred for inclusion as the gross effect was larger. Two different indices of multiple deprivation were available for Wales. As neither showed a strong gross relationship, WIMD Education quintile was used for consistency with Scotland. The correlation between independent status and living arrangements was smaller than for Scotland (0.13*** for degree students, 0.53*** for sub-degree ones), causing no problems with modelling these together.

Factors were introduced into the models using the same approach as Scotland, based on the relationship with living cost loan take-up (given the more limited significant
effects observed for fee loans), adding sex first and then others in an order suggested by the examination of gross effects (Appendix E, Table E-26 and E-27). A model testing institution in place of field of study was also run; the results are briefly discussed below but not shown, but are included in Appendix E (Tables E-28 to 31, Model 8). The same ordering of variables was used for sub-degree students, as these two populations were less distinct from each other compared to Scotland. The outcome of the modelling for all loans (i.e. fee and living cost together) is provided in the figures below, as total borrowing is the focus of the comparison between nations. Table 7-5 and Table 7-6 also show the results of the first and final model for fee and living cost loans. The full results for all models for all loans and for the final model for living cost and fee loans are provided in Appendix E (Tables E-28 to E-32). The relationship with income is discussed first. Comments on other factors are more limited than for Scotland, as there were fewer significant relationships.

As would be expected from previous findings, income had a much weaker relationship with borrowing within the Welsh degree and sub-degree student populations. At degree level, only the two groups from family incomes between £25,000 and £49,999 had a significant difference for total borrowing with the highest income group, in all models; they were more likely to take all their loans (2.9 and 2.6 percentage points in the final model, Table 7-5). Among sub-degree students those with incomes between £15,000 and £24,999 were initially significantly less likely to take all their loans than the highest income group, but the difference was not significant from model 4 onwards. All other differences illustrated in the figures below were not significant. The higher take up of loans by nil income students compared to others seen for Scottish students therefore did not obtain for those from Wales.
Figure 7-7: Wales: degree students. Results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not all loans, by income group, compared to students from family incomes of £50,000 or more.

Model number and elements

Model 1: Gross income
Model 2: 1 + Sex
Model 3: 2 + Living arrangements
Model 4: 3 + Field of study
Model 5: 4 + Independent
Model 6: 5 + Region
Model 7: 6 + WIMD Education

Probability of taking all loans compared to not taking all loans. (percentage points)

£35,000-£49,999
£25,000-£35,000
£15,000-£24,999
£5,000-£14,999
£1-£4,999
Nil
Figure 7-8  Wales: sub-degree students, Results of models for differences in the probability, as average marginal effects estimated from regression model, of taking out all loans vs not all loans by income group, compared to students from family incomes of £50,000 or more.
Table 7-5 shows that the significant difference in borrowing for degree students between the two groups just below the highest income level and those with family incomes over £50,000 can be related to fee loans. These two groups in addition differed from the lowest income groups for living cost loans; those in the lowest income groups were significantly less likely to take out such loans than those from the highest incomes, while those from incomes above £25,000 were not. The results here repeat those seen in the modelling for all cases at Table 7-2.

These results appear most likely to be explained by these students’ lower entitlement to additional funding from institutions compared to those at lower incomes and more limited access to family funds compared to those from higher ones. Under nationally mandated arrangements which applied in English universities from 2006 until 2015, institutions were expected to target additional support for living costs and fees on those from households with incomes under £25,000 (Dearden et al. 2014). Houle (2014) attributes a similar finding in the United States to the same “squeezed middle” effect; it corresponds also to Antonucci’s (2016) finding of financial pressure on lower middle income students. There was no significant difference between the highest income group and those from families below £25,000 in the probability of taking all loans, once both types borrowing were combined.

As for Scotland, the relationship between the non-income variables and borrowing behaviour as shown in Tables 7-5 for degree students and Table 7-6 for sub-degree students is briefly discussed, given that only limited information previously available on this for Wales from the SIES (Maher et al. 2018b).
Table 7-5 Wales: degree students: first and final model, probability (AMES) of borrowing behaviour; taking all loans vs not all loans

<table>
<thead>
<tr>
<th>Income Ref: £50,000+</th>
<th>All borrowing AME</th>
<th>Living cost loans AME</th>
<th>Fee loans AME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>-0.004</td>
<td>-0.016</td>
<td>-0.028**</td>
</tr>
<tr>
<td>£1-£4,999</td>
<td>-0.004</td>
<td>-0.001</td>
<td>-0.028 **</td>
</tr>
<tr>
<td>£5,000-£15,000</td>
<td>-0.007</td>
<td>-0.004</td>
<td>-0.030***</td>
</tr>
<tr>
<td>£15,000-£24,999</td>
<td>-0.001</td>
<td>0.000</td>
<td>-0.026**</td>
</tr>
<tr>
<td>£25,000-£34,999</td>
<td>0.028**</td>
<td>0.029***</td>
<td>-0.011</td>
</tr>
<tr>
<td>£35,000-£49,999</td>
<td>0.024*</td>
<td>0.026**</td>
<td>-0.004</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex Ref: Male Female</th>
<th>All borrowing AME</th>
<th>Living cost loans AME</th>
<th>Fee loans AME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.002</td>
<td>0.007</td>
<td>-0.007</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Living arrangements Ref: At home Away</th>
<th>All borrowing AME</th>
<th>Living cost loans AME</th>
<th>Fee loans AME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Away</td>
<td>0.116***</td>
<td>0.134***</td>
<td>0.007</td>
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<th>Field of study Ref: Other STEM LEM Suppressed</th>
<th>All borrowing AME</th>
<th>Living cost loans AME</th>
<th>Fee loans AME</th>
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</thead>
<tbody>
<tr>
<td>STEM</td>
<td>-0.066***</td>
<td>-0.025***</td>
<td>-0.052***</td>
</tr>
<tr>
<td>LEM</td>
<td>-0.030***</td>
<td>-0.021**</td>
<td>-0.028***</td>
</tr>
<tr>
<td>Suppressed</td>
<td>-0.034***</td>
<td>-0.004</td>
<td>-0.029***</td>
</tr>
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<table>
<thead>
<tr>
<th>Independent Ref: not indpt Independent</th>
<th>All borrowing AME</th>
<th>Living cost loans AME</th>
<th>Fee loans AME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>-0.008</td>
<td>-0.006</td>
<td>0.008</td>
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<table>
<thead>
<tr>
<th>Region Ref: Urban south Rural NE and border</th>
<th>All borrowing AME</th>
<th>Living cost loans AME</th>
<th>Fee loans AME</th>
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<tbody>
<tr>
<td>Rural</td>
<td>-0.006</td>
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<td>NE and border</td>
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<th>Living cost loans AME</th>
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<td>0.020*</td>
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<td>0.020*</td>
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<td>0.022*</td>
</tr>
<tr>
<td>3</td>
<td>0.019*</td>
<td>0.010</td>
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</tr>
<tr>
<td>4</td>
<td>-0.003</td>
<td>0.004</td>
<td>-0.002</td>
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</table>

p < 0.05 *, p < 0.01 **, p < 0.001 ***
Table 7-6 Wales: sub-degree students: first and final model, probability (AMES) of borrowing behaviour; taking all loans vs not all loans

<table>
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<tbody>
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<td></td>
<td>All borrowing</td>
<td>Living cost loans</td>
<td>Fee loans</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Model 1 AME</td>
<td>Model 7 AME</td>
<td>Model 1 AME</td>
<td>Model 7 AME</td>
<td>Model 1 AME</td>
<td>Model 7 AME</td>
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<td>Income</td>
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</tr>
<tr>
<td>Nil</td>
<td>-0.015</td>
<td>-0.036</td>
<td>-0.018</td>
<td>-0.029</td>
<td>-0.006</td>
<td>-0.038</td>
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</tr>
<tr>
<td>£1-$4,999</td>
<td>-0.035</td>
<td>-0.031</td>
<td>-0.059</td>
<td>-0.038</td>
<td>0.026</td>
<td>-0.007</td>
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</tr>
<tr>
<td>£5,000-$15,000</td>
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<td>-0.035</td>
<td>-0.044</td>
<td>-0.024</td>
<td>-0.010</td>
<td>-0.025</td>
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<tr>
<td>£15,000-$24,999</td>
<td>-0.100*</td>
<td>-0.093</td>
<td>-0.070</td>
<td>-0.054</td>
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<td>£25,000-$34,999</td>
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<tr>
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p <0.05 *, p<0.01 **, p<0.001 ***
Despite the lack of a significant difference between the lowest and highest incomes, degree students from the WIMD Education quintiles 1 to 3 (most disadvantaged) had a small significant increased probability of using all their loans (between 1.9 and 3.4 percentage points, Table 7-5) after taking other factors into account, compared to those in the fifth quintile. This was seen for fee and living cost loans separately for those in the lowest (most disadvantaged) quintile. Given the better quality of the measures for income and living at home for the Welsh cases, these effects are likely to be due to other factors. As for Scotland, this result may be providing some indication of differences in access to resources not measured by income; but the possibility of other explanations would bear further examination.

An unexpected finding from this research was the persistent significant relationship for Wales between field of study and loan use, for fee and living cost loans, for degree students only. After adjusting for other factors STEM and LEM students, and the suppressed cases, remained significantly less likely to take out all their loans compared to students in other fields of study: the difference was larger in all models for STEM (-6.6pp) than LEM (-3.8pp) (Table 7-5, Model 7). These students may have better access to other resources in the form of fee waivers, bursaries, scholarships or paid internships, which are used to reduce their borrowing of all sorts. The suppressed group, which was also significantly less likely to use all their loans (3.4 percentage points) and was expected to be concentrated in institutions in England, where more emphasis was placed on additional institutional financial support.

For degree students whether students lived at home or away was significant in all models for living cost loans and total borrowing. There was no significant relationship for fee loans. The difference between those living at home and away increased marginally as controls were added (from a gross effect of 10.4 to 11.6 percentage points in the final model for all loans: for living cost loans the difference between those living at home and away in the final model was 13.4 percentage points), as shown in Table 7-5. These results were again very close to those found by De
Gayardon et al. (2019). As for Scotland the effect of living arrangements was therefore significant and substantial.

Living arrangements were the only factor with a significant relationship with borrowing behaviour for sub-degree students (6.9 percentage points greater likelihood of taking all loans if living away in the final model, Table 7-6). It only became so however after taking region into account, suggesting regional differences in the relationship between living at home and borrowing behaviour for these students; as before, the small size of the group studied here should however be borne in mind. This was not examined further here; as for Scotland there may however be a case for understanding better differences in how the national student funding system functions in different parts of Wales. For degree students, the gross effect for the North East and Border region showed students from there having a small significant higher probability of taking out all their loans compared to those from the Urban South (1.9 percentage points, Appendix E Table E-26) which was not see in the final model; a further model (not shown) confirmed that differences in living arrangements explained the difference. In contrast to Scotland, neither sex nor independent status had a significant relationship with taking out all loan for Wales at either level of study.

7.4 Conclusion

This chapter addressed the question:

How does the likelihood of taking out a student loan relate to income in both systems, and how far may any differences be accounted for by variation between the two student populations in other characteristics expected to affect borrowing behaviour?

Examining the data revealed that whether students took out a loan at all in any year was the principal way in which borrowing behaviour affected total borrowing, rather

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35 When modelled with living arrangements only, there were no significant differences by region in borrowing behaviour.
than students’ taking only part of the total amount available to them, a point not previously reported. The analysis here therefore examined how many of the various loans available to them during their studies students took out, rather than the percentage of the total value of possible loans, which was a more difficult figure to estimate accurately from the available data.

Students from Scotland from lower incomes were significantly and substantially more likely to take out all their loans and to borrow at all, compared to those in the highest income group. The effect persisted as other factors were taken into account on which the two populations varied, including level of study and living arrangements. For Wales differences by income were much smaller and significant ones confined to the groups with incomes between £25,000 and £49,999. Again this difference persisted as other factors were added. Differences between the two nations were smaller at lower incomes. Differences in borrowing behaviour by income were smaller for Scotland among sub-degree than degree students. Accounting for other factors reduced the differences by income, at sub-degree more than degree level, but did not remove them. The Scottish nil income group emerged as persistently more likely than all others to take all their loans, and to borrow at all. Their take-up of loans was similar to that of the same group for Wales.

For Scottish degree students, income made more difference to whether or not a student took out all their loans than it did to whether they were a borrower at all. This was an unexpected result, given that borrowing nothing at all might have been expected to be a stronger function of income than only missing one or more years. Although the focus of concern about equal debt expressed in the English literature has been on non-borrowing, the results suggest that partial borrowing may be the form of debt reduction most closely linked to income. Students on sub-degree courses in Scotland were the least likely group to use loans, across the nations and levels of study; almost half of those in the highest income group here took no loan (45%), an effect predictable from earlier work (Hunter Blackburn 2016a). The higher proportion of sub-degree students in Scotland therefore contributed substantially to
the higher proportion of non-borrowers overall. The presence of degree students who had previously studied at sub-degree level was a further influence on lower loan take-up among students from Scotland. These students were more likely to have had at least one year without a loan.

The Welsh results may have been influenced by some students' additional access to additional support from institutions and other non-family sources. The findings suggested that the results of the most recent SIES for Wales (Maher et al. 2018b) of no relationship between institutional bursaries and SES status (chapter 3) should not be relied on as evidence that these additional payments had no relationship to income. There was only limited evidence of Welsh students treating fee and living cost loans differently.

Whether or not students lived in the parental home (or for Scotland, had a high likelihood of doing so) reduced the likelihood of using all loans in both nations at both levels, for degree students more than for sub-degree students. This factor had the largest effect on borrowing behaviour for students from Wales, but the effect for degree students was still only around two-thirds of that seen for Scotland. The findings were comparable with previous research in England by De Gayardon et al. (2019).

It appeared possible that index of multiple deprivation (IMD) Education quintile data in both nations was providing evidence of access resources not reflected in the research data: more so for Scotland, where the upper income data was less differentiated. The larger effect and significance of SIMD for degree than sub-degree students there may also reflect that measure serving more as a proxy income variable in the degree group. A smaller significant effect was also seen for Wales. The IMD effect appeared contradictory to some previous findings about loan use and social class, and educational advantage. A “hidden income” effect might also explain why coming from the Aberdeen city region which was persistently associated for
Scotland with lower loan take-up, for degree and sub-degree students, on either measure of borrowing, whatever other controls were applied.

The analysis in this chapter shows that differences in the lower-income skewed distribution of student loan between Scotland and Wales could be predicted to be a product not only of the structure of entitlements in each system, but also of differences in borrowing behaviour. In contrast to Wales, Scottish students at higher incomes were less likely to make use of loans than those from lower incomes. In response to the research question, these differences could not be accounted for by differences in the nature of the two student populations, although the scale of income differences in the Scottish student group reduced somewhat when other factors were taken into account.

At the theoretical level, the findings in this chapter show that engagement with student loan systems is context specific. How the income-related difference in borrowing behaviour between the two systems might be explained is considered further in the conclusion, with the presence or absence of fee loans suggested as a possible explanatory factor, which could be tested further and separately by looking at how loan take-up has changed in each part of the U.K. since 1990. More generally, these findings bring out that in assessing the impact of student loans on the reproduction of inequality in any jurisdiction, the pattern of loan take-up requires attention: the theoretical design of the system alone will not provide sufficient information. Further, patterns of partial borrowing cannot be assumed to be the same as non-borrowing, and may play a substantial role in how debt is distributed.

The next chapter considers how the final distribution of student debt in each nation which results from the combination of differences in entitlements and take-up could be expected to translate into repayments, and what relationship these would be expected to have the reproduction of economic inequality.
Chapter 8 The distribution of repayments and overview of the two systems

8.1 Introduction

This chapter considers how loan repayments may be expected to be distributed across graduates according to their original family income and individual characteristics, in order to address RQ3:

To what extent should the protection for low earners in the loan repayment regime applying in each nation be expected to limit how far differences in the distribution of debt will be reflected in actual repayments?

The analysis here allows the range of effects each system might be predicted to have to be compared. It illustrates under what conditions each system might be expected to have particular distributional effects, rather than seeking to provide any single estimate of how repayments will be distributed in either nation.

The chapter opens with a detailed explanation of the approach taken to calculating expected repayments, as briefly summarised at section 4.4.4. It then reports the results, providing these separately for all, degree and sub-degree students in each nation. These are provided first as an overview of the outcomes obtained by combining various relevant factors, using a comparison of concentration indices, which identify whether any particular outcome is expected to skew repayments more towards those stating from lower or higher family incomes, or neither. The results are compared with the concentration indices for initial borrowing in each nation, to enable a direct answer to RQ3. They show that in both nations the repayment system is expected to create a more higher-income skewed distribution of repayments compared to initial borrowing. For Wales, where borrowing already has a higher-income skewed distribution, this results in a secure prediction that repayments will also be higher-income skewed. For Scotland, the outcomes of the repayment system are more unpredictable. Two scenarios are then examined further for each nation, using concentration curves, to provide more detail of the pattern of distribution across the income range, on comparable terms to those presented in earlier
chapters. In the light of results from the concentration curves, descriptive statistics are used to examine a sample scenario from each nation to consider in further detail the differences between the individual income groups and the variation within each.

The final section of this chapter uses concentration indices to summarise each nation's funding system as a distribution mechanism of benefits and costs. In addition to including previous findings, some further detail is added for context, ahead of the discussion of what this comparison shows. This is the distribution and average annual value of total living cost support and average value of all support paid to institutions for teaching costs.

8.2 Predicting future repayments

8.2.1 Anticipating future earnings

This was one of the most difficult parts of this research. The most similar exercise to one undertaken here appears to be Britton, van der Erve and Higgins (2019). This became available too late for the development of the methodology used here, but appears to have adopted some parallel strategies in seeking to link borrowing with repayment. Their method also takes a student population, in their case drawn from cases held by the Higher Education Statistics Authority (HESA). They assigned to each student a notional loan amount, and linked each student case to an earnings centile point in a simulated earnings model. The construction of the earnings model is discussed in the detail, and the basis for the assignment of notional loan amounts to actual student cases is partly described, but the process by which earnings profiles were assigned to student cases is not discussed. The authors do however state that at a prior stage of the process they “calculate the rank of all our simulated earnings profiles by age and gender” (Britton, van der Erve and Higgins 2019, 67), before further ranking cases within those groups.

The research here was able to draw on a model published by the Department of Business and Industry (“the BIS model”), based on 20,000 projected earnings profiles over the 30 years repayment period. The model is publicly available (BIS 2015b) and
runs in Excel. The cases in it are based on anonymised cases processed by the
Student Loans Company (SLC), with certain known characteristics and actual early
career earnings, from which projections about future earnings are then made,
drawing on a range of assumptions. The process used by BIS to create the estimated
earnings path for each case is complex, and not published in detail. It is described
only as being based on actual earnings data from SLC and a combination of data
from the British Household Panel and the Labour Force Survey, for English domiciled
students on courses of three years or more (BIS 2015a). The individual pathways are
calculated taking into account assumptions based on sex and age, and also on
institution and subject. It does not make use of area deprivation or family income
data. Only sex and age at entry are provided for each case in the resulting published
dataset. These however represent two of the best established predictors of future
graduate earnings. As noted at 4.5.1, sex emerges repeatedly from research as a key
explanatory variable in difference between graduates’ labour market outcomes. Age at
participation is also strongly associated with later earnings.

It was possible to calculate from the data published by BIS how the model predicted
the distribution of degree-level cases across lifetime earnings deciles by sex and age,
in combination, using the age, sex and graduate earnings centile data published in the
model for all cases. This distribution was taken as the starting point for sorting
degree level-cases in this research into different positions on the graduate earnings
range. How sub-degree cases were included is discussed further below. In
analysing the BIS data, being aged 22 or more at entry to HE was chosen as the
proxy for independent student status by the end of the course.

For sex, the BIS model predicts that mean lifetime earnings will be 37% higher for
men than women; and the median 31% higher. The Longitudinal Earnings Outcome
(LEO) exercise (Department for Education 2019) ten year data also show a difference
in median earnings by sex of 31% (no mean differences have been reported). The
alternative LEO ten year data suggest a smaller age effect than the BIS model. For
this exercise, the BIS model was treated as more likely to be a reasonable guide to age-related effects.  

The distribution of graduates across the earnings deciles by age and sex predicted by the BIS model was calculated in SPSS from the BIS data and is shown in Figure 8.1. The differences by sex are greater for younger entrants.

Figure 8-1 Distribution of cases included in the BIS model across lifetime earnings deciles separated by age at entry and sex

Source: Author’s analysis of raw data included in the BIS model (BIS 2019)

The model replicates Conlon and Patrignani’s (2011) finding that late entry has a larger negative effect for men than for women. For women the median earnings centile was 12 centiles lower for the older group (31st compared to 43rd); for men the difference was 20 centiles (47th centile compared to 67th). This is a result of the

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36 Measuring only up to ten years, the LEO cannot take into account the full effect of differences in earnings between graduates based on age at time of participation which are due to older entrants having less time between graduation and retirement.
men’s larger earnings after early entry into higher education, compared to all other groups.

To take advantage of the BIS modelling, I assumed that the cases in my research would follow the distribution across lifetime earnings deciles predicted by that model for each age and sex group. This assumes the distribution of graduates across the lifetime earnings deciles for Scotland and Wales by age and sex will be a close match for England. This was also the assumption adopted by the Fraser of Allander Institute in their reworking of the BIS model for Scotland (FAI 2018), discussed further below.

No separate data are available on lifetime graduate earnings deciles by age and sex specific to students originally domiciled in Scotland or Wales on which any alternative assumption could be made. There is some basis for assuming that sex-related differences function similarly across the U.K.. The LEO result shows a similar but slightly larger sex-related gap in graduates from Scottish HEIs (median earnings are 15% higher for men) than from HEIs in England (+12%) (no figure is available for Wales). The Scottish figure will however be influenced by the inclusion of students from other parts of the UK.

In the absence of better data being available for Scotland or Wales, the BIS model was adopted as the best available guide to the likely distribution of cases across the earnings deciles by sex and age. To build the BIS model assumption into the calculation, as a starting point the cases in each nation were first separated by sex and age into four groups. Any further steps were limited to ranking cases within these groups, so that the joint effect of sex and age would be taken into account in all the repayment scenarios examined. Other characteristics were then used to distribute the cases within each group across the earnings deciles, to mirror as far as possible the four separate distributions shown in Figure 8-1 above.

### 8.2.2 Adding further characteristics

Cases were ranked within each of the four age and sex sub-groups using other variables available in the research data which would be expected to have an
association with earnings, based on existing research: these were IMD Education quintile, income, institution and subject. Region of origin, also available in my data, may also be a predictor of earnings, but in the absence of regional data for Scotland and Wales comparable to that used for other factors, most obviously the LEO, region of origin was excluded from the analysis. There is also some recent evidence of a relationship between earnings and whether a student lived at home, with the LEO showing a 14% earnings advantage after ten years for those who lived away (BIS 2019). As shown in earlier chapters, living at home correlates strongly with several other variables already used here. It was not considered for further use here, as being likely to duplicate other effects, particularly for independent students, as well as already being on an estimated basis for Scotland.

The approach here was unavoidably novel. The separation of cases into four separate groups by age and sex however provided that the results departed from known data only in the distribution within each of those groups and not between them. Thus, independent students were always more concentrated in the lower earnings deciles than younger students, and women were more concentrated in the lower groups than men, both for younger and older cases. The LEO offered the most comprehensive available assessment of the relative effect of the further factors used here on graduate earnings, on a common basis. This was therefore chosen as the main source to determine the relative scale of effect expected for individual variables. There was no basis in the data sources available for making assumptions about the effects of the four further variables used (IMD, field of study, institution and income) varying between the four different sub-groups, other than for field of study and institution (Wales only) where the data drawn on were separated by sex.

The scenarios developed for each nation were not identical, as for Wales it was possible to use more information on subject and institution, due to the availability of relevant research findings (Belfield et al. 2018) and the additional information here for the Welsh research cases. The difference in the income data supplied also led to differences in the way effects related to this were examined. Further detail is provided in Appendix F (Note 1) about the sources consulted and conclusions.
reached about how each factor should be weighted in ranking degree cases within the sex/age groups.

There is a lack of comparable data on sub-degree students. Information on earnings for this group is very limited, although the recent limited extension of the LEO to sub-degree study (Scottish Government 2019) is a helpful development. In Scotland using LFS data Walker and Zhu (2007) found the earnings premium for a HN-level qualification, compared to having no qualifications, to be similar to that for Highers (around 50%), with a substantially greater premium for a degree (around 80% ). Gasteen and Houston (2007), also using LFS data, found the advantage of an HN-level qualification in Scotland to be around half that of a degree, compared to basic school leaving qualifications, before applying other controls. Both these are limited accounts and now over a decade old. They are however consistent with accounts with using data from across the UK for England alone. Blundell et al (1997) found earnings for women with a degree to be around 50% higher than for a sub-degree qualification and that this effect continued even after including a variety of controls. The advantage of degree level study was smaller for men, and in one model there was none. Robinson (1997) found the earnings associated with HN-level qualification to be more similar to those with school-leaving qualifications than degrees, for women and men. Using UK-wide LFS data, Dearden et al (2002) found a lower return for HNs than for degrees, again with the difference being largest for women, but the number in the sample was relatively small. McIntosh (2006) also using LFS UK-wide data to model lifetime earnings achieves the most extreme results, concluding that an HNC/HND was equivalent in effect to achieving “good” A levels. All these accounts are now dated, but the recent initial LEO reports confirm that sub-degree study still has a less positive effect on earnings than a degree, at least in the short-term; four years after graduation HN leavers’ average earnings were around two-thirds of those who completed with a first degree in 2012-13 (Scottish Government 2019).

Sub-degree students were included in the approach here by first excluding them from the initial ranking of cases. They were then ranked within the same age and sex groups, using a more limited range of factors (IMD and for young students only,
income), fitted as far as possible to the same decile pattern as for degree students and then had a uniform downward adjustment applied to this result to produce their final decile. The basis of published comparisons of degree and sub-degree did not readily produce an estimate of which decile of graduate earnings range would be the median for sub-degree cases and therefore the appropriate size of downward adjustment. I was however able to take into account that where these students were placed would in general make less difference to their final repayments than was the case for degree students, as they borrowed smaller amounts and were therefore more likely to repay the whole amount at most deciles. A two decile downward adjustment was used, to differentiate from the degree population but still allow for some variation within HN outcomes.

8.2.3 Development of further repayment scenarios

To contain the volume of results, a limited number of scenarios were chosen initially, as each one required to be run multiple times in each nation, under varying assumptions about the general level of graduate earnings, interest rates and (for Scotland) the repayment threshold, as discussed below, and to test for the sensitivity of using different approaches to grouping the income data for concentration indices and curves. Had access to the data not been interrupted in the spring of 2020, the opportunity might have been taken to develop and examine more scenarios: however, the ones here proved sufficient to answer the research question.

The relationship with income was the focus of this research. As Chowdry et al. (2012) had demonstrated the sensitivity of loan repayment models to varying assumptions about the strength of the relationship between family income and later earnings, the set of scenarios initially identified was concerned mainly with examining this point. Income was only used as a further factor for young students, as the limited available research data on the relationship between initial family income and earnings relates only to that group. The income data for independent students placed most cases in the nil income category, and therefore this measure would also have introduced little
further differentiation of cases; those that would have been affected would have reflected a partner's earnings, rather than their family of origin.

The factors included in each scenario for each nation are shown at Table 8-1.

*Table 8-1 Scotland and Wales: factors included in repayment scenarios*

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<td>Income (young students only): additional weighing for group £50,000+</td>
<td>Income (young students only): Stronger assumed income effect at £50,000+ (young students only)</td>
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For Scotland only, where the data on which an institutional assumption could be made was more limited, preliminary work was done on a further scenario which allowed for a larger institutional adjustment, weighting post-92 institutions more negatively against pre-1992s, and ancients more positively, to have the effect of distinguishing cases more by institution type in predicting future earnings. Although this was not taken all the way to an expected set of repayments, a cross-tabulation of the effect of this approach with income, compared to the one included in scenarios 2 and 3, showed that as expected it strengthened to relationship with family income
and would therefore be expected to enhance any effects due to that. For Wales, an additional scenario was used to examine the effect of removing any subject assumptions. The relationship between subject and later earnings has been a considerable focus of research in England over the past decade; removing the subject adjustment demonstrated how its inclusion had affected the results.

For each factor considered in a scenario, a relative value was assigned to each category it contained, and each case then scored for that factor. In the absence of a basis for any more complex approach, the values obtained for each separate factor were then combined by summing, to produce an overall score for that case under that scenario. These scores distributed cases across a range of values, allowing cases then to be ranked for expected future earnings within their age/sex group for that scenario.

The distribution of cases by ranked scores within each age/sex group was examined separately in turn. An earnings decile was associated with each ranked score, chosen to achieve the most similar possible distribution of earnings deciles in the group as in the BIS model for the same group. For Welsh students the ranking process produced a distribution of cases which could be straightforwardly matched to the BIS distribution. For Scottish students the cases clustered round a smaller number of values, in the absence of the additional detailed subject and institutional adjustments used for Wales. Results clustered more for independent students than for young ones, as fewer factors were included in their scoring. Where boundary matches were not precise, an element of judgement was therefore required in assigning earnings deciles for Scottish cases. A worked example is provided in Appendix F (Tables F-5 to F-7), providing the process followed for young male Scottish students under scenario 3. In some instances a particular ranked score had to be assigned a combined decile (5 and 6, and 7 and 8, in the example provided); how these cases were treated at the point of calculating the expected repayment is discussed further below.

Certain types of case were expected to be more sensitive to the judgements exercised at this stage than others. A preliminary examination of the relationship
between borrowing, earnings deciles and repayments for the Scottish student group was produced using the Fraser of Allander (FAI) model discussed below: the results are shown at Figure 8-2.

*Figure 8-2 Expected value of repayments for given amounts of final total borrowing at 2018 prices at each earnings decile (£25,000 repayment threshold, UK earnings, Scottish interest assumption)*

This analysis showed that for the amounts of debt typical for Scotland, between zero and around £25,000, under the increased repayment threshold it was expected to make relatively little difference whether a person fell into any of the highest five graduate earnings deciles, as all cases in these deciles were all expected to repay in full, or nearly to do so. As predicted earnings fall, the likelihood of some write-off rises. Those in the lowest earnings decile were predicted by the FAI model to repay on average less than £3,000, whatever they borrowed. Equally, predicted earnings made little difference to predicted repayments for lower borrowers. For borrowing up to around £7,000, the highest 80% of earners were all expected to have similar average repayments. This finding is particularly relevant to sub-degree students. The analysis suggested that the results would be most sensitive to where lower earning degree level cases were placed and that decisions about the detailed placing of other
cases would have less effect. This, in the example shown in appendix, combing cases at deciles 5 and 6 and 7 and 8 would expected to have little effect. A similar calculation for the original lower repayment threshold showed a similar pattern but with further reduced differentiation by decile, as would be expected from its reduced protection for lower earners.

This stage of the exercise therefore introduced unquantifiable uncertainties, given the lack of a developed methodology I could apply in anticipating where individual cases might fall within the range of earnings deciles, and the limits imposed both by the data and by the process on how precisely cases could be matched with the distribution in the BIS model. The general bounding by age and sex, and the limited effect of decile choice in the upper deciles and for lower borrowers, and for Scotland the higher proportion of non-borrowers, will however have contained these effects.

The output of the repayment scenarios was checked for the incidence of cases with no repayment: these matched the cases of non-borrowers, as expected. In practice, some borrowers may also make no repayments, if they never earn above the threshold. The scenarios will therefore tend to underestimate the numbers making no repayment, depending on how many graduates in each group earn below the earnings repayment threshold throughout the thirty years before debt is written off, die before making any payments, or evade payment. Borrowers who move to live outside the UK are liable to make loan repayments but in practice this group is hard to pursue and contributes to non-repayment. Estimating the size of this group is difficult. Britton et al. (2016) found that in total 15% of graduates in their sample had no earnings, although using a different approach, Britton, van der Erve and Higgins (2019) estimate a smaller group of those with a loan, between 3% and 10%, would be expected to make no repayment, depending on where the loan repayment threshold was set. The number of borrowers with no expected repayment and their distribution across the family income groups was therefore unpredictable; for the purpose of this analysis this group is assumed to be distributed pro rata by initial income.
8.2.4 Converting loan into repayment

The assumed repayment for each case in each scenario was calculated by taking its assigned decile in that scenario and selecting the value of expected repayment at that decile for its total borrowing, from a range of possible repayments which had been calculated for it, as described below. For Welsh cases, total borrowing was reduced by the estimated value of the partial cancellation. Where a case was assigned to a group which covered more than one decile (cases assigned to deciles 5 and 6 or to deciles 7 and 8, in the worked example above in Appendix F, Tables F5 to F7), the mean repayment was taken to be the average of the individual decile averages, as each decile covered 10% of the population.

To estimate repayments at different earnings deciles, I was able to draw on a model developed by the Fraser of Allander Institute at the University of Strathclyde (“the FAI model”). This model was kindly provided to me with permission for use for this purpose by the Institute. It runs in Stata. The model is based on the simplified repayment calculator published by the Department of Business and Industry (“the BIS model”), which is publicly available (BIS 2015b) and runs in Excel. Each time the BIS model is run, half (10,000) of the cases it contains are sampled. The FAI model is based on a single extract of 10,000 cases from this database. Following the BIS model, the FAI model calculates the amount each case is expected to repay each year and then sums these payments. It applies the same assumptions as BIS for earnings growth (based on figures from the UK’s Government’s Office of Budget Responsibility) and inflation-linked increases to the repayment threshold, to produce a figure for total repayment for each case at 2018 prices deflated by the Consumer Price Index (CPI), but without applying a government discount rate (Fraser of Allander 2018). The model therefore differs from those generally used to cost loan repayments (for example, Chowdry et al. 2012) which take into account the greater value of having resources in the present rather than the future. As the comparisons here were concerned with comparing distributions, rather than absolute value, the 2018 prices approach of the FAI model was regarded as fit for this purpose.
Unlike the BIS model, the FAI model also calculates estimates of the average repayment expected at each lifetime earnings decile for any given level of loan, depending on what assumptions are made about the design of the loan scheme. It allows the loan repayment threshold and interest rate to be adjusted. It also includes an adjustment factor for the earnings data to reflect the FAI's analysis that higher earning graduates in Scotland earnt less than those in the U.K. in general. The reduction applied are shown at Table 8-2. These adjustments only affect cases in deciles 4 and higher, with those in the highest earnings decile most affected. This adjustment to the earnings assumption can be used or disregarded in running the FAI model.

Table 8-2 Scotland: Earnings adjustment for Scottish resident graduates included in FAI model by graduate earning decile

<table>
<thead>
<tr>
<th>Decile</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-1%</td>
</tr>
<tr>
<td>5</td>
<td>-2%</td>
</tr>
<tr>
<td>6</td>
<td>-2%</td>
</tr>
<tr>
<td>7</td>
<td>-6%</td>
</tr>
<tr>
<td>8</td>
<td>-8%</td>
</tr>
<tr>
<td>9</td>
<td>-9%</td>
</tr>
<tr>
<td>10</td>
<td>-15%</td>
</tr>
</tbody>
</table>

Source: Fraser of Allander Institute (2018)

For Welsh graduates no analogous adjustment was readily available. The Destinations of Leavers from Higher Education Survey (DLHE) showed that earnings for graduates from Welsh institutions shortly after graduation were lower in every earnings decile, compared to the U.K. average, with no consistent pattern, by amounts generally between 7% and 9%. An alternative earnings assumption applying a 10% reduction to every decile was therefore also tested for Wales, solely to establish the sensitivity of the results to a more pessimistic assumption about the relative earnings for Welsh graduates, rather than to attempt a precise estimate of these effects.

The FAI model allows the interest rate to be varied but only as a single rate. For Scottish cases, the assumption in the model was expected to be a close fit with what was expected in practice. For Welsh cases, the interest rate is expected to vary with the level of earnings, as is provided for in the SLC’s Plan 2 loan repayment scheme (SLC 2020), under which higher earners pay higher rates of interest. This was dealt
with by running the FAI model multiple times with different interest rate assumptions and using repayment predictions based on higher assumptions for Welsh cases in higher earnings deciles, drawing on further information that could be extracted from the BIS model on the absolute value of expected earnings at each decile. To test the sensitivity of the results to the interest rate assumption, outcomes were calculated for Welsh cases based on applying two different approaches to applying interest rate assumptions.37

As discussed in chapter 2, the Scottish government was committed to increasing the threshold to £25,000, which it did in April 2021. The sensitivity of the Scottish results to using a lower threshold was also examined, using a threshold of £19,000,38 and is presented below. The FAI model assumed the threshold would be increased with inflation relative to its 2018 value. This assumption held for Wales; the new threshold for Scotland was however set at a cash figure of £25,000 in 2021. The estimates for Scotland therefore assumed a somewhat higher threshold than will apply in practice if there are no further policy changes.

The Scottish cohort examined here are currently expected to spend most of their working life under the higher threshold unless policy changes again. However, the lower threshold represents what the Scottish group was expected to face at the time of study. At the time the Welsh students examined here studied, the expected threshold there was £21,000 and therefore also lower than £25,000. The decision was taken not to test the results for Wales for sensitivity to using the original repayment threshold in the light of the initial results, as it was determined that it was not required in order to answer the research question.

37 The model also assumes borrowing has been accumulated over a particular number of years, which can be varied. For Scotland 4 years was assumed, and 3 years for Wales. This will have overstated the interest on cases studying for longer and under-stated on those studying for a shorter period. These was no simple way to test the sensitivity of the results to this; it was was treated within this exercise as expected to have a de minimis effect.

38 The actual repayment threshold applying was in April 2018, the relevant year for setting the figure in the FAI model, was slightly below this (£18,330). A rounded up figure was used to be illustrative of general effect of the threshold change.
The FAI model was initially run using the U.K. graduate earnings estimates used in the BIS model, by disapplying the Scottish earnings adjustment. This allowed the results for each system to be compared on the same graduate earnings assumption, before testing for the effect of applying lower earnings assumptions in each nation.

8.3 The distribution of repayments by income

Overview of repayment scenarios: higher-income skewed, lower-income skewed or neither?

The distribution of repayments was first examined using CIs and concentration curves. All the scenarios, in combination with varying interest, earnings and threshold assumptions, were run for the ungrouped Welsh income data and Scottish income data in 7 groups, as the most disaggregated approach to income available in each nation, to be on comparable terms with the results for loans in previous chapters.

In the tables below, results which are lower-income skewed (negative) are shaded: in these cases, repayments were expected to skew more towards those at lower incomes. Results where no significant difference was found from zero, suggesting an equal distribution per head, are shown in bold. Significant higher-income skewed (positive) results are left unshaded. The comparison of the range of CIs produced show an immediate difference in the range of expected outcomes for each nation.
Wales

Table 8-3 shows the full set of concentration indices for results for Wales, using ungrouped income data.

Table 8-3 Wales: Concentration indices for all repayment scenarios, using 7 income groups, lower-income skewed results highlighted, results with no significant departure from zero (equality) in bold

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
<th>Sex</th>
<th>Age</th>
<th>WIMD</th>
<th>Institution</th>
<th>Subject</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earnings assumption</th>
<th>Interest assumption</th>
<th>CI (SE)</th>
<th>CI (SE)</th>
<th>CI (SE)</th>
<th>CI (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>UK</td>
<td>Higher</td>
<td>.085*** (.003)</td>
<td>.119*** (.003)</td>
<td>.139*** (.003)</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>.085*** (.003)</td>
<td>.118*** (.003)</td>
<td>.138*** (.002)</td>
<td>.158*** (.002)</td>
</tr>
<tr>
<td>Reduced</td>
<td>Lower</td>
<td>.092*** (.003)</td>
<td>.145*** (-.003)</td>
<td>.170*** (.003)</td>
<td></td>
</tr>
</tbody>
</table>

| Sub-degree          | UK                  | Higher  | .066*** (.015) | .093*** (.015) | .105*** (.015) |
|                     | Lower               | .066*** (.015) | .092*** (.015) | .152*** (.015) | .119*** (.015) |
| Reduced             | Lower               | .075*** (.017) | .106*** (.016) | .180*** (.015) |

| All                 | UK                  | Higher  | .096*** (.003) | .130*** (.003) | .148*** (.003) |
|                     | Lower               | .095*** (.003) | .128*** (.003) | .149*** (.003) | .168*** (.003) |
| Reduced             | Lower               | .103*** (.003) | .154*** (.003) | .180*** (.003) |

| z-stat              | UK                  | Higher  | 1.24 | 1.71 | 2.27* |
|                     | Lower               | 1.24 | 1.71 | -0.91 | 2.54* |
| Reduced             | Lower               | 1.05 | 2.34* | -0.69 |

p<0.05 *, p<0.01 **, p<0.001 ***

For Wales all the scenarios under all assumptions for all groups of students produced a higher-income skewed (positive) CI with significant effect, meaning under all assumptions.

39 Cases from families with incomes over £50,000 given an additional score of +10, young cases only.
40 Cases from families with incomes over £50,000 given an additional score of +15, young cases only.
conditions at all levels the distribution of repayments was expected to skew to higher incomes. All the CI results were more positive than for loans, as reported at Table 6-2 (degree students CI .039***, sub-degree .024***). This means the application of the repayment rules had the effect of skewing repayments more strongly than loans towards those from higher incomes. The departure from an equal distribution, as measured by the CI, was generally between two and four times greater in scale than for loans.

The results showed little sensitivity to applying different interest rate assumptions. The results were more sensitive to differences in graduate earnings. Under the reduced earnings assumption, which depressed earnings expectations across the population, the results were more positive/higher-income skewed in all the scenarios (comparison of results for reduced and UK earnings across scenarios in Table 8-3). This suggested that at a lower overall value of earnings, the protections in the loan repayment system provided more benefit to earners in the lower half of the range, as the proportion of their income above the threshold diminished to a larger extent than was the case for those at higher earnings. This effect then benefits those from lower incomes more, if they are assumed to be lower earners.

The CIs increased across all groups between scenario 1 and 2, when an explicit income adjustment was added, and then increased again between scenario 2 and 3, when a stronger income adjustment was used, increasing the higher-income skewed effect at each stage. Whether the positive effect was larger in the degree or sub-degree group varied according to the conditions applied, but differences between the groups were mostly not significant. Combining degree and sub-degree students produced results at least as positive as either group, and usually larger, showing the inclusion of sub-degree students tending to make the outcome more higher-income skewed, consistent with their being on shorter courses and so borrowing less, and being more concentrated in lower income groups.

Removing the subject effect (examined only for one combination of earnings and interest assumption, as a further exploratory step) had the reverse effect for degree
cases only and thus across all students. Further investigation showed the subject adjustment drawn from Belfield et al. (2018) to have a complex relationship with income, which differed by sex. The adjustment depressed earnings expectations for male students in middle to high income groups (but not the highest); a stronger uplifting effect for women and a smaller one for men in the highest income group was insufficient to prevent this adjustment tending to reduce differences in repayments by earnings, explaining why this scenario is less higher-income skewed. This may reflect a potential real effect from subject sorting or illustrate the limitations of adjusting for subject independently from institution (Britton et al. 2016).

**Scotland**

Table 8–4 provides the same results for Scotland using 7 income groups. The Scottish results present a more complex picture, in which the distribution may be lower-income skewed (negative), higher-income skewed (positive) or neither, depending on the conditions applying.
Table 8-4 Scotland: Concentration indices for all repayment scenarios, using 7 income groups, lower-income skewed results highlighted, results with no significant departure from zero (equality) in bold

<table>
<thead>
<tr>
<th>Scenario</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Description</td>
<td>CI (SE)</td>
<td>CI (SE)</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>Degree</td>
<td>Scottish</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>£25,000</td>
<td>£19,000</td>
</tr>
<tr>
<td></td>
<td>SIMD</td>
<td>UK</td>
<td>Scottish</td>
</tr>
<tr>
<td></td>
<td>Institution</td>
<td>-0.054*** (.003)</td>
<td>-0.042*** (.003)</td>
</tr>
<tr>
<td></td>
<td>Subject</td>
<td>0.042*** (.003)</td>
<td>0.019*** (.003)</td>
</tr>
<tr>
<td></td>
<td>Income A**</td>
<td>0.002 (.003)</td>
<td>0.011*** (.003)</td>
</tr>
<tr>
<td></td>
<td>Threshold Earnings assumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CI (SE)</td>
<td>-0.038*** (.005)</td>
<td>-0.023*** (.005)</td>
</tr>
<tr>
<td></td>
<td>Sub-degree</td>
<td>-0.072*** (.005)</td>
<td>-0.063*** (.005)</td>
</tr>
<tr>
<td></td>
<td>£25,000</td>
<td>Scottish</td>
<td>£19,000</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>-0.112*** (.006)</td>
<td>-0.092*** (.006)</td>
</tr>
<tr>
<td></td>
<td>Scottish</td>
<td>-0.096*** (.005)</td>
<td>-0.092*** (.006)</td>
</tr>
<tr>
<td></td>
<td>£19,000</td>
<td>Scottish</td>
<td>-0.050*** (.007)</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>-0.071*** (.003)</td>
<td>-0.050*** (.007)</td>
</tr>
<tr>
<td></td>
<td>£25,000</td>
<td>Scottish</td>
<td>-0.022*** (.003)</td>
</tr>
<tr>
<td></td>
<td>£19,000</td>
<td>Scottish</td>
<td>0.008** (.003)</td>
</tr>
<tr>
<td></td>
<td>Sub-degree</td>
<td>z-stat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>degree vs sub-degree</td>
<td>UK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>Scottish</td>
<td></td>
</tr>
</tbody>
</table>

41 Young students only: cases from families with incomes over £35,000 given an additional score of +10. Cases with incomes below £15,000 given a score of -5. The further discussion of these adjustments in Appendix E, Note 1 describes the steps taken to establish the expected effect of applying the same income adjustments as a further scenario for Wales, and why this was not taken through to the production of further estimated repayments.

42 Young students only: cases from families with incomes over £35,000 not in SIMD5 given an additional score of +5, cases from families with incomes over £35,000 and in SIMD5 given an additional score of +15, adjustment below £15,000 as before.
Considering first, degree students, the concentration index was always less negative (more positive) than that for total borrowing (-1.41***, SE .002 reported at Table 6-2), showing as for Wales the repayment rules producing (here) at minimum a less strong skew of loan repayments towards those from lower incomes than was true for loans. Outcomes where repayments skewed towards those starting from lower family incomes were produced by all combinations of threshold and earnings, in the scenario which included no explicit assumption about a positive relationship between family income and graduate earnings. As for Wales, introducing such an assumption created a more positive or less negative result, moving payments more towards those starting from higher family incomes. The alternative income adjustment in scenario 3, which further differentiated the earnings of those in higher family income groups using SIMD 5, moved the distribution further to a higher-income skewed distribution except for degree students at the £19,000 threshold, where it altered the result only by less than the standard error of the CI, showing that the reweighting of the higher income cases made no significant difference at the lower repayment threshold.

The effect of the threshold increase, examined using Scottish earnings, is further shown to play a central role in producing more positive results, making the results substantially less negative and in scenarios 2 and 3 turning lower-income skewed outcomes higher-income skewed. This is consistent with modelling undertaken in England comparing the effect of different levels of threshold (for example, Johnston and Barr 2013), showing that a threshold rise benefits lower earners the most, as more of them see more of their loan written off: higher earners still repay their whole loan but more slowly.

Outcomes at the lower repayment threshold using UK earnings assumptions were not further examined, given these results: using the higher threshold, U.K. earnings produced more negative or less positive results than Scottish ones. From this, it
could be reasonably expected the distribution of repayments under the lower threshold would be lower-income skewed under both earnings assumptions.

The Scottish earnings assumption always produced a more higher-income skewed or less lower-income skewed outcome than U.K. earnings. Reducing the value of assumed earnings for Scotland therefore had the same effect as for Wales, even though the reductions were largest at higher incomes. From the analysis of earnings and repayment discussed at section 8.2.3, those in the highest deciles remained likely to pay off their whole loan, at the levels of borrowing typical for students from higher income families from Scotland (if they borrowed at all). The smaller reductions applied in the middle of the earnings range were more likely to increase loan write-off for those earners, who in turn were more likely to come from lower incomes and to have borrowed more.

For sub-degree students from Scotland, U.K. earnings results are shown here for completeness, but effects using the Scottish earnings assumptions are more likely to be relevant. For this group, the expected distribution of repayments was always lower-income skewed and had less negative than for loans (CI -1.148***). The increase in the repayment threshold usually reduced the lower-income skewed effect for this group, but did not remove it, with the exception of scenario 1 where no relationship was assumed between income and earnings.

For this group, the persistent skewing of repayments towards those from lower family incomes was consistent with the large proportion of non-borrowers at higher incomes at sub-degree level and the lower absolute value of total borrowing by those who did borrow, as seen in chapter 6. Sub-degree borrowers are therefore more likely than degree ones to be from lower incomes and to pay back the full amount of the loan, plus interest, even at relatively low earnings. This creates conditions under which it is difficult for an income contingent loan scheme to reverse fully an initial lower-income skewed distribution of borrowing.

The results for Scotland when students at both levels were combined under most conditions were at least insignificantly different from equality, and in most cases
higher-income skewed. This mirrors the effect of combining loan results for degree and sub-degree students, with the concentration of students from lower incomes in sub-degree study accounting for the lower share of overall repayments attributable to lower income cases. Echoing earlier results, a technically higher-income skewed distribution of repayment is due to unequal initial participation. Under the previous threshold across the entire cohort completing at both levels, the overall distribution of repayments by income would have been expected only just to avoid a lower-income skew. The difference in the distribution of repayments between degree and sub-degree students was always significant at the higher threshold, but less often significant under the lower loan threshold, reflecting its weaker protection in practice for graduates from lower income families.

Repayment scenarios in overview

Common to both systems were repayment outcomes which consistently skewed repayments more towards those starting from higher family incomes than the initial distribution of loan, as would be expected from the design of the scheme and building into the scenarios the link established between socio-economic background and later earnings. As a result, for Wales repayments always skewed towards those from originally from higher income families; the distribution of repayments on that pattern appears highly predictable from the initial higher-income skewed distribution of loan. For Scotland how far the repayment scheme could be expected to fully offset the lower-income skewed initial distribution of loan was more contingent on other factors. Had the repayment threshold not been increased, then a lower-income skewed distribution of repayments would have been predictable at both levels of study. The increase in the repayment threshold is not expected to alter this for sub-degree students. For degree students it appears more likely to have moved repayments to an equal or higher-income skewed distribution, but that outcome is itself contingent on what assumptions are made about the influence of students’ characteristics on later earnings. More equal effects in the repayment system are more likely the more unequal the effects of the labour market. A close to neutral
effect for Scotland was only achieved when students receiving different level of access to higher education were considered together.

While many of the general effects discussed here are predictable from the design of the loan scheme, this research makes a new contribution by demonstrating how the general principle of the U.K. loan repayment system can be expected to work in practice in the devolved administrations, given the different characteristics of student funding systems and their use by students. It identifies for the first time the limitations of the repayment protection for sub-degree students from Scotland. It shows the importance of the increase in the loan repayment threshold for Scotland to avoiding a lower-income skewed distribution at degree level and by extension that how far the threshold is held at that value in real terms over time will be relevant in whether repayments skew more to those from lower or higher incomes. It also demonstrates that for Scotland the achievement of a less lower-income skewed or more higher-income skewed distribution of repayments is also expected to rely on regressive labour market effects. The persistent higher-income skewed set of results for Wales was more directly predictable: however, demonstrating that the distribution of repayments would be expected to be substantially more higher-income skewed than the initial distribution of loans under all the conditions examined adds to understanding of the likely long-term redistributive effect of an initial skew of loans, raising a question about fairness in that system which is returned to in the conclusion.

8.3.1 Effects across the income range

The results above are technically sufficient to answer RQ3. However, as observed at section 4.6.3, a limitation of the CI is that different distributions may produce the same single figure outcome. Uneven effects across the income range are therefore not visible. Further examination of the shape of the distribution of repayments by family income is possible using concentration curves, as shown below.
Scenarios 2 and 3 are examined further here, covering the range of expected repayments which assume some direct relationship between earnings and income. Effects are examined using the low interest assumption for Wales: both sets of earnings assumptions are used in both nations. For Scotland, one scenario using the previous lower threshold is also shown. Degree and sub-degree students are examined separately, and the combined result also shown.

*Figure 8-3 Scotland: degree students, concentration curves for repayments, Scenarios 2 and 3, UK and Scottish earnings assumption for repayment threshold of £25,000, Scottish earnings assumption only assumption for repayment threshold of £19,000, with 95% confidence interval*

Figure 8-3 shows the range of repayment outcomes discussed above for Scottish degree students for the scenarios involving an income-related assumption. The results show the impact of increasing the value of the repayment threshold, taking expected repayments from a clear skew towards those starting from lower incomes to a cluster of results around an equal share per head, or slightly skewed towards those starting from higher family incomes. They also illustrate that even with this change under all the scenarios examined here repayments are still expected to skew towards those entering from the very lowest incomes; the section of the income
distribution where the curve is above the line of equality will represent the group who entered from nil incomes. This group have the highest average borrowing (Figure 6-2), a product of the higher loan to grant ratio in their funding entitlement (section 2.4.1) and their higher probability of using loans (section 7.3).

The results for Scottish sub-degree students in Figure 8-4 show that under scenario 2 the distribution comes close to equality around the middle of the income range, suggesting that under these conditions there are in effect two lower-income skewed distributions within each half of the income range. That the income adjustment works in the opposite direction for this group compared to degree students, is shown by the curves for scenario 3 being more lower-income skewed than for scenario 2. The £19,000 threshold is not illustrated, as its value is very close to those already shown (Table 8-4); as noted above this change had little effect for those borrowing lower sums.

Figure 8-4 Scotland: sub-degree students, concentration curves for repayments, Scenarios 2 and 3, UK and Scottish earnings assumption for repayment threshold of £25,000, Scottish earnings assumption only assumption for repayment threshold of £19,000, with 95% confidence interval shown for lowest and highest values only.
For the Welsh degree cases, shown in Figure 8-5, the concentration curves illustrate how close the results are for the different assumptions at degree level. The lower CIs for scenario 2 are associated with curves just distinguishable from those for scenario 3. At sub-degree level (Figure 8-6) the outcomes from two scenarios are more distinct, with a stronger skew towards those starting from higher incomes becoming clearer around the 60th centile of the sub-degree population.

*Figure 8-5 Wales: degree students, concentration curves for repayments, Scenarios 2 and 3, UK and lower earnings assumption, low interest models only, for repayment threshold of £25,000, with 95% confidence interval*
8.3.2 Variation within income groups

The concentration curve still provides only limited information on the variation in expected repayments at any particular income level and no contextual information on their overall value. The mean, median and lower and upper quartile boundaries by income group for repayments were therefore also calculated, for each scenario. The full data are included in Appendix F (Tables F-9 to F-12). The results are illustrated for scenario 2 in both nations, using the £25,000 threshold, UK earnings and for Wales the low interest assumption. Results are shown only for degree students, as this group is shown above be expected see most departure from the original distribution of loan.

Figure 8-7 shows the expected higher-income skewed distribution of repayments for students from Wales. The results are revealed to be far more dispersed than for borrowing at most lower income groups (as shown above at Figure 6-7); patterns of earnings are expected to be more varied within the income group than patterns of
borrowing. The exception is the group from family incomes of £50,000 or more. For this group, expected repayments are not only higher but more tightly grouped, so that even those at the 25th centile are expected to repay more than the median of all other income groups or more compared to lower income groups. The effect comes from the combination of a high take-up of loans, relatively high borrowing entitlements and greater expected concentration in the upper earnings quartiles.

*Figure 8-7 Wales: degree students, median expected total repayments (2018 prices) with lower and upper quartile boundaries and mean, by family income: scenario 2 assumptions, £25,000 repayment threshold, UK earnings*

The Scottish results are shown at Figure 8-8. Figure 8-3 showed how the insignificant difference in the overall departure from equality under this set of conditions obscured a skew of repayments towards the very lowest incomes, despite independent students being predicted to earn less on average in all scenarios. This figure further shows that underpinning those effects is the relatively high level of expected repayments from the nil income group compared to others; it has the highest mean and median of any group and the highest upper quartile boundary. Other students from families with incomes below £15,000 are expected to make the lowest
repayments; the combination of expected lower earnings and the higher repayment threshold offsets their initial higher debt. The same effect produces a relatively even share of repayments in other groups. At the average level, therefore, the repayment arrangements incorporating a higher repayment threshold are expected to offset initial unequal borrowing among young students.

Figure 8-8 Scotland, degree students: median expected total repayments (2018 prices) shown as columns, with lower and upper quartile boundaries and mean, by family income: Scottish scenario 2 assumptions, £25,000 repayment threshold, UK earnings

The dispersion of cases was however wide in most of the income groups; the largest difference between the two nations for dispersion was at the top end of the income range. Splitting the upper income group by SIMD5 as before shows that those from the highest income group and from SIMD5 have higher expected mean repayments than others, aside from those from nil incomes; however, the lower quartile boundary being at zero shows that one-quarter are predicted to make no repayments at all, reflecting the earlier finding that 24.4% of degree students in this group made no use of loans (section 7.2.2). From earlier results, the lower interquartile boundaries
compared to Wales at all incomes can therefore be understood to be due partly to the higher presence of non-borrowers in addition to low earners.

With the proviso that the figures are from different years and, as discussed in chapter 6, figures for the later year for Wales might be expected to be slightly higher, the analysis above shows that average repayments are at least expected to be similar in absolute terms for students from nil income households in both nations, with medians and means in both falling between £16,000 and £18,000: the upper quartile boundary is around £26,200 in both cases. That outcome is consistent with the similar levels of borrowing, smaller difference in loan take-up than at other incomes, and the same repayment threshold applying. For the remaining groups there is a more obvious difference in the value of repayments as expressed here, with the systems diverging most in effect for students from the highest incomes, with those from Wales expected here to repay around twice as much as those from Scotland.

Further investigation of the results showed that the mean expected repayment for Scottish independent students was between 28% and 33% higher than for young Scottish students, limiting the results to the two scenarios which include an income assumption and only using the higher repayment threshold, with the difference in value falling in a range between £3,000 and £4,000. The expected difference under the lower threshold was in a range just over £5,000.

8.4 Repayment results: discussion

The results above show the loan repayment system acting to skew repayments more towards those who started from higher incomes, compared to the distribution of initial debt. They provide a response to RQ3, which asks to what extent the protection for low earners in the loan repayment regime can be expected to limit how far differences in the initial distribution of debt will be reflected in actual repayments. For Scotland, the answer is somewhat, but how far depends on level of study, the maintenance of a higher repayment threshold than applied at the time students
originally studied and how far low initial income predicts lower later earnings. For Wales, the answer is the opposite: the repayment system is strongly expected to amplify initial differences in borrowing by income, increasing the extent of the higher-income skew, and therefore to act as a counter-weight to the reproduction of economic inequality in the Welsh graduate population.

The most reliable expectation of a higher-income skewed distribution of repayments for Scotland came when students from different levels of study were combined, but as for initial borrowing, this effect is as a result of inequalities in participation by level of study, according to income. Within the degree group, the relationship with labour market outcomes matches the finding Chowdry et al. (2012) obtained from sensitivity tests on this point on their hypothetical student population. It follows that the more progressively the labour market functions to prevent the reproduction of inequalities in earnings, the more likely it is that the student funding system for Scottish-domiciled students in Scotland will be regressive in its direct effects. The Welsh system by contrast can be expected to produce results skewing cost away from those entering HE from lower family incomes under most conditions, saving perhaps a very strong, and unlikely, given wider research findings (such as Crawford et al 2016), inverse relationship between family income and earnings.

The results suggest that the reliance by the Scottish government on using loans to fund more of the living expenses of independent students is likely to have a lasting impact for this group, by translating into higher repayments, even when the outcomes within the young group become more equal. This holds despite a strong assumption built into all the scenarios that independent students will tend to be lower earners. The contrast with the results for Wales brings out that this outcome is not inevitable: the high loan, low grant policy for independent students in Scotland emerges as an element of the nation’s student funding arrangements which is particularly likely to reproduce inequality.

The additional average amounts Scottish graduates from lower incomes are likely to repay if the outcome is regressive are likely to be small by comparison with their
likely lifetime earnings gains from entering higher education. However, the degree of variation in predicted outcomes within each income group across all the scenarios for Scotland but especially the lowest and highest means that even when population-wide average effects become more equal, many students from lower incomes can be expected to repay substantially more than students from higher family incomes, due to the difference in their initial borrowing rather than their earnings. The narrower distribution of repayments at the highest incomes for students from Wales, reflecting the relatively high take-up of loan and labour market sorting effects, means that individual cases of students from higher incomes repaying substantially less than students from lower income ones will be rarer than will be the case among students from Scotland.

The repayment results therefore reflect a larger picture: the most progressive outcomes for repayments in the Scottish system rely on wider inequalities in the labour market. It moreover appears that labour market inequalities would have been insufficient to avoid the reproduction of inequality among degree students, had the higher repayment threshold brought in for England, and by extension Wales, not been adopted. Without that last change, the reproduction of inequality through loan repayments would have been a predictable outcome under plausible assumption.

The Welsh system by contrast can be securely predicted to skew costs away from those starting from lower income families without relying on wider inequalities in the education system or the labour market. The question raised by the results for Wales relates instead to how far the student funding system should depart from equality in the opposite direction.

In addition to allowing the two systems studied here to be compared, these observations also provide the basis for developing a theoretical position on the conditions under which student loans may be expected to have effects which will increase or decrease the reproduction of economic inequality over the life course. While certain combinations of conditions (such as those found in Wales) can be readily predicted to have particular effects, others will be more sensitive to the
detailed circumstances. The Scottish results illustrate that how much protection is provided for lower earners, in this case through variation in the repayment threshold, and varying assumptions about the strength of the relationship between family income and later earnings, can affect how far an initially low-income skewed distribution of debt translates into repayments following the same pattern. What more general principles can be abstracted from these findings is considered in the final chapter.

8.5 Systems in overview

Once the range of predicted repayments is available it is possible to connect the earlier findings there with those of this chapter and to consider how each student system worked as a redistributive system in the short and long-term, and so return to the overarching research question, which is

Using Scotland and Wales as comparators, how far do different approaches to targeting the repayable and non-repayable elements of undergraduate funding by income have different implications for the reproduction of economic inequality within the graduate population?

The overall shape of each system is discussed below, drawing on the concentration indices already provided for non-repayable funding and repayments. As context for this, two further dimensions of funding are discussed: living cost support and total institutional funding.

8.5.1 Living cost support: the scope for invisible costs

Total living cost support is relevant to the distribution of cost and benefits both as a benefit and as the dimension of student funding which leaves a funding gap which students must fill from other sources, creating either a short or long term cost (Dearden et al. 2008). Figure 8-9 compares the mean annual value of living cost support received by students in the different income groups in each nation living at home (high likelihood of living at home for Scotland) or away (low likelihood of living at home for Scotland). Students receiving the higher rate for living in London are excluded for Wales. Degree and sub-degree students were not separated, as their
requirement for annual living cost support was taken to be the same. The data for the figures are provided in Appendix F (Table F-13), together with figures for the Scottish group estimated to have a medium likelihood at home group, whose results fell between the figures shown here for the high and low groups, and for Welsh students on the London away rate. Given the difference in timing in the periods covered, the comparison of the absolute values between nations should be treated as broadly indicative rather than strictly like-for-like. As the Welsh figures excluded Special Support Grant, affecting the nil income group most, the figures for this group are likely to be understated.

As noted in chapter 2, the systems were designed differently in their treatment of students living at home or away, and differed in the detail of how they distributed support across the income range; this is reflected in results. Nevertheless, the comparisons show that both distributed similar amounts and targeted this support more on those from lower incomes. Although the Scottish system provided support at a single rate mid-way between the Welsh home and away rates (Figure 2-10), the comparison shows that in practice Scottish students expected to be living at home received a lower value of support than those expected to live away, an effect which can only be explained by Scottish students’ borrowing behaviour rather than national rules. It has the effect of creating a larger difference in the support students received if living at home than away, when the two nations are compared. The results raise questions about how effective the approach to providing targeted support is for students who live at home in Scotland, and whether all those who make no or less use of living cost loans are doing so from lack of need.
Although there were differences between how much students received in practice between the two nations at different incomes in different circumstances, for the purpose of this research, the relevant observation is that the more lower-income skewed distribution of repayments for Scotland was not related to the student funding system doing more to reduce those students’ reliance on other sources of funding, including commercial debt. The results suggest that students from Wales at different incomes received at least an equal value of support in practice.

Shown as CIs in Table 8-5, the results are predictably lower-income skewed in both nations. The difference by level was smaller for Scotland. The distribution was less lower-income skewed for students from Wales: this mirrors the result for living cost grant, which was less strongly targeted by income compared to Scotland as a
product both of its design and the different income composition of the Welsh student population. As shown in chapter 2, the same also held for total living cost support. The difference between levels of study was larger for Wales. It appears likely, as before, that this reflects in part the omission of Special Support Grant from the research data.

Table 8-5 Scotland and Wales: concentration indices average living nominal cost support per year (grants and loans combined)

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>-.194***</td>
<td>-.189***</td>
<td>-.193***</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.002)</td>
<td>(.003)</td>
</tr>
<tr>
<td>Wales</td>
<td>-.125**</td>
<td>-.131***</td>
<td>-.094***</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.008)</td>
</tr>
</tbody>
</table>

p<0.05 *, p<0.01 **, p<0.001 ***

8.5.2 Total spending on tuition: invisible savings?

A further contextual measure provided here is the total value of all upfront spending on institutions. In both nations fee payments through the national arrangements were expected to cover the whole of that cost for those taking publicly funded places, and students were not expected to contribute further from private sources to this cost. Large differences in such spending would however still be relevant to the comparison of the fairness of any system, as these could be argued to represent savings by the state at the expense of students’ experience. As the financial implications of that for individual students are not directly predictable, this point is considered only for further context.

Using the assumptions applied in calculating the CI for fee loans and fee grants (section 6.5.2), the distribution of these costs would be predicted to vary little by income within each level of study. Table 8-6 therefore shows the mean value of total and annual institutional funding in each nation per student or degree and sub-degree students per year of study. For students from Scotland this comprised the cash tuition fee paid by SAAS and the imputed SFC additional payment; for Wales this was
the fee grant plus the fee loan both directly available in the research data. As with annual living cost support, the comparison of absolute values is indicative only.

Table 8-6 Scotland and Wales: mean nominal value of total and annual funding paid to institutions per student

<table>
<thead>
<tr>
<th>Payments to institutions</th>
<th>All £</th>
<th>Degree £</th>
<th>Sub-degree £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Scotland</td>
<td>22,775</td>
<td>31,486</td>
<td>6,712</td>
</tr>
<tr>
<td>Wales</td>
<td>24,445</td>
<td>25,668</td>
<td>9,501</td>
</tr>
<tr>
<td>Of which</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repayable</td>
<td>11,022</td>
<td>11,506</td>
<td>5,116</td>
</tr>
<tr>
<td>Non-repayable</td>
<td>13,423</td>
<td>14,163</td>
<td>4,386</td>
</tr>
<tr>
<td>Annual Scotland</td>
<td>6,595</td>
<td>7,432</td>
<td>5,000</td>
</tr>
<tr>
<td>Wales</td>
<td>7,568</td>
<td>7,639</td>
<td>5,622</td>
</tr>
<tr>
<td>Of which</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repayable</td>
<td>3,444</td>
<td>3,424</td>
<td>3,027</td>
</tr>
<tr>
<td>Non-repayable</td>
<td>4,195</td>
<td>4,215</td>
<td>2,595</td>
</tr>
</tbody>
</table>

The total value of spending on degree students per head was higher for Scotland, as would be expected from the longer standard length of degree course, and the difference between degree and sub-degree students was larger there than for Wales. Once the comparisons were adjusted for differences in average periods of study (Table 5-2) to provide annual sums, levels of investment in were broadly comparable between the two nations within each level; they appeared slightly higher for Wales, but limitations in estimating spending on institutions beyond the amounts recorded in the research data should be borne in mind. For the purpose of this research, the only evidence of a substantial difference in investment relates to the length of time spent receiving support, which for students from Scotland was higher on average for degree students and lower for those on sub-degree courses, compared to Wales. Broadly, the two nations spent comparable amounts on full-time undergraduates, with a larger difference for Scotland between the levels of study.
This research conceives student funding systems as being composed of two distributive elements: a short term one (total benefits, in the form of grants and loans paid during study) and a long term one (costs, in the form of loan repayments). These are compared in Table 8-7 for Wales and Table 8-8 for Scotland. Total benefits is the sum of all grants and loans; costs are the expected range of repayments from Tables 8-3 and 8-4.

The components of total benefits are noted: total repayable funding (from Table 6-2) and total non-repayable funding (from Table 6-4), with each broken down further into living cost and fee funding, allowing differences in the distribution of each part to be compared. In comparing the degree of skew between the two nations, as set out in previous chapters, it should be recalled that, all other things being equal, the Scottish system will tend to produce more skewed effects by income, because the student population there is itself less evenly distributed across the income range than for Wales.

The comparison here therefore concentrates attention first on the distribution of benefits and costs, and then on funding by type (repayable or non-repayable) rather than purpose (fee or living cost). It could include an assessment of the unfunded gap left by each system, following Deaden et al. (2008); this would be more speculative, as students' unmet living costs are unknown. For the purpose of the comparison below, the Scottish and Welsh systems are treated as being broadly comparable in how far they may distribute further unfunded costs, from the comparison of total living cost support at Figure 8-9 and the full upfront funding of fee costs for the students studied.43

Whether outcomes would be expected to increase or decrease the reproduction of economic inequality, or neither, is shown as before by shading cells where the outcome is expected to do so, and marking in bold cells where there was no

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43 The exclusion of private unfunded study omits unrecognised costs for Scottish students studying in private institutions, mainly at sub-degree level: see section 6.5.1.
significant difference from equality. Outcomes which are higher-income skewed (positive) for benefits and lower-income skewed (negative) for costs reinforce existing inequalities.

The Welsh system (Table 8-7) is shown to be lower-income skewed in the distribution of total non-repayable funding, and higher-income skewed in the distribution of costs. It would therefore be expected in the short and long run to act counter to the reproduction of economic inequality, distributing benefits most towards those from the lowest incomes, and costs towards those from higher ones. The relative weight attached to income targeted living cost grants was responsible for the short-term effects and the related distribution of living cost loans for the long-term one; fee grants and loans were very close to being equally distributed per head. The importance of the overall value of living cost grant as well as its skew in the distribution of support is consistent with an observation by Gugushvili and Hirsch (2014) in their overview of the arguments and evidence on targeting benefits, that the strongest point of consensus in the wider literature on targeting in welfare is that the volume of resources being targeted matters more for how much redistribution takes place than does the degree of targeting alone. The relatively small number of students in sub-degree forms of HE meant that distributional effects for Welsh graduates were also seen across the Welsh student population as whole.
Table 8-7 Wales: overview of core distributive elements of student funding (concentration indices), results at equality in bold

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Degree</th>
<th>Sub-degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CI</td>
<td>CI</td>
<td>CI</td>
</tr>
<tr>
<td><strong>Benefits to students (Total upfront funding)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All grants and loans</td>
<td>-.121***</td>
<td>-.135***</td>
<td>-.090***</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.001)</td>
<td>(.012)</td>
</tr>
<tr>
<td><strong>Costs to students (Repayments)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario 1: UK earnings High Int</td>
<td>.096***</td>
<td>.085***</td>
<td>.066***</td>
</tr>
<tr>
<td>Scenario 1: UK earnings Low Int</td>
<td>.096***</td>
<td>.085***</td>
<td>.066***</td>
</tr>
<tr>
<td>Scenario 1: Lower earnings Low Int</td>
<td>.103***</td>
<td>.092***</td>
<td>.075***</td>
</tr>
<tr>
<td>Scenario 2: UK earnings High Int</td>
<td>.130***</td>
<td>.093***</td>
<td>.093***</td>
</tr>
<tr>
<td>Scenario 2: UK earnings Low Int</td>
<td>.128***</td>
<td>.092***</td>
<td>.092***</td>
</tr>
<tr>
<td>Scenario 2: Lower earnings Low Int</td>
<td>.154***</td>
<td>.106***</td>
<td>.106***</td>
</tr>
<tr>
<td>Scenario 3: UK earnings High Int</td>
<td>.148***</td>
<td>.139***</td>
<td>.105***</td>
</tr>
<tr>
<td>Scenario 3: UK earnings Low Int</td>
<td>.149***</td>
<td>.138***</td>
<td>.152***</td>
</tr>
<tr>
<td>Scenario 3: Lower earnings Low Int</td>
<td>.180***</td>
<td>.170***</td>
<td>.180***</td>
</tr>
</tbody>
</table>

**Notes**

*Components of total upfront benefits*

Non-repayable funding

|                                |              |              |              |
|                                | -.125***     | -.139***     | -.089***     |
|                                |              |              |              |
| Of which:                      |              |              |              |
| Living cost grants             | -.400***     | -.421***     | -.218***     |
| Fee grants                     | .035***      | .022***      | .034***      |

Repayable funding

|                                |              |              |              |
|                                | .049***      | .039***      | .024***      |
|                                |              |              |              |
| Of which:                      |              |              |              |
| Living cost loans              | .091***      | .083***      | .030*        |
| Fee loans                      | .007***      | -.003***     | .019         |

*p<0.05 *, p<0.01 **, p<0.001 ***
Table 8-8 Scotland: overview of core distributive elements of student funding (concentration indices), results reproducing economic inequality shaded, results at equality in bold

<table>
<thead>
<tr>
<th>Benefits to students (Total upfront funding)</th>
<th>All CI</th>
<th>Degree CI</th>
<th>Sub-degree CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>All grants and loans</td>
<td>.021***</td>
<td>-.063***</td>
<td>-.076***</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.001)</td>
<td>(.003)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs to students (Repayments)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Threshold £25,000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario 1:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scottish earnings</td>
<td>.015***</td>
<td>-.042***</td>
<td>-.096***</td>
</tr>
<tr>
<td>UK earnings</td>
<td>.002</td>
<td>-.054***</td>
<td>-.112***</td>
</tr>
<tr>
<td>Scenario 2:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scottish earnings</td>
<td>.087***</td>
<td>.019***</td>
<td>-.023***</td>
</tr>
<tr>
<td>UK earnings</td>
<td>.071***</td>
<td>.002</td>
<td>-.038***</td>
</tr>
<tr>
<td>Scenario 3:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scottish earnings</td>
<td>.086***</td>
<td>.030***</td>
<td>-.063***</td>
</tr>
<tr>
<td>UK earnings</td>
<td>.068***</td>
<td>.011***</td>
<td>-.072***</td>
</tr>
</tbody>
</table>

| **Threshold £19,000**                       |       |           |               |
| Scenario 1:                                 |       |           |               |
| Scottish earnings                           | -.022*** | -.085*** | -.092***     |
| Scenario 2:                                 |       |           |               |
| Scottish earnings                           | .008  | -.064***  | -.050***     |
| Scenario 3:                                 |       |           |               |
| Scottish earnings                           | .005  | -.062***  | -.092***     |

**Notes**

*Components of total benefits*

- Non-repayable funding: .063***, -.028**, -.026***
- Of which:
  - Living cost grants: -.485***, -.601***, -.345***
  - Fee grants: .096***, .003***, .015**
- Repayable funding: -.066***, -.141***, -.148***

p<0.05 *, p<0.01 **, p<0.001 ***
For Scotland (Table 8-8) total benefits were also distributed to counter the reproduction of inequality within each level of study. Despite the greater income skew in the Scottish student population itself, the effect was about half that of Wales for degree students (-0.063***, compared to -0.135***), but more similar for sub-degree students (-0.076***, compared to -0.090***, although missing SSG figures for Wales may understate the difference). In contrast to Wales, the distribution of repayments was expected to reproduce inequality at both levels of study under the original repayment threshold. Under the higher one the outcome was more difficult to predict for degree students, except for those entering from nil incomes who were still expected to make relatively high repayments on average compared to others (not apparent from the CIs, but shown in Figure 8-3). The Scottish Government’s decision to follow the U.K. government in raising the repayment threshold shifted the distribution of costs among young degree students to a point closer to equality, and possibly slightly higher-income skewed. This outcome is more likely the more closely later earnings are related to initial family income. For sub-degree students, the higher threshold did not prevent an expected distribution costs which would reproduce inequality within this group. When figures were combined across the levels, the distribution of total benefits reinforced the reproduction of inequality (.021***), but costs became less likely to do so (ranging from equality to .087***, depending on the assumptions made).

Missing information on institutional bursaries would be expected to reinforce the distribution of living cost support towards those at lower incomes in both nations, but more so for Welsh students, as they can be predicted to have had more access to these. This missing data only however affects the assessment of upfront support; to the extent that bursaries, and for Welsh students fee waivers, reduced debt, that will already be reflected in the final loan figures here, and therefore have been taken into account in the comparison of repayments.
The two nations studied here did not take a different view on whether funding for certain types of activity (living costs, fees) should be targeted by need or shared on more equal or universal terms; they differed only in how they applied these concepts to repayable and non-repayable funding, which in turn shaped how loan and then repayments were distributed relative to initial income, determining how far their student funding systems could be expected to work for or against the reproduction of economic inequality within the graduate population.
Chapter 9 Conclusion: fair shares in student funding

The final chapter of this thesis considers how the research aim was met, before discussing the theoretical contribution of this research. It then discusses the empirical and methodological contribution of this thesis, and the limitations on the findings. It concludes with the implications of the findings for policy and further research.

Student loans now embedded in student funding systems in the U.K. and elsewhere. This chapter argues that greater awareness is needed of the potential for student funding systems to reproduce economic inequality in the graduate population. It argues that this requires rethinking how student funding is usually understood. Seeking to move beyond the terms in which this debate has become embedded in the academic and political discourse in the U.K., driven by developments in England, it argues that how student funding systems distribute their total benefits and costs, relative to students’ original family backgrounds, should become one of the standard ways in which they are analysed. This would aid understanding of how short-term distributional choices about the use of repayable and non-repayable forms of funding have potential long-term effects, some of which are more obviously fair than others. It argues further that looking at systems in this way should mean looking at how they were used in practice: paraphrasing Ball (1993), quoted in chapter 2, the findings highlight how students as actors made meaning of student funding policy and did so differently in different contexts.

9.1 Comparing student funding in Scotland and Wales

The over-arching research question for this research was

Using Scotland and Wales as comparators, how far do different approaches to targeting the repayable and non-repayable elements of undergraduate funding by family income have different implications for the reproduction of economic inequality within the graduate population?

It was addressed through investigating three questions, answered in chapters 6, 7 and 8.
9.1.1 Responding to the research questions

The distribution of debt by income

RQ1 was concerned with the distribution in practice of repayable (loan) and non-repayable (grant) funding by income, and how this compared between the two nations. In both nations, payments of non-repayable funding were skewed towards those from lower family incomes, within each level of study (degree and sub-degree). The skew was stronger for Wales, where a larger proportion of this funding was distributed to support living costs and targeted by need and weaker for Scotland, where non-repayable funding was distributed largely on relatively equal terms to fund fees. When all students were combined, the large proportion of sub-degree students in Scotland, and their concentration at lower incomes, caused the distribution of total non-repayable funding to change direction, and become biased towards those from higher incomes. A much smaller sub-degree population from Wales, less different by income from those at degree level, meant the same effect was not visible there.

Repayable funding was distributed in opposite directions in the two nations; towards those from higher family incomes in the case of Wales and towards those from lower incomes in that of Scotland. The skew was stronger for Scotland, reflecting that this funding was distributed only for living cost support relative to assessed need. For students from Wales, this funding was distributed partly on relatively equal terms for fees, and partly as a supplement to living cost grants.

Borrowing behaviour

The second research question considered the take-up of loans, and how far any differences in students' take up of loans might be explained by differences in the Scottish and Welsh student populations. Differences which might be particularly expected to affect borrowing behaviour were the proportion studying at different levels (a higher proportion completed at sub-degree level in Scotland, as already observed), income distribution (students from Wales tended to be drawn from lower
incomes) and patterns of living at home (expected to be higher in Scotland, although this could not be precisely measured).

The take-up of loan was higher among students from Wales; the number with no loans (0.7% all, 0.9% degree) was very low and well below that suggested by previous studies in England. Partial borrowing was more common, but even so 86.8% of students took out all their loans (87.1% of degree students). The relationship with income suggested a small “squeezed middle” effect, with those from families with incomes between £25,000 and £49,999 more likely to use all their loans, possibly reflecting the greater access to institutional resources at lower income and family sources at higher incomes. This was consistent with previous research in the U.S. (Houle 2014) but not in the England (De Gayardon et al. 2019). This pattern persisted once other factors were taken into account. There were only small differences in the relationship between income and loans for fees and living costs, when considered separately.

Loan take-up was lower among students from Scotland. A higher proportion of students took out none of the loans available to them (21.3% of all students, 15.7% of degree students). Whether students borrowed at all, and whether or not they took out all the loans they could, was inversely related to income. Those from the highest incomes made least use of loans, those from the lowest ones made most use. Loan take-up in the group assessed as having no family income, mainly independent students, was similar to that in the equivalent group from Wales. Differences by income reduced in scale but persisted as a pattern as other factors were introduced. Differences in the nature of the two student populations therefore did not explain the different relationship between income and loan take-up in the two nations.

The distribution of loan repayments

The final research question considered how far the rules for loan repayment were expected to affect the distribution of costs, in the form of loan repayments, relative to the original distribution of debt. For this purpose, a range of scenarios was constructed for each nation, to examine what repayment outcomes were likely under
different conditions. In both nations, repayments were expected to skew more towards those from higher incomes than was the case for the original distribution of debt. This reflected that in both nations students from higher incomes were expected as a group to be higher earners than those starting from lower income families. For Wales this lead to a highly predictable outcome that repayments would be skewed to those starting from higher incomes, as initial debt already was. For Scotland, outcomes were less predictable; a skew towards those at lower incomes was expected under the lower repayment threshold applying at the time student studied. A recent increase in the threshold appeared likely to make the distribution more equal among young degree students. The more the labour market works to reproduce inequality, the more likely it became that repayments might skew slightly towards those from higher income households. Students from nil incomes were however expected to take on a disproportionate share of costs under all scenarios. Among sub-degree students, repayments were also expected to skew towards those starting from lower incomes under any conditions. Combining students from both levels led to costs being distributed more towards those originally from higher income families. However, this effect relied on a concentration of lower income students on shorter sub-degree courses.

9.1.2 Scotland and Wales as redistributive systems: rhetoric and reality

Presented in this way, the Welsh system emerged as having a set of outcomes which followed a clear logic, with benefits distributed towards those entering HE from lower family incomes and costs towards those entering from higher ones. This effect flowed from non-repayable funding being distributed in relatively equal parts based on need and equality. Repayable (loan) funding then took on a distribution skewed towards those at higher incomes, leading to similar distribution of costs. Growing out of a series of enquiries in which questions about which students should benefit and how were discussed in detail, it might reasonably be described as more progressive than universal, despite having elements of both. Comparing the two systems suggested a more sophisticated appreciation of the nature of loan as a welfare
instrument in the design of the arrangements in Wales, where it was used as a benefit but, unlike grant, concentrated on those from higher incomes.

In the Scottish system, by contrast, loan was treated as a benefit identical to grant, and concentrated on those on lower incomes, while non-repayable grant funding was distributed mainly on equal, untargeted terms. As a result, the initial distribution of benefits favoured those from lower family incomes but long-term effects were expected to be more complex and less predictable. The expectation of costs being skewed towards those who entered higher education from lower income backgrounds was clearest for two groups who were predicted to be relatively low earners compared to others: those starting from nil incomes, meaning in practice mainly independent students, and sub-degree students from lower income family backgrounds. This outcome sat at odds with the concentration on “ability to pay” in the political justification for the Scottish arrangements. It seems unlikely to have been generated as an explicit aim, but was the consequence of the design of student funding policy round a single element of student funding, the preservation of free tuition, which led to relatively little non-repayable funding being targeted on those from lower incomes. It was argued in Chapter 2 that characterising the Scottish student finance system as having a particularly universal, or egalitarian, character overlooked both the targeting included in its design and the substantial universal elements of those in other UK jurisdictions, particularly those provided for institutional funding. A summary of its outcomes further calls into doubt the rhetorical claims made for it.

For Wales as for Scotland the rhetoric of “universalism” held for government inputs, but not for outcomes. The most substantial question related to equality and fairness raised by the Welsh system was whether it is legitimate to use student loan systems not only to assist with short-term need but also as a mechanism for redistributing resources progressively across generations over the longer term, as the Welsh system can be confidently predicted to do; it is not an effect that appears ever to have been articulated as policy.
9.2 **Theoretical contribution**

9.2.1 **Student loans as a contributor to the reproduction of economic inequality over the life course**

These findings make it possible to consider how student loan repayments fit into the wider analysis of life course inequality, based on a detailed examination of their expected effects in two similar-but-different jurisdictions. The findings caution against simplistic understandings.

This research shows that loan repayments may have a regressive effect on life course inequality within a cohort, but need not do so: the initial distribution of debt, the repayment threshold and how closely later labour market benefits relate to initial family income will all be relevant. Thus for Welsh graduates, the design and take-up of the loan scheme are enough, regardless of later labour market outcomes, to ensure that loan repayments will skew towards those from higher income families, reducing this group’s comparative advantage over their lifetime. This can be predicted to continue to hold, even if the repayment threshold falls. In Scotland, by contrast, the skew of initial borrowing towards those from lower income families sets up the potential for loan repayments to increase the comparative advantage of those from higher incomes. How far it will do so in practice becomes sensitive to the level of the repayment threshold and how closely earnings follow initial family background. The lower the threshold and the less difference in earnings by background, the more loan repayments will contribute to the reproduction of inequality over the life course.

The emerging literature on the collateral effect of loan repayment examined by De Gayardon et al. (2018), discussed in Chapter 3, suggests that this is not only a question of the immediate sums repaid but also the potential for reduced spending on savings and investments in housing, pensions or other assets, and in participation in further education or training. These effects have potential to compound the impact of repayments, with further implications for how far inequalities are reproduced within the graduate population over the life course. The relative absence of loan
repayments, or lower levels of those, can conversely compound the accumulation of advantage experienced by graduates starting from better resourced backgrounds.

Independently of the total amount repaid, the loan repayment threshold raises a further point relevant to inequality over life course. The lower the threshold, the more falls to be repaid earlier in a graduate's career. The compounding effects of repayments made early on other spending, including spending that acts as an investment for later life or that allows the development of independence from the family, will therefore be greater. This research examines only the total expected value of repayments, but their timing will matter also, and studies which factor in the long-term implications of how repayments are timed earlier in a graduate's life will give a fuller account of the impact. Recent studies in life course inequality further suggest more recent cohorts of young adults are likely to remain reliant on family resources for longer. For those from form families less able to provide such support, loan repayments which fall due to be aid earlier place them at a further disadvantage.

Placing these observations in the wider questions of inequality in access to higher education discussed in section 3.2 means returning to the concepts of maximally maintained inequality (MMI) and effectively maintained inequality (EMI) discussed there. Absolute inequalities of access are an issue of MMI, concerned with who benefits from entering higher education. In Chapter 3, the evidence that student loans impede widening access was questioned. Given that, and that this research looks only at those who have entered higher education, the qualitative differences in experience of interest for EMI are more relevant here. The exception to this is whether students enter sub-degree or degree level education, an issue predominantly for Scotland, and more appropriately thought of in the absolute quantitative terms of MMI than subtler qualitative differences. However, this research suggests loan repayment will play a small part in the life course financial inequalities typically associated with the difference between sub-degree and degree study. The repayments involved for sub-degree students will be relatively small, compared to their potential average earnings differences with graduates.
Within the degree-level graduate population, there are two ways in which loans may be relevant to EMI: their effect on participation choices among those taking part in higher education, and the distribution of loan repayments themselves, resulting from the interaction of borrowing behaviour and system design. First, if loans encourage debt-reducing behaviours they may reduce the benefit of taking part in HE, for example by limiting course choice to within commuting distance or taking on excessive paid employment. Here, as discussed in chapter 3, the evidence is stronger than it is for direct effects on entry to higher education. The findings in this research support the view that lower borrowing and living at home are associated, although the direct of causation cannot be shown. Using the data for Wales, it can be shown clearly for the first time that living at home is associated with lower borrowing for living costs, but not for fees.

Separately, loan repayment can also be conceived as a potential element of EMI in its own right, and in doing so this research makes a new theoretical contribution. The findings here for Scotland show how differences in loan take up can be theorised as a form of EMI, with lower borrowing giving a life course financial advantage to those starting from better resourced backgrounds, an advantage which can be obtained separately from any due to participation choices. The opposite however is true among students from Wales, where the effect of loan repayments is to offset some of whatever earnings advantages may that accrue from undertaking a particular course, at a particular institution. This is a function of relatively uniform rates of loan take-up and a scheme design which skews debt towards those from higher incomes. The approach taken to the use of student loans in Wales in the period studied, therefore, appears likely to have run counter to any unequal distribution of earnings advantages over the life course which may be due to initial qualitative differences in forms of participation.

These results therefore allow the effect of income-contingent student loan schemes to be reflected on for the first time as both potentially contributing to and off-setting EMI among degree-level students. How much use students from different backgrounds make of loans across their period of study is the first relevant factor.
Conceptualising this as a difference only between borrowers and non-borrowers overlooks that partial use of entitlements may contribute substantially to how debt is distributed across the student population. This research shows also however that how far loan systems are likely to reproduce or counter economic inequality among graduates over the life course will also depend on the combination of the initial distribution of debt by family income such schemes are designed to produce, the extent of protection for lower earners in the repayment system and the relationship between family income and later earnings. In other words, how governments design their loan schemes plays an important role in determining their impact on life course inequality among graduates, alongside what borrowing behaviours students adopt in relation to them.

9.2.2 The reproduction of inequality as an issue of fairness in student funding

Applying the reproduction of inequality as a test of fairness

A further theoretical contribution of this research is to propose a more integrated approach to conceptualising fairness in loan-based student funding systems than is available in the existing literature on student finance. The principle of avoiding the reproduction of economic inequality between graduates from more and less affluent backgrounds is proposed here as an additional test of fairness, but not as a substitute for applying principles related to need at the time of participation or in relation to repayments; a relationship between repayments and later earnings is still taken here to be a fundamental element of a fair system. Indeed, it is the interference with that principle caused by carrying forward previous unequal loan shares which motivates the introduction of a further one. Further, equal distribution of costs is a minimum strategy for avoiding the reproduction of inequality. If graduates originally from lower income families are also on average lower earners, an equal distribution of costs per head would indicate that the fairness ambitions of the repayment scheme are not being met.
This approach challenges the tendency identified in the literature in chapter three to think of students at the time of participation as embedded in a set of family circumstances, but graduates as isolated individuals, with no variation by background in what liabilities they carry forward from their time in HE, or in their wider access to resources. In arguing for thinking about the effects of student funding systems on individuals in the round, it also rejects conceptual frameworks which perceive fairness problems as being limited to policy on fees or to the use of loans in general. The comparison of effects for Scotland, with no fee lending, and Wales, with fee loans, shows that the link made between reinforcing inequality and the use of fee loans is a conflation of concerns. The example of Wales challenges the assumption that a student loan system must have inequality-reinforcing effects, providing a response to De Gayardon et al. (2019) when they note “whether student loans and equity can coexist is yet to be determined” (980). The range of results for Scotland and Wales provide evidence of the potential for that coexistence.

The analysis here shows that an income-contingent loan repayment system is not enough to guarantee avoiding the reproduction of inequality. Under certain conditions, as obtained for Scotland, a student funding system using loans is capable of recovering costs disproportionately from those who entered from lower incomes, even when repayments are income contingent and those students are expected to be lower earners (and there are no fee charges). This does not intuitively feel “fair”; it infringes on equality in a way which penalises individuals for past need and is contrary to current need.

The concept of the reproduction of inequality provides a framework within which that intuitive sense of unfairness can be examined, as it recognises that earlier needs-based funding has the potential for later adverse effects, and treats students’ starting circumstances as still being of interest after graduation, unlike the conventional framework for analysing fairness in distribution of repayments, which is interested only in earnings (Usher and Burroughs 2018). It allows also for recognition that those starting from lower incomes can be predicted to receive less continuing family help with current costs or asset accumulation (Hood and Joyce 2017).
Alternative conceptualisations of the reproduction of inequality

This thesis looks at the distribution of repayments according only to the amount repaid. An alternative approach might look at the concentration of repayments as a proportion of earnings, identified as a central test of fairness for income-contingent loan systems by Britton, van der Erve and Higgins (2019). There is a strong case for this as a development of the analysis above.

Fairness might otherwise be conceived here as related to the distribution of net benefits rather than being applied to the distribution of benefits and costs separately, that is, to the value to students of all benefits received during study less the later cost to them of repayments; the scale of the first might then off-set any inequality in the second. That approach would still visit on graduates later in life the impact of their initial greater need; it is therefore rejected here as a reasonable conceptualisation of fairness in student funding systems, where avoiding the reproduction of inequality is an aim.

Justifying the reproduction of economic inequality through student funding

Even where it is accepted that the reproduction of economic inequality through the student funding system is not necessary in order to achieve large off-setting financial gains for entrants for lower income backgrounds, it might still be argued to be justified on as required to achieve of other policy goals, as an unavoidable effect, due for example to more general budgetary constraints. Critics of the “marketisation” of full-time first-time undergraduate study might argue it is more important to avoid this, through prioritising for non-repayable funding centrally-managed state support for teaching costs, as in Scotland. That moves the argument beyond the scope of this thesis, in treating the reproduction of economic inequality as an acceptable unfairness in student funding.

Do individual injustices matter?

One further challenge to applying the reproduction of inequality to student funding is implied by Belfield, Britton and Hodge (2017), when they highlight that improving
grants in England would not benefit lower earning graduates, whose loans would anyway not be fully repaid. On that view, the priority for additional resources should be lower earners from whatever family background, and the unequal recovery of costs from higher ones depending on family background is not a significant issue of fairness. This represents the point of tension between most of the literature on loan repayment and the wider literature on the role of higher education in reproducing existing socio-economic differences, raising the question, is there a point at which having a higher income makes any inequality in student loan repayments unimportant? This point is context-specific; in England only the highest 20% or so of earners are expected to repay in full, due to very high average levels of debt. As seen in chapter 8, in the systems studied here being a “higher earner”, meaning one who would be expected to be repay in full, covered a much larger proportion of graduates. An inequality which might be regarded relatively unimportant between very high earners may seem more important among average ones. How differing levels of debt limits the relevance of research and discussion in England to that in other parts of the U.K. is considered further below.

Related to this, in the results reported above, the outcomes were more dispersed at higher incomes in Scotland compared to Wales. Dorling (2017) is not unusual in focussing on non-borrowing as a source of unfairness not only in its average effects, but in the comparison of individuals. The analytic approach above concentrates on effects across the population; relative equality at the whole population level could still conceal cases where graduates who are no more than average earners, but who started from lower incomes with higher debt, are repaying more than identical or higher earning graduates from higher income families who borrowed little or nothing. The more equal Scottish repayment outcomes above would have that effect. The sums involved for those on lower earnings and with more limited access to wider family resources may be significant, for those with limited access to additional resources. The question arises how far a system seeking to avoid the reproduction of inequality should aim to eliminate such examples and how far only to achieve fair
average effects; the second of those alone could be argued to be a relatively limited approach to the avoidance of reinforcing pre-existing disadvantage.

**Could a student funding system over-compensate for the reproduction of inequality?**

The example of Wales draws attention to a different theoretical issue; is it fair to recover greater costs from those starting from higher incomes? A higher-income skewed distribution of loans predictably leads to students from higher incomes bearing a larger share of repayments than any purely earnings-based system would produce. As Usher and Burroughs (2018) argue in their discussion of means-tested tuition fee polices, whether this is fair is open to debate. It is less clearly defensible than the aim of simply avoiding the reproduction of inequality. I am not aware of any theoretical discussion about the legitimacy of using student funding systems as positive redistributive mechanisms in their own right. Usher and Burroughs’ (2018) discussion raises this as a question of fairness as a side-effect of other decisions; it is not explicitly addressed in the report of the Diamond Committee (Diamond 2016).

9.2.3 **Loans as both a cost and a benefit**

This research seeks also to encourage a clearer conceptualisation of student loans as both a benefit and a cost. De Gayardon et al. (2019) argue loans should be regarded as a cost at all stages, while Ziderman (2013) treats them as pure benefit, recommending they are targeted on students from low incomes with no discussion of long-term effects. However, as a welfare instrument loans are not easily discussed as being either progressive (in the sense of off-setting the reproduction of inequality) or regressive (doing the opposite). The comparisons here show that under certain conditions loans can contribute to progressive effects in both the short and long term; under others progressive initial effects can become regressive long term ones. Their long-term effect therefore depends on how they are distributed, how repayments are collected on them and how these two interact. As the difference between sub-degree and degree students in Scotland shows, and Britton, van der Erve and Higgins (2019) demonstrate in detail, absolute loan size also affects these
interactions; they warn that policy-makers should be alert to the consequences for the distribution of costs among graduates when making policy affecting this dimension. Loans need to be more consistently conceptualised in policy and the academic literature as having the potential both for inequality enhancing and decreasing effects, if policy is not to have unintended or unnoticed consequences.

9.3 Empirical contribution

The operation of devolved student funding in practice

This research provides the first empirical evidence on how closely the outcomes from the student funding schemes developed in Scotland and Wales in reaction to developments in England conformed to the political claims made for them, allowing explanations used in both nations to be critically appraised for the first time. Universalism and ideas related to it are shown to have limited value in for explaining the long-term distribution of costs in either case, due to the unequal sharing of loan by income in both, in opposite ways. That the political rhetoric in both cases engages with these as systems with inputs only, and generally fails to address the distribution of long term costs, distinguishes both nations from England, where emphasis has been placed rhetorically, as well as in research, on the fairness of income-contingent loan repayments. In the devolved administrations loans have been adopted as a substantial element of funding but without the same degree of local political ownership. The results for repayments raise a further question about the description of the Scottish system as based on “ability to learn not ability to pay”.

The analysis of the data by level of study has implications for the comparison of the published figures for average borrowing among those making use of the student loan scheme between nations, which are routinely used to justify policy decisions in Scotland.\textsuperscript{44} This research shows that the Scottish figure for average total borrowing produced by the SLC will have been substantially depressed relative to Wales by the

\textsuperscript{44} For example on 20 March 2019 the Scottish Government's Minister for Higher Education, Richard Lochhead MSP, told the Scottish Parliament that “In England, the figure is £34,800; in Wales, it is £21,520; in Northern Ireland, it is £22,440; and in Scotland, it is £13,230.”
larger number of sub-degree students, with the headline comparison concealing a smaller difference in the average amount for degree students. This is also likely to affect comparisons with other parts of the UK, which also have fewer sub-degree students (Hunter Blackburn et al. 2016).

**Borrowing behaviour**

This research makes a substantial contribution to the very limited empirical evidence from anywhere in the U.K. on how student funding systems are used in practice, in particular how students engage with the loans system. It adds to the understanding of non-borrowing, and reduced borrowing, and how this can differ between systems. It appears to be the first to observe that borrowing behaviour tends to be “all or nothing” in relation to individual loans and to identify the extent of partial borrowing, as opposed to making no use of the loan system. As Britton et al. (2016) note, there is a lack of empirical evidence about which students make no use of student loans.

It identifies that non-borrowing and reduced borrowing are contextual: they differed between the two nations. For Wales the only significant effects were small and limited to those entering from middle incomes. A range of effects, including with field of study, raised questions about how far students’ differential access to non-national forms of student funding might influence their engagement with national funding. Among students from Scotland, the reduced use of loans was much more substantial: it was most likely among those from higher incomes, among students still dependent on their parents and among those from areas with more immediate access to universities.

The research reinforces some existing findings and challenges others. Britton et al.’s (2016) assumption that non-borrowers are “likely to be more socioeconomically advantaged, attend higher status institutions and are more likely to go on to be higher earners” (2016,10) held on the first two parts for Scotland, but not Wales. De Gayardon et al.’s (2019) assumption that independent students would make less use of loans was not however borne out. The regional variation in loan use in Scotland, before and after controlling for other factors, has not previously been shown. The
apparent lack of any strong regional effect on loan use among students from Wales might benefit from further examination using alternative area groupings. A significant finding on the relationship between sex and the use of loans for Scotland, but not for Wales, develops a picture which has altered over the period since student loans were first introduced, when women were identified both as more debt averse and less likely to borrow (De Gayardon et al. 2019).

The findings provide new evidence on differences in the use of loans at different levels of study. Some caution is advised about the findings here for Wales, as the sub-degree group was small. In Scotland a much clearer difference could be seen. These students were more likely to make no use of the loan scheme, especially at higher incomes. This was consistent with earlier more limited research (Hunter Blackburn 2016a), but this research allowed this effect to be examined in more depth.

By comparing student borrowing behaviour in two differently-constructed systems the findings further raise questions about what factors affected students’ use of loans at different incomes, and what incentivised higher income families from Wales not only to take up fee loans, but also to make more use of living cost loans; this point is revisited below.

**The operation of the repayment system outside England**

There has been a large amount of research into the operation of loan repayment arrangements in England, but very little about its likely effects elsewhere in the U.K. Most of what is now published in England is of limited application in the other U.K. nations, due to the differences in total debt levels. It is a new finding that increasing the loan repayment threshold for students from Scotland is expected to have been essential to avoiding a lower-income skewed distribution of costs among younger degree students. The sensitivity of the distribution of repayments to the strength of the relationship between family income and later earnings is not a new finding, but again the reliance on this in Scotland in order to avoid a lower-income skewed distribution of costs among young degree students is. The expected persistence of higher repayments in Scotland for those from nil incomes, and by extension this
effect for independent students, even when they are consistently assumed to be lower earners, is also a new finding. The highly predictable skewing of repayment to Welsh graduates from higher family incomes was technically predictable but has not previously been demonstrated.

**The income distribution of the funded student population**

Although most findings about the characteristics of the study populations were comparable with those from other sources, the extent of difference in the income composition of the Scottish and Welsh student populations is a new finding, as is the income difference between sub-degree and degree leavers in Scotland.

### 9.4 Methodological contribution

The first methodological contribution of this study is its use of administrative data from student funding bodies. It is also innovative in applying the logic of concentration indices and curves to the examination of student funding systems.

**Using administrative data**

The data used here exhibited the well-known limitations of secondary administrative data sets (Connolly et al. 2016): limited variables, including the lack of any information giving direct insight into why students made particular decisions, loss of detail though anonymisation, the sometimes hard to estimate effect of the operation of administrative practices and rules which could not be further investigated, the reliance on recording and coding practices within the providers, the risks of miscommunication between researcher and provider and the creation of a time demand on providers. Used comparatively as here, differences in the definitions used in systems, in the way data were held within systems and in the detailed responses to the data request also imposed limitations.

Working with these data sets also however showed their unexploited potential to improve understanding not only of how students use the funding system in practice, but of other longitudinal patterns. This study is the first to identify the potential for
using these for the purposes of understanding how students interact with the funding system, and for following students through it.

*Concentration indices and curves*

The application here of CIs and concentration curves to the scrutiny of student funding systems is innovative. It simplifies comparisons within and between systems of how various elements are used, concentrating attention on the extent to which different elements depart from an equal distribution by income. It makes easier and therefore supports taking an overview of all the components of a student funding system and their interaction.

The methodology here could be extended. The standard CI was chosen for use here, to focus on the proportionate departure from equality. Further research here could apply the generalized CI (O'Donnell et al. 2016) to calculate the absolute value of the positive or negative transfers for each element of a funding system. Quantifying the scale of resource transfer within systems in different forms and directions would be an obvious extension of the work here.

**9.5 Limitations**

The findings here are limited by the coverage of the administrative data itself, limits on what could in practice be requested and the need to make decisions about the terms of the request without prior experience of working with these sources.

The data only recorded those students who engaged with SAAS or the SLC. It is assumed here that the presence of substantial non-means-tested non-repayable funding will have acted as a strong incentive for students from all incomes to engage with both agencies; the Welsh fee grant was worth on average £4,649 annually at degree level, and the SAAS fee payments £1,820 (£1,285 sub-degree). Although comparisons were made with other available data sets, this assumption could not be directly tested.
Certain full-time cases (principally early leavers, Scottish student studying outside Scotland and nursing and midwifery students) were excluded. These were outside the group chosen as the focus for this research but including them would give a more complete understanding of how full-time undergraduate funding distributed costs and benefits amongst all those taking part. Similarly part-time students were excluded here; their inclusion would also give a fuller picture.

In both nations, the cohorts studied spanned a change in system, but this was not expected to have substantial implications for the overall findings. It was expected to have had no effect on borrowing figures for Wales, but will have depressed the amount of institutional funding recorded for the minority of cases (5.5%) entering in 2011-12, for whom the non-repayable element of institutional funding was channelled through HEFCW. Scottish students present in 2012-13 were entitled to higher grants and lower loans, in that year only. This affected a large minority of degree cases (38.6% of degree entrants) and means that in the cohort studied the skew of non-repayable funding towards lower incomes will have been somewhat greater than it would have been, had all years been under the system introduced in 2013-14. The change to loans only affected those students present in 2012-13 who also borrowed in that year (around one-quarter of cases), in that year only. The difference in arrangements applying in 2012-13 will have led to larger differences between income groups in the average value of borrowing by value that year, but lower average borrowing overall, compared to later ones. Had all years studied been under the new Scottish system, the skew of borrowing towards lower incomes would have been marginally reduced for degree students and the distribution of costs therefore expected to skew marginally more towards higher incomes.

The limitation on the measurement of living at home for Scotland has been discussed and noted, but in the light of the results is not expected to have had a substantial effect on the main findings, and limits only findings on that direct point. The limitation on the measurement of independent status to an age measure for cases from Scotland is a more substantial restriction on understanding more exactly the source of effects in the nil income group there. The suppression of institution and subject
data for a large minority of Welsh cases limited the possible analysis, but did not have substantial implications for the findings.

The single year of income data was noted in chapter 4 to be most likely to affect the comparability of income measurement for degree and sub-degree cases in Scotland, over-stating the value of incomes in the sub-degree cohort compared to the degree one where results for these cases were combined; this will not have affected any results relating to nil income cases, however.

The comparison between the old and new repayment thresholds for Scotland suggests that the threshold will need to be maintained at a real-terms value well above that of the previous lower one for the results here for the effect of increasing the threshold to hold. The calculations in chapter 7 assumed a slightly higher level than has now been implemented. If the loan repayment threshold is not uprated with inflation, or is reduced, and the distribution of loan is not altered by an increase in living cost grants at low incomes, it is predictable that the distribution of costs from the student funding system in Scotland will be lower-income skewed. In the weeks over which this research was being completed, the U.K. government appeared to be considering reducing the loan repayment threshold (Financial Times 2021). If this happens, and the Scottish government follows suit, the results above will have been based on over-optimistic assumptions about the value of threshold over time. The issue does not arise for Wales, due to its initial skew of debt; the threshold level there is not material to achieving a distribution of repayments skewed to those who started from higher family incomes.

### 9.6 Policy implications

General policy observations which emerge from the discussion above are considered first. Separate policy implications for Scotland and Wales are then discussed, before turning to implications for other parts of the U.K.
9.6.1 Avoiding the reproduction of economic inequality: the skew of final debt

The argument adopted here is that the minimum policy aim in a fair loan-based system of student funding should be to avoid reproducing economic inequality through a lower-income skewed distribution of loan repayments. A small lower-income skew in final borrowing might be corrected by labour market effects at the whole population level, as the Scottish results show, but unpredictably and with potential for anomalies. In systems where debt is not so high as to make full repayment unlikely in most cases, to securely avoid reproducing inequality requires either a higher-income skew of debt distribution, as for Wales, or achieving as closely as possible equal debt on leaving, either through the distribution of initial borrowing or targeted early write off some debt for those entering from lower incomes, where these students have borrowed more. Rarely used, early loan write-off is a policy instrument deserving more attention.

Equal debt on leaving requires that as close as possible to all students take all the loans available to them or at least that any non-borrowing is concentrated at lower incomes, without incurring hidden costs. In the period studied here Welsh system appears to have come relatively close to achieving this. How far students from higher incomes are more likely to engage with a loan scheme when loans are used to defer the cost of fees and not only to reduce living costs is a question this research raises. Official statistics and the periodic SIES surveys, where these exist, suggest an upward trend in loan use not only in England (De Gayardon et al. 2019) but across the U.K. more generally, but more so in those parts where fee loans have been introduced. Where Dorling (2017) identifies fee loans as having specifically unfair effects due to non-borrowing, the results here suggest rather that systems which involve fee loans are more likely to bring students from higher income households into the student loan system and so to take a share of the long-term cost. The research here cannot prove this point, but is strongly suggestive that it should be

\footnote{The Welsh partial cancellation scheme discussed in chapter 2 is unusual in using early write-off as an intervention.}
taken seriously by policy-makers in charge of schemes which make extensive use of student loans. If research from England provides a reliable guide to levels of non-borrowing there prior to the changes made in 2012, the results for Wales raise a further question: whether a mixture of grant and loan funding for fees engages higher income households with the student loan scheme more effectively than one of fee loans alone.

**9.6.2 Scotland: Policy implications and recommendations**

**Funding sub-degree study fairly**

A first set of policy implications from this research relate to sub-degree students. Forsyth and Furlong’s (2000) criticism that the inclusion of one-year HNCs in official statistics on higher education conceals “subtle ‘hidden disadvantage’” (47) bears revisiting. A theme of this research has been that statistics which cover all sub-degree and degree students can give a misleading account of student funding in Scotland. Arguably, the combined statistic giving the most useful information about Scotland is that which shows that the total investment of non-repayable funding is higher-income skewed, due to the sorting of students by background into different levels. The extent to which sub-degree students who do not proceed to degree level are shown here for Scotland to be a cohort drawn substantially more from lower incomes raises questions of fairness about the lower share of public investment they receive in their higher education, their predicted lower earnings on average and lesser protection in the student loan repayment system. As a first step, figures relating to student funding published by SAAS and the SLC should be provided broken down further by level of undergraduate study.

The use of loans for this group more generally is open to question. The core justification for student loans draws on theories of human capital (Becker 1975). The use of loans is more theoretically problematic to support forms of higher education on which the earnings return is demonstrably much smaller and less certain than is the case for degree students, whether for living costs or fees. The funding for students from low incomes studying no further than sub-degree level
should be revisited, and consideration given to reducing their borrowing through increased grant or debt write off. The Welsh sub-degree group was smaller, and more diverse, but similar questions arise in principle.

The argument can be extended to other parts of post-school education. The review of student funding in Scotland which took place in parallel with this research (Scottish Government 2017a) recommended the introduction of loans into further education to provide higher living cost support. This equalisation was proposed specifically as a point of fairness, making the same error as Ziderman (2013) in conceptualising loans as a pure benefit. The recommendation remains unacted upon: similar questions arise here as for sub-degree students which require consideration.

**The evidence base for policy making**

The absence of information for Scotland from the SIES since 2007 (Warhurst et al. 2009) is a significant loss to researchers and policy makers in this area, brought home by comparison with the information available in the recent SIES surveys for Wales (Maher et al. 2018b). More use of administrative data cannot fill this gap: the SIES is a source on all the forms of income students have, from the state, the family, institutions and employment, as well as their outgoings. Quantitative research on the model of the SIES to inform policy making in this area before the next elections to the Scottish Parliament in 2026 is recommended. Similar arguments about the importance of the SIES hold for Wales, where the immediate need is to examine the effects of the arrangements introduced in 2018. One further finding from this research is that HESA’s published data sets are relatively limited in what information they provide by domicile within the U.K., and that this particularly restricts the information publicly available for the group funded by the Welsh government.

Separately, being able to distinguish more clearly between those on middle and higher incomes in the group not entitled to means-tested support would allow a clearer understanding of the how the Scottish student funding system distributes costs and benefits across students starting from different financial backgrounds, as well as the implications of any policy changes not tied to the current income cut-off
points. It is difficult to see that this information can be routinely gathered under the existing arrangements, but there is a strong case for taking some action to understand better the internal income distribution of the now very large highest income group.

For Scotland, better understanding is still needed of the relationship between living arrangements and use of the loan scheme. With this as the focus it may be possible to devise more sophisticated ways to use the administrative data to predict this for individual students; it may also be possible to link with HESA data which collects this information. Having lost a direct measure of living arrangements in the Scottish funding system, alternative ways should be developed of gathering information on this point, if one cannot be recreated directly.

**The distribution of non-repayable and repayable funding**

The remainder of this section concerns points related to the policy which still attracts the most attention in Scotland: the full non-repayable subsidy of fees for full-time first-time Scottish students who remain in Scotland to study (“free tuition”). The comparison with Wales makes clear that the effects seen for Scotland which raise questions about fairness within the student population were an effect of concentrating non-repayable funding on the subsidy of tuition costs, without any income targeting, leaving loans as the mechanism for providing students from low incomes with additional support for living costs.

The Welsh counter-example demonstrates the risk of skewing of costs towards those at lower incomes can be avoided, while retaining a needs-based approach to living cost support, if more of the non-repayable funding already available were used for forms of funding which are targeted by income, rather than being equally distributed per head. The model adopted by the government in Wales in the period studied (providing part of the fee cost through flat-rate loan and part through loans, and using the remaining cash funding for living cost grants targeted by income) is not the only possible approach. The same effect could be achieved by subjecting part of the cash fee support to means-testing, so that some fee funding grant is withdrawn from
students from higher incomes and replaced with a fee loan, following a model recently adopted in several jurisdictions (Usher and Burroughs 2018). This would release non-repayable resources from higher income students to target on those from lower ones; and would also be predicted to increase the likelihood that students from higher incomes take on a more proportionate share of existing loan borrowing, addressing the uneven share of lending by income identified in this research.

*Priority groups for improved grant funding*

This research suggests the increase in the loan repayment threshold appears likely to be effective in sharing the distribution of costs more evenly among young degree students by income. Those assessed as having nil family income as students, meaning in practice mainly independent students, and those at sub-degree level from lower incomes, are still however expected to carry a disproportionate share of costs compared to their higher-income peers. The long-term outcomes of the Scottish system are not defensible as fair for these students, whether by reference to the reproduction of inequality, or to equality defined in any other way or to need or merit. They are both groups which did not benefit from the abolition of the graduate endowment (as they were already exempt) and whose funding situation has not tended to be as prominent in either the political or academic discussion of student funding in Scotland. Raising the Independent Student Bursary to the same level as the Young Student Bursary would remove this group’s additional reliance on loans reducing their excess repayments. The circumstances of young students still in the nil income group could also be examined further, although the Scottish government’s recent introduction of a non-repayable full grant for those leaving local authority care is likely to have addressed the high debt of a proportion of younger students in that group.

*The official presentation of student loans*

As chapter 2 sets out, in Scotland there has been an increased reliance on loans over recent years and they are the main source of living cost support to students from all incomes. As long as that remains so, there is a risk that ambivalence or negative
government messages about student loans will discourage some students from taking up their full entitlement to living cost support. Although non-borrowing rises with income, there was also evidence in the data studied here of lower use of loans by lower-income students from Scotland than from Wales. This cannot be assumed to be entirely related to lower need. The Scottish government’s rhetoric around debt remains at odds with its practice. At a hustings organised by NUS Scotland in April 2021 ahead of the Scottish Parliament elections in May 2021, the First Minister stated,

“We need to continue to shift away from loan provision to grant provision and make that the predominant part of the student support package and perhaps ultimately hopefully if resources allow the totality of the student support package.” (Sturgeon 2021)

The implicit spending commitment in such a statement is very large and was not reflected in any document produced during the election or since. The opportunity to leave HE with no debt or minimal debt continues to be rhetorically positioned in Scotland as an optimal outcome but the research here shows that in the period studied this opportunity was in practice highly unequally distributed by income, as well as age (closely related to income) and geography.

9.6.3 Wales: Policy implications and recommendations

The policy implications of this research for Wales are complicated by the implementation of the Diamond review reforms in 2018, meaning that the detailed account of the Welsh system here no longer reflects the policy in place.

With the implementation of the Diamond review, loan entitlements have become more sharply differentiated by income; living cost loan entitlements have more than doubled at the highest incomes. This has been accompanied by the conversion of all fee funding to loans on the English model. Students from higher income Welsh families who use all their loans are much more likely than before to see some of their borrowing written off through the repayment system.
The new arrangements differ fundamentally in their conception from those previously in place, by equalising living cost support entitlements across the income range. Income affects only what proportion of the total flat-rate entitlement is given as grant, with around nine-tenths as grant at the lowest incomes, tapering to a low non-means-tested grant at the highest incomes, worth around one-tenth of the total living cost package. Without precedent in a U.K. system, the concept of need has therefore been removed from the distribution of total living cost support and applied only to the grant element. Fee support is still distributed without reference to income, now wholly as loan.

**Monitoring the effects of change on creating new hidden inequalities**

If the system operates as designed, with loan take-up remaining high at all incomes, the distribution of funding by purpose (living cost and tuition) will be close to equality, affected only by how students sort by income into different levels of study and living arrangements. Considered by type of funding, non-repayable funding should continue to have a substantial lower-income skewed distribution (somewhat more so than now) and repayable funding to be more skewed to higher incomes than before, dictating in turn a higher-income skewed distribution of repayments. However, more debt is likely to be written off for the highest, higher income borrowers and the distribution of benefits will be relatively equal.

In practice, the distributional effect of these changes will depend on how far students from higher incomes make full use of the new higher entitlements. The research here would predict high take-up of these new higher sums. The early available statistics (SLC 2020) do not include information by income and are reporting on the system in a transitional state, with the further interferences from the COVID pandemic. With these caveats, the available figures suggest the take-up of living costs loan by value has not fallen as entitlements have moved more towards those at higher incomes.

Losing need as a determinant of total immediate living cost support has some potentially complex effects for inequality within the student and graduate population. It reduces the pressure on higher income households to find funding to support their
children (Hillman 2018). These changes at first sight therefore imply an intergenerational redistribution, as well as one within the student body, transferring costs from parents to their children’s future earnings. This depends however on how these new allowances are used. If the additional funding is saved rather than used to support immediate living costs, students from higher incomes gain a sum they could use in the short- to medium term, including for purposes that could be to their longer-term economic advantage (a housing deposit, for example). Though they will repay this, they will gain the advantage of early access to this cash and the difference between the subsidy on the loan compared to any other form of funding they might have used. This would create new long-term inequalities within the graduate population.

The Welsh government should therefore keep under review whether the greater formal equality introduced into living cost support is creating less visible inequalities, by tracking the take-up of elements of the new funding package by income, and commissioning research into how this funding is being used by those from higher incomes. A transfer of resources upwards from children to parents within higher income families would place students from different backgrounds on a more equal footing; all other outcomes build in new forms of inequality which will be impossible to track through administrative data. The reworking of Welsh student support demonstrates the limitations on looking at student funding in isolation from wider family finances, but also the helpfulness of the analytic lens of the reproduction of inequality in structuring the scrutiny of a system’s effects.

9.6.4 Policy implications for other parts of the U.K.

The much higher debt now typical in England will have an equalising effect in relation to unequal initial loan entitlements within the large group of graduates who take out loans and eventually have debt written off. Much of the analysis above is therefore not relevant to the English context. The approach used here even so offers a way to look at effects in England which brings together various critiques of the arrangements now in place there: the high average levels of debt, the effect of removing targeted
living cost grant, the difference in repayment experience between the majority of graduates and those who for whatever reason do not make payments throughout the repayment period; and differences in the proportion of income repaid. This thesis is not the place to pre-empt what policy recommendations might flow from doing this. It recommends instead that the concentration of costs and benefits in the English system by reference to initial income should be examined, to identify how far higher debt prevents the absence of targeted non-repayable funding reproducing inequality in the English graduate population. The greater difficulty in England of identifying non-borrowers will be the challenge in modelling these effects.

The Northern Irish student funding system could be subject to the same analysis. In this case, how a lower real terms level of living cost support is factored into the assessment of fairness will be a more substantial issue, as will be migration effects, due to the higher debt expected of the large volume of Northern Irish students who study in the rest of the U.K. The under-supply of places in Northern Ireland generates “reluctant leavers” (Whittaker 2017). The position of students travelling to Republic of Ireland in such a model would therefore need to be considered. The Northern Irish system has been subject to the least review and up-rating of any in the U.K. Understanding its current effects in relation to the reproduction of inequality would be a useful contribution to identifying where policy interventions are needed.

9.7 Areas for further research

To overcome the disjoint in the literature between the conceptualisation of students as embedded in a family context and graduates as lacking such a history and background, when the repayment outcome of a specific system is being modelled, loan amounts should be assigned to the population members which reflect their likely distribution in practice by income, or another measure of socio-economic difference. There are already precedents for this, as discussed in chapter 3, that could be developed further to take account of expected variation in loan take-up. The associated step, so far only taken by Chowdry et al. (2012) and this research, should be to report the distribution of repayments not only by graduate earnings decile but
also according to whatever measure (for example, family income) was used to assign loan amounts, as a standard approach.

This research suggests that any examination of borrowing behaviour will be particular to its local context. Further research could be undertaken in all the U.K. nations into students who do not borrow, and those who borrow less than their full entitlement. For Scotland and Wales, this could draw on samples drawn from the administrative records, taking advantage on greater incentive to engage with systems for non-borrowers. This should investigate the extent to which reduced loan use is explained by lack of understanding of the system, an issue raised by previous research in Scotland (Minty 2016) and by the recent review of student funding (Scottish Government 2017a), and how these students deal with reduced income from the student funding system. For Wales, where Evans and Donnelly’s (2018) finding that young people are relatively accepting of student loans ceases to hold could be explored. Certain effects for other variables, such as sex for Scotland or field of study for Wales, suggest scope for further research. The administrative data could be used further to develop best-fit models from the available data for borrowing behaviour, which was not an aim of this research.

Investigating further the inverse relationship between IMD Education quintile and loan use in both nations would be relevant to long-standing debates about educational disadvantage and attitudes to borrowing, or else might reveal the limitations of income data in capturing information on wealth, or may do both.

Within Scotland more than Wales, there was some marked regional variation in the use of the loan scheme. The findings here suggest student funding could provide an interesting case study in how national policies play out differently according to the local context.

This research looked only at the main funding scheme for full-time first-time undergraduates, as the focus of claims made in the political sphere. How the distribution of benefits and costs affects the reproduction of inequality in the wider HE student population could be examined by bringing in groups excluded here, noted
in section 9.5. A specific distributive fairness question is suggested by Whitaker's (2017) finding that ethnic minority students from Scotland are more likely to leave Scotland to study. The scope for using the administrative data to explore effects related to ethnicity was not examined as part of this research, but effect on the distribution of resources of the intersection between less generous arrangements in Scotland for those studying in other parts of the UK and greater cross-border movement by ethnic minority students would benefit from being better understood.

The research data suggested that students with patterns of broken study were more prevalent among students from Scotland. In both nations, the data held by the funding agencies could be used to understand better the scale and nature of interrupted patterns of study and which students are most affected. This is a group about which little appears to be known at national level, and an obvious area for further research suggested by the initial examination of the cases provided.

9.8 Conclusion

The purpose of this research was to revisit ideas of fairness in relation to student funding, by applying the concept of the reproduction of economic inequality. In doing so, it develops the theoretical understanding of how and when student loans may be expected to contribute to the transmission of economic inequality between generations, an issue of increased relevance as such loans are used to fund increased participation in higher education in a growing number of jurisdictions. It argues for introducing the idea of the reproduction of inequality into the analysis of loan-using student funding systems, to examine them according to their distribution of overall benefits and costs by students' initial family income. It suggests that looking at different approaches to targeting repayable and nonrepayable elements in the short term can explain long term effects. That approach would overcome a disjoint in the conceptualisation of students, treated at one stage as individuals embedded in a particular socio-economic context, and the next solely as earners, with no history in the student funding system which relates to their original background. This approach would also address a common tendency in both political
and academic debate to focus on one element of system, most often fees or loans, or fee loans in isolation. It suggests further that whatever external comparisons are regarded as important, decision makers should be concerned with the internal distributive characteristics of their own systems.

The findings demonstrate the value of applying empirical analysis to rhetorical claims about student funding, and doing so in a comparative context, showing that both systems mixed targeted and “universal” funding, and repayable and non-repayable forms, and that their eventual outcomes relied not on the presence or absence of either, but on how these were combined. Although these differences between the two nations in the design of their systems were apparent at the start of this research, the analysis here allowed for the first time a detailed comparison of how these two systems functioned in practice and the analysis of expected future effects. In neither nation was the outcome of the student funding scheme fully reflected in the rhetorical claims, although the difference between description and outcomes was more marked for Scotland.

It could be fairly asked whether the reproduction of inequality matters, if the sums involved are small. The findings for Scotland do not involve large amounts compared to overall benefit graduates would be expected on average to receive, from degree level study at least. However, unless such effects are clearly necessary to achieve a wider goal related to fairness, their unfairness remains. In addition, as the dispersion of results for repayments shows, small average differences may conceal much wider differences between individuals, in extremis between high-earning non-borrowers from high family incomes and middle earners from the lowest family incomes who took out their maximum loan and can expect to repay it in full. Contrasts of this sort will exist in any system where borrowing can be avoided, but will be more common in the graduate population of Scotland than that of Wales.

A final reflection from this research is that technical studies from England dominate the literature here, are available in large numbers but limited in their transferability, due to their necessary assumption of very high debt. The systems in the devolved
nations receive very little attention by comparison, but still serve many students. A challenge in the devolved nations is to escape a conceptual political and research framework for student funding which centres on policy making in England and defining itself by comparison with that. On that test, for reasons that are recognised above to be pragmatic as well as political, policy making in Wales has exhibited relative freedom of thought, even while dealing with a more closely entangled system; this has culminated in a radical recent departure on the treatment of living costs. By contrast, the continued centring of tuition fee policy in Scotland, and comparisons with England, might be argued to be its least devolved feature, preventing the full effects of Scottish policy making from being considered on their own terms. The findings here are evidence of how the persistence of this conceptual tie has been to the relative financial detriment of Scottish students entering from lower incomes. In arguing for a different conceptualisation of fairness in student funding which gives weight to avoiding the reproduction of inequality, and demonstrating the scope for variation within the U.K. devolved arrangements, this research hopes to support more independent thinking about how the resources available for supporting students in all parts of the U.K. might be shared more fairly.
BIBLIOGRAPHY


