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Payback Time? Student debt and loan repayments: what will the 2012 reforms mean for graduates?

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Foreword

David Hall *Acting Chairman, Sutton Trust*

Funding for universities changed significantly in 2012. Students are now expected to repay a much greater proportion of the costs of their higher education upon graduation, as government has switched most of the teaching grant into tuition fees.

Until now, attention has focused on the implications for university applications and acceptances. On that score, it is good that after the initial dip that accompanies any significant increase in fees, student numbers have held up and the gap in applications between advantaged and disadvantaged young people has continued to narrow. It remains a concern that mature – second chance – applications have not yet recovered and that the gender gap is widening, particularly among those from the most disadvantaged neighbourhoods.

The Sutton Trust also continues, through its successful summer schools, to improve access to our best universities, where there remains a sevenfold gap in applications between advantaged and disadvantaged neighbourhoods.

But the new system is not just about the level of tuition fees and its impact on applications. It has brought with it significant changes to the loans used by most young people to cover the cost of going to university. With higher fees, students graduate with average debts in excess of £40,000, nearly twice what they owed previously. It is true that repayments now start at a higher level of income than before. But it is also the case that the loans now have a real rate of interest, one that is charged from the first year at university.

This important new report by Claire Crawford and Wenchao Jin from the Institute for Fiscal Studies explores the full impact of these changing debts for the first time.

Their findings bring mixed news for the graduates from the new fees regime. In their 20s and 30s, graduates will on average pay less than under the old system. Those who earn the least during their lifetime will probably have most of their debts eventually written off. But whereas graduates might previously have hoped to pay off all their debts by their late 30s, most will now continue to be paying back their student loan until their early 50s.

For many professionals, such as teachers, this will mean having to find £1,700–£2,500 a year more to service loans at a time when their children are still at school, and family and mortgage costs are at their most pressing. Yet, even with this extra charge on middle earners, there is an increasing likelihood that the government will end up failing to recoup most of its loans. Although not covered by this report, this suggests that not only are today's students facing bigger debts, but also the new system is not producing the savings expected by ministers.

The Sutton Trust's view is that the government should look again at the balance between fees, loans and government grants to universities. In particular, the government should consider reintroducing means testing for fee loans, in the same way that maintenance loans are means tested, reducing levels of debt for those who use higher education as a means of social mobility.

I am very grateful to the authors for this timely new report. I hope it helps inform the public debate about the overall impact of the new higher education funding regime, and its potential implications for graduates in the future.

Preface

The authors are grateful to the Sutton Trust for funding this report. They also thank the Nuffield Foundation (grant EDU/39084) and the ESRC via the Centre for the Microeconomic Analysis of Public Policy at IFS (grant RES-544-28-5001) for supporting the work on the modelling that underlies the analysis in this report. They would also like to thank Robert De Vries, David Hall, Paul Johnson, Liz Johnston, Oliver Quick and Conor Ryan for helpful comments and advice. This report has benefited from previous modelling work by Sarah Cattan, Haroon Chowdry, Lorraine Dearden and Lewis Hodge at IFS. Some of the calculations in this report use data accessed via the Secure Data Service. The original data creators, depositors or copyright holders, the funders of the Data Collections and the UK Data Archive bear no responsibility for any analysis or interpretation in this report. All errors remain the responsibility of the authors.

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Executive Summary

- In 2012–13, the government made significant changes to how higher education is funded in England. It no longer provides money directly to universities in the form of teaching grants (except for more expensive courses). To make up for this, universities are permitted to charge students substantially higher tuition fees.

- Students do not have to pay these higher tuition fees up front. As before, they are entitled to take out a government-backed loan, which they do not have to repay until after graduation. However, due to the higher fees, students requiring loans must now borrow substantially larger amounts.

- Additional changes were made to the terms of these loans. Under both old and new systems, graduates must repay 9% of their gross income above a certain level of annual income. Under the old system, this threshold was £15,795 (in 2012 prices) and this number increased in line with the retail price index (RPI). Under the new system, the threshold is higher (£21,000 in 2016 prices) and rises in line with average earnings. Graduates must make repayments either until they repay their loan in full or until a set amount of time has elapsed (25 years under the previous system, 30 years under the current system) – after which any remaining debt is forgiven.

- Under the previous system, graduates were charged an interest rate equivalent to inflation as measured by the RPI (0% interest in real terms). Under the present system, graduates are charged a real (above-inflation) interest rate of 3% while studying and of 0–3% after graduation, depending on their income. The combination of threshold and interest changes makes the system more generous in some respects and less generous in others.

- This report examines the financial implications of the 2012 reforms for graduates. In particular, we calculate the differences between graduating under the new 2012–13 system and the old 2011–12 system. The changes made to the size and terms of student loans are key to understanding the impact of the 2012 reforms both on average and for different types of graduates.

Key findings

- *Summary:* Students will graduate with much higher debts than before, averaging more than £44,000. For most, this will entail higher repayments – though the higher repayment threshold means that the lowest earners will actually pay back less. Relative to the previous system, the effects will be felt most by higher earners. And the biggest effects will be felt relatively far into the future. Under the old system, nearly half would have repaid their debt in full by the age of 40; only a very small fraction – about 5% – will achieve that under the new system. In fact, remarkably, we expect that almost three-quarters of graduates will not earn enough to pay back their loans in full, being left with an average debt of around £30,000 to be written off.

- The fact that students must now take out larger loans to cover higher tuition fees, plus the fact that they are now charged real interest on their loan while studying, means that students are now graduating with substantially higher debt than before. We estimate that students will leave university with nearly £20,000 more debt, on average, in 2014 prices (£44,035 under the new system compared with £24,754 under the old system). The vast majority of this increase is the result of higher fee loans to cover higher tuition fees.

- As a result, graduates will, on average, repay substantially more in total under the new system than under the old one. In cash terms, we estimate that, on average, graduates will now repay a total of £66,897, compared with £32,917 under the old system. In real terms, this equates to £35,446, on average, in 2014 prices compared with £20,936 before the reform.

- The lowest-earning graduates, whose income rarely exceeds £21,000 a year, will, however, pay back less under the new system, mainly because of the higher level of earnings required before repayments are made. For example, the 10% lowest-earning graduates would only repay £3,879 in 2014 prices under the new system, compared with £6,120 under the old system.

- Higher-earning graduates, meanwhile, pay back substantially more under the new system than under the old one, making the new system more progressive (on the basis of graduates' lifetime earnings) than the old one. For example, the highest-earning 10% of graduates would repay £60,601, on average, in 2014 prices under the new system, compared with £25,564 under the old system.

- The introduction of a real (above-inflation) interest rate of up to 3% means that 45% of graduates will repay more than they borrowed in real terms under the new system.

- Despite the fact that large numbers of graduates will repay more than they borrowed, the majority will not repay their loan in full under the new system. We estimate that 73% will have some debt written off at the end of the repayment period, compared with 32% under the old system. The average amount written off will be substantial – about £30,000.

- For example, an 'average teacher' (that is, a teacher who takes out a loan equivalent to the average in our data, who works every year after graduation and whose earnings are equal to the average amongst their profession at each age, putting them in the seventh decile of graduate earners) would repay around £25,000 (in 2014 prices) in total under the old system, repaying in full by around age 40. Under the new system, the average teacher will pay back around £42,000 (£17,000 more), but will still not have repaid in full by their early 50s, when they will have around £25,000 (in 2014 prices) written off.

- Despite the fact that most graduates will repay substantially more over a longer period under the new system, most will repay slightly less per year up to their mid-30s. For example, annual repayments between ages 22 and 30 will be £609, on average, under the new system, £198 per year less than under the old system (in

2014 prices). This arises because of the higher earnings threshold introduced by the 2012 reforms (and the fact that this rises in line with average earnings – rather than the RPI – which the Office for Budget Responsibility assumes will increase faster than prices in the long run).

- However, most graduates will repay more in their 40s and early 50s under the new system than under the old one. For example, amongst those aged 41–51, repayments will be £1,308 per year, on average, under the new system, £1,087 more than before (in 2014 prices). This large increase arises from the fact that 49% of graduates would have repaid their loans in full by age 40 under the old system, compared with just 5% under the new system.

- Our 'average teacher' is one of those who would have cleared their debt by age 40 under the old system; under the new one, they will still owe around £37,000 in 2014 prices. This means that they will repay between £1,700 and £2,500 more per year in 2014 prices during their 40s and early 50s under the new system than under the old one.

- These differences may make it more difficult for some mid- to higher-earning graduates, who would have repaid their loans in full under the old system, to meet their ongoing expenses. The lowest-earning graduates will, however, continue to be better off as a result of the higher repayment threshold introduced by the 2012 reforms.

1. Introduction

In 2012–13, the government made significant changes to the way in which higher education (HE) is funded in England. Teaching grants provided directly to universities were abolished for all but the most expensive subjects, with the cap on undergraduate tuition fees raised (from £3,375 to £9,000 per year) to ensure that universities did not lose out from this change.

A key feature of both the 2011–12 and 2012–13 systems (the 'old' and 'new' systems) is that undergraduate students do not have to pay tuition fees up front: they are entitled to take out a government-backed loan to cover their fees, as well as their maintenance expenses, which they do not have to repay until after graduation. However, the changes introduced in 2012–13 mean that – if they do not want (or are unable) to pay their fees up front[1] – they must now take out larger loans. Additional changes were made to the terms of these loans: they were made more generous in some respects (for example, the income threshold above which loans have to be repaid was increased), but less generous in others (for example, a positive real interest rate is now charged, as opposed to zero real interest under the old system, and repayments have to be made over a longer period).

This report updates and extends the work of Chowdry et al. (2012) to examine the consequences of these changes for graduates. In particular, we use a new model of graduate earnings and repayments (described in Chapter 3) and explore in more detail the pattern and size of loan repayments made, including by different types of graduates.[2]

We start by documenting the amount of debt with which students will leave university under the old and new systems. We use our model of graduate earnings to calculate how much graduates will repay each year and in total, how long it will take them to repay their loan and what proportion will have some debt written off at the end of the repayment period. We also show how these figures vary across the graduate earnings distribution. To illustrate, we use some 'example graduates', including those working in particular graduate occupations – namely, teachers and lawyers.

We find that, on average, students will leave university with substantially more debt under the new system than under the old one. Graduates will also, on average, repay more in total and take longer to clear their debt as a result of the reform. But lower-earning graduates will actually repay less, because of the increase in the income threshold for loan repayments, and simply have more debt forgiven at the end of the repayment period.

[1] The Student Loans Company (2013, table 4B(ii)) estimates that 13% of full-time English undergraduate students who are eligible for fee loans did not take them up in 2011–12.

[2] Another IFS report – Crawford, Crawford and Jin (2014), funded by Universities UK and due to be published in comings weeks – will focus instead on the financial consequences of these reforms for the public purse, including an assessment of the magnitude of the public subsidy inherent in the student loan system.

The impact of the reforms will also vary across an individual's lifetime. Most graduates will repay slightly less per year in their 20s under the new system than under the old one (because the income threshold has gone up), but much more per year in their 40s. This is because almost no one will have repaid their debt by age 40 under the new system (only 5.4%), while 49% would have done so under the old system. This means that graduates may have slightly higher net earnings (earnings after income tax, National Insurance contributions and student loan repayments) in their 20s, but lower net earnings in their 40s.

This report now proceeds as follows. A brief summary of the main changes between the 2011–12 and 2012–13 HE finance and student support systems is given in Chapter 2. Chapter 3 discusses our model of graduate earnings and repayments, as well as how we select our example graduates and how we calculate net disposable income. Chapter 4 reports our key findings: in particular, it describes how the reform will affect student debt and repayments, on average and for different types of graduates. Chapter 5 discusses these findings in the context of two example graduate occupations – teachers and lawyers. Chapter 6 concludes.

2. Policy Background

Since 1998, higher education in England has been funded as follows: to cover the costs of teaching undergraduates, universities receive tuition fees from students and teaching grants from the government.[3] To help meet their costs whilst at university, students are entitled to loans to cover the up-front costs of tuition fees ('fee loans') and living expenses ('maintenance loans'); students from low-income families receive additional support in the form of maintenance grants from the government and scholarships, bursaries or fee waivers from their university.[4]

This system was reformed for new students starting undergraduate courses from September 2012 onwards. These changes fell into two main camps:

- Teaching grants paid directly to universities by the government were reduced dramatically and replaced by the ability to charge higher tuition fees.
- The terms of the student loan system were changed.[5]

Table 2.1 summarises these changes.

[3] They also receive grants to cover other activities, including research and work on widening participation.

[4] The entitlement criteria for institutional support vary, and may cover students who are not from low-income families, such as those with high A-level scores or those from low-participation neighbourhoods.

[5] The government also introduced a national scheme of student support known as the National Scholarship Programme (NSP). This scheme provided £50 million to universities (which universities had to match) in order to support students from low-income families who started undergraduate courses in 2012–13. The NSP has since been abolished for undergraduates who enrol in or after 2015–16. The support provided via the NSP is included in our calculations for the 2012–13 system, with assumptions being made about how universities allocated the funds for the 2012–13 cohort in the later years of their degree. This does not dramatically change the picture of relative winners and losers from the changes made to the system in September 2012.

Table 2.1. HE funding system in England for students first enrolled in 2011–12 and 2012–13

	Students first enrolled in 2011–12	**Students first enrolled in 2012–13**
Fees	£3,375 in 2011; £3,465 in 2012, as announced; assumed to stay at £3,465 thereafter.	Up to £9,000 a year.
Student support		
Fee loan	All students may get a loan from the Student Loans Company (SLC) to pay the fees and must repay SLC after they graduate.	All students may get a loan from the Student Loans Company (SLC) to pay the fees and must repay SLC after they graduate.
Maintenance grant	In 2011, £2,906 if household income less than or equal to £25,000 p.a. Tapered away at 20% withdrawal rate for income between £25,000 and £34,000. Tapered away at around 7% withdrawal rate between £34,000 and £50,020. The maximum grant, the means-testing thresholds and the taper rates changed slightly for subsequent years.	In 2012, £3,250 if household income less than or equal to £25,000 p.a. Tapered away at around 18% withdrawal rate thereafter. No grant available when parental income exceeds £42,600. The maximum grant increases slightly in subsequent years.
Maintenance loan	The maximum loan is £3,838 for students living at home, £4,950 for others outside London, and £6,928 for those away from home and in London. The maximum loan is lower for the final year of study. Students lose 50p maintenance loan for every £1 they receive as maintenance grant. The loan is tapered away at 20% for household income above £50,778. All students are guaranteed at least 72% of the maximum loan. The parameters did not change in cash terms between 2011 and 2013.	The maximum loan is £4,375 for students living at home, £5,500 for others outside London, and £7,675 for those away from home and in London. The maximum loan is lower for the final year of study. Students lose 50p maintenance loan for every £1 they receive as maintenance grant. The loan is tapered away at 10% for household income above £42,875. All students are guaranteed at least 65% of the maximum loan. The parameters did not change in cash terms between 2012 and 2013.
Other student support	Universities have their own schemes. They are obliged to pay a minimum of 10% of fees to students who receive the maximum maintenance grant.	The National Scholarship Programme (NSP) was introduced to give at least £3,000 each to students whose household income is less than or equal to £25,000. The award may be given as fee waivers. Universities determine the detailed criteria. Not all eligible students are guaranteed an award. The NSP has since been abolished for undergraduates.
Accumulation and repayment of student loans		
Real interest rate (relative to RPI)		
During study	0%	3%
After graduation	0%	0–3% depending on graduate income: 0% if below the repayment threshold, linearly increasing to 3% for income at or above the higher repayment threshold
Repayment rate	9%	9%
Repayment threshold	£15,795 in 2012 (above which 9% of income is to be paid)	£21,000 in 2016 (above which 9% of income is to be paid)
Higher repayment threshold	n.a.	£41,000 in 2016 (at which point the real interest rate is 3%)
Threshold indexation	Annually in line with RPI from 2012	Annually in line with national average earnings from 2017
Repayment period	25 years	30 years

2.1 Teaching grants replaced by tuition fees

Before September 2012, teaching grants were paid by the government to universities in respect of all eligible students. The amount paid depended on the subject, ranging from £2,325 for classroom-based subjects to £13,335 for clinical years of study in medicine, dentistry and veterinary science.[6] Since September 2012, however, only students in clinical years of study and 'laboratory-based science, engineering and technology' have attracted teaching grants (approximately one in four of all full-time undergraduates[7]).

To compensate universities for this reduction in public funding, the cap on tuition fees was raised significantly, from £3,375 per year in 2011 to £9,000 per year in 2012.

On the basis of our calculations, universities have, on average, seen an increase in resources per undergraduate student as a result of this change. On average, we estimate that they received £22,143 per student (£12,012 through teaching grants and £11,522 through tuition fees) under the old system, compared with £28,250 per student (£2,010 through teaching grants and £27,299 through tuition fees) under the new system.[8]

2.2 Terms of student loans

Under both the old and new systems, students can apply for a loan from the Student Loans Company (SLC) to cover all of their tuition fees. They can also apply for means-tested maintenance grants and loans from the SLC, to help cover their living expenses whilst studying.[9] In both cases, these loans do not have to be repaid until the April after graduation, and only then once income is above a certain threshold; graduates must repay 9% of gross income above a repayment threshold under both systems.

The 2012 reforms made changes to this repayment threshold, as well as the repayment period and the interest rates charged on the loans.

[6] Source: 'Recurrent grant and student number controls for 2012-13', March 2012, ref 2012/08, at https://www.hefce.ac.uk/data/year/2012/201208/.

[7] Source: the number of full-time undergraduate HEFCE fundables by price group in 'Student numbers from HESES and HEIFES (March 2012)' at http://www.hefce.ac.uk/data/year/2012/studentnumbersfromhesesandheifesmarch2012/.

[8] In addition, universities gave out £1,391 per student in cash bursaries under the old system and £1,257 under the new one, on average. Universities in our sample also receive an average of £198 per student from the government under the National Scholarship Programme. These numbers are presented in Table A.1 in the appendix.

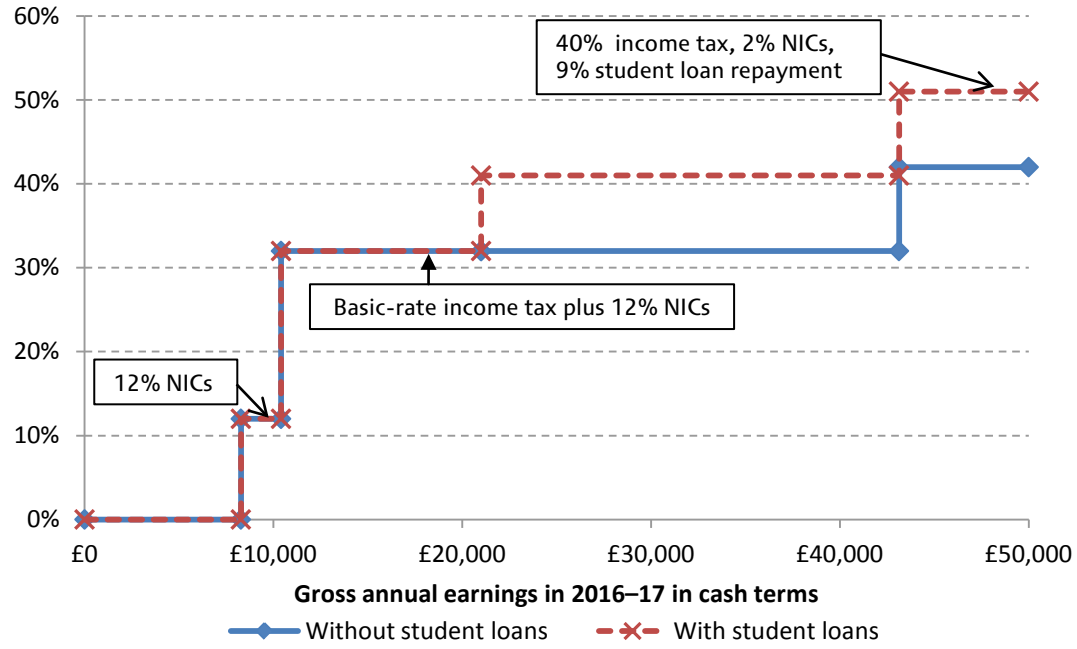
[9] The 2012 reform changed schedules of maintenance grants and loans, increasing the generosity and simplifying the structure (see figure 1 in Chowdry et al. (2012)). These changes are minimal compared with the substantial increase in fee loans and the significant changes that have been made to the loan repayment system.

Repayment threshold and period

For individuals who started university before 2012–13, repayments would be due on income above £15,795 in 2012 prices (£16,910 in April 2014), with the threshold rising in line with the retail price index (RPI). For individuals enrolling in 2012–13 or beyond, the repayment threshold will be £21,000 in April 2016 and will increase each year in line with average earnings (from 2017 onwards). Under the old system, any outstanding debt will be written off 25 years after the individual becomes eligible to repay; the new system increases this period to 30 years.

Until the debt is repaid (or until the repayment period ends, whichever comes sooner), the system works effectively as an additional 9% tax for graduates on all income above the repayment threshold. Figure 2.1 illustrates how much of every additional £1 earned would be forgone as income tax, National Insurance contributions (NICs) and student loan repayment across the spectrum of gross annual earnings.

Figure 2.1. Effective marginal tax rate on gross earnings in 2016–17



Note: Assumptions about income tax and NIC thresholds and rates in 2016–17 are described in Section 3.2.

Interest rates

Before September 2012, loans were subject to an interest rate equal to the inflation rate as measured by the RPI – in other words, a 0% interest rate in real terms. This rate applied both whilst students were at university and after they graduated. After the 2012 reform, these interest rates were increased. Loans are now subject to a real interest rate of 3% per year (that is, 3% plus inflation measured by the RPI) whilst students are studying – in other words, from the point at which loans are issued until the April after graduation. After this point, the interest rate will depend on the graduate's income in each financial year. Graduates with income below £21,000 (in

2016) face a 0% real interest rate. The real interest rate then increases linearly with income, reaching a maximum of 3% for graduates with income of £41,000 or more (in 2016). The latter threshold is due to increase in line with average earnings in future years. It is worth noting that this interest rate does not affect the size of the repayment made by the graduate each year (which is simply equivalent to 9% of gross income over the repayment threshold), but instead affects the overall size of the loan and hence the period over which it is repaid (and potentially the amount of debt written off at the end of the repayment period).

Throughout this report, we refer to students who entered university in 2012–13 as 'the 2012–13 cohort' and the system facing them as 'the new system'. We model 'the old system' as the system that would have been in place for the 2012–13 cohort had there not been a reform – in other words, the system that was in place for the cohort starting university in 2011–12 but with increases in line with the RPI. For example, we calculate the debt that the 2011–12 cohort would have in cash terms and increase it by the annual inflation rate (as measured by the RPI). This approach gives a like-for-like comparison.

3. Methodology

Our main aim in this report is to assess the financial implications of the 2012 reforms to the higher education and student finance system for the debts and loan repayments of graduates. In order to do so, we need to know:

- how much students borrow each year to cover tuition fees and maintenance costs: this requires knowing which course at which university each student studied (because fees differ by subject and institution), as well as their family income and other background characteristics (because student support entitlements vary on this basis);[10]
- how much graduates earn (and hence how much they repay) each year for 30 years after graduation:[11] for this, we need to simulate the earnings of each graduate over a 30-year period. We assume that they make repayments from earnings according to the repayment schedule (that is, 9% of earnings above the repayment threshold, with no evasion and no early repayment).

These elements of our modelling are described in more detail in Section 3.1. Section 3.2 discusses the construction of the lifetime earnings profiles for our example graduates and compares their gross and net earnings.

3.1 Model of graduate earnings and repayments

As described above, in order to assess how much better or worse off graduates will be under the old and new systems, we need to be able to calculate how much students borrowed and repaid under each system.

The Student Loans Company holds data on all students who applied for loans and grants in 2011–12 and 2012–13, but we do not have access to this information and must therefore piece it together from other sources. The SLC also holds information on the earnings of previous cohorts of students during the early years of their careers, but these data do not yet exist over a 25- or 30-year period, and we cannot yet observe any relevant earnings information for the 2011–12 or 2012–13 cohorts (none of whom will have yet reached the start of the repayment period). We must therefore simulate the earnings of our cohorts of interest using other data sources.

[10] We assume that there is no dropout from university and that students borrow the full amount to which they are entitled. Crawford, Crawford and Jin (2014) explore the sensitivity of our estimates to these and other assumptions.

[11] In principle, graduates have to make student loan repayments out of unearned income if unearned income exceeds £2,000 per year. In practice, however, most repayments are collected via the PAYE system (based on earnings) and repayments made out of other types of income (such as income from investments or savings) are only collected from individuals who submit self-assessment tax returns. (Source: http://www.hmrc.gov.uk/students/repay_loan_through_sa_6_3.htm and http://www.hmrc.gov.uk/manuals/cslmanual/cslm16035.htm.) This report therefore focuses on earnings and the repayments made out of earnings. To the extent that graduates have unearned income above £2,000 per year, we may therefore be underestimating the repayments they would make each year and in total over the repayment period.

With this in mind, there are three key components to the model underlying our estimates:

- First, we must identify the populations of undergraduate students starting university in 2011–12 and 2012–13 and calculate the fee and maintenance loans to which they are entitled.
- Second, we must simulate the gross annual incomes of a population of graduates over their lifetimes (or at least over a 25- or 30-year period).
- Third, we must link our populations of students to our pool of graduates in order to calculate the loan repayments made each year and over the whole repayment period.

Some further details on each of these components can be found below. The model is discussed in more detail in Crawford, Crawford and Jin (2014).

Identifying a relevant student population and calculating loan entitlement

Our base population of students is taken from Higher Education Statistics Agency (HESA) data for 2011–12 (the latest year for which data were available at the time of writing).[12] These data are matched to data from the National Pupil Database (NPD) – a census of pupils attending schools in England since 2001–02 – which provides detailed information on prior attainment, together with some information about family background.

This automatically restricts our attention to young English-domiciled students.[13] In addition, we focus on the following subset of students in the linked NPD–HESA data:

- those studying full-time for an undergraduate degree (to whom the loan and grant systems described in Chapter 2 apply);[14]
- those entering one of the 90 largest universities in England (for which we have collected fee, fee waiver and student support details).[15]

[12] Using data from 2011–12 as a starting point for both the 2011–12 and 2012–13 cohorts means that we are assuming that the composition of students in 2012–13 did not differ significantly from the composition in 2011–12. This applies both to the overall characteristics of the student population and to the distribution of students across institutions and subjects.

[13] Students from other countries in the UK are subject to different student support regimes (as education is a devolved issue), and EU students are entitled to fee loans but not maintenance loans. By young students, we mean students whose eligibility for maintenance grants and loans is means tested on their parents' income rather than their own, which requires the student to be under 25. The calculations undertaken in this report are therefore unlikely to be representative of these other types of students. See Crawford, Crawford and Jin (2014) for further discussion of these issues.

[14] Part-time students are entitled to fee loans under the new system but not under the old one; we therefore focus only on full-time students, for comparability purposes. Moreover, only those studying for their first undergraduate degree are eligible for government support.

[15] We collected information on institutions' fees, fee waivers and other student support schemes offered from Access Agreements, websites and, in some cases, Freedom of Information requests. The 90 largest

Simulating graduate earnings

Future earnings are inherently uncertain, but information on them is vital for calculating loan repayments. Moreover, we cannot simply rely on the average earnings of graduates in a particular year, or the average lifetime earnings of particular graduates, because the distribution (how much earnings vary across individuals in any given year), the age profile (how fast earnings grow over the life cycle) and the volatility (how widely earnings fluctuate for each individual) also matter for our calculations.[16] Simulating the gross annual earnings of a population of graduates over a 25- or 30-year period therefore represents a vital part of our analysis.

To do so, we take estimates from a rich statistical model of employment and earnings dynamics (estimated on a relatively small sample of graduates who we observe over a long period) and combine them with estimates of the level and distribution of earnings amongst recent cohorts of graduates from nationally representative data and with Office for Budget Responsibility (OBR) forecasts and assumptions about future economy-wide earnings growth from its 2013 *Fiscal Sustainability Report*.

The first component of our modelling uses data from the British Household Panel Survey (BHPS).[17] The model describes how current employment status and earnings are affected by past employment status, unemployment duration and previous earnings; in other words, it enables us to simulate how employment status and earnings evolve from a given starting point. We allow these relationships to be different for men and women, and for graduates and postgraduates. We use this model to produce a large number of lifetime earnings profiles for these groups. We then scale these profiles using data from the Labour Force Survey (LFS)[18] to ensure that they match the observed distribution of graduate earnings, and we apply OBR forecasts to these adjusted profiles to ensure that the evolution of future earnings matches that assumed by the OBR.

Specifically, we follow the OBR in assuming that there will be 12.3% nominal earnings growth between 2012 and 2016, an average of 0.5% per year real earnings growth from 2016 to 2020, and 1.1% real earnings growth from 2020 onwards. We also assume that earnings growth applies to all graduates equally. Crawford, Crawford and Jin (2014) explore the sensitivity of our estimates to these assumptions. Were we to assume that earnings growth was positively correlated with earnings – that is, that the earnings of higher-earning graduates grow faster than the earnings of lower-earning

universities in England cater for 95% of all full-time undergraduates attending universities in England (source: authors' calculations using number of full-time undergraduates in HESA table '2012/13 students by institution' at http://www.hesa.ac.uk/content/view/1897/239/).

[16] For instance, graduates with more volatile annual earnings tend to repay more, for given levels of total earnings, because they cannot get a rebate in the year when earnings fall below the threshold. For example, because the repayment is 9% of earnings above a threshold, total repayments over two years are lower when earning £30,000 for each year than when earning £60,000 in one year and £0 in the other.

[17] For more details, see https://www.iser.essex.ac.uk/bhps.

[18] For more details, see http://www.data-archive.ac.uk/deposit/use?id=2895.

graduates – then repayments would be higher amongst mid- to higher-earning graduates and a smaller proportion of graduates would repay their loans in full.

Linking students to simulated graduate earnings

Linking our population of students to our simulated profiles of lifetime earnings among graduates enables us to link the debts with which particular students graduate with the earnings (and consequent loan repayments) that they go on to make.

Very few characteristics appear in both our model of graduate earnings and our baseline NPD–HESA population, so to improve the linkage we make use of a third data set – the Destination of Leavers from Higher Education (DLHE) data. This data set provides information on what individuals are doing six months after graduation (including earnings if they are in work) and is designed to be a census of those leaving university in a particular year. Clearly, we do not have access to data for the 2012–13 cohort (or even the 2011–12 cohort whose NPD–HESA data we use). Instead, we use data on the cohort of individuals who left university in 2006–07 to provide us with a proxy for the distribution of earnings by gender, institution, subject and socio-economic background.

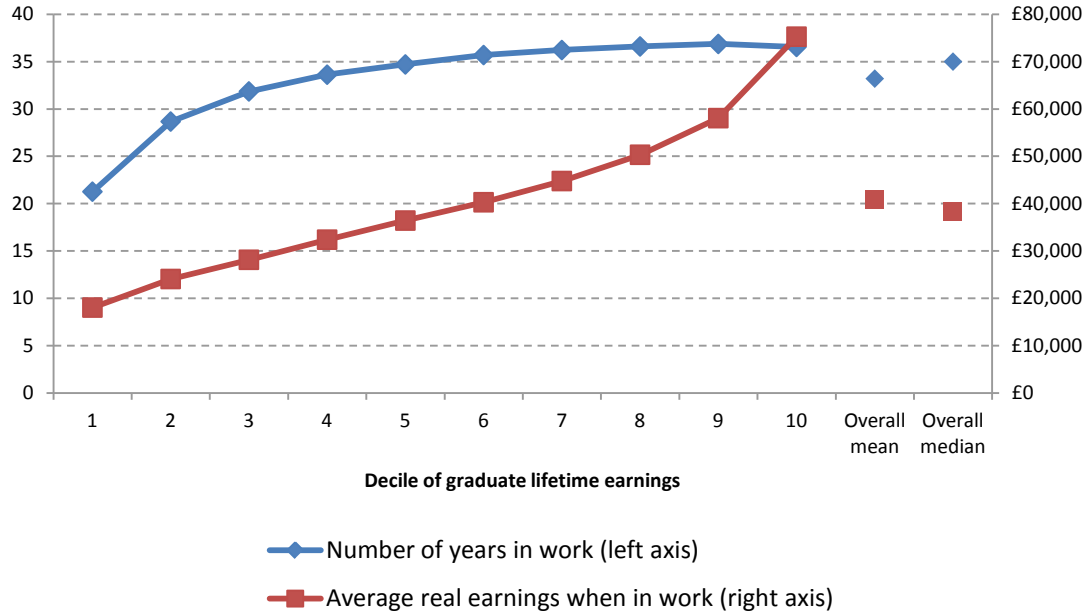
For each individual in our NPD–HESA population, we draw a value of initial earnings from the relevant distribution, which we then use in conjunction with information on gender, socio-economic background and whether the individual obtained a postgraduate degree, in order to select an appropriate lifetime earnings profile, ensuring that the distributions of earnings imposed above are preserved in this step.

The resultant graduate earnings profiles

Figures 3.1 and 3.2 present summaries of the types of information that our model produces. We divide our graduate population into 10 equally-sized groups (deciles) on the basis of their lifetime earnings from age 22 to age 60.

Figure 3.1 shows, for each decile, the average number of years individuals in that decile spend in work and their average earnings (in 2014 prices) when they are in work. For example, our model suggests that the 10% lowest-earning graduates will, on average, be in work for 21 out of the 39 years we consider and that they are expected to earn around £18,000 per year on average (in 2014 prices) when they are in work. At the other end of the spectrum, our model suggests that the top 10% highest-earning graduates will, on average, work for 36.5 years out of 39 and that they will earn around £75,000 per year on average (in 2014 prices) when they are in work.

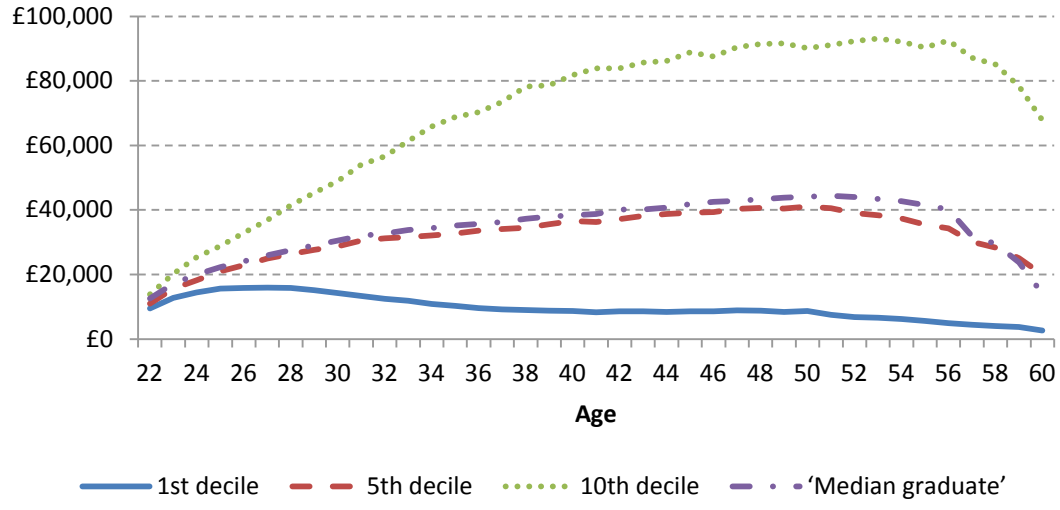
Figure 3.1. Number of years in work and average annual earnings (in 2014 prices) by decile of graduate lifetime earnings



Note: Each data point is the average of the relevant outcome across all graduates within the decile. These figures are based on data from our simulated graduate earnings profiles rather than on real data.

Figure 3.2 presents average lifetime earnings profiles for individuals in selected deciles of the graduate lifetime earnings distribution. These profiles are constructed by taking the average earnings at each age amongst individuals in a particular decile (including zeroes for those who are not in work) and hence they do not represent the profile of any particular individual within that decile. The figure also shows the profile for the 'median graduate' (who earns more than 50% of all graduates, including those out of work, every year from ages 22 to 60).

Figure 3.2. Average lifetime earnings profiles (in 2014 prices) for selected deciles of the graduate lifetime earnings distribution



Note: These figures are based on our simulated graduate earnings profiles rather than on real data.

Figure 3.2 shows that, on average, individuals in the first, fifth and tenth deciles (and at the median) of the graduate earnings distribution see their earnings rise during their 20s. Thereafter, we see the patterns diverge. Amongst the lowest 10% of earners (the first decile of the graduate earnings distribution), average earnings start to decline from the late 20s, driven by an increasing proportion of those individuals (mostly women) dropping out of the workforce. (Figure A.1 in the appendix presents the employment rates amongst men and amongst women generated by our simulations.) For those in the top 10% of earners (the tenth decile of lifetime earnings), by contrast, average earnings continue to grow until the early 40s and then flatten out and start to decline at around age 56 as these individuals begin to retire.

The patterns for individuals in the fifth decile and at the median of the graduate lifetime earnings distribution are somewhere in between, with much slower growth in the 20s, 30s and 40s. For example, the median value of graduate earnings at each age (including zeroes to reflect differences in participation rates) rises steadily from £22,000 at age 25 to around £30,000 at 30 and £38,000 at 40, peaking at about £44,000 at around age 50 (all in 2014 prices), before falling away rapidly as participation rates start to fall throughout their 50s. Half of graduates are expected to earn less than this amount on the basis of our simulations and half are expected to earn more.

Calculating repayments

Once we have selected lifetime earnings profiles for each individual in our initial population, we calculate the interest rate charged and the value of student loan repayments made (according to the repayment schedule) in each year on the basis of gross annual earnings.[19]

3.2 Earnings profiles of example graduates

As well as calculating the average debt incurred – and the average repayments made – by our population of graduates (and how these vary across the lifetime earnings distribution), we can calculate the repayments that would be made by individuals following specific earnings profiles.

To do so, we adopt two approaches:

- In the first, we use data from the Annual Survey of Hours and Earnings (ASHE) – which contains information on the hours and earnings of a 1% sample of employees liable to pay National Insurance contributions in the UK – to calculate the average earnings of individuals working in particular (graduate) occupations.

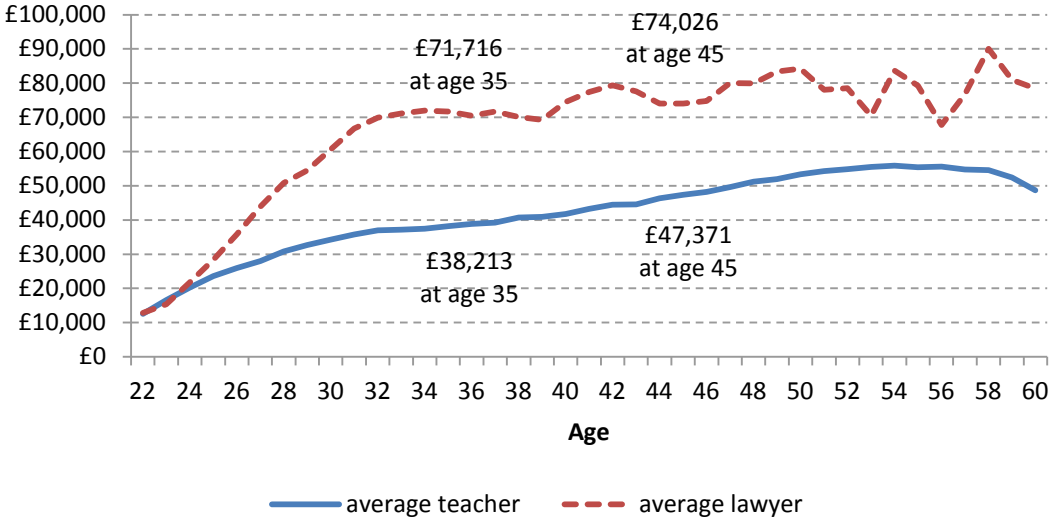
- Under the second approach, we impose particular patterns on employment and earnings in order to provide illustrative examples of repayments by individuals who fall into particular deciles of the lifetime earnings distribution.

[19] As outlined above, to the extent that individuals have substantial amounts of unearned income, this may lead us to underestimate the repayments made by – and the interest rate charged to – these graduates.

Our first approach uses individuals' annual earnings and occupation information from ASHE from 1997 to 2012 (collected in April of each year).[20] We focus on individuals aged 22–60 and select two subsamples based on occupation – school teachers (including those in leadership positions) and law professionals. We do not specifically observe qualifications in ASHE, but it seems plausible that most school teachers and law professionals are graduates.

After removing those with the 1% highest and lowest real earnings in each year, we are left with 64,151 positive earnings observations for teachers and 7,982 for lawyers. We convert all earnings to the 2012 level[21] and take the mean of annual earnings by age for each occupation group. Finally, we apply OBR forecasts for future earnings growth. This produces the two average earnings profiles shown in Figure 3.3 (in 2014 prices).

Figure 3.3. Annual average real gross earnings for teachers and lawyers in 2014 prices



Note: We assume that both the average teacher and the average lawyer enter university in 2012 and start making repayments from April 2016 at age 22. The number of observations for lawyers ranges from 38 at age 22 to 455 at age 28, and is more than 100 from ages 23 to 52. The number of observations for teachers is always above 300.
Source: Authors' calculation from ASHE 1997–2012.

It is worth noting that these constructed earnings profiles are positive in every year, whereas in reality individuals may spend some time out of the workforce (for example, to raise children) or may switch occupations. These profiles should therefore be thought of as representing the 'average teacher' or the 'average lawyer' to the extent

[20] This means that earnings relate to financial years. Thus, if an individual started working as a teacher in September, then we would observe their earnings in that financial year to be about half of their annual salary.

[21] To do so, we regress earnings on year dummies and subtract the relevant year effect from each observation.

that they represent the mean earnings of individuals working in the relevant profession at each age.

Average earnings start below £20,000 per year for both occupations. Average earnings amongst teachers in the ASHE data increase gradually to around £34,000 per year at age 30 and peak at around £55,000 in their mid-50s. Total earnings are expected to be £1.6 million between ages 22 and 60, meaning that our 'average teacher' fits into the seventh decile of graduate lifetime earnings. Average earnings grow much faster for lawyers than for teachers in their 20s and early 30s. Average earnings amongst lawyers in the ASHE data rise quickly, reaching £70,000 a year in their early 30s, and fluctuating around and above that level in their 40s and 50s. This means that our 'average lawyer' fits into the top decile of graduate lifetime earnings.

Our second approach imposes particular patterns of employment and earnings in order to illustrate the effects of the 2012 reforms with reference to example graduates at different points of the earnings distribution. These profiles are for illustrative purposes only and, in contrast to the profiles for teachers and lawyers described above, are not based on real (groups of) individuals or data. As such, they are by definition simplified versions of what may happen to any given individual over the course of their lifetime.

We construct two example graduates using this method:

- Alice works continuously from graduation to age 30, when she becomes a mother and stays out of work until age 52. Her annual earnings start at £20,000 at age 22 in 2014 prices, rising by £1,000 a year in real terms until they reach £28,000 at age 30. Because she stays out of the labour market for many years, she belongs to the bottom decile of the distribution of graduates' lifetime earnings.

- Jamal works continuously from graduation to age 60. His real earnings (in 2014 prices) start at £20,000 at age 22, rising by £1,000 per year in real terms until they reach £35,000 at age 37, after which they stay at that level (in real terms) until age 60. His earnings profile fits into the fifth decile of the distribution of graduates' lifetime earnings.

To calculate net earnings for our example graduates at particular points in time, we must make some assumptions about what will happen to income tax and NICs rates and thresholds in future. We assume that the rates stay the same but that the thresholds go up in line with the consumer price index (CPI) each year (which is the default in the absence of active policy decisions).[22] We assume the CPI will rise by 2% a year, which is also the OBR's long-run assumption.[23]

[22] The personal allowance will increase in line with the CPI from 2015–16 onwards (source: http://www.hmrc.gov.uk/budget2013/tiin-2531.pdf). NICs thresholds are indexed to the CPI rather than the RPI from 2012–13 (source: http://www.tax.org.uk/Resources/CIOT/Documents/2011/03/CPT%20Indexation%20of%20National%20Insurance%20Contribution%20Rates_%20Limits%20and%20Thresholds.pdf).

[23] Source: table 2.1 in supplementary tables in Office for Budget Responsibility (2013).

In addition, we must make some assumptions about the debt on graduation of our example graduates in order to calculate their future loan repayments. In all cases, we assume that they graduate with debt equal to the average of all graduates under the relevant system and that they become eligible to start making repayments at age 22.

4. Financial Consequences of the 2012 HE Finance and Student Support Reforms

This chapter discusses our estimates of the implications of the changes to the HE finance and student support regime introduced in 2012–13 for graduate debt and repayments. We present these estimates both on average and amongst different types of graduates, including with reference to our two example graduates in the bottom and fifth deciles of the graduate lifetime earnings distribution. Chapter 5 discusses our findings for the 'average teacher' and the 'average lawyer'.

We can present the figures in nominal, real or net-present-value (NPV) terms. We now discuss the key differences between these figures and which are the most appropriate to use in different circumstances:

- **Nominal** figures present the total stock of debt or the repayments made in a particular year or in total over time in cash terms. This means that we treat £100 in 2030 the same as £100 today, without taking into account the fact that £100 in 2030 is likely to be worth a lot less than it is now (assuming positive inflation).

- **Real** figures account for inflation – they take account of the fact that £100 in 2030 is not worth the same as £100 today – by expressing all figures in a particular year's prices (we choose 2014 prices for this report). To do so, we deflate the debt and repayment figures in future years using the RPI.[24] (The OBR assumes that the RPI will rise by 3.3% per year from 2021 onwards.[25])

- **NPV** figures additionally take into account the fact that going to university can be thought of as an investment for students. If, before they decided whether or not to go, students (or their parents) wanted to assess whether the future benefits of going to university were likely to exceed the future costs, then they would typically 'discount' estimates of both the costs and the benefits. This is an adjustment that is made over and above inflation to take account of the fact that costs or benefits in the future are not worth as much as costs or benefits today.

  There are clear economic rationales for discounting future cash flows. First, people are generally impatient: £1 today is preferred to £1 in a year's time. This means that, even if the inflation rate is zero, £1 in future is valued less than £1 today.[26] Second, the financial market provides individuals with opportunities to transfer money over time. With a positive real interest rate, an individual's real discount

[24] We choose the RPI because this is the inflation measure that governs changes in the HE finance and student loan system. For example, it is the measure used to calculate the interest rate charged on loans.

[25] Source: table 2.1 in supplementary tables in Office for Budget Responsibility (2013).

[26] For example, if graduates are indifferent between £1 in 2016 and £1.05 in 2017 (both in the same price level), then we should discount the real repayment in 2017 by 5% before adding it to the real repayment in 2016.

rate is likely to be above zero.[27] Therefore, the undiscounted measure of total real repayments is likely to overstate the true costs of repayments to graduates' well-being. Of course, economic theory does not point to a unique real discount rate for all individuals at all times. For this report, we adopt a real discount rate of 2.2%, which is the government's chosen real discount rate for the purposes of estimating the costs and benefits associated with higher education.[28]

In general, we prefer figures in real or NPV terms – as these take into account the fact that repayments in future do not affect graduates' well-being in the same way as repayments today – but we present figures in nominal terms on some occasions (mainly when calculating total repayments) for illustrative purposes.

This chapter now proceeds as follows: Section 4.1 presents estimates of total debt under the old and new HE finance and student support systems; Section 4.2 presents estimates of the total repayments that are made over the lifetime under the old and new systems, together with estimates of the proportion of individuals who have some debt written off; and Section 4.3 presents estimates of the annual repayments that are made at different stages of the life cycle.

4.1 Student debt at graduation

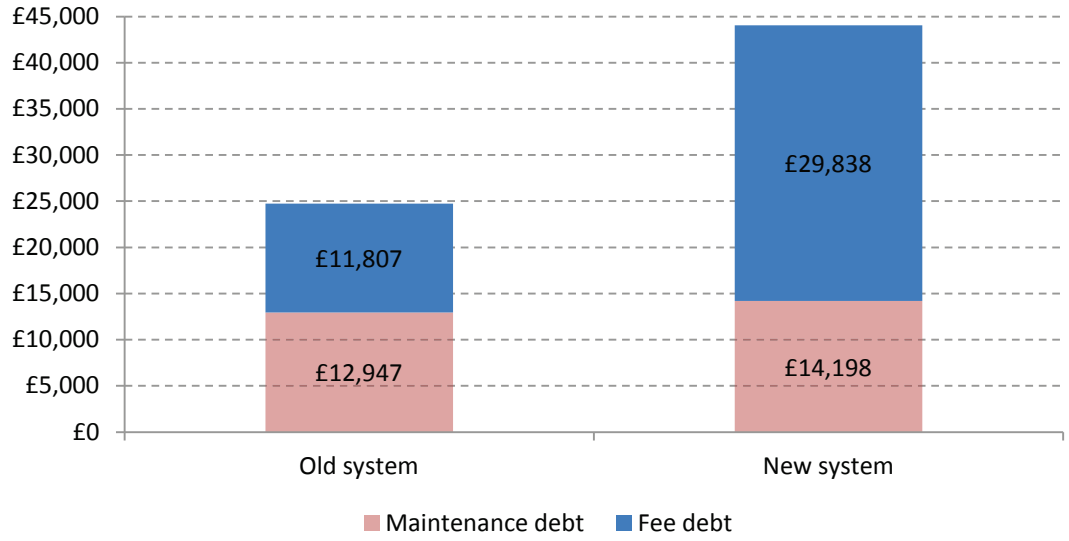
As discussed in Chapter 2, the 2012 reform increased fees (and hence fee loans) and maintenance loans, as well as the real interest rate charged on these loans whilst studying. As a result, students will accumulate substantially more debt by the time they graduate under the new system than under the old one.

Figure 4.1 compares the amount of debt on graduation before and after the 2012 reform in real terms. It shows that, on average, students graduating under the new system will graduate with £44,035 student debt (in 2014 prices) compared with the £24,754 they would have graduated with had the 2012 reforms not been introduced. This is equivalent to an increase of £19,281 (78%). (In nominal terms, the average debt would be £26,675 and £47,462 under the old and new systems respectively.) It is clear from Figure 4.1 that this real increase in student debt is mostly driven by the increase in tuition fees (and hence fee loans) rather than maintenance loans.

[27] For example, if I can put £1 in a savings account today and expect to receive £1.05 in a year's time, then I should be indifferent between repaying £1.05 in a year's time or £1 today. Thus, my repayment next year should be discounted by 5%. Although interest rates have been lower than inflation measured by the RPI for the last few years, in the long run we may expect interest rates to exceed inflation.

[28] Source: House of Commons Library (2014). Crawford, Crawford and Jin (2014) examine the sensitivity of our estimates to this assumption.

Figure 4.1. Average real student debt at graduation under old and new systems (in 2014 prices)



Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full fee and maintenance loans to which they are entitled and that there is no dropout from university. See Chapter 3 for more details.

The amount of debt can in principle vary across students, depending on their choice of university and subject (which determines the fee level and course length), their family income (which determines the maintenance loan to which they are entitled) and their other characteristics such as prior attainment (which, together with their family income and the university they attend, determines any fee waivers to which they are entitled).

Generally speaking, students from lower-income households tend to receive more fee waivers, and students from middle-income households qualify for larger maintenance loans than both lower- and higher-income ones. Thus, on the assumption that all students take out the maximum loan to which they are entitled, students from lower-income households will accumulate the least debt and those from middle-income households will accumulate the most.[29]

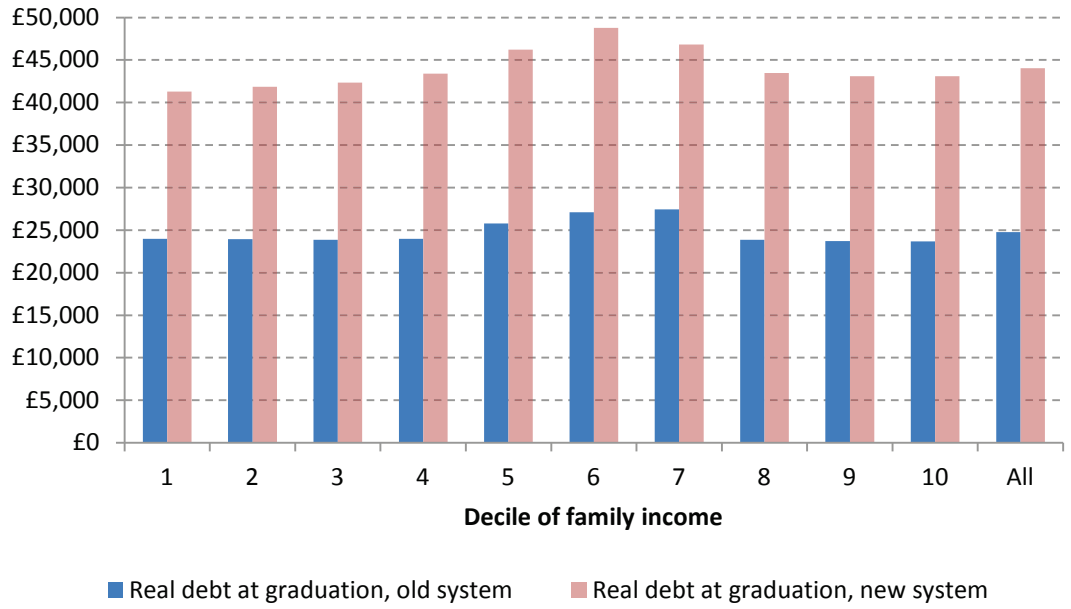
This is shown in Figure 4.2, where we divide the student population into 10 equally-sized groups (deciles) on the basis of family income.[30] We estimate that the average real student debt on graduation under the new system ranges from £41,283 (in 2014 prices) for the 10% of students from the poorest households, to £48,766 for students in the sixth decile of household income. The equivalent figures under the old system for students in these deciles are £23,998 and £27,106 respectively. These differences

[29] In practice, students from higher-income households may be able to afford not to take out loans, but they may also be less debt averse than students from lower-income households. Our model assumes that everyone takes out the maximum loan to which they are entitled. The implications of relaxing this and other assumptions are discussed in detail in Crawford, Crawford and Jin (2014).

[30] As the sample includes students only and HE participation is higher for young people from richer families, the average student is likely to have a family income above the population average.

between the deciles are comparatively small relative to the size of the overall loan, however.

Figure 4.2. Real student debt at graduation across the distribution of family income (in 2014 prices)



Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full fee and maintenance loans to which they are entitled and that there is no dropout from university. See Chapter 3 for more details.

Interestingly, we estimate that men will graduate with slightly higher debts on average than women – by about 3% under both systems. This is because men are more likely to study courses that take longer than three years, such as computer sciences and engineering. (See Figure A.2 in the appendix for details.)

4.2 Total repayments and debt write-offs

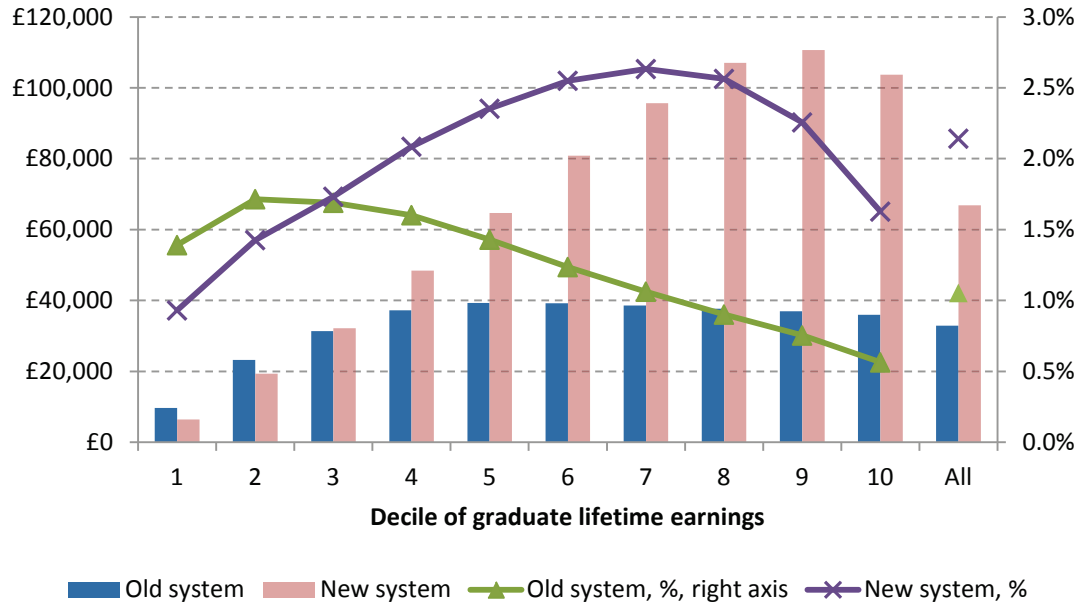
Those graduating from university under the new system will clearly be doing so with substantially higher debt than those graduating under the old system. Higher debt may not necessarily make graduates worse off in financial terms, however, if the repayment terms are more favourable, meaning that they have to pay back less. This section uses our model of graduate earnings and repayments to calculate how much graduates are expected to repay in total over the repayment period before and after the 2012 reforms. We do so both on average and across the distribution of graduate lifetime earnings.

Total repayments

Figures 4.3 to 4.5 show the total repayments made over graduates' lifetimes on average and across the distribution of graduate lifetime earnings, in nominal, real and real NPV terms.

Figure 4.3 shows that, in nominal terms, we estimate that graduates will, on average, repay £66,897 under the new system – more than double the amount they would have repaid under the old system (£32,917). This is equivalent to 2.1% of nominal lifetime earnings under the new system, up from 1.1% under the old system (shown on the right-hand axis of Figure 4.3).

Figure 4.3. Total nominal repayments and as a share of nominal lifetime earnings across distribution of graduate lifetime earnings (all in current prices)



Note: The % figures represent the average total repayments in nominal terms in each decile as a percentage of the average lifetime earnings (also in nominal terms) in that decile. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

As repayments are contingent on income, there is huge variation across the graduate earnings distribution. Figure 4.3 shows that we estimate the 10% lowest lifetime earners to repay a total of £6,460, on average, under the new system, while the 10% highest lifetime earners are, on average, expected to repay £103,691 in total. Compared with the old system, the lowest lifetime earners will actually be better off in nominal terms: they would have repaid £9,658 under the old system. This is because the effect of the higher repayment threshold (which acts to reduce annual repayments) more than outweighs the effect of the higher interest rate and the longer repayment period (both of which would act to increase repayments) for these individuals.

The highest earners, by contrast, will repay substantially more under the new system – almost three times more (£103,691 versus £35,952 under the old system). The finding that total repayments broadly increase with lifetime earnings is mainly driven by the repayment rule: annual repayment is 9% of income above the repayment threshold. A second but less important reason is that lower-earning graduates tend to come from lower-income households and receive more fee waivers, and hence tend to accumulate

less debt. But the differences in initial debt by graduate earnings are very small, as shown in Figure A.3 in the appendix.

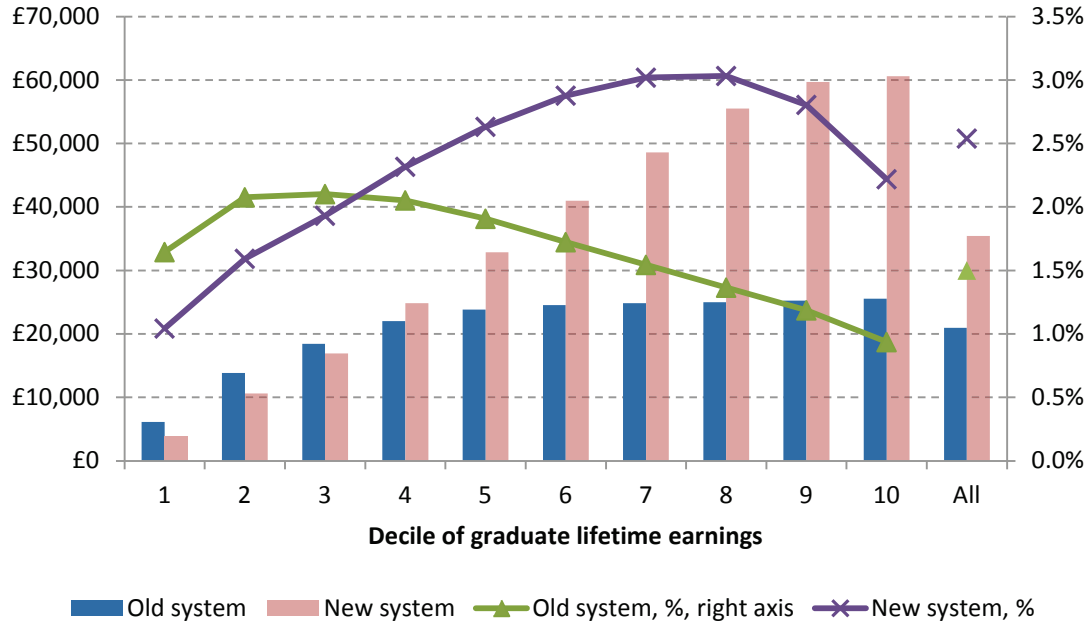
We also find a significant gender difference in average total repayments: because women tend to work for fewer years and earn less when in work than men, they are estimated to repay less, on average, than men under either system, and are relatively less affected by the 2012 reforms (that is, the proportional increase in repayments is smaller for women than for men). See Figure A.4 in the appendix for details.

Looking at average total repayments as a share of average lifetime earnings within each decile, Figure 4.3 shows that, under the old system, higher-earning graduates repay substantially less as a proportion of their gross lifetime earnings than lower-earning graduates; under the new system, by contrast, mid- to higher-earning graduates will repay the most in proportional terms (although the 20% highest-earning graduates will repay less as a proportion of their earnings than those in the eighth decile, because they are more likely to repay their loans in full, as we shall see in more detail later on).

Both average total repayments and repayments as a percentage of gross lifetime earnings highlight the greater progressivity of the new system compared with the old system.

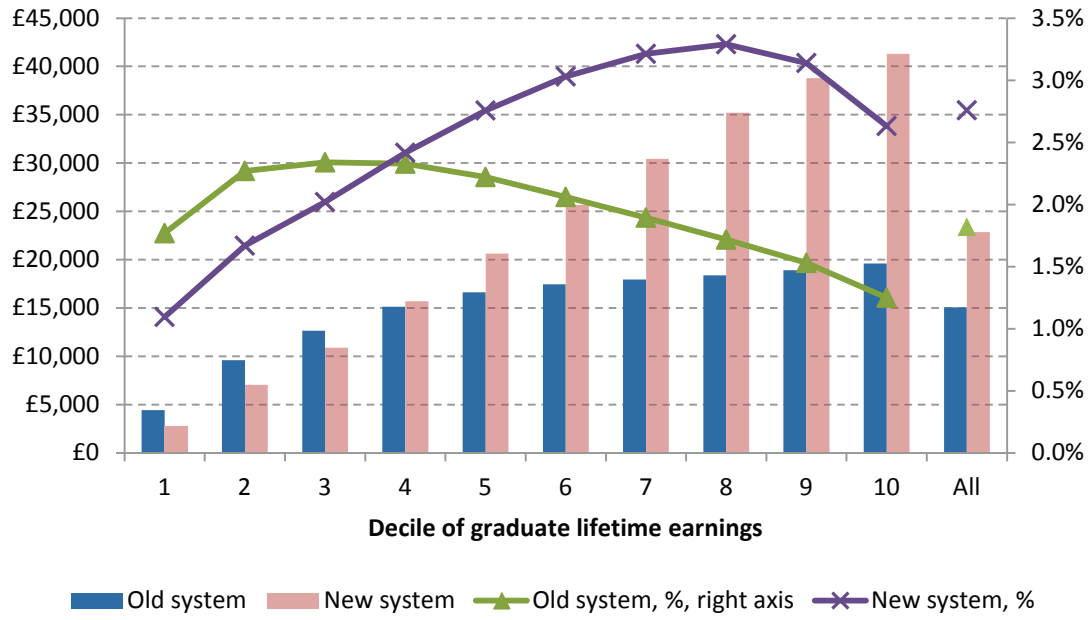
Repeating this analysis in real and real NPV terms (shown in Figures 4.4 and 4.5 respectively) produces a similar pattern of results (although the levels are very different). In real terms (Figure 4.4), average total repayments are estimated to be £35,446 under the new system, compared with £20,936 under the old one. Both figures are substantially smaller than the nominal figures shown in Figure 4.3, because the bulk of repayments are made many years into the future, such that removing the effects of inflation makes quite a large difference. In real NPV terms (Figure 4.5), the impact of the 2012 reform is smaller again: average total repayments are estimated to increase from £15,075 under the old system to £22,843 under the new system. This is because more repayments are made further into the future under the new system, and hence are discounted more heavily.

Figure 4.4. Total real repayments and as a share of real lifetime earnings across distribution of graduate lifetime earnings (all in 2014 prices)



Note: The % figures represent the average total repayments in 2014 prices in each decile as a percentage of the average lifetime earnings (also in 2014 prices) in that decile. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Figure 4.5. Net present value of total real repayments and as a share of real NPV lifetime earnings across distribution of graduate lifetime earnings (in discounted 2014 terms)



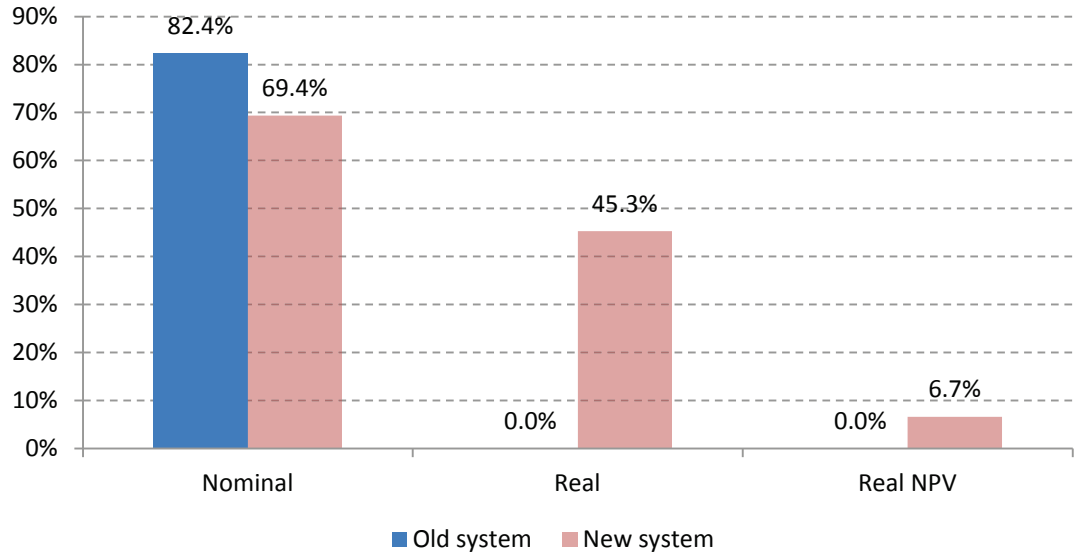
Note: The % figures represent the average total repayments in real NPV terms in each decile as a percentage of the average lifetime earnings (also in real NPV terms) in that decile. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

The differences in repayments across the graduate lifetime earnings distribution are also similar in real and real NPV terms compared with nominal terms, both overall and as a proportion of gross lifetime earnings. The main difference is that the graduates in the top decile are estimated to repay more in real and real NPV terms than those in the ninth decile, while the reverse is true in nominal terms. This is because those in the top decile tend to repay their loans more quickly, meaning that their repayments are deflated and discounted less heavily than those made by individuals in the ninth decile.

In addition, what the average figures cannot show is that there is also significant variation *within* deciles in terms of total repayments. For example, while the average real repayment in the top decile is £60,601 under the new system, we estimate that a quarter of this group will repay less than £50,756, while a quarter will repay more than £68,688.

Comparing these estimates of total repayments with the estimates of total debt presented in Section 4.1, it is clear that, in contrast to the old system, the positive real interest rates introduced as part of the 2012 reform mean that, for the first time, it is possible for graduates to repay more than they borrowed in real terms. Figure 4.6 shows the percentage of graduates who we estimate to repay more than they borrowed in nominal, real and real NPV terms under the old and new systems.

Figure 4.6. Percentage of graduates repaying more than they originally borrowed



Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

We estimate that 45% of graduates will repay more in real terms than they borrowed under the new system (compared with 0% under the old system, as there was a 0% real interest rate). As argued above, one may additionally want to discount real repayments in future years. With a real discount rate of 2.2%, the NPV of total repayments exceeds the NPV of loans taken out for 6.6% of all graduates under the new system. If the government's real cost of borrowing is 2.2%, then it would make a profit from lending to these 6.6% of graduates (as they are sometimes charged a real interest rate above 2.2%). But, as with all our analysis, this assumes that graduates do not make early repayments; it is possible that they might choose to do so in order to reduce the accumulation of interest on their debt.

On the other hand, if one looks at the nominal amounts, a majority of graduates will repay more than the amount borrowed under both systems. Interestingly, we estimate that a smaller proportion of graduates will repay more than the amount they borrowed in nominal terms under the new system (69%) than under the old one (82%). This is driven primarily by the higher repayment threshold under the new system. But the average difference between the nominal amount borrowed and the nominal amount repaid is much lower under the old system than under the new one: those who repay more than they borrowed in nominal terms under the new system will, on average, repay £48,184 more than they borrowed, whereas the equivalent figure is £13,258 under the old system. All figures are in nominal terms (that is, in current prices).

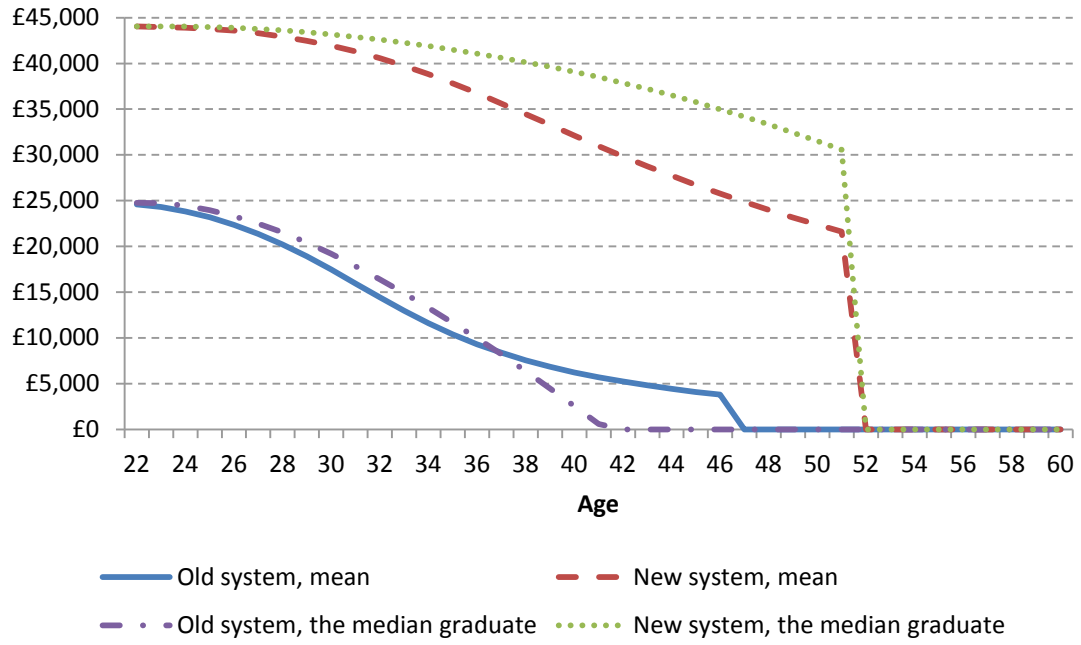
Time taken to clear debts and debt write-offs

Under the new system, any outstanding student debt will be forgiven 30 years after the graduate becomes eligible to repay. This is an increase from 25 years under the old

system. Nonetheless, we expect many more graduates to have some debt written off under the new system than under the old one. We also expect the average time taken to clear the debt (even amongst those who do repay in full) to be considerably longer under the new system than under the old one. This arises both because the average debt will start larger and because the possibility of incurring a positive real interest rate means that the size of the outstanding debt may increase in real terms over the repayment period.

Figure 4.7 illustrates the profiles of real outstanding debt over the life cycle under the old and new systems both on average and for what we call the 'median graduate' (who earns more than 50% of all graduates, including those out of work, every year from ages 22 to 60). As we have already shown, the 2012 reform almost doubles the average level of debt with which students leave university (in real terms). As graduates repay over time, average real debt falls, such that, on average, we estimate that about £3,800 (in 2014 prices) per graduate would be written off after 25 years under the old system.[31] At this point, the outstanding debt under the new system will still average around £25,800 (in 2014 prices). After an additional five years of repayments, we estimate that an average of about £21,600 (in 2014 prices) per graduate would be written off under the new system.[32]

Figure 4.7. Average real outstanding debt over the life cycle (in 2014 prices)



Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

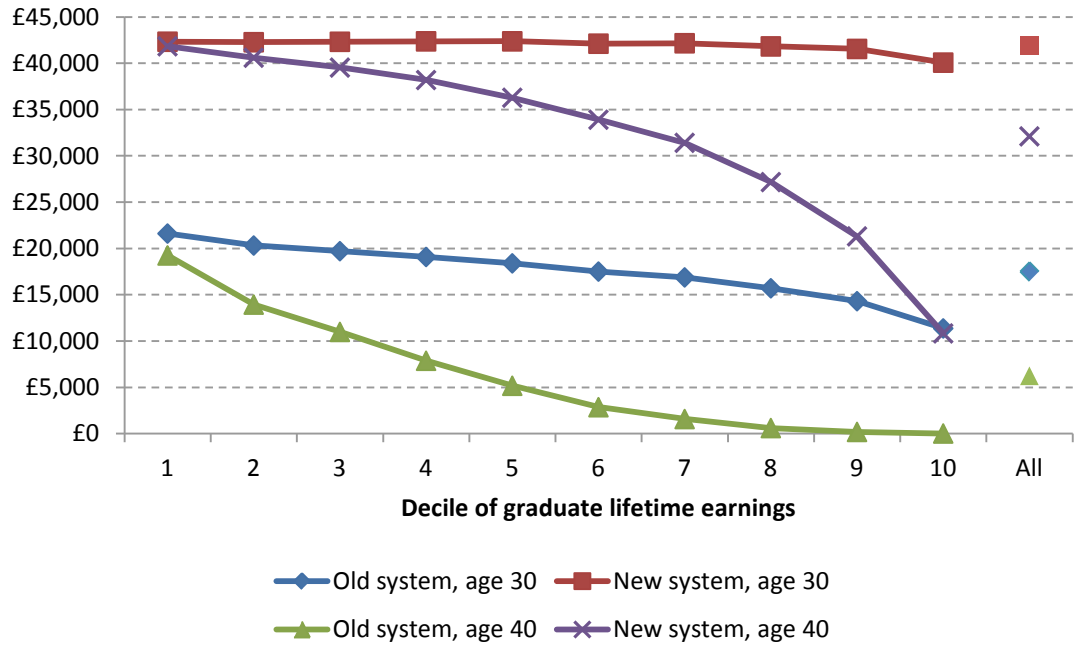
[31] This average is across all graduates, including those who repay in full. Among graduates with positive write-offs, the average would be £11,868 in 2014 prices under the old system.

[32] The average would be £29,836 if those with zero write-offs are excluded.

The profile of the median graduate is quite different. We saw in Figure 3.2 that median earnings amongst all graduates (including those who do not work) rise to a maximum of around £44,000 in 2014 prices. An individual with this profile would not repay their debt in full under the new system. Instead, real debt would fall very slowly, from £44,035 at age 22 to £43,181 at age 30, £39,069 at age 40 and £31,519 at age 50; at age 51, the remaining debt of £30,574 would be written off. By contrast, under the old system, an individual with this profile would have repaid their debt by age 42 (at which point they would still have £37,861 of debt outstanding under the new system).

Figure 4.8 shows how real outstanding debt at ages 30 and 40 varies across the distribution of graduate lifetime earnings. At age 30, there is a clear gradient in outstanding debt under the old system, as higher-earning graduates have paid off relatively more of their debt than lower-earning graduates. Under the new system, however, the amount of debt outstanding at age 30 is slightly lower for the top 10% earners than for others, but is otherwise relatively constant across the earnings distribution. (The amount borrowed does not vary much across the distribution – see Figure A.3 in the appendix – and higher repayments amongst higher-earning graduates are counterbalanced by their stock of debt increasing more rapidly as a result of the positive real interest rates they face.)

Figure 4.8. Real outstanding debt at ages 30 and 40 across distribution of graduate lifetime earnings (in 2014 prices)



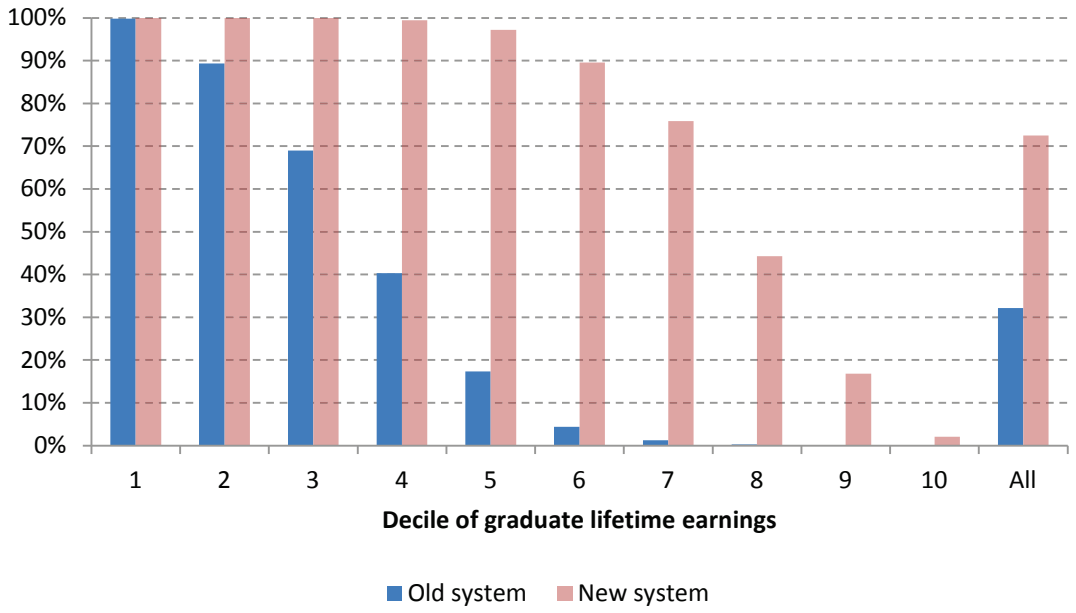
Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

The gradients are steeper at age 40 under both systems. Relatively little progress is made by the lowest earners in paying off their debt between ages 30 and 40 under either system. By contrast, many mid- to high-earning graduates (including more than

99% of those in the top decile of lifetime earnings) would have paid off their debt by age 40 under the old system, but even the top 10% of earners would have substantial outstanding debt on average at age 40 (over £10,000 in 2014 prices) under the new system. These differences are much larger at other parts of the distribution – including the median, as we saw above.

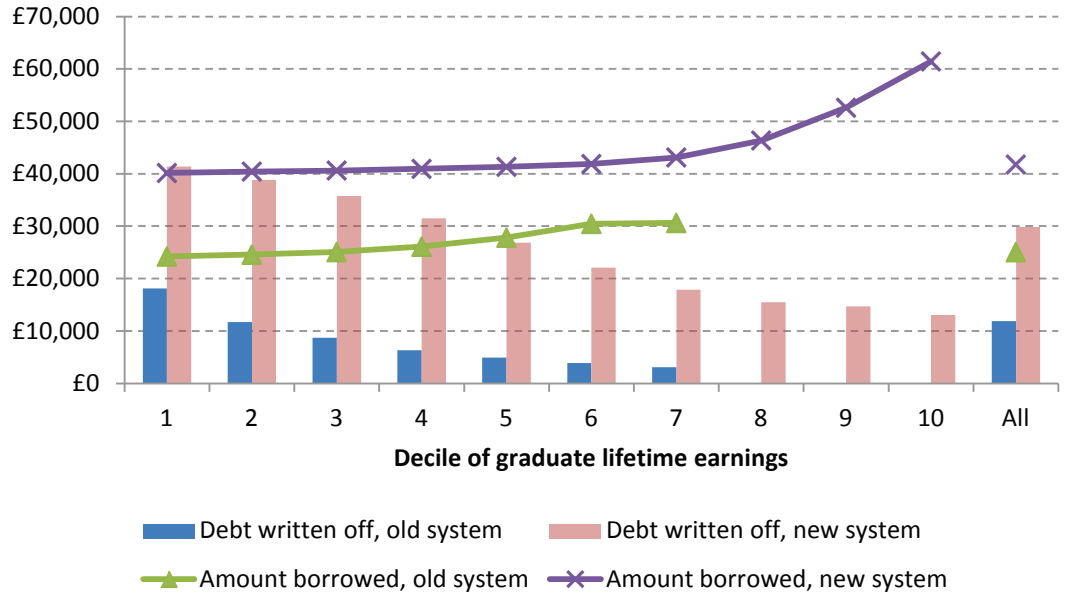
We saw in Figure 4.7 that average real outstanding debt at the end of the repayment period was substantial, especially under the new system. Figure 4.9 shows the percentage of graduates who have some debt written off in real terms at the end of the repayment period under the old and new systems. Overall, we estimate that 73% of graduates will not repay their debt in full within the 30-year repayment period under the new system, compared with 32% not doing so within the 25-year repayment period of the old system. Figure 4.10 illustrates the average amount written off amongst those who do not repay their debt in full under the old and new systems. It shows that, amongst those who do not repay in full, we estimate an average debt write-off of £29,836 in 2014 prices under the new system, compared with £11,868 under the old one.

Figure 4.9. Percentage of graduates with real debt write-offs across distribution of graduate lifetime earnings



Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Figure 4.10. Amount of real debt written off among graduates who do not repay in full, across distribution of graduate lifetime earnings (in 2014 prices)



Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details. Note that the apparent increase in the average amount borrowed as lifetime earnings increase is due to the fact that this graph focuses on those who do *not* repay their loans in full. This suggests that high-earning graduates who do not repay their loans in full have borrowed more than equally high-earning graduates who repay in full (and lower-earning graduates who do not repay in full), as the unconditional amounts borrowed do not vary systematically across the earnings distribution.

As we would expect, the likelihood of not repaying in full varies across the graduate lifetime earnings distribution. We estimate that less than 1% of graduates in the top three deciles would not repay in full (in real terms) under the old system, compared with more than 99.5% of those in the bottom decile. The prevalence of not repaying in full is substantially higher under the new system. More than 40% of graduates in the eighth earnings decile are not expected to repay in full and more than 99% of graduates in the bottom four deciles not expected to do so.[33] Put another way, we estimate that virtually all graduates in the bottom earnings decile are likely to benefit from some real debt write-off under the old system, while virtually all graduates in the bottom four deciles will do so under the new system.

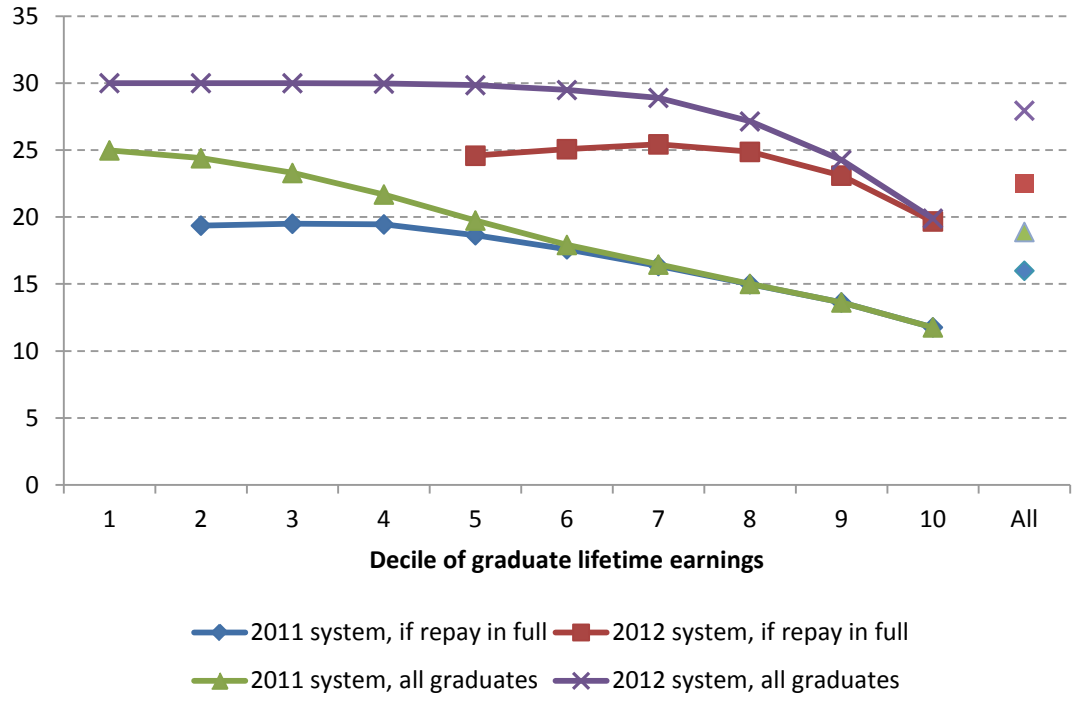
Intuitively, lower-earning graduates can expect to see more debt forgiven than higher-earning graduates, as shown in Figure 4.10. It is also worth noting how large the write-offs are relative to the amount borrowed under the new system. For example, the 10% lowest-earning graduates are expected to have £41,412 (in 2014 prices) written off, on average, slightly more than the amount they will have borrowed (£40,150 in 2014

[33] It is possible but very unlikely for graduates with relatively low lifetime earnings to repay in full under the new system. This happens when a graduate earns a lot in a small number of years and little in other years.

prices). This is driven by the fact that there is a positive real interest rate while studying: even if they never earn enough to be charged a real interest rate after graduation, their debt will still have increased by 3% in real terms each year whilst they were at university.

The analysis regarding debt write-offs clearly focuses on graduates who do not repay their debt in full by the end of the repayment period. For these individuals, their debt is cleared 25 or 30 years after they first become eligible to repay under the old and new systems respectively. For those who do repay their debt in full, Figure 4.11 shows that the average length of time it takes to clear the debt is 16 years under the old system and 22.5 years under the new system. If those who do not repay in full are also included, the average lengths to clear the debt rise to 19 and 28 years under the old and new systems respectively. Unsurprisingly, lower-earning graduates take much longer to clear their debt than higher earners.

Figure 4.11. Average number of years before debt is cleared, across distribution of graduate lifetime earnings (in real terms)



Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Box 4.1 illustrates what total debt, repayments and write-offs would look like for an example graduate from the lowest earnings decile (Alice), while Box 4.2 shows what would happen for an example graduate from the fifth earnings decile (Jamal).

Box 4.1. Example graduate from the bottom earnings decile: Alice

Alice works continuously from graduation to age 30, when she becomes a mother and stays out of work until age 52. Her earnings start at £20,000 in 2014 prices at age 22, rising by £1,000 a year until they reach £28,000 per year in real terms when she is 30. Because she stays out of the labour market for many years, she belongs to the bottom 10% of graduates in terms of lifetime earnings.

As an average graduate, Alice's student debt would stand at £44,035 in 2014 prices if she graduated under the new system, much higher than the debt of £24,754 with which she would graduate under the old system. Assuming Alice is not debt averse, the amount of debt should not matter to her – she is going to have a write-off under either system.

In fact, her total repayments would be lower in real terms under the new system than under the old one: £3,112 versus £5,788 in 2014 prices (£2,536 versus £4,772 in NPV terms). Under the old system, she would have £18,966 in 2014 prices (£10,312 in NPV terms) written off at the end of the repayment period (at age 46, after 25 years). Under the new system, she would have £43,260 in 2014 prices (£21,096 in NPV terms) written off after 30 years (when she is 51).

Box 4.2. Example graduate from the fifth earnings decile: Jamal

Jamal works continuously from graduation to age 60. His real earnings (in 2014 prices) start at £20,000 at age 22, rising by £1,000 a year in real terms until they reach £35,000 at age 37, after which they stay at that level in real terms until age 60. His earnings profile fits into the fifth decile of the distribution of graduates' lifetime earnings.

Under the old system, Jamal would accumulate £24,754 debt (in 2014 prices) by age 21. He would clear his debt at age 43, three years before the end of the repayment period; in other words, he would repay £24,754 in real terms (£17,268 in NPV terms) over a 22-year period.

Under the new system, Jamal's debt will start at a substantially higher level (£44,035 in 2014 prices). He will not be able to repay in full, even over the longer repayment period of 30 years. He will repay £22,653 in real terms (£14,504 in NPV terms) and have £35,354 in real terms (£17,241 in NPV terms) written off at age 51.

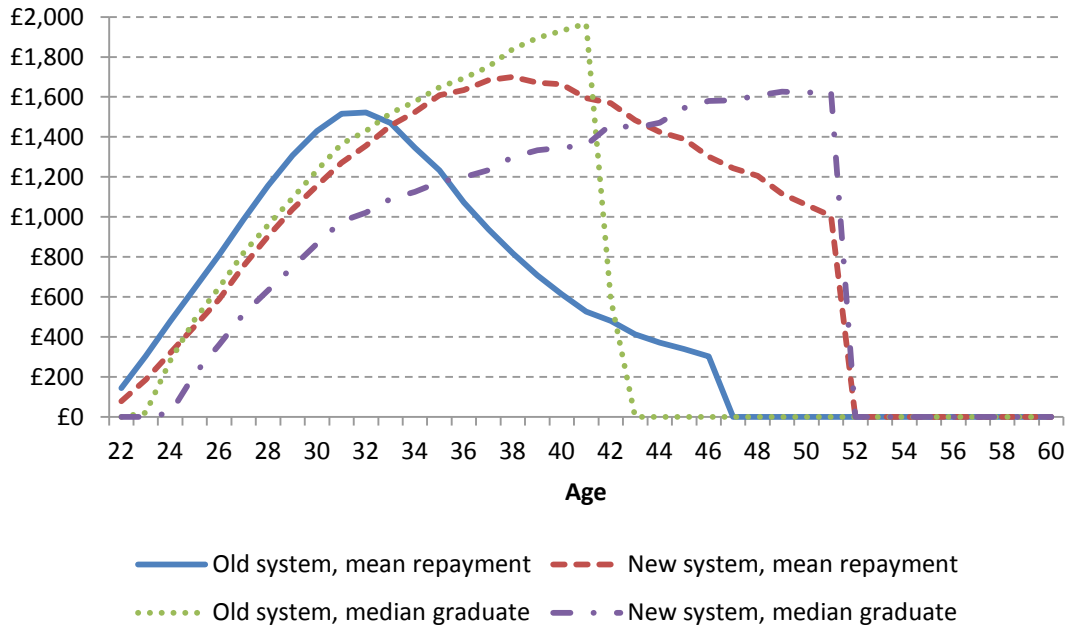
It is clear that Jamal will be better off in terms of total repayments (whether discounted or not) as a result of the 2012 reform.

4.3 Annual repayments and net disposable income

While, as we have seen above, the 2012 reform is likely to increase both the total amount repaid and the number of years spent repaying for many graduates, the impact

on annual repayments and hence annual net or disposable income is more benign to start with. The repayment threshold is higher and likely to rise faster under the new system than under the old one; hence the amount that graduates repay each year until the debt is cleared will be lower. Figure 4.12 plots average annual real repayments by age under the two systems.

Figure 4.12. Average real annual repayments over the life cycle (in 2014 prices): all graduates



Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

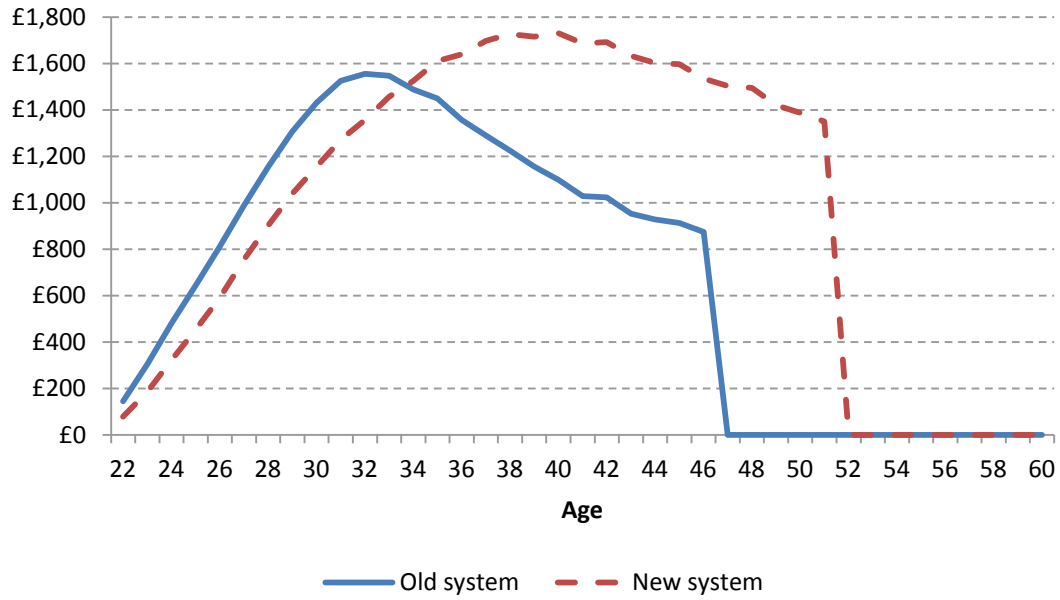
For the first decade or so after graduation, it is clear that average real annual repayments are slightly lower under the new system than under the old one, with the difference ranging from £66 to £273 per year in 2014 prices. This suggests that graduates' net disposable income is likely to be higher over this period under the new system than under the old one. We estimate that average real annual repayments peak at age 32 under the old system, compared with 38 under the new system, after which the effect of some higher-earning graduates having paid off their debts (and hence making zero repayments) starts to emerge.

For the median graduate (whose earnings profile was illustrated in Figure 3.2), annual repayment under the new system would rise gradually from zero at age 22 to around £900 at age 30, £1,300 at 40 and £1,600 at 50. Compared with the old system, the annual repayment will be about 30% lower in his 30s, but still stand at around £1,500 instead of zero from his early 40s onwards.

Even once we exclude graduates who have repaid their loans in full, however, average annual repayments still fall with age (see Figure 4.13). This is because repayments are

lower amongst lower-earning graduates, and it is these individuals who are still repaying their loans in their 40s and 50s. Just before the debt is written off (at age 46 under the old system and age 51 under the new system), repayments are substantially higher in real terms under the new system than under the old one: amongst individuals who are still repaying, we estimate that those who graduated under the old system would be repaying £874 per year on average, whilst those who graduated under the new system would be repaying £1,350 per year on average.

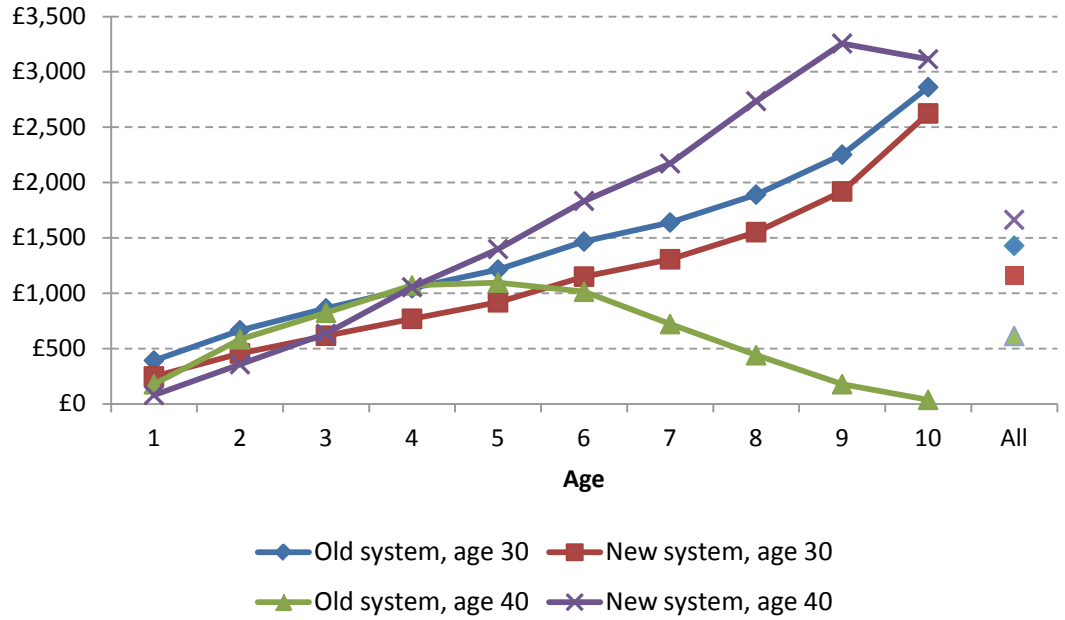
Figure 4.13. Average real annual repayments over the life cycle (in 2014 prices) amongst graduates who have not repaid in full



Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Of course, annual repayments are driven by how much graduates earn. Figure 4.14 shows how annual repayments vary across the distribution of graduate lifetime earnings, and Figure A.5 in the appendix shows how repayments vary by age and gender. Figure 4.14 shows that, at age 30, annual repayments are strictly higher for higher-earning graduates than for lower-earning graduates under both systems, as most graduates are still repaying at this point. They are also strictly lower in each decile, on average, for those who graduated under the new system than for those who graduated under the old one. The impact of the 2012 reform on average real annual repayments is negative at this age.

Figure 4.14. Average real annual repayments at ages 30 and 40 across distribution of graduate lifetime earnings (in 2014 prices)



Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

At age 40, however, a lot of higher-earning graduates would have paid off their debt under the old system, but not under the new one. As a result, annual repayments at this age are hump-shaped across the graduate earnings distribution under the old system, but increasing under the new one (for all except the 10% highest-earning graduates). We estimate that the impact of the reform on average real annual repayments at age 40 is negative for the 30% lowest earners, but positive (and in some cases very large) for other graduates. For example, at age 40, graduates in the sixth decile of lifetime earnings will be paying £821 more per year (in 2014 prices), on average, under the new system than under the old one. These figures rise to £3,077 more per year, on average, amongst the 10% of graduates with the highest lifetime earnings at this age, as most would have repaid their loans in full by this point under the old system but not under the new system.

The fact that average annual student loan repayments are lower for all graduates whilst they are in their 20s means that it may be easier for these individuals to save money over this period – for instance, towards a deposit on a house. But the estimated reduction in annual repayments between ages 22 and 30 only adds up to around £1,800 (£198 per year), on average, in 2014 prices. In the context of an average deposit amongst graduates of around £35,000,[34] this saving is relatively small.

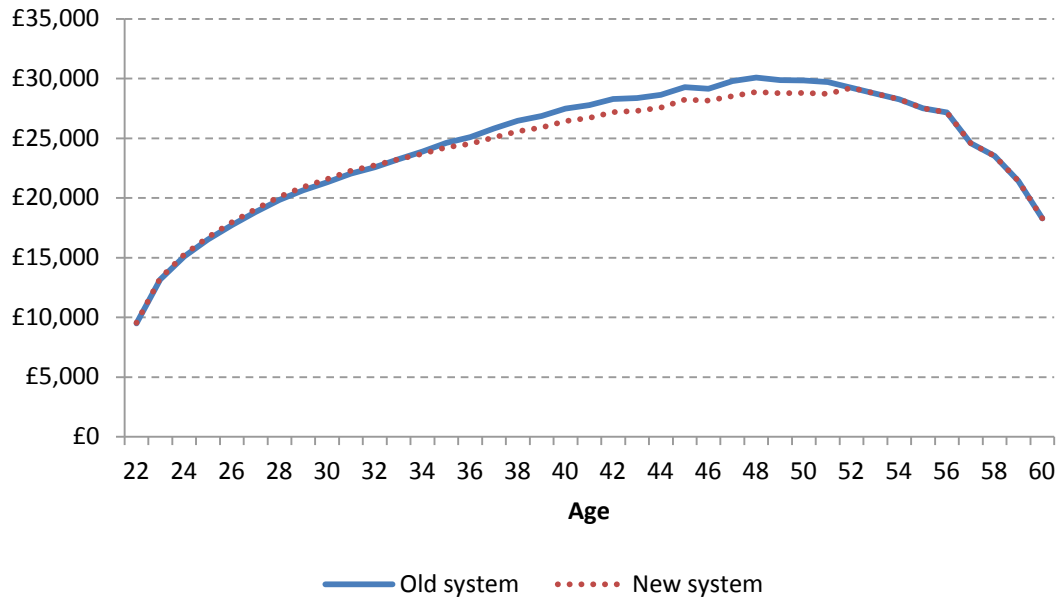
[34] Source: http://www.rightmove.co.uk/news/articles/property-news/graduates-are-more-likely-to-pass-the-first-home-ownership-test and http://www.thisismoney.co.uk/money/mortgageshome/article-2197482/Number-time-buyers-expected-increase-year.html.

As we saw above, the difference in annual repayments is more marked later in life. Between ages 31 and 40, we estimate that the increase in annual repayments will amount to £4,334 in 2014 prices (£433 per year on average); the equivalent figures between ages 41 and 51 are much higher, at £11,956 (£1,087 per year on average), as this encompasses the period when all debts would have been written off under the old system. (Of course, these differences will not be evenly spread across the earnings distribution.)

These differences may make it more difficult for some individuals to meet their ongoing expenses, such as mortgage payments, during their 30s and 40s as their take-home pay (after income tax, NICs and student loan repayments) will be lower as a result of the 2012 reforms.

Given the size of student loan repayments relative to net earnings, however, these changes are unlikely to have dramatic consequences for major life decisions, such as buying a house or having a child. For example, Figure 4.15 shows that we estimate the difference in annual earnings net of income tax, NICs and student loan repayments under the old and new systems to average £698 in 2014 prices between ages 30 and 49 (equivalent to a difference of at most 4.2% in net earnings between the old and new systems).

Figure 4.15. Average real net annual earnings over the life cycle (in 2014 prices)



Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Boxes 4.3 and 4.4 consider the implications of these annual repayments for the net earnings of our example graduates. Box 4.3 focuses on Alice, our example graduate

from the lowest earnings decile, while Box 4.4 focuses on Jamal, our example graduate from the fifth decile of the graduate lifetime earnings distribution.

Box 4.3. Example graduate from the bottom earnings decile: Alice
(Continues from Box 4.1. All figures quoted are in 2014 prices unless otherwise stated.)

As described in Box 4.1, Alice is amongst the 10% of graduates with the lowest lifetime earnings. She only works during her 20s, over which time her earnings rise by £1,000 each year in real terms, from £20,000 at age 22 to £28,000 at age 30. As a result of her rising earnings, her annual income tax and NICs payments would also increase over this period, from £2,050 and £1,469 respectively at age 22 to £3,838 and £2,519 at age 30.

Under the old system, Alice would start repaying her student loan at age 22, when she would pay £283 per year. Her repayments would increase in line with her earnings, reaching £1,003 at age 30. Her net annual income (after accounting for income tax, NICs and student loan repayments) would rise from £16,198 at age 22 to £20,640 at age 30.

Under the new system, Alice's student loan repayments would be lower, because the repayment threshold is higher than under the old system (£21,000 in 2016 prices under the new system, compared with £17,985 in 2016 prices under the old one). Her repayments would therefore start at £29 at age 22, rising to £636 at age 30, and her net annual income would rise from £16,452 to £21,007 between ages 22 and 30.

From age 31 onwards, as Alice has zero earnings, she does not have to make any student loan repayments under either system (assuming she has low unearned income). The 2012 reform will thus have no impact on her income from then onwards.

Box 4.4. Example graduate from the fifth earnings decile: Jamal

(Continues from Box 4.2. All figures quoted are in 2014 prices and not discounted unless otherwise stated.)

As described in Box 4.2, Jamal works continuously from age 22 to age 60. His real earnings start at £20,000 and rise by £1,000 a year, reaching £35,000 at age 37, after which they stay at that level in real terms. This earnings profile places Jamal in the fifth decile of the distribution of graduates' lifetime earnings, and he would pay £2,050 and £1,469 in income tax and NICs respectively at age 22, rising to £7,050 and £2,855 at age 51.

Jamal's annual student loan repayments would be the same as Alice's under both systems between ages 22 and 30, as they have the same annual earnings over this period. Because Jamal continues earning in his 30s, 40s and 50s, however, he will repay considerably more than Alice thereafter, and more so under the new system than under the old one.

Under the old system, Jamal's annual student loan repayment rises from £283 at age 22 to £1,633 at age 42. He repays the remaining debt in full at age 43, beyond which point his repayments stop.

Under the new system, Jamal's annual student loan repayments would be lower throughout his 20s and 30s, rising from £29 at age 22 to £1,116 at age 37 and falling to £1,002 at age 42. (The reduction in his annual repayments between ages 37 and 42 arises from our assumption that his earnings will grow in line with inflation, while the repayment threshold will rise in line with average earnings.) At age 43, Jamal would still have £38,712 debt outstanding, so he would continue to make repayments each year. At age 51, after making an annual repayment of £780, he will have £35,354 debt written off.

The 2012 reform therefore reduces Jamal's annual student loan repayments for the first 22 years, but increases them considerably over the last eight years, by which time he would have fully repaid his loan under the old system. This means that the reform increases Jamal's net annual earnings by £254–£631 (1.5%–2.6%) during his 20s to early 40s, but reduces them by £780–£954 (3.1%–3.7%) over the final eight years.

5. Financial Consequences of the 2012 Reforms for Selected Graduate Occupations

This chapter describes the implications of the 2012 reforms to the HE finance and student support regime for total and annual student loan repayments for our 'average teacher' and our 'average lawyer'. As outlined in Section 3.2, we define these profiles on the basis of the average annual earnings of teachers and lawyers at each age. In reality, of course, not everyone will work in every period (for example, if they leave the labour market to undertake caring responsibilities). These profiles should therefore be thought of as representing the 'average teacher' or the 'average lawyer' to the extent that they represent the average earnings of someone working in the relevant profession at a particular age.

Figure 3.3 showed that lawyers and teachers start off earning relatively similar amounts, but that lawyers tend to see their earnings rise considerably more rapidly thereafter. Overall, therefore, our 'average teacher' fits into the seventh decile of graduate lifetime earnings, while our 'average lawyer' fits into the top decile of graduate lifetime earnings.

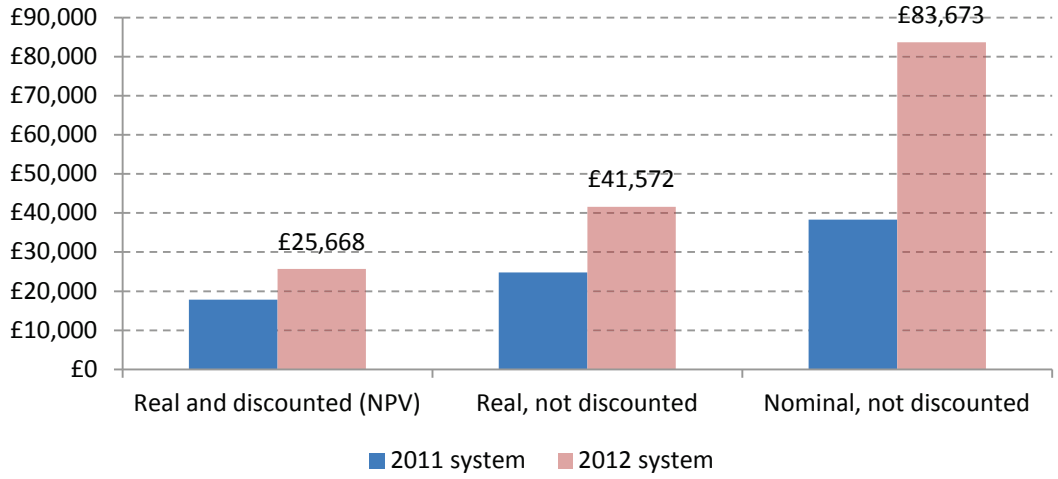
We assume that both individuals start with the same level of debt (equivalent to the average debt amongst our sample – £24,754 under the old system and £44,035 under the new system in 2014 prices) and that they become eligible to start making loan repayments at age 22. In reality, many prospective teachers may study for an extra year (for a PGCE course) and hence borrow more from the government.[35] As we shall see below, under the new system, the main difference this makes is to the amount of debt with which they leave university and the amount of debt they have written off at the end of the repayment period. We note in the text below where these figures would differ.

Figures 5.1 and 5.2 present our estimates of the total student loan repayments made by our average teacher and our average lawyer respectively in nominal, real and NPV terms. Under the old system, both our average teacher and our average lawyer repay exactly the same amount in real terms that they borrowed (£24,754). But in NPV terms, our average teacher repays less than our average lawyer (£17,862 versus £19,397), whilst the opposite is true in nominal terms (£38,318 versus £33,512). This is because the teacher earns less and takes longer to repay, meaning that a larger proportion of his repayments would occur further into the future, when prices will be

[35] Note that to practise law in the UK also requires taking a year-long postgraduate course (the Legal Practice Course for solicitors and the Bar Professional Training Course for barristers), but students on these courses are not eligible for the student loans available to undergraduates and PGCE students. Thus, the prospective lawyer may have to borrow commercially with less favourable interest rates and repayment conditions than the prospective teacher in order to complete their training.

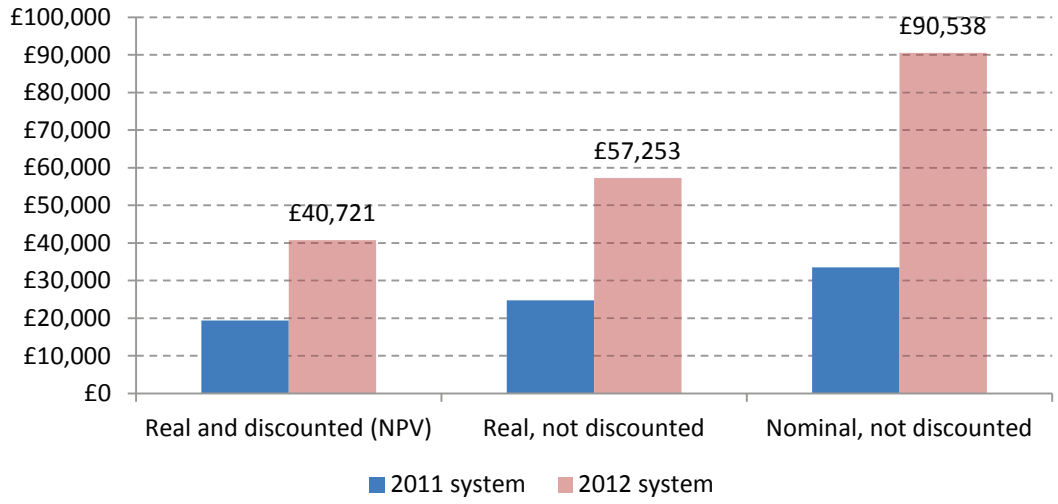
higher (hence the figures will be larger in nominal terms), but also more heavily discounted (hence they are lower in NPV terms).

Figure 5.1. Total student loan repayments in nominal, real and NPV terms for the average teacher



Note: We assume that our average teacher graduates at age 21 and starts making payments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for details.

Figure 5.2. Total student loan repayments in nominal, real and NPV terms for the average lawyer



Note: We assume that our average lawyer graduates at age 21 and starts making repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for details.

Under the new system, our average teacher repays less than our average lawyer in nominal, real and NPV terms. For example, Figures 5.1 and 5.2 show that our average

teacher is expected to repay £83,673 in nominal terms under the new system, 8% less than our average lawyer (£90,538). These differences are greater if we measure them in real or NPV terms, with our average teacher repaying 27% less than our average lawyer in real terms and 37% less in NPV terms. The average teacher's repayments under the new system are independent of his initial debt: if he borrows more (for example, to fund a PGCE course), then he would just have more written off at the end of the repayment period.[36]

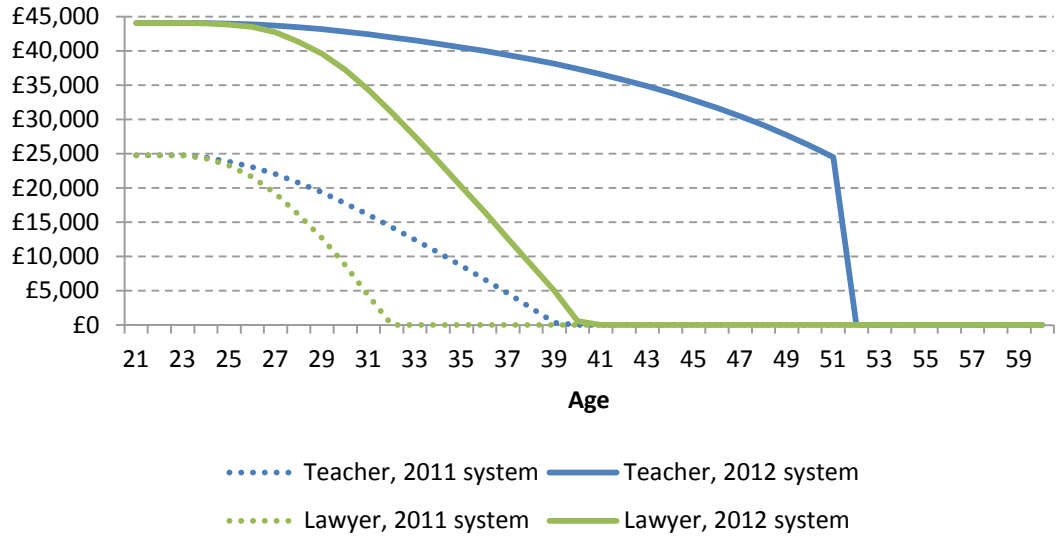
Of course, despite paying back less than our average lawyer, our average teacher still pays back more under the new system than under the old one. In real terms, he will repay £24,754 under the old system and £41,572 under the new one – an increase of 68%. The difference is considerably larger if we report the figures in nominal terms – a rise of £45,355 (118%). The differences are even starker for our average lawyer, with his estimated repayments in real terms being around 130% higher under the new system than under the old one and his estimated repayments in nominal terms being around 170% higher.[37]

Despite these substantial increases in repayments, we do not expect the average teacher to repay his debt in full under the new system. Figure 5.3 plots the profile of real outstanding debt in 2014 prices for our average teacher and our average lawyer under the old and new systems. (Figure A.6 in the appendix shows how the profile for our average teacher would change if he borrowed funds to cover a year-long PGCE course as well.)

[36] Under the new system, if he borrows £54,186 rather than £44,035, he would have £42,247 written off rather than £24,479.

[37] It is worth noting that all of our estimates assume that individuals repay according to the repayment schedule, with no behavioural change as a result of the reforms. For example, we assume that all individuals take out the full amount of the loan to which they are entitled and do not make any early repayments. Crawford, Crawford and Jin (2014) explore the sensitivity of our estimates to these assumptions.

Figure 5.3. Profile of real outstanding debt (in 2014 prices): average teacher versus average lawyer

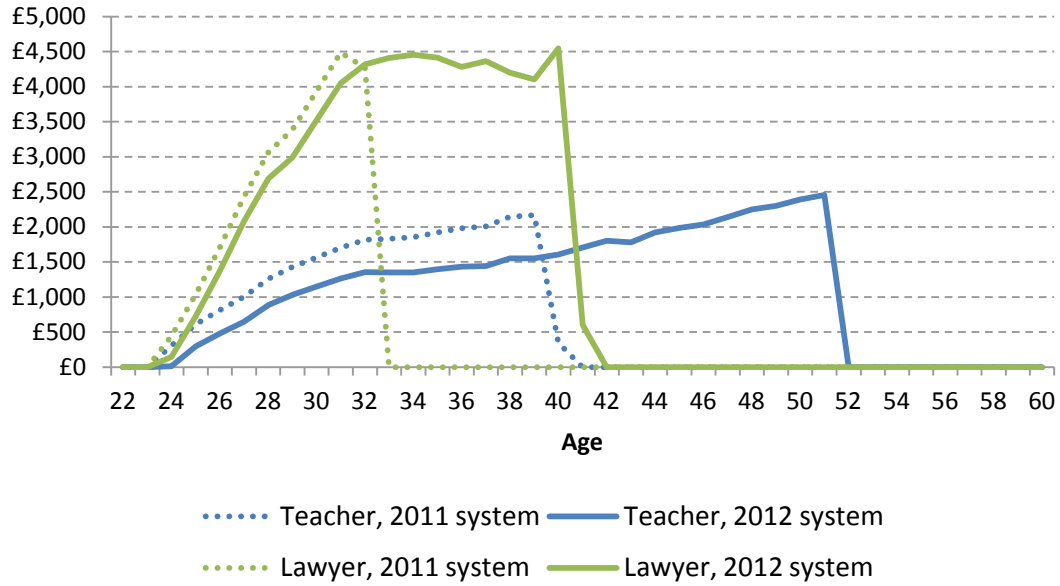


Note: We assume that both the average lawyer and the average teacher graduate at age 21 and start making repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for details.

We estimate that our average teacher would have cleared his debt by age 40 under the old system, but would still have £37,384 of debt in 2014 prices under the new system and have £24,479 to be written off at the end of the repayment period (age 51). (The debt to be written off under the new system would rise to £42,247 if he had borrowed enough to cover a PGCE course as well.) By contrast, we estimate that our average lawyer would repay his debt in full under both systems, achieving this in his early 30s under the old system and in his early 40s under the new one.

Figure 5.4 shows the profile of real annual repayments for our average teacher and our average lawyer under each system. Under the old system, annual repayments rise sharply for our average lawyer through his 20s, hitting a peak of £4,488 per year in 2014 prices at age 31, before falling to zero as he pays off his debt. Annual repayments rise more slowly for our average teacher, peaking at £2,167 in 2014 prices at age 39, before falling to zero as he repays his debt in full. If the teacher had borrowed more to cover a PGCE course, then his annual repayment would peak at around £2,500 in his early 40s under the old system.

Figure 5.4. Annual real repayments (in 2014 prices): average teacher versus average lawyer

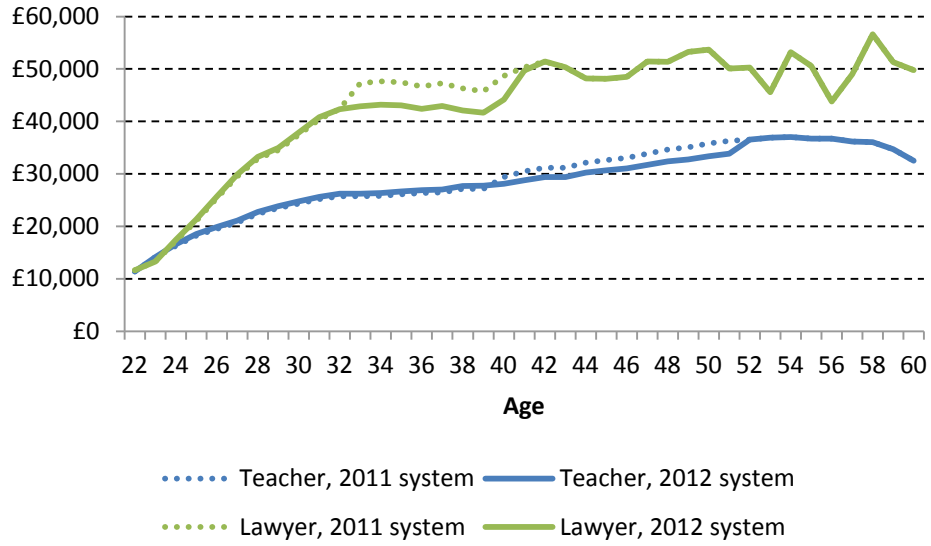


Note: As for Figure 5.3.

Under the new system, our average lawyer would repay slightly less during his 20s, but his annual repayments peak at around the same level and remain between about £4,000 and £4,500 per year in 2014 prices throughout his 30s. He repays his loan in full in his early 40s, after which his loan repayments fall to zero. Our average teacher also benefits from lower annual repayments in his 20s and 30s, repaying about a third less per year at these ages than under the old system. His annual repayment rises every year to reach £2,454 in his early 50s, until his debt is written off.

Figure 5.5 shows how net real earnings (that is, earnings after deducting income tax, NICs and student loan repayments) vary by age and across student loan systems in 2014 prices for our average teacher and our average lawyer. For our average teacher, net real earnings would be slightly higher under the new system than under the old one until age 40. At that point, we see a step increase in his net real earnings under the old system (of £2,248) when he pays off his student loan. From then until the end of the new repayment period, his net real earnings will be lower as a result of the 2012 reform, by an amount ranging from £1,708 to £2,454. Then, at age 52, he will experience a step increase in his net real earnings under the new system as his remaining student debt is forgiven.

Figure 5.5. Annual net real earnings (in 2014 prices): average teacher versus average lawyer



Note: As for Figure 5.3.

For our average lawyer, net real earnings are quite similar under the two systems until his early 30s. For the next eight years, however, his net earnings would be approximately 10% lower under the new system than under the old one, as a result of the 2012 reform.

Boxes 5.1 and 5.2 provide some further illustrative examples of the implications for the net earnings of our average teacher and our average lawyer at ages 35 and 45 under the old and new HE finance systems.

Box 5.1. Our average teacher at ages 35 and 45: Martin
(All figures are given in 2014 prices and not discounted unless otherwise stated.)

Age 35

Martin's gross earnings are £38,213. He would pay £6,775 in income tax and £3,403 in National Insurance contributions. His earnings net of income tax and NICs would thus be £28,035.

Assuming he borrowed £44,035 to fund his studies, he would have outstanding student loan debt of £8,647 under the old system and £40,516 under the new one. (These debt figures would be £15,515 and £52,799 respectively if he had borrowed enough to cover a PGCE course as well.)

Regardless of the amount borrowed, under the old system, his annual repayment would be £1,922, meaning that his net earnings (his earnings net of income tax, NICs and student loan repayments) would be £26,113. Under the new system, his repayment would be lower (at £1,397) as a result of the higher threshold above which repayments are due. After the reform, his net earnings would therefore be marginally higher, at £26,638.

Age 45

Martin's gross earnings are £47,371. He would pay £11,450 in income tax and £3,272 in NICs. His earnings net of income tax and NICs would thus be £32,649.

His outstanding student debt would be £32,817 under the new system (£48,553 if he had borrowed enough to cover a PGCE course as well), whereas he would have already paid off his debt under the old system.

Under the new system, he would repay £1,985 in this year, meaning that his net earnings would be £30,664 – £1,985 lower than under the old system when he makes no loan repayments.

Box 5.2. Our average lawyer at ages 35 and 45: Ahmed
(All figures are given in 2014 prices and not discounted unless otherwise stated.)

Age 35

Ahmed's gross earnings are £71,716. He would pay £20,176 in income tax and £4,073 in National Insurance contributions. His earnings net of income tax and NICs would thus be £47,467.

Under the new system, Ahmed would have outstanding student debt of £20,182. His annual repayment would be £4,413, meaning that his net earnings (his earnings net of income tax, NICs and student loan repayments) would be £43,054. Under the old system, by contrast, Ahmed would already have cleared his student debt. His net earnings would therefore be £47,467.

Age 45

Ahmed's gross earnings are £74,026. He would pay £22,112 in income tax and £3,805 in NICs. Ahmed will have cleared his debt by age 41 under the new system. The HE finance system will thus have no effect on his net earnings beyond that point, meaning that his net earnings will be £48,108.

6. Conclusion

This report has used an updated and extended model of graduates' lifetime earnings to estimate the financial impact on graduates of the 2012 reforms to the higher education funding and student support system in England.

On average, the reforms substantially increased both the debt with which students will leave university and the total amount of repayments that they will subsequently make. Indeed, nearly half of all graduates will repay more than they borrowed in real terms.

Despite the increase in repayments, we estimate that nearly three-quarters of graduates will not repay their loan in full under the new system, compared with just under a third under the old system. Moreover, we estimate that the amount that will be written off will be nearly three times higher in real terms under the new system than under the old one.

While this summary appears to paint a fairly gloomy picture of the implications of the 2012 reforms for graduates, there are some more positive aspects to these changes. For example, the lowest-earning graduates will pay back less under the new system than under the old one, while higher-earning graduates will pay back substantially more. This makes the new system substantially more progressive than the old one (at least in terms of graduates' lifetime earnings).

Graduates will also repay less per year in real terms up to the point at which their debt would have been repaid under the old system. This arises because of the higher repayment threshold introduced in 2012 (and the fact that it is uprated in line with average earnings rather than prices). However, these savings are relatively small – around £200 per year on average (in real terms) from ages 22 to 30.

These savings at younger ages under the new system are offset by increased costs in later life. After the point at which graduates would have repaid their debt under the old system, most will end up paying substantially more per year for several years. These costs amount to around an additional £430 per year on average between ages 31 and 40 in 2014 prices (equivalent to around 1.6% of net earnings) and around an additional £1,090 per year on average between ages 41 and 51 in 2014 prices (equivalent to around 3.7% of net earnings). This may make it more difficult for affected individuals to meet ongoing expenses over this period.

The motivation behind the reforms introduced in 2012 was to increase the private contribution to the funding of higher education in order to reduce the public contribution. Our analysis makes clear that the average private contribution has increased substantially as a result of the reforms, but whether the public contribution will have fallen in response is less clear. We investigate these issues in a complementary IFS report, funded by Universities UK, which will be published in the coming weeks.

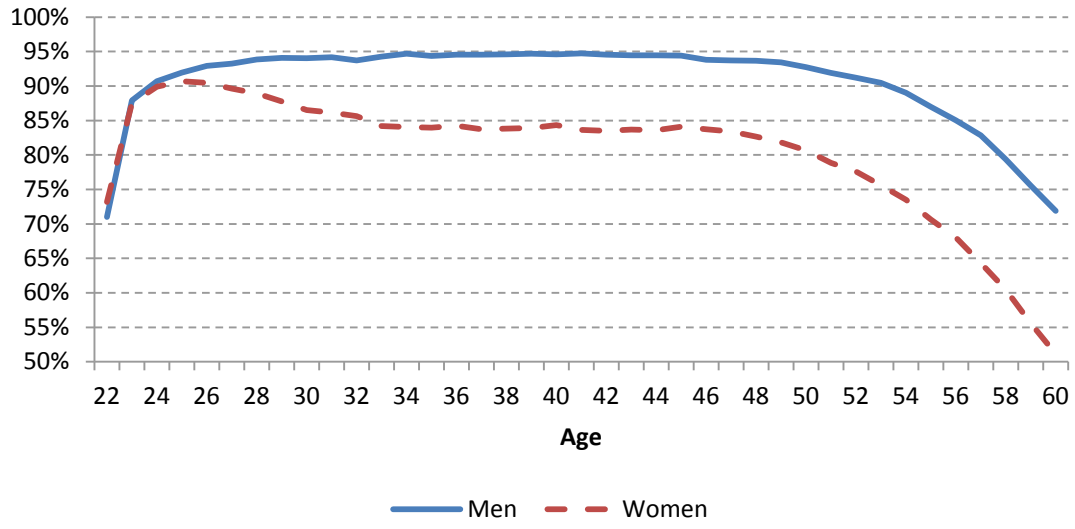
Appendix

Table A.1. Recipients of HE spending – by source (total per graduate over degree, discounted, 2014 prices)

	Old system	New system	% change
Recipients of spending			
Total	**£40,922**	**£47,435**	**16%**
Of which:			
Universities	**£22,143**	**£28,250**	**28%**
From:			
HEFCE funding	£12,012	£2,010	–83%
National Scholarship Programme	£0	£198	
Fees	£11,522	£28,037	143%
Less Fee waivers	£0	£738	
Net fees	£11,522	£27,299	137%
Bursaries and scholarships	–£1,391	–£1,257	–10%
Students	**£18,779**	**£19,185**	**2%**
From:			
Maintenance grants	£4,741	£4,941	4%
Maintenance loans	£12,647	£12,987	3%
Bursaries and scholarships	£1,391	£1,257	–10%

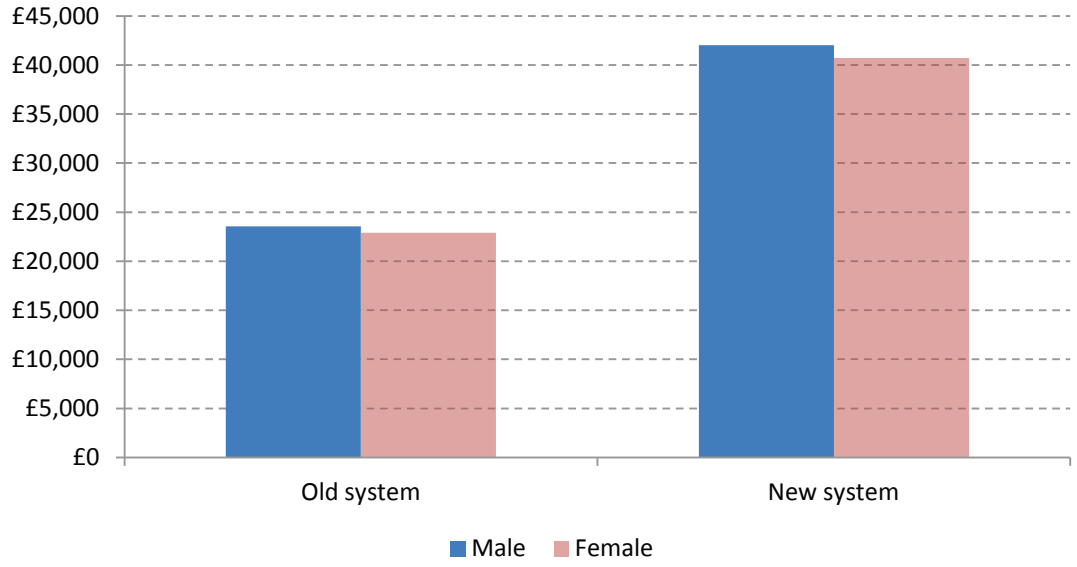
Note: Figures are for the total cost over the course of a student's degree, and are in 2014 prices, discounted to 2012.
Source: IFS graduate repayments model.

Figure A.1. Percentage of men and women in work by age



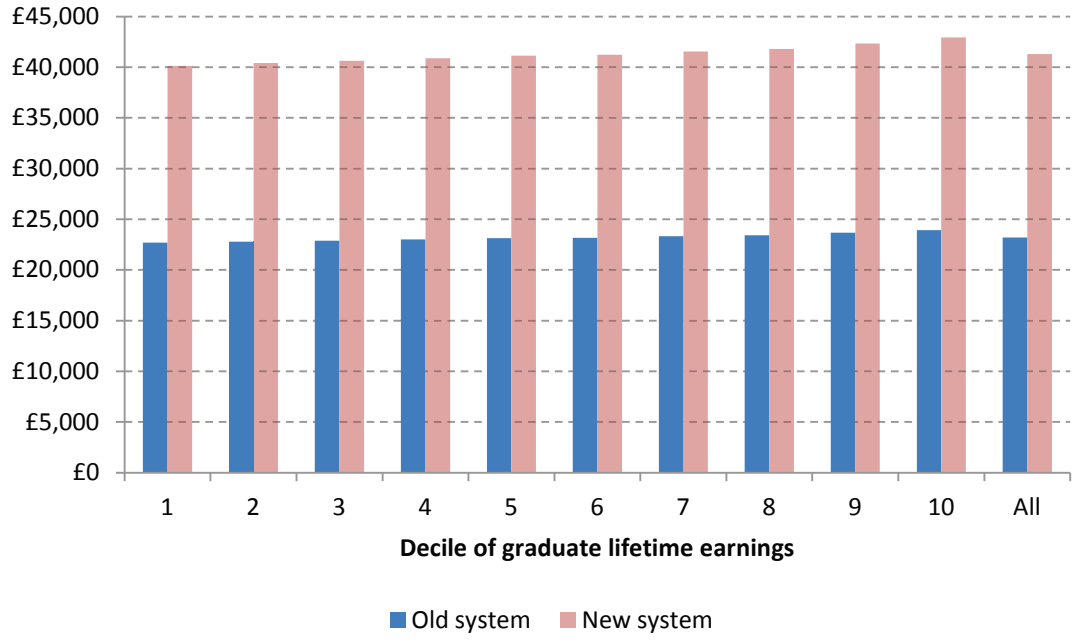
Note: These figures are taken from our simulations and hence are not based on real data.

Figure A.2. Average real student debt at graduation (in 2014 prices) by gender



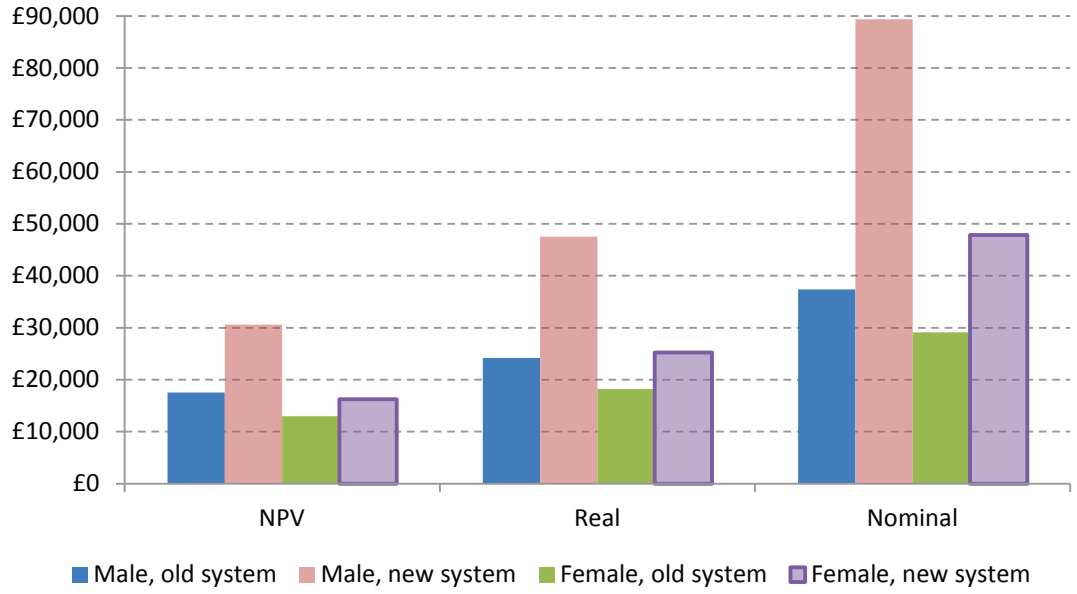
Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full fee and maintenance loans to which they are entitled and that there is no dropout from university. See Chapter 3 for more details.

Figure A.3. Average debt at age 21 (in 2014 prices) by decile of graduate lifetime earnings



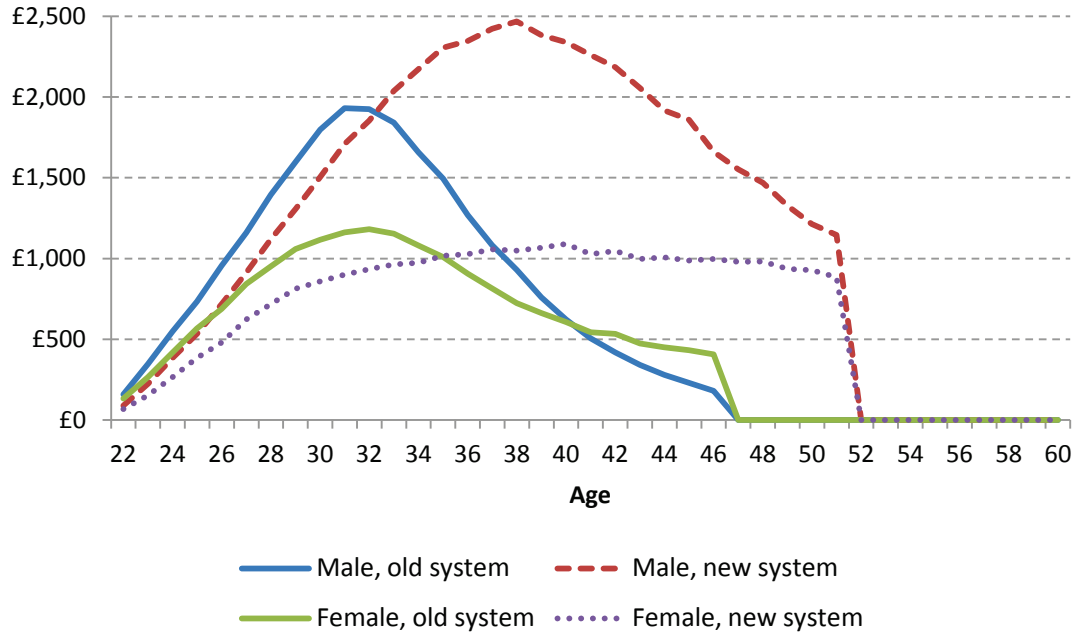
Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full fee and maintenance loans to which they are entitled and that there is no dropout from university. See Chapter 3 for more details.

Figure A.4. Total repayments by gender



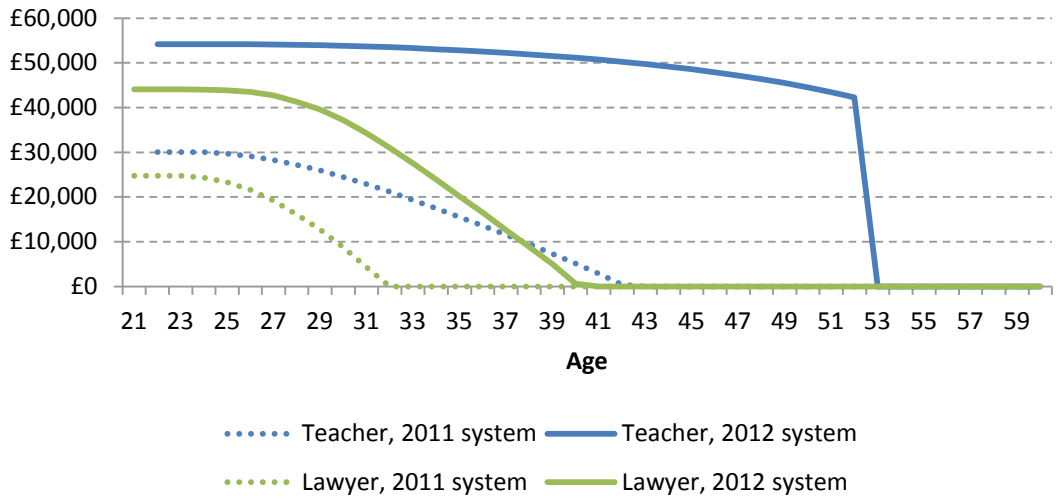
Note: These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Figure A.5. Average annual repayments (in 2014 prices) by age and gender



Note: We assume that individuals graduate at age 21 and hence are first eligible to make repayments at age 22. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for more details.

Figure A.6. Profile of real outstanding debt (in 2014 prices) when average teacher takes out a loan to cover a four-year course: average teacher versus average lawyer



Note: We assume that our average lawyer graduates at age 21 and starts making repayments at age 22, while our average teacher graduates and starts making payments one year later. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England. We assume that all students take out the full loans to which they are entitled, that there is no dropout from university, that graduates repay according to the repayment schedule and that they have low unearned income. See Chapter 3 for details.

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