Institute for Fiscal Studies

Higher Education funding in England: past, present and options for the future

IFS Briefing Note BN211

Chris Belfield
Jack Britton
Lorraine Dearden
Laura van der Erve

E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL

Higher Education Funding in England: Past, Present and Options for the Future

Chris Belfield, Jack Britton, Lorraine Dearden and Laura van der Erve

Copy-edited by Judith Payne

Published by

The Institute for Fiscal Studies

ISBN 978-1-911102-48-9

July 2017

The authors would like to thank Paul Johnson for providing extremely useful comments, Louis Hodge and Ben Waltmann for help with the modelling, and Martin Wheatcroft for providing details on government accounting.

This research was funded by the ESRC Centre for the Microeconomic Analysis of Public Policy (CPP) at IFS. Jack Britton would like to thank the British Academy for funding through a postdoctoral grant and the authors would like to thank the Department for Education for providing the linked NPD–HESA data.

Correspondence to jack_b@ifs.org.uk or chris_b@ifs.org.uk

Executive Summary

Key findings

There has been a big shift in the way government funds higher education (HE) from up-front grants to student loans.	Tuition fees were introduced in 1998, and increased in 2006 and again in 2012. This has increased overall funding, but teaching grants have declined. Maintenance grants have also been scrapped. Consequently, 96% of up-front government support is now in the form of loans.
This has dramatically reduced deficit spending, while also reducing the expected long-run taxpayer contribution.	A key factor is that loans do not count towards the deficit, while grants do. Since 2011, the contribution of HE spending to the deficit has declined by £5.7 billion (around 10% of the current deficit), while university funding has increased. The long-run taxpayer contribution has decreased by less – around £3.1 billion – because graduate contributions have increased, but by less than the increase in the loans provided.
The long-run taxpayer contribution has become considerably more uncertain.	The long-run contribution is now heavily dependent on graduate earnings, early repayment behaviour and the government cost of borrowing; for example, if graduate earnings are 2 percentage points lower than expected, the long-run government contribution increases by 50%.
Students now graduate with average debts of £50,000 – and even more for the poorest students.	The combination of high fees and large maintenance loans contributes to English graduates having the highest student debts in the developed world. The 2015 policy that replaced maintenance grants with loans means students from the poorest backgrounds will accrue debts of £57,000 (including interest) from a three-year degree. Their 'cash in pockets' has been protected, but now it is almost entirely in loans rather than free cash.

Student loans differ from private loans, as repayments are proportionate to income.	Consequently, there is significant variation in graduate contributions, with the highest earners repaying considerably more than the lowest. However, changes since 2012 have increased the repayments of almost all graduates, increasing the burden of student loans the most for low and middle earners – driven largely by the freezing of the repayment threshold.
Positive real interest rates increase debt levels for everybody – but only the repayments of the highest earners.	The use of RPI + 3% during study – currently 4.6% nominal, but rising to 6.1% in September – results in students accruing £5,800 in interest on average during study. Positive rates do not affect the loan repayments of those below the median, as they do not repay their principal. However, for high earners, the use of RPI + 0–3% rather than CPI + 0% increases lifetime repayments by almost £40,000 in today's money. This is due to lengthening the period of repayment rather than increased payments in any given year.
The benefits from high interest rates appear to outweigh the costs.	There is a risk that better-off parents will pay fees up front, especially if they think their offspring will be high earners. This would increase the cost to government in the long run, as high-earning graduates repay more than the value of their loans. However, even if all of the top 20% do not take out loans, the increased cost is outweighed by the significant revenue forecast to be generated by the positive real rates.
Recent reforms have considerably changed the landscape for UK universities.	The 2012 reform increased average university funding by 25%. It also considerably changed the relative per-student income of providing different courses; for example, funding for 'Group A' (high-cost) courses increased by only 6% between 2011 and 2017, while 'Group D' (low-cost) funding increased by 47%. This may affect universities' incentives.

Cutting fees while protecting university funding would increase the deficit and the long-run taxpayer contribution, but would also increase flexibility.

Large fee cuts would reverse recent changes and increase both deficit spending and the long-run taxpayer contribution to HE. However, unlike the current system, under which the vast majority of the taxpayer contribution comes through the unpaid loans of low earners, replacing the lost fee income by teaching grants would allow government to target high-priority subjects (such as STEM-based courses) or students (such as those from low-income households).

1. Introduction

Higher education (HE) in England has been subject to near-constant reform over the past two decades (see Table 1.1 for a summary). The most notable of these was the 2012 trebling of tuition fees to £9,000. HE is an area where England is a genuine world leader having long boasted several of the world's finest universities, yet that position is increasingly under threat from increased global competition. Understanding the impact of various reforms on government, universities and students is therefore crucial.

Previous IFS research[1] has evaluated the 2012 reform, finding that it increased overall graduate contributions considerably but actually reduced lifetime repayments for those in the bottom third of the graduate lifetime earnings distribution. The reform also significantly increased the level of resources available for universities, while leading to a small reduction in the expected long-run government contribution to higher education.

This latter result was unexpected, as the government had forecast considerable savings to the public purse. Two major drivers of this were the higher-than-expected share of universities charging the maximum fees (in 2016, all but three of the top 90 institutions charged fees of £9,000 per year for all of their courses) – the government predicted average fees after fee waivers of £7,500 post-reform[2] – and worse-than-expected graduate earnings growth.

This unexpectedly high long-run cost, combined with a backdrop of fiscal tightening and more general concerns about the competitiveness of the HE sector, has led to several more minor tweaks to the system since 2012. These include: the removal of maintenance grants (replaced with loans); the reduction of the discount rate applied to future graduate repayments; and the freezing of the repayment threshold and the freezing of fees in nominal terms between 2012 and 2016. Finally, to address concerns about competition, the government has relaxed barriers to entry for private providers, removed the cap in student numbers and introduced the Teaching Excellence Framework that will allow some universities to increase their fees with inflation each year.[3]

In Section 2 of this briefing note, we use the IFS HE finance model to provide up-to-date estimates of the long-run cost of undergraduate loans to the government taking into account these recent changes.[4] We consider the impact of the 2012 reform and the changes since 2012 separately by estimating the long-run government loan subsidy (the 'RAB charge') and the overall long-run cost to government for the 2017 cohort of students under three different HE finance systems (the '2011 system', the '2012 system' and the '2017 system').

In Section 3, we consider the system from the point of view of students, showing debt on graduation, 'cash-in-pockets' for students at university, and graduates' lifetime loan repayments. We highlight the role of recent reforms, further freezes to the thresholds at which loan repayments are made, and the use of the positive real interest rates. To

1 For example, Crawford, Crawford and Jin (2014).

2 See Department for Business, Innovation and Skills (2010).

3 All of the largest 90 universities have announced they will increase fees.

4 See Crawford and Jin (2014) for details on the model. Details of recent changes are also provided in Appendix Table A.1.

complete the picture for the changes since 2011, we focus on the status of university finances in Section 4, highlighting the impact of recent reforms on the relative incentives to provide courses in different subjects. Finally, in Section 5, we consider some policy options, qualitatively outlining the potential impact of various reforms on the system of HE finance in England. Section 6 concludes.

Table 1.1. Timeline of recent reforms

1998 – introduction of tuition fees

- Fees of £1,000 per year; no tuition fee loans but significant fee waivers for those from poor backgrounds
- No change in teaching grants; the reform boosted university resources
- Income-contingent maintenance loans introduced
- Maintenance grants scrapped

2006 – tuition fees raised to £3,000 per year

- Income-contingent tuition fee loans introduced
- Teaching grants unchanged; the reform boosted university resources
- Maintenance grants reintroduced

2012 – tuition fee cap raised to £9,000 per year

- Tuition fee loans increased to meet higher fees
- Repayment threshold raised from £15,000 per year to £21,000
- Positive real interest rates on debt introduced as RPI + 3% while studying and RPI + 0–3% after leaving HE (depending on earnings); previously, this was the maximum of the Bank of England base rate +1% and RPI
- Teaching grants cut, now only provided to 'high-cost' subjects (costing more than £7,500 per year); the reform reduced cost to government and increased resources available to universities
- Introduction of the National Scholarship Programme, which provided support for poor students; subsequently abolished in 2015–16

2016 – various reforms

- Maintenance grants abolished and replaced with additional loans
- Repayment threshold frozen in cash terms for five years
- Tuition fees fixed in cash terms from 2012, a 4.4% real-terms fall
- Government discount rate for valuing student loan repayments fell from 2.2% to 0.7%

2017 – fees increased with inflation

- Tuition fee cap raised to £9,250
- Introduction of the Teaching Excellence Framework to determine which universities can raise fees

2. Government Finances

Over the past 20 years, various reforms have fundamentally shifted the government financing of HE in England away from grants towards loans. The 2012 reform combined a large increase in tuition fees (funded through income-contingent loans) with a large cut in teaching grants, while in 2016 all maintenance grants were scrapped and replaced with slightly larger loans. Consequently, the long-run taxpayer cost of HE finance is now heavily contingent on the repayment of these loans. In this section, we provide the latest estimates of the long-run total government subsidy to HE and the long-run government loan subsidy (also commonly referred to as the 'RAB charge'). We explore how recent reforms and changes have impacted these numbers and set out a series of risks which have the potential to increase estimates of the government cost.

Previous IFS research (Crawford, Crawford and Jin, 2014) evaluated the impact of the 2012 HE finance reform on government finances. A highly cited figure from that work was the estimate of the 'resource and accounting budgeting' charge, commonly referred to as the RAB charge. This is the share of government loans that is expected to be written off, given by:

$$RAB = 1 - \frac{Total\ net\ present\ value\ of\ graduate\ repayments}{Total\ issues\ in\ government\ loans}.$$

Table 2.1 shows the estimate of the RAB charge from Crawford, Crawford and Jin (2014) compared with our most recent estimate. Our latest estimate is 31.3%, down considerably from their estimate of 43.3%. Importantly, both estimates align with historical government estimates.[5]

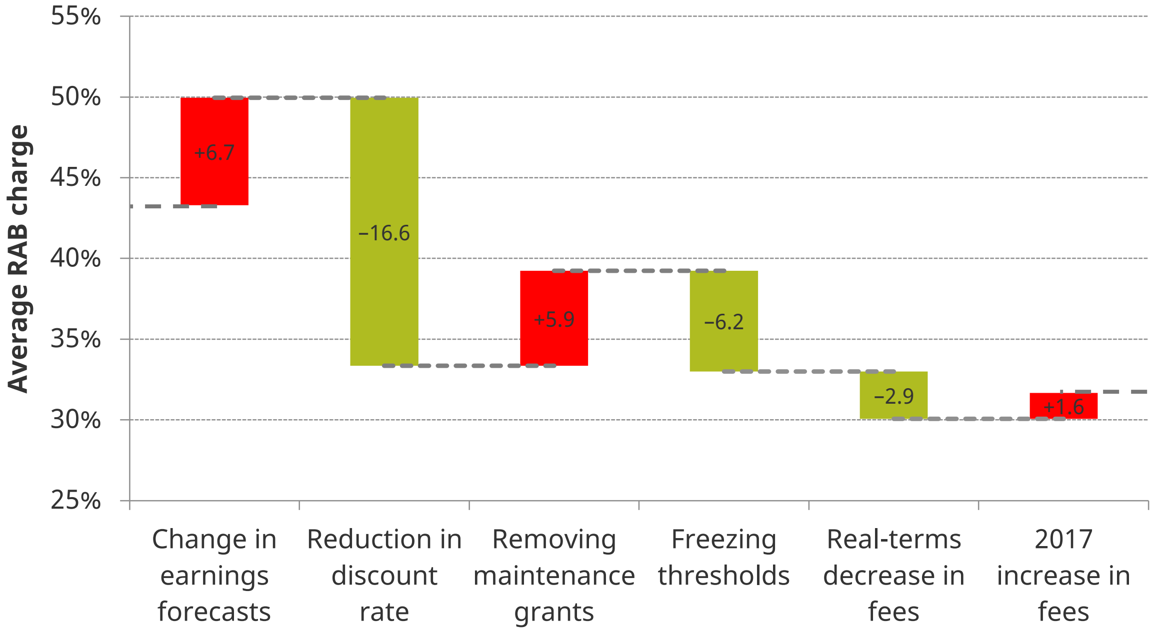
The differences between these numbers are driven by a combination of changes in economic circumstances, changes to the way student loans are treated in the government accounts and actual policy changes that affect the student loan system. Figure 2.1 summarises how these various components have impacted this estimate.

Table 2.1. The changing estimate of the RAB charge

	2012 system (Crawford et al., 2014)	2017 system
RAB charge	43.3%	31.3%

[5] See Crawford, Crawford and Jin (2014) for a discussion of the previous government estimate. The latest reported BIS estimate is lower than ours but does not include the removal of maintenance grants or increased tuition fees, which both increase the RAB. See Department for Business, Innovation and Skills (2016b).

Figure 2.1. Impact of sucessive changes on RAB charge



Note: Impact of changes in earnings forecasts and successive changes in policy on the RAB charge for the 2017 entry cohort. For details, see Appendix Table A.1.

Source: Authors' calculations using IFS's graduate repayments model.

First, we have updated our projections of future graduates' earnings. New realisations of graduates' early-career earnings and a downrating in the Office for Budget Responsibility (OBR)'s long-run earnings growth projection have reduced our estimates of graduates' lifetime earnings. This reflects the historically poor decade of earnings growth across the whole population (Cribb, Joyce and Norris Keiller, 2017). These lower graduate earnings projections result in lower expected loan repayments, which increases the RAB charge by 6.7 percentage points.[6]

Second, in the accounting of the current value of student debt, the government applies a discount rate to future repayments made by graduates. This captures the notion that money in the future is not as valuable as money today. In 2015, the government announced a reduction in the discount rate that it applies from 2.2% to 0.7% (in 'real terms', defined by the RPI). The motivation was to bring the discount rate 'into line with the government's long-term cost of borrowing' (HM Treasury, 2015, paragraph 2.76).[7] A lower discount rate means the government values future repayments more highly and so both the RAB charge and the long-run cost to the government in *net present value* terms are significantly lower. It is important to note that this is merely an accounting change, meaning that neither the total level of debt nor actual graduate repayments are affected. However, this change acted to reduce the RAB charge by 16.6 percentage points.

[6] Small modelling changes have also been made since Crawford, Crawford and Jin (2014) and we are modelling the costs of the 2017–18 cohort of HE entrants rather than the 2012–13 cohort. These changes only have a small impact.

[7] Note that the government cost of borrowing is actually currently cheaper than this, and some have argued that the discount rate should be reduced further still in order to reflect this.

In addition, two policy changes have been announced since 2012 that affect the real value of student debt and the repayments graduates make. In 2012, the income threshold that determines the point at which graduates start to make repayments on their debt (at a rate of 9% of income in excess of the threshold) was increased to £21,000 for 2016, and set to increase in line with average earnings growth from then on.[8] In 2015, it was announced that this threshold would be frozen in cash terms between 2016 and 2021, equivalent to a 10% cut in the real value of the threshold. This freeze also applied to the upper earnings threshold at £41,000, which determines the point at which the interest rate charged reaches RPI + 3%. Freezing the repayment threshold increases both the number of graduates earning above the threshold and the repayments of all graduates with earnings above the threshold. Freezing the thresholds also marginally increases the average interest rates paid on loans, as interest rates are determined by those thresholds. The result of this is to reduce the RAB charge by 6.2 percentage points.

In 2016, maintenance grants were scrapped and replaced by higher maintenance loans for low-income students. This policy increased the RAB charge by 5.9 percentage points. The increase arises because a relatively small share of these additional loans will be repaid. It should be noted that this change also increased overall debt, meaning a larger share of a larger total debt is expected to be written off. Previous IFS work estimated that this policy would save the government approximately £270 million in the long run (Britton, Crawford and Dearden, 2015). Whereas grants represented a permanent cost, some of the additional maintenance loans are expected to be repaid. In fact, this saving would now be larger, due to the reduction in the discount rate increasing the value of the additional future graduate repayments.

Finally, since the tuition fee cap was raised to £9,000 in 2012, it has been held constant in cash terms, which represents a fall of 4.4% in real terms.[9] This has reduced the real value of debt held by students on graduation and leads to a slight reduction in the RAB charge. However, in 2017, it is proposed that the tuition fees cap will rise to £9,250 (for universities that pass the Teaching Excellence Framework requirement), increasing the level of debt in real terms and hence the RAB charge.

The overall impact of policy reforms since 2011

We now focus on the overall impact of changes to HE finance since 2011, breaking down the impact of the pre- and post-2012 reforms. We consider up-front government expenditure and the expected long-run contribution once loan repayments have been taken into account. We compare three different HE funding systems: 2011, 2012 and 2017. For all three cases, we apply the system to the 2017 cohort of graduates using the most recent projections of graduate earnings and the current government discount rate of RPI + 0.7%. The intention is to isolate the role of policy changes. The details of each of the three systems we model are shown in Table 2.2.

8 In practice, this was uncertain. David Willetts, Minister for Universities and Science in the coalition government, introduced the changes to HE funding in a statement on 3 November 2010 and said that the thresholds would be increased 'periodically to reflect earnings' (https://www.gov.uk/government/speeches/statement-on-higher-education-funding-and-student-finance--2). It further remains uncertain what will happen to the thresholds after the freeze is over. We assume they will then continue to go up with average earnings growth.

9 See Appendix Figure A.1 for the value of fees in real terms over time.

Table 2.3 shows the breakdown of the government contribution to HE for the 2017 cohort of students under the current system. It also shows the equivalent figures had there been no government policy changes since 2012, and if there had been no policy changes since 2011.

Table 2.2. Details of various HE systems in England

	2011 system	2012 system	2017 system
Maximum fees	£3,465 in 2012, increasing with RPI thereafter	£9,000 in 2012, increasing with RPI thereafter	£9,250 in 2017, increasing with RPI thereafter
Graduate repayments threshold (graduates repay 9% of income above this threshold)	£17,775 uprated with RPI from 2018	£21,000 uprated with nominal earnings growth from 2017	£21,000 uprated with nominal earnings growth from 2021
Interest rate on loans	RPI[a]	RPI + 0–3%	RPI + 0–3%
Maintenance grants	Yes	Yes	No
Write-off	25 years	30 years	30 years

[a] Actual policy is the minimum of base rate + 1% or RPI. We assume it is RPI in the long run.

Table 2.3. Money flows under various student finance systems (2017 prices)

	2011 system	2012 system	2017 system
RAB charge	30.9%	33.3%	31.3%
Cost per borrower			
Total up-front government spend	£43,200	£53,200	£51,700
Of which, loans	59%	87%	96%
Long-run graduate contribution	£17,700	£30,800	£34,000
Long-run taxpayer subsidy	£25,500	£22,400	£17,700
Total costs (including non-borrowers)			
Total up-front government spend	£14,869m	£17,769m	£17,088m*
Of which, direct grants	*£6,442m*	*£2,578m*	*£748m*
Total long-run government contribution	£9,045m	£7,644m	£5,910m

Note: All figures are given in 2017 prices, in net present value terms using the government discount rate of RPI + 0.7%. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. We assume that all students taking out loans do so for the full amount 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. This assumes cohort size of 365,700 based on 2015–16 Higher Education Statistics Agency (HESA) estimates of English-domiciled first-year full-time undergraduates. We assume 10% non-take-up of loans, approximately in line with Student Loans Company (SLC) data on loan uptake. * When originally published this number did not include the £75m in grants for non-borrowers, this has since been added.

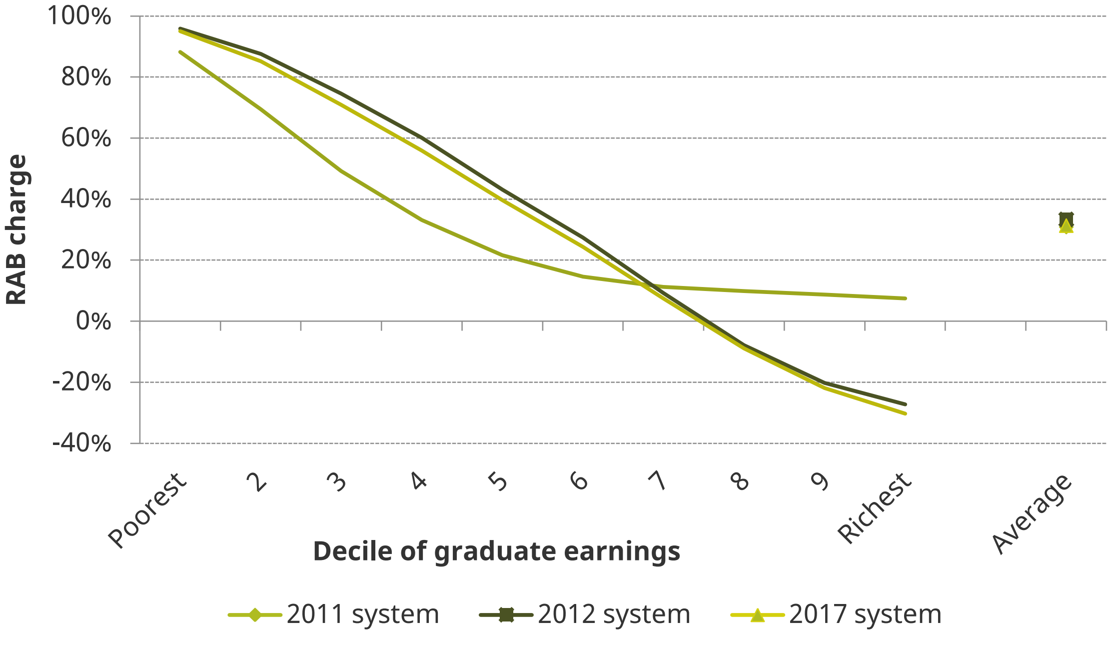
Source: Authors' calculations using IFS's graduate repayments model.

The up-front cost to government per student (who takes out the full student loan) for the 2017–18 cohort is £51,700 under the current system. Just 4% of this is in the form of teaching grants, which still remain for high-cost subjects (see Section 4). The remaining 96% consists of tuition and maintenance loans, which graduates begin to repay as they earn. In the long run, the discounted present value of graduate repayments is expected to be worth £34,000 on average, leaving a long-run taxpayer subsidy of £17,700 per student.

The total government up-front expenditure for the 2017–18 cohort of entrants into HE is £17.0 billion. However, because 96% of this is provided in student loans, this expenditure only contributes £745 million to the government deficit (as loans provision is not included in the deficit until the loans are written off 30 years later). This is dramatically lower than for the 2011 system, in which £6.4 billion was paid out in grants and hence contributed to the deficit. This change is a result of the shifting of payments from grants to loans: replacing teaching grant funding with tuition fee loans in 2012 and replacing maintenance grants with loans in 2016.

However, it is the long-run taxpayer cost which should be important for policy decisions, not the up-front contribution to the deficit. Recent reforms have reduced the total long-run taxpayer cost of HE. The cost of the 2017 system in 2017 is £5.9 billion, 35% lower than the £9.0 billion that is the equivalent cost of the 2011 system. However, this reduction is significantly smaller than the 88% fall in the value of grant payments, which appear in the deficit.

Figure 2.2. RAB charge by decile of graduate lifetime income



Note: All figures are given in 2017 prices, in net present value terms using the government discount rate of RPI + 0.7%. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

The 2012 reform reduced the long-run taxpayer cost of HE by £1.4 billion. The saving from providing lower teaching grants to universities exceeded the cost of providing larger student loans. Reforms since 2012 have further reduced the long-run taxpayer cost of HE by £1.7 billion. This saving results from a combination of replacing maintenance grants with loans, freezing the repayment threshold in cash terms and reducing the value of fees in real terms.

Although the average RAB charges are very similar across the three systems, this masks very different patterns across the distribution of graduates. We show this in Figure 2.2. In all three systems, the RAB charge is higher amongst lower-earning graduates as these individuals repay less of their student loans; however, the pattern is significantly stronger in the 2012 and 2017 systems, with the cost of non-repayment more concentrated amongst low-earning students and a negative RAB charge for the top 30% of earners. A negative RAB charge implies negative government subsidy, meaning the government values the loan repayments more than the initial cost of the loan provided. This negative subsidy results from graduates who face a real interest rate higher than the government real discount rate, and repay (or almost repay) the complete value of their loan. These graduates essentially cross-subsidise the education of lower-earning graduates. There is no cross-subsidisation in the 2011 system because the discount rate the government applies to future repayments exceeded the interest rate charged on student loans. This means that even those who repay the value of their loan in full receive a (small) long-run government subsidy.

Government exposure

As discussed in the previous subsection, the expected long-run cost to the taxpayer of HE for the 2017 cohort is £5.9 billion. However, since 96% of the initial government outlay is issued in loans, this long-run cost is heavily contingent on future graduate earnings and loan repayments. Here, we explore the sensitivity of the government cost to changes in the behaviour of students and to changes in economic circumstances.

One risk to government finances is posed by the potential of high earners to not take up student loans or to repay their loans early with voluntary repayments. Figure 2.2 highlighted the cross-subsidisation between high- and low-earning graduates. If high-earning graduates do not take out student loans, then the overall long-run cost of the system may increase. This may be possible if they can secure lower interest rates on private loans or have parental help. Indeed, previous IFS research has shown that high-earning graduates are disproportionally likely to have well-off parents (Britton et al., 2016).

Table 2.4 shows the impact of non-take-up of student loans amongst the highest-earning quintile of graduates on the long-run cost to the taxpayer. It shows long-run cost estimates with different shares of the top 20% of lifetime earners taking out loans. Under our baseline assumption of all of these individuals taking out the full loan (given in bold in the table), the long-run costs under the 2017 and 2011 systems are £5.9 billion and £9.0 billion, respectively. As the share of high earners taking up loans declines, the overall taxpayer subsidy to higher education increases under the 2017 system, due to the cross-subsidy provided by these individuals. Conversely, for the 2011 system, the subsidy decreases, due to the fact that the government provides a long-run subsidy for all students under this system.

Table 2.4. Sensitivity of overall taxpayer subsidy to loan take-up by high earners

	Loan take-up by high earners:				
	100%	75%	50%	25%	0%
2017 system	**£5,910m**	£6,069m	£6,261m	£6,453m	£6,645m
% change		+3%	+6%	+9%	+12%
2011 system	**£9,045m**	£8,976m	£8,907m	£8,838m	£8,769m
% change		−1%	−2%	−2%	−3%

Note: All figures are given in 2017 prices, in net present value terms using the government discount rate of RPI + 0.7%. Baseline scenario (100% take-up from high earners) assumes 90% take-up of loans over the population, roughly in line with current Student Loans Company numbers. Scenarios with lower take-up from high earners assume this is distributed evenly across the 20% highest earners taking up loans under the baseline scenario. Cohort of students is held constant across systems.

Source: Authors' calculations using IFS's graduate repayments model.

In the most extreme case, with no top earners taking out student loans, the long-run cost to the taxpayer increases by £700 million per cohort (12%) to £6.6 billion under the 2017 system.[10] Under the 2011 system, the long-run cost decreases by less than £300 million (3%), to £8.8 billion.

A second key risk factor for government is long-run graduate earnings growth. Figure 2.1 highlighted the importance of revisions to earnings growth assumptions for estimates of the long-run government loan subsidy. However, even with up-to-date earnings forecasts, there remains significant uncertainty about graduate earnings in the long run; the true taxpayer cost of HE for the 2017–18 cohort will depend on graduate earnings up to and beyond 2050. Our main estimates assume that, in the long run, real graduate earnings growth is 2.3% per year, in line with the OBR projection of earnings growth.[11]

Table 2.5 shows the impact of different realisations of graduate earnings growth under the 2017 and 2011 systems. In both cases, higher graduate earnings growth results in a lower long-run subsidy due to increased loan repayments. However, this pattern is considerably more pronounced for the 2017 system: a 2 percentage point increase in average real earnings growth to 4.3% would reduce the government subsidy by 29% to £4.2 billion compared with the baseline case. The equivalent figure for the 2011 system is 3%.

A third key risk factor is the cost of borrowing for government. The 2016 decision to reduce the rate at which it discounts future loan repayments to 0.7% in real terms significantly reduced long-run cost projections. However, this also in theory increased government exposure. The rationale to reduce the rate to 0.7% was to bring discounting more in line with the costs of borrowing. By the same rationale, during times when the

[10] Early repayment represents a similar but slightly less extreme case than non-take-up, as graduates will have incurred some interest while studying and before early repayment is complete.

[11] Estimate from the January 2017 OBR Fiscal Sustainability Report.

Table 2.5. Sensitivity of overall taxpayer subsidy to graduate earnings growth

	Real graduate earnings growth:				
	0.3%	1.3%	**2.3%**	3.3%	4.3%
2017 system	£8,753m	£6,876m	**£5,910m**	£4,996m	£4,221m
% change	+48%	+16%		–15%	–29%
2011 system	£9,687m	£9,213m	**£9,045m**	£8,904m	£8,778m
% change	+7%	+2%		–2%	–3%

Note: Real earnings growth relative to CPI inflation. All figures are given in 2017 prices, in net present value terms using the government discount rate of RPI + 0.7%. Cohort of students is held constant across systems.

Source: Authors' calculations using IFS's graduate repayments model.

government cost of borrowing increases, the discount rate applied to future repayments should increase as well.[12]

Table 2.6 highlights the impact of this factor for estimations of the long-run cost to government. As expected, increases in the discount rate increase estimates of the long-run costs to government. Crucially, we again find that the 2017 system has significantly higher exposure: a 2 percentage point increase in the government discount rate would increase the long-run taxpayer cost of HE by 56% under the 2017 system, while the equivalent increase under the 2011 system is just 13%.

A final point to consider is exposure to changes in student numbers. Since 2012, the cap on student numbers has been removed. The government initially projected 60,000 additional students as a result of this removal. This increase has not yet materialised, but this could be due to supply-side constraints that have been slow to adjust, meaning we could see larger increases in the future. Since the cost per student is much lower under the 2017 system, this system is actually much less sensitive to increases in student

Table 2.6. Sensitivity of overall taxpayer subsidy to the government cost of borrowing

	Government discount rate (real terms):				
	–1.3%	–0.3%	**0.7%**	1.7%	2.7%
2017 system	£330m	£3,478m	**£5,910m**	£7,760m	£9,200m
% change	-94%	-41%		+31%	+56%
2011 system	£7,233m	£8,240m	**£9,045m**	£9,697m	£10,216m
% change	-20%	-9%		+7%	+13%

Note: Real government discount rate relative to RPI inflation. All figures are given in 2017 prices, in net present value terms using the relevant discount rate. Cohort of students is held constant across systems.

Source: Authors' calculations using IFS's graduate repayments model.

[12] Note that the current long-run cost of borrowing is much lower than the discount rate of RPI + 0.7%. This suggests that the discount rate would not move one-for-one with changes in borrowing costs. However, despite not knowing the precise nature of the relationship, it seems reasonable to assume that increases in borrowing costs would increase the discount rate applied to student debt.

numbers than the old system, assuming that the new students look like the current average graduate. However, under the assumption that the additional students are, on average, lower-achieving and hence lower-earning than the current population of students, this would increase costs more in the 2017 case than in the 2011 case.

Throughout this subsection, we have shown the role of different factors assuming they are uncorrelated. In practice, this assumption is unrealistic, as long-run borrowing costs are likely to be related to both long-run earnings growth and loan uptake. This will mitigate government exposure. However, it remains the case that long-run cost projections are much more sensitive to long-run factors now than they would have been had there been no reforms since 2011. This effect has been driven by the increase in the share of the government up-front spend that is in the form of loans – which have uncertain long-run costs – rather than grants, which do not.

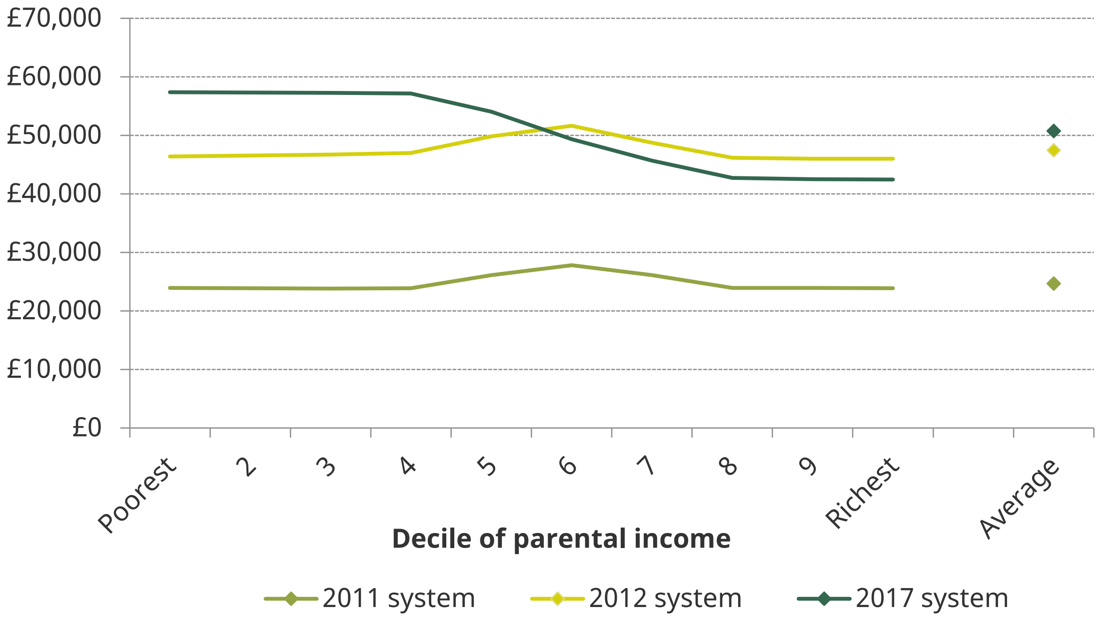
3. Students

In this section, we consider the HE system from the point of view of students. In particular, we consider debt levels on graduation, the amount of cash students have in their pockets while at university and expected lifetime repayments. Each of these factors is crucial for students considering whether to attend higher education. We show these figures for the cohort of students set to start HE in September 2017 under the current '2017 system' as defined above. We also isolate the impact of recent government reforms to HE on students had they been facing the 2011 and 2012 systems (more details on these are provided in Table 1.1 above). Finally, we consider the impact of the freeze in the repayment thresholds and the role of interest rates in determining graduate repayments.

Debt on graduation

A highly pertinent issue for students is the level of debt they will hold on graduation. Figure 3.1 shows this in 2017 prices for students under the 2011, 2012 and 2017 systems, combining tuition and maintenance debt. The figure shows average debt for individuals taking up their full loans for three-year degrees, by decile of parental earnings.[13]

Figure 3.1. Debt at graduation for three-year degree by parental income decile for 2017–18 cohort (2017 prices, not discounted, including interest)



Note: Figures give the debt at graduation, deflated back to 2017 using CPI inflation between 2017 and 2020. This includes any interest accrued while at university. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. We assume that all students take out the full loans to which they are entitled and that there is no dropout from university. See Appendix Table A.2 for construction of these numbers for the 2017 system.

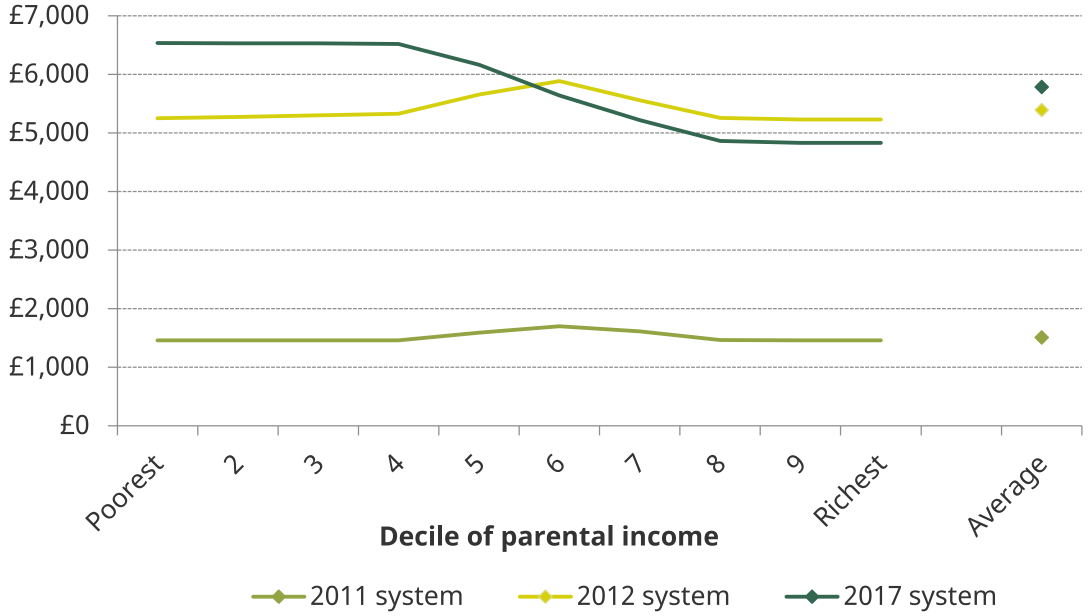
[13] This includes individuals living at or away from home and inside or outside London (both of these factors affect the size of maintenance loan for which individuals are eligible).

Under the 2017 system, average debt on graduation is just over £50,000.[14] This is more than double the average debt students would have been set to face had the system remained unchanged from 2011. The vast majority of this difference is explained by the large increase in tuition fees in 2012, which increased average debt to more than £47,000.

The increase in average debt between the 2012 and 2017 systems is driven almost entirely by the increase in maintenance loans available for poorer students, following the 2015 removal of maintenance grants. This has resulted in students from the poorest 40% of families graduating with the largest debts: around £57,000 on average, compared with around £43,000 for students from the richest 30% of families. This pattern was not a feature of the 2011 or 2012 systems, under which debt is broadly flat across the parental earnings distribution.[15]

A further change for students is the role of interest rates during study in determining debt on graduation. Under the 2011 system, interest rates were RPI + 0%;[16] however, the reform

Figure 3.2. Interest accrued while studying for three-year degree by parental income decile for 2017–18 cohort (2017 prices)



Note: Figures give the average interest accrued by graduation, for students on a three-year degree. Deflated back to 2017 prices using CPI inflation between 2017 and 2020. Under the 2011 system, interest rate charged was RPI + 0%, which translates into approximately 1% real interest when we use CPI as the measure of inflation. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. We assume that all students take out the full loans to which they are entitled and that there is no dropout from university. See Appendix Table A.2 for construction of these numbers for the 2017 system.

[14] This includes approximately £27,000 of tuition fee debt, £18,000 of maintenance debt and £6,000 of interest accrued over the three years of studying.

[15] The exception is slightly higher debt levels in the middle of the family income distribution. These students receive higher maintenance loans to alleviate the negative impact of the steep taper rate on maintenance grant.

[16] This is actually the minimum of base rate + 1% or RPI. We assume that RPI is the lower one in the long run, as has been the case historically.

in 2012 increased interest rates to RPI + 3% while studying. Figure 3.2 shows the total real value of interest accrued during study for each of the three systems, using CPI as the price index. The average student would have accrued around £1,500 in real interest during study under the 2011 system. However, due to both higher real interest rates and considerably larger principal debt (due primarily to the increase in tuition fee loans), this figure rises to around £5,400 after the 2012 reform. Under the 2017 system, interest accrual during study has increased to just under £5,800 in real terms because of the higher maintenance debt. Due to their higher principal debt, students from poorer households accrue the most interest during study; students from the poorest 40% of families now accrue around £6,500 in interest during study.

Cash-in-pockets for students from low-income households

Cash support while at university is a crucial factor for students. Other than support received from parents, this typically comes in three forms: through university bursaries and government maintenance grants (which don't have to be repaid) and through government maintenance loans (which do). Table 3.1 shows the average up-front cash support for students from low-income families, defined as individuals who would be eligible for full maintenance loans in 2017–18.[17] This accounts for just over 40% of the student population (Student Loans Company, 2014). The table also divides individuals up by prior attainment, separating out individuals with A-level grades of at least AAB or equivalent from the rest. This is because many universities issue bursaries based on this

Table 3.1. Up-front support for students from low-income families per year (in 2017 prices)

	<AAB students			AAB+ students		
	2011 system	2012 system	2017 system	2011 system	2012 system	2017 system
Maintenance loan	3,793	4,272	8,398	3,793	4,272	8,398
Maintenance grant	3,197	3,482	0	3,197	3,482	0
Bursaries (including NSP)	831	864	649	1,546	1,966	1,604
Total cash-in-pocket	**7,821**	**8,618**	**9,047**	**8,536**	**9,720**	**10,002**
Total cash excluding loans	**4,028**	**4,346**	**649**	**4,743**	**5,448**	**1,604**

Note: 'Low-income' defined as parental income below £25,000, which is the income at which a student got the full maintenance grant in 2015–16 and gets the full maintenance loan in 2017–18. All figures in 2017 prices. Values for bursaries are averages per year over the duration of the degree. Values for maintenance loans are averages over those living at home, those living away from home and those studying inside or outside London. To calculate the figures for the 2011 and 2012 systems, we use the student finance figures for 2017–18 for continuing students starting their course before September 2012 and September 2016 respectively, as these students still fall under the old system.

[17] In 2017–18, this meant having a household income below £25,000. This is identical to the income threshold for being eligible for the full maintenance grant for students under previous systems.

benchmark, with AAB+ students receiving more cash support (often reflecting their higher attendance at elite universities (Wyness, 2016)).

Students from the poorest families received between £800 and £1,200 more per year in up-front support as a result of the 2012 reforms. This was mostly driven by increases in maintenance grants and loans for these students, with the rest accounted for by the introduction of the National Scholarship Programme (NSP).

The system in 2017 provides the poorest students with a slightly higher level of cash support in real terms to what the 2012 system would have done. This is the result of two almost offsetting changes. Maintenance grants were scrapped in 2016, with their value more than replaced by a corresponding increase in maintenance loans for the poorest students, leading to a net increase in students' 'cash-in-pockets'. This increase was offset by the gradual phasing out of the NSP, which brought average bursaries for the poorest students back to close to the levels seen in 2011 (in real terms).

However, the key difference is that now only around 10% of that cash is in the form of grants, rather than loans, compared with more than 50% under the 2011 and 2012 systems. Now just £650 for <AAB students and £1,600 for AAB+ students on average is available in non-repayable cash support for students from low-income households. It is difficult to know whether this decline has yet had an impact on participation.

Graduate repayments

We have shown that changes to the system since 2011 have significantly increased students' average levels of debt on graduation. However, a key insight from Crawford and Jin (2014) is that higher debt levels do not necessarily translate into higher graduate repayments. Indeed, those authors showed that the 2012 reforms actually reduced total repayments for the bottom 30% of graduates. This was because the reform significantly increased the threshold at which individuals start to make repayments. In this subsection, we assess the full impact of the various changes to debt and repayment rules since 2011 on expected graduate repayments.

The distinction between debt levels and repayments emerges because any outstanding debt is written off at the end of the repayment period (30 years after graduation under the 2012 and 2017 systems; 25 years under the 2011 system). As shown in Table 3.2, under the current system, more than three-quarters of students can expect to have some debt written off, up from around 40% under the 2011 system.[18]

Table 3.2. Projected share of individuals with some debt written off

	2011 system	2012 system	2017 system
Share with debt written off	41.5%	76.0%	77.4%

Note: Individuals with any debt written off at the end of the repayment period (30 years for 2012 and 2017 systems; 25 years for 2011 system).

[18] Note that the 76% estimated for the 2012 system is up from 73% estimated in Crawford and Jin (2014). This is driven primarily by declines in projected graduate earnings growth.

Figure 3.3. Expected average lifetime repayments by decile of graduate lifetime earnings for 2017–18 cohort (2017 prices, not discounted)

Note: Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

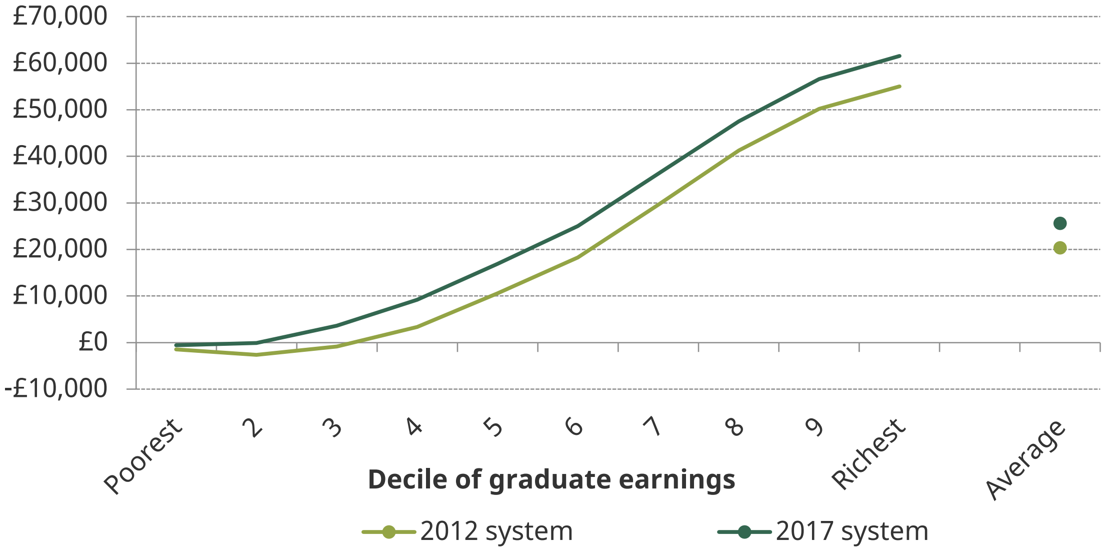
Source: Authors' calculations using IFS's graduate repayments model.

Figure 3.3 shows the value of repayments graduates can expect to make over their lifetime, both on average and across the distribution of graduate lifetime earnings. This is given in real terms (deflated to 2017 prices), but not discounted.[19] On average, graduates will repay £48,600 under the 2017 system, more than double what they would have paid if they had faced the 2011 system. Much of this difference was driven by the 2012 reforms, which increased average graduate repayments by more than £20,000. Reforms since 2012 have acted to increase average graduate repayments by a further £5,000.

However, focusing on these averages masks significant variation across graduates. The 2011 repayment system was progressive, with the highest-earning graduates making the largest contributions. Figure 3.4 shows the difference in expected repayments between the 2011 system and each of the 2012 and 2017 systems. The 2012 reform dramatically increased the progressivity of the system, by reducing repayments for graduates from the bottom 30% of the lifetime earnings distribution while significantly increasing repayments for the highest-earning graduates. Conversely, changes since 2012 have increased

[19] This is unlike in Section 2 (government finances), where future payments are discounted at 0.7% in real terms. It is typical to assume individuals do discount future payments, but it is unclear what rate should be used. Here we show the real value of non-discounted payments to provide an illustration of the repayments graduates can expect to make in today's money. In Appendix Figure A.2, we show the same figures using a real discount rate of 2.5%. This significantly reduces the value of expected long-run repayments but the pattern of findings shown here holds true.

Figure 3.4. Change in average lifetime repayments by decile of graduate lifetime earnings for 2017–18 cohort relative to 2011 system (2017 prices, not discounted)



Note: Difference in lifetime repayments compared with the 2011 system. Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

Figure 3.5. Impact of reforms on lifetime repayments as a proportion of lifetime income

Note: Difference in lifetime repayments as a percentage of lifetime earnings compared with the 2011 system (for 2012 reform) or the 2012 system (for changes since 2012). Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

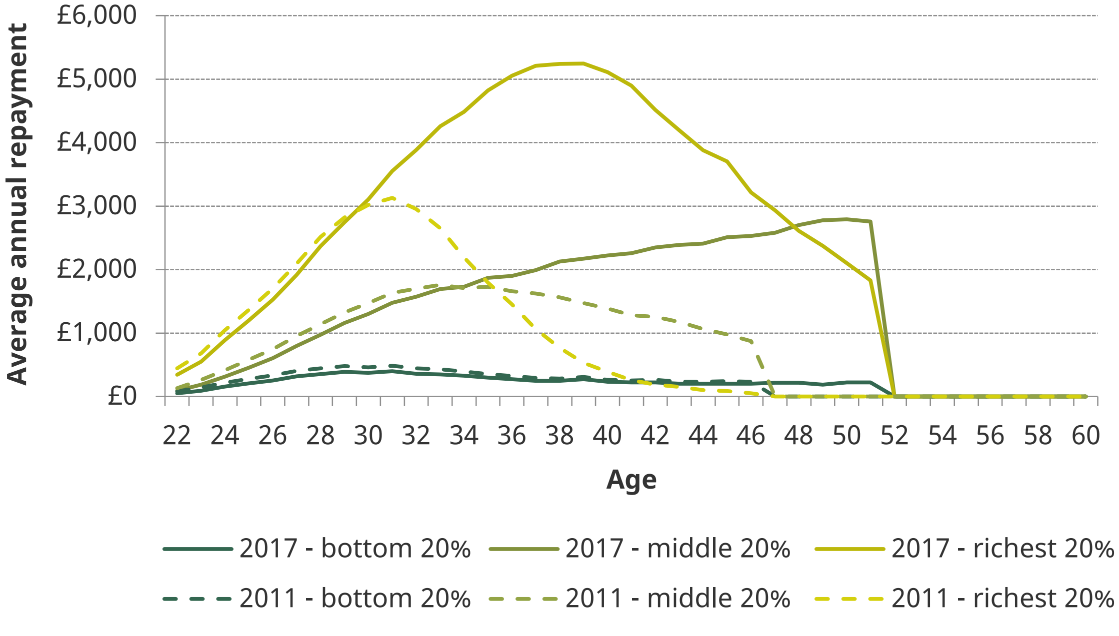
Source: Authors' calculations using IFS's graduate repayments model.

average repayments at all levels of earnings. Consequently, graduates from the bottom 30% are now no better off than they would have been had they faced the 2011 system.

We can also look at how the reforms in 2012 and the changes since 2012 have affected lifetime repayments as a proportion of graduates' lifetime income. This is shown in Figure 3.5.[20] Overall, the effects are small: the 2012 reform increased repayments by around 0.8% of lifetime income, and subsequent changes have increased repayments by a further 0.2% of lifetime income. Looking at these changes across the distribution of graduate earnings reveals the stark difference between these two reforms. Even as a proportion of income, the 2012 reform increased the repayment burden of high-earning graduates the most. However, the changes since 2012 have increased repayments as a proportion of lifetime earnings the most amongst graduates in the third and fourth deciles of earnings.

Figure 3.6 shows how these repayments are distributed across graduates' lifetimes. For the top 20% of earners, repayments are nearly identical under the 2011 and 2017 systems for the first nine years, but thereafter are much higher under the current system. Before the increase in fees in 2012, debt levels were such that some of the highest earners had repaid the full amount of the loan after about eight years. By age 47, when the loan was written off, virtually no graduates in the top 20% of earnings had any debt outstanding.

Figure 3.6. Repayments over the lifetime by graduate lifetime earnings quantile (2017 prices, not discounted)



Note: Average repayments by age for graduates in the top, middle and bottom 20% of the lifetime graduate earnings distribution. Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

[20] Here we define lifetime income as earnings during the repayment period, between ages 23 and 53.

Under the new system, it takes much longer for the richest graduates to have repaid the full amount of their loan, and even a non-negligible part of the 20% richest graduates will have some of their loan written off after 30 years. The impact of the reforms on the lowest 20% of earners is negligible as they never repaid the full amount of their debt under the 2011 system. The only difference is that their repayments continue five years longer due to the change in the write-off period.

In Appendix Figure A.3, we show these numbers as a share of earnings by age, highlighting the repayment burden. With a repayment rate of 9% above the repayment threshold, repayment burdens can never exceed 9%, excluding voluntary repayments. The figure shows that repayment burdens are typically around 3%, are lowest for the lowest earners and reach a maximum of just over 5%.

We now explore two specific elements of the student finance system in more detail, focusing on the repayment threshold and interest rates applied to student debt.

The repayment threshold

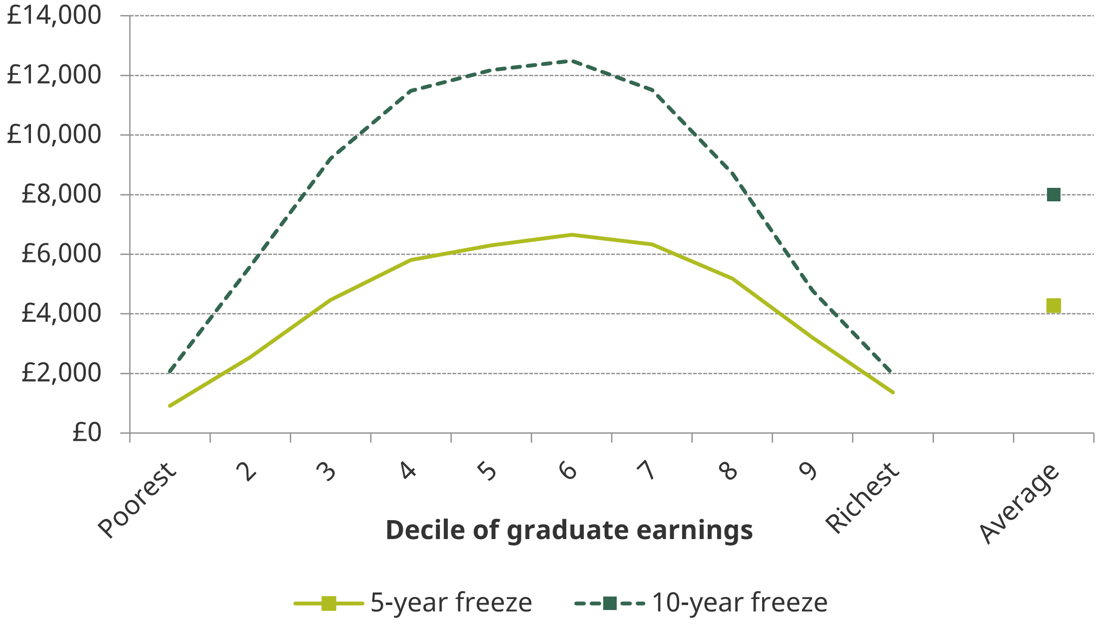
The 2012 reform set the threshold above which graduates begin to repay student loans at £21,000 in 2016, with the threshold increasing to reflect nominal earnings growth thereafter. However, in 2015, it was announced that the threshold would be frozen at £21,000 in cash terms until 2021.[21] The freeze means that the repayment threshold will be 10% lower than it would have been had it risen with earnings. As a result, more graduates will have earnings above the threshold, and hence have to start making repayments. For all those who were already above the threshold, annual repayments will be larger while they still have positive student debt.

Figure 3.7 shows the change in average repayments by decile of graduate earnings due to this threshold freeze relative to if the threshold had increased in line with nominal earnings as previously announced. This reform increases average graduate repayments by more than £4,000. This is because the threshold freeze has a permanent impact; in all future years, the threshold will be lower than it otherwise would have been. Therefore, graduate repayments are higher in every year. The impact is concentrated in the middle of the earnings distribution. Low earners are less affected as the majority of their earnings remain below the new lower threshold, while high earners experience little overall difference as they would have repaid their entire loan anyway (although it does bring their repayments forward so they have lower net incomes earlier in their lives but higher net incomes later). It is middle earners who repay up to nearly £7,000 more over their lifetime as a result of the threshold freeze. A cash-terms freeze for a further five years follows a similar pattern: it increases average repayments by £8,000 relative to no threshold freeze, again with the largest increases concentrated in the middle of the earnings distribution. A continued threshold freeze begins to affect more and more low-earning graduates.

These increased graduate repayments result in a lower government subsidy. The threshold freeze between 2016 and 2021 reduced the long-run taxpayer cost from £7 billion to £5.9 billion. Continuing the freeze for a further five years would save the government a further £700 million.

[21] The rationale behind this freeze was that earnings grew by less than expected between 2012 and 2016, resulting in a threshold that was ‘too high’ in 2016 (Department for Business, Innovation and Skills, 2015).

Figure 3.7. Impact of threshold freeze on average repayments by decile of graduate lifetime earnings (2017 prices, not discounted)



Note: Difference in lifetime graduate repayments between the current system, had thresholds increased in line with nominal earnings growth from 2017, and the same system with a nominal freeze of the repayments thresholds for five or ten years. Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

Interest rates

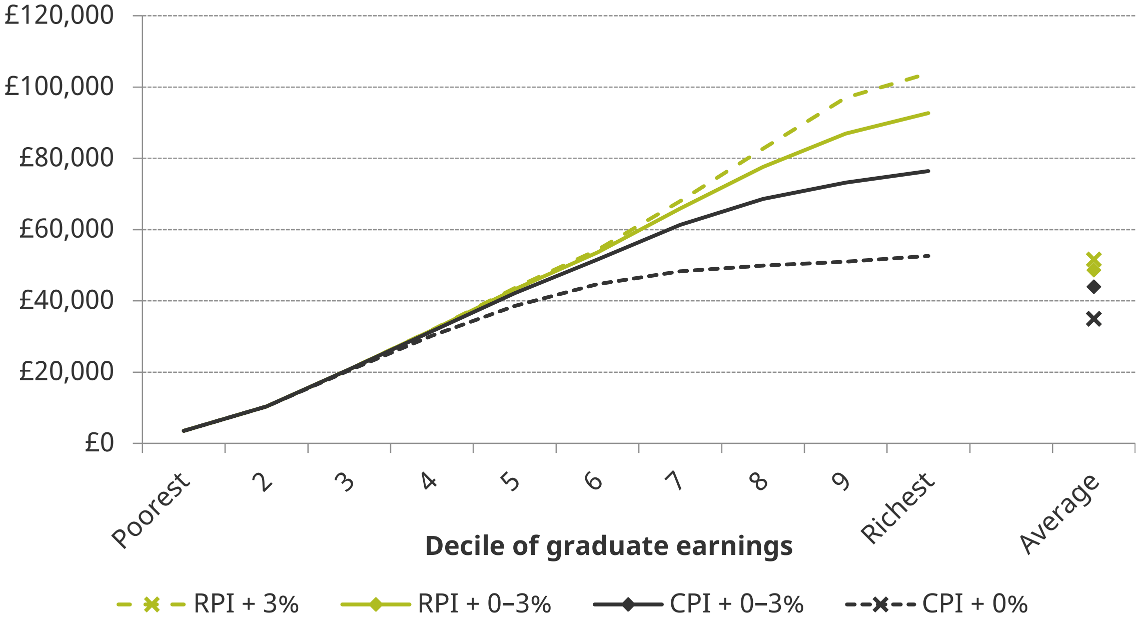
A second highly controversial area of the current student loans system is the high interest rate applied to debt. Until 2012, interest rates were fixed at the minimum of base rate + 1% or RPI. However, the 2012 reform increased interest rates on new loans to RPI + 3% while studying and an increasing rate of RPI + 0–3% depending on earnings. We now consider the impact of the positive rate above RPI, and the use of RPI itself to index interest rates. RPI has been shown to systematically overstate the rate of inflation by around 1 percentage point.[22]

The interest rate charged continues to affect the level of debt after graduation and hence impacts the repayments students can expect to make over their lifetimes. Figure 3.8 shows lifetime student repayments by graduate earnings decile under various interest rates.

The choice of interest rate has virtually no impact on the repayments of graduates in the bottom 40% of the graduate earnings distribution. This is because very few graduates with this level of earnings repay the full principal value of their loan and so most do not begin to repay the interest accrued. However, the interest rate has a significant impact on the

[22] Box 3.3 of Office for Budget Responsibility (2015).

Figure 3.8. Impact of interest rates on real graduate repayments by lifetime earnings decile (2017 prices, not discounted)



Note: Average graduate repayments under the current interest rate regime of RPI + 3% while studying and RPI + 0–3% depending on income thereafter; with the same tapered interest rate but using CPI + 0–3% after graduation; with a flat rate of RPI + 3% for all graduates; and with a flat rate of CPI + 0% interest. Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

repayments of top earners. The higher the interest rate, the higher the real value of repayments made by top earners; under the current system, graduates in the top decile repay an average of £93,000 in 2017 prices over their lifetime. Under a zero real interest rate (CPI + 0%), the top decile of earners would only repay £53,000 on average.[23] It is worth noting that the interest rate does not increase the existing repayment burden in any given year. Instead it increases the length of time for which high-earning graduates repay their loans. Under a zero real interest rate graduates in the top decile would finish repaying their loans after an average of 16 years, whereas with an interest rate of RPI + 0–3% they will only finish repaying after 21 years on average.

As discussed in Section 2, positive real interest rates result in top earners paying back more in real terms than they borrow. Indeed, they may pay back more than they would have to if borrowing a similar amount privately (for example, through taking a larger mortgage loan in order to pay off student debt), either by taking out a loan after graduation or through parents. This raises an important issue: if top earners can acquire credit with a lower interest rate, they may be incentivised to repay loans early (or not take

[23] If instead the variable interest rate RPI + 0–3% were replaced with a fixed rate of RPI + 3%, this would increase the average repayments of the top decile of earners to £104,000 and again have no impact on low earners.

out loans in the first place). This will increase the overall taxpayer cost of HE provision in the long run.

We explored this potential risk to government finances in Section 2, showing that in the most extreme case – if no earners in the top quintile take out loans – the long-run taxpayer cost would increase by £700 million. However, the use of an interest rate of RPI + 0–3% rather than CPI + 0% reduces the long-run taxpayer cost by £2.9 billion. While the entirety of the saving may not be realised if some high earners do not take up loans, it is clear that charging a positive real interest rate has a large net benefit for government finances. This would be a challenging amount to raise elsewhere (we discuss options for raising more money from the student loan system in Section 5).

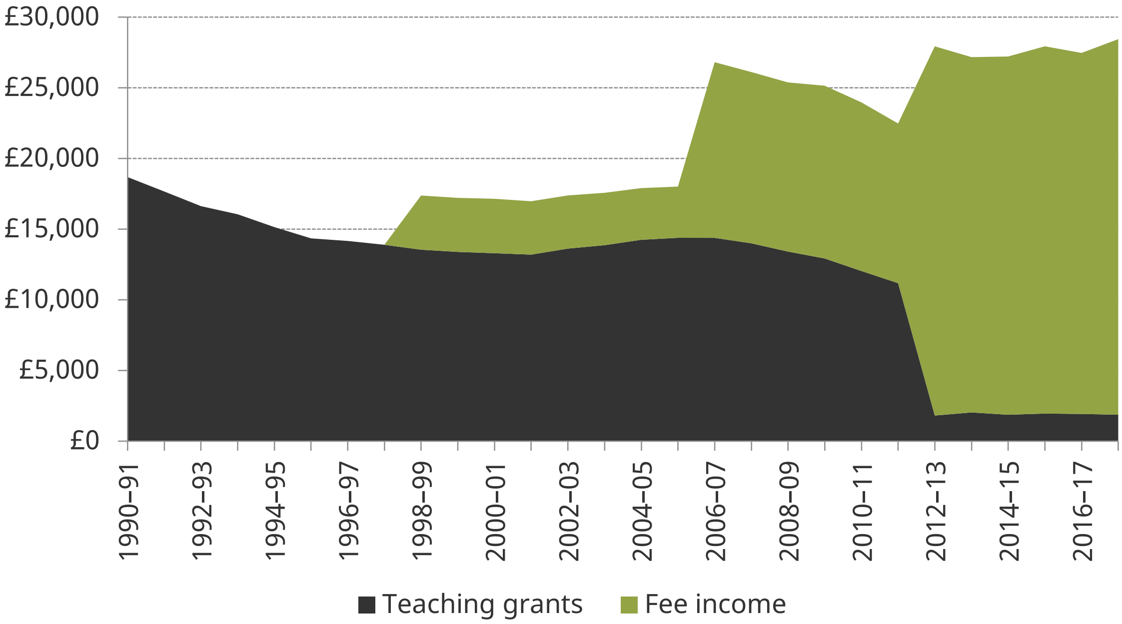
4. University Funding

The previous two sections explored how recent reforms have affected how the costs of HE are distributed between government and graduates, and between different types of graduates. Here, we look at how these reforms have impacted the level of HE funding and which subjects receive this funding.

Figure 4.1 shows the average level of resources universities receive per student to fund the cost of providing a degree, by cohort of entry into HE since 1990–91. The 2012 reform increased the total level of resources universities receive per student per degree by around 25% from £22,500 to £28,000 in 2017 prices. This was a result of the increase in tuition fee income exceeding the loss in teaching grant income. The falling real value of the fee cap since 2012 has reduced funding per student at some universities, but the average figure has been offset by increasingly more universities charging the maximum possible fees and by reductions in fee waivers and bursaries.

These changes continue a consistent trend of HE institution income transitioning from direct teaching grants to tuition fees funded by student loans. In the early 1990s, university teaching income per student in England consisted entirely of teaching grants, whereas now the vast majority of teaching income per student is through fees. Throughout the 1990s, the value of these grants declined in real terms per student

Figure 4.1. University resources per student per degree for students starting between 1990–91 and 2017–18 (2017 prices)



Note: Deflated using the GDP deflator. The fee incomes prior to 2012–13 assume all courses are three years, so they represent a slight underestimate. Institution-specific bursaries and fee waivers (when appropriate) are deducted from fee income.

Source: HEFCE Teaching Grant Letters, various years, http://www.hefce.ac.uk/funding/annallocns/. HM Treasury deflators, March 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/509245/GDP_Deflators_Budget_2016_update.csv/preview.

(Murphy, Scott-Clayton and Wyness, 2017). There have been three major increases in fees since then, in 1998, 2006 and 2012. Each of these increases resulted in a sudden boost to university income, followed by subsequent flatlining or declines in funding. This has resulted in extremely high variation in funding per student over the past 30 years, which is unlikely to be optimal.[24] However, it should be noted that the general trend is upwards, and that university funding per student is currently at the highest level it has ever been in the last 30 years.

The 2012 reform also affected the level of funding for different subjects. Universities receive different funding for different courses, based on the price group of each course. Group A courses include clinical stages of medicine and dentistry, Groups B and C include subjects with laboratory or fieldwork elements (Group C is split into two bands, C1 and C2, with C1 considered the marginally more expensive) and Group D includes all other subjects.

Table 4.1 shows teaching grant and fee income per student that universities would receive for each of the five course groups. The table again shows the big shift away from grants

Table 4.1. University funding per student per year (2017 prices)

	Course price group				
	A	B	C1	C2	D
Share of students	*2%*	*20%*	*18%*	*28%*	*33%*
Funding under 2011–12 system					
HEFCE funding	14,543	5,337	3,736	3,736	2,536
Fees	3,681	3,681	3,681	3,681	3,681
Total	**18,224**	**9,018**	**7,417**	**7,417**	**6,217**
Funding in 2016–17 under new system					
HEFCE funding	10,180	1,527	255	0	0
Fees	9,162	9,162	9,162	9,162	9,162
Total	**19,342**	**10,689**	**9,417**	**9,162**	**9,162**
Change in funding	+6%	+19%	+27%	+24%	+47%

Note: Per full-time undergraduate. Deflated using GDP deflator. Figures for both systems exclude London weighting. The figure includes the scaling factor to ensure HEFCE allocations remain within budget (1.018 for 2016–17).

Source: HEFCE, 'Recurrent grants and student number controls for 2012-13' http://www.hefce.ac.uk/media/hefce/content/pubs/2012/201208/12_08_1123.pdf for 2011–12 figures. HEFCE, 'Guide to funding 2016–17', http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/2016/201607/HEFCE2016_07.pdf for 2016–17 figures. HM Treasury deflators, March 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/509245/GDP_Deflators_Budget_2016_update.csv/preview. Student numbers are from HESA data 2015–16 based on all students in university in 2015–16.

[24] Although we note that universities with multiple cohorts of students have the ability to smooth funding across cohorts.

towards fee income between the 2011–12 and 2016–17 systems. It also highlights how the relative incomes from each course group changed over that period. In 2011–12, funding for Group A courses was around £18,000 per student, around three times the funding for Group D of around £6,000. By 2016–17, average funding per Group A course increased to around £19,000, while funding for Group D courses was around £9,000. This is a 47% increase in funding for Group D courses compared with just a 6% increase for Group A.

This has not yet had a clear effect on the student number shares within each group, which are very similar to 2011 figures. However, it might have an important effect in future, particularly if universities have been slow to adjust to the changes. While universities may be deciding to reallocate funds to cross-subsidise subjects, these funding changes appear to be at odds with the government's intention to promote typically high-cost STEM subjects.[25]

[25] Science, technology, engineering and mathematics.

5. Directions for Policy

In their manifesto in 2017, Labour announced plans to scrap tuition fees and reintroduce maintenance grants for the poorest students. This would represent a major reversal of recent policy reforms and come at a significant cost, increasing the government deficit by £12.7 billion.

In this section, we explore the broad impact of these reforms and other potential reforms for the HE finance system. This is a complex area where there are multiple trade-offs to be managed and where there are no simple or costless reforms available that would unambiguously improve the system.

Tuition fees

One oft-cited potential reform to the HE system in England is the reduction or removal of tuition fees. Under the current system, 93% of university income from teaching comes from tuition fees.[26] Therefore, any discussion of changing tuition fees is not complete without considering the impact on university income. The simplest case is to assume that university funding is held constant by replacing lost tuition fee income one-for-one with increased teaching grants.

Under this scenario, reducing (or scrapping) tuition fees has little impact on up-front government expenditure on HE. Outlay on tuition fee loans is replaced by spending on teaching grants, with a small increase in the up-front cost due to students who were not taking out loans under the current system. But moving from loans to grants increases measured government borrowing.[27] Tuition fee loans add to the overall level of government debt but do not appear in the deficit until they are written off 30 years later (this is because at least part of the value is expected to be repaid).

Reducing tuition fees also clearly increases the long-run cost to government as graduate contributions through loan repayments are reduced. The main beneficiaries from reducing fees would be high-earning graduates, as they are the ones making the highest repayments under the current system.

An alternative reform is to increase the cap on tuition fees, as is proposed for 2017–18 (fees are due to rise to £9,250 per year). Assuming teaching grants are unchanged, small increases in fees such as this raise the overall level of universities' resources and are paid for by high-earning graduates and the government (through loan write-offs). Low-earning graduates are unaffected in terms of repayments as they do not earn enough to repay even the current level of fees.

Larger increases in fees would have a relatively smaller impact on graduate contributions as very few graduates would end up repaying the loans (77% of students already expect to have some debt written off after 30 years). These increases end up effectively being a

[26] This definition of university income includes fee income and income from government teaching grants. Research grants and income from other sources (including international and postgraduate students) are excluded.

[27] Defined as public sector net borrowing.

transfer from government to universities, albeit one that does not affect the deficit in the short run.

Student maintenance funding

In 2016–17, means-tested maintenance grants were abolished for students from low-income backgrounds and replaced with (slightly larger) maintenance loans. One impact of this is that students from poorer backgrounds now graduate with more debt than those from better-off families. One potential option for future policy would be to reverse this policy change by reintroducing maintenance grants for the poorest students.

Such a reform would increase measured public borrowing by around £2 billion (if the current loans were converted directly into grants). This would make no difference to the amount of cash-in-pockets students receive, although students may value 'free cash' more than loans – even if they do not expect to repay them. The long-run cost is considerably lower, because a significant part of the maintenance loans is not expected to be repaid.

Funding for nurses and teachers

Nurses currently receive bursaries, which cover the full cost of tuition. These bursaries will be abolished from September 2017, meaning nurses will face tuition fees (which they can pay for with a fee loan from government) like the rest of the student population. This has the potential to reduce the supply of nurses; indeed applications dropped 23% in the last year.[28] Teachers also face tuition fees for their Initial Teacher Training, which they can also pay for with fee loans from government.

One potential policy would be to bring back (or introduce) bursaries to cover fees for students going into these two professions. As with a general tuition fee removal, this comes with a short-run disadvantage of increasing deficit spending. The number of places could be restricted to limit this effect. In the long run, these policies would be relatively low-cost because a large proportion of nurses' and teachers' tuition fee debt is expected to be written off anyway. This is particularly true for teachers who train through a postgraduate route as they have to fully repay their undergraduate loan before they begin repaying the additional loan for teacher training.

An alternative approach is to offer forgiveness on student loan repayments while individuals remain in the profession, as was promised for teachers in the 2017 Conservative manifesto. This may be more costly in the case of teachers as it reduces repayments on teacher undergraduate loans – as well as postgraduate loans – some of which would have been repaid. However, this policy would reclaim all potential repayments if a teacher left the profession for a more highly paid job and this provides an

[28] See: https://www.ucas.com/corporate/data-and-analysis/ucas-undergraduate-releases/2017-cycle-applicant-figures-%E2%80%93-march-deadline. Although in practice the number of nurses training this year may actually rise.

incentive for teachers to remain in teaching. Similar policies have been successful in other countries, such as in Florida, US (Feng and Sass, 2015).[29]

Changing the student loan system

Under the 2017–18 HE system, 96% of the up-front government outlay on undergraduate teaching is through student loans. There are various policy levers in the student loan system that the government could adjust to increase graduate contributions. Each has a slightly different impact on graduates in different parts of the earnings distribution.

Under the current system, graduates repay their student loans at a rate of 9% of income over £21,000 per year and any outstanding debt is written off after 30 years. We consider in turn the impact of changing the interest rate, the repayment threshold, the repayment period and the repayment rate, and an alternative policy to implement a surcharge on debt.

Interest rates

Interest rates on student debt are controversial. They are currently RPI + 3% during study and RPI + 0–3% (depending on income) while working. Reducing the real interest rate reduces the repayments for high-earning graduates and therefore increases the overall cost to government. Low-earning graduates are relatively unaffected by the interest rate charged (at least in terms of their scheduled loan repayments) as they typically do not earn enough to begin to repay the interest accrued on their loans. However, reducing the real interest rate would also reduce the risk posed to government finances of high-earning graduates repaying early or not taking out student loans. A lower (or zero) real interest rate reduces the incentive for students to find credit outside the student loan system and reduces the cross-subsidisation present in the current system.

Repayment threshold

Reducing the repayment threshold increases graduate contributions and so reduces the taxpayer cost. The increase in graduate contributions is concentrated in the middle of the graduate earnings distribution. The highest-earning graduates are relatively unaffected over their lifetimes, as they are likely to repay the full value of their loans anyway; however, a lower threshold brings forward their future repayments, reducing net incomes in the short run (but increasing them later). Those low-earning graduates who earn below the new threshold are also unaffected, meaning it is typically middle-earning graduates who are most affected.

Repayment period

Increasing the period before outstanding loans are written off increases the repayments of all graduates who would not have repaid their loans in full under the current system. Given that 77% of graduates are expected to have some outstanding loans written off, increasing the repayment period would increase the repayments of all but the richest graduates. Middle earners would again experience the largest increase in repayments as they are likely to be earning more than low earners during these additional years. However, given that the current repayment period ends when a typical graduate is 53 (and

[29] This example offered loan write-off, rather than repayment forgiveness, if a teacher remained in the profession for a number of years, but the principle is similar.

much later for mature students), it is worth considering the implications of an extended repayment period for retirement decisions.

Repayment rate

Increasing the repayment rate increases the repayments in any given year of all graduates earning above the repayment threshold. As with lowering the repayment threshold, for high-earning graduates who are expected to repay their loans in full, this again acts to bring forward future repayments with little impact on the total value of contributions, while there is no impact for low earners below the repayment threshold. As such, increasing the repayment rate again reduces government costs by increasing the contribution from middle-earning graduates.

Wider implications of changing the repayment rate should be taken into account. An important consideration is that student loan repayments act very similarly to a tax on earnings. It is therefore possible that a higher repayment rate could reduce the incentive to work or earn more. This could reduce the level of graduate repayments and, more importantly, the receipts from income tax and National Insurance contributions.

Surcharge on debt

An alternative way the government could increase contributions from high-earning graduates is to impose a surcharge on student debt upon graduation in conjunction with lower interest rates. This would reduce the incentives for high-earning graduates to make voluntary early repayments.[30] Those who would not have repaid the initial debt are unaffected as the additional debt will be written off after 30 years. However, a high surcharge may discourage individuals with well-off parents expecting to have high lifetime earnings taking out loans. It may also have adverse consequences for participation if lower-earning graduates are debt averse and are deterred by the high headline debt levels on graduation.[31]

Increasing the number of high-quality STEM graduates

It is clear that producing high-quality STEM graduates is a priority for the English higher education system. In 2016, a government review explored the provision of STEM degrees and the employability of graduates.[32] Increasing the number of high-quality STEM graduates is a two-stage problem: encouraging high-quality students to apply for STEM subjects and incentivising universities to provide high-quality STEM courses.

The 2012 reform increased the funding of all subjects. However, this increase was largest amongst low-cost, typically non-STEM, courses, while STEM degrees experienced much smaller increases. Prior to the 2012 reforms, universities received much less funding for subjects that were cheaper to teach than they did for more expensive ones. Since the 2012 reform, however, the funding universities receive for a given course is much less dependent on the cost of providing this course. This change potentially increased the

[30] See Barr et al. (2017) for a discussion of the theoretical underpinnings of designing an income-contingent loan system from scratch for the US, and the distributional and revenue implications of imposing different combinations of surcharges and real interest rates using US data.

[31] For poor students, interest accrued whilst at university is equivalent to a 13% loan surcharge.

[32] The Wakeham Review (BIS and HEFCE, 2016).

incentive for universities to provide cheaper non-STEM over more expensive STEM courses.[33] One way to alleviate this problem might be to allow different subjects to charge different fees, as is the case in Australia. The prospect of receiving higher fee income for providing a STEM course might encourage universities to provide more or higher-quality degrees.

Encouraging more or higher-quality students to apply for STEM courses is likely to require a different set of policies. These may be in the form of additional teaching grants or bursaries to students, additional information provided about the returns to studying STEM courses, or training in schools to prepare more students for STEM degrees.

Access for private providers

The Higher Education and Research Bill passed in April 2017 makes it easier for new providers to enter the market and obtain degree-awarding powers. The intention (outlined in the government White Paper on higher education[34]) was for new providers to increase competition and therefore quality.

A crucial area for government consideration is the provision of loans for students at these private providers. Currently, loans of £6,000 per student are available at a small number of institutions. Extending this loan availability could improve both the quality of private providers and access to them for poor students. However, similar policies in the US and Australia have run into difficulties, with low-quality institutions setting up to extract large profits from government while adding limited value to students. This is particularly pertinent in an environment with a lack of information on quality available to students, which results in competition not necessarily feeding into quality improvements. In this context, regulation of quality is essential.

Targeted teaching grants

One feature of the current system is that there are very low levels of direct teaching grants. Instead, the government subsidy to HE is paid almost entirely through the loan subsidy. An implicit result of this is that the government subsidy is targeted at students with low expected future earnings, as these are the students who will not repay their loans. This would not seem to be an optimal targeting of the subsidy. A system with higher levels of teaching grants, on the other hand, would provide the government with more opportunity to target these teaching grants towards the subjects, institutions or students that yield the highest public benefit.

Selling the loan book

Another way in which student loans can impact government finances is if the government chooses to sell the loan book. The intention to do this for loans issued between 2002 and 2012 was announced in February 2017.[35] Selling the student loan book trades an asset that

[33] Although, in practice, universities might cross-subsidise between subjects if they have a vested interest in providing particular courses.

[34] Department for Business, 2016a.

[35] https://www.gov.uk/government/news/government-launches-first-sale-from-the-student-loan-book.

has an expected return in the future (in the form of graduate repayments) for an up-front sum. It should be noted that selling the loan book for its expected value does not 'improve' government finances and the proceeds cannot be used to fund an additional expenditure; it merely brings forward expected future income. Selling the loan book could reduce the level of government debt if the asset is fully securitised; that is, the government no longer bears any of the uncertainty over the future value of repayments.

Under the proposals announced in February 2017, students would be completely unaffected by the sale of the loan book. In order for this to be the case, and for the asset to be accurately valued, the government must set out all future parameters of the repayment model including, for example, how the repayment threshold is to be uprated over time. In the recent past, the government has appeared reluctant to do this, as evidenced by the retroactive cash-terms freeze in the repayment threshold for post-2012 loans. Trading future repayments for up-front income highlights the value the government places on certain money now over uncertain future money. The value at which the loan book is sold could reveal some information about the true government valuation of student loans (and hence the true government discount rate).

6. Conclusion

In this briefing note, we have provided up-to-date estimates of the long-run cost of higher education. We have shown the impact of various policy changes on the long-run cost to government, student debt and graduate repayments, and university income. We highlight the dramatic switch away from grants towards loans in recent years and point out that recent reforms have simultaneously reduced the long-run government costs of HE and increased university funding.

However, there remain major issues with the system. First, although we have yet to see large declines in student numbers, the long-run cost of university is now considerably greater – both in terms of debt on graduation and in terms of long-run repayments – for prospective students, and this may reduce participation in the longer term. Second, the current system does not give the government much flexibility to directly target courses or individuals that have high value to society. This is because the vast majority of the government contribution to HE teaching now comes through loans that are not repaid by low-earning individuals. A more grant-based system would allow the government to target high-return individuals or courses much more flexibly. Such an approach is reflected in the removal of maintenance grants for poor students and the large shift in per-student funding for different courses, with funding increasing much more for lower-cost ‘Group D’ courses than for high-cost ‘Group A’ courses.

The long-run government contribution to undergraduate teaching is considerably lower than before the 2012 reforms. However, if the government were to try to extract more money from graduates, there are numerous parameters in the student loan system that it can draw from. Different parameters will have different impacts on graduates, but it is important to recognise that the contributions of the highest earners are already considerably higher than the amount they borrow.

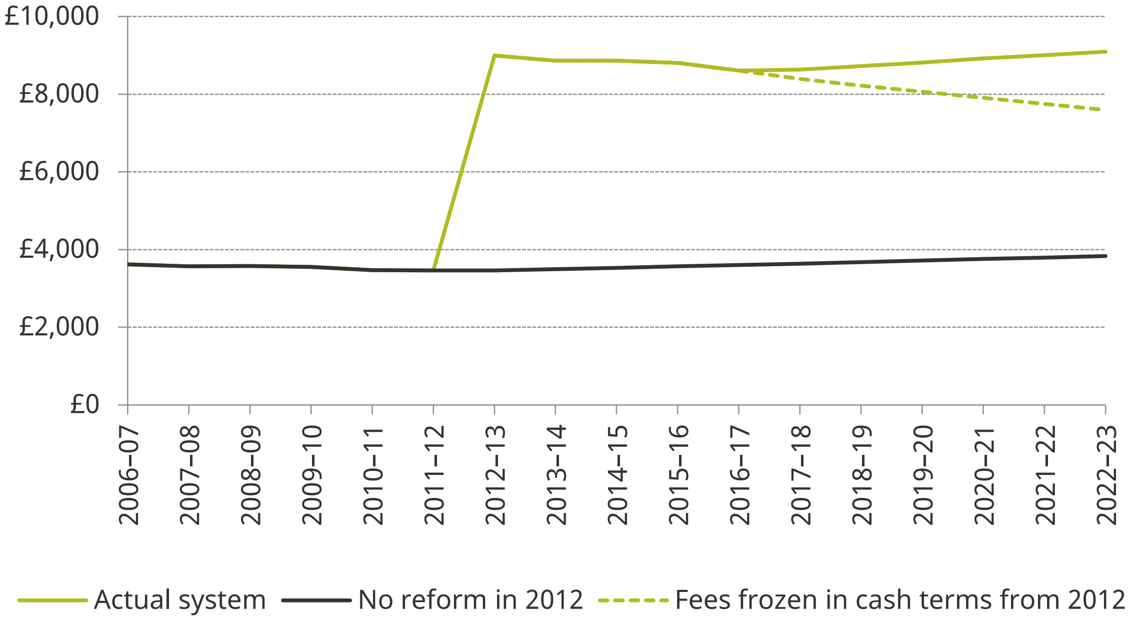
Finally, reducing tuition fees or bringing back maintenance grants would have the advantage of allowing government to target specific students or courses that have wider benefits to society. This would, however, significantly increase deficit spending and lead to a smaller, but still considerable, increase in the long-run government contribution. In future years, the government should put more weight on the latter than the former in its approach to making policy.

Appendix

Table A.1. Details of consecutive changes incorporated into Figure 2.1

Change in earnings forecasts	Reduction in discount rate	Removing maintenance grants	Freezing thresholds	Real-terms decrease in fees	2017 increase in fees
Incorporates most recent OBR estimates of short- and long-run earnings growth and small modelling changes	Reduction in discount rate used by government from RPI + 2.2% to RPI + 0.7%	Maintenance grants replaced by maintenance loans as introduced in 2016	Freeze of the repayment threshold at £21,000 and the higher interest rate threshold at £41,000 in nominal terms for five years from 2017	Impact of the decrease in real value of fees since 2012, as fixed in nominal terms	Impact of increase in fees with RPI every year from 2017 onwards

Figure A.1. Real value of maximum fees by cohort (in 2012–13 prices)



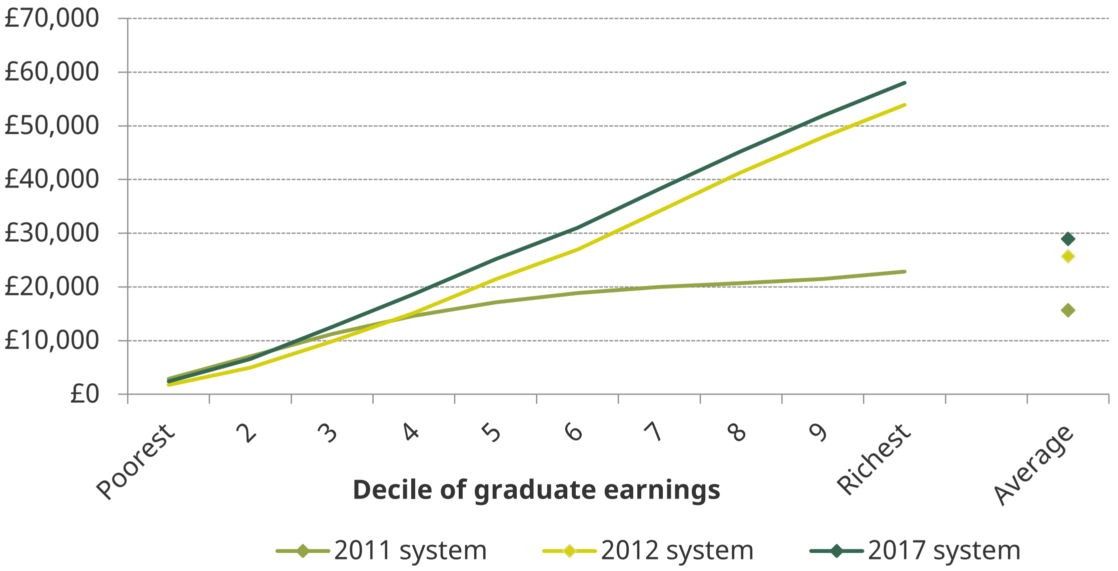
Note: Real value of fees in 2012–13 prices, deflated using CPI. Fees without 2012 reform assume tuition fees would have been uprated at RPI after 2012. Actual system assumes all providers will be able to increase their fees by RPI inflation each year. Under the Teaching Excellence Framework, not all providers may actually be able to do so.

Table A.2. Construction of debt at graduation estimates for 2017 system

2017 system	Year 1	Year 2	Year 3	Graduation	Graduation (in 2017 prices)
Average fee loan for year	9,228	9,535	9,831		
Average maintenance loan for year	6,480	6,644	6,320		
Average total loan for year	15,708	16,179	16,151		
Total loan without interest	**15,708**	**31,888**	**48,038**	**48,038**	**45,003**
Accumulated interest	**1,021**	**3,061**	**6,178**	**6,178**	**5,788**
Total loan including interest	**16,729**	**34,949**	**54,217**	**54,217**	**50,791**

Note: Average loan amounts given for a three-year degree. Assuming full loan amount is received at the start of each year and interest is charged on a yearly basis at RPI + 3%, using November 2016 OBR predictions of RPI inflation of 3.5% in 2018, 3.2% in 2019 and 3.1% in 2020. The debt at graduation is the debt outstanding three years after starting the degree. The amount outstanding at graduation in 2020 is deflated using the CPI to put this into 2017 prices.

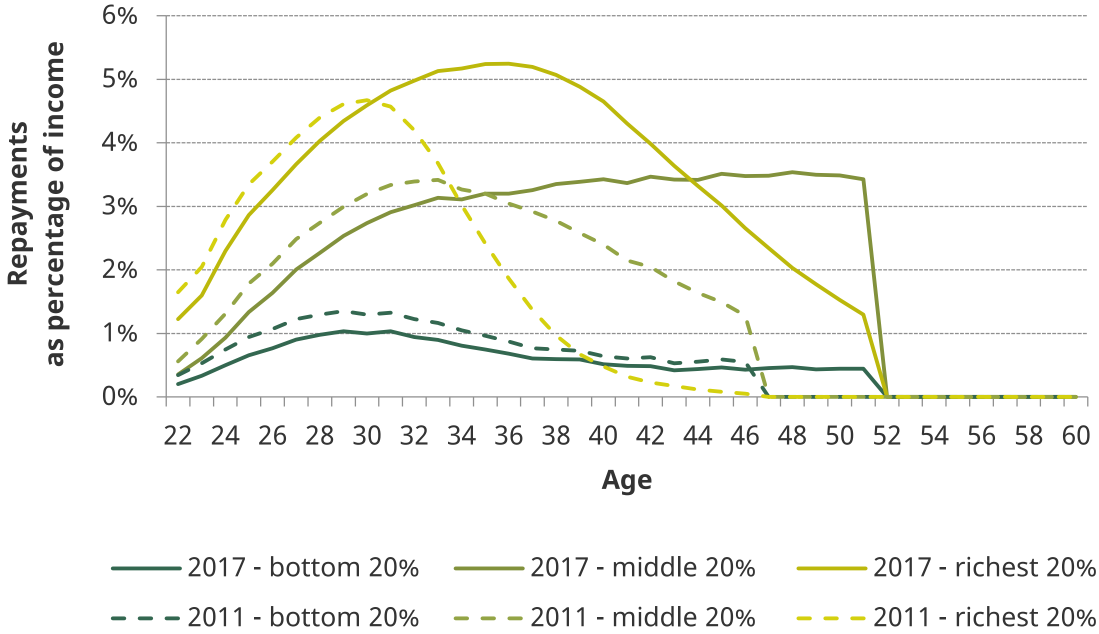
Figure A.2. Expected average lifetime repayments by decile of graduate lifetime earnings for 2017–18 cohort (2017 prices, using a 2.5% real discount rate)



Note: Figures in 2017 prices, in net present value terms using a CPI + 2.5% discount rate. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017-18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

Figure A.3. Repayments as a percentage of income over the lifetime by graduate lifetime earnings quantile



Note: Average repayments as a percentage of average income by age for graduates in the top, middle and bottom 20% of the lifetime graduate earnings distribution. Figures in 2017 prices, deflated using CPI inflation, not discounted. These figures apply to young full-time English-domiciled students studying at the 90 largest universities in England starting in 2017–18. Cohort of students is held constant across systems. 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.

Source: Authors' calculations using IFS's graduate repayments model.

References

Barr, N., Chapman, B., Dearden, L. and Dynarski, S. (2017), 'Getting student financing right in the US: lessons from Australia and England', Centre for Global Higher Education, Working Paper 16, http://www.researchcghe.org/publications/getting-student-financing-right-in-the-us-lessons-from-australia-and-england/.

BIS and HEFCE (2016), *Wakeham Review of Stem Degree Provision and Graduate Employability*, https://www.gov.uk/government/publications/stem-degree-provision-and-graduate-employability-wakeham-review.

Britton, J., Crawford, C. and Dearden, L. (2015), 'Analysis of the higher education funding reforms announced in Summer Budget 2015', IFS Briefing Note BN174, https://www.ifs.org.uk/publications/7904.

Britton, J., Dearden, L., Shephard, N. and Vignoles, A. (2016), 'How English domiciled graduate earnings vary with gender, institution attended, subject and socio-economic background', IFS Working Paper W16/06, https://www.ifs.org.uk/publications/8233.

Crawford, C., Crawford, R. and Jin, W. (2014), *Estimating the Public Cost of Student Loans*, IFS Report R94, https://www.ifs.org.uk/publications/7175.

Crawford, C. and Jin, W. (2014), *Payback Time? Student Debt and Loan Repayments: What Will the 2012 Reforms Mean for Graduates?*, IFS Report R93, https://www.ifs.org.uk/publications/7165.

Cribb, J., Joyce, R. and Norris Keiller, A. (2017), 'The UK labour market: where do we stand now?', IFS Briefing Note BN197, https://www.ifs.org.uk/publications/9170.

Department for Business, Innovation and Skills (2010), 'Higher education funding for 2011-12 and beyond', https://www.gov.uk/government/publications/higher-education-funding-for-2011-12-and-beyond.

Department for Business, Innovation and Skills (2015), 'Consultation on freezing the student loan repayment threshold', https://www.gov.uk/government/consultations/freezing-the-student-loan-repayment-threshold.

Department for Business, Innovation and Skills (2016a), *Higher Education: Success as a Knowledge Economy*, https://www.gov.uk/government/publications/higher-education-success-as-a-knowledge-economy-white-paper.

Department for Business, Innovation and Skills (2016b), 'BIS annual report and accounts 2015-2016', https://www.gov.uk/government/publications/bis-annual-report-and-accounts-2015-to-2016.

Feng, L. and Sass, T. (2015), ‘The impact of incentives to recruit and retain teachers in “hard-to-staff” subjects: an analysis of the Florida Critical Teacher Shortage Program’, Calder Center, Working Paper 141, http://www.caldercenter.org/sites/default/files/WP%20141.pdf.

HM Treasury (2015), *Spending Review and Autumn Statement 2015*, https://www.gov.uk/government/publications/spending-review-and-autumn-statement-2015-documents.

Murphy, R., Scott-Clayton, J. and Wyness, G. (2017), ‘Lessons from the end of free college in England’, *Evidence Speaks* report 2(13), Economic Studies at Brookings, https://www.brookings.edu/research/lessons-from-the-end-of-free-college-in-england/.

Office for Budget Responsibility (2015), *Economic and Fiscal Outlook: March 2015*, http://budgetresponsibility.org.uk/docs/dlm_uploads/March2015EFO_18-03-webv1.pdf.

Student Loans Company (2014), ‘Student support for higher education in England, academic year 2014/15 (provisional)’, http://www.slc.co.uk/media/5423/slcsfr052014.pdf.

Wyness, G. (2016), ‘Deserving poor: are higher education bursaries going to the right students?’, *Education Sciences*, 6(1), 5.