

# Estimating the Cost to Government of Providing Undergraduate and Postgraduate Education

IFS Report R105

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ISBN: 978-1-909463-87-5

## Executive summary

In September 2012, significant changes were made to the funding of undergraduate higher education in England, with teaching grants largely replaced by higher tuition fees, funded through a government-backed loan scheme. These changes have been vigorously debated in the years since. Part of the debate has focused on the long-run cost to government of issuing student loans (the so-called RAB charge) and the extent to which the new system will actually save the government money in the long term.

At the same time, concern has been growing regarding socio-economic inequalities in access to *postgraduate* study, where – in stark contrast to undergraduate higher education – fees are unregulated and must be paid up front. There has also, to date, been little government support available to help students with either tuition fees or living costs. This looks set to change, however, with the announcement in Autumn Statement 2014 that the government plans to introduce a new loan scheme for postgraduates on taught masters courses.

The purpose of this report is fourfold:

- First, we revisit estimates of the long-run cost to government of the undergraduate loan scheme and proposed postgraduate loan scheme and we present new analysis of the implications for postgraduates and the government of the combined loan schemes.
- Second, we illustrate the sensitivity of these estimates to three important parameters underlying both loan schemes: the government's cost of borrowing, expected future graduate earnings growth and student loan take-up.
- Third, we illustrate the implications for taxpayers, universities and graduates of some potential reforms to the undergraduate loan scheme that have been proposed.
- Fourth, we compare the illustrative postgraduate loan scheme set out in the Autumn Statement (described in more detail below) with some alternative proposals.

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<sup>1</sup> The authors gratefully acknowledge funding from Universities UK for analysis of reforms to the undergraduate and postgraduate loan schemes, and the Nuffield Foundation, which has provided generous support for ongoing IFS analysis relating to the 2015 general election. The Nuffield Foundation is an endowed charitable trust that aims to improve social well-being in the widest sense. It funds research and innovation in education and social policy and also works to build capacity in education, science and social science research. The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily those of the Foundation. More information is available at <http://www.nuffieldfoundation.org>.

Support from the Economic and Social Research Council (ESRC) through the Centre for the Microeconomic Analysis of Public Policy at IFS (grant reference ES/H021221/1) is also gratefully acknowledged.

### **Analysis of the undergraduate loan system**

- When using the government's preferred discount rate (RPI+2.2%), the Office for Budget Responsibility (OBR)'s forecasts of future earnings growth and assuming that the parameters of the loan system remain unchanged throughout the repayment period, we estimate that graduates will contribute around £23,000 in today's money, on average, to the cost of their undergraduate degree, while the government will contribute around £24,500 per student. The government contribution is split between a £7,000 up-front contribution in the form of teaching and maintenance grants, and an estimated £17,500 contribution in the form of a loan subsidy. This means that, on the above assumptions, for every £1 the government lends to students, the subsidy is 43p, i.e. the RAB charge is 43%.
- There is huge uncertainty in estimating the loan subsidy, however, as it depends on what happens to graduate earnings for many years to come. There has also been a debate about whether the government's preferred discount rate is too high. Its purpose is to provide a way of valuing money today that the government will receive in future. One option would be to set the discount rate at something closer to the government's long-term borrowing rate, which measures the actual cost to the government of borrowing money now in order to lend to students. In fact, the government's borrowing rate has been less than RPI+2.2% for some time, so it may be that the government is undervaluing the future repayments that it will receive.
- We investigate the sensitivity of the RAB charge to these important underlying assumptions. We find that if long-run real earnings growth were to be 0% or 2.2% (rather than the 1.1% forecast by the OBR), then the RAB charge would be 47% or 39% respectively, assuming a discount rate of RPI+2.2%. If we were to instead use a discount rate closer to the government's cost of borrowing (RPI+1.1%), then the equivalent RAB charge figures would be 35% or 25%. This highlights that the assumption about how to value future repayments in the present matters at least as much as future earnings growth in assessing the overall cost of the loan system.

### **Effects of possible reforms to the undergraduate system**

- While acknowledging that the cost of the undergraduate loan system is hugely uncertain, it still seems likely that it will be greater than zero in the absence of further policy reform. We thus explore the implications for graduates and taxpayers of three potential reforms that would reduce the taxpayer contribution relative to the current system: freezing the income thresholds at £21,000 and £41,000 per year in nominal terms for seven years (and uprating them in line with inflation rather than average earnings thereafter); a 'pseudo' graduate tax, in which all graduates make repayments of 9% of income above the lower income threshold for an extended period of 35 years; and a 'total income' system, in which loan repayments would be calculated on the basis of total income rather than income above a threshold. We also assess the implications of Labour's proposal to reduce the tuition fee cap to £6,000 per year, which would reduce the cost to graduates rather than the taxpayer. In all cases, we focus on estimates under the baseline assumptions outlined above, but also illustrate the sensitivity of these conclusions to alternative assumptions.

- The smallest RAB charge (and hence the lowest government contribution) is delivered by the pseudo graduate tax we model, at around 19%. This is achieved by extracting substantially higher repayments from the highest-earning graduates than under the current system: indeed, the top 10% of earners are estimated to repay more than double what they borrow in net-present-value (NPV) terms using the preferred government discount rate of RPI+2.2%. The ability to deliver such reductions in the long-run cost to government therefore depends significantly on the behaviour of these higher-earning graduates: if none of them were to take out loans, then we estimate the RAB charge would increase to 34%. This proposal is also the most sensitive to changes to long-run graduate earnings growth.
- The distributional implications of asking graduates to make repayments on the basis of total income and those of freezing the income thresholds for a time are relatively similar: in both cases, it is lower- to middle-earning graduates whose repayments increase the most. Asking graduates to make repayments on the basis of total income is estimated to deliver a greater reduction in RAB charge (25% versus 30%), however, and is far less sensitive to changes to long-run graduate earnings growth.
- These results highlight the trade-offs in making changes to the loan system: because the current system is strongly progressive, most reforms tend to either hit lower- to middle-income graduates harder or they rely heavily on extracting larger repayments from a small number of high-income graduates, whose behaviour may have a substantial effect on the overall cost of the system. Moreover, our results suggest that the more progressive the system, the more sensitive it is to changes to the underlying parameters (such as earnings growth). These trade-offs will inform the implications of any future changes made to the loan system.

#### ***Labour's proposal***

- Rather than seeking to reduce the taxpayer contribution to undergraduate higher education, Labour's proposal instead focused on reducing the costs to graduates. It pledged to reduce the annual tuition fee cap from £9,000 to £6,000 per year, but to increase teaching grants paid directly to universities to replace the lost fee income, thus keeping university funding unchanged. It also pledged to increase maintenance grants, meaning initial government spending would rise slightly.
- This proposal increases the 'cash in pocket' of students entitled to maintenance grants whilst at university (benefiting roughly the poorest half of students) and also reduces average debt on graduation (from around £44,000 under the current system to around £35,000 under the proposed system, including both tuition fee and maintenance loans) for all students. In the long run, there would be a shift in the burden of costs from graduates to the taxpayer, which arises because some graduates would make repayments on the final £3,000 of loans per year under the current system, while under Labour's proposal the taxpayer would automatically contribute the full amount up front. Under our standard assumptions, we estimate that Labour's proposal would increase the average taxpayer contribution by around £3,000 per student in today's money (including the rise in maintenance grants).

- It is also worth noting that this reform would have significant public finance implications, as teaching and maintenance grants count towards borrowing, whereas the long-run cost associated with student loans does not (until the point at which the loss is realised). That is why Labour announced a £3 billion tax increase alongside its policy on tuition fees.

#### **Analysis of the postgraduate loan scheme**

- We also assess the financial implications of the illustrative postgraduate loan scheme set out in Autumn Statement 2014, in which graduates on taught masters courses under the age of 30 would be able to borrow up to £10,000 towards the cost of their education. They would be charged a real interest rate of 3% on their loans and would be liable for repayments of 9% of income above £21,000 once they graduate (which would be paid at the same time as repayments on their undergraduate loan). We assess this proposal under our standard baseline assumptions regarding the discount rate and future earnings growth, and also illustrate the sensitivity of the system and two alternative systems – one in which repayments would be made on income between £15,000 and £21,000 and another in which repayments would be made on the basis of total income – to these assumptions.
- Our analysis corroborates the government’s own assessment of the likely cost of the proposed postgraduate loan scheme, as we estimate that it will cost the government close to nothing when using the OBR’s estimated long-run real earnings growth rate of 1.1% and the government’s preferred discount rate of RPI+2.2%. In fact, using a lower discount rate, our estimates suggest that the government is likely to make a profit on these loans, with graduates repaying substantially more than they borrow, on average, as a result of the positive real interest rate charged on their loan.
- In contrast to the undergraduate loan system, these estimates are not very sensitive to changes to future earnings growth or assumptions regarding who takes out a loan. This is mainly because the maximum postgraduate loan would be much smaller than the typical undergraduate loan (£10,000 versus £44,000). The overall cost and lack of sensitivity are similar for the alternative loan schemes that we consider too.
- Although we estimate that the long-run cost of the postgraduate loan scheme is likely to be zero, its effectiveness in reducing barriers to postgraduate study remain difficult to predict. If institutions with high market power respond to the increased availability of credit by increasing fees, for example, then the loan scheme may have only a limited effect on the up-front costs to students.

#### **Summary**

- The uncertainty over future student loan repayments means that the debate about whether the government contribution to the cost of higher education is too high will almost certainly continue. However, as our analysis makes clear, whatever the current estimate of the RAB charge, it is based on a large number of assumptions, many of which are likely to change in future (e.g. the rate of graduate earnings growth). It also depends hugely on the way in which we value expected future repayments in the present. It would thus be a mistake to undertake reforms solely on the basis of a single uncertain figure. The loan subsidy is just one part of a package of support that the government offers to students and universities which must be taken into consideration when deciding on the extent to which it wishes to subsidise higher education in England.

## 1. Introduction

In September 2012, significant changes were made to the funding of undergraduate higher education in England, with teaching grants largely replaced by higher tuition fees, funded through a government-backed loan scheme. These changes have been vigorously debated in the years since their introduction, with much of the debate centring on concern over the long-run cost to government of issuing student loans (the so-called RAB charge). Such concerns have been magnified by the government's decision to remove the cap on undergraduate student numbers from Autumn 2015.

At the same time, concern has been growing regarding socio-economic inequalities in access to postgraduate study, where – in stark contrast to undergraduate higher education – fees are unregulated and must be paid up front. There has also, to date, been little government support available to help postgraduate students with either tuition fees or living costs. This looks set to change, however, with the announcement in Autumn Statement 2014 that the government plans to introduce a new loan scheme for postgraduates on taught masters courses, and a further announcement made in Budget 2015 regarding the possibility of income-contingent loans of up to £25,000 for PhD students.

The purpose of this report is fourfold:

- First, we revisit estimates of the long-run cost to government of the existing undergraduate loan scheme and the proposed postgraduate loan scheme and we present new analysis of the implications for postgraduates of the combined loan schemes. In each case, we provide overall estimates and also show how these estimates differ for graduates with different lifetime incomes.
- Second, we illustrate the sensitivity of these estimates to three important parameters underlying both loan schemes: the government's cost of borrowing, expected future graduate earnings growth and student loan take-up.
- Third, we illustrate the implications for taxpayers, universities and graduates of some potential reforms to the undergraduate loan scheme that have been proposed, including Labour's proposal to reduce the tuition fee cap to £6,000 per year, a freezing of the income threshold at £21,000 per year in nominal terms for seven years, and two slightly more radical reforms – moving to a 'pseudo' graduate tax (in which all graduates make repayments for 35 years), and assessing liability for loan repayments on the basis of total income rather than income above the threshold.
- Finally, the postgraduate loan scheme set out by the Chancellor in the Autumn Statement was only illustrative, with the government planning to consult on its design. We additionally estimate the implications of some alternative proposals for postgraduate loan schemes that have been put forward, including one in which repayments would be made on income between £15,000 and £21,000 per year, and another – similar to the complementary undergraduate scheme described above – in which repayments would be made on the basis of total income once income exceeds a given threshold.

This report now proceeds as follows. Chapter 2 sets out our methodology, with a particular focus on the key assumptions underlying our estimates. Chapter 3 discusses the current undergraduate and proposed new postgraduate loan systems, including estimates of their financial implications for taxpayers, universities and graduates overall

and across the distribution of graduate lifetime earnings; it also examines the sensitivity of these estimates to the underlying assumptions. Chapter 4 estimates the implications of various reforms to the undergraduate loan system and Chapter 5 the implications of some alternative postgraduate loan schemes. Chapter 6 concludes.

## 2. Methodology

The funding of undergraduate higher education in England works as follows. Universities receive tuition fees from students and teaching grants from the government via the Higher Education Funding Council for England (HEFCE).<sup>2</sup> Tuition fees are capped at £9,000 per year. Students do not have to pay these fees up front; they are entitled to government-backed loans to cover the full costs of their tuition fees ('fee loans') and a contribution towards their living expenses ('maintenance loans').<sup>3</sup> These loans are not repaid until after graduation, and not until gross annual income rises above £21,000.

The funding of postgraduate higher education in England is somewhat different. In contrast to undergraduate courses, fees must be paid up front and are not capped. There has, to date, been little in the way of government support to help meet the costs of either tuition fees or living expenses.<sup>4</sup> But this looks set to change: in the 2014 Autumn Statement, the Chancellor of the Exchequer announced that a new income-contingent government-backed loan (similar to that available to undergraduates) would be available to help meet the costs of postgraduate study from academic year 2016–17. Specifically, English-domiciled students studying in the UK or EU students studying in England under the age of 30 who are studying full-time or part-time for taught masters courses would be able to borrow up to £10,000 from the UK government. Around 12% of UK-domiciled students graduating from a full-time first degree at an English university go straight on to study for a postgraduate qualification, with around 7% studying for a taught masters degree (HEFCE, 2013).

The aim of this report is to shed light on the financial implications for the government, universities and graduates of: (a) the current undergraduate scheme; (b) the proposed new postgraduate scheme; and (c) various reforms (or alternative arrangements) that have been proposed, in an attempt to reduce their cost to either the government or to graduates. We mainly analyse the implications of the undergraduate and postgraduate schemes separately, but we also provide some analysis illustrating the implications for graduates and the government if we consider the two systems jointly.

### 2.1 Our graduate repayments model

Our analysis is conducted using the IFS's graduate repayments model. The model is described in detail in Crawford, Crawford and Jin (2014), but the essential elements are

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<sup>2</sup> They also receive grants to cover other activities, including research and work to widen participation.

<sup>3</sup> Students from low-income families also receive support in the form of maintenance grants from the government and scholarships, bursaries or fee waivers from their university.

<sup>4</sup> A pilot study by HEFCE is one recent exception ([http://www.hefce.ac.uk/pubs/year/2013/CL\\_182013/](http://www.hefce.ac.uk/pubs/year/2013/CL_182013/)). Career development loans are also available (<https://www.gov.uk/career-development-loans/overview>). These are loans of up to £10,000 from commercial banks on which the government pays interest whilst the individual is studying. These differ from the new loans proposed in the Autumn Statement both because the interest rate charged on the new loans would probably be lower and because individuals are liable for repayments on career development loans as soon as they graduate, regardless of how much they earn. Some universities also offer individual support schemes for their postgraduate students.

as follows. To estimate the long-run cost to the government of providing student loans to a particular cohort of students (whether undergraduate or postgraduate), we need to know:

- the value of the loans issued to each individual in that cohort over the course of their degree (i.e. their stock of debt);
- the gross annual income of each individual to whom a loan was issued; this enables us to calculate: (a) the interest rate that graduates face on their loans each year; (b) the amount that they should repay each year; and hence (c) the amount of outstanding debt at the end of the repayment period.

To do so, we:

- identify a relevant population of students attending a relevant set of institutions;
- calculate the loans to which these students would be entitled;
- simulate the gross annual earnings of a population of graduates over their lifetimes (or, more accurately, the repayment period following graduation), separately for those with undergraduate and postgraduate qualifications;<sup>5</sup>
- link the population of students to the simulated graduate earnings profiles, matching those who report being in postgraduate study six months after leaving an undergraduate course to the postgraduate earnings profiles and matching all others to the undergraduate lifetime earnings profiles;
- calculate interest and loan repayments each year.

In principle, graduates have to make student loan repayments out of unearned income if it exceeds £2,000 per year. In practice, however, only those who submit self-assessment tax returns make repayments on the basis of unearned income. Given that the number of individuals to whom this applies is relatively small, together with the challenges of estimating unearned income, this report focuses on repayments made out of earned income only, which is why we estimate graduate *earnings* profiles rather than graduate *income* profiles.

The resultant data set enables us to estimate statistics such as:

- the value of average annual and total repayments that are made;
- the average length of time over which graduates make repayments;
- the proportion of graduates who are likely to have some of their debt written off;
- the Resource Accounting and Budgeting (RAB) charge.

The RAB charge can be thought of as the long-run cost to the government of issuing student loans. The provision of student loans is costly to the government for two reasons. First, under current policy, not all loans will be repaid, since the debt is written off under certain circumstances (including death, permanent disability, and after a certain period of time). Second, the loans are (on average) made available at subsidised interest rates – in other words, the interest payable by the borrower is generally lower than the interest the

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<sup>5</sup> An implicit assumption underlying our analysis is thus that earnings profiles for graduates in the past are a good guide to the likely path of graduate earnings in the future.

government is assumed to pay on its debt. This means that providing student loans would be costly to the government even if they were all repaid in full.

## 2.2 Important assumptions underlying our analysis

There are a number of important assumptions underlying our analysis which matter hugely for our estimates. These are as follows:

- **Population of interest.** Due to the limitations of the data at our disposal, our estimates for the undergraduate system focus on loans taken out by young English-domiciled students who entered one of the 90 largest higher education institutions in England in 2012 to study full-time for a first degree.<sup>6</sup> This group is likely to hold a majority of the student loans issued by the government to first-year students in 2012, but it is important to acknowledge its limitations.<sup>7</sup> To use our estimates to describe the total cost to the government of providing loans to the entire undergraduate student population, one would have to assume that the average loan subsidy for part-time students, mature students, non-English-domiciled students, English-domiciled students studying in institutions outside England and future cohorts of students was the same as the subsidy that we estimate for young English full-time undergraduates studying in English institutions starting in 2012.

For our postgraduate analysis, our simulated earnings profiles are based on data that do not distinguish between the type of postgraduate qualification that an individual has nor the age at which they studied for it. As such, our profiles of postgraduate earnings do not fully match the group of postgraduates who would be entitled to loans under the Chancellor's proposed new postgraduate loan scheme. Nonetheless, as shown in Figure 0, we find that postgraduates earn around 9% more than undergraduates at both the median and the 95<sup>th</sup> percentile of lifetime earnings, in line with other estimates of the benefits of postgraduate study (see Lindley and Machin (2012)).

In both cases, we assume that all eligible students take out the maximum loan to which they are entitled and that there are no early repayments. In addition to costs per undergraduate and postgraduate student, we also provide some indication of total costs for a cohort of undergraduate or postgraduate students of a given size.

- **Graduate earnings growth.** This will matter for the repayments that graduates are likely to make, because the higher their future income, the higher will be their repayments. Thus, other things being equal, higher earnings growth will increase student loan repayments and lower earnings growth will reduce them. We use the Office for Budget Responsibility (OBR)'s earnings growth forecasts to inform our analysis.<sup>8</sup> In particular, this means an assumption that graduate earnings will grow

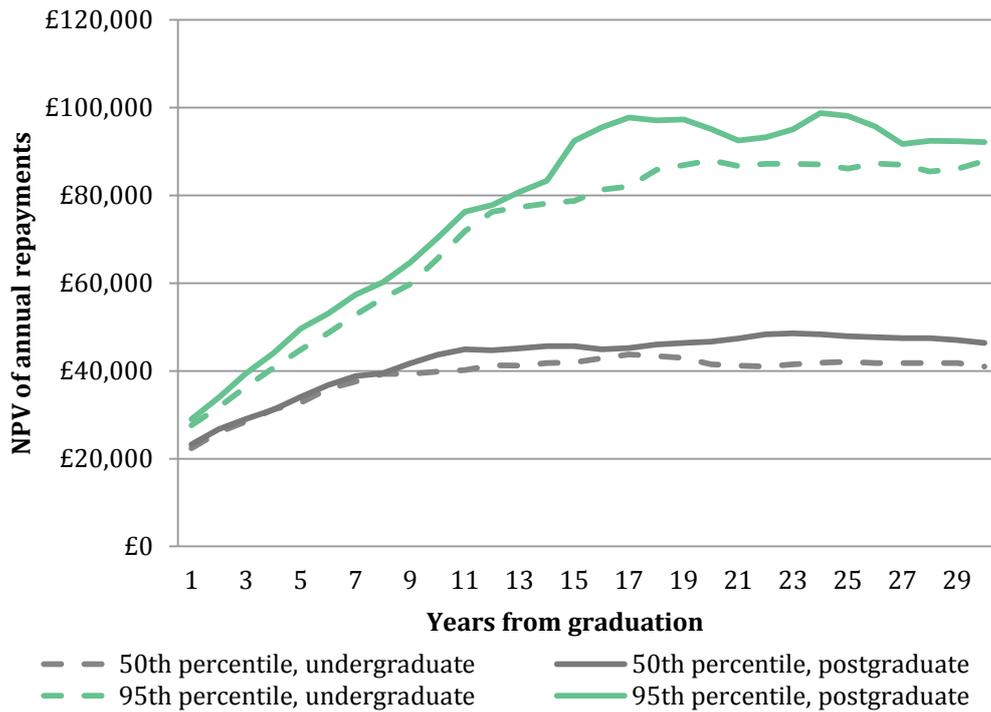
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<sup>6</sup> By young students, we mean students whose eligibility for maintenance grants and loans is means tested on their parents' income rather than their own, which requires the student to be under 25. The 90 largest institutions in England cover 95% of full-time undergraduate students.

<sup>7</sup> In 2012–13, 596,525 UK/EU students started undergraduate courses in the UK. Of these, 28,800 were EU students and 185,240 were UK part-time undergraduates. Part-time and EU students are not eligible for maintenance loans, so they account for a smaller proportion of the total value of loans made. Out of the 382,485 full-time UK undergraduates in UK universities, 304,690 were English-domiciled and in English universities. (Source: tables 2 and 4 of HESA, Statistical First Release 197, [http://www.hesa.ac.uk/index.php?option=com\\_content&task=view&id=3103&Itemid=161](http://www.hesa.ac.uk/index.php?option=com_content&task=view&id=3103&Itemid=161).)

<sup>8</sup> We use the estimates from the 2013 Fiscal Sustainability Report to be consistent with our previous work on this topic (Crawford, Crawford and Jin, 2014). The OBR's long-run estimate of earnings growth remains the

Figure 0. Average undergraduate and postgraduate earnings profiles



Source: Profiles created using data from the British Household Panel Survey, which feed into IFS's graduate repayments model.

by 1.1% above the rate of inflation from 2020 onwards. We illustrate the sensitivity of our estimates to this assumption by calculating the implications for graduate and taxpayer contributions using long-run real earnings growth rates of 0% and 2.2% instead of 1.1%.

- Discount rate.** The government borrows the money that it lends out to students, and repays the money to its creditors over time. Because money now is usually more highly valued than money in the future, a discount rate is typically applied to long-term investments of this kind. A discount rate effectively reduces the value of money coming in (repayments made) in future compared with money coming in now (at the time the investment is made). Future payments to which a discount rate has been applied (i.e. that have been discounted) are said to be in net-present-value (NPV) terms.

For the purposes of its own assessment of the value of future student loan repayments, the government assumes a discount rate of 2.2% above the rate of inflation, as measured by the (now discredited) retail price index (RPI). In calculating estimates of the cost of issuing student loans, this rate is assumed to reflect the long-run cost of government borrowing, i.e. the interest rate the government would have to pay in order to borrow the money to make the investment.

In this report, as in previous IFS reports, our baseline analysis uses the government's preferred discount rate of RPI+2.2%. However, some commentators have argued that this rate is too high, as in practice the government cost of borrowing is lower than

same, and the relatively small changes that have been made to earnings growth forecasts in the short to medium term do not qualitatively affect our results.

this. For example, Shephard (2013) shows that the long-run median of real index-linked bonds between 1999 and 2012 was 1.1% (and some commentators have argued that even this is too conservative). On the other hand, even the government's preferred discount rate is small compared with those used in other countries – Canada, for example, uses a discount rate of 10%<sup>9</sup> – and other similar investment projects in the UK, which are typically discounted at a rate of 3.5% for the first 30 years.

To illustrate the sensitivity of our analysis to assumptions about the discount rate, we present estimates using two different discount rates: 2.2% real, as used by the government, and 1.1% real, as suggested in Shephard (2013).

- **Loan parameters do not change throughout the repayment period.** For our baseline analysis, we assume that the parameters of the loan system do not change throughout the repayment period. In reality, however, the government could, in principle, decide to change one or more of the underlying parameters, even for existing borrowers. The reforms that we analyse provide some indication of the likely consequences of making such changes to the loan system.

### **2.3 The public finance implications of the higher education funding system**

When thinking about the impact of the higher education funding system on the public finances, it is easiest to think about its effect on the profile of public debt over time for a given cohort. There is an initial sharp increase in debt, as the government borrows money to lend to students to cover tuition and maintenance costs whilst they are at university. (It may additionally borrow money to cover teaching and maintenance grants.)

Once students leave university and start making loan repayments, public debt starts to decline. It continues to do so until the end of the repayment period, after which there will be no further graduate repayments. (We are only considering the profile for a single cohort for illustrative purposes.) At this point, there will be no further reduction in the debt accumulated in respect of the loans issued to this cohort. This outstanding debt is what we refer to as the long-run cost of issuing student loans.

The effects on 'borrowing' are complicated by the different accounting treatment of loans and grants. The former do not count towards borrowing (as measured by public sector net borrowing) in the year they are issued (and repayments from graduates do not reduce government borrowing when they are received) since they are counted as 'financial transactions'. Only the debt interest accruing on the loans made, and any write-offs at the end of the repayment period, affect borrowing. The RAB charge (described earlier) is a way of accounting for the expected future write-offs resulting from the student loan book in the Department for Business, Innovation and Skills (BIS)'s departmental accounts. In contrast, spending on grants counts towards government borrowing in the year they are made.

When estimating the total cost of teaching the 2012 cohort of undergraduate students, there are two elements to consider: a certain up-front cost arising from spending on teaching and maintenance grants, which counts towards the deficit in the short run; and an uncertain long-run cost associated with student loans, which only counts towards the

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<sup>9</sup> See [http://www.neweconomics.org/page/-/publications/Economics\\_in\\_policymaking\\_Briefing\\_5.pdf](http://www.neweconomics.org/page/-/publications/Economics_in_policymaking_Briefing_5.pdf).

deficit at the point at which any remaining debt is written off at the end of the repayment period. The extent of the write-off depends on, amongst other things, what happens to earnings growth and to the parameters of the loan system over the next three decades, factors that will not be known for many years to come. It is for estimation of this latter cost that the discount rate is so important, and – as we shall see – makes such a huge difference to our estimates. Thus, while we add together estimates for these two elements of the costs in order to assess the potential magnitude of the total taxpayer contribution to the teaching of undergraduates under a given set of assumptions, it must be borne in mind that the latter is subject to a huge amount of uncertainty.

This description applies to both the current undergraduate funding system and the illustrative postgraduate loan scheme outlined in Autumn Statement 2014 and described in more detail in Section 3.2.

### **3. The current system**

This chapter provides estimates of the financial implications for taxpayers, universities and graduates of:

- the current undergraduate loan system (Section 3.1);
- the illustrative loan scheme for taught masters students set out in the 2014 Autumn Statement (Section 3.2);
- the combination of the current undergraduate loan scheme and the proposed postgraduate loan scheme (Section 3.3);
- the sensitivity of these estimates to the underlying assumptions (Section 3.4).

As described above, our estimates of the cost of the undergraduate loan scheme apply to young full-time undergraduates entering the 90 largest higher education institutions in England and our postgraduate estimates apply to those with any postgraduate qualifications taken at any age (rather than just those under the age of 30 with taught masters degrees). All of our analysis also makes the following important assumptions:

- discount rate of 2.2% above the rate of inflation;
- long-run real graduate earnings growth of 1.1%;
- everybody takes out loans and there is full repayment compliance;
- the existing parameters of the loan system (repayment rate, thresholds and period, and the interest rates charged) are unchanged throughout the repayment period.

#### **3.1 Current undergraduate funding system**

As described above, students are entitled to take out loans to cover the full value of their tuition fees, as well as a contribution towards their living costs (the value of which depends on their family income and whether they study inside or outside London). They do not have to make repayments until after they graduate, and only then once their income rises above a certain threshold. They must continue making repayments until their loan is fully repaid, or until the end of the repayment period, whichever comes first.

The key features of the undergraduate loan system are as follows:

## *The cost to government of providing higher education*

- Students can borrow the full value of their tuition fees each year (up to a cap of £9,000 per year) and a maximum of £7,675 per year in maintenance loans (if they live away from home in London). They face a real interest rate of 3% while they are studying, i.e. their debt increases in value whilst they are at university. This means that a student on a three-year course being charged the maximum tuition fees and receiving the maximum maintenance loan will leave university with debt of £51,500.
- Individuals do not have to make repayments until after they graduate, and only then once their income reaches £21,000 a year (in 2016 prices). Once their income crosses this lower income threshold, they must repay 9% of their income above the threshold, e.g. someone with income of £22,000 per year would have to repay £90 in that year (9% of £1,000), while someone earning £31,000 per year would have to repay £900 in that year (9% of £10,000). This lower income threshold is assumed to increase in line with average earnings from 2016 onwards. (We investigate the implications of relaxing this assumption in Chapter 4.)
- Once they have left university, graduates face a real interest rate of 0% if their income is less than the lower income threshold and 3% if their income is above an upper income threshold (currently set at £41,000, and assumed to increase in line with average earnings). The interest rate charged increases linearly in between (e.g. someone with income of £31,000 faces a real interest rate of 1.5%).
- Any outstanding debt that remains at the end of the repayment period (30 years after graduation) is written off.

As outlined above, we use the government's preferred real discount rate of 2.2%, and discount all future payments (both from and to the government) back to 2012 (the time at which the decision to 'invest' in the 2012 cohort of students was made).

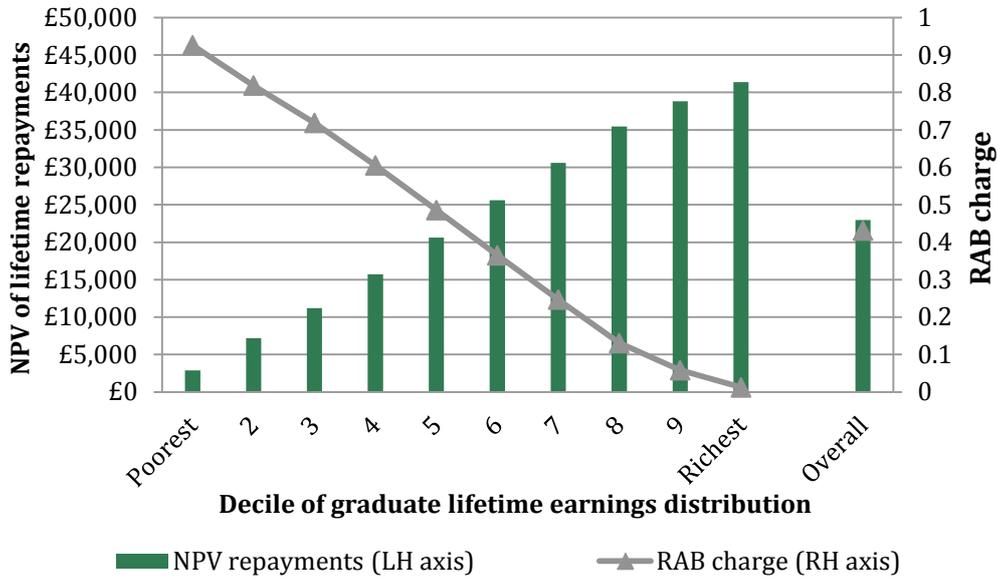
Figures 1 and 2 (and the first column of Table 1) reproduce similar figures in Crawford, Crawford and Jin (2014) and Crawford and Jin (2014).<sup>10</sup> They show that, on the basis of current estimates of future graduate earnings growth, using the government's preferred discount rate, and under the assumption that the existing loan parameters remain in place for the entire repayment period, we estimate that graduates will, on average, repay around £23,000 in NPV terms over their lifetime, over an average of 28 years. But this still means that over 70% of graduates are likely to have some debt written off at the end of the repayment period.

These write-offs, together with the fact that the average interest rate charged to graduates is less than the assumed cost of government borrowing (the discount rate), give a long-run cost to government of issuing student loans of around 43p per £1 (equivalent to a RAB charge of 43%), under the assumptions outlined above. As shown in the first column of Table 1, this means that the loan subsidy is expected to be around £17,400 per student. This is an uncertain cost whose true value will not be known for decades to come. However, we can add our current estimate of this figure to the certain up-front costs of teaching and maintenance grants (of around £7,100 per student) to give an approximate estimate of the total taxpayer contribution to the funding of undergraduate higher education per student. Using the government's preferred discount rate and the OBR's forecasts of future graduate earnings growth, our estimates suggest

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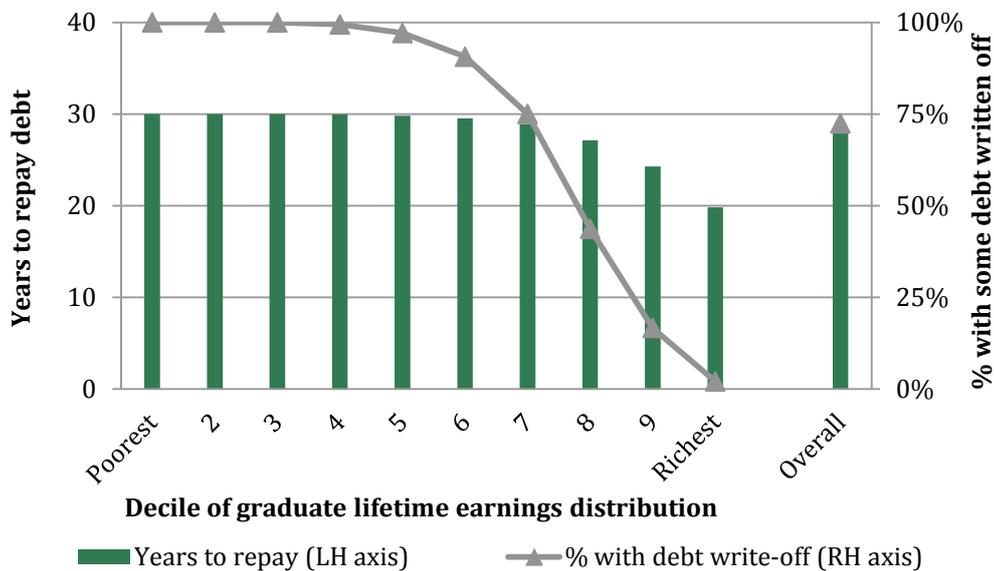
<sup>10</sup> There are small differences in estimates as a result of updated student number estimates. We follow Crawford, Crawford and Jin (2014) in reporting all estimates of the cost of the undergraduate loan system in 2014 prices using a discount rate of RPI+2.2% (with all future payments discounted back to 2012).

Figure 1. Net present value of repayments and RAB charge, by decile of graduate lifetime earnings distribution: default 2012 system (2014 prices)



Note: 'NPV of lifetime repayments' is the value of expected future graduate repayments in today's money (i.e. in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%)). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.  
 Source: Authors' calculations using IFS's graduate repayments model.

Figure 2. Average years to repay and percentage with debt written off, by decile of graduate lifetime earnings distribution: default 2012 system



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

that this figure will be around £24,500 per student for the 2012 cohort. For a cohort of around 300,000 undergraduate students, this amounts to an estimated government contribution of around £7.3 billion per cohort.<sup>11</sup> (Assuming constant cohort size, this can also be thought of as the total cost per year.)

Figures 1 and 2 also show how these figures vary across the distribution of lifetime earnings. We split all graduates into 10 equally-sized groups (deciles) on the basis of their earnings over the 30-year repayment period (we refer to this as 'lifetime' earnings as a shorthand in what follows). The 10% of graduates with the lowest lifetime earnings repay, on average, less than £3,000 in NPV terms; almost none repay their loans in full and so most are liable for repayments for the full 30 years. They have an average RAB charge of 93%. The 10% of graduates with the highest lifetime earnings, on the other hand, are highly likely to repay their loans in full: they repay over £40,000, on average, in NPV terms and only 2% have some debt written off.

The current system of student loans is thus highly progressive: we estimate that the highest-earning graduates are highly likely to repay their loans in full, while the government subsidises an increasing proportion of each £1 that it lends to graduates with lower lifetime earnings. As we will see in Chapter 4, the progressivity of the system has significant implications for the distributional consequences of reforms that might seek to reduce the government subsidy inherent in the student loan system.

### **3.2 Proposed postgraduate loan system**

In the 2014 Autumn Statement, the Chancellor of the Exchequer announced that a new income-contingent government-backed loan would be available to help meet the costs of postgraduate study from academic year 2016–17. Specifically, English-domiciled students studying in the UK or EU students studying in England under the age of 30 who are studying full-time or part-time for taught masters courses would be able to borrow up to £10,000 from the UK government. In this section, we estimate the financial implications of these proposed new loans for graduates and the government using the illustrative loan scheme described in the Autumn Statement documentation.

Specifically, this scheme would operate as follows:

- Individuals would repay 9% of their income above £21,000 (i.e. assuming they had taken out a loan for undergraduate study as well, they would be liable for repayments of 18% of their income above £21,000 until the postgraduate loan was repaid, and 9% thereafter until their undergraduate loan was repaid).
- The £21,000 threshold would be frozen in nominal terms for five years from implementation. (This is similar to one of the potential reforms to the undergraduate system that we consider in Chapter 4. In the absence of such a change being made to the undergraduate system as well, however, it means that the lower income threshold for the undergraduate loan repayment scheme would rise whilst the lower income threshold for the postgraduate scheme would be frozen, thus creating an increasing slice of income on which repayments would be due on postgraduate but not undergraduate loans. The rationale for such a 'wedge' is not clear.)

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<sup>11</sup> Note that we are assuming a cohort size of 300,000 students here, which was the size of the 2012 cohort (the focus of this report) and makes our total public cost figures consistent with those in Crawford, Crawford and Jin (2014). Figures for different cohort sizes can be calculated by multiplying up the per-student figures.

- Individuals incur a real interest rate of 3% (i.e. the interest rate is set at RPI+3%) on their debt, regardless of income. (This is in contrast to the undergraduate loan scheme, in which the interest rate charged rises with income, up to a maximum of RPI+3% when income reaches £41,000 per year.)

We assume that all other features of the repayment system follow the undergraduate loan scheme – i.e. that individuals incur a real interest rate of 3% while they are studying, that the lower income threshold is uprated by average earnings growth after the five-year period in which it is frozen, and that postgraduate debt will be written off after 30 years.

It should be noted that the design of the postgraduate loan scheme is not yet finalised, and indeed will be subject to public consultation (alongside the design of the loans of up to £25,000 for PhD students which were announced in Budget 2015). We illustrate the implications of some alternative postgraduate loan schemes in Chapter 5.

As outlined above, we do not observe detailed information on the type of qualification obtained by the postgraduates in our data, nor the age at which they attained them. It is therefore not possible to separately identify the earnings profiles of those who studied for a taught masters programme under the age of 30 (the group that would be eligible for the proposed new postgraduate loan scheme). We assume that the profiles of all postgraduates in our data are representative of the earnings profiles of eligible students.

It should also be noted that we effectively estimate the potential cost of the loan scheme for the cohort who would be eligible in the first year of its operation (i.e. in 2016), and assume that all of the money is loaned out in that first year. As such, we discount all future payments back to 2016, rather than 2012 (as we did for the undergraduate loan scheme), and give figures for the cost of the postgraduate loan scheme in 2016 prices.

Figures 3 and 4 (and the first column of Table 2) illustrate the net present value of repayments, years to repay, percentage with debt written off and the RAB charge under our baseline assumptions about the discount rate and future earnings growth, with the parameters of the loan scheme as outlined above. Figure 3 shows that, on the basis of our estimates, postgraduates would, on average, repay the full value of their loans in the long run (i.e. the government could expect to recoup 100% of the money it lends out, meaning that the RAB charge is effectively zero, as the Chancellor suggested would be the aim of the scheme).

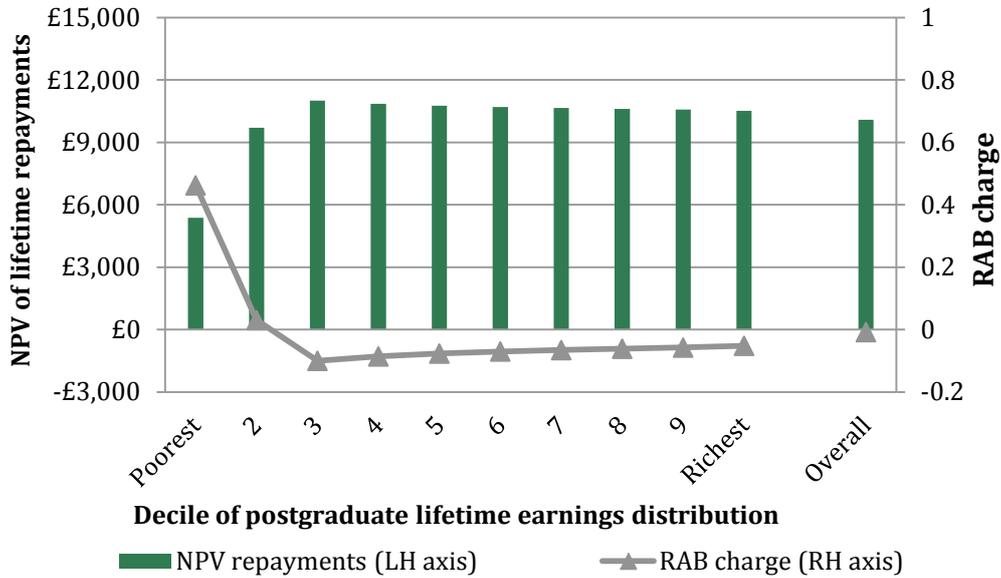
How is it possible for the postgraduate loan scheme to be effectively zero-cost for the government in the long run, when the undergraduate loan scheme incurs a large subsidy? First, and most importantly, postgraduates would borrow considerably less: the maximum postgraduate loan would be £10,000, while the average undergraduate loan is around £44,000. Second, as shown in Figure 0, postgraduates earn more, on average, over their lifetimes than undergraduates, meaning that they repay more quickly. Third, postgraduates would be charged higher interest rates on their loans than most undergraduates under this scheme, which makes a small additional difference.

Figures 3 and 4 also show how repayments and debt write-offs would vary across the distribution of lifetime earnings. It should be noted that these figures focus on postgraduates only, whose earnings are higher, on average, than those of undergraduates: 38% of postgraduates are in the top 30% of graduate lifetime earnings, while just 21% are in the bottom 30%, for example.<sup>12</sup> Figure 3 shows that in all but the

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<sup>12</sup> Profiles created using data from the British Household Panel Survey, which feed into IFS's graduate repayments model.

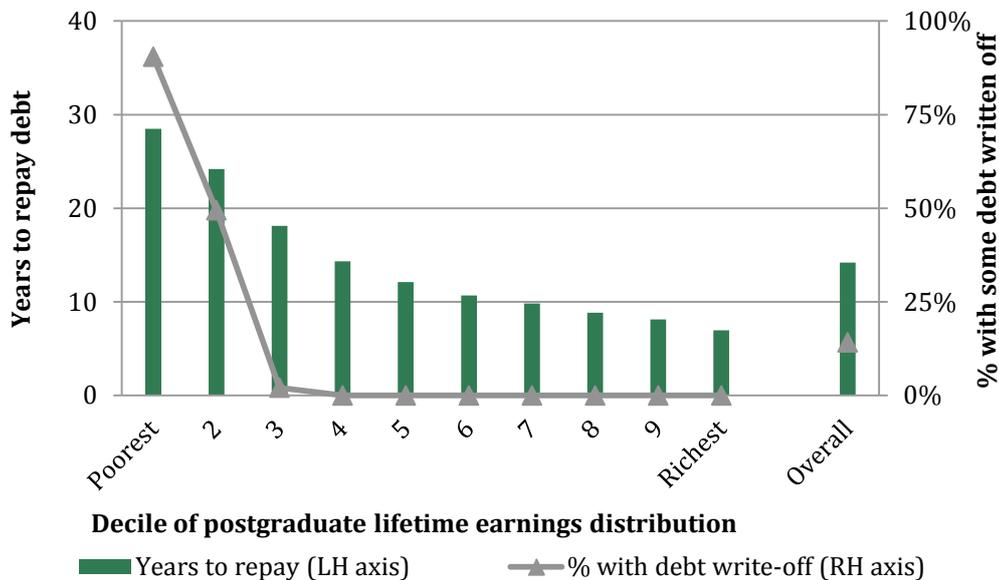
Figure 3. Net present value of repayments and RAB charge, by decile of postgraduate lifetime earnings distribution: Autumn Statement proposal (2016 prices)



Note: 'NPV of lifetime repayments' is the value of expected future postgraduate repayments in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%). Assumes all postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Figure 4. Average years to repay and percentage with debt written off, by decile of postgraduate lifetime earnings distribution: Autumn Statement proposal



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

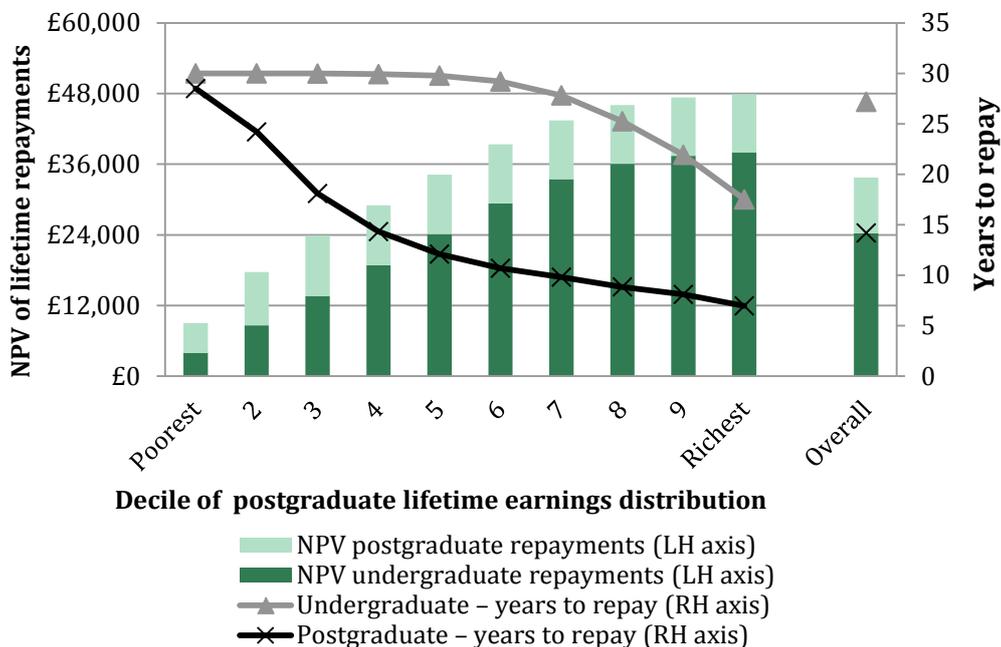
first decile of postgraduate lifetime earnings, loans are close to being repaid in full, on average, with repayments highest in the third decile of lifetime earnings. This relative lack of progressivity is a consequence of the positive real interest rate charged and the fact that repayments are lower than the interest accrued at relatively low earnings. Individuals higher up the earnings distribution also repay more quickly, with those with the highest lifetime earnings repaying in full, on average, within seven years of graduating.

### 3.3 The two systems combined

Of course, the undergraduate and postgraduate loan schemes would not operate in isolation. This section investigates the implications for government and postgraduates of the two systems as a whole, assuming the illustrative postgraduate loan scheme set out in Autumn Statement 2014 would be introduced under the assumptions outlined above.

Figure 5 again focuses on postgraduate students, but under the assumption that they have already been through the undergraduate system in England. It shows how much such individuals would be expected to repay in total, across both the undergraduate and postgraduate loan systems, as well as the number of years over which they would be expected to make repayments to each. It does so both for all postgraduates and across the distribution of lifetime earnings amongst postgraduates.

Figure 5. Net present value of repayments and years to repay debt, by decile of postgraduate lifetime earnings: default undergraduate system and proposed postgraduate system outlined in Autumn Statement (2016 prices)



Note: Figure shows undergraduate and postgraduate repayments for postgraduates only. 'NPV of lifetime repayments' is the value of expected future postgraduate repayments in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%). Assumes all postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

It shows that, under the assumption that all students take out the maximum loans to which they are entitled (and under the usual assumptions regarding discount rates and earnings growth), postgraduates can expect to repay, on average, nearly £34,000 in NPV terms towards their undergraduate and postgraduate loans, over an average of around 27 years. For around half of that time, on average, they will be facing loan repayments worth 18% of their income above £21,000.

Because almost everyone (except those in the lowest decile of lifetime earnings) repays the full value of their postgraduate loans, the distributional consequences of the combined systems closely follow those of the undergraduate system alone. Postgraduates in the bottom decile of lifetime earnings repay both loans for a period of close to 30 years, on average; thus they face an 18% repayment rate throughout much of their working lives. Postgraduates in the highest decile of lifetime earnings, on the other hand, would repay 18% of income above £21,000 for only around the first seven years after graduation, with a further 10 years, on average, during which they would make repayments of 9% towards their undergraduate loan.

Column 1 of Table 3 summarises the implications for government. The figures are essentially a weighted average of the figures for the undergraduate and postgraduate loan schemes. The Autumn Statement documentation suggested that around 92,000<sup>13</sup> individuals would be eligible for postgraduate loans, around one-third the number of undergraduates who take out loans. This, combined with the fact that the maximum postgraduate loan is around one-quarter the size of the average undergraduate loan, means that, looking across both undergraduate and postgraduate schemes, we estimate that, for every £1 loaned out, the government subsidy amounts to around 40p. And the overall cost to government in the long run (assuming 300,000 undergraduates and 92,000 postgraduates) is estimated to be around £7.3 billion per cohort (effectively the same as the undergraduate system alone, as the postgraduate loan scheme is estimated to cost the government approximately nothing).

### **3.4 Sensitivity analysis**

As we have emphasised, the above estimates apply to a particular population, under a set of assumptions about future earnings growth, using the government's preferred discount rate, and assuming that the parameters of the loan system do not change throughout the repayment period. These are, of course, all strong assumptions. This section therefore investigates the sensitivity of these baseline estimates to some of the key assumptions underlying our analysis.

Of particular interest is how our estimates would change if we were to use a discount rate closer to the government's actual cost of borrowing at the time the first loans were made to students starting university in 2012. For both our baseline discount rate (of RPI+2.2%) and our alternative discount rate (of RPI+1.1%), we then explore sensitivity to earnings growth and loan take-up, by assuming that:

- long-run real earnings growth turns out to be higher or lower than expected by the OBR; in particular, we consider long-run real earnings growth rates of 0% and 2.2%;

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<sup>13</sup> Based on authors' calculations from the Autumn Statement 2014 policy costings document (HM Government, 2014). We assume 100% uptake in our analysis, though note that our conclusions are highly insensitive to this assumption. The government estimates 56% of the full possible value of loans (i.e. 56% of £920 million) will be borrowed. Using this figure would lower our estimated up-front cost to the government, but would have a very small impact on the long-run taxpayer costs and the estimated RAB charge.

- the highest-earning 10% of graduates did not take out a loan.

Table 1 shows how these assumptions affect the current undergraduate loan scheme, Table 2 the postgraduate loan scheme proposed in Autumn Statement 2014, and Table 3 the combination of these schemes.

It should be noted that initial government spending, university funding and student funding are the same across all scenarios in which all students take out a loan. For the undergraduate analysis (Table 1) and the combined analysis (Table 3), they appear slightly higher when we use a lower discount rate, because government spending beyond 2012 is discounted back to 2012. As noted above, however, the discount rate affects the way in which we value future payments in the present, rather than the total amount of future payments made; hence actual funding is the same.

The picture is somewhat different when the highest-earning 10% of graduates opt out of the loan system. In this scenario, university funding remains unchanged, because students who opt out of the loan system must still pay tuition fees to the university. Total up-front government spending goes down because the government now pays out less in tuition fee and maintenance loans overall. Student funding goes down because of the reduction in maintenance loans. Overall funding to support the teaching of undergraduates (from both students and the government) therefore falls by the value of the maintenance loans previously taken by students who now opt out of the loan system. (Students and their parents are still likely to be making equivalent private contributions to living costs; but these do not feature in our table.)

Focusing first on the undergraduate loan system (Table 1), we can compare the estimated contributions to the cost of higher education from graduates and the taxpayer under different discount rate assumptions: when using a discount rate of RPI+2.2% – our baseline assumption – (first four columns) and when using a lower discount rate of RPI+1.1% (second four columns).

We start by assuming that all graduates take out the maximum loan to which they are entitled and that real earnings grow by 1.1% in the long run. It is clear that the assumed discount rate makes a substantial difference to our estimates. While the government loan subsidy is estimated to be £17,400, on average, per student using our baseline assumptions (and the RAB charge is estimated to be 43%), these figures fall to £12,334, on average, per student – with a RAB charge of 30% – if we instead use a discount rate of RPI+1.1%. This change arises because we now value repayments made many years into the future much more highly in the present. An alternative way to think about this is to consider that the interest rate subsidy – the extent to which the government lends money to students at less than its assumed cost of borrowing, one of the two components of the RAB charge – falls, because many fewer students face an interest rate of less than RPI+1.1% than face one of less than RPI+2.2% (as was the case under the baseline scenario).

Conditional on discount rate, we can also compare the variation in the loan subsidy (and hence the RAB charge) that arises as a result of different graduate earnings growth rates and under different assumptions regarding loan take-up. There are two points to make here: first, the variation that results from these uncertainties is less than the variation that arises from changing the assumed government cost of borrowing (and hence the discount rate). For example, assuming a discount rate of RPI+2.2%, the RAB charge varies from 39% to 47% with real earnings growth of 2.2% and 0% respectively (while it changed by more than 10 percentage points with a 1.1 percentage point change in the

assumed discount rate). Second, the impact of the top 10% of earners not taking out a loan is greater when we assume a lower discount rate. This is because the high future repayments of these individuals are valued more highly when we use a lower discount rate; thus, removing them leaves a bigger hole than when they are valued less highly. In fact, relative to the default 2012 system with a discount rate of RPI+1.1%, the total taxpayer cost is estimated to be higher when the top 10% of earners opt out of the loan system (£6.1 billion versus £5.9 billion), while it is estimated to be marginally lower when we use the standard discount rate of RPI+2.2% (£7.326 billion versus £7.342 billion).

All of these scenarios imply a significant government subsidy for the teaching of undergraduates, but the size of the subsidy differs substantially depending on what may happen to future graduate earnings growth or on how much we value expected future repayments in the present. Of course, the true subsidy will not be known for decades to come, because it relies on realised graduate earnings many years into the future. And the government could still act to further reduce the risk of low repayments by changing some of the underlying parameters of the loan system, even for current borrowers. We explore the implications of a range of such changes in Chapter 4.

Table 2 shows that using a lower discount rate makes approximately the same difference to the estimated RAB charge for postgraduate loans as was the case for the estimated RAB charge for undergraduate loans: using a discount rate of RPI+1.1% as opposed to RPI+2.2% reduces the RAB charge by around 10 percentage points in both cases. Thus, while the expected cost to government is close to zero when using a discount rate of RPI+2.2%, a significant profit on postgraduate loans would be expected if a discount rate of RPI+1.1% were used instead: Table 2 shows that the value of repayments in 2016 would be expected to be around £1,200 higher, on average, than the amount the government lends out to students, under the assumptions that long-run real earnings growth is 1.1% and that all eligible postgraduates take out the full £10,000 loan.

In terms of susceptibility to changes in graduate earnings growth or loan take-up, Table 2 shows that the proposed postgraduate loan scheme is much less sensitive to such uncertainties than the undergraduate loan system, essentially because the value of the loan is much lower. For those students who earn enough to repay the loan in full, they are likely to do so well within the 30-year repayment period; hence changes to earnings growth (or which graduates take out a loan) do not matter so much.

Table 3 provides an assessment of the sensitivity of the combined undergraduate and postgraduate systems to the assumed discount rate, future real earnings growth and the type of graduates who take out a loan. As discussed above, because the postgraduate loan scheme essentially operates at zero cost to the government in the long run under our baseline assumptions – and is relatively impervious to changes in future earnings growth and loan take-up – the implications for graduates and taxpayers looking across the combined undergraduate and postgraduate loan schemes (in Table 3) are very similar to the picture for the undergraduate system alone (shown in Table 1).

Table 1. Money flows per student per undergraduate degree (in 2014 prices)

	Baseline discount rate: RPI+2.2%				Alternative discount rate: RPI+1.1%			
	Default (1.1% real earnings growth, everyone takes out a loan)	0% real earnings growth	2.2% real earnings growth	Top 10% earners don't take out loans	1.1% real discount rate (1.1% real earnings growth, everyone takes out a loan)	0% real earnings growth	2.2% real earnings growth	Top 10% earners don't take out loans
RAB charge (%)	43.1	46.8	39.0	48.0	30.2	34.9	25.1	35.8
% of graduates with write-offs	72.5	79.3	64.3	72.3	72.4	79.3	64.2	72.2
<b>Initial government spending</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£43,230</b>	<b>£47,947</b>	<b>£47,947</b>	<b>£47,947</b>	<b>£43,711</b>
<b>Initial student spending</b>	<b>£0</b>	<b>£0</b>	<b>£0</b>	<b>£2,841</b>	<b>£0</b>	<b>£0</b>	<b>£0</b>	<b>£2,873</b>
Taxpayer contribution (as a % of initial spending)	£24,472 (52%)	£25,952 (55%)	£22,808 (48%)	£24,421 (53%)	£19,501 (41%)	£21,389 (45%)	£17,420 (36%)	£20,251 (43%)
<i>Of which:</i> Upfront grants	£7,072	£7,072	£7,072	£7,072	£7,167	£7,167	£7,167	£7,167
Loan subsidy	£17,400	£18,880	£15,736	£17,349	£12,334	£14,222	£10,253	£13,084
Graduate contribution	£22,945	£21,466	£24,609	£18,809	£28,447	£26,558	£30,527	£23,460
<b>University funding</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,331</b>	<b>£28,331</b>	<b>£28,331</b>	<b>£28,331</b>
<i>Of which:</i> Teaching grants	£2,085	£2,085	£2,085	£2,085	£2,120	£2,120	£2,120	£2,120
Net fees	£27,355	£27,355	£27,355	£27,355	£27,638	£27,638	£27,638	£27,638
Bursaries	-£1,335	-£1,335	-£1,335	-£1,335	-£1,427	-£1,427	-£1,427	-£1,427
<b>Student Funding</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£17,966</b>	<b>£19,616</b>	<b>£19,616</b>	<b>£19,616</b>	<b>£18,253</b>
<i>Of which:</i> Maintenance Loans	£12,990	£12,990	£12,990	£11,644	£13,142	£13,142	£13,142	£11,778
Maintenance Grants	£4,987	£4,987	£4,987	£4,987	£5,047	£5,047	£5,047	£5,047
Bursaries	£1,335	£1,335	£1,335	£1,335	£1,427	£1,427	£1,427	£1,427
<i>Per cohort of 300,000 students</i>								
Total up-front govt spending	£14,225m	£14,225m	£14,225m	£12,969m	£14,384m	£14,384m	£14,384m	£13,113m
Total long-run contribution	£7,342m	£7,786m	£6,842m	£7,326m	£5,850m	£6,417m	£5,226m	£6,075m

Note to Table 1: Teaching grants, bursaries, fees, loans and grants are all affected by the discount rate. Consequently, student and university funding appear to have increased relative to the default scenario when we reduce the discount rate, when in fact subsequent years of funding are simply being discounted at a lower rate. All figures are given in 2014 prices, discounted using a discount rate equal to the government’s assumed cost of borrowing (assumed to be either RPI+1.1% or RPI+2.2%). Assumes graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Table 2. Average taxpayer and graduate contributions per postgraduate student per postgraduate degree (in 2016 prices)

	Baseline discount rate: RPI+2.2%				Alternative discount rate: RPI+1.1%			
	Default (1.1% real earnings growth, everyone takes out a loan)	0% real earnings growth	2.2% real earnings growth	Top 10% earners don’t take out loans	1.1% real discount rate (1.1% real earnings growth, everyone takes out a loan)	0% real earnings growth	2.2% real earnings growth	Top 10% earners don’t take out loans
RAB charge (%)	-0.8	0.1	-1.1	-0.6	-12.0	-11.1	-12.1	-12.2
% of graduates with write-offs	14.2	16.4	12.6	14.2	14.2	16.4	12.6	14.2
<b>Initial government spending</b>	<b>£10,000</b>	<b>£10,000</b>	<b>£10,000</b>	<b>£9,000</b>	<b>£10,000</b>	<b>£10,000</b>	<b>£10,000</b>	<b>£9,000</b>
Taxpayer contribution	-£79	£11	-£111	-£51	-£1,198	-£1,114	-£1,210	-£1,094
Postgraduate contribution	£10,079	£9,989	£10,111	£9,051	£11,198	£11,114	£11,210	£10,094
<i>Per cohort of 92,000 students</i>								
Total up-front govt spending	£920m	£920m	£920m	£828m	£920m	£920m	£920m	£828m
Total long-run contribution	-£7.3m	£1.0m	-£10.2m	-£4.7m	-£110.2m	-£102.5m	-£111.3m	-£100.7m

Note: All figures are given in 2016 prices, discounted using a discount rate equal to the government’s assumed cost of borrowing (assumed to be either RPI+1.1% or RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Table 3. Average taxpayer and graduate contributions per postgraduate student for undergraduate and postgraduate degrees combined (in 2014 prices)

	Baseline discount rate: RPI+2.2%				Alternative discount rate: RPI+1.1%			
	Default (1.1% real earnings growth, everyone takes out a loan)	0% real earnings growth	2.2% real earnings growth	Top 10% earners don't take out loans	1.1% real discount rate (1.1% real earnings growth, everyone takes out a loan)	0% real earnings growth	2.2% real earnings growth	Top 10% earners don't take out loans
RAB charge (%)	40.2	43.7	36.3	44.7	27.5	31.8	22.7	32.6
% of graduates with write-offs	72.5	79.3	64.3	72.3	72.4	79.3	64.2	72.2
<b>Initial government spending</b>	£50,292	£50,292	£50,292	£45,816	£50,821	£50,821	£50,821	£46,297
Taxpayer contribution	£24,449	£25,955	£22,776	£24,406	£19,157	£21,069	£17,072	£19,937
Graduate contribution	£25,842	£24,337	£27,515	£21,410	£31,665	£29,752	£33,749	£26,361
<i>Per cohort of 300,000 students</i>								
Total up-front govt spending	£15,087m	£15,087m	£15,087m	£13,745m	£15,246m	£15,246m	£15,246m	£13,889m
Total long-run contribution	£7,335m	£7,787m	£6,833m	£7,322m	£5,747m	£6,321m	£5,122m	£5,981m

Note: All figures are given in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be either RPI+1.1% or RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

## 4. Reforms to the undergraduate loan system

As we have seen, on the basis of current estimates of graduate earnings growth, the existing parameters of the loan system and following the Treasury's advice regarding discount rates, we estimate that the government is still expected to make a significant financial contribution to the cost of teaching undergraduates.

One concern that has been expressed repeatedly over the current undergraduate funding system is whether the estimated long-run cost to the government of issuing student loans (the so-called RAB charge) is too high. These concerns have escalated following the government's decision to remove the cap on undergraduate student numbers (which will be unlimited as of Autumn 2015).

There are many reasons why the government might want to increase the numbers of students going to university, not least because higher education (HE) has been found to confer significant public benefits (e.g. BIS, 2013; Brennan, Durazzi and Séné, 2013; Conlon and Patrignani, 2011; OECD, 2014), as well as significant private benefits. Any decision over the expansion of HE would need to weigh these public benefits against the costs that would be incurred. Considering the HE funding system in isolation, it is clear that the cost would increase (overall if not per student) as the numbers going to university rise. That increase in cost would need to be weighed against any increase in taxes and reduction in benefits that might result from the higher earnings graduates can expect to receive compared with those who do not go to university; plus any other benefits that may arise, such as lower spending on healthcare or the criminal justice system.

However, while a large subsidy inherent in the student loan system does not in itself mean that the funding system is too expensive – or that the government would lose out financially from expanding HE – now seems a particularly important time to consider what could be done to reduce the subsidy, if it were felt to be too high.

In this chapter, we analyse four proposals that have been put forward by external parties (political parties and other organisations interested in the HE funding system) that aim to reduce the cost of the funding system to either the government or graduates:

### *Proposals that aim to reduce the cost to government*

- Freezing the income thresholds in nominal terms for seven years (Section 4.1).
- Changing the system so that graduates are liable for repayments on all income once their income crosses a threshold (rather than just on the income above that threshold) (Section 4.2).
- A 'pseudo' graduate tax, in which graduates make repayments for a full 35-year repayment period (rather than just until they repay their loans in full) (Section 4.3).<sup>14</sup>

### *Proposals that aim to reduce the cost to graduates*

- The Labour Party recently announced its own proposal for reforming the undergraduate HE finance system were it to be elected in the May 2015 general

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<sup>14</sup> Crawford, Crawford and Jin (2014) explored other variants, including changes to the repayment rate, period and thresholds, and maximum interest rate charged.

election. It has pledged to reduce the tuition fee cap from £9,000 per year to £6,000 per year, and to partially pay for this by charging higher-income graduates a higher interest rate on their loans. In addition, the party has pledged to increase maintenance grants. We explore the implications of this reform in Section 4.4.

In each case, we compare the proposed new system with the 'default' 2012 system and provide details of the financial implications for graduates, universities and the taxpayer (Section 4.5). For graduates, we estimate the NPV of graduate repayments, the proportion of individuals with debt written off at the end of the repayment period and the average number of years taken to repay, including how these statistics vary across the distribution of graduate lifetime earnings. For universities, we investigate any change in funding that may result from these proposals. For taxpayers, we estimate the RAB charge, as well as the total taxpayer contribution to the funding of HE. We end the chapter with a discussion of the sensitivity of these estimates to assumptions about the discount rate, graduate earnings growth and student loan uptake (Section 4.6).

## 4.1 Freezing the repayment thresholds

The key features of this system are as follows:

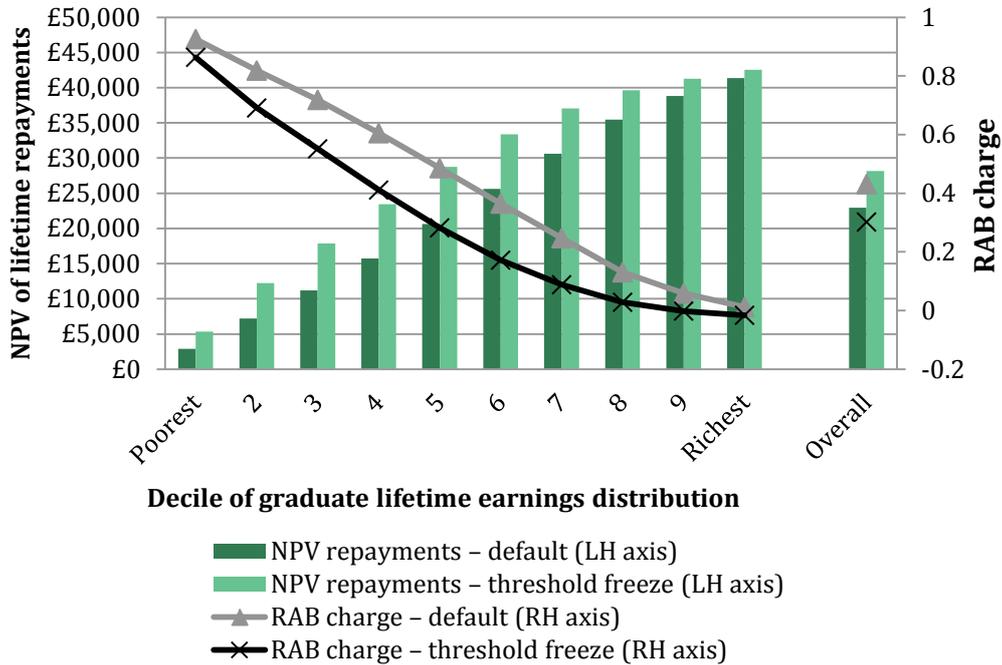
- The lower and upper income thresholds are frozen in nominal terms for a period, meaning their real value declines with inflation. In the scenario we model, they are frozen until the point at which the lower income threshold meets the real value of the lower income threshold under the previous (2011) system, which was £15,000 in 2011. Assuming this threshold would have been uprated in line with inflation (RPI), it would have risen to £21,000 in nominal terms in 2023. We therefore freeze both the lower and upper income thresholds for a period of seven years (as the first year of repayments for the 2012 cohort is 2016). After seven years, the thresholds are assumed to rise in line with inflation (RPI) rather than average earnings growth.
- All else is the same as the default system.

Figures 7 and 8 illustrate the overall and distributional implications of this policy, and how they compare with the default system (introduced in 2012). In each figure, the dark green bars and grey lines represent the estimated position under the existing system, and the light green bars and black lines represent the estimated position after the reform.

Using the Treasury's preferred discount rate and the OBR's forecasts for graduate earnings growth, and assuming the loan system remains otherwise unchanged throughout the repayment period, our estimates suggest that graduate repayments would increase by around £5,000, on average, in NPV terms were this proposal to be enacted, and the RAB charge (the long-run cost to government of issuing student loans) would fall to around 30% (compared with around 43% under the existing system). Moreover, we estimate that around 62% of graduates would not repay their loans in full (compared with 72% under the 2012 system). From a public finance perspective, this reform would increase the rate at which public debt declines over time, as the value of the repayments collected each year would rise. There would also be less outstanding debt to write off at the end of the repayment period; thus future borrowing would rise by less than under the 2012 system.

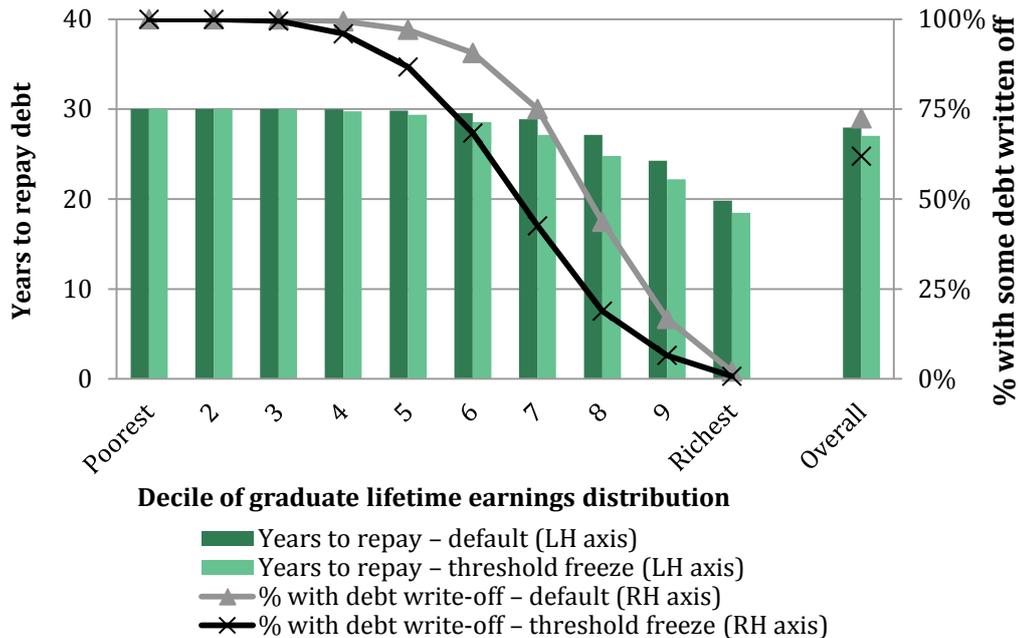
Middle-income graduates would be hit hardest by this reform. Graduates on low incomes (between the old and new lower income thresholds) who would previously not have been liable for repayments will now have to repay 9% of their income above the new lower

Figure 7. Net present value of repayments and RAB charge, by decile of graduate lifetime earnings distribution: default 2012 system versus threshold freeze



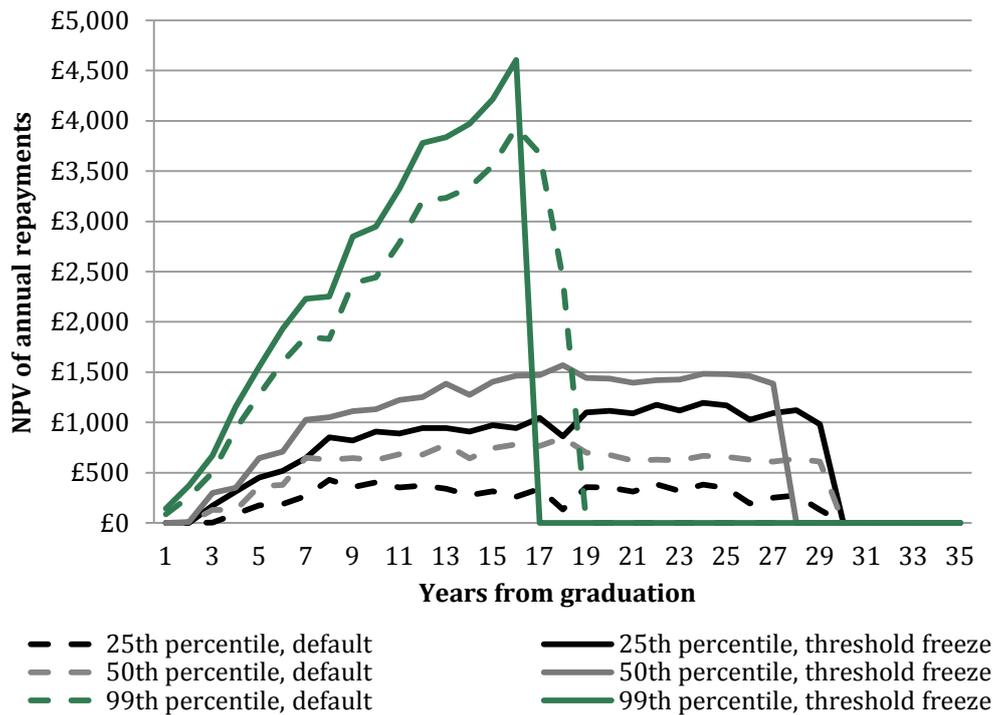
Note: 'NPV of lifetime repayments' is the value of expected future graduate repayments in today's money (i.e. in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%)). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.  
Source: Authors' calculations using IFS's graduate repayments model.

Figure 8. Average years to repay and percentage with debt written off, by decile of graduate lifetime earnings distribution: default 2012 system versus threshold freeze



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

Figure 8a. Net present value of annual repayments: default versus threshold freeze



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

threshold, but this is still a relatively small amount. Graduates earning above £21,000 will have to make repayments on an increasingly large slice of their income, and more higher-income graduates will now face a higher interest rate, as the threshold above which the highest interest rate (of RPI+3%) is charged falls. Higher-income graduates are also affected by these reforms, but for a shorter period, as they repay their loans more quickly.

Figure 8a provides further insight into these distributional implications, showing expected average annual repayments for individuals at different parts of the earnings distribution: specifically, for individuals earning at the median of graduate lifetime earnings, as well as at the 25<sup>th</sup> and 99<sup>th</sup> percentiles. The dotted lines represent the profile of annual repayments under the default 2012 system, while the solid lines represent the profile under the proposed reform, in which the income thresholds are frozen in nominal terms for seven years and then increase in line with inflation rather than earnings.

The increase in total lifetime repayments is represented by the difference between the area under the solid line and the area under the dashed lines. All graduates experience an increase in annual repayments under the proposed new system, but the absolute and relative increase compared to the default system is largest for lower-earners. For example, 28 years after graduating from university, we estimate that those earning at the 25<sup>th</sup> percentile of graduate lifetime earnings would be making annual repayments of over £1,100 in NPV terms, on average, under the proposed new system, about four times as much as they would be paying under the default 2012 system.

Looking across the whole repayment period, Figures 7 and 8 show that graduates in the seventh decile of lifetime earnings would, on average, make repayments for an additional two years under the proposed new system, with total repayments increasing by around

£6,400 in NPV terms; we also estimate that the percentage of graduates in this decile who repay their loan in full would more than double, from around 25% to nearly 60%.

## 4.2 Repayments liable on total income once above threshold

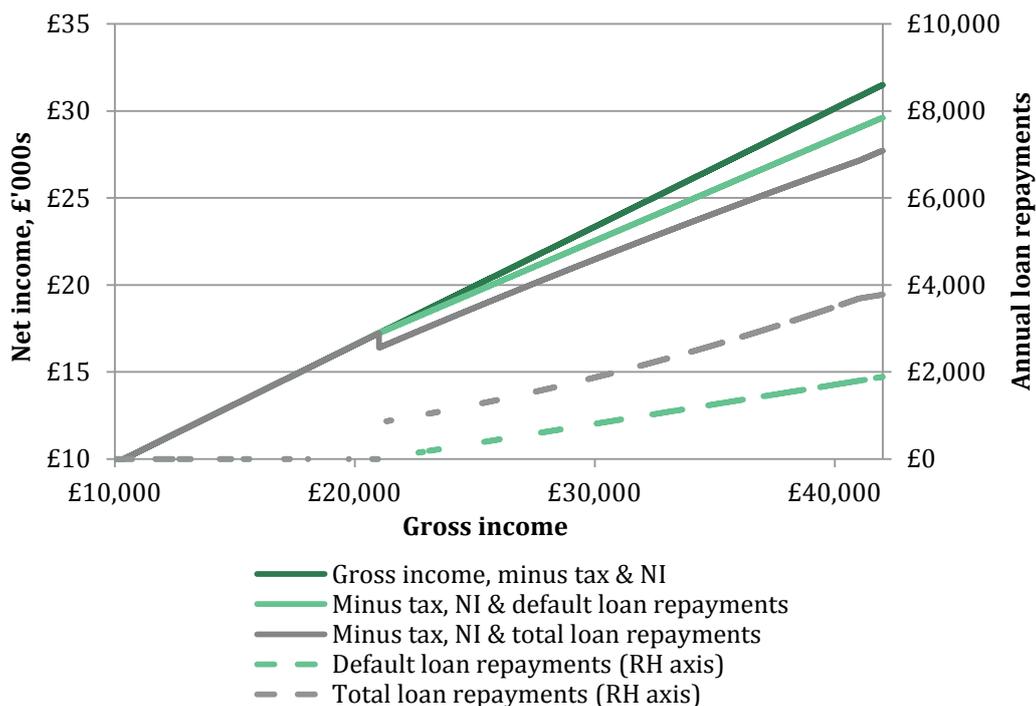
The key features of this system are as follows:

- Individuals now pay a percentage of total income if they earn above the lower income threshold. The percentage increases on a sliding scale from 4% of all income at the lower income threshold to 9% of all income at and above the upper income threshold. (These thresholds are uprated in line with average earnings, as planned under the 2012 system.) This is similar in some respects to the HELP system of undergraduate and postgraduate loans put forward by University Alliance (2014).
- All else is the same as the default system.

Figure 9 illustrates the relationship between gross income and net income (left-hand axis) and loan repayments (right-hand axis) under the default and potential new systems. The dark green line shows income after income tax and National Insurance (NI) contributions have been paid. The light green line shows income after tax, NI and student loan repayments under the default 2012 system have been made, and the light green dotted line illustrates the amount of loan repayments that are made for a given level of gross income, rising at a rate of 9% on income above the lower income threshold (£21,000).

The grey line shows income after tax, NI and student loan repayments under the 2012 system have been paid under the proposed new system, and the dotted grey line illustrates loan repayments under the new system, jumping up at £21,000 and rising at a more rapid rate as income increases. As Figure 9 clearly shows, repaying a percentage of total income once income rises above a threshold introduces a 'cliff edge' at the lower

Figure 9. Net income and student loan repayments under different repayment schedules



income threshold of £21,000. This is because if an individual earns £20,999, they make no student loan repayments, whereas if their income rises by £1 to £21,000, they would now be liable for student loan repayments of £840 (4% of £21,000). (In comparison, under the current system, individuals would make no student loan repayments if their income was £21,000, they would repay 9p (9% of £1) if they had income of £21,001, they would repay 18p (9% of £2) if they had income of £21,002, and so on.)

There is a growing academic literature on the extent to which people respond to such 'cliff edges' by 'bunching' below the threshold: in this case, organising their affairs to ensure that their income does not rise above £21,000 per year. A paper relating to the income-contingent student loan repayment system in Australia (Chapman and Leigh, 2008) – in which repayments are due on the basis of total income once income rises above a threshold – finds some evidence of bunching below their threshold, but that the economic impact of that bunching was very small (although it should be noted that the discontinuity in income induced by their system occurs at a lower income level and is somewhat smaller than the 'cliff edge' that would be introduced here).

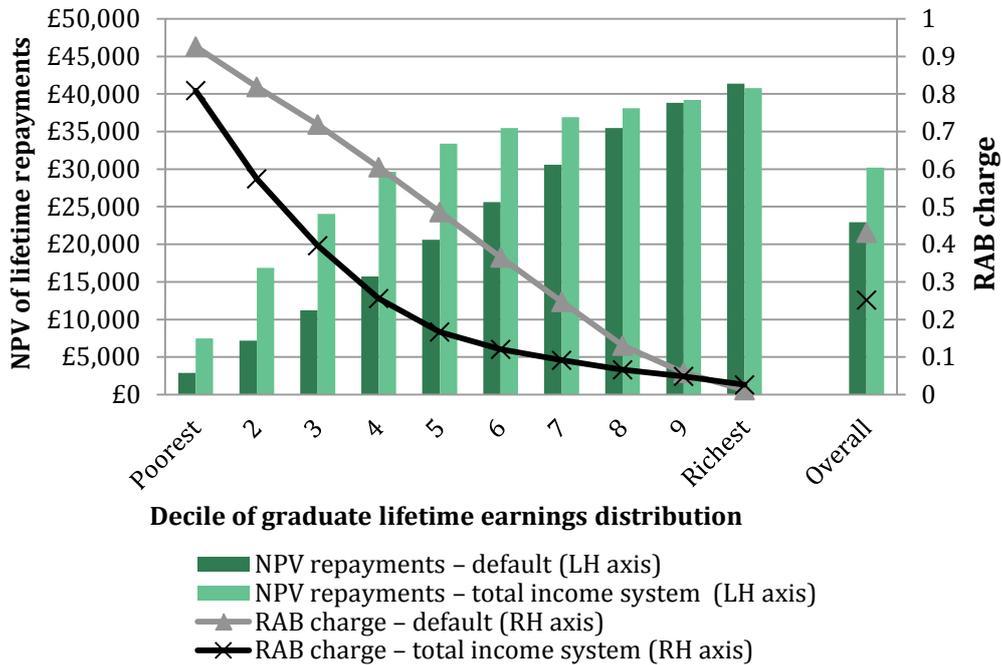
Figures 10 and 11 illustrate the financial implications of the total income proposal for graduates and the government. Average repayments would increase by more under this system than under the proposal to freeze and then uprate the income thresholds more slowly (described in Section 4.1), with NPV repayments increasing by over £7,200, on average, compared with the 2012 system, and the RAB charge almost halving from 43% to 25%. The percentage of graduates who would not repay their loans in full is also estimated to fall dramatically, approximately halving from 72% under the default system to around 36% under the proposed new system.

Figures 10 and 11 illustrate that it is again lower- to middle-income graduates who are estimated to make the largest additional repayments. In contrast to the threshold freeze proposal in Section 4.1, the highest-income graduates would actually see their repayments fall in this scenario, as they would repay their loans more quickly, and hence would be less likely to face higher interest rates, and for a shorter time. In fact, the additional repayments made by the 10% of graduates with the lowest incomes would be higher, on average, than those made by the highest-earning 30% of graduates.

This point is illustrated more clearly in Figure 11a, which shows the different profiles of average annual repayments for individuals at different points of the graduate lifetime earnings distribution under the 2012 system (dashed lines) and the proposed new system in which repayments would be due at a lower rate on all income once income rises about the lower income threshold. It clearly shows the more rapid profile of repayments for those at the top of the earnings distribution (and indeed for those in the middle). For those at the 25<sup>th</sup> percentile, by contrast, average annual repayments increase, but not enough to reduce the time over which repayments are paid; their total repayments would thus increase dramatically under this proposal.

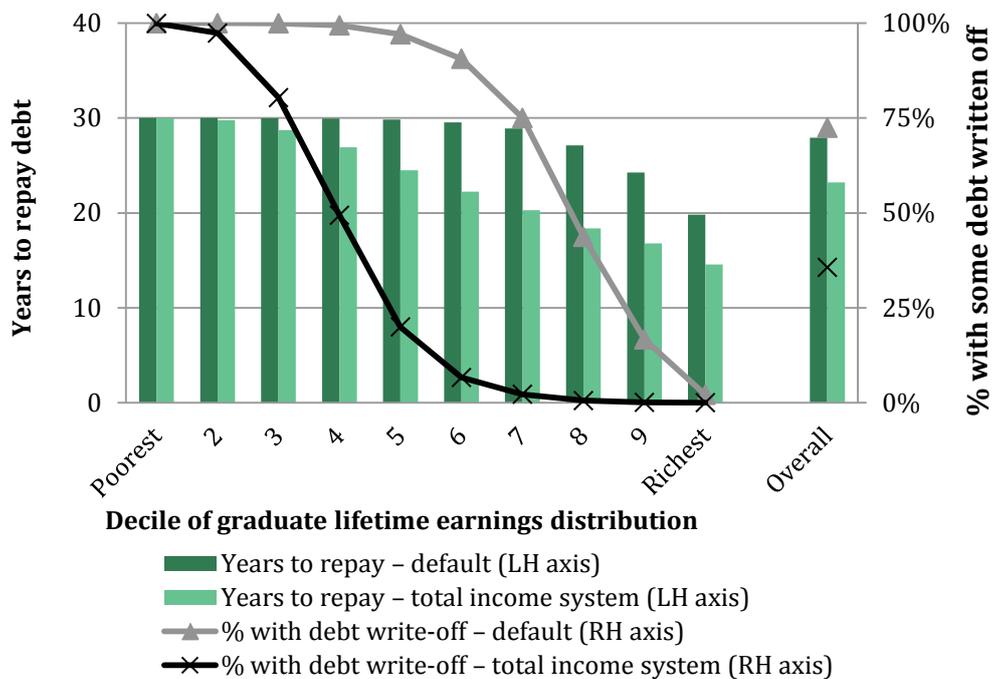
Returning to Figures 10 and 11, they show that graduates in the fourth decile of lifetime earnings are estimated to make the largest additional repayments as a result of this reform, paying nearly £14,000 more, on average, in NPV terms over their lifetime compared with the 2012 system. Meanwhile, those in the sixth decile would see the largest increase in the percentage paying off their loan in full, rising from less than 10% under the 2012 system to more than 90% under the proposed new system.

Figure 10. Net present value of repayments and RAB charge, by decile of graduate lifetime earnings: default 2012 system versus total income system



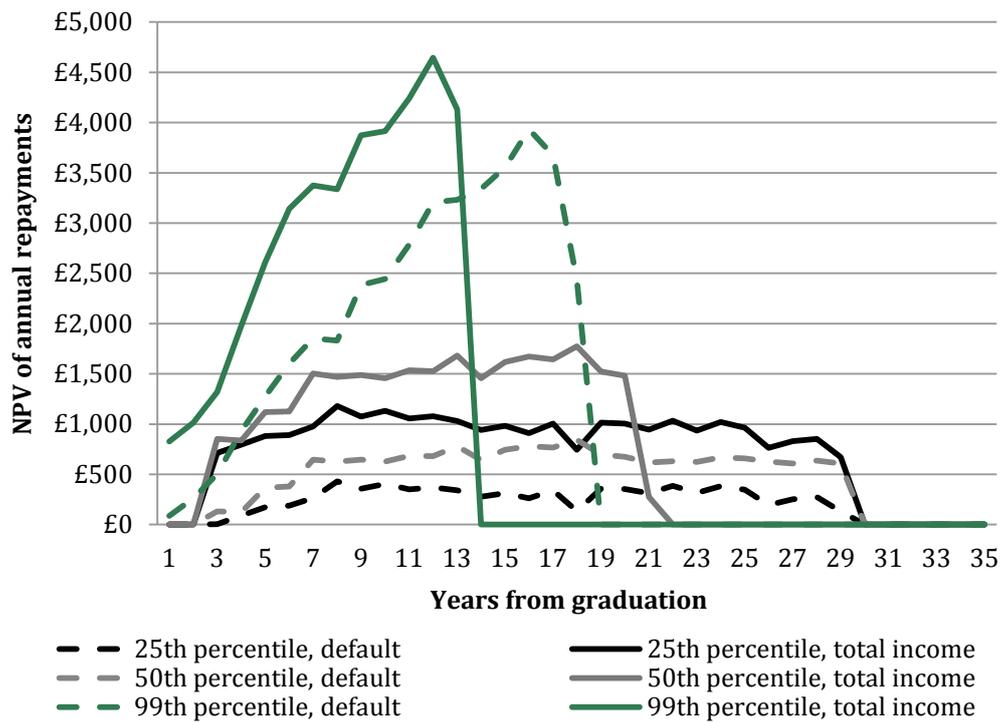
Note: 'NPV of lifetime repayments' is the value of expected future graduate repayments in today's money (i.e. in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%)). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.  
 Source: Authors' calculations using IFS's graduate repayments model.

Figure 11. Average years to repay and percentage with debt written off, by decile of graduate lifetime earnings: default 2012 system versus total income system



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

Figure 11a. Net present value of annual repayments: default versus total income system



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

The public finance implications of this reform would be similar to those described above in relation to the threshold freeze scenario. However, public debt would decline at a faster rate here than under either the default 2012 system or the threshold freeze scenario in the early part of the repayment period, as the value of the repayments collected each year is much higher under this scenario than under either of the other two. This means there would also be less outstanding debt to write off at the end of the repayment period; thus future borrowing would rise by less under this proposal than under the threshold freeze scenario (which in turn had lower future borrowing than the 2012 system).

The two proposed reforms examined thus far have attempted to secure higher loan repayments from graduates by targeting those on low and middle incomes, thus reducing the progressivity of the system in terms of lifetime income. In the next section, we will see a radically different way of trying to increase graduate loan repayments, which focuses on trying to secure higher repayments from the highest-income graduates.

### 4.3 'Pseudo' graduate tax

The key features of this system are as follows:

- The repayment period is lengthened (from 30 years to 35 years) and individuals continue making repayments until the end of the repayment period, even when they have written off their debt.
- All else is the same as the default system.

This is a 'pseudo' graduate tax because individuals under this system are only expected to repay for 35 years rather than for the rest of their lives. For modelling purposes, it does

not matter whether we think of this as a loan with a fixed minimum repayment period or a graduate tax. But this choice matters hugely from a public finance perspective.

Money would most likely have to be borrowed in order to finance the up-front expenditure in either case: to lend to students or to give straight to universities. Public debt would thus increase in both cases. But the implications for borrowing are different. With a loan, borrowing would only increase at the point at which any unpaid debt is written off (at the end of the repayment period). Because the loan subsidy is likely to be lower under this scenario than under the default 2012 system, public debt would decline more rapidly and borrowing would rise by less at the end of the repayment period than under the current system.

With a graduate tax, however, borrowing would increase at the start of the period. To understand the full implications, one needs to be clear which elements of the current system would go and which would stay: if both tuition fee and maintenance loans were replaced by higher teaching grants and maintenance grants (to be recouped in the form of higher tax receipts in future rather than as loan repayments), then the loan system as set out above would effectively be dismantled, and all spending would count towards borrowing in the short run. Over time, as increasing numbers of graduates pay more tax than the up-front costs of their education ('repay their loans' using loan terminology), the system would become partially funded, and up-front borrowing would need to increase by less than the full cost of teaching and maintenance grants. (It would not become fully funded using the parameters we model, however, because even though – as we shall see in Section 4.6 – the RAB charge becomes negative with a lower discount rate, this refers only to repayments on fee and maintenance loans, and would not cover the cost of teaching and maintenance grants.)<sup>15</sup>

In addition, there may be different enforcement issues. For example, it may be difficult to extract graduate tax payments from students who move out of the UK after graduation. As we will see below, it is also likely to matter hugely whether the highest earners are able to opt out of the system (whether through not taking out loans, or by making differential location or labour supply decisions post-graduation, for example).

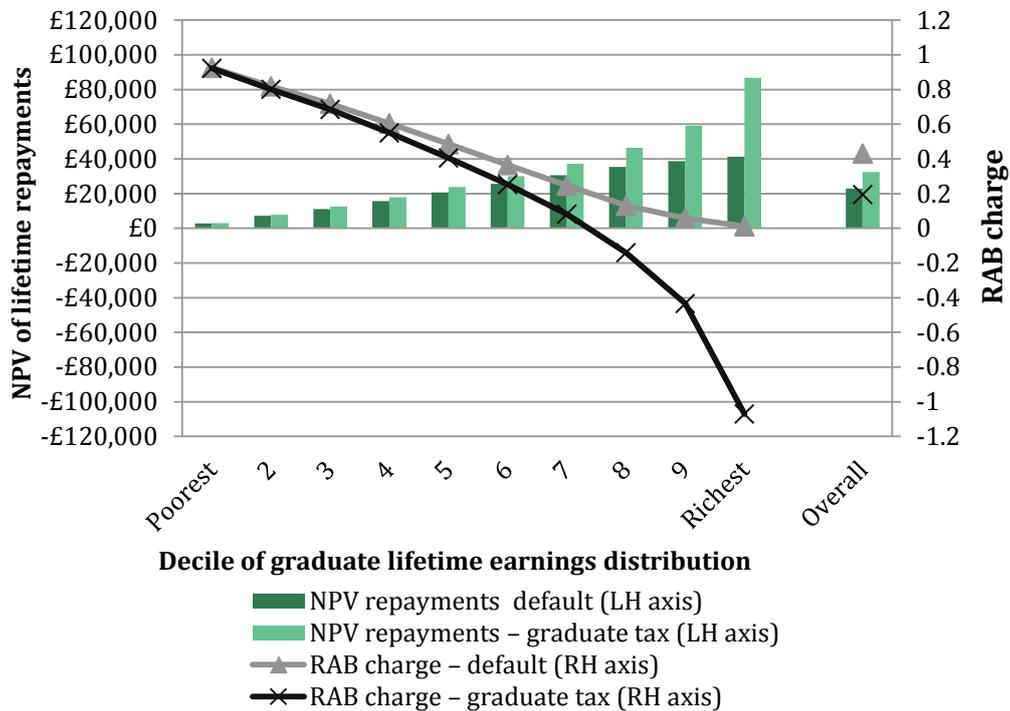
Figures 12 and 13 show the overall and distributional implications of implementing this pseudo graduate tax for graduates and taxpayers. Average repayments would increase the most under this system compared with either of the previous two reforms: under our standard assumptions regarding discount rates, earnings growth and all other parameters of the system remaining unchanged, we estimate that repayments would increase by just over £9,500, on average, in NPV terms, with the RAB charge under this proposal falling to 19%, less than half what it is estimated to be under the 2012 system.

Figures 12 and 13 also make clear that the graduates who would bear the burden of these additional repayments are very different under this system from those in either of the two previous reforms considered. In this case, it is the highest-income graduates – those who would have repaid their loans in full under the 2012 system – who are contributing the most to this reduction in the long-run cost to government. Repayments made by the lowest-earning graduates are similar to those made under the 2012 system, where many are effectively facing a pseudo graduate tax in any case, as they do not repay their loans in

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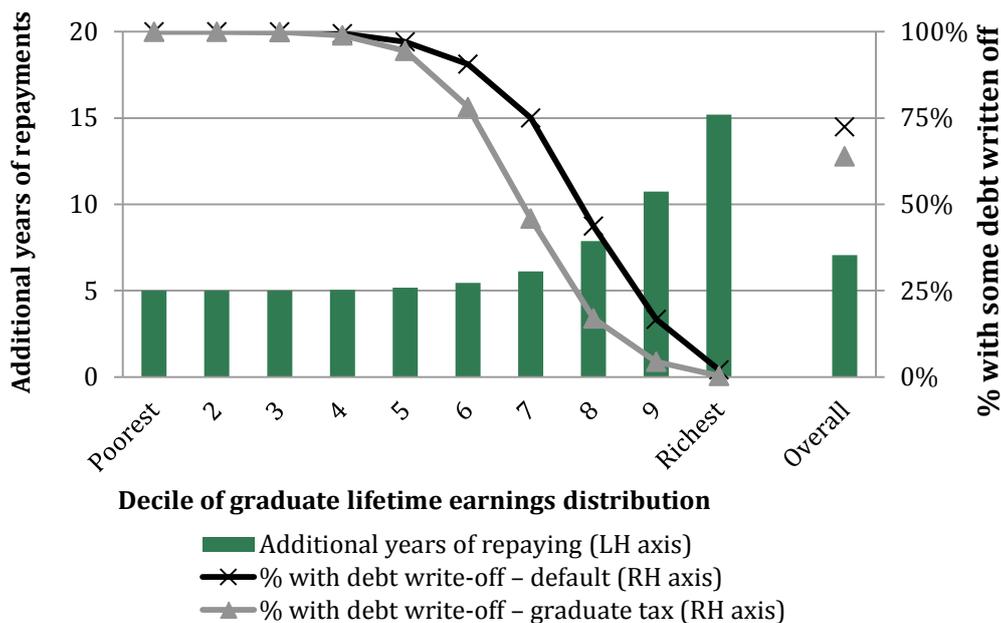
<sup>15</sup> We assume that existing graduates who attended university under previous systems would not be required to pay a graduate tax. If they were, then it is highly likely that the system would be fully funded from the start.

Figure 12. Net present value of repayments and RAB charge, by decile of graduate lifetime earnings: default 2012 system versus 'pseudo' graduate tax



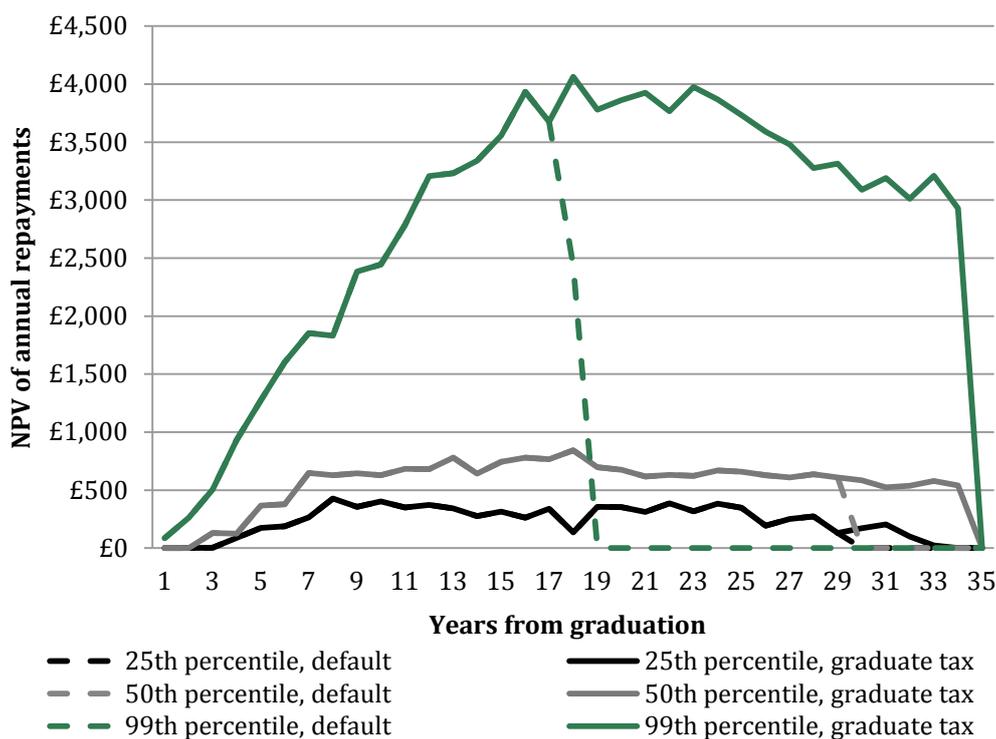
Note: 'NPV of lifetime repayments' is the value of expected future graduate repayments in today's money (i.e. in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%)). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.  
 Source: Authors' calculations using IFS's graduate repayments model.

Figure 13. Average additional years to repay and percentage with debt written off, by decile of graduate lifetime earnings: default 2012 system versus 'pseudo' graduate tax



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

Figure 13a. Net present value of annual repayments: default versus ‘pseudo’ graduate tax



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

full over the 30-year repayment period (and would be unlikely to do so under a 35-year repayment period either).

This point is additionally illustrated in Figure 13a, which shows the profile of annual repayments under the default system (dotted lines) and with proposed pseudo graduate tax system (solid lines) for individuals earning at the 25<sup>th</sup>, 50<sup>th</sup> and 99<sup>th</sup> percentiles of the graduate lifetime earnings distribution. The substantial increase in repayments for those at the top of the earnings distribution is illustrated very clearly, with increases for individuals earning at the 25<sup>th</sup> and 50<sup>th</sup> percentiles of the distribution only arising as a result of the increased repayment period of 35 years (compared with 30 years under the default system).

Overall, we estimate that the highest-earning 10% of graduates would repay more than double what they borrowed in NPV terms under the pseudo graduate tax system: they would end up repaying for an average of 15 years beyond the point at which they would have repaid their loans in full, making their RAB charge -107% (i.e. meaning that the government would effectively make a profit on their loans).

This means that the overall reduction in the long-run cost to government will be highly sensitive to the decisions taken by these high-income individuals (as we show in more detail in Section 4.6). And it highlights one of the trade-offs inherent in making changes to the parameters of the loan system: because the current system is strongly progressive, most reforms either tend to hit lower- to middle-income graduates harder (as we saw with the threshold freeze and total income proposals) or they rely heavily on extracting larger repayments from a relatively small number of high-income graduates, whose behaviour may then have a substantial effect on the overall cost of the system. We return to this issue in more detail in Section 4.6.

## 4.4 Labour's proposal<sup>16</sup>

On 27 February 2015, Labour announced its much-anticipated policy to reduce the cap on undergraduate tuition fees from £9,000 to £6,000 per year. Alongside this reform, it announced an increase in the maximum interest rate incurred on student debt and a rise in average maintenance grants. Specifically, the key features of the system that Labour would put in place if it wins the 2015 election are as follows:

- The cap on undergraduate tuition fees would fall from £9,000 per year to £6,000 per year. However, Labour announced that university funding would be maintained, with the lost fees replaced by higher teaching grants.
- The maximum interest rate incurred on student debt would increase from RPI+3% under the 2012 system to RPI+4% under the proposed Labour system. Individuals with income below £41,000 per year would face the same interest rate under both systems. Those with income between £41,000 and £47,667 would pay an interest rate between RPI+3% and RPI+4% (on a linear taper) and those earning above £47,667 would pay RPI+4%.
- Maintenance grants would increase from £3,400 to £3,800 per student per year for individuals with parental income below £25,000, and those with parental income between £25,000 and £42,000 would receive smaller increases to their grants.
- All else is the same as the default system.

Taking into account the facts that not all universities charge the full £9,000 per year, that some students receive fee waivers from their institutions and that some courses last longer than three years – and assuming that all institutions charge the full £6,000 per year under the new system – we estimate that the policy would reduce debt on graduation by around £9,000, on average, per student, with teaching grants rising from around £675 to around £3,450 per student per year on average.

While initial government spending would rise only slightly – as a result of the increase in maintenance grants – there is a shift in the long-run burden of costs from graduates to the taxpayer. This arises because some graduates would be making repayments on the final £3,000 of loans per year under the current system, while under Labour's proposed system the taxpayer would automatically contribute the full amount up front. Graduate repayments are therefore expected to be lower by the average expected value of any repayments made on that last £3,000 per year of loans.

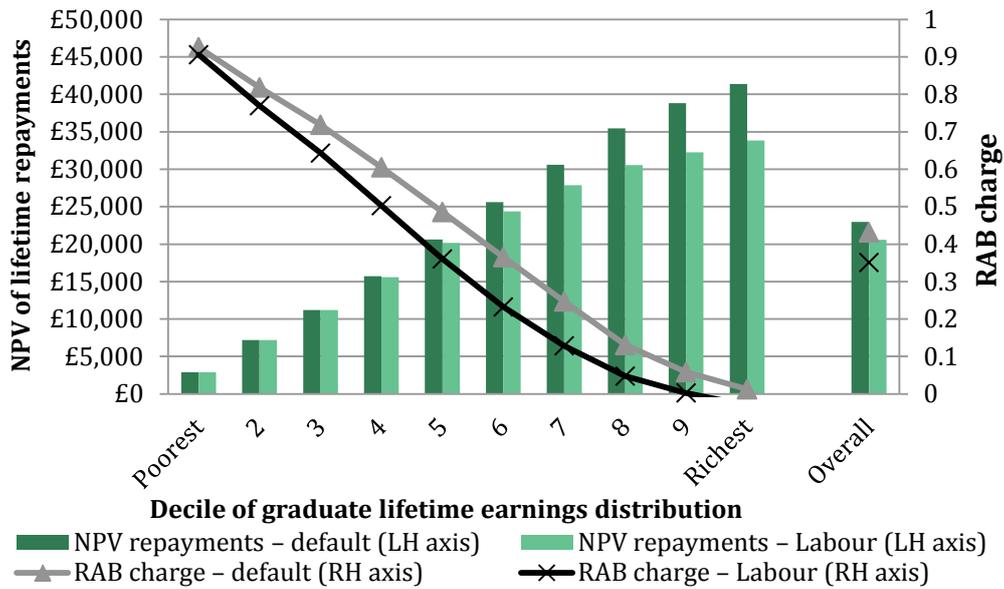
Based on the usual set of assumptions about future graduate earnings growth and the government's cost of borrowing, and assuming there are no changes to the parameters of the loan system over the repayment period, Figure 14 shows that we estimate average repayments would fall by around £2,400 per graduate under the proposed Labour system compared with the current one. Figure 15 shows that the average number of years to repay is likely to fall only marginally (by around 18 months, on average), but the percentage of graduates with some debt written off would fall from around 72% to around 61%.

The current value of the taxpayer contribution would rise by the same amount as the graduate contribution falls. Taking into account the increase in maintenance grants as

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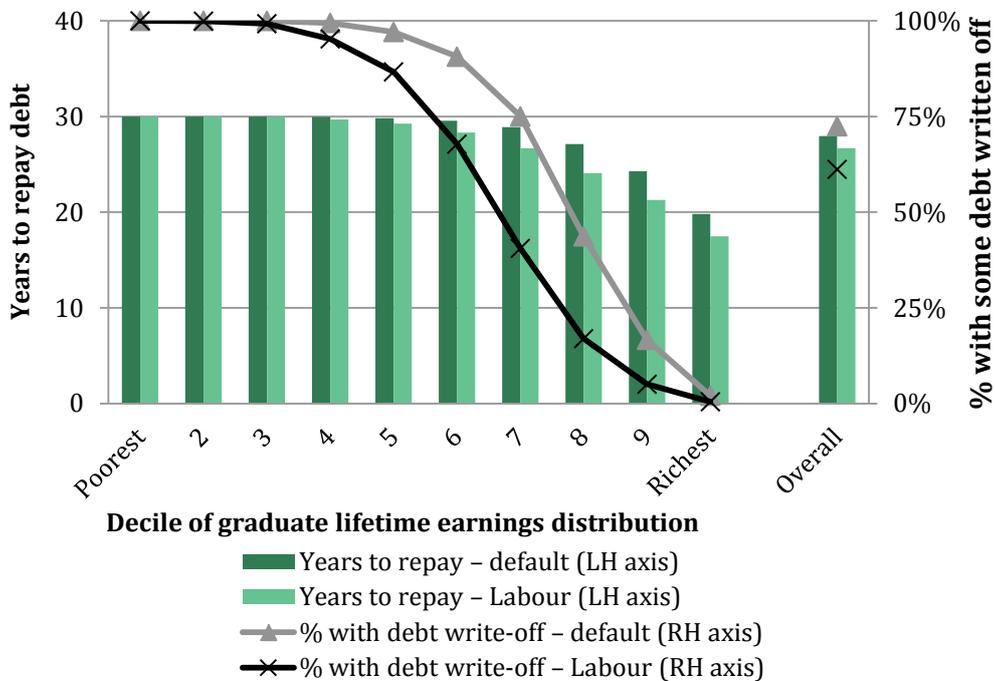
<sup>16</sup> See Britton et al. (2015) for a more detailed analysis of this proposal.

Figure 14. Net present value of repayments and RAB charge, by decile of graduate lifetime earnings: default 2012 system versus Labour proposal



Note: 'NPV of lifetime repayments' is the value of expected future graduate repayments in today's money (i.e. in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%)). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.  
 Source: Authors' calculations using IFS's graduate repayments model.

Figure 15. Average years to repay and percentage with debt written off, by decile of graduate lifetime earnings: default 2012 system versus Labour proposal



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

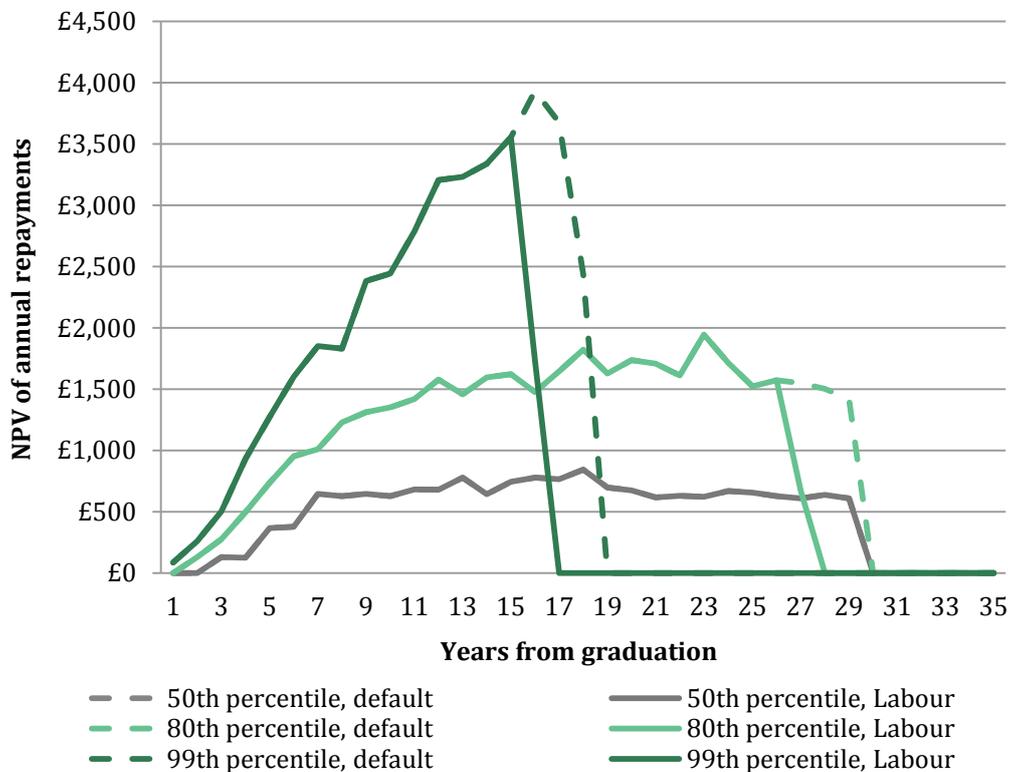
well, we estimate that the total taxpayer contribution to higher education would rise by around £3,000 per graduate under Labour’s proposed system.

Figures 14 and 15 show that these reductions in graduate contributions are not spread equally across graduates, however. We estimate that, under the current system, the vast majority of the lower-earning half of graduates – those earning less than £30,700 on average per year – are unlikely to make any repayments on that last £3,000 a year of loans. This means that the proposed change in policy would make virtually no difference to the repayments of these graduates, and the government contribution would rise only if they benefit from the proposed increase in maintenance grants (not shown in the figures).

For those in the top 10% of lifetime earnings, however, we estimate that repayments would decline by around £7,500, on average, in today’s money under Labour’s policy. Total repayments would be lower, since these people take out smaller loans to start with, and this would outweigh the effect of the higher interest rate (which would increase the size of the outstanding debt more rapidly for those earning above £41,000 per year). Those in the eighth decile of lifetime earnings would see the biggest reduction in average years of repayment (of around three years, on average) and those in the seventh decile would see the biggest percentage point reduction in the percentage with debt written off, falling from around 75% under the current system to around 40% under Labour’s proposed system.

Figure 15a provides further insight into these distributional implications, showing the expected average annual repayments for individuals earning at the median, 80<sup>th</sup> and 99<sup>th</sup>

Figure 15a. Net present value of annual repayments: default versus Labour proposal



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

## *The cost to government of providing higher education*

percentiles of the distribution of graduate earnings. The total saving for graduates is equal to the area between the dotted and solid lines. The graph shows that there would be no difference in expected repayments between the current system and Labour's proposed system for those earning at the median of graduate lifetime earnings. But there would be a clear benefit for those earning at the 80<sup>th</sup> and 99<sup>th</sup> percentiles, arising from the fact that the increase in the interest rate they face does not outweigh the smaller loans they take out, meaning that they are subsequently able to clear their debt more quickly. We estimate that those earning at the 80<sup>th</sup> percentile of graduate lifetime earnings would repay £7,000 less in total in today's money than under the current system, while those earning at the 99<sup>th</sup> percentile of graduate lifetime earnings would repay £8,300 less in today's money.

Of course, because of the huge uncertainty surrounding expected future graduate loan repayments, the expected increase in taxpayer contribution is also hugely uncertain. If graduates were to repay a substantially larger proportion of that final £3,000 per year of loans, then the taxpayer contribution would rise equivalently. If all loans were to be repaid, then the total taxpayer contribution of Labour's policy would rise by the full value of the increase in teaching and maintenance grants, which would amount to around £3,000 per student per year on average. We explore the implications of such changes in assumptions in Section 4.6.

### *Impact on the public finances*

The reform itself makes only a very small difference to debt in the short run: spending on student loans is replaced by spending on teaching grants, so the increase arises from the small increase in maintenance grants. In the longer run, the proposal increases debt by a larger amount, because none of the teaching grant gets paid back while some of the student loan spending would have been. In the long run, debt would be around £900 million higher per cohort of students (based on an increase in the taxpayer contribution of £3,000 described above and assuming a cohort size of 300,000 students).<sup>17</sup>

The impact on government 'borrowing' is complicated by the different accounting treatment of loans and grants. The former do not count towards borrowing (as measured by public sector net borrowing) in the year they are issued (and repayments from graduates do not reduce government borrowing when they are received) since they are counted as 'financial transactions'. Only the debt interest accruing on the loans made, and any write-offs at the end of the repayment period, affect borrowing. In contrast, spending on grants counts towards government borrowing in the year they are made.

This means that the direct effect of replacing fee loans pound-for-pound with increased teaching grants would actually be an increase in government borrowing in the absence of any other policy action. If teaching grants are increased by £2,800 per student per year and maintenance grants are increased by £200 per student per year (across all students), this would result in a direct increase in borrowing of around £2.75 billion per year, assuming a fixed number of 300,000 students per cohort.<sup>18</sup> However, a large proportion

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<sup>17</sup> Note that we are assuming a cohort size of 300,000 students here, which was the size of the 2012 cohort (the focus of this report) and makes our total public cost figures consistent with those in Crawford, Crawford and Jin (2014). The cohort size in 2016 is likely to be higher (around 350,000 students), which is the figure we assumed in our recent briefing note specifically on the Labour HE funding proposal (see Britton et al. (2015)).

<sup>18</sup> Accounting for the fact that non-English students are not eligible for maintenance loans.

of this increase would be offset by lower borrowing in future, arising from the lower write-offs that smaller loans would entail.

The proposed reform increases the taxpayer contribution to HE (since none of the teaching grant or increased maintenance grant gets paid back, while some of the loans made would have been), and therefore weakens the public finances in the absence of any other policy action. However, while the reforms weaken the public finances in expectation, they also reduce some of the uncertainty around the long-run public cost of funding the degrees of a given cohort of students, by replacing some of the uncertain cost of student loans with the certain cost of grants.

#### 4.5 Comparison with the current undergraduate funding system

Table 4 summarises the flow of money under each of the systems analysed so far. Initial government spending includes tuition and maintenance loans plus maintenance and teaching grants. Some of this initial spending is repaid by graduates through their income-contingent student loan repayments (graduate contributions), while the rest is paid for by the taxpayer. University funding is equal to teaching grants plus net tuition fees (total fees minus fee waivers) minus bursaries, while student funding consists of ‘cash in pocket’ money for students whilst at university, and equals their maintenance loans and grants from the government, plus bursaries from their university. University and student funding sum to initial government spending. All figures are per student over the course of their degree.

Table 4. Money flows per student for the five systems (in 2014 prices)

	Default 2012	Threshold freeze	Total income	Graduate tax	Labour
RAB charge (%)	43.1	30.2	25.2	19.5	35.1
% with write-offs	72.5	61.9	35.7	63.9	61.2
<b>Initial govt spending</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£48,032</b>
Taxpayer contribution (as % of initial spending)	£24,472 (52%)	£19,266 (41%)	£17,229 (36%)	£14,938 (32%)	£27,441 (57%)
<i>Of which:</i> Up-front grants	£7,072	£7,072	£7,072	£7,072	£16,309
Loan subsidy	£17,400	£12,194	£10,157	£7,866	£11,132
Graduate contribution	£22,945	£28,152	£30,188	£32,480	£20,591
<b>University funding</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>
<i>Of which:</i> Teaching grants	£2,085	£2,085	£2,085	£2,085	£10,707
Net fees	£27,355	£27,355	£27,355	£27,355	£18,733
Bursaries	-£1,335	-£1,335	-£1,335	-£1,335	-£1,335
<b>Student funding</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,928</b>
<i>Of which:</i> Maint. loan	£12,990	£12,990	£12,990	£12,990	£12,990
Maint. grant	£4,987	£4,987	£4,987	£4,987	£5,602
Bursaries	£1,335	£1,335	£1,335	£1,335	£1,335
<b>Per 300,000 students</b>					
Total up-front govt spend	£14,225m	£14,225m	£14,225m	£14,225m	£14,410m
Total long-run contribution	£7,342m	£5,780m	£5,169m	£4,481m	£8,232m

Note: All figures are given in 2014 prices, discounted using a discount rate equal to the government’s assumed cost of borrowing (assumed to be RPI+2.2%). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

All but the Labour proposal are reforms that would affect future loan repayments only; thus university and student funding (and hence initial government spending) remain unchanged. (The Labour proposal maintains university funding and only changes student funding because of the increase in maintenance grants that was announced.)

However, the division of the burden of contributions between graduates and taxpayers varies across policies. The initial government spending figures include all money spent on the teaching of undergraduates, which can be split into money that ultimately goes to universities (in the form of teaching grants and fee loans to students to cover net tuition fees) and money that goes to students (in the form of maintenance grants and loans). Some of this money is recovered from graduates in future via repayment of tuition fee and maintenance loans, but the remainder of the tab is picked up by the taxpayer. Using our estimates of expected future loan repayments, we can therefore estimate the percentage of the funding of undergraduate teaching that is covered by graduates and the percentage that is covered by taxpayers.

Table 4 shows that the percentage picked up by the taxpayer is estimated to be greatest under Labour's proposal (57%), although it is not very much higher than for the default system (52%) based on the usual assumptions regarding discount rates, future earnings growth and future parameter changes. (This is because so little of the last £3,000 per year of loans is expected to be repaid by most graduates.) The percentage of total costs covered by the taxpayer is lowest for the pseudo graduate tax (32%), but the percentages under the total income and threshold freeze scenarios are considerably lower than the default system too. Thus while initial government spending would be expected to be around £14 billion for a cohort of 300,000 students under each proposal, the long-run taxpayer contribution ranges from £4.5 billion under the pseudo graduate tax to £8.2 billion under Labour's proposal with our standard baseline assumptions.

The reductions in taxpayer contributions promised by all but Labour's reform would be delivered by reducing the average loan subsidy (and hence the RAB charge). The largest reduction would be delivered by the pseudo graduate tax (assuming everyone takes out a loan; we explore the implications of relaxing this assumption in Section 4.6). While Labour's proposal also delivers a lower loan subsidy per student (and hence a lower estimated RAB charge) than the current system, it does so by reducing the total amount loaned out. The total taxpayer contribution rises because the certain increase in the up-front costs resulting from higher teaching and maintenance grants outweighs the uncertain reduction in the long-run cost of student loans. The RAB charge is thus not a particularly helpful way to compare the costs of Labour's proposal with the costs of the current system (or indeed any of the other proposals).

### **4.6 Sensitivity analysis**

We investigate the sensitivity of the results in Table 4 to the same four alternative scenarios discussed in relation to the default undergraduate and postgraduate situations in Chapter 3. We start in Section 4.6.1 by exploring the effect of lowering the discount rate used (from RPI+2.2% to RPI+1.1%). In Section 4.6.2, we investigate the implications of long-run real earnings growth being higher (2.2%) or lower (0%) than in our baseline scenario (where it is 1.1%). Finally, in Section 4.6.3, we investigate the possibility of the top 10% of earners not taking out loans.

In general, we find that the pseudo graduate tax is the most sensitive of the proposed systems, while the total income proposal is the least sensitive. This primarily arises

because the pseudo graduate tax relies heavily on a relatively small group of high-income graduates to generate a substantial percentage of its repayments; thus if these individuals choose not to take out a loan, or their earnings (especially towards the end of the repayment period) are lower than expected, then this has a significant impact on the overall cost of the system. By contrast, the total income proposal secures greater repayments at lower levels of income; thus even if the highest earners drop out of the system entirely, or their earnings do not grow as rapidly, repayments continue to roll in.

Sensitivity to the underlying assumptions is strongly linked to the progressivity of the two systems: as discussed above, most potential reforms either make the system more progressive (and hence more sensitive to the repayments and behaviour of small groups of high-income graduates) or less progressive (and hence less sensitive to overall macroeconomic conditions or loan take-up behaviour). This is a trade-off that proponents of changes to the current system will face.

#### 4.6.1 Government cost of borrowing

Our above analysis uses the Treasury's recommended discount rate of RPI+2.2%. In Table 5, we outline the effect of assuming a lower discount rate (of RPI+1.1%). As noted above, real payments do not change in this scenario; we are simply valuing those made in future more highly than we do under the baseline scenario. Thus, while it appears that initial government spending (and hence university and student funding) have increased relative

Table 5. Money flows per student: discount rate of RPI+1.1%

	Default 2012	Threshold freeze	Total income	Graduate tax	Labour
RAB charge (%)	30.2	14.7	11.3	-3.0	21.0
<b>% with write-offs</b>	<b>72.4</b>	<b>61.8</b>	<b>35.6</b>	<b>63.8</b>	<b>61.1</b>
<b>Initial govt spending</b>	<b>£47,947</b>	<b>£47,947</b>	<b>£47,947</b>	<b>£47,947</b>	<b>£48,570</b>
Taxpayer contribution (as % of initial spending)	£19,501 (41%)	£13,166 (27%)	£11,761 (25%)	£5,955 (12%)	£23,260 (48%)
<i>Of which:</i> Up-front grants	£7,167	£7,167	£7,167	£7,167	£16,516
Loan subsidy	£12,334	£5,999	£4,594	-£1,212	£6,744
Graduate contribution	£28,447	£34,782	£36,187	£41,993	£25,310
<b>University funding</b>	<b>£28,331</b>	<b>£28,331</b>	<b>£28,331</b>	<b>£28,331</b>	<b>£28,331</b>
<i>Of which:</i> Teaching grants	£2,120	£2,120	£2,120	£2,120	£10,846
Net fees	£27,638	£27,638	£27,638	£27,638	£18,912
Bursaries	-£1,427	-£1,427	-£1,427	-£1,427	-£1,427
<b>Student funding</b>	<b>£19,616</b>	<b>£19,616</b>	<b>£19,616</b>	<b>£19,616</b>	<b>£20,238</b>
<i>Of which:</i> Maint. loan	£13,142	£13,142	£13,142	£13,142	£13,142
Maint. grant	£5,047	£5,047	£5,047	£5,047	£5,670
Bursaries	£1,427	£1,427	£1,427	£1,427	£1,427
<b>Per 300,000 students</b>					
Total up-front govt spend	£14,384m	£14,384m	£14,384m	£14,384m	£14,571m
Total long-run contribution	£5,850m	£3,950m	£3,528m	£1,787m	£6,978m

Note: Teaching grants, bursaries, fees, loans and grants are all affected by the discount rate. Consequently, student and university funding appear to have increased relative to the default scenario when we reduce the discount rate, when in fact subsequent years of funding are simply being discounted at a lower rate. All figures are given in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+1.1%). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

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to the baseline scenario (in Table 4), this arises simply because funding for the second and third (and in some cases fourth and fifth) years is being discounted less heavily. Similarly, graduate repayments in nominal or real terms have not changed; we are simply valuing those made decades into the future more highly in the present.

As Table 5 shows, this has a dramatic effect on the value of expected future repayments and hence the loan subsidy, the RAB charge and the total taxpayer contribution in all cases. For example, the total taxpayer contribution to the cost of teaching undergraduates is estimated to fall to £19,500 per student, on average, in today's money using the lower discount rate; this would amount to a total cost of around £5.9 billion for a cohort of 300,000 students (while the equivalent figure using the standard higher discount rate was £7.3 billion).

Unsurprisingly, using a different discount rate makes the greatest difference in the case of the graduate tax. This arises both because the repayment period is longer here than it is under any other scenario (35 rather than 30 years) and because many more repayments are being made in those later years than in any other scenario (because the highest-income graduates are making substantial repayments in these years under the pseudo graduate tax scenario, whilst they would have already repaid their loans in all other scenarios). In fact, the overall average RAB charge is estimated to be negative under the pseudo graduate tax scenario, meaning that graduates, on average, repay more in NPV terms than they borrowed.

### *4.6.2 Graduate earnings growth*

In all of the above analysis, we have followed the OBR's forecasts and assumed that graduate earnings will grow by an annual average of 1.1% above the rate of inflation from 2020 onwards. In Table 6, we investigate the impact of higher-than-expected real graduate earnings growth of 2.2%. In Table 7, we investigate the impact of lower-than-expected real graduate earnings growth of 0%.

Table 6 shows that higher-than-expected earnings growth decreases the loan subsidy (the RAB charge) and hence the taxpayer contribution in all cases. By contrast, lower-than-expected earnings growth increases the loan subsidy and hence the total taxpayer contribution. For example, the total taxpayer contribution would be estimated to fall to £22,800 per student, on average, if real earnings were to grow by 2.2% in the long run, but to increase to £26,000 per student, on average, if there were no real earnings growth beyond 2020. For a cohort of 300,000 students, this translates into a difference in costs of around £1 billion per cohort (or per year, assuming all cohorts are of the same size). (The cost for a cohort of this size would be £6.8 billion with earnings growth of RPI+2.2% and £7.8 billion if earnings grow in line with the RPI.)

In both cases, the effect is particularly pronounced for the pseudo graduate tax system. The loan subsidy falls from just under £8,000 per student, on average, under our baseline assumptions (see Table 4) to under £2,000 per student, on average, with real earnings growth of 2.2%; while it increases to more than £12,000 per student, on average, with real earnings growth of 0%. The associated RAB charge for the pseudo graduate tax scenario ranges from 4.5% with the higher-than-expected real earnings growth to 30.5% with zero real earnings growth.

The effect on the loan subsidy (and hence the RAB charge and the total taxpayer contribution) is smallest for the total income proposal. This is because it has the broadest base: graduates must pay a percentage of *all income* once it rises above the lower income threshold, while they must only repay a percentage of their income *above the threshold*

Table 6. Money flows per student: 2.2% real graduate earnings growth

	Default 2012	Threshold freeze	Total income	Graduate tax	Labour
RAB charge (%)	38.5	21.5	23.5	4.5	29.0
<b>% with write-offs</b>	64.3	46.2	29.8	54.2	52.9
<b>Initial govt spending</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£48,032</b>
Taxpayer contribution (as % of initial spending)	£22,808 (48%)	£15,762 (33%)	£16,544 (35%)	£8,917 (19%)	£25,522 (53%)
<i>Of which:</i> Up-front grants	£7,072	£7,072	£7,072	£7,072	£16,309
Loan subsidy	£15,376	£8,690	£9,472	£1,845	£9,213
Graduate contribution	£24,609	£31,656	£30,873	£38,501	£22,510
<b>University funding</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>
<i>Of which:</i> Teaching grants	£2,085	£2,085	£2,085	£2,085	£10,707
Net fees	£27,355	£27,355	£27,355	£27,355	£18,733
Bursaries	-£1,335	-£1,335	-£1,335	-£1,335	-£1,335
<b>Student funding</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,928</b>
<i>Of which:</i> Maint. loan	£12,990	£12,990	£12,990	£12,990	£12,990
Maint. grant	£4,987	£4,987	£4,987	£4,987	£5,602
Bursaries	£1,335	£1,335	£1,335	£1,335	£1,335
<b>Per 300,000 students</b>					
Total up-front govt spend	£14,225m	£14,225m	£14,225m	£14,225m	£14,410m
Total long-run contribution	£6,842m	£4,729m	£4,963m	£2,675m	£7,657m

Note: All figures are given in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+2.2%). Assumes all graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Table 7. Money flows per student: 0% real graduate earnings growth

	Default 2012	Threshold freeze	Total income	Graduate tax	Labour
RAB charge (%)	46.8	36.2	26.6	30.5	36.7
<b>% with write-offs</b>	79.3	72.2	42.3	72.6	69.0
<b>Initial govt spending</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£47,418</b>	<b>£48,032</b>
Taxpayer contribution (as % of initial spending)	£25,952 (55%)	£21,676 (46%)	£17,816 (38%)	£19,374 (41%)	£27,956 (58%)
<i>Of which:</i> Up-front grants	£7,072	£7,072	£7,072	£7,072	£16,309
Loan subsidy	£18,880	£14,604	£10,744	£12,302	£11,647
Graduate contribution	£21,466	£25,742	£29,602	£28,044	£20,076
<b>University funding</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>
<i>Of which:</i> Teaching grants	£2,085	£2,085	£2,085	£2,085	£10,707
Net fees	£27,355	£27,355	£27,355	£27,355	£18,733
Bursaries	-£1,335	-£1,335	-£1,335	-£1,335	-£1,335
<b>Student funding</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,313</b>	<b>£19,928</b>
<i>Of which:</i> Maint. loan	£12,990	£12,990	£12,990	£12,990	£12,990
Maint. grant	£4,987	£4,987	£4,987	£4,987	£5,602
Bursaries	£1,335	£1,335	£1,335	£1,335	£1,335
<b>Per 300,000 students</b>					
Total up-front govt spend	£14,225m	£14,225m	£14,225m	£14,225m	£14,410m
Total long-run contribution	£7,786m	£6,503m	£5,345m	£5,812m	£8,387m

Note and Source: As for Table 6.

under the other scenarios. Their annual repayments are thus, on average, higher than under other proposals (even though the marginal repayment rate is lower), and they are expected to repay their loans more quickly. This means that most graduates would still be expected to repay their loans in full under the total income proposal, even with zero real earnings growth: the percentage of graduates that we estimate would have some debt written off ranges from 30% with 2.2% long-run real earnings growth to 42% with 0% long-run real earnings growth, while it is nearly 65% under the default 2012 system, even with real earnings growth of 2.2%.

#### **4.6.3 Top earners not taking out loans**

The above analysis assumes perfect loan take-up and compliance, i.e. that all students take out the maximum loan to which they are entitled and that repayments are made on schedule (there is no avoidance and no early repayment). In Table 8, we investigate the implications of the highest-earning 10% of graduates not taking out loans (either tuition fee or maintenance loans).

All figures are given per student (not per student who takes out a loan). University funding remains unchanged: students who opt out of the loan system must still pay tuition fees to the university. Total up-front government spending goes down because the government now pays out less in tuition fee and maintenance loans overall. Student funding goes down because of the reduction in maintenance loans. Overall funding to support the teaching of undergraduates (from both students and the government)

**Table 8. Money flows per student: without 10% highest earners**

	<b>Default 2012</b>	<b>Threshold freeze</b>	<b>Total income</b>	<b>Graduate tax</b>	<b>Labour</b>
RAB charge (%)	48.0	31.6	27.8	34.1	39.5
<b>% with write-offs</b>	72.3	59.4	35.7	63.9	61.1
<b>Initial govt spending</b>	<b>£43,230</b>	<b>£43,230</b>	<b>£43,230</b>	<b>£43,230</b>	<b>£44,746</b>
<b>Initial student spending</b>	<b>£2,841</b>	<b>£2,841</b>	<b>£2,841</b>	<b>£2,841</b>	<b>£1,940</b>
Taxpayer contribution (as % of initial spending)	£24,421 (53%)	£18,510 (40%)	£17,120 (37%)	£19,417 (42%)	£27,539 (59%)
<i>Of which:</i> Up-front grants	£7,072	£7,072	£7,072	£7,072	£16,308
Loan subsidy	£17,349	£11,438	£10,048	£12,345	£11,231
Graduate contribution	£18,809	£24,720	£26,110	£23,813	£17,207
<b>University funding</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>	<b>£28,105</b>
<i>Of which:</i> Teaching grants	£2,085	£2,085	£2,085	£2,085	£10,707
Net fees	£27,355	£27,355	£27,355	£27,355	£18,733
Bursaries	–£1,335	–£1,335	–£1,335	–£1,335	–£1,335
<b>Student funding</b>	<b>£17,966</b>	<b>£17,966</b>	<b>£17,966</b>	<b>£17,966</b>	<b>£18,581</b>
<i>Of which:</i> Maint. loan	£11,644	£11,644	£11,644	£11,644	£11,644
Maint. grant	£4,987	£4,987	£4,987	£4,987	£5,602
Bursaries	£1,335	£1,335	£1,335	£1,335	£1,335
<b>Per 300,000 students</b>					
Total up-front govt spend	£12,969m	£12,969m	£12,969m	£12,969m	£13,424m
Total long-run contribution	£7,326m	£5,553m	£5,136m	£5,825m	£8,262m

Note: All figures are given in 2014 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+2.2%). Assumes all but the top 10% highest-earning graduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

therefore falls by the value of the maintenance loans previously taken by students who now opt out of the loan system. (Students and their parents are still likely to be making equivalent private contributions to living costs; but these do not feature in our table.)

In most cases, the loan subsidy *per student* falls as a result of this reform (because less money is loaned out). However, the loan subsidy *per student who takes out a loan* (and hence the RAB charge – the subsidy per £1 loaned out) would increase if the highest-earning 10% of graduates opted out of the loan system. This is because the highest-earning graduates would be expected to repay their loans in full, on average, and so repay more than most graduates further down the earnings distribution would repay. The extent to which the highest-earning graduates cross-subsidise those with lower lifetime earnings is most apparent with the pseudo graduate tax: under this scenario, even the loan subsidy per student increases dramatically – from around £7,900 (see Table 4) to around £12,300 per student – if the highest-earning 10% of graduates opt out of the loan system.

These differences in loan subsidy translate into differences in the total taxpayer contribution of different systems. For all but the pseudo graduate tax proposal, the estimated total taxpayer cost of the teaching of undergraduates is estimated to change only marginally if the highest-earning 10% of graduates do not take out a loan. This is because these individuals would otherwise have been expected to almost fully repay their loans. There is thus little long-run benefit to the taxpayer from the reduction in up-front spending (except that debt would be lower in the short run).

The cost of the pseudo graduate tax policy is, by contrast, expected to increase as a result of the highest-earning 10% of graduates opting out of the loan system. We estimate that the total taxpayer contribution would rise from £4.5 billion in today's money if all eligible undergraduates take out a loan to £5.8 billion if the highest-earning 10% opt out of the loan system. This again highlights the very heavy reliance of the pseudo graduate tax system on the highest-income graduates to generate a substantial proportion of its repayments.

## 5. Alternative proposals for the postgraduate loan scheme

In the 2014 Autumn Statement, the Chancellor of the Exchequer announced plans to introduce a new income-contingent government-backed loan scheme for postgraduates from 2016. Section 3.2 estimated the cost of the illustrative loan scheme set out in the Autumn Statement. In this chapter, we compare the repayment schedules (Section 5.1) and estimate the financial implications (Section 5.2) of three alternative loan schemes:

- The first is a variant of the illustrative loan scheme set out in the Autumn Statement, except that instead of repayments occurring alongside undergraduate repayments, they are made only once an individual's undergraduate loan is fully repaid.
- The second is a scheme initially proposed by CentreForum in which individuals make repayments of 9% on the wedge of income between £15,000 and £21,000.<sup>19</sup> (This is equivalent to the first slice of income on which repayments used to be made towards

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<sup>19</sup> See Leunig (2011) and Muir (2014).

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undergraduate loans under the 2011 system, before the repayment threshold was increased in 2012.)

- The third mirrors the total income system for undergraduate loans discussed in Section 4.2, in which individuals repay 4% of all income once their income reaches £21,000 per year, rising to 9% of all income once their income reaches £41,000.

In each case, we assume that the eligibility criteria for the loans would be the same as outlined as part of the illustrative loan scheme in the Autumn Statement (i.e. those on taught masters courses under the age of 30) to ensure comparability.

To start with, we make the same assumptions as under our baseline analysis of the undergraduate loan system, that is:

- the discount rate is RPI+2.2%;
- average postgraduate earnings grow at the same rate, on average, as undergraduate earnings, and hence grow at a rate of 1.1% per year in real terms in the long run;
- all eligible students take out the maximum loan of £10,000.

We outline the sensitivity of our results to each of these assumptions in Section 5.3.

### **5.1 The proposed systems**

As a reminder, the key elements of the proposal outlined in Autumn Statement 2014 (AS) are as follows:

- individuals repay 9% of income above £21,000;
- the £21,000 threshold is frozen for five years in nominal terms from implementation;
- individuals incur an interest rate of RPI+3% on their debt, regardless of income.

Here, however, instead of assuming that repayments are made alongside those towards an individual's undergraduate loan, we assume that repayments towards the postgraduate loan are only made once an individual's undergraduate loan is repaid in full.

The key element of the CentreForum (CF) proposal is that individuals repay 9% of their income between £15,000 and £21,000 per year. Because it is designed to be complementary to the undergraduate loan system, we assume that both thresholds are uprated in line with real earnings growth (as is assumed to be the case for the default 2012 undergraduate loan system). In addition, we assume that individuals incur an interest rate of RPI+3% on their debt, regardless of income. (This is in line with the interest rate charged as part of the illustrative postgraduate loan proposal set out in the Autumn Statement and described above.)

The key elements of the total income (TI) proposal are as follows:

- individuals with income of £21,000 repay 4% of all income;
- this percentage increases linearly with income until it reaches 9% of all income at £41,000;
- above this level, individuals repay 9% of all income.

For the same reasons as outlined above, we additionally assume that the £21,000 and £41,000 thresholds are uprated in line with real earnings growth and that individuals incur an interest rate of RPI+3% on their debt regardless of income.

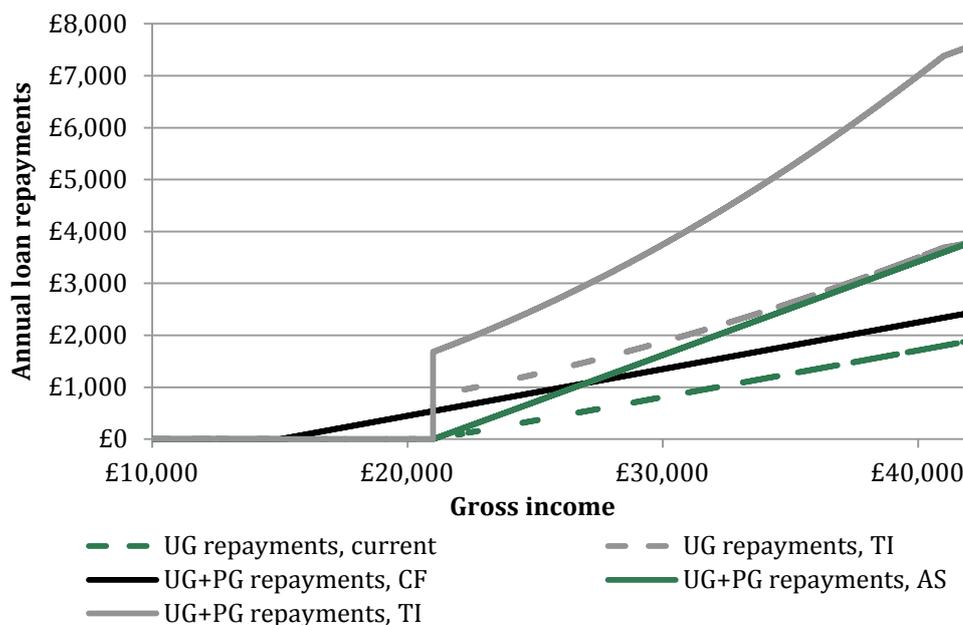
The public finance implications of each of these scenarios are similar to those of the default undergraduate loan system: for a given cohort of students, public debt rises at the beginning of the loan period (but by less than a tenth of the rise generated by the undergraduate loan system, as postgraduate loans are smaller and taken out by fewer students). It then declines over time and any outstanding debt is written off at the end of the repayment period. (As we shall see below, however, in some cases there is very little outstanding debt to be written off; and in others – where the government is estimated to make a profit – borrowing would fall rather than rise at the end of the repayment period.)

Figure 16 outlines the repayment schedules under each potential loan system. For the Autumn Statement and total income proposals, it matters a great deal whether postgraduate loan repayments are made alongside undergraduate loan repayments or only once an individual’s undergraduate loan has been cleared. (This is not relevant for the CentreForum proposal, under which postgraduate loan repayments are designed to be made alongside undergraduate loan repayments.)

The solid dark green line illustrates annual undergraduate (UG) and postgraduate (PG) repayments if payments are made alongside each other (as envisaged as part of the illustrative loan scheme outlined in Autumn Statement 2014). Individuals would pay 18% of income above £21,000 until their postgraduate loan is repaid (as that will be cleared first, assuming no early repayments), when they would return to paying 9% (as illustrated by the dashed dark green line) until their undergraduate loan is repaid. If postgraduate loan repayments are instead only paid once an individual’s undergraduate loan is fully repaid, then repayments would follow the dashed dark green line throughout.

For the total income system, the solid grey line illustrates annual repayments if undergraduate and postgraduate loan repayments are paid alongside one another. Since individuals would repay 4% of *all* income on *both* loans, they would now face a much larger jump in repayments once their income crosses the lower income threshold (currently set at £21,000), of £1,680 (8% of £21,000). If, on the other hand, postgraduate

Figure 16. Student loan repayments under different repayment schedules



Note: AS = Autumn Statement proposal. CF = CentreForum proposal. TI = total income proposal.

repayments are made only after undergraduate loans are cleared, then repayments follow the dashed grey schedule (the same as under the undergraduate loan scheme).

Were the CentreForum system to be implemented, undergraduate and postgraduate repayments would be made simultaneously, as individuals would repay 9% of income between £15,000 and £21,000 towards their postgraduate loan and 9% of income above £21,000 towards their undergraduate loan. The repayment schedule for this system is given by the solid black line. Once an individual pays off their postgraduate loan, their repayments would revert to those under the default undergraduate loan system (illustrated by the dashed dark green line).

Two points are clear from Figure 16. First, annual loan repayments are, of course, much higher if individuals are required to pay off their undergraduate and postgraduate loans simultaneously, but this has the advantage from the government's perspective that individuals are much more likely to completely pay off their postgraduate loans. Second, annual repayments are much higher for a given level of income under the total income system than under either the proposed Autumn Statement or CentreForum system. Moreover, this is true even when undergraduate and postgraduate loans are repaid simultaneously under the illustrative loan scheme outlined in the Autumn Statement. Both points are discussed in more detail below.

## **5.2 Comparison of systems**

We closely follow the analysis undertaken for each proposed reform to undergraduate loans, illustrating, for each postgraduate loan scheme, the net present value (NPV) of lifetime repayments, the associated RAB charge, the average number of years taken to repay the debt in full, and the percentage of postgraduates with some debt written off after 30 years. We do so both overall and by decile of postgraduate lifetime earnings.

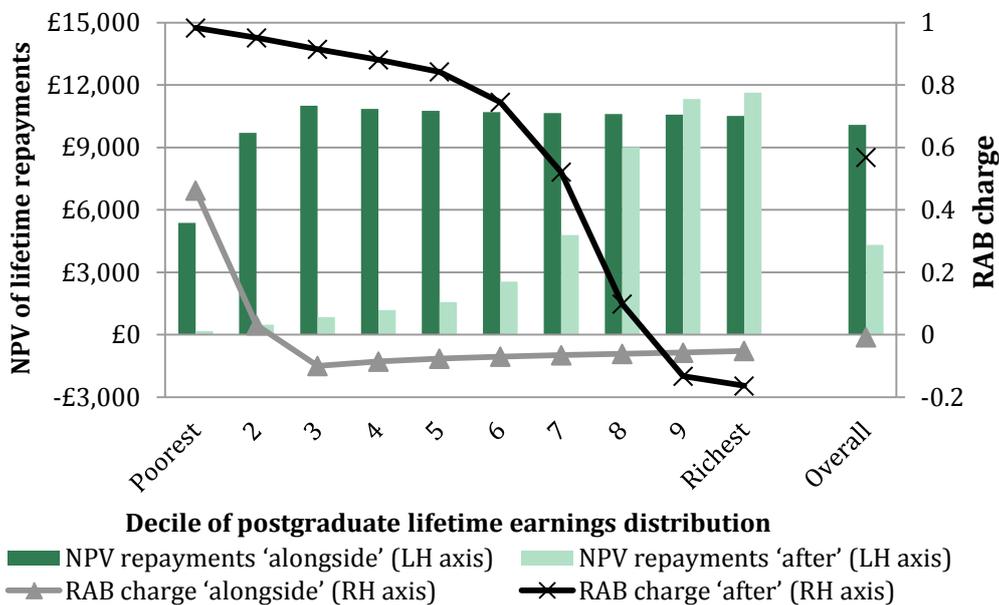
### ***5.2.1 Autumn Statement but with repayments made after undergraduate loan***

Figures 17 and 18 illustrate the overall and distributional implications of the illustrative loan scheme outlined in Autumn Statement 2014, under the alternative assumptions that repayments are made consecutively or only after an individual repays their undergraduate loan. Given the relatively small percentage of graduates who fully repay their undergraduate loans (less than 30% in our baseline estimates), the choice between these assumptions matters a great deal.

Figure 17 shows that assuming repayments towards postgraduate loans are only made after undergraduate loans have been repaid makes the system much more progressive, but at the expense of much lower repayments, on average. Only the 20% of graduates with the highest lifetime earnings come close to repaying both loans in full under this version of the proposal: indeed, they repay considerably more than they borrowed in NPV terms, on average, as a result of the positive real interest rate charged on the full value of the postgraduate loan over many years while no repayments are being made. Similarly, the RAB charge associated with the postgraduate loan scheme rises from close to zero assuming repayments are made simultaneously to nearly 60% assuming repayments are made consecutively.

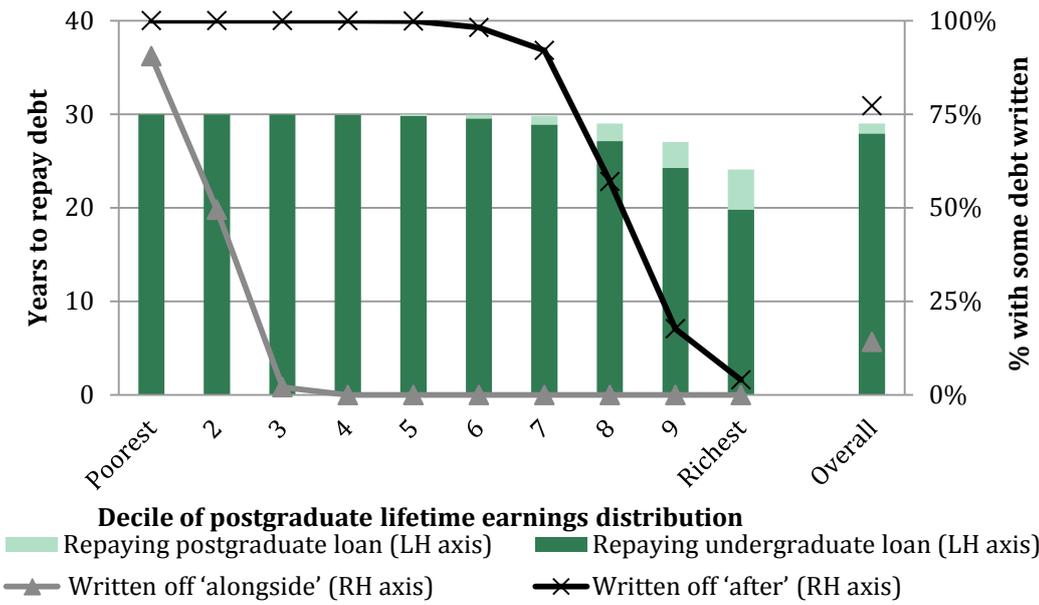
Figure 18 reinforces this picture, highlighting the very small numbers of postgraduates who make any repayments towards their postgraduate loan: the dark green bars illustrate average number of years spent repaying undergraduate loans and the light green bars average number of years spent repaying postgraduate loans once undergraduate loans have been repaid. The graph shows that the lower-earning half of

Figure 17. Net present value of repayments and RAB charge, by decile of postgraduate lifetime earnings: Autumn Statement proposal with postgraduate repayments made alongside or after undergraduate repayments



Note: 'NPV of lifetime repayments' are the value of expected future postgraduate repayments in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.  
 Source: Authors' calculations using IFS's graduate repayments model.

Figure 18. Average years to repay and percentage with debt written off, by decile of postgraduate lifetime earnings: Autumn Statement proposal with postgraduate repayments made alongside or after undergraduate repayments



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

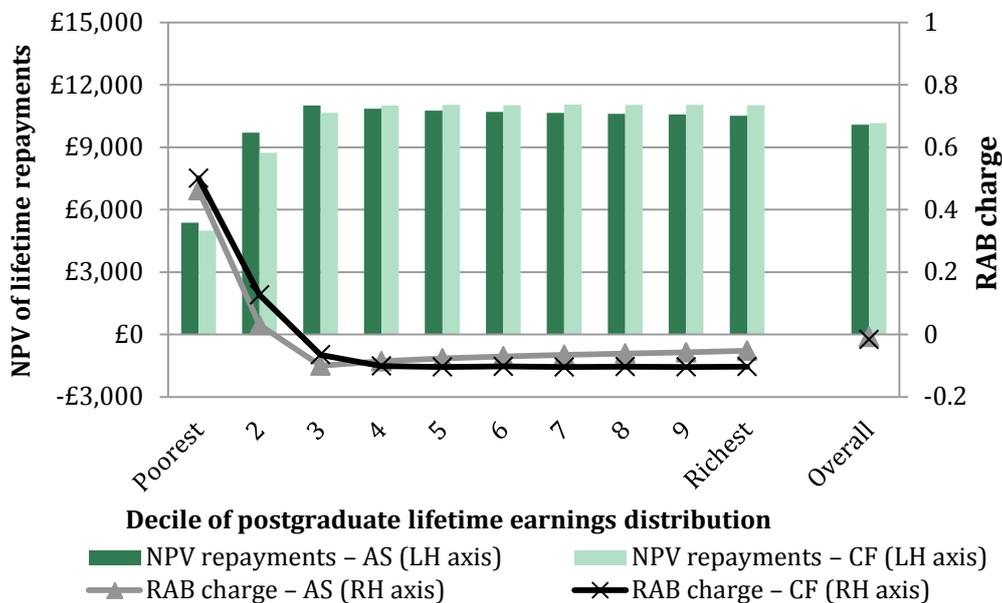
graduates make virtually no repayments towards their undergraduate loans. Higher-earning graduates who do end up repaying their postgraduate loan, however, do so more quickly if repayments are made after their undergraduate loan is paid off than if repayments are made concurrently. This is because they have higher earnings, on average, later in their careers. For example, the richest 10% of postgraduates would make repayments on their postgraduate loan for only an additional four years once their undergraduate loan was repaid (as opposed to seven years when payments are made simultaneously, despite the larger accumulated loan – see Figure 5).

### 5.2.2 CentreForum proposal

Figures 19 and 20 show the overall and distributional implications of the CentreForum proposal for graduates and taxpayers compared with the illustrative loan scheme set out in Autumn Statement 2014, under the assumption that undergraduate and postgraduate loan repayments are made concurrently.

Figure 19 shows that total NPV repayments are very similar under this proposal to those under the Autumn Statement proposal with repayments made alongside the undergraduate system. But Figure 20 illustrates that this overall picture is reached through very different routes under the two systems. While postgraduates take, on average, 14 years to repay their loans under the Autumn Statement proposal, they would take, on average, 25 years to repay their loans under the CentreForum proposal. This is because 9% of income between £15,000 and £21,000 is lower than 9% of income above £21,000 for anyone earning more than £27,000 per year (which around two-thirds of postgraduates do from age 30 onwards).

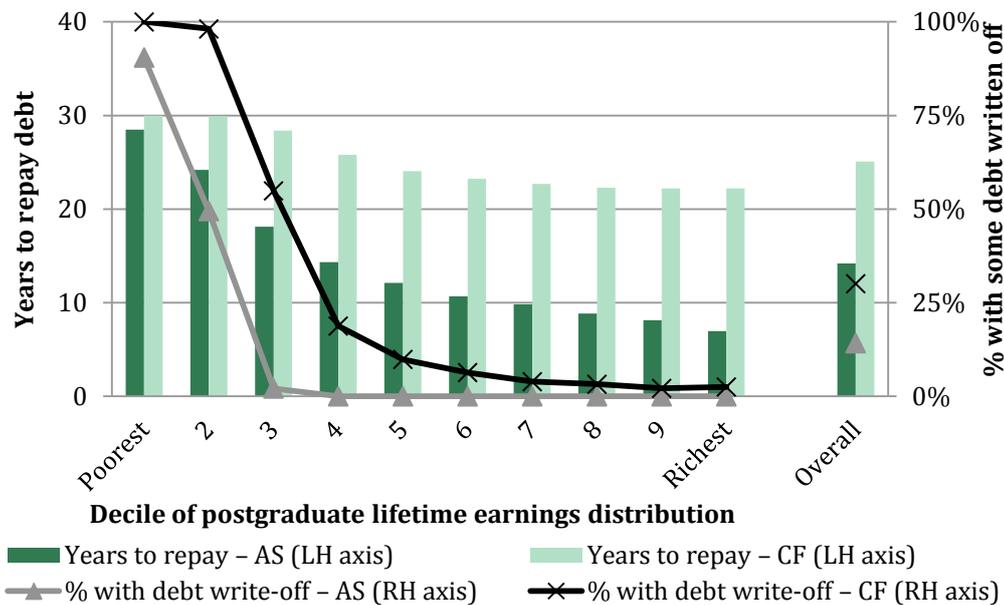
Figure 19. Net present value of repayments and RAB charge, by decile of postgraduate lifetime earnings: Autumn Statement proposal versus CentreForum proposal



Note: 'NPV of lifetime repayments' is the value of expected future postgraduate repayments in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Figure 20. Average years to repay and percentage with debt written off, by decile of postgraduate lifetime earnings: Autumn Statement proposal versus CentreForum proposal



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

Thus, we see the biggest difference between the two systems for the highest-earning 10% of postgraduates, who would take more than 22 years, on average, to repay their postgraduate loans under the CentreForum proposal, but are estimated to repay their loans in full within seven years, on average, under the Autumn Statement proposal. In fact, they would be repaying their postgraduate loans for longer than their undergraduate loans under the CentreForum proposal, because of the restricted slice of income on which they would be making repayments towards their postgraduate loans.

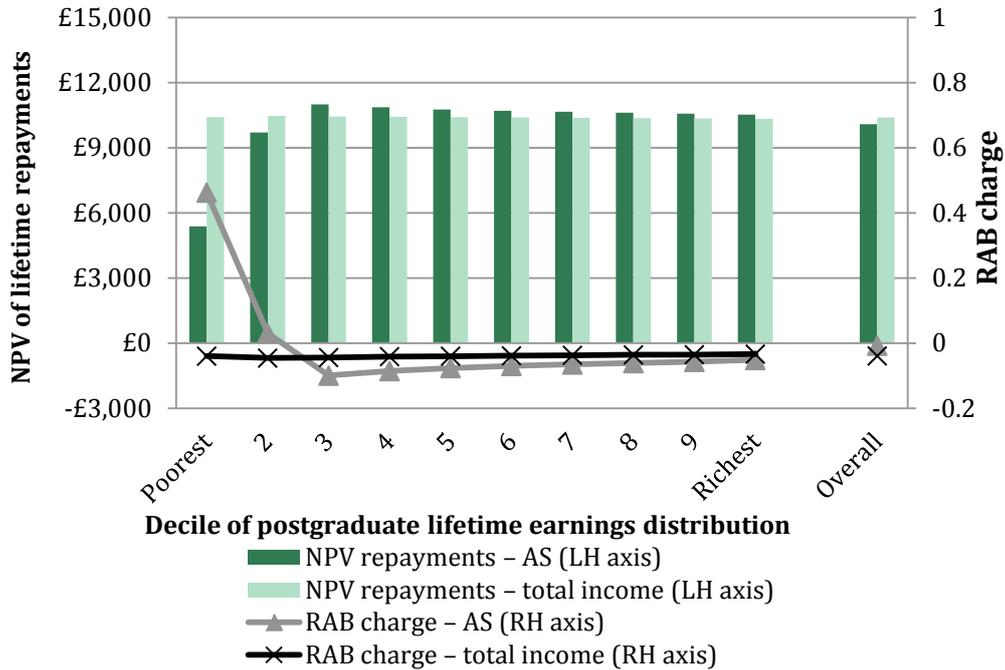
This, of course, raises the possibility that the highest-earning graduates would decide not to take out loans or that they would choose to repay early – an issue that we explore in Section 5.3. It also suggests that were the CentreForum proposal to be implemented, it would be tricky to increase the loan amount substantially without changing the terms under which loans are issued, because otherwise it might quickly run into problems with non-repayment.

### 5.2.3 Total income proposal

Figures 21 and 22 show the overall and distributional implications of the total income proposal for graduates and taxpayers compared with the illustrative loan scheme set out in Autumn Statement 2014, in both cases under the assumption that postgraduate loan repayments are made concurrently with undergraduate loan repayments. (Figures A.1 and A.2 in the appendix show what would happen under the total income proposal if we assumed undergraduate and postgraduate repayments were made consecutively.)

These figures highlight that virtually all postgraduates would be expected to repay their loans in full under this system, and would do so very quickly as well. For example, everyone outside the lowest-earning 10% of postgraduates is estimated to repay their loans in full, and less than 5% of those in the bottom decile are estimated not to do so. Average repayment length is also very low, even amongst those in the bottom decile: less than six years, on average, and less than 10 years amongst the lowest-earning 10% of

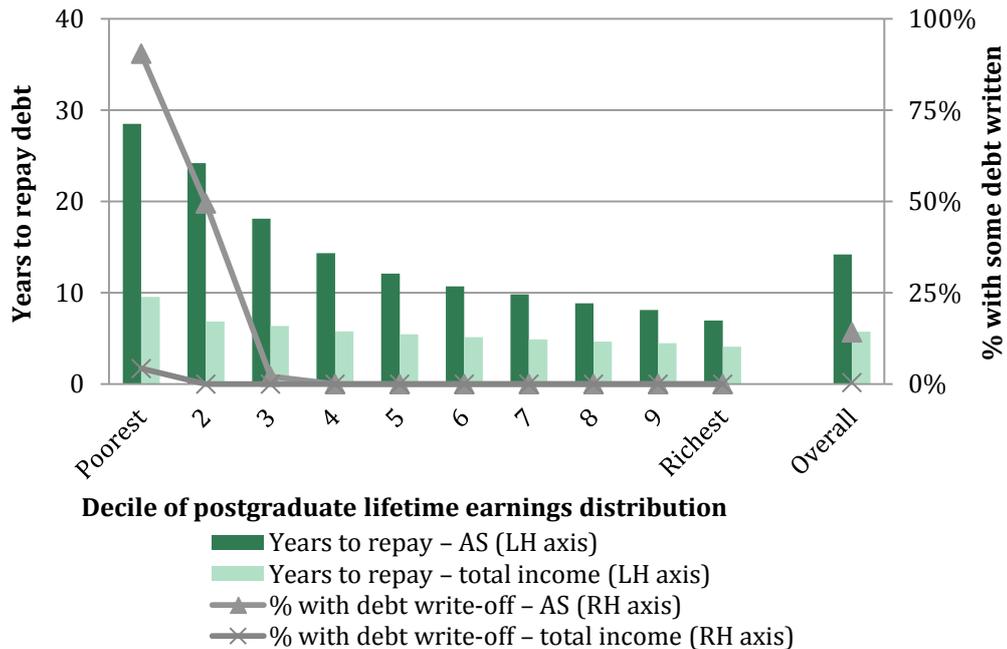
Figure 21. Net present value of repayments and RAB charge, by decile of postgraduate lifetime earnings: Autumn Statement proposal versus total income proposal



Note: 'NPV of lifetime repayments' is the value of expected future postgraduate repayments in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Figure 22. Average years to repay and percentage with debt written off, by decile of postgraduate lifetime earnings: Autumn Statement proposal versus total income proposal



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

postgraduates. Again, this delivers a RAB charge very similar to those under the CentreForum proposal and under the illustrative Autumn Statement loan scheme (assuming repayments are made concurrently), and suggests that, whichever of these postgraduate loan schemes the government were to adopt, it is highly likely that it would be relatively low-cost to the government, at least with a maximum loan amount of £10,000.

#### 5.2.4 Comparison with the proposed Autumn Statement system

Table 9 highlights the main points from the discussion of each of the three alternative systems above, illustrating how they compare with the Autumn Statement proposal in which undergraduate and postgraduate loan repayments are made concurrently.

For all policies in which postgraduate loan repayments are made concurrently with undergraduate loan repayments, the RAB charge is negative but close to zero: the NPV of lifetime repayments for postgraduate loans is expected to slightly exceed initial government spending in all three cases; thus we expect the government to break even (or make a small profit) under each of these proposals, at least when using under our baseline assumptions. As outlined above, the RAB charge is much higher under the Autumn Statement proposal if we assume that an individual only starts making postgraduate loan repayments once they have paid off their undergraduate loan.

Focusing just on the scenarios in which undergraduate and postgraduate loan repayments are made concurrently, the distributional implications of these three proposals are somewhat different, with virtually all postgraduates expected to repay the full value of their loans under the total income proposal, while around one-in-seven postgraduates would be expected to have some debt written off under the illustrative loan scheme set out in the Autumn Statement and nearly one-in-three postgraduates would not be expected to repay their loans in full under the CentreForum proposal. The fact that all three proposals end up with a RAB charge close to zero thus indicates the extent to which some postgraduates are expected to repay more than the amount they borrow in NPV terms as a result of the relatively high real interest rate (RPI+3%).

Table 9. Summary of taxpayer and postgraduate contributions

	Default (Autumn Statement proposal)	Autumn Statement proposal assuming consecutive repayments	CentreForum proposal	Total income proposal
RAB (%)	-0.8	56.8	-1.6	-3.9
% with write-offs	14.2	77.2	30.1	0.4
<b>Initial govt spending</b>	£10,000	£10,000	£10,000	£10,000
Taxpayer contribution	-£79	£5,684	-£161	-£393
Graduate contribution	£10,079	£4,316	£10,161	£10,393
<b>Per 92,000 students</b>				
Total up-front govt spending	£920m	£920m	£920m	£920m
Total long-run contribution	-£7.3m	£523m	-£14.8m	-£36.2m

Note: All figures are given in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

### 5.3 Sensitivity analysis

As was done for the undergraduate loan system in Section 3.4, this section explores the sensitivity of these estimates to the underlying assumptions, investigating the difference made by using a lower discount rate (Table 10), having long-run real earnings growth that is higher (Table 11) or lower (Table 12) than is assumed in the baseline scenario, and assuming that the highest-earning 10% of postgraduates decide not to take up the government's offer of an income-contingent loan (Table 13).

Table 10 replicates Table 9 under the assumption that the discount rate is RPI+1.1% rather than RPI+2.2% as assumed in our baseline estimates. It is again important to emphasise that changing the discount rate does not change the amount of real repayments that are made, simply how highly we value future repayments today. (Thus, the percentage of graduates with some debt written off is the same here as it was in Table 9.)

Table 10 shows that, as was the case for the undergraduate loan system, reducing the discount rate from RPI+2.2% to RPI+1.1% reduces the RAB charge by about 10 percentage points. For the three proposals in which undergraduate and postgraduate repayments are made concurrently, the RAB charge becomes consistently negative; in other words, we estimate that the government would be highly likely to make a profit from lending money to postgraduates. This arises mostly because all postgraduates face an interest rate on their loan that is well above the government's assumed cost of borrowing. (Remember that the discount rate is designed to reflect the government's long-run cost of borrowing.) We estimate that the largest profit would be made from the total income proposal and the smallest from the CentreForum proposal.

Tables 11 and 12 show the sensitivity of our estimates to changing the assumption about the long-run rate of graduate earnings growth. Table 11 illustrates what would happen if graduate earnings growth were to be RPI+2.2% in the long run and Table 12 what would happen if there were to be no real earnings growth in the long run. (The baseline assumption is that there will be long-run real earnings growth of 1.1%.)

**Table 10. Summary of contributions: discount rate of RPI+1.1%**

	<b>Default (Autumn Statement proposal)</b>	<b>Autumn Statement proposal assuming consecutive repayments</b>	<b>CentreForum proposal</b>	<b>Total income proposal</b>
RAB (%)	-12.0	43.3	-9.9	-18.4
% with write-offs	14.2	77.2	30.1	0.4
<b>Initial govt spending</b>	£10,000	£10,000	£10,000	£10,000
Taxpayer contribution	-£1,198	£4,326	-£992	-£1,845
Graduate contribution	£11,198	£5,673	£10,992	£11,845
<b>Per 92,000 students</b>				
Total up-front govt spending	£920m	£920m	£920m	£920m
Total long-run contribution	-£110m	£398m	-£91.3m	-£170m

Note: All figures are given in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+1.1%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Table 11. Summary of contributions: earnings growth of RPI+2.2%

	Default (Autumn Statement proposal)	Autumn Statement proposal assuming consecutive repayments	CentreForum proposal	Total income proposal
RAB (%)	-1.1	46.0	-3.6	-3.9
% with write-offs	12.6	68.9	19.6	0.3
<b>Initial govt spending</b>	£10,000	£10,000	£10,000	£10,000
Taxpayer contribution	-£111	£4,598	-£360	-£394
Graduate contribution	£10,111	£5,402	£10,360	£10,394
<b>Per 92,000 students</b>				
Total up-front govt spending	£920m	£920m	£920m	£920m
Total long-run contribution	-£10.2m	£423m	-£33.1m	-£36.2m

Note: All figures are given in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Table 12. Summary of contributions: earnings growth of RPI+0%

	Default (Autumn Statement proposal)	Autumn Statement proposal assuming consecutive repayments	CentreForum proposal	Total income proposal
RAB (%)	0.1	66.8	3.0	-3.9
% with write-offs	16.4	83.9	52.8	0.5
<b>Initial govt spending</b>	£10,000	£10,000	£10,000	£10,000
Taxpayer contribution	£11	£6,678	£305	-£392
Graduate contribution	£9,989	£3,322	£9,695	£10,392
<b>Per 92,000 students</b>				
Total up-front govt spending	£920m	£920m	£920m	£920m
Total long-run contribution	£1.0m	£614m	£28.1m	-£36.1m

Note: All figures are given in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

These tables show that the rate of earnings growth has a substantial impact on the expected cost of the Autumn Statement proposal assuming postgraduate loan repayments are only made once undergraduate loans have been paid off, with the RAB charge ranging from 46% assuming 2.2% real earnings growth in the long-run to 67% assuming real earnings growth of 0%.

By contrast, earnings growth has a limited impact on the expected long-run cost to government across any of the proposals in which undergraduate and postgraduate loan repayments are made concurrently, with the RAB charge remaining between -4% and +3% regardless of policy. The total income proposal is particularly impervious to the impact of graduate earnings growth, because almost everybody pays off their loan very

Table 13. Summary of contributions: top 10% of earners do not take out loans

	Default (Autumn Statement proposal)	Autumn Statement proposal assuming consecutive repayments	CentreForum proposal	Total income proposal
RAB (%)	-0.6	64.7	-0.9	-4.3
% with write-offs	14.2	76.8	29.8	0.4
<b>Initial govt spending</b>	£9,000	£9,000	£9,000	£9,000
Taxpayer contribution	-£51	£5,822	-£83	-£383
Graduate contribution	£9,051	£3,178	£9,083	£9,383
<b>Per 92,000 students</b>				
Total up-front govt spending	£828m	£828m	£828m	£828m
Total long-run contribution	-£4.7m	£536m	-£7.6m	-£35.2m

Note: All figures are given in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (assumed to be RPI+2.2%). Assumes all but the top 10% highest-earning postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

quickly. The different ways in which the proposals generate repayments produce differences in some other indicators, however: for example, if there were zero real earnings growth in the long run, then we estimate that less than half of postgraduates would be expected to repay their loans in full under the CentreForum proposal, while the figure would be more than 80% if earnings grew at 2.2% above the rate of inflation in the long run.

Finally, Table 13 shows the sensitivity of our estimates to loan take-up, illustrating what difference it would make if the highest-earning 10% of postgraduates did not take out a loan. Averaged across all postgraduates, up-front government spending is now £9,000 rather than £10,000. Overall, however, the removal of the 10% highest-earning graduates makes relatively little difference to the overall cost of the loan scheme to the government under any of the four policies considered. In particular, the NPV of repayments is still expected to exceed up-front costs under the three scenarios in which undergraduate and postgraduate loan repayments are made concurrently. This lack of sensitivity to loan take-up arises largely because most postgraduates are expected to repay their loans; thus the highest-earning postgraduates are not cross-subsidising underpayments from lower-earning postgraduates to the same extent as they are under some undergraduate loan scenarios (e.g. the pseudo graduate tax in particular).

In summary:

- The long-run cost to government associated with a postgraduate loan of the magnitude set out in the Autumn Statement is expected to be close to zero whichever of the three approaches we were to pursue (assuming that undergraduate and postgraduate loan repayments are made concurrently). Moreover, this assessment is not particularly sensitive to assumptions about long-run graduate earnings growth or the population of postgraduate borrowers.
- But, as was the case for the undergraduate loan scheme, the discount rate is important. If we were to use a real discount rate of 1.1% (rather than the 2.2% used

in our baseline estimates), then we estimate that the government would make a profit from lending money to postgraduates, as a result of the high real interest rate charged (RPI+3%, regardless of income), which is above its own assumed cost of borrowing.

- It is important to note, however, that in both our analysis in this chapter and in the undergraduate loan chapter, we have assumed that there is no behavioural response, i.e. that we do not suddenly see a large influx of new borrowers (or, if we do, that they have earnings very similar to the existing population of postgraduates). If lots of very low earners were to enter the system, then the cost may increase. (Although, given that the loan is so small, they would have to be in the lowest decile of postgraduate earners to really make a difference.)

While not the main focus of this report, it is also worth noting that for the proposed postgraduate loan scheme to make a big difference to postgraduate participation rates, it would need to sufficiently cover the tuition fees and living costs of students whilst they are studying. While some estimates of average postgraduate fees suggest that this may be a reasonable assumption,<sup>20</sup> there are clearly some courses that charge fees well above the £10,000 maximum loan, for which the loan may not be sufficient to overcome the credit constraints faced by poorer individuals. It is also worth noting that, in contrast to the undergraduate system in which fees are tightly regulated, there is much more scope for universities to increase fees in response to an increase in liquidity amongst potential postgraduate students. In the extreme scenario in which all universities raised fees by £10,000, it is possible the loan scheme may make no difference to access to postgraduate studies.

## 6. Conclusion

This report has estimated the likely long-run cost to government of the current undergraduate and proposed new postgraduate loan schemes. We have also estimated the variation in these estimates that might result from changes to long-run real earnings growth or loan take-up behaviour, and in particular shown how sensitive they are to the choice of discount rate (the way in which we value future repayments in the present).

While there is a range of plausible estimates for the long-run cost of the loan scheme to government – and the true cost, even for the 2012 cohort, will not be known for decades to come – it seems likely that, for the undergraduate system at least, in the absence of further policy reform, the long-run cost to government of issuing student loans will be at least £10,000 per student (or £3 billion per year for a cohort of 300,000 students).

Recent policy debate has focused heavily on whether this figure is ‘too high’. It is, of course, important to bear in mind that the loan subsidy is just one element of the support government provides for undergraduate higher education: it also provides teaching and maintenance grants, for example, as well as funding for things such as ‘widening’ access (although we have not considered these latter elements in this report). Any debate about whether the current system is ‘too expensive’ should thus consider the full range of support on offer and not just the loan subsidy (commonly referred to as the RAB charge).

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<sup>20</sup> See, for example, <http://www.timeshighereducation.co.uk/features/international-and-postgrad-fee-survey-2014/2015207.article>.

To inform potential future discussions on this topic, this report has explored the financial and distributional implications of a range of potential reforms that have been suggested by various interested parties to reduce the loan subsidy (and hence the overall government contribution to undergraduate higher education).

Because the current repayments schedule is so progressive, reforms that seek to adjust the parameters of the existing loan system generally fall into two camps: those that make the system somewhat less progressive (and hence hit lower- to middle-income graduates hardest) and those that seek to extract higher loan repayments from the richest graduates (and hence become very sensitive to the income and loan take-up behaviour of a relatively small number of individuals). Of the reforms we have considered, the proposal to freeze (and then uprate more slowly) the income thresholds and the proposal to assess repayment liabilities on the basis of total income (rather than income above a threshold) fall into the former camp, while the 'pseudo' graduate tax falls into the latter camp. This is an inevitable trade-off that policymakers seeking to reform the system in future would have to make.

The Labour proposal is different, in that it seeks to reduce not the cost of higher education borne by taxpayers but the cost borne by graduates. It reduces the amount that is loaned out to graduates (and hence the long-run cost to government of issuing student loans), but substitutes this uncertain long-run cost with a known up-front contribution in the form of higher teaching grants. Because some graduates are expected to repay their loans in full under the current system, this policy would increase the overall taxpayer contribution to higher education. Moreover, because higher-income graduates are the most likely to repay their loans in full, the policy effectively benefits higher-income graduates the most.

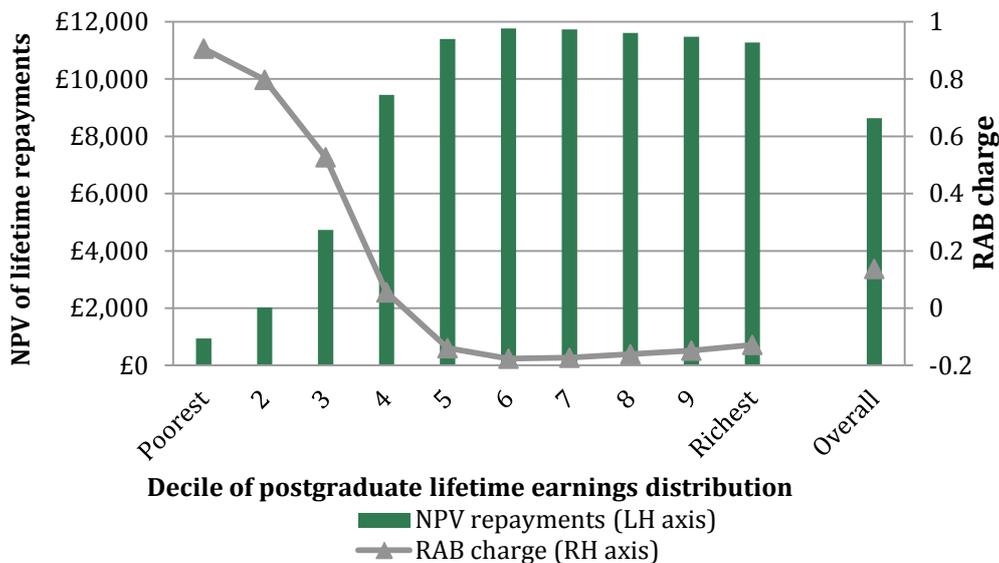
The report also considers the likely cost to government of issuing loans of up to £10,000 to almost 100,000 postgraduate students. Assuming postgraduate loan repayments are paid concurrently with undergraduate loan repayments, we estimate that this could be achieved at essentially zero cost to the government. Moreover, these estimates are relatively impervious to changes to real earnings growth or which graduates decided to take out a loan. This is because the vast majority of postgraduates are expected to repay their loans in full, and to do so relatively quickly, mostly because they would borrow considerably less than undergraduates.

The risks to the postgraduate system are therefore likely to be somewhat different from those to the undergraduate system. For example, if the size of the postgraduate loan on offer were scaled up substantially, then the costs might start to escalate (and the uncertainty increase). This may be relevant when considering the design of the £25,000 loans for PhD students proposed in the Budget. Similarly, while asking postgraduates to repay their postgraduate loans alongside their undergraduate loans means that the loans are much more likely to be fully repaid, it comes at the expense of these individuals facing very high marginal tax and repayment rates – more than 50% in the early part of their career – which might change their labour supply or location behaviour in a less than optimal way. Moreover, the extent to which the new postgraduate system will ease credit constraints (and hence widen access to postgraduate study) is uncertain, as it is not clear how universities will respond. In contrast to undergraduate fees, postgraduate fees are unregulated; some courses already charge fees of more than £10,000 and – if they believe that there is excess demand for their courses – universities with high market power may simply increase fees in response to an increase in liquidity amongst potential students.

The subsidy inherent in the undergraduate student loan system now comprises a substantial proportion of the overall government subsidy of higher education. It is thus perhaps inevitable that debates about whether the loan subsidy is too high will continue. But it is important to remember that this is only one (highly uncertain) element of government support for higher education, and having so much of the debate focused solely on how much the government is likely to subsidise student loans misses the wider issue of how much the government should be subsidising higher education full stop. There are several reasons why the government might want to subsidise higher education, including the fact that there are benefits for the economy beyond those realised by individual graduates, such as having a more productive or healthier workforce. However, choosing the appropriate level of subsidy and targeting it efficiently is fraught with difficulty. A more open discussion about how much subsidy should be provided, for whom, and how much certainty we would like to have over the numbers would be welcome.

## Appendix

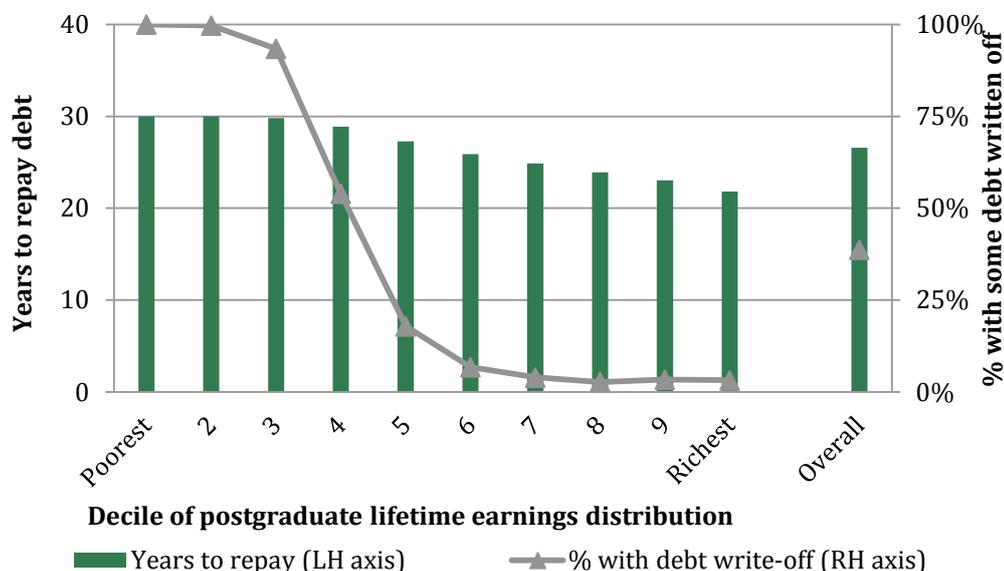
Figure A.1. Net present value of repayments and RAB charge, by decile of postgraduate lifetime earnings: total income proposal for postgraduate loans assuming postgraduate repayments are made after undergraduate loan is paid off



Note: 'NPV of lifetime repayments' is the value of expected future postgraduate repayments in 2016 prices, discounted using a discount rate equal to the government's assumed cost of borrowing (RPI+2.2%). Assumes postgraduates take out the maximum loan to which they are entitled, repay following their repayment schedule and have no unearned income.

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

Figure A.2. Average years to repay and percentage with debt written off, by decile of postgraduate lifetime earnings: total income proposal for postgraduate loans assuming postgraduate repayments are made after undergraduate loan is paid off



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

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