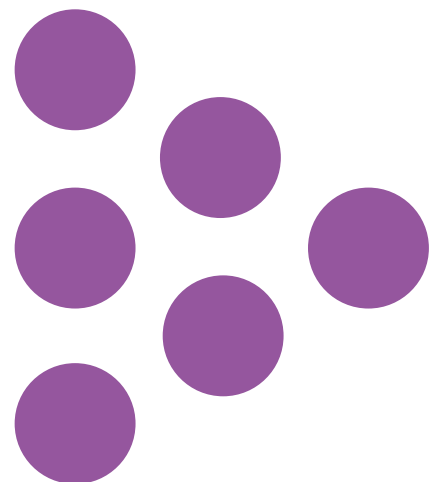# NFER

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Report

The impact of training bursaries on teacher recruitment and retention

An evaluation of impact and value for money

National Foundation for Educational Research (NFER)

The impact of training bursaries on teacher recruitment and retention: an evaluation of impact and value for money

Dawson McLean, Sarah Tang and Jack Worth

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Executive Summary

England has been facing a significant teacher supply challenge, particularly in the years following the Covid-19 pandemic (McLean, Worth and Faulkner-Ellis, 2023). The number of teachers recruited to postgraduate initial teacher training (ITT) has been lower than before the pandemic despite increased demand for teachers. In 2022, retention rates returned to pre-pandemic levels after two years of being higher due to the pandemic.

The challenge has been particularly intense in secondary subjects, and undersupply has been especially marked for physics, computing, maths and chemistry teachers. Further undersupply of the specialist teachers required for a high-quality science, technology, engineering and maths (STEM) education in schools in England is a significant risk to education quality.

The Department for Education (DfE) offers financial incentives to increase the attractiveness of subjects that are experiencing recruitment and retention issues. A key financial incentive is the training bursary, which the DfE spent £181 million on in 2023/24.

The research evidence clearly demonstrates that increases in training bursaries are associated with increased recruitment into teacher training. However, there is little robust evidence on the effectiveness (including cost effectiveness) of bursaries at addressing the overall teacher supply challenge in the long term. The aim of this research is to provide evidence on the long-term effectiveness of financial incentives for improving teacher recruitment and retention.

Using data from the ITT Performance Profiles (ITT-PP) and the School Workforce Census (SWC), we estimated the impact of bursaries on key longer-term teacher outcomes, including qualified teacher status (QTS) achievement, entry into state-sector teaching and retention in the state sector. We used a statistical methodology that compares outcomes associated with bursary changes that occur within subjects rather than between subjects, which is more robust than the methods used in the existing literature.

Key Findings

The analysis confirms the consistent finding from previous research that bursary increases are associated with increases in recruitment into ITT. We also find that the additional teachers induced to enter training by a bursary increase tended to complete their training, enter teaching and be retained in teaching at the same rate as other teachers in their cohort.

Overall, bursary increases are therefore associated with a sustained increase in long-term teacher supply. Currently, a starting cohort of 100 teachers will translate, through attrition, into 41 teachers that stay beyond their fifth year in teaching. However, a £5,000 bursary increase, all else equal, leads to 115 teachers entering training and 47 teachers staying beyond their fifth year in teaching.

The additional teachers are also more likely to teach in schools that tend to struggle most with filling vacancies, such as schools in London and schools serving disadvantaged communities. Bursaries are therefore an effective policy tool for addressing national teacher shortages and the associated staffing challenges in the most affected schools.

Crucially, bursary spending can be targeted at priority subjects, so offers good value for money compared to undifferentiated spending on all phases and subjects, such as across-the-board pay

increases. Bursary spending is also targeted at prospective teachers, whose behaviour tends to be highly responsive to financial incentives compared to experienced teachers.

We also find that bursaries offer good cost effectiveness compared to other targeted policy measures such as early career payments, especially where the existing bursary for a subject is low. Our analysis suggests that an additional £100m spent on bursaries (including the extra indirect costs such as teacher training costs) in shortage subjects would have a similar impact on overall teacher supply compared to same-cost increases in early career payments and pay increases targeted at early career teachers or secondary teachers.

The findings suggest that policymakers have a range of effective tools at their disposal for addressing recruitment and retention, which all show good levels of cost effectiveness, and bursaries are one of them. The current high level of teacher supply challenge across many subject areas means that policy measures are needed to support the teacher pipeline wherever possible, using a balanced approach.

We recommend that:

1. The Government should keep training bursaries in place to ensure ITT recruitment is supported to be higher than it otherwise would be.
2. The Government should continue raising bursaries for subjects experiencing teacher supply challenges and where bursaries are low. Increasing bursaries where there is a small or no existing bursary is more cost effective than when the existing bursary is already at a high level.
3. The Government should maintain high bursaries for maths, physics, chemistry and computing, raising them over time with the level of the teaching starting salary. However, to further boost teacher supply the Government should redesign the 'levelling up premium' early career payments for shortage subjects by widening eligibility to teachers working in all schools nationally and increasing payment generosity to enhance its impact.

1 Introduction

1.1 Policy background

England has been facing a significant teacher supply challenge, particularly in the years following the Covid-19 pandemic (McLean, Worth and Faulkner-Ellis, 2023). The number of teachers recruited to postgraduate initial teacher training (ITT) has been lower than before the pandemic despite increased demand for teachers. In 2022, retention rates returned to pre-pandemic levels after two years of being higher due to the pandemic.

The challenge has been particularly intense in secondary subjects, and undersupply has been especially marked for physics, computing, maths and chemistry teachers. Further undersupply of the specialist teachers required for a high-quality science, technology, engineering and maths (STEM) education in schools in England is a significant risk to education quality. There has been chronic under-recruitment and higher-than-average leaving rates for maths and science for many years, primarily due to STEM graduates having relatively attractive career options outside of teaching, compared to teachers of other subjects (Migration Advisory Committee, 2017; Worth and Van den Brande, 2019).

Teacher pay is not differentiated by subject and therefore does not account for differences in what different subject specialists might be able to earn outside of teaching. This can disincentivise graduates from entering teaching when they can earn significantly more outside of teaching than other graduates. This, in part, is likely to have contributed to teacher recruitment and retention in STEM subjects being significantly more challenging than other subjects.

In the absence of subject-specific teacher pay, the Department for Education (DfE) offers financial incentives to increase the attractiveness of subjects that are experiencing recruitment and retention issues. A key financial incentive is the training bursary. Since 1986, the DfE has offered qualifying graduates tax-free bursaries to cover some or all of their training costs (Robinson, 1995). Trainees are eligible for a bursary if they are not training through an employment-based training route where they receive a salary (including Teach First trainees), hold at least a lower second-class (honour's) undergraduate degree and train to teach in an eligible subject.

Until 2019/20, bursaries were differentiated by degree class, with the highest bursaries available to those holding a first-class degree. However, since 2019/20, bursaries amounts have been identical for trainees holding a first-class, 2:1 or 2:2 degree.

Crucially, bursary amounts are subject-specific, with the subjects most in shortage attracting the highest bursaries. Since 2014/15, for example, eligible trainees holding a first-class degree and specialising in physics, maths, computing and chemistry have all received bursaries of over £20,000, with first-class physics trainees being eligible for £30,000 in 2016/17 and 2017/18.

Bursaries are not the only financial incentive which the DfE uses to boost recruitment and retention. Eligible trainees training in specific subjects (e.g. physics, chemistry and computing) can apply to receive a scholarship to assist with their training costs. Between 2000/01 and 2011/12, the DfE also offered qualifying applicants 'Golden Hellos' which were similarly aimed at improving recruitment and retention in shortage subjects.

The financial incentive system was streamlined in 2012/13 when 'Golden Hellos' were eliminated, leaving bursaries as the main financial incentive. The generosity of bursary payments also increased significantly beginning in 2012/13 (Worth, Tang and Galvis, 2022). This was to

compensate for the increase in tuition fees faced by trainees that year, which were previously partially subsidised by the tuition grant (also eliminated in 2012/13).

Teachers in shortage subjects, in addition to a training bursary, may also be eligible for early career payments, which are salary premiums paid to teachers in the first five years of their career, designed to improve retention of teachers in shortage subjects. The policy was introduced in 2018/19 and initially provided eligible maths and physics teachers with a £2,000 after-tax lump sum payment – an eight per cent premium paid on top of their teaching salary. The programme has since expanded to provide more generous payments and to target teachers in other shortage subjects. In 2023/24, eligible maths teachers can receive up to £5,000, while eligible physics, chemistry and languages teachers can receive up to £2,000.

Since 2022/23, some maths, physics, chemistry and computing teachers have also been eligible to receive the levelling up premium. The levelling up premium is a salary premium of up to £3,000 paid to eligible teachers who started their ITT course in 2017/18 or later, are in the first five years of their careers and who are teaching in schools identified as having a high need for teachers. Teachers in schools that are in education investment areas receive higher payments (DfE, 2023b).

1.2   Research evidence on training bursaries

DfE's estimates show that there is a positive link between bursary payments and applications to train as a teacher. Specifically, a £10,000 increase in a bursary is associated with a 29 per cent increase in the number of applications to enter teacher training (National Audit Office, 2016). Qualitative evidence suggests that, particularly for career changers, bursaries were the main trigger for many to explore teaching as a career option.

NFER's previous research in this area suggests that the responsiveness of applications to bursary increases means that bursaries are a key tool available to the DfE to address the teacher recruitment challenge (Worth and Hollis, 2021). Alongside increases to teacher pay, increases in the generosity of bursaries, particularly for chronically under-recruiting subjects such as physics, maths and chemistry, could assist in meeting recruitment targets in some of these subjects (Worth, Tang and Galvis, 2022; Tang and Worth, 2023).

However, while effective in terms of improving applications, bursary payments are a significant financial outlay for the government each year – in 2024/25, the DfE plans to spend £196 million on bursary payments (DfE, 2023a) . Despite this significant cost, there is little evidence on the effectiveness (including cost effectiveness) of bursaries at addressing the overall teacher supply challenge in the long term.

Specifically, while bursaries have a significant impact on ITT applications, it is hypothesised that bursary changes also lead to lower teacher retention rates. Trainees may respond to the incentive to enter teacher training, but may ultimately be more likely to leave teaching once the financial motivation is gone (See *et al.*, 2023)

There is little concrete evidence that bursaries support this theory, however. DfE statistics show that, on average, the higher the bursary an ITT trainee receives, the lower the likelihood that they receive their teaching qualification and are in teaching in subsequent years (DfE, 2018b). However, these summary statistics do not provide compelling evidence of a causal relationship since they compare qualification and retention rates across subjects. Subjects that suffer from the greatest teacher supply challenges (and hence tend to have lower qualification, progression and

retention rates) tend to be supported by higher bursaries. The relationship between a higher bursary and lower qualification and retention rates implied by the data may to some extent therefore be reflecting this 'reverse causality'.

Existing evidence suggests that bursary increases change the type of applicant to a teacher training course. A £10,000 increase in a subject's bursary is associated with a two percentage point increase in the proportion of applicants who are age 40 and over. The same bursary increase is associated with a one percentage point increase in the proportion of applicants who are from a white ethnic background, a four percentage point reduction in applications to employment-based training routes (which are not eligible for bursaries, but do come with a salary) and a two percentage point increase in male applicants (Worth and Hollis, 2021).

Changes to the composition of trainee teachers driven by increases to bursary may lead to lower future retention rates of the teachers attracted because, overall, male teachers and career changers are less likely than average to stay in teaching long term. Therefore, bursary changes may in fact ultimately have an impact on retention rates, but through changes to teacher characteristics.

1.3   Research evidence on other financial incentives

Bursaries operate alongside other financial incentive programmes designed to directly influence teacher retention, such as early career payment and the levelling up premium. The evidence around the effectiveness of salary premiums on retention is more well-developed than for bursaries. A recent study shows that early career payments eligibility was associated with teachers being 23 per cent less likely to leave state-sector teaching in the years they were eligible (Sims and Benhenda, 2022). This is in line with similar studies from around the world. Evidence from the United States, Norway and Chile generally has showed that salary premiums were associated with improved retention outcomes (See *et al.*, 2022; Taylor *et al.*, 2023)

Bursaries, on the other hand, are paid to all eligible trainees from when they begin their training. Some of the government's annual expenditure on bursary payments is therefore made to trainees who do not enter or stay in state-sector teaching. This raises important questions about the value for money of bursary payments as a financial incentive, especially if teachers recruited into trainee through a higher bursary are ultimately less likely to stay in teaching.

1.4   Political context

Questions around the right mix of financial incentives to improve teacher supply have become important for policymakers in light of the worsening teacher recruitment and retention situation and challenging state of public finances. Political parties are also in the process of setting their manifestoes for a likely 2024 general election and putting forward their proposals for tackling the teacher recruitment and retention challenges.

The Prime Minister announced funding during the 2023 Conservative Party Conference to implement an additional £30,000 tax-free payment for teachers in key shortage subjects in the first five years of their careers. This would be part of a £600 million expenditure over two years to 'lay the groundwork for delivering the Advanced British Standard', the proposed replacement for A-Levels and T-Levels qualifications (Prime Minister's Office, 10 Downing Street Department for Education, 2023).

The Labour party has also stated plans to implement significant reforms in the teacher recruitment and retention space. Specifically, they aim to restructure the retention payments scheme and

introduce a new Early Career Framework retention payment. Alongside this is an explicit commitment to review the evidence on bursaries to ensure that 'the £181 million a year the Government spends on incentivising people into teaching is being best used to attract and critically to retrain [*sic*] teaching staff' (Labour Party, 2023).

1.5 Motivation and aims for this research

The overall aim of this research is to provide evidence on the long-term effectiveness of financial incentives for improving teacher recruitment and retention.

This is the second strand of a wider research programme, commissioned by the Gatsby Foundation, to investigate specific policy proposals aimed at improving the teacher supply challenge, particularly for STEM subjects. This strand of the research aims to produce a comprehensive impact and cost-effectiveness evaluation of bursaries as a financial incentive.

The main research questions are:

1) Do bursary changes affect the recruitment and retention of teachers in the long term?
2) What does the impact of bursaries on retention imply about the value for money of bursary payments compared to other available policy levers?
3) Do bursary changes affect the characteristics of trainee teachers and the schools they teach in?

The findings will lead to an improved understanding of how bursaries impact teacher supply in the long-term, helping policymakers to make informed decisions around recruitment and retention policy.

1.6 Structure of this report

Section 2 of this report contains a brief outline of the methodology we used for the analysis, with additional details in the methodology appendices.

Sections 3 to 5 summarise the main findings from the analysis. In section 3, we explore the impact that bursary changes have on recruitment into teaching and then analyse how bursaries are associated with teacher progression and retention rates.

Section 4 then shows what the link between bursaries and progression and retention rates imply about the value for money of bursaries. We analyse the cost effectiveness of bursaries (in terms of average cost per additional teacher) compared with early career payments. We also show how cost-effective bursaries are at improving overall teacher supply (i.e. the number of trainees compared to target), compared to other policy options designed to improve teacher supply (such as early career payments and increasing pay.)

In section 5 we provide additional insights into how bursary changes are associated with the characteristics of trainees and the schools they teach in. This section provides some key context around our estimated impacts on progression and retention rates and will also show whether bursary increases lead to additional teachers filling in gaps in supply in particular types of schools.

Section 6 concludes and offers recommendations based on our analysis. Additional methodological details for our analysis are provided in a series of appendices at the end of this report.

2 Methodology

We use two key datasets for our analysis: the ITT Performance Profiles (ITT-PP) and the School Workforce Census (SWC). The ITT-PP data records key information about trainee teachers, while the SWC records key information about teachers for each year that they are teaching in a state-sector school. The SWC tracks the same teachers each year they are in state-sector teaching, which means, crucially, that we can observe which teachers are retained in teaching in the years after they enter.

The ITT-PP data does not contain information on the bursary received by each trainee. We therefore inferred the bursary each trainee received by the year they began their training and the subject they qualified in. We assumed that all trainees received the bursary for trainees holding a 2:1 degree. This is because, in more recent years, there has been a move away from differentiating bursaries by degree class and also, since 2010/11, the majority of trainees hold a 2:1 degree anyway (DfE, 2022). Furthermore, in most cases, trainees would only receive confirmation of their undergraduate degree class after having applied to postgraduate teacher training, so it is unlikely that degree class would be strongly correlated with decisions to enrol on an ITT course or stay in teaching for the long term.

We also assumed that all trainees received a bursary regardless of training route (as most trainees on employment-based routes receive a salary, rather than a bursary). We made these simplifying assumptions in order to make the modelling more tractable and conducted a number of robustness checks to ensure that our approach to infer a trainee's bursary did not significantly affect our results. We provide more details of how we identified bursaries and the results of the robustness checks we implemented in the methodology appendices. The first key outcome we derived from the data for the analysis was the overall aggregate number of trainees on ITT courses, which we calculated separately by year and subject. We used this outcome to analyse the impact of bursary increases on the number of trainees.

The other key outcomes we used in the analysis were trainees' career trajectories. All were observed and analysed at the individual level, rather than the aggregate level. Specifically, we observed whether each trainee achieved qualified teacher status (QTS) in the last year of their course and whether qualified trainees entered teaching within one year of receiving QTS. Using the SWC data, we then observed, for all teachers who entered teaching, whether they stayed in teaching in each of the first five years after they entered. Further details on variable definitions are provided in the methodology appendices.

We also observed several characteristics of the trainees and teachers in the data, which were used to determine whether bursary changes impact on the characteristics of trainees, teachers and the schools they teach in. Specifically, we observed trainees' age, gender, ethnicity, undergraduate degree specialism and degree class. For teachers who received QTS and entered teaching, we also observed their working pattern, the region and level of deprivation of their school.

To estimate the impact of bursaries on our key outcomes, we used statistical regression models, focussing on the 2012/13 to 2020/21 ITT cohorts. Drawing on an existing methodology previously used in this area (Worth and Hollis, 2021), we estimated regression models for each of our outcomes, with the amount of bursary each trainee or teacher received at the beginning of their ITT course as the key explanatory variable.

We also included separate control variables for year and subject in the model to account for any impacts on our progression and retention outcomes that were specific to a particular year or subject. The inclusion of these 'year and subject fixed effects' also, crucially, means that our estimated impacts reflect the impact of a bursary increase within subjects (i.e. we are not comparing across different subjects).

Where the outcome variable was dichotomous (i.e. a 'yes' or 'no' outcome), we used a regression model built for dichotomous outcomes, known as a logistic regression model. For the estimates we included in this report, we converted the model outputs to 'marginal effects' (i.e. an impact represented in terms of percentage points). We discuss further details of the model specifications in the methodology appendices.

Since bursaries operated alongside other financial incentive programmes designed to support teacher recruitment and retention in numerous years (see section 1.1), there was a possibility that our estimates may have confounded the effect of bursaries with the effect of other programmes. We conducted sensitivity analysis to check that other programmes were not significantly affecting our results, which we summarise in Appendix B.

To assess how the value for money of bursaries compares to other policy options, we used our estimates of how bursary changes impact recruitment and retention to calculate the cost of recruiting additional teachers via a bursary increase. We then compared the cost per additional teacher-year (i.e. the number of additional years there were teachers in the classroom) for bursaries to the cost per additional teacher-year for early career payments (holding the total cost for each policy option constant). This follows a similar methodology used by Sims and Benhenda (2022), further details of which can be found in Appendix A.

As a second part of the value for money analysis, we also used our estimates of how bursary increases impact recruitment in the NFER teacher supply forecast and simulation model (see Tang and Worth (2023) and Appendix C for a more detailed description of the simulation model). The aim of this was to analyse the impact of bursaries compared to other policy options in terms of overall teacher supply (i.e. how bursaries impact the number of teachers recruited into ITT compared to the targeted number of teachers).

We ran a range of scenarios (e.g. increasing bursaries, increasing early career payments, increasing teacher pay) in the forecasting and simulation model. Each policy option involved an additional cost of £100m per year compared to a status quo baseline, and we compared the impacts on teacher supply for each scenario to the baseline. This enabled us to compare the impact on teacher supply within the broader system of spending additional funds on bursaries compared to ECPs or pay.

3   Impact of bursaries on recruitment and retention

In this section, we consider how bursary changes impacted on the supply of teachers in state-sector schools in England. We first show how bursary changes influenced the number of teachers enrolled on ITT courses. We then discuss whether bursary changes were associated with the proportion of trainees receiving QTS, entering and staying in teaching. The analysis shows whether bursary changes were associated with differences in retention rates and, therefore, how the impact of bursary changes ultimately feeds through to long-term teacher supply.

3.1   Bursary impact on recruitment into training

As we outlined in section 1.2, the existing evidence consistently shows that increasing bursaries is associated with a higher number of ITT applications. A £10,000 increase in a subject's bursary is associated with a 29 per cent increase in the number of applications to that training programme (National Audit Office, 2016; Worth and Hollis, 2021).
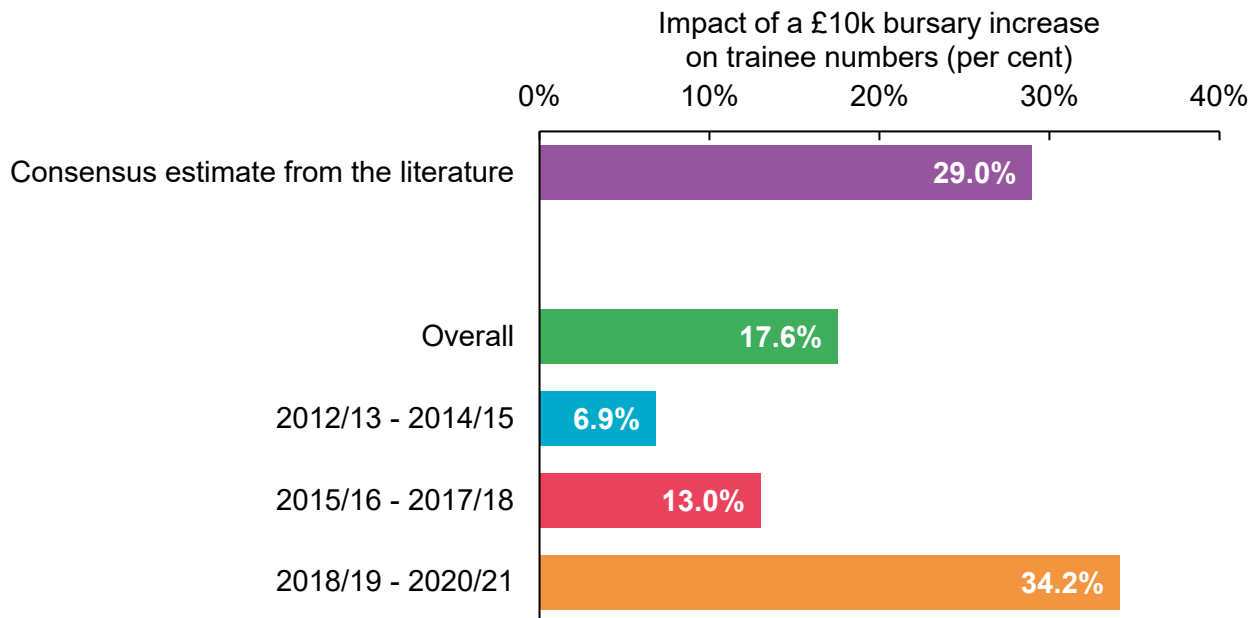
However, if a higher proportion of these additional applicants are more likely to have their application rejected or are less likely to enrol on a course, then this may not necessarily translate into a similar increase in the number of trainees enrolling on ITT courses.

To determine the impact of bursary changes on the number of trainees, we used data from the ITT-PP to estimate how variation in the number of ITT trainees in each subject and year was associated with the bursaries that trainees received that year.

The analysis showed that, overall, a £10,000 increase in a subject's bursary was associated with an 18 per cent increase in the number of trainees in that subject. However, the impact was highly dependent on the cohorts analysed. For the 2012/13 to 2014/15 cohorts, a £10,000 bursary increase was associated with seven per cent more trainees, which was not statistically significant. However, in more recent cohorts the impact has been larger. For the 2015/16 to 2017/18 cohorts, a £10,000 bursary increase was associated with 13 per cent more trainees while the impact was 34 per cent for the 2018/19 to 2020/21 cohorts, both of which were statistically significant.

The consensus estimate from the literature is that a £10,000 bursary increase leads to 29 per cent more ITT applications. This is a larger impact than our overall estimated impact on trainees of 18 per cent, although relatively close to our estimate for the four most recent cohorts in our analysis.

Figure 1 **A £10,000 bursary increase was associated with an 18 per cent increase in trainees, but the impact was highly dependent on which cohorts were considered**

Impact of a £10k bursary increase
on trainee numbers (per cent)

Category	Value
Consensus estimate from the literature	29.0%
Overall	17.6%
2012/13 - 2014/15	6.9%
2015/16 - 2017/18	13.0%
2018/19 - 2020/21	34.2%

Note: Consensus estimate from the literature reflects the estimated impact of a £10k bursary increase on ITT applications (National Audit Office, 2016; Worth and Hollis, 2021; Worth, Tang and Galvis, 2022).

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21.

The impact estimate from the more recent cohorts likely offers a better reflection of the current teacher recruitment and retention landscape in England, which has changed significantly since the early 2010s. Teacher recruitment and retention has become, generally, more challenging over time. Furthermore, throughout much of the 2010s, the DfE imposed caps on the number of ITT trainees a provider could enrol on a course, which targeted a provider-level and national-level number of trainees entering the system (Spendlove, 2024). This means that bursary increases from earlier in the decade may have had a more muted impact on trainees in those years.

Overall, what the findings suggest is that the impact of bursary increases on trainee numbers reflects the changing policy context of teacher recruitment over the years. One 'overall' impact estimate requires a somewhat arbitrary choice of which sets of cohorts should be considered in the analysis.

Nonetheless, our estimated impact on trainee numbers in the most recent cohorts is consistent with the estimates from the existing literature. This suggests that the 29 per cent impact on trainee numbers per £10,000 bursary rise estimate remains well-supported by the evidence. Accordingly, we use this as our primary estimated impact on trainee numbers in our subsequent modelling and analysis throughout the rest of this report.

3.2 Bursary impact on entry and retention in teaching

To determine whether the increase in trainees induced by a bursary increase feeds through to more teachers remaining in the school system, we considered how bursary increases were associated with each cohort's subsequent progression and retention rates.

The analysis in this section focussed on the impact on progression and retention rates, rather than the aggregate number of teachers in each career stage, because the impact of a bursary increase on the aggregate number of trainees and teachers was highly dependent on the cohorts considered. We used a logistic regression model for the 2012/13 to 2020/21 cohorts to estimate whether bursaries were associated with a significant difference in qualification, entry and retention rates.

We then combined our estimated impact on trainee numbers (from section 3.1) with our individual estimated impacts on QTS achievement, entry and retention rates to determine what our results imply about how bursaries impact overall teacher numbers. We outline these findings in section 3.2.2.

3.2.1 Overall impact on entry and retention

Overall, the findings show that there is no compelling evidence that bursary increases are associated with significantly lower retention rates, nor with any impacts on QTS achievement and entry into teaching rates, which we show in Figure 2.

Figure 2   A bursary increase was associated with a positive and statistically significant impact on entry into teaching rates but no significant impacts on other outcomes
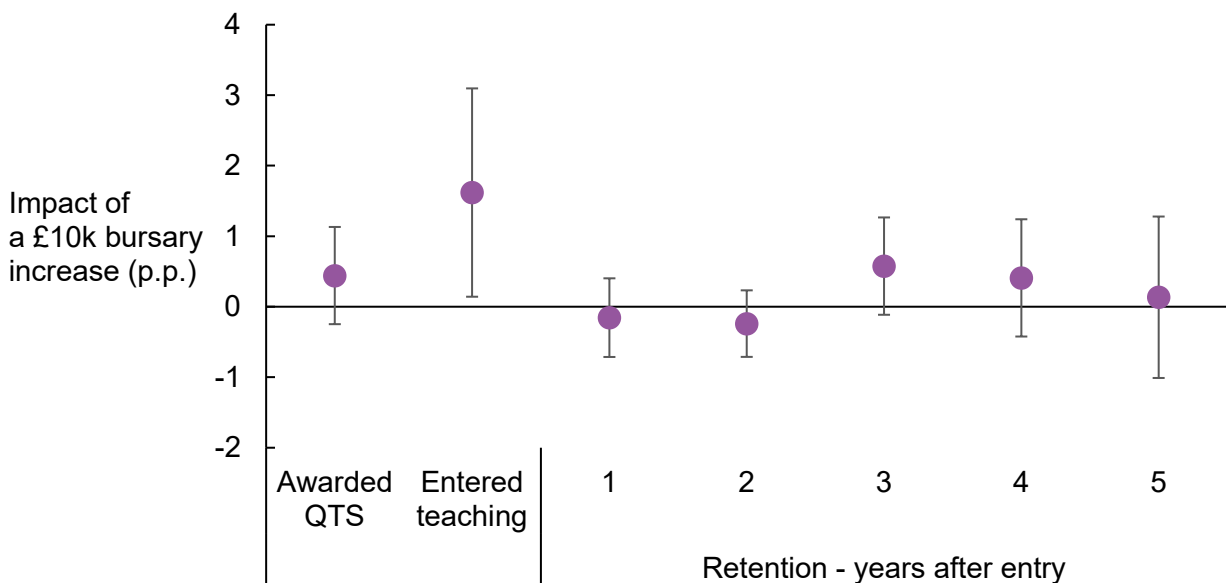
Note: Error bars represent the estimate's 95 per cent confidence intervals. Estimates are not statistically significantly where the bar crosses the horizontal axis.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Specifically, we found that a £10,000 bursary increase was associated with a QTS achievement rate that was about half a percentage point higher than the baseline achievement rate,[1] but this was not statistically significant. The same bursary increase was also associated with retention rates one and two years after entry into teaching that were about a fifth of a percentage point lower than baseline,[2] none of which were statistically significant. The impact on retention rates from three to five years after entry, conversely, was positive, but also small (less than one percentage point) and not statistically significant.

Where bursary increases were associated with a statistically significant impact was in entry into teaching. Specifically, a £10,000 bursary increase was associated with a small increase in entry rates into teaching (1.6 percentage points higher than the baseline rate),[3] which was statistically significant.

A positive and statistically significant estimated impact on entry rates is counterintuitive. However, as we show in Appendix A, it may have been driven by different impacts across cohorts. For most subsets of cohorts (i.e. for only the 2012/13 to 2014/15 cohorts or only the 2015/16 to 2017/18 cohorts), bursary changes were not associated with any statistically significant impacts on entry rates. Indeed, if we remove the 2019/20 and 2020/21 cohorts from the analysis, the estimated impact on entry becomes slightly negative. This could suggest that our overall positive estimated impact may have been driven in part by effects of the Covid-19 pandemic.[4]

Generating one overall concrete estimate of the impact on progression and retention rates requires an arbitrary choice of which cohorts to include in the analysis. However, overall, our estimated impacts on all progression and retention outcomes are very small, and the specific magnitude highly dependent on which cohorts on considered. This suggests that bursary changes therefore broadly have no significant impacts on progression and retention rates. In all our subsequent modelling, we therefore assume that bursary increases have no impact on progression and retention rates.

In addition to exploring differences in impact across cohorts, we also examined whether there were any statistically significant differences across subjects. We found that generally there was little evidence of any systematic differences across different subjects. This means that there was no compelling evidence that bursary changes impacted teachers in one subject (and particularly, in shortage subjects) differently than any others.

We also analysed whether there were differences in impacts across bursary levels (i.e. whether the impact of a bursary increase was different when the prevailing bursary was £1,000 or £30,000). This would reflect whether there tends to be a 'ceiling' beyond which bursary increases may negatively impact progression and retention rates.

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[1] The baseline QTS achievement rate is the QTS achievement rate that we would expect to observe in the absence of a bursary increase. Overall, for all cohorts and subjects we consider in the analysis, the baseline QTS achievement rate was 90 per cent.

[2] The baseline retention rate for teachers one and two years after entry was 89 and 90 per cent, respectively.

[3] The baseline rate of qualified trainees entering teaching within a year of achieving QTS was 73 per cent.

[4] We included year fixed effects in the regression model specification to control for system-wide shocks such as the pandemic. However, if the pandemic had a different impact on recruitment and retention outcomes for different subjects, then the year fixed effects may not have fully absorbed its impact.

Overall, we found that there was no strong evidence that the impact was different for different prevailing bursary levels. This does not necessarily imply that a hypothetical very large bursary increase (i.e. a bursary of much more than £30,000) would have no impact progression and retention rates. However, it is not possible to extrapolate beyond historical bursary levels to determine whether such a ceiling exists.

4 Value for money of bursaries

Our finding that bursary increases have no significant impact on qualification, entry and retention rates suggests that the additional trainees who enrol on an ITT course because of a bursary increase then enter and stay in teaching at the same rate as the rest of the cohort. This implies that increasing bursaries leads to a larger cohort of teachers in the long term.

In this section we explore the implications of these findings further, illustrating the impact of bursary increases on teacher numbers and teacher supply. We also compare the teacher supply implications and cost effectiveness of bursary increases with other policy measures that also have known impacts on teacher supply.

First, we take a cohort-based approach, comparing the numbers of teachers from a hypothetical cohort of trainees under different policy scenarios with the same total cost to Government. We compare bursaries with early career payments and compare both to a baseline scenario (i.e. a scenario without a bursary increase or an early career payment).

Second, we use NFER's teacher supply forecast and simulation model to analyse the effectiveness of bursaries at improving teacher supply more generally (i.e. increasing the number of trainees as a proportion of the recruitment targets). This analysis aims to provide insights into which policy, or group of policies, are the most cost effective: i.e. lead to the highest impact on teacher supply for a given fixed expenditure. We provide further methodological details for our value for money analysis in Appendix A.

4.1 Implications for teacher supply

We first set out a thought experiment using a hypothetical cohort of 100 teacher trainees entering the profession. Based on qualification, entry into teaching and retention rates derived from the ITT-PP and the SWC, we would expect that, at the prevailing bursary level, 66 qualified trainees of the original cohort of 100 would enter state-sector teaching and, after five years in teaching, 41 would remain.

We estimate what impact a bursary increase of £5,000 would have on teacher numbers from the hypothetical cohort at each stage of the teacher career pipeline using the parameters from section 3. Our analysis suggests that with a £5,000 bursary, we would expect 115 trainees to be recruited to training. Since, as we showed in section 3.2.1, bursary increases are not strongly associated with progression and retention, these teachers would be just as likely as teachers recruited without a bursary in place to enter and stay in teaching. Therefore, we would expect 75 qualified trainees of the cohort of 115 to enter state-sector teaching in the year after they complete their training, and 47 to still be in teaching after five years, 15 per cent more than in the baseline scenario.

We also examine further scenarios for comparison, in which teachers receive ECPs. To facilitate a like-for-like comparison we compare the number of teachers in the cohort from a £5,000 bursary increase scenario with the number of teachers in the cohort from the same total cost being spent on ECPs.

The total cost of a £5,000 bursary increase depends on the level of the prevailing bursary. This is because bursaries induce more trainees to enrol on an ITT course (who then receive a bursary payment). For example, if there is no existing bursary then the cost to Government of raising

bursaries by £5,000 is the £5,000 for the 100 existing trainees, plus the £5,000 and training costs[5] for the additional 15 teachers (since the total bursary amount paid to the additional trainees recruited is £5,000).

However, if the prevailing bursary is £30,000 already, then the cost to raise bursaries by £5,000 involves all the same costs as before, but the additional 15 teachers recruited would also receive the £30,000 existing bursary (since the total bursary amount paid to the additional 15 trainees recruited in this scenario would be £35,000).

This means that the cost of a bursary increase, no matter the size of the increase, would be higher for subjects which already have high bursary levels (e.g. shortage subjects such as physics, maths, computing and chemistry). We show concretely how the cost of increasing bursaries is related to the prevailing bursary level in Appendix B.

We therefore compare the number of teachers in the cohort that result from increasing bursaries by £5,000 with two scenarios that reflect Government spending the same amount on ECPs, based on prevailing bursary levels of £0 and £30,000. A bursary increase of £5,000 from no bursary is equivalent in cost to an ECP of £3,300 per year for teachers in each of the first five years. A bursary increase of £5,000 from a prevailing £30,000 level is equivalent in cost to an ECP of £4,700 per year for teachers in each of the first five years. We show in Appendix B how we estimated the cost of bursaries and ECPs.

We assume that an ECP would not lead to any effects on recruitment[6], and draw on the estimates of ECPs impact on retention from the existing literature. Specifically, a one per cent increase in ECPs (relative to a teacher's existing salary) leads to a three per cent lower teacher wastage rate (Sims and Benhenda, 2022).

Figure 3 shows how each of these scenarios affect the total number of teachers at each stage of the teacher career pipeline. A £5,000 bursary increase leads to more entrants into training than the baseline scenario and this supply increase is sustained into a greater number of early career teachers in the state sector.

The recruitment boost from bursaries also means that there are more teachers that enter state-sector teaching than both the baseline and ECP scenarios. As shown in Table 1, the baseline and ECP scenarios lead to 66 teachers entering state-sector teaching, whereas a £5,000 bursary increase leads to 75 teachers entering.

After the first year in teaching the ECP scenarios begin to lead to more teachers in teaching than the baseline, and the gaps between the bursary increase scenario and the ECP scenarios narrow. In terms of the number of teachers who stay in teaching more than five years after entry, both bursaries and ECPs lead to similar numbers of additional teachers in teaching, for the same cost. ECPs lead to a slightly greater number of teachers staying after their fifth year compared to bursaries.

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[5] We use an estimated cost of training one additional teacher of £22,000, in 2023 prices. Sims and Benhenda (2022) use a figure of the average teacher training costs to central Government being around £29,000 in 2022 prices. However, we require an estimate that does not include the bursary component of the average cost, which the original estimate does (Allen *et al.*, 2016a). We therefore estimate the cost by removing the bursary component from the original estimate from Allen *et al.*, and uprating to 2023 prices.
[6] The literature shows that early career payments may be associated with a very small impact on recruitment (Worth, Tang and Galvis, 2022), but for simplicity we assume that this impact is negligible.

Figure 3   Bursaries lead to a boost in recruitment, which leads to more teachers in teaching compared to the baseline
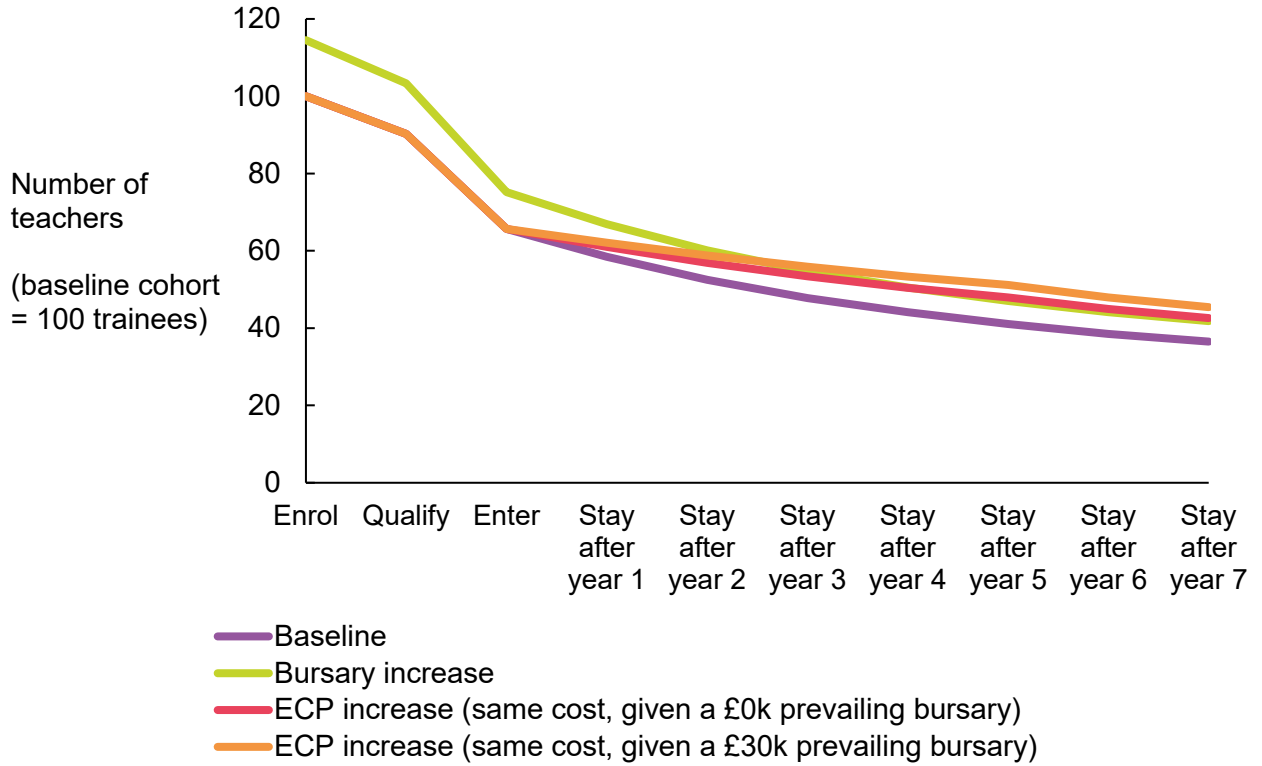
Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Table 1 **A £5,000 bursary increase has a similar impact on the number of early career teachers in state-sector teaching as an ECP**

	Number of teachers			
	Baseline	**Bursary increase (£5,000)**	**ECPs (£3,300 per year)**	**ECP (£4,700 per year)**
Entrants	100	115	100	100
Qualify	90	103	90	90
Enter	66	75	66	66
Stay after year 1	58	67	61	62
Stay after year 2	53	60	57	59
Stay after year 3	48	55	53	56
Stay after year 4	44	51	50	53
Stay after year 5	41	47	48	51

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Increases in bursaries and ECPs both lead to a greater number of teachers compared to the baseline, which demonstrates that both are powerful tools for increasing the number of teachers in state-sector teaching. However, the profile of the additional teacher supply varies through the career pipeline, with the data suggesting that bursaries lead to more teachers entering teaching and being in the classroom in their first few years, whereas early career payments lead to more classroom teachers over the longer term.

Figure 4 summarises the implications for the cumulative number of 'teacher-years' in the classroom under each scenario, compared to the baseline. Teacher-years is based on counting the number of additional years there are teachers in the classroom. For example, the bursary increase leads to nine more teachers compared to the baseline in the first year of teaching (75 versus 66 in Table 1), a further nine teachers in the second year of teaching (67 versus 58), which is a cumulative total of 18 teacher-years, and so on.

At the enrolling in ITT and qualifying stages there are no more teachers in the classroom under any scenario because they are still in training. The boost to ITT recruitment from bursaries that is sustained into later career stages leads to more teachers entering the classroom than the baseline scenario. Bursaries continue to lead to more teacher-years in the classroom over time due to the sustained supply increase. In contrast, ECP increases only start leading to increased numbers of teacher-years in the classroom after teachers' first year.

The implications of this analysis are that all three scenarios lead to a greater cumulative number of teacher-years in the classroom compared to the baseline. The analysis also suggests that where a subject does not currently have a bursary, increasing it is likely to lead to more teacher-years in the classroom (i.e., the green line is above the red line). For subjects with a very high

bursary already (e.g. shortage subjects such as physics, maths, chemistry and computing),[7] a bursary increase does lead to more teacher-years in the classroom in the short and medium term. However, spending the equivalent amount on ECPs is likely to be similarly or even more effective in the long term (i.e. beyond seven years after entering teaching).

Figure 4   Bursary increases lead to a higher cumulative number of teacher-years in the classroom than the baseline and ECP increase scenarios
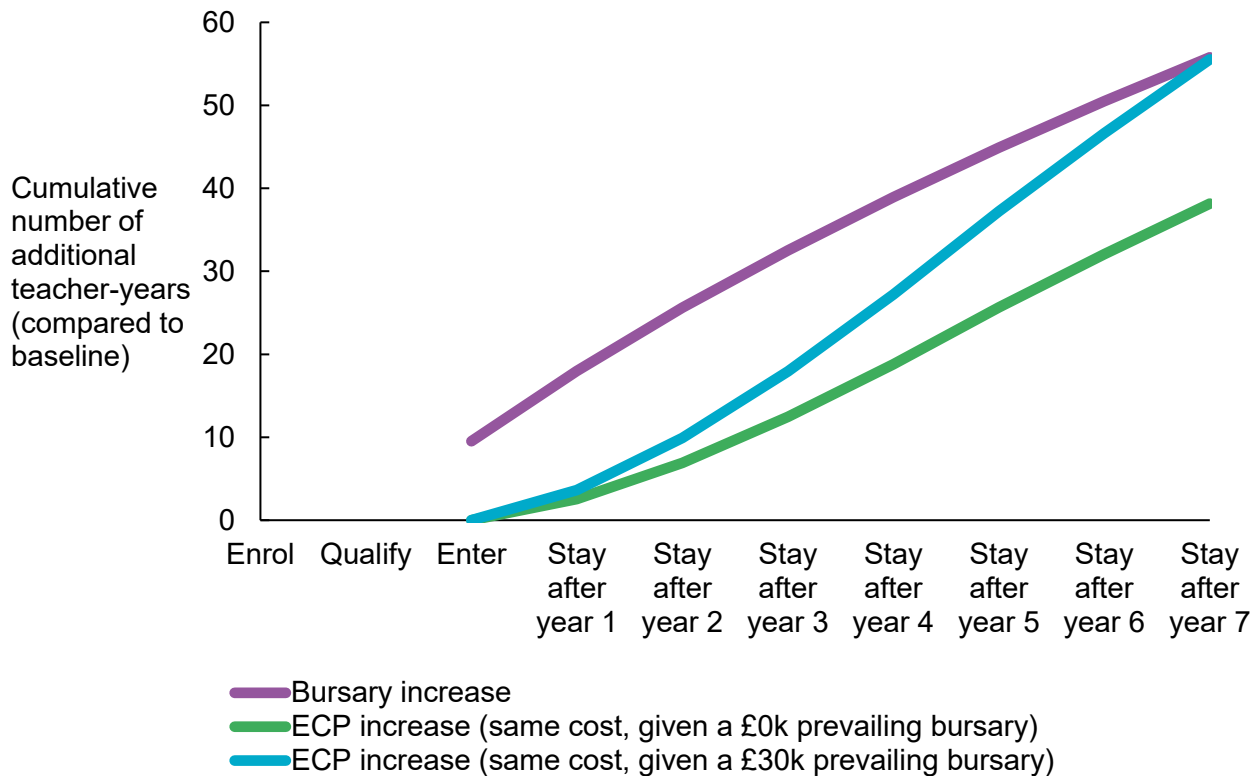
Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

4.2   Cost effectiveness of bursaries for early career teacher supply

To directly compare the cost effectiveness of different policy levers at a cohort level, we use the same analytical framework of a hypothetical cohort of 100 teachers to answer a slightly different question. We analysed what the impact of spending a total of £1m (including direct policy costs as well as indirect costs such as increased cost of teacher training for bursaries) would be on the hypothetical cohort using different policy measures.

First, as in the previous section, we assess what impact the different policy measures are estimated to have on the cumulative number of teacher-years in the classroom. Second, we assess the average cost per additional teacher-year in the classroom for each policy measure, at different stages of the teacher career pipeline.

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[7] The maximum bursary in 2020/21, the last cohort in our analysis, was £26,000, which applied to all of these subjects plus languages and biology.

Figure 5 shows that spending an additional £1m on the hypothetical cohort using either bursaries or ECPs leads to a higher number of teacher-years in the classroom compared to the baseline. In other words, all these measures are effective at increasing teacher supply. As in the previous section, it also shows that cost effectiveness depends on the prevailing level of the bursary.

For a subject with no bursary, a £1m increase in bursary spend and associated indirect costs (e.g. teacher training costs) would enable a £5,560 bursary increase. This increase would lead to a greater cumulative number of teacher-years in the classroom compared to spending the same total cost on ECPs (£3,670 per year for the first five years).

Figure 5 **For a £1m spend, bursaries lead to more additional teacher-years in the classroom compared to early career payments, especially for subjects with a low prevailing bursary**
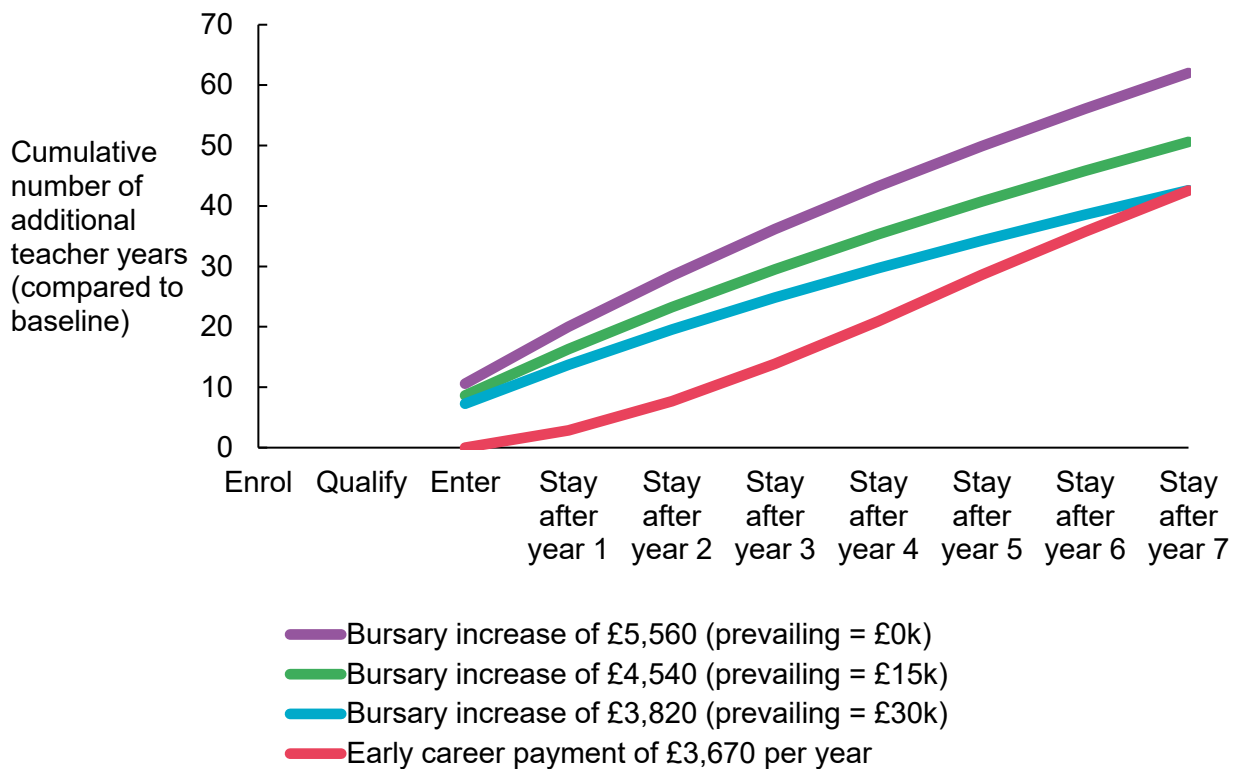
Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

A £1m increase in bursary spend and associated indirect costs for a subject with an existing £15,000 bursary would enable a £4,540 bursary increase. Similarly, this size of increase would also lead to a greater cumulative number of teacher-years in the classroom compared to spending the same total amount on ECPs.

For a subject with a £30,000 bursary, a £1m increase in bursary spend and associated indirect costs (e.g. teacher training costs) would enable a £3,820 bursary increase. An increase of this size would lead to a greater cumulative number of teacher-years in the classroom in the short and medium term compared to spending the same total amount on ECPs, but spending the equivalent

amount on ECPs is likely to be similarly or even more effective in the long term (i.e. beyond seven years after entering teaching).

This suggests that increasing bursaries has high cost effectiveness compared to spending the equivalent amount on ECPs, especially in the first years of teachers' careers, although the difference is smaller when the bursary level is very high to begin with.

Figure 6 highlights this directly, measuring the average cumulative cost per additional teacher-year for each of these policy measures. The average cost falls as more additional teacher-years in the classroom are accrued by the policies. Consistent with Figure 5, an additional spend of £1m on financial incentives has the lowest average cost, and is therefore most cost effective, when spent on bursaries for subjects with no current bursary. The average cost is higher for spending on bursary increases where a subject already has a bursary. Finally, spending £1m on ECPs may be more effective than spending on a bursary increase where the bursary is already very high, especially over the long term.

Figure 6 **Bursaries have a lower cost per additional teacher-year compared to early career payments, especially for subjects with a bursary that is low to start with**
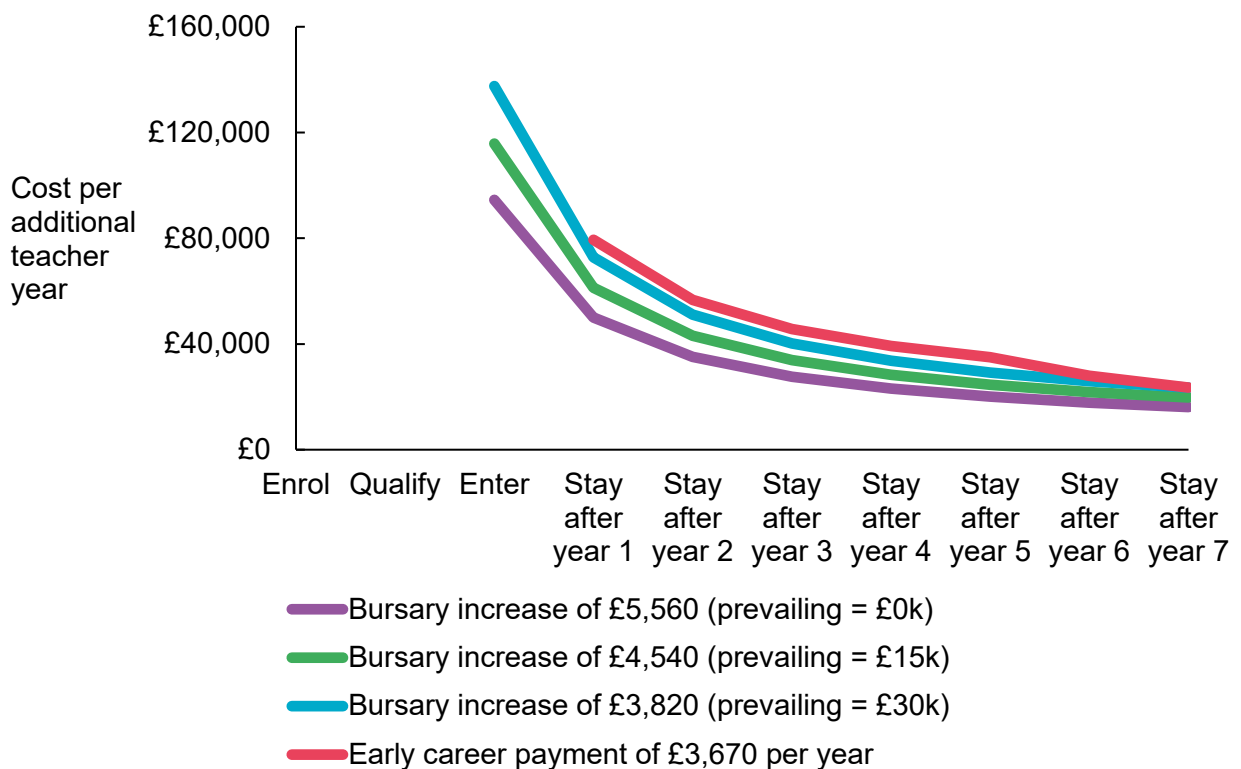
Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

4.3 Cost effectiveness of bursaries for overall teacher supply

We also considered what our analysis implies about the cost effectiveness of bursaries at supporting teacher supply more generally. The analysis in this section uses NFER's teacher

supply forecasting and simulation model to analyse the impact of increased bursaries on teacher supply. The simulation model enabled us to analyse how bursary increases are likely to impact on overall teacher supply, given factors such as the teacher pay structure, growth in pupil numbers and the dynamic impacts of recruiting and retaining more teachers on recruitment targets. The model also enabled us to compare the value for money of bursaries to other, wider policy options such as increasing pay. See Appendix C for further details of the NFER teacher supply simulation model.

The measure of impact on teacher supply is the capped measure of overall supply, which is the number of trainees recruited into ITT as a percentage of the number required (the recruitment target). The capped measure of overall supply provides a measure of ITT recruitment against target for all subjects, but it is 'capped' because it does not allow over-recruitment (i.e. greater than 100 per cent) in some subjects to be counted against under-recruitment (i.e. less than 100 per cent) in other subjects. The capped measure of overall recruitment has a maximum value of 100 per cent, which would represent every subject meeting or exceeding its target.

We modelled a range of policy scenarios, focussed on changing one input in the model: bursaries, ECPs or pay. Each scenario involved spending an additional £100m per year from 2025/26 on either bursaries, ECPs or pay to estimate what effect this had on teacher supply.

Our baseline scenario keeps bursaries and ECPs at the current levels and increases pay by two per cent per year. The 'increasing bursaries' and 'increasing ECPs' scenarios increase financial incentives for maths, physics, chemistry and computing. We also modelled three pay scenarios: increasing pay, splitting pay scales and flattening pay. The 'increasing pay' scenario simply increases pay rates across both phases (primary and secondary) and all spine points at the same rate. The 'splitting pay scales' scenario keeps primary teacher pay at two per cent per year, as in the baseline, but spends the extra £100m on increasing secondary teacher pay by more (recognising that recruitment challenges are most acute in the secondary sector). The 'flattening pay' scenario involves increasing lower pay points at a higher rate than higher pay points, thus boosting starting pay and reducing the gap between pay points as teachers move up the pay scale. Further details of each of the scenarios is given in Appendix D.

For each scenario the capped measure of overall recruitment was compared to the baseline scenario, to assess the relative cost effectiveness of each approach. Each policy scenario involved an increase in spending of £100m a year from 2025/26 onwards. This £100m includes all costs involved with each of the policy options, both direct from the policy and indirect from the policy's implications. For example, scenarios that increased starting pay for teachers attract additional teachers into teacher training and are therefore associated with increased indirect costs of bursaries and also training costs.

In 2027/28 under the baseline scenario, the model forecasted that capped overall supply would be 59 per cent. The relative impact of the approaches outlined in the Appendix D are shown in Figure 7. All scenarios led to an increase in the capped measure of overall supply above baseline, as would be expected by a £100m increase in spending on measures that increase recruitment, retention or both.
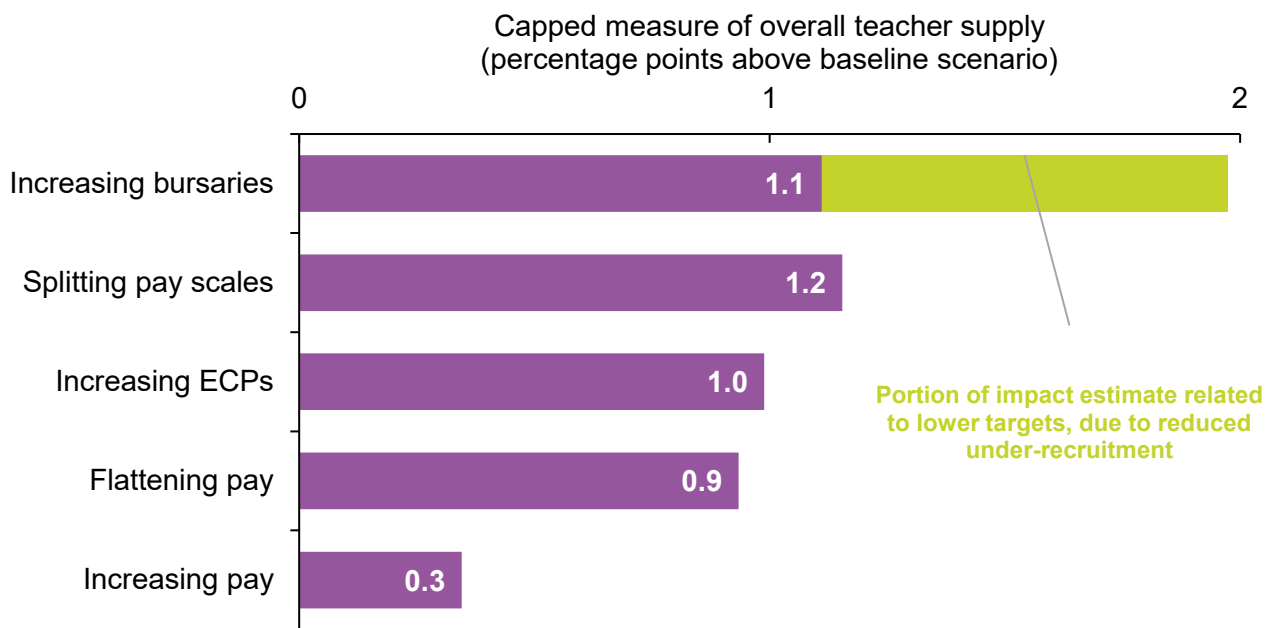
Figure 7 shows that a £100m spend on bursaries, ECPs, splitting the pay scale and flattening the pay scale all have roughly similar impacts on the number of teachers in teaching (reflected by the purple bars). However, increasing pay at a flat rate across all pay points has the lowest overall impact. This is because a flat pay increase boosts primary teacher supply, which is already at the

target, and a large proportion of the pay increase is for experienced teachers, who tend to be less responsive to pay changes.

Bursary increases have an additional effect on the capped measure of overall recruitment (reflected by the green bar) in the forecast and simulation model. This additional 'impact' relates to how the mechanism for bursaries differs from ECPs, as bursaries attract more teachers into teacher training. Since 2021/22, the DfE's ITT recruitment targets have been calculated by adjusting targets upwards in response to low recruitment in previous years. Therefore, higher ITT recruitment leads to less under-recruitment, which reduces the recruitment targets for the following two years. The forecast and simulation model replicates this target methodology. However, this means that bursaries have a double effect: increasing ITT recruitment and reducing the target through less under-recruitment. The latter is a technical feature of the target-setting process, but does not have a straightforward interpretation in terms of teacher supply in schools. Therefore, we have decided to treat it separately for this analysis.

Figure 7   **All scenarios have similar impacts on overall teacher supply, except a flat rate increase in pay**

Capped measure of overall teacher supply
(percentage points above baseline scenario)

Increasing bursaries	1.1
Splitting pay scales	1.2
Increasing ECPs	1.0
Flattening pay	0.9
Increasing pay	0.3

Portion of impact estimate related to lower targets, due to reduced under-recruitment

Note: See Appendix A for further details and data sources.

Source: NFER analysis using the NFER simulation model.

Crucially, the findings suggest that bursaries, ECPs and targeted pay increases all appear to be effective policy options with similar levels of value for money. Consistent with the finding from section 4.2, bursaries show a slightly higher level of cost effectiveness relative to ECPs, even where they are directed towards subjects with high bursaries already.

These findings suggest that policymakers have a range of effective tools at their disposal for addressing recruitment and retention, which all show good levels of cost effectiveness, meaning

that a balanced policy approach is needed. The current high level of teacher supply challenge across many subject areas means that policy measures are needed to support the teacher pipeline wherever possible.

However, all these scenarios also have other important considerations for policymakers alongside cost and teacher supply impacts. Bursaries increase recruitment while other policy options focus on retention, meaning it results in a greater proportion of inexperienced teachers in the workforce, who may be less effective while they gain experience (Podolsky, Kini and Darling-Hammond, 2019). Pay flattening also has implications for the balance of early career and more experienced teachers within the school system, as well as the incentives to progress. Increasing secondary teacher pay by more than primary teacher pay is also likely to be seen as unfair by primary teachers and may increase the gender pay gap (Tang and Worth, 2023).

5 Impact of bursaries on trainee characteristics

Previous work has shown that not all prospective teachers respond to changes in training bursaries in the same way. Bursary increases have been found to induce a higher number of applications to teacher training courses from career changers, male applicants and applicants from a white ethnic background (Worth and Hollis, 2021).

In this section, we extend the existing analysis to consider how bursary increases are associated with the characteristics of trainees and teachers (versus applications, which previous analysis considered). Using the characteristics of the schools teachers go on to work in, we also analysed how bursary increases were associated with the deprivation and region of the school that teachers teach in. This enabled us to determine how effective bursary increases have been at filling teacher vacancies in schools where supply challenges tend to be greatest.

5.1 Trainee characteristics

We first considered the effect of bursary changes on trainee characteristics, including age, gender and ethnicity. Previous research has shown applicants who are older, male and from a white ethnic background tend to be more responsive to bursary increases, but the effects are relatively small (around two percentage points).

Our results very closely mirror these previous findings. In terms of age (a proxy for whether a trainee is a career changer or a new graduate) bursary increases were associated with the strongest effects on the proportion of trainees who are 40 and over. Specifically, a £10,000 bursary increase was associated with a 2.8 percentage point increase in the proportion of trainees who were 40 and over and a two percentage point reduction in the proportion of trainees who were 22 or 23. The same bursary increase was also associated with a 2.7 percentage point increase in the proportion of trainees who were male.

The impacts across trainees from different ethnic backgrounds were generally smaller but statistically significant for some groups. A £10,000 bursary increase was associated with a 0.3 percentage point increase in the proportion of trainees from a white ethnic background, but this increase was not statistically significant. The impact on the proportion of trainees from Asian and black ethnic backgrounds was negative but small and statistically significant. Specifically, a £10,000 bursary increase was associated with 0.5 and 0.1 percentage points fewer trainees from Asian and black ethnic backgrounds.

One hypothesis from the existing literature is that the high responsiveness of career changers and males to bursary increases would lead to lower teacher retention rates, since career changers and males are, generally, less likely than average to remain in teaching (Worth and Hollis, 2021). In section 3, however, we showed that the effects of a bursary increase on retention rates were small and not statistically significant. The changing makeup of the teacher workforce induced by a bursary increase therefore does not appear to lead to any significant changes in retention rates.

Figure 8   A £10,000 bursary increase is associated with a higher proportion of trainees who are male, white and older
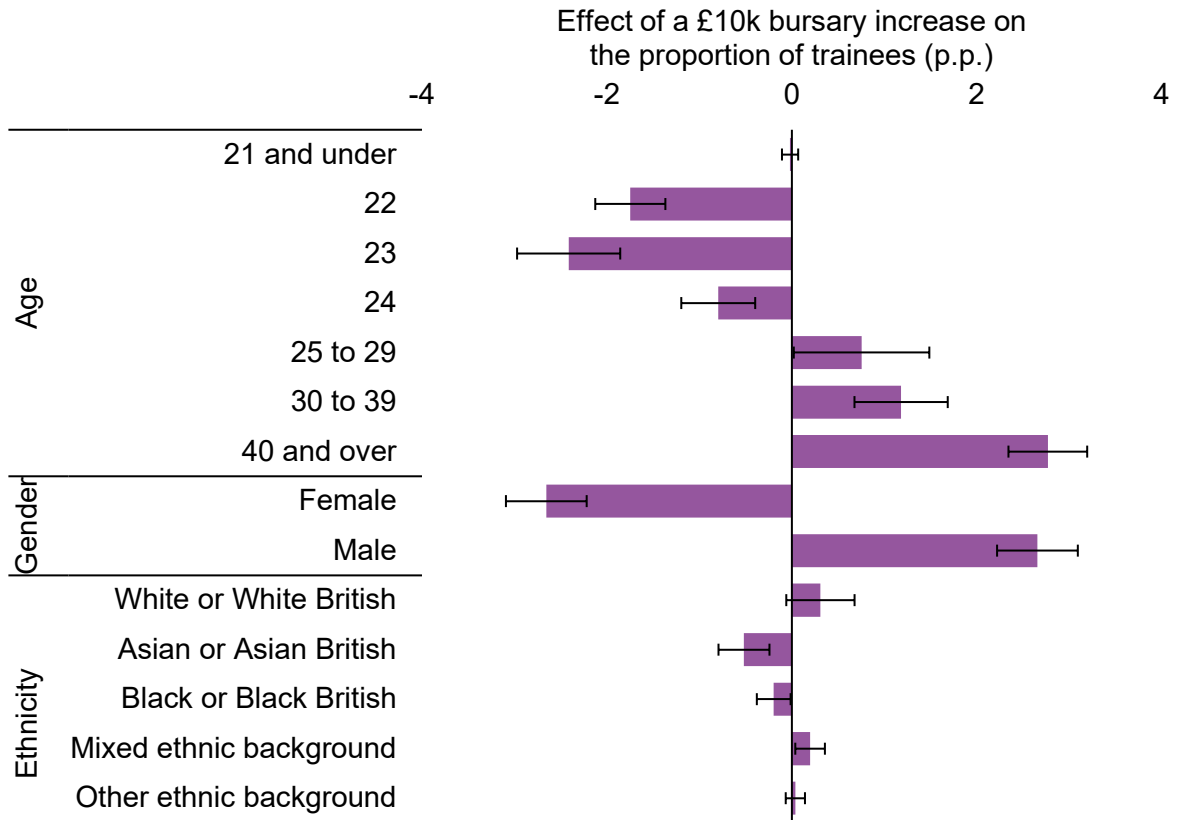
Effect of a £10k bursary increase on the proportion of trainees (p.p.)

Note: Error bars represent the estimate's 95 per cent confidence intervals. Estimates are not statistically significantly where the bar crosses the horizontal axis.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

5.2   ITT route

We also analysed how bursary changes impact on trainee's ITT routes. Previous research in this area has showed that bursary increases lead to a reduction in trainees on employment-based routes (i.e. School Direct[8] and postgraduate teaching apprenticeships)[9] (Worth and Hollis, 2021).

Our results suggest a similar impact. Specifically, a £10,000 bursary increase was associated with a decrease of 2.7 percentage points in the proportion of trainees on employment-based ITT routes. The same bursary increase was associated with an increase of 3.5 percentage points in the proportion of trainees on school-centred ITT (SCITT), while there was no significant impact on the proportion of trainees on higher education routes.

Trainees on employment-based routes are not eligible for bursaries as they receive a salary while training. This may be leading to a higher proportion of trainees training on school-based routes,

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[8] We included both School Direct fee-paying and salaried routes in employment-based routes as it was not possible to observe each separately for all years in the data.
[9] We have excluded trainees on Teach First routes (who receive a salary while training) from the analysis as they are not eligible for a bursary.

where they receive a bursary, and accordingly, a lower proportion of trainees on employment-based routes.

Figure 9   A £10,000 bursary increase is associated with a decrease in trainees on employment-based routes and an increase in trainees on school-based routes
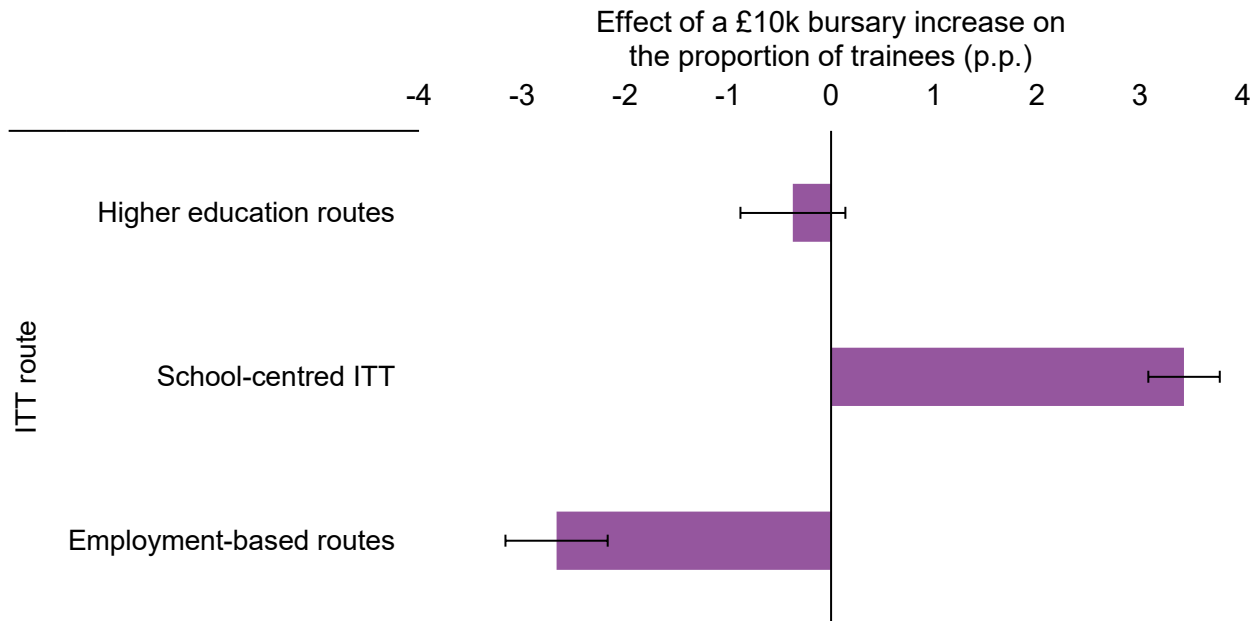
Effect of a £10k bursary increase on
the proportion of trainees (p.p.)

Note: Error bars represent the estimate's 95 per cent confidence intervals. Estimates are not statistically significantly where the bar crosses the horizontal axis.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

5.3   School deprivation and region

In addition to trainee characteristics and ITT route, we also analysed how bursary changes impacted the characteristics of the schools teachers who entered the state sector taught in. We focussed on school deprivation and region, as more deprived schools and schools in London tend to struggle more than average with teacher supply (Allen and Sims, 2018; Worth, Rennie and Lynch, 2018).

We only observed school deprivation and region for teachers who were working in schools (i.e. not for teachers who did not receive QTS or did not enter teaching). We also analysed the impact on school characteristics separately for teachers in each of the first five years of their teaching careers. However, the results were similar across years so we focus primarily on the impact on school characteristics in the first year after entry.

Figure 8 shows that the overall effects on school characteristics was significant. Specifically, a £10,000 bursary increase was associated with around a one percentage point increase in the proportion of teachers working in schools in the fifth quintile of deprivation (i.e. the schools in the

top 20 per cent of schools for pupils eligible for free school meals), and a similar decrease in the proportion of teachers working in the least deprived schools, which were all statistically significant.

Similarly, a bursary increase was associated with an increase in the proportion of teachers working in schools in London, by about one percentage point, which was a statistically significant difference. Previous research has showed that bursary increases tend to be associated with fewer ITT applications from London, which could suggest that teachers have a degree of geographic mobility after they complete their training.

Bursary increases were also associated with a statistically significant and negative impact on the proportion teachers working in schools in the North West (by half a percentage point). Evidence from the DfE suggests that there may be a degree of teacher over-supply in the North West and under-supply in London (DfE, 2018a). Bursary increases may therefore be leading overall to the additional teachers attracted into teaching by a bursary increase being less likely to work in areas with over-supply (i.e. the North West) and more likely to work in areas of under-supply (i.e. London).

This may not necessarily be an aim of the bursary programme itself. However, by increasing the supply of teachers coming into the profession, bursary increases lead to vacancies in schools with the greatest teacher supply challenges – deprived schools and schools in London – to be filled.

Figure 10   A £10,000 bursary increase was associated both with an increase in the proportion of teachers working in the most deprived schools and working in schools in London
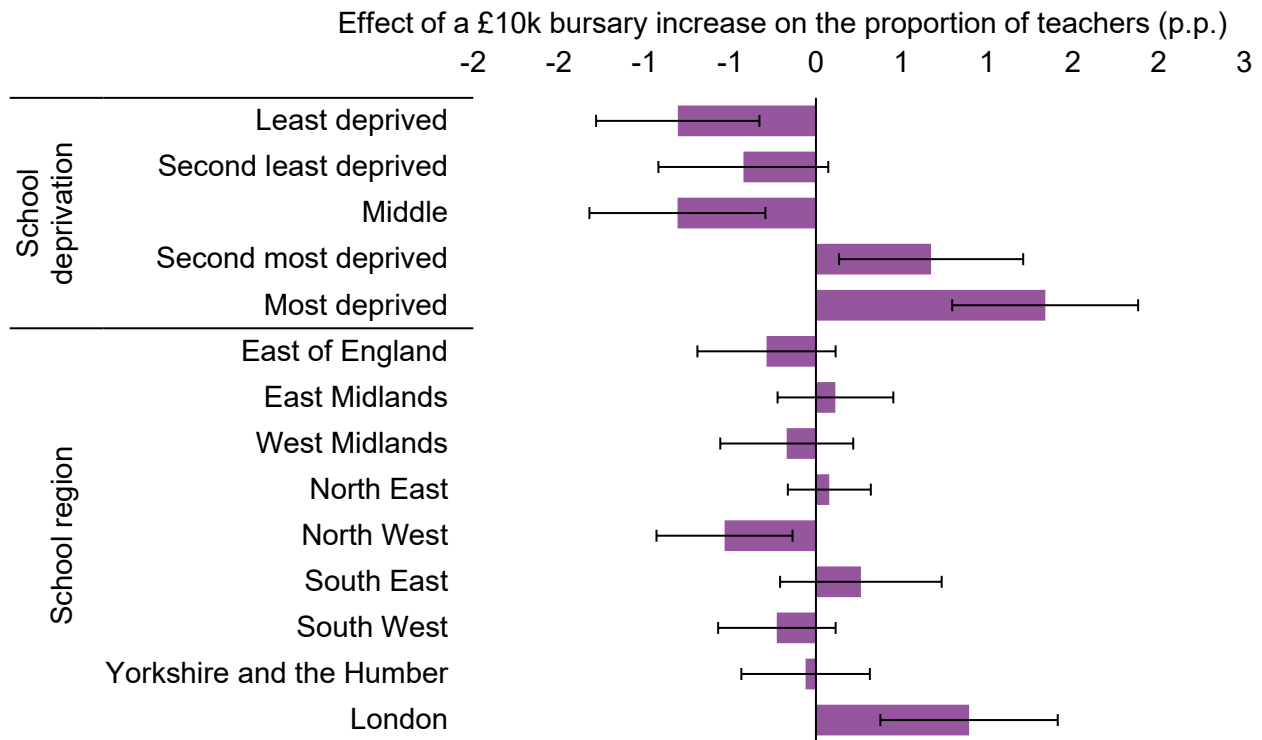
Note: Error bars represent the estimate's 95 per cent confidence intervals. Estimates are not statistically significantly where the bar crosses the horizontal axis.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Overall, the results point towards bursary increases having an impact on the characteristics of the teacher workforce. However, as suggested in section 3, this does not appear to translate into significant differences in teacher retention rates. Bursary increases, do however, appear to be associated with more teachers working in schools serving deprived communities and in regions that tend to have teacher under-supply versus over-supply. This means that not only are bursaries are an effective policy lever to attract teachers into the profession overall, but they also appear to help address supply challenges in the schools and regions where they are greatest.

6 Conclusions and recommendations

6.1 Conclusions

The evidence clearly demonstrates that increases in training bursaries are associated with increased recruitment into teacher training. The analysis in this research shows that those additional teachers induced to enter training by the bursary tend to complete their training, enter teaching and be retained in teaching at the same rate as other teachers in their cohort. This means that, overall, bursary increases are associated with a sustained increase in long-term teacher supply.

The additional teachers are also more likely to teach in schools that tend to struggle most with filling vacancies, such as schools in London and schools serving disadvantaged communities. Bursaries are therefore an effective policy tool for addressing national teacher shortages and the associated staffing challenges in the most affected schools.

Crucially, bursary spending can be targeted at priority subjects, so offers good value for money compared to undifferentiated spending on all phases and subjects, such as across-the-board pay increases. Bursary spending is also targeted at prospective teachers, whose behaviour tends to be highly responsive to financial incentives compared to experienced teachers.

We also find that bursaries offer good cost effectiveness compared to alternative policy measures such as early career payments, especially where the existing bursary for a subject is low. Our analysis also suggests that an additional £100m spent on bursaries (including the extra indirect costs such as teacher training costs) in shortage subjects would have a similar impact on overall teacher supply compared to same-cost increases in early career payments and pay increases targeted at early career teachers or secondary teachers.

The findings suggest that policymakers have a range of effective tools at their disposal for addressing recruitment and retention, which all show good levels of cost effectiveness, and bursaries are one of them. The current high level of teacher supply challenge across many subject areas means that policy measures are needed to support the teacher pipeline wherever possible, using a balanced approach.

6.2 Policy recommendations

We recommend that:

1. The Government should keep training bursaries in place to ensure ITT recruitment is supported to be higher than it otherwise would be.
2. The Government should continue raising bursaries for subjects experiencing teacher supply challenges and where bursaries are low. Increasing bursaries where there is a small or no existing bursary is more cost effective than when the existing bursary is already at a high level.
3. The Government should maintain high bursaries for maths, physics, chemistry and computing, raising them over time with the level of the teaching starting salary. However, to further boost teacher supply the Government should redesign the 'levelling up premium' early career payments for shortage subjects by widening eligibility to teachers working in all schools nationally and increasing payment generosity to enhance its impact.

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8 Appendix A: Methodological details

This section describes in detail the methodology used in this research and is intended to complement the methodology summary outlined in section 2.

8.1 Variable definitions

As we discussed in section 2, this research primarily used data from ITT-PP and the SWC. The ITT-PP contains data on all ITT trainees in the 2010/11 to the 2020/21 cohorts and the SWC contains data on teachers working in state-sector schools from 2010/11 to 2021/22, though for this analysis, we focussed only on the 2012/13 to 2020/21 ITT cohorts. Our analysis used several key variables related to teacher recruitment and retention, the specific definitions of which we outline in Table 2.

Table 2   Recruitment and retention variable definitions

Key outcome	Data source	Specific definition
Number of trainees	ITT-PP	Total number of trainees per subject and year in the ITT-PP. Observed at the subject and year level. Defined only for those with subject not missing in the ITT-PP data.
QTS achievement	ITT-PP	Binary outcome – observed at the individual trainee level for those with subject not missing in the ITT-PP data.
		0: if a trainee does not achieve QTS in the last year of their ITT training programme.[10]
		1: If a trainee achieves QTS in the last year of their ITT training programme.
Entry into teaching	ITT-PP and SWC	Binary outcome – observed at the individual trainee level for trainees who achieved QTS.
		0: if a trainee achieves QTS but is not in state-sector teaching (i.e. has an SWC record) in the following year[11]
		1: if a trainee achieves QTS and is in state-sector teaching in the following year

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[10] This includes those who have 'not yet' achieved QTS but who may go on to in a future year. This is slightly different from how DfE reports QTS achievement rates (which focusses only on those who receive a 'completed' or 'did not complete' outcome). See: https://explore-education-statistics.service.gov.uk/find-statistics/initial-teacher-training-performance-profiles/2021-22. Ours is a wider measure which includes all those who enrol on an ITT course each year.

[11] This includes trainees who go on to enter teaching in future years. This is slightly different from how DfE reports entry into teaching rates, which considers an entrant as anyone working in a school within 16 months of achieving QTS. We have adopted this slightly narrower definition as it enables us to compare entry into teaching rates across the maximum number of cohorts. For example, if we considered entry within 16 months of receiving QTS, we would not have been able to estimate entry into teaching rates for trainees in the 2020/21 ITT cohort.

Retention in teaching	SWC	Binary outcome – observed at the individual teacher level for those teachers who achieve QTS and enter teaching within one year.
		0: If a teacher is recorded as being in state-sector teaching in one year but not in the following year.
		1: If a teacher is recorded as being in state-sector teaching in one year and again in the following year.

We also used several variables related to the demographic characteristics of teachers and the characteristics of the schools in which they teach. This was for our analysis of the impact of bursary changes on trainee and school characteristics (in section 5). The specific definition of these variables is as follows:

Table 3   Trainee and school characteristics variable definitions

Key outcome	Data source	Specific definition
Trainee age	ITT-PP	The age category (21 and under, 22, 23, 24, 25 – 29, 30 – 39, 40+) of trainees when they enrolled on their ITT course. Defined at the individual trainee level for all those in the ITT-PP not missing subject.
Trainee gender	ITT-PP	The gender of trainees when they enrolled on their ITT course. Defined at the individual trainee level for all those in the ITT-PP not missing subject.
Trainee ethnicity	ITT-PP	The ethnicity of trainees (White or White British, Asian or Asian British, Black or Black British, Mixed ethnic background or other ethnic background) when they enrolled on their ITT course. Defined at the individual trainee level for all those in the ITT-PP not missing subject.
ITT route	ITT-PP	The ITT route of trainees when they enrolled on their ITT course. We used relatively coarse categories of ITT route: higher education routes, school-centred ITT and employment-based routes.[12] We combined both School Direct salaried and fee-paying routes into the employment-based routes category as it was not possible to observe them separately for all years in the data.
School deprivation	SWC and Get Information About	The quintile of deprivation for the school in which a teacher taught in the year they entered teaching.[13] We observed deprivation based on the proportion of pupils eligible for free school meals. Deprivation quintiles were calculated

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[12] This included School Direct salaried and School Direct fee-paying routes as well as postgraduate teaching apprenticeship (PGTA) routes.

[13] We observed the deprivation level of schools for the first five years after a teacher entered teaching. The impact of bursary changes on school deprivation in the years after entry were similar to in the year of entry, so for simplicity we focussed on entry year only.

	Schools (GIAS)	separately for primary and secondary schools and group and consist of 20 per cent of schools in the following deprivation categories:
		Highest level of deprivation, second highest level of deprivation, middle level of deprivation, second lowest level of deprivation, lowest level of deprivation
School region	SWC and GIAS	The region of the school in which a teacher taught in the year they entered teaching.[14]

8.2 Statistical model specifications

To determine how bursary changes are associated with our main outcomes, we used statistical regression models. We used two different types of models in the analysis. The first, which associated bursary changes with the number of ITT trainees, was a linear model estimated using ordinary least squares, using the following specification:

$$\log(Number\ of\ trainees_{sub.,year}) = \beta_0 + \beta_1 year + \beta_2 subject + \beta_3 Bursary_{sub.,year} + \varepsilon$$

We included bursaries in thousands in the model (i.e. a bursary of £10,000 would be coded as 10 in the data). We also included the natural logarithm of the number of trainees as our main dependent variable in the model. This enabled us to interpret β_3, our main effect of interest, as a semi-elasticity (i.e. the effect of a £1,000 bursary increase on trainee numbers in per cent terms).

We weighted our estimates by the size of the ITT cohort each year. This was to put more weight on subjects that tend to have large cohorts and less weight on smaller subjects with potentially more year-to-year volatility in trainee numbers. Finally, we multiplied our estimate by 10 to represent the effect of a £10,000 bursary increase.

Our model analysing the impact of bursary changes on progression and retention outcomes was different, as it used individual trainee- and teacher-level data and a logistic regression model. We used individual level data for these outcomes (rather than data on the aggregate number of teachers as we did for trainees) because we found that a model using aggregated data yielded estimates which were highly dependent on which cohorts were included in the analysis. The logistic regression model yielded estimates which exhibited much more stability across cohorts (see Appendix B).

The main specification of our logistic regression models took the form:

$$\log(Odds\_outcome_i) = \gamma_0 + \gamma_1 year + \gamma_2 subject + \gamma_3 Bursary_i + \omega_i$$

Since our estimates exploited variation in subject and year, we estimated standard errors for our model clustered at the subject- and year- level. We also converted our estimates to marginal effects (i.e. the impact of a £1,000 bursary increase on the likelihood of career progression or

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[14] We observed region for the first five years after a teacher entered teaching. The impact of bursary changes on region in the years after entry were similar to those from the year of entry, so for simplicity we focussed only on entry year.

retention in percentage points)[15] and multiplied impacts by 10 to estimate the effect of a £10,000 increase.

8.3 Heterogeneity by subject and bursary level

In addition to our overall estimates, we also showed whether there was any variation in our impact estimates over subject, year and the bursary level (i.e. whether there is a different impact for when the bursary increase applies to a prevailing bursary of £0, £10k, etc.). We did so by including additional interaction terms in our main model specification. We discuss heterogeneity across subjects and bursary level in this section and heterogeneity across years in Appendix B.

Our results showed that there were no statistically significant differences in the estimated impact of a bursary increase across most subjects. There were a few cases where the impact on entry or retention rates was significantly different for one subject compared to the others. However, the differences were generally small and, in all cases, did not suggest that the overall boost to recruitment was being eroded by lower entry and retention rates.

Furthermore, significant caution should be exercised against over-interpreting the differences by subject as our estimates of impacts across subjects were noisy with high standard errors.

Similarly to subject, we also analysed whether the impact of a bursary increase depended on the level from which the bursary was raised. This was to test whether bursary increases exhibited decreasing returns. Specifically, we included an additional interaction term in our main specification to test whether bursaries' impact on QTS achievement, entry and retention rates was different for a prevailing bursary of £5k-£14k or £15k-£30k compared to a bursary of £0-£4k.

As with our analysis of heterogeneity by subject, our estimates were noisy, with high standard errors. However, there was little evidence for any significant differences in impact for different prevailing bursary levels. This suggests that bursaries' impact on recruitment and retention was generally similar regardless of prevailing bursary level, and that the effects do not diminish at higher bursary levels.

8.4 Value for money analysis

A key part of the value for money analysis involved ensuring that we compared bursaries and ECPs in a like-for-like way (i.e. so that both policies involved the same cost to central Government). The cost to central Government of a bursary increase is dependent on the level of the prevailing bursary. This is because the cost of a bursary increase involves the cost of the additional bursary paid to trainees plus the cost to pay the prevailing bursary amount to all the additional trainees who enrolled on an ITT course because of the bursary rise (and who, without a bursary increase, would not have enrolled on an ITT course at all).

Bursary increases also involve additional training costs for each additional teacher recruited onto an ITT course. We assumed that the cost to train each additional trainee was £22,000.[16]

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[15] We used the *margins* command in Stata to calculate marginal effects.
[16] We use an estimated cost of training one additional teacher of £22,000, in 2023 prices. Sims and Benhenda (2022) use a figure of the average teacher training costs to central Government being around £29,000 in 2022 prices. However, we require an estimate that does not include the bursary component of the average cost, which the original estimate does (Allen *et al.*, 2016a). We therefore estimate the cost by removing the bursary component from the original estimate from Allen *et al.*, and uprating to 2023 prices.

In total, including training costs, from a hypothetical original cohort of 100 teachers, a £5,000 bursary increase would lead to 115 trainees – with a total additional cost of £891,500 when there is no prevailing bursary. When the prevailing bursary is £30,000, the additional cost is £1,326,500. This is outlined in Table 4.

Table 4   Cost of a £5k bursary increase at different prevailing bursary levels

	Prevailing bursary = 0k	Prevailing bursary = 30k
Number of teachers	114.5	114.5
Additional teachers (vs baseline)	14.5	14.5
Total extra training costs	£319,000	£319,000
Cost of £5k bursary increase	£572,500	£572,500
Cost of the prevailing bursary paid to 'additional' teachers	£0	£435,000
Total additional cost	**£891,500**	**£1,326,500**

Note: In the main report, the number of teachers and number of additional teachers were rounded to the nearest whole numbers for simplicity.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Since we assume that ECPs do not have any effects on recruitment, there would be no additional training costs for Government. The total cost of an ECP would be the cost of the ECP multiplied by the number of teachers in teaching (based on section 3).

We calculated that a bursary increase of £5,000 at no prevailing bursary would involve the same cost to Government as an ECP of £3,306. This is shown in Table 5.

However, at a prevailing bursary of £30,000, a £5,000 bursary increase involves the same cost as an ECP of £4,717. This is shown in Table 6.

Table 5   **A £5k bursary increase with no prevailing bursary has the same cost to Government as a £3,306 ECP**

		Number of teachers – years after entry		
	Trainees	One	Three	Five
Number of teachers	100.0	61.0	53.4	48.0
Training cost	£2,200,000	£0	£0	£0
Per-teacher ECP cost	£0	£3,306	£3,306	£3,306
Annual ECP cost	£0	£201,678	£176,464	£158,574
Cumulative ECP cost	£0	£201,678	£566,143	£891,500
Total additional cost				**£891,500**

Note: In the main report, the number of teachers and number of additional teachers were rounded to the nearest whole numbers for simplicity.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Table 6   **A £5k bursary increase with a £30k prevailing bursary has the same cost to Government as a £4,717 ECP**

		Number of teachers – years after entry		
	Trainees	One	Three	Five
Number of teachers	100.0	62.1	55.9	51.1
Training cost	£2,200,000	£0	£0	£0
Per-teacher ECP cost	£0	£4,717	£4,717	£4,717
Annual ECP cost	£0	£292,870	£263,522	£241,248
Cumulative ECP cost	£0	£292,870	£833,630	£1,326,500
Total additional cost				**£1,326,500**

Note: In the main report, the number of teachers and number of additional teachers were rounded to the nearest whole numbers for simplicity.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

To analyse the impact of spending £1 million on bursaries and ECPs for the hypothetical cohort of 100 trainees, we backed out the bursary payment at a series of prevailing bursaries that would lead

to a £1m spend. We did this separately for a prevailing bursary of £0, £15,000 and £30,000, and the same for ECPs.

We show example calculations for an increase from a prevailing bursary of £0 and for an ECP in Table 7. The bursary increase for each of the different prevailing bursary levels were calculated in a similar way.

Table 7   A £5,558 bursary increase from a £0 prevailing bursary and an ECP of £3,670 per year both have a total cost of £1,000,000

	Enrol	Qualify	Enter	Stay after year 1	Stay after year 3	Stay after year 5
Bursary increase of £5,558 from a prevailing bursary of £0						
Number of teachers	116.1	104.8	76.2	67.9	55.5	51.2
Cumulative extra teacher-years	-	-	10.6	9.4	36.2	49.9
Extra training cost	£354,605	£0	£0	£0	£0	£0
Additional direct cost	£645,395	£0	£0	£0	£0	£0
Total direct cost						**£645,395**
Total cost incl. training						**£1,000,000**
ECP of £3,670 per year						
Number of teachers	100.0	90.3	65.6	61.3	54.0	48.8
Cumulative extra teacher-years	-	-	0.0	2.8	13.9	28.6
Extra training cost	£0	£0	£0	£0	£0	£0
Additional direct cost	£0	£0	£0	£224,812	£633,345	£1,000,000
Total direct cost						**£645,395**
Total cost incl. training						**£1,000,000**

Note: In the main report, the number of teachers and number of additional teachers were rounded to the nearest whole numbers for simplicity.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

8.5 NFER teacher supply model

For details of the development of the NFER forecast and simulation model see Worth, Tang and Galvis (2022). Further methodological updates were made to the model in early 2023 and these are outlined in Tang and Worth (2023).

Our analysis in this report is based on the latest version of the NFER forecast and simulation model, with the following additional changes made since Tang and Worth (2023). Prior to running the analysis, we updated the model to use the latest available forecast of ITT recruitment from ITT applications data (for July 2023) and the latest teacher salary scales (for the 2023/24 academic year).

We also incorporated some additional methodological updates for this analysis, including:

- adding estimates of teacher training costs. This multiplies the number of enrolments by the cost of training (derived from (Allen *et al.*, 2016b)).

- changing the pay elasticity of wastage for teachers in the first five years of their careers (on the M1-M5 pay scales) to -3, following the estimate from Sims and Benhenda (2022). This mirrored the elasticity used in the value for money analysis in this report, but differed from the -2.5 estimate used in Tang and Worth (2023), which was based on judgements, drawing on a wider evidence base.

8.6 Modelled scenarios

The specific scenarios we modelled in the value for money section are provided in Table 8 below.

Table 8 Overview of modelled scenarios from 2025/26

Scenario	Pay (annual increase)	Bursaries/ ECPs
Baseline	2 per cent	Both remain at 2023/24 levels and subjects
Increasing ECPs	2 per cent	ECPs for maths, physics, chemistry and computing increase to £4,850 per year across all schools (regardless of a school's deprivation decile or whether it is in an Education Investment Area). Bursaries remain at 2023/24 levels and subjects
Bursaries (with training costs)	2 per cent	£100m spent on bursaries and training costs Bursaries for maths, physics, chemistry and computing increase to £36,200 ECPs remain at 2023/24 levels and subjects
Increasing pay	2.4 per cent in 2025/26 2 per cent in other years	Both remain at 2023/24 levels and subjects

Splitting pay scales	2.8 per cent for secondary teachers in 2025/26 2 per cent in other years/ phases	Both remain at 2023/24 levels and subjects
Flattening pay	4.8 per cent for starting salaries (M1) in 2025/26 (Pay points between M1 and M6 increase at decreasing rates between 4.8 per cent and 2 per cent) 2 per cent other years/ pay points	Both remain at 2023/24 levels and subjects

9 Appendix B: Robustness checks

9.1 Checking whether differences in impact across cohorts were driving the results

As we discussed in the main report, there were significant differences in the estimated impact of bursary changes on recruitment and retention across different ITT cohorts. We showed this in section 3.1 where the impact on trainee numbers was much larger in more recent cohorts than in the earlier cohorts in our sample. We attributed this difference to broad changes in the teacher recruitment and retention landscape over time, and especially the effect of ITT enrolment caps in earlier cohorts.

Our modelling of individual retention outcomes (using logistic regression models) is not as strongly impacted by this issue. However, our logistic regression modelling showed that there were still some slight differences in the impact of bursaries on our key outcomes across years. We show this in Figure 11.

The results suggest that in the earlier cohorts in our analysis, bursary increases tended to be associated with small impacts on QTS and entry into teaching rates. For the 2018/19 to 2020/21 cohorts however, the estimated impact was slightly larger and negative for all three outcomes, which may have been driven by the impact of the Covid-19 pandemic.

Removing cohorts which were mostly likely to have been impacted by the pandemic (i.e. the 2018/19 to 2020/21 cohorts) did not substantively affect our estimates. Overall, therefore, despite some differences over time, bursary increases are associated with broadly small impacts on any of our outcomes. This is consistent with our overall conclusion that bursaries do not have an overall significant impact on progression or retention rates.

Figure 11   Heterogeneity in impact across cohorts
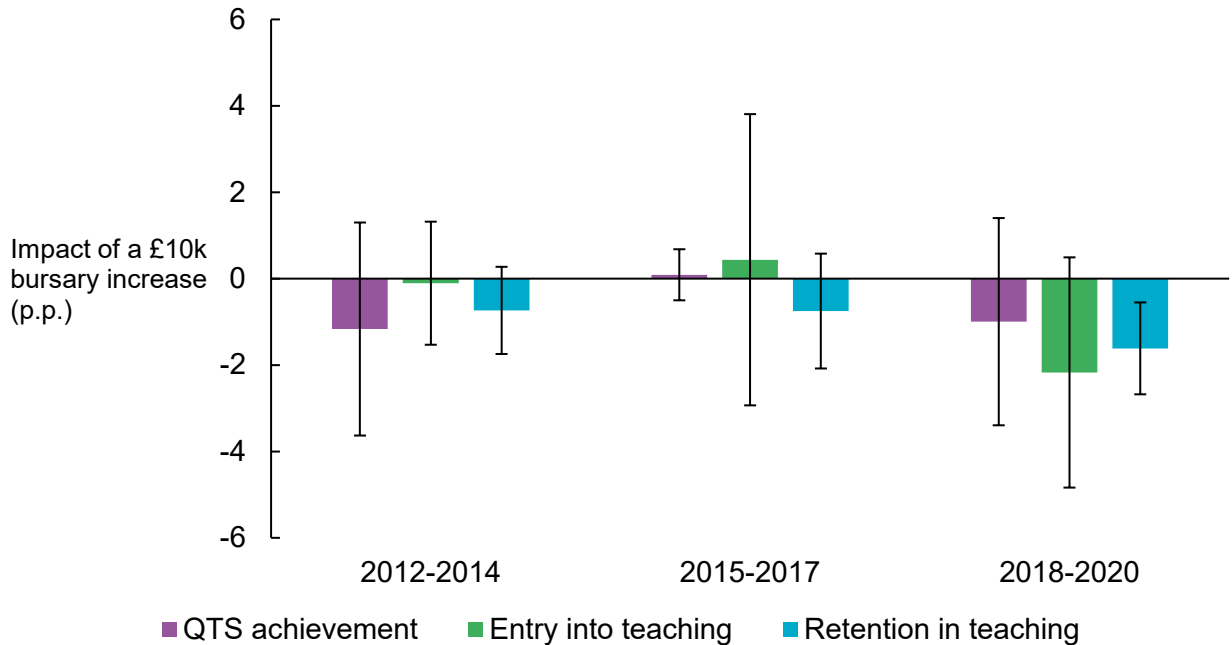
Note: Error bars represent the estimate's 95 per cent confidence intervals. Estimates are not statistically significantly where the bar crosses the horizontal axis.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

9.2   Checking that how we inferred bursaries did not significantly affect the results

We also checked whether our assumption that all trainees received the same bursary regardless of their degree class or ITT route affected our results. We discussed why we assumed all trainees received the same bursary in more detail in section 2.

Including differentiated bursaries in the modelling required additional fixed effects and interaction terms in the model to control for degree class and ITT route fixed effects. This made it more difficult to interpret our impact estimates as the effect of a bursary increase within the same subject. Nonetheless, we conducted robustness checks by estimating several different versions of our main model specification to ensure that our undifferentiated bursaries were not significantly affecting our results. These specifications and the resulting estimates are summarised below.

- Specification 1: Our baseline specification as reported in section 3
- Specification 2: Using bursaries differentiated by degree class (and including both degree class fixed effects and a degree class-year interaction term[17])
- Specification 3: Our baseline specification but excluding all trainees on employment-based routes

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[17] This interaction term picked up any confounding effects of the growing number of ITT trainees holding first-class degrees over time.

The results are shown in Table 9, which shows that there were no statistically significant differences in our main estimates across the three specifications. This suggests that using our simplified, un-differentiated bursaries in our modelling did not substantially affect our main results.

Table 9   Robustness checks on how we inferred bursaries

Outcome	Specifications			Statistically significant difference between:	
	1	2	3	Specs. 1/2	Specs. 1/3
Awarded QTS	0.4	0.8	0.6	No	No
Entered teaching	1.6	2.4	2.4	No	No
Retention – one year after entry	-0.2	0.2	0.0	No	No
Retention – two years after entry	-0.2	0.3	0.0	No	No
Retention – three years after entry	0.6	0.6	0.6	No	No
Retention – four years after entry	0.4	0.6	0.5	No	No
Retention – five years after entry	0.1	0.1	0.0	No	No

Coefficients reported above represent the impact of a £10,000 bursary increase on QTS achievement, entry and retention rates in percentage point terms. Statistical significance assessed at the five per cent level.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

9.3   Checking that other financial incentives were not confounding the results

Bursaries were not the only financial incentive programme in place over the main years of our study. Two key financial incentive programmes that could possibly have confounded our results (i.e. may have been correlated with the level of the bursary a teacher received and also their progression and retention outcome) include the early career payments (ECP) programme and the student loan repayment programme.

Teachers were eligible for an ECP payment if they qualified between 2014/15 and 2019/20 and were a maths or physics teacher. Eligible teachers received retention payments starting in the 2018/19 academic year. We conducted several robustness checks to ensure that ECP eligibility did not confound our main results. This involved estimating four specifications of our main model:

- Specification 1: Our baseline specification
- Specification 2: Baseline specification, but excluding teachers who qualified in targeted subjects (maths and physics)

- Specification 3: Baseline specification, but excluding teachers who qualified in targeted subjects between 2014/15 and 2019/20
- Specification 4: Same as specification 3, but excluding affected years (2018/19 – 2021/22) from our retention impact estimates.

Table 10 shows that there were no statistically significant differences between any of the coefficients in the four specifications. Teachers' eligibility for ECPs was therefore unlikely to have had a significant impact on our estimates.

Teachers were also eligible for student loan repayments if they were in any of the cohorts in our analysis (except the 2012/13 cohort) and were an English, Modern Foreign Languages, biology, chemistry, computing or physics teacher. Eligible teachers received student loan repayments starting in the 2018/19 academic years. Similarly to how we conducted robustness checks on ECPs, we also checked whether student loan repayments had an impact on our main results. This involved estimating three different model specifications:

- Specification 1: Our baseline specification
- Specification 2: Our baseline specification but excluding teachers in targeted subjects
- Specification 3: The same specification as Specification 2 but excluding affected years (2018/19 – 2021/22) from our retention impact estimates.

Table 10   Robustness checks on the impact of ECP eligibility on our main results

Outcome	Significant difference between:		
	Specifications 1 and 2	Specifications 1 and 3	Specifications 1 and 4
Awarded QTS	No	No	No
Entered teaching	No	No	No
Retention – one year after entry	No	No	No
Retention – two years after entry	No	No	No
Retention – three years after entry	No	No	No
Retention – four years after entry	No	No	No
Retention –five years after entry	No	No	No

Note: Statistical significance assessed at the five per cent level.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

Table 11 shows that there were no statistically significant differences across the specifications. Student loan repayments were therefore unlikely to have a significantly impacted on our estimates.

Table 11 Robustness checks on the impact of student loan repayment eligibility on our main results

Outcome	Significant difference between:	
	Specifications 1 and 2	Specifications 1 and 3
Awarded QTS	No	-
Entered teaching	No	-
Retention – one year after entry	No	No
Retention – two years after entry	No	No
Retention – three years after entry	No	No
Retention – four years after entry	No	No
Retention –five years after entry	No	No

Note: Statistical significance assessed at the five per cent level.

Source: NFER analysis of ITT-PP data for 2012/13 to 2020/21 and SWC data for 2012/13 to 2021/22.

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