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Does student loan debt deter higher education participation? New evidence from England[1]

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List of Contents

List of Tables

Abstract

Research among prospective UK undergraduates in 2002 found that some students, especially from low social classes, were deterred from applying to university because of fear of debt. This paper investigates whether this is still the case today in England despite the changing higher education landscape since 2002. The paper describes findings from a 2015 survey of prospective undergraduates and compares them with those from the 2002 study. We find that students' attitudes to taking on student loan debt are more favorable in 2015 than in 2002. Debt averse attitudes remain much stronger among lower-class students than among upper-class students, and more so than in 2002. However, lower-class students did not have stronger debt averse attitudes than middle-class students. Debt averse attitudes seem more likely to deter planned higher education participation among lower-class students in 2015 than in 2002.

Key words

Student debt, debt aversion, loan aversion, higher education, student funding

Introduction

Research conducted in 2002 among prospective UK undergraduates found that some students, especially from low social classes, were deterred from applying to university because of their fear of debt (Callender and Jackson 2005). This paper investigates whether this is still the case in England. The paper compares findings from a 2015 survey of prospective undergraduates with those from the 2002 study. The paper considers whether prospective students' attitudes toward student loan debt have changed since 2002, in the light of radical higher education (HE) funding policy reforms and changing political and ideological contexts, and how students' attitudes may contribute to differences across social classes in their intention to participate in higher education.

This paper focuses exclusively on potential full-time undergraduates attending 'public' universities in England and the policies affecting them.[2] The lessons learned may be more far-reaching, with likely relevance for countries with cost-sharing policies such as the United States where student loan take-up and debt have risen and income-driven repayment plans have emerged on the policy agenda (College Board 2015, Carey 2015). This research is also significant because prospective higher education students' attitudes towards student loan debt are not well understood while existing research is limited. For instance, many UK and US studies on loan aversion are conducted among current students (e.g. Bachan 2014; Burdman 2005; Goldrick-Rab and Kelchen 2015; Harrison et al 2015a; 2015b) so can tell us nothing about how student debt influences prospective students' decisions regarding higher education. The most comprehensive UK studies exploring prospective students' attitudes towards debt and higher education participation are based on data which are at least a decade old (Davies and Lea 1995; Callender and Jackson 2005; Bates et al 2009). Since these studies were undertaken student funding policies have changed dramatically and debt has risen sharply bringing into question the findings' relevance for today's students and public policy. Now most students in England have to borrow if they want to enter higher education. Moreover, this paper exploits a unique dataset derived from a survey of prospective students in 2002 and another in 2015, allowing us to examine changes in students' attitudes to debt over time and the role played by these policy reforms and shifting political and ideological contexts. This is central for understanding the continuing socio-economic inequalities in access to higher education.

The shifting higher education landscape

This section discusses the shifting higher education policy landscape including changes in student funding between 2002 and 2015 and implications for student debt.

Student funding policy changes 2002-2015

The evolution of higher education funding systems, in England and elsewhere, is dominated by prevailing political and ideological currents, rather than purely economic and pragmatic considerations. Recently England, like many countries, has moved from a system where the costs of funding higher education are shouldered primarily by taxpayers, through government subsidies, to one where students pay a larger share. This cost-sharing approach, a global phenomenon, seeks to increase the total resources available to higher education, especially from non-governmental or private sources (McMahon 2009; Johnstone and Marcucci 2010).[3]

A series of cost-sharing policies occurred between 2002 and 2015 in England. First, there were large tuition fee increases. The government-set cap on tuition fees rose from £1,000 ($1,296)[4] a year in 1998 to £3,000 ($3,890) in 2006/7, and to £9,000 ($11,664) in 2012/13 (current prices). By 2016, all universities, except one, charged £9,000 for all their courses. Only Further Education (FE) colleges charged less (OFFA 2015). Any competitive advantage of charging lower tuition fees was outweighed by the benefits of higher tuition income.

Second, in 2006/7, government-subsidised income-contingent student loans were extended to cover all students' tuition fees – making tuition rises more politically and socially acceptable. Graduates start repaying these loans once their income reaches a specified threshold, currently £21,000.[5] Graduates pay nine percent of earnings above this threshold until they have repaid their loan, with any outstanding debt forgiven after 30 years. Repayments are taken directly from the graduate's salary through the tax system. In 2006/07, the interest paid was equal to inflation (RPI) or, the Bank of England base rate plus 1 percent, whichever was lower (in effect, a zero or negative real interest rate). In 2012/13, a real interest rate was charged, between inflation and inflation plus 3 percent, with a sliding scale dependent on a graduate's annual earnings, making the costs of borrowing more expensive but reducing government costs.

Third, means-tested government grants for low-income students' living costs were replaced with enhancements to pre-existing government-financed maintenance loans, available to all students and with the same repayment terms and conditions as tuition loans. Since 2002 these grants have been

reduced in value, frozen and eroded by inflation, restricted in eligibility, and between 1998 and 2004 abolished completely.

These policy developments have been informed by a strengthening of the cost sharing ideology of 'who benefits pays,' and a quest for the greater marketization of higher education with tuition fees and loans playing central roles (Callender and Scott 2013). Higher tuition fees and loans are justified, following human capital theory, by a view of higher education participation as a private investment for private returns – benefiting the individual more than society. Tuition fee increases and loans have been portrayed by successive governments as 'fair' (DfEE 1998; DfES 2003, 83; DBIS 2011, 17) because graduates usually benefit from better paid employment (NCIHE 1997, 288; DfES 2003, 2). The 2011 White Paper informing the £9,000 tuition fees increase asserted '...graduates…earn more than non-graduates… So it is fairer to finance the system by expecting graduates to pay, if and when they are in better paid jobs' (DBIS 2011, 17). The Paper also argued that income-contingent tuition loans make higher education affordable and free at the point of entry, while credit and liquidity constraints are removed (DBIS 2011, 16). The costs of borrowing are depicted as reasonable, and loan repayments 'more affordable for everyone' (DBIS 2011, 24), while extra support is available for the poorest students - allegedly safeguarding widening participation (DfES 2003, 2; DBIS 2011, 24). These messages were promoted to potential higher education students when tuition fees were increased in 2006/7 and 2012/13. Students may have internalized this policy discourse of a positive graduate salary premium and the 'risk-free' nature of income-contingent loan repayments.

Following these policy changes students became heavily reliant on loans to fund their higher education studies. By 2013/14, 92 percent of students had taken out a loan for tuition and 89 percent for maintenance (SLC 2015), suggesting that most cannot afford to study unless they are willing to borrow. Between 2002 and 2015, tuition fees rose by 553 percent after allowing for consumer price inflation during this period. Average student loan debt (both tuition and maintenance) on graduation rose from £8,666 ($11,180) (2002 prices) (Callender and Wilkinson 2003) to £44,035 ($57,211) (2014 prices) (Crawford and Jin 2014, 2), representing an increase of 260 percent after allowing for inflation. Under current arrangements, it will take graduates about 28 years to clear these debts, while the majority will never repay their loans in full (Crawford and Jin 2014).

Higher education participation in England and student funding

These policy changes occurred alongside a government commitment to higher education expansion, with a stated desire to widen access. Despite these increases in tuition fees and prospective debt burdens, higher education participation rates for 17 to 20 year olds in England began rising gradually from 2007, reaching 38 percent in 2010. A sudden jump to 42 percent occurred in 2011, as applicants tried to avoid the planned tuition fee increase in 2012, followed by a sharp drop to 36 percent in 2012/13, and then a climb back to 41 percent in 2014/15 (DfE 2016).

There are considerable socio-economic differences in these participation rates. Rates for low-income students have increased recently, albeit from a low base. Data on university acceptances indicate that 18 year olds from disadvantaged areas are 65 percent more likely to enter higher education in 2015 than in 2006. But, they remain two and half times less likely to enter higher education than their more advantaged peers, and eight and a half times less likely to enroll in the most selective universities (UCAS 2015, 92; 99). This growth in enrollments is consistent with recent improvements, also from a low base, in national examination attainment of low-income students at aged 16 (SMCPC 2015), confirming the important contribution of prior educational achievement to explaining higher education participation patterns.

Higher education participation rates also are lower for men than women (37 percent compared with 46 percent in 2013/14, (DfE 2016), and among White students than minority ethnic groups. In 2015, higher education entry rates ranged from 28 percent for Whites to 37 percent for Blacks and 41 percent for Asians, rising to 58 percent for Chinese students (UCAS 2015, 12).

Research confirms that money matters for higher education access and lower-income students are more price-sensitive (Leslie and Brinkman 1987; Heller 1997). Tuition fee rises tend to depress higher education participation, especially among disadvantaged groups, but the type and mix of aid is important (for a review of the literature see Baum et al. 2008; London Economics 2010; Long 2008; Dynarski and Scott-Clayton 2013). However, research findings are contradictory with some evidence that neither tuition increases nor the introduction of income-contingent loans affect enrollments, especially among students from disadvantaged backgrounds with appropriate university-entry qualifications (Hemelt and Marcotte 2011; Cardak and Ryan 2009).

In England, the introduction of £1,000 tuition fees and the replacement of student grants with loans for maintenance in 1998 had no effect on young people's participation (HEFCE 2005). Dearden et al. (2010) show "upfront tuition fees in 1998 had a small negative impact on participation among

high income groups" but the rise in tuition fees to £3,000 in 2006 had "no impact on participation, largely because tuition fees were accompanied by large increases in loans and grants" (2). Crawford and Dearden (2010) find that some English students, especially those from higher socio-economic backgrounds and with higher grades, started university a year earlier (2005/06) than they might otherwise have done (2006/07) to avoid having to pay higher tuition fees. However, overall, there was no evidence that the 2006/07 finance reforms led to a sustained fall in higher education participation.

No similar analysis has yet been undertaken exploring the consequences of the tuition fee rise to £9,000 in 2012/13. Chowdry et al (2012) warn that debt aversion might affect participation, especially among students from the poorest backgrounds.

Student attitudes to debt and higher education participation: Theory, empirical evidence and hypotheses

This section examines how extant research conceptualizes and measures student debt aversion and explores student attitudes to debt. It then provides a conceptual framework for analyzing these attitudes and posits three hypotheses to be tested.

Debt aversion: Conceptual and measurement issues

Debt aversion (sometimes called loan aversion) is a reluctance to incur debt and refers to the psychological costs associated with carrying debt, in addition to any explicit costs and risks associated with taking out loans (Baum and Schwartz 2013). Debt aversion can be distinguished from risk aversion which covers a wide range of life-contexts (e.g., personal safety, health and career progress) and is not confined to financial choices such as borrowing (Dohmen et al. 2011). Debt aversion in relation to higher education has been defined as "an unwillingness to take a loan to pay for college, even when that loan would likely offer a positive long-term return" (Cunningham and Santiago 2008, 10). Baum and Schwartz (2013, 16) suggest that the prospect of being left with unmanageable debt "might deter people from making investments they would judge wise if the downside were simply wasted expenditures as opposed to debt" (Baum and Schwartz 2013, 16). Palameta and Voyer (2010) define loan averse students as those willing to invest in higher education but unwilling to take on loans to do so. In England, current students' high dependence on loans and the absence of alternative funding sources (apart from family), an unwillingness to borrow, in effect, excludes most students from participating in HE.

Definitions and measurement of student debt aversion, and especially its relationship to higher education participation vary between studies - producing different results which are not necessarily directly comparable (Boatman et al 2016). Here we focus primarily on studies of prospective students. Studies that measure debt aversion through monitoring prospective students' actual borrowing and enrollment behaviour are rare. In Field's (2009) randomised controlled experiments, law school applicants at New York University were offered either upfront loans that could be forgiven or tuition subsidies that could later turn into loans. Both aid programs were designed to be financially equivalent. Applicants offered tuition subsidies were more likely to enroll than those offered upfront loans (42% compared with 32%). This finding was taken as confirming debt aversion in high stakes decisions deriving from both social norms regarding indebtedness and psychological burdens associated with debt.

A series of studies use survey respondents' preferences for cash, grants, or grants plus loans in hypothetical financial aid packages to measure debt aversion. In Johnson and Montmarquette's (2011) laboratory experiments in Canada, high school students were asked to make a number of binary choices between cash and various forms of loans and grant. As an incentive to choose their preferred option, one choice was honored. Just over 12 percent (152 of 1,248) of participants were defined as debt averse because they always chose a grant over cash and never chose a loan over cash. These respondents were "…insensitive to price and completely sensitive to subsidy type" (Johnson and Montmarquette, 2011, 39). Palameta and Voyer (2010, 60), using a similar approach, defined loan aversion as when their Canadian high school students likely to enroll in college only take a grant and never a combination of grants and loans. They find that between 5 and 20 percent of their sample is loan averse, a pattern linked to "relatively low numeracy, a tendency to discount future benefits, and doubt about the returns to PSE (post-secondary education), especially university." Caetano et al, (2011) measure the existence of debt aversion in Latin America using a World Bank survey, where participants were presented with choices that were financially equivalent. A greater preference for the "human capital contract" option compared to "loans" was taken as confirming debt aversion and the importance of language in the labelling of financial aid. Labelling a contract as a "loan" decreases its probability of being chosen over a contract by more than 8 per cent.

Some studies measure debt aversion as rejection of loans offered (Goldrick-Rab and Kelchen 2015) or borrowing low amounts (Burdman 2005). Such behaviour may be due to debt aversion or because students do not need the money, or require small amounts, to pursue their studies.

Another method for measuring debt aversion is through assessing attitudes to debt, usually via student surveys. In some studies, a single question is asked (Bachan 2014; Oosterbeek and Van den Broek 2009). In others, an attitude scale is created to gain a more nuanced understanding of the structure of student debt attitudes. Noteworthy is Davies and Lea's (1995) UK study, one of the first to use this approach. Their unidimensional Attitudes to Debt scale was constructed to run from pro-debt to anti-debt. Their scale consisted of 14 items, administered in a five-point Likert format, covering general philosophical/moral and day-to-day attitudes toward debt. They subsequently developed their longitudinal method to include prospective students and find attitudes change with the experience of debt. Prospective higher education students are less debt tolerant than current students and graduates (Lea et al. 2001), a finding echoed by Haultain et al. (2010).

Callender and Jackson (2005) use a reduced version of this scale and, in a move away from a unidimensional concept, also measure the "cost/benefit balance of going to university." They identify both moralistic attitudes critical of debt and positive attitudes that recognise the value of debt in supporting investment in higher education. They show that debt averse attitudes deterred disadvantaged prospective students from applying to university.

Haultain et al. (2010) detect low levels of internal reliability for Davies and Lea's scale in other UK and New Zealand studies, suggesting that this is because "students' attitudes to debt may not, in fact be unidimensional, and are not ordered on one tolerant versus intolerant of debt continuum" (323). They find that attitudes toward debt among prospective and current tertiary students in New Zealand are best described by two uncorrelated dimensions, "fear of debt" and "debt utility," and conclude that the average student is fearful of debt but realizes it is useful.

The current study builds on these well-established methods for measuring debt aversion through student attitudes, and specifically on Callender and Jackson (2005), using a more refined attitude scale. We then examine the relationship between debt averse attitudes and students' higher education intentions.

Prospective students' attitudes toward debt

Callender and Jackson (2005) find that ethnic minority, first-generation and lower-class students appeared particularly wary about taking on debt to pay for higher education study. Haultain et al. (2010) reveal that "fear of debt" is associated with parents not having attended university and attending schools in lower-income catchment areas.

Bates et al.'s (2009) analysis of two large-scale longitudinal studies of 16 and 17 year olds in England finds that one third of those who want to apply to higher education have concerns over the associated debt burden that make them question their decision to apply. Those with the greatest debt aversion are among those least likely to apply to higher education. Attitudes toward debt vary, with those from low-income and disadvantaged backgrounds, black and minority ethnic groups, and young women being the most debt averse. These debt averse, but academically qualified, students are the most likely to feel that that owing money is wrong, borrowing money is not a normal part of today's lifestyle, debt can be very difficult to get out of, and student loans are not a cheap way to borrow money.

Burdman's (2005) qualitative study confirms that U.S. students from low-income families avoid borrowing often because of concerns about their ability to repay, negatively affecting their higher education decisions. She argues that, for many students, debt aversion frequently begins with their parents. Similarly, Perna (2008) shows that potential US higher education students' willingness to borrow varies depending on their financial resources and is influenced by their families and high schools. Low-income students' unwillingness to borrow limits their higher education opportunities and willingness to enroll in universities compared with community colleges. Both Perna (2008) and Burdman (2005) also highlight the role of low-income parents in discouraging loan take-up, unlike more wealthy parents.

By contrast, Wilkins et al.'s (2013) study of English high school students, just before the 2012/13 reforms, uncovers "an increasing anxiety about financial issues" (136) but no evidence that low-income students are more likely to be deterred from higher education entry because of the costs and debts involved. They reason that higher education entry is gradually becoming the norm for students from various social backgrounds, so "students from working class backgrounds may feel compelled not to lose out and therefore opt to enrol" (Wilkins et al 2013, 12). Esson and Ertl (2016) observe variations in attitudes toward debt, tuition fees, and plans to enter higher education by the type of high school attended but conclude that, for the majority, tuition debt was not "a major factor in the decision whether or not to enter higher education" (8). This is because prospective students consider a higher education degree vital to securing employment in a competitive labour market while income-contingent loans mean the government and not the student is liable for any financial losses.

Conceptual framework and hypotheses

In common with Perna's (2006) conceptual framework for understanding potential higher education students' enrollment decisions, we assume that students' decisions and attitudes towards debt and higher education are shaped by four nested contextual layers: the student and family context; the school and community context; the higher education context; and the broader social, economic and policy context. Although school staff and careers advisors were excluded from our study, we draw on students' responses to questions about the extent of encouragement from teachers and school friends to enter higher education. "Differences in students' perceptions of loans reflect differences in the messages students receive about loans from their parents, school counselors and teachers, and the broader state policy context" (Perna 2008, 601).

Following Callender and Jackson (2005; 2008), we submit that, when students decide to enter higher education, they assess the expected costs and benefits of investing in higher education, consistent with human capital theory. This assessment, including the risks, is in very broad terms, rather than rigid cost/benefit analysis. As Brynin (2013, 285) argues:

> It is unlikely that many young people calculate the economic value of education relative to an expected career. They are likely instead to have a notion of a 'good' job, which would partially be based on some (often vague) idea of expected pay, but also on the job's prestige and the skills it requires.

In summary, we propose, like Perna (2006), that students' subjective understanding and perceptions of these costs and benefits, their views about their academic and financial resources, and their higher education choices are shaped by their socio-economic backgrounds and other resources they derive from their cultural and social capital. In addition, we consider the political and ideological backdrop and policy rhetoric and suggest students are likely to absorb these in their decision-making. Policies are more than a statement, but an "authoritative allocation of values" (Kogan 1975, 55), which do not "float free of their social context" (Ball, 1990, 3).

Using this contextual framework, we propose three hypotheses to test using data from our 2002 and 2015 surveys of prospective undergraduates. First, in the light of continued growth in higher education participation in England at a time of rising tuition fees and increases in student borrowing following policy changes and its pervasive rhetoric, we posit that:

Hypothesis 1: Young people's attitudes toward taking out student loan debt were more favourable in 2015 than in 2002.

Next, motivated by the cross-national evidence on debt aversion, social class and higher education participation discussed above, we submit two further hypotheses to empirical scrutiny.

Hypothesis 2: Where debt averse attitudes exist, they are stronger among lower-class students than among students from other social classes in 2015, as in 2002.

Hypothesis 3: All else being equal, debt averse attitudes contribute to lower rates of planned higher education participation by lower-class students compared to students from other social classes in 2015, as in 2002.

Research methods

To investigate key issues concerning student loan debt, we draw on two nationally representative surveys of students in England who were studying toward higher education entry-level qualifications such as A levels or vocational qualifications at Level 3 on the UK Regulated Qualifications Framework.[6] The first survey was carried out in 2002 and the second in 2015. Several questions in the 2015 survey were identical to those asked in the 2002 survey. In both years the samples comprised students in their final year of studying toward higher education entry-level qualifications in:

- government-funded high schools;
- independent (private fee-paying) high schools; and
- further education colleges.

There are some differences in the ways the samples were constructed and the survey questionnaires were distributed. In 2002, the survey was conducted on a random sample of high schools and colleges and data were collected using in-class self-completion questionnaires, handed out to students by teachers. In 2015, a sampling frame of potential individual respondents was built using student contact details drawn from two national databases that had become accessible since 2002: the National Pupil Database and Individual Learner Records held by the Department for Education. Questionnaires were sent to most students through a mix of postal and email methods. Since the National Pupil Database does not contain contact details for independent school students, a sample of these students was obtained through direct approaches to independent schools, with teachers given a choice of handing out paper questionnaires to students or providing them with the information required to complete questionnaires on-line.[7]

Although the 2002 survey covered the whole of the UK and included a proportion of students aged 22 and older, the 2015 survey was confined to England and largely to students age 17 to 21.[8]

Accordingly, in this paper comparisons between the two samples are confined to 17 to 21 year old students in England. About 7 to 8 percent of these students in each year did not reply fully to survey questions concerning attitudes toward debt and these cases were omitted from our analysis.[9] This process yields final samples of 1,028 students in 2002 and 1,427 students in 2015 (Table 1). Some 60 percent of respondents in 2002 and 62 percent in 2015 were female, reflecting the higher female higher education participation rate over the last 20 years noted above. The proportion of 18 to19 year olds was 81 percent in 2002 and 87 percent in 2015. Using an indicator of social class based on the occupations and economic activities of the primary income earners in student households, upper-class students accounted for a higher share of sampled students in 2002 (41 percent) than in 2015 (32 percent) while the reverse was true for middle- and lower-class students.[10] The proportion of sampled students who had definitely decided to apply for higher education courses was slightly higher in 2015 (81 per cent) than in 2002 (78 percent).

In terms of sample composition by educational institution attended, the unweighted share of further education students in 2015 was considerably smaller than in 2002, contributing to a larger unweighted share of government-funded high school students in 2015. This was partly due to a shift from further education colleges to government-funded schools in recent years among students taking higher education entry-level qualifications and partly due to a lower response rate by further education students. To derive nationally representative estimates of student attitudes toward debt and other variables, sample data are weighted to national profiles of students by type of institution attended and qualification aim. These weights were developed using Labour Force Survey[11] data for 2002 and 2015 as well as official statistics on young people's participation in education, training, and employment in England. (See Appendix Table A1 for further details.)

Because of the relatively small (unweighted) share of further education students in 2015 compared to 2002, we test the sensitivity of our main findings to compositional differences between the two samples by estimating equivalent results for high school students only (excluding further education students) as well as for all students and by comparing unweighted with weighted estimates. Our main findings prove to be robust to the outcomes of these sensitivity tests. Full details are available from the authors on request.

Table 1: Student samples by type of educational institution, 17-21 year olds in England, 2002 and 2015

	2002	2015		2002	2015
	% of respondents (unweighted)			*% of respondents (population-weighted)*	
Type of education institution:					
Independent high schools	16	9		8	8
State high schools	28	72		33	41
Further education colleges	57	19		59	52
Total	**100**	**100**		**100**	**100**
n =	*1,028*	*1,427*		*1,028*	*1,427*

Note: In this and other tables, percentages may not sum to 100 due to rounding.

Index of social advantage

In addition to information on the occupation and economic activity status of main income earners in respondents' households in 2002 and 2015, we also have information for both years for anticipated financial support from family, parental attendance at university, and family encouragement to attend higher education. All three items constitute mechanisms of social advantage which we would expect to be less available to lower-class students than to upper or middle-class students. To avoid problems of multicollinearity when all of these measures are included in the same specifications, we use the three family-level indicators to construct a summary "index of social advantage," with a scale of 0 to 3. Three indicates high anticipated level of financial support from family, at least one parent attended university, and reported family encouragement to attend higher education, while zero indicates that none of these advantages apply. This index is highly positively correlated with the occupation-based social class measure and also with attendance at fee-paying independent schools (Table 2). In our multivariate analyses, we use this index as a second measure of social background in addition to our occupation-based indicator of social class.

Table 2: Social advantage index by social class and type of educational institution (population-weighted)

	2002		2015	
	Mean	**Std. error**	**Mean**	**Std. error**
Upper-class	2.15	0.04	1.90	0.03
Middle-class	1.66	0.05	1.63	0.04
Lower-class	1.48	0.05	1.27	0.03
Independent high schools	2.38	0.05	2.27	0.06
State high schools	1.91	0.04	1.60	0.02
Further education colleges	1.69	0.03	1.48	0.04

Note: All differences in mean scores between social class and type of educational institution are statistically significant at the 1% level.

Debt averse attitudes

To assess students' attitudes toward debt, both surveys asked a series of questions about the extent to which respondents agreed with various statements about debt.

Generally more students in both years agreed with statements that are favourable to debt (e.g. "debt is a normal part of today's lifestyle, "it is OK to be in debt if you can pay it off") than with the criticisms of debt (i.e., "there is no excuse for borrowing money," "owing money is basically wrong"). Half of 2002 respondents and just over 70 percent of 2015 respondents agreed with the fourth statement "you should always save up first before buying something" (Table 3).

Factor analysis of the responses to these five statements produced two factors with eigenvalues greater than unity for each year. One, based on the first two statements, can be interpreted as a summary measure of attitudes favourable to debt. The second (based on statements 3-5) can be interpreted as a summary measure of the extent of debt averse attitudes among students. The latter measure explained 57-58 percent of the total variation in the responses to statements 3-5 in each year. These factor scores, with mean zero and standard deviation one, are entered as measures of debt averse attitudes in 2002 and 2015 in the multivariate analysis. [12]

Table 3: Extent of agreement with statements regarding debt, 17-21 year old students in England, 2002 and 2015 (population-weighted)

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total	*n*=
		% of respondents (population-weighted)						
1. 'Debt is a normal part of today's lifestyle	2002	11	42	29	13	5	**100**	*1028*
	2015	7	45	26	14	8	**100**	*1427*
2. 'It is OK to be in debt if you can pay it off'	2002	9	57	22	9	3	**100**	*1028*
	2015	5	42	24	21	7	**100**	*1427*
3. 'There is no excuse for borrowing money'	2002	3	6	27	39	26	**100**	*1028*
	2015	3	7	28	41	20	**100**	*1427*
4. 'You should always save up first before buying something'	2002	10	40	30	17	4	**100**	*1028*
	2015	21	50	18	9	1	**100**	*1427*
5. 'Owing money is basically wrong'	2002	5	12	35	34	15	**100**	*1028*
	2015	3	12	33	37	15	**100**	*1427*

Data analysis

Hypothesis 1 is tested by comparing 2002 and 2015 responses to relevant survey questions on student attitudes to taking out loan debt to pay for university education. To test Hypothesis 2, we regress our summary measure of debt averse attitudes for each year on measures of social class with controls for other relevant individual characteristics:

$$(1) \qquad DA_{it} = \alpha + \sum_{j} \beta_j \boldsymbol{X}_{jit} + \varepsilon_{it}$$

Here DA_i is the debt averse attitudes score for student i and X_{ji} is a vector of j dummy variables denoting social class, gender, age, ethnicity, and type of educational institution attended. For 2015, we also control for prior educational attainment on the General Certificate of Secondary Education national examination that English students typically take at age 16. No equivalent data are available for 2002. Descriptive statistics for these and other variables used in multivariate analysis are shown in Appendix Table A2.

To test Hypothesis 3, we conduct multivariate analyses of higher education participation in 2015 and 2002, modelling the probabilities that individuals plan to undertake higher education as follows:

(2) $\Pr(HE_i) = F(X_i \beta_1)$

where

$$HE_i \begin{cases} = 1 \text{ if the individual intends to participate in higher education} \\ = 0 \text{ if there is no such intention} \end{cases}$$

F(.) is the cumulative distribution function of the standard normal distribution and X_i is a vector of individual-level and school-related characteristics that are expected to influence the probability of participating in higher education. These variables are gender, age, ethnicity and social class; the degree of encouragement to enter higher education provided by friends and teachers; and, for 2015, prior educational attainment at GCSE level.

Findings

Changes in student attitudes to debt

To test Hypothesis 1, that young people's attitudes to taking out student loan debt were more favourable in 2015 than in 2002, we first examine the extent of student agreement with the statement that "borrowing money to pay for a university education is a good investment." As Table 4 shows, the proportion of respondents agreeing with this statement rose from 52 percent in 2002 to 74 percent in 2015. Mean response scores calculated on a 1-5 scale show a statistically significant increase from 3.35 in 2002 to 3.98 in 2015 ($p<0.001$). As a check on the sensitivity of these findings to the inclusion of further education students who were relatively under-sampled in 2015 compared to 2002, we carried out similar estimates for high school students only. These estimates show a similar pattern of change between 2002 and 2015 as for the full samples including further education students. (Results for this and all other sensitivity tests are available from the authors on request).

The bulk of the change in attitudes toward debt between the two years occurred among female students rather than among men: 76 percent of females in 2015 agreed with the statement that "borrowing money to pay for a university education is a good investment" compared to 46 percent in 2002. The shift in attitudes was broadly similar across social classes.

Together, these findings provide strong support for Hypothesis 1. Other survey responses help to explain why young people's attitudes to taking out student loan debt have, on average, become more favorable even as prospective debt burdens have increased. In particular, student confidence in the positive impacts of higher education qualifications on earnings prospects appears to have grown. There was a statistically significant increase between 2002 and 2015 in the proportion of students agreeing with the proposition that "Students do not worry about their debts while at university because they will get well-paid jobs when they graduate." Mean response scores for this question, calculated on a 1-5 scale, rose from 2.26 in 2002 to 2.62 in 2015 ($p<0.001$).

Table 4: Extent of agreement with statements regarding student loan debt, 17-21 year old students in England, 2002 and 2015 (population-weighted)

	'Borrowing money to pay for a university education is a good investment'	
	2002	**2015**
	% of respondents (population-weighted)	
Strongly agree	9	31
Agree	43	43
Neither agree nor disagree	28	18
Disagree	15	6
Strongly disagree	5	1
Total	**100**	**100**
Mean score (on 1-5 scale)	3.35	3.98***
Standard error	0.03	0.02
n =	*1,028*	*1,427*

	'Students do not worry about their debts while at university because they will get well-paid jobs when they graduate'	
	2002	**2015**
	% of respondents (population-weighted)	
Strongly agree	1	3
Agree	7	18
Neither agree nor disagree	28	30
Disagree	45	36
Strongly disagree	19	13
Total	**100**	**100**
Mean score (on 1-5 scale)	**2.26**	**2.62*** **
(Standard error)	**0.03**	**0.03**
***n* =**	**1028**	**1427**

*** Difference between 2015 and 2002 mean scores is statistically significant at the 1% level.

Debt aversion and social class

Hypothesis 2 posits that, where debt averse attitudes exist, they are stronger among lower-class students than among students from other social classes. To test this hypothesis, we estimate Equation 1 using the summary measure of debt averse attitudes as the dependent variable. Table 5 shows that upper-class students were significantly less likely to hold debt averse attitudes in 2015 than were lower-class students, the reference category for both the upper and middle-class variables (Column 2). Comparison with the equivalent upper-class coefficient for 2002 suggests that the gap in mean debt averse attitude scores between upper and lower-class students widened sharply since 2002 for 17-21 year old students in England. Indeed, the upper-class coefficient for 2002 is lower than for 2015 and is not statistically significant due to a relatively high standard error (Column 1).[13] The second indicator of social background, the index of social advantage, is significantly negatively related to debt aversion in both 2002 and 2015 (Columns 4-5).

Apart from lower-social class status, other variables that contribute to students holding debt averse attitudes are attendance at further education colleges in 2015 (as compared to attendance at independent and government-funded high schools) and being non-white in both years. All findings for 2015 are robust to controlling for prior attainment at GCSE level (Columns 3 and 6).

Focussing specifically on differences between middle- and lower-class students, in 2002 the coefficient on middle-class is positive compared to lower-class students while in 2015 it is negative (Columns 1 and 2). Due to wide dispersion of debt averse attitude scores for middle-class students in both years (reflected in the relatively high standard errors attached to the middle-class coefficients), we cannot attribute statistical significance to differences between middle and lower-class students in either year.

Overall, the findings in relation to social class and the index of social advantage provide partial support for Hypothesis 2. Lower-class students are more likely to display debt averse attitudes than upper-class students in 2015 and this disparity appears to have grown since 2002. However, there is no clear evidence of lower-class students being more debt-averse than middle-class students in either year.

These findings are generally robust to sensitivity tests confining estimation to school-based students (excluding further education college students) and re-estimating Equation 1 using weighted least squares. Results are available from the authors on request.

Table 5: OLS estimates of debt aversion: 17-21 year old students in England, 2002 and 2015

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Independent Variable	**2002**	**2015**	**2015**	**2002**	**2015**	**2015**
Upper-class	-0.0894	-0.1601**	-0.1375*			
	[0.082]	[0.070]	[0.070]			
Middle-class	0.111	-0.1221	-0.1188			
	[0.099]	[0.076]	[0.076]			
Social advantage				-0.0957**	-0.0684*	-0.0596*
				[0.040]	[0.035]	[0.035]

State school	-0.1046	-0.3754***	-0.3327***	-0.0834	-0.3736***	-0.3303***
	[0.072]	[0.069]	[0.070]	[0.073]	[0.069]	[0.070]
Independent school	-0.0797	-0.3998***	-0.3637***	-0.0568	-0.3789***	-0.3455***
	[0.094]	[0.106]	[0.105]	[0.096]	[0.108]	[0.107]
Female	-0.0357	-0.0783	-0.0657	-0.0419	-0.0803	-0.068
	[0.065]	[0.056]	[0.056]	[0.065]	[0.056]	[0.056]
Age 17-18	-0.0903	0.0215	0.0252	-0.0776	0.0274	0.0305
	[0.065]	[0.056]	[0.055]	[0.065]	[0.055]	[0.055]
White	-0.2241***	-0.2060***	-0.1930***	-0.2851***	-0.2229***	-0.2069***
	[0.081]	[0.061]	[0.060]	[0.081]	[0.059]	[0.059]
GSCE - 10+ grades A-C			-0.1017*			-0.1047*
			[0.058]			[0.058]
GSCE - 1-4 grades A-C			0.091			0.0958
			[0.155]			[0.154]
GCSE - grades D-F			0.4008**			0.3890*
			[0.203]			[0.202]
Observations	1,028	1,427	1,427	1,028	1,427	1,427
Adj R^2	0.0354	0.0333	0.0373	0.0188	0.0332	0.0374
SEE	0.9821	0.9807	0.9787	0.9905	0.9808	0.9786

Notes: * ** significant at 1%, ** significant at 5%, * significant at 10%

OLS regression estimates. Robust standard errors in parentheses. The dependent variable is a summary measure of debt aversion with mean zero and standard deviation of one, derived through factor analysis, as described in the main text. The reference categories for social class, age, ethnicity and prior GCSE attainment, respectively, are lower-class, age 19-21, non-white and GCSE – 5-9 grades A-C. For educational institutions the reference category is further education colleges.

Occupations and economic activities of main income earners were classified to social classes as follows: 2002 (based on 2000 Standard Occupational Classification): Upper: Managerial and professional occupations; Middle: Intermediate occupations, small employers and own account workers; Lower: Lower supervisory and technical occupations, semi-routine and routine occupations, long term unemployed. 2015 (based on 2010 Standard Occupational Classification): Upper: Managerial, professional and higher administrative, technical and supervisory occupations; Middle: Intermediate occupations, employers in small organisations, own account workers; Lower: Lower supervisory and technical occupations, semi-routine and routine occupations, long term unemployed.

Higher education participation and social class

Having established that debt averse attitudes tend to be stronger among lower-class than upper-class students, we now examine evidence relating to Hypothesis 3. This hypothesis posits that, all else being equal, debt averse attitudes still contribute to lower rates of planned higher education participation by lower-class students compared to students from other social classes.

Table 6 reports probit estimates for Equation 2, modelling the probability of individual students planning to participate in higher education in 2002 and 2015, using the indicator of social class. The estimated probability of upper-class students planning to participate in higher education in 2015 is 5.9 percentage points higher than for lower-class students after controlling for various individual and school-related characteristics (Column 2), slightly lower than the estimated 7.5 percentage points differential in 2002 (Column 1). The estimated probability of middle-class students planning to enter higher education is not significantly higher than for lower-class students in either year. These patterns of class difference remain when we enter our measure of debt averse attitudes as an additional regressor (Columns 3 and 4). In both years, debt averse attitudes are negatively related to planned higher education participation, significantly so in 2015 but not in 2002. [14]

Several control variables are positively associated with anticipated higher education participation in both years: attendance at government-funded and independent schools (compared to further education colleges), being from non-white ethnic backgrounds, and having received encouragement at school from friends to apply for higher education studies (Columns 1-7). Encouragement from teachers played a significant role in both years but apparently made a smaller contribution in 2015 compared to 2002. The reasons for this change are unclear but may suggest that higher education participation is now taken for granted in schools. Attending government-funded high schools appears to have a smaller positive effect on plans for higher education participation than attending independent schools in 2002 but 13 years later this differential appears to have disappeared.

We test Hypothesis 3 by entering two additional variables denoting interactions between debt averse attitudes and, respectively, upper- and middle-class status (Columns 5 and 6). The coefficient for the debt averse attitudes variable refers to the association between debt averse attitudes and planned higher education participation by students in the lower-class reference category. For 2015, we observe a significant negative link between debt averse attitudes and lower-class status but the coefficient on the same variable in 2002 is not statistically significant. The finding for 2015 is robust to controlling for prior attainment at GCSE level (Column 7).

The extent of the association between debt averse attitudes and planned higher education participation by students in other social classes relative to the lower-class reference category can be estimated by adding together the coefficients on the debt averse attitudes variable and the respective debt averse attitudes/class interactions in Models 5-7. Tests of the joint significance of these coefficients showed no significant role for debt averse attitudes for middle-class students in 2015 ($p = 0.284$). For upper-class students the equivalent combination of coefficients was significantly different from zero ($p = 0.001$). However, any association between debt averse attitudes and planned higher education participation by upper-class students is small compared to the association between debt averse attitudes and planned higher education participation by lower-class students. As shown in Column 7, the estimated probability of upper-class students planning to participate in higher education in 2015 is still 4 percentage points higher than for lower-class students after taking account of associations with debt aversion and prior attainments by students at the General Certificate of Secondary Education level (Column 7).

In Table 7, we replace the social class variable with an index of social disadvantage, the inverse of the social advantage index which, as described above, is highly correlated with social class. We focus on social disadvantage to explore the impact of interacting this class indicator with debt averse attitudes. The coefficient on this interaction term is easier to interpret when both its constituent variables have similarly-signed independent associations with planned higher education participation.

The analyses show that social disadvantage is negatively related to students' intention to enter higher education in both years, with the estimated contribution approximately 2 percentage points greater in 2015 than in 2002 (Columns 1-2). These estimated contributions change very little when debt averse attitudes are entered as an additional regressor (Columns 3-4). Unlike with the measure of social class in Table 6, the coefficients on the interacted debt averse attitudes/social disadvantage variable are statistically insignificant in both years (Table 7, Columns 5-7). This finding is a reminder of the sensitivity of our results to the way that variables relating to social background are defined.

Overall, our findings provide strong support for Hypothesis 3. Debt averse attitudes in 2015 still contribute to lower higher education participation by lower-class students compared to students from other social classes. This inference is generally robust to sensitivity tests when the sample is restricted to school-based students only (i.e. excluding further education college students) and when estimates for the full sample are based on population-weighted data.

Table 6: Probit estimates of higher education participation: 17-21 year old students in England, 2002 and 2015 - Marginal effects (evaluated at sample means) – Using occupation-based indicator of social class

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Independent Variable	**2002**	**2015**	**2002**	**2015**	**2002**	**2015**	**2015**
Upper-class	0.0750***	0.0593***	0.0739***	0.0536***	0.0737***	0.0553***	0.0381*
	[0.027]	[0.020]	[0.028]	[0.020]	[0.027]	[0.020]	[0.021]
Middle-class	0.0258	0.0128	0.0273	0.0064	0.0282	0.0067	-0.0011
	[0.030]	[0.023]	[0.030]	[0.023]	[0.029]	[0.023]	[0.023]
State school	0.0576***	0.1013***	0.0569***	0.0865***	0.0586***	0.0862***	0.0628**
	[0.022]	[0.025]	[0.022]	[0.025]	[0.021]	[0.025]	[0.024]
Independent school	0.1873***	0.0844***	0.1868***	0.0761***	0.1870***	0.0761***	0.0589**
	[0.016]	[0.020]	[0.016]	[0.021]	[0.016]	[0.021]	[0.024]
Female	0.008	0.0478**	0.0079	0.0442**	0.0083	0.0445**	0.0427**
	[0.022]	[0.019]	[0.022]	[0.019]	[0.022]	[0.019]	[0.019]
Age 17-18	-0.0378*	0.0122	-0.0388*	0.0134	-0.0390*	0.012	0.0096
	[0.021]	[0.018]	[0.022]	[0.018]	[0.021]	[0.018]	[0.018]
White	-0.1479***	-0.0863***	-0.1495***	-0.0910***	-0.1501***	-0.0898***	-0.0947***
	[0.020]	[0.018]	[0.020]	[0.017]	[0.020]	[0.017]	[0.017]
Friends encouragement	0.1705***	0.2107***	0.1669***	0.2110***	0.1645***	0.2069***	0.1898***
	[0.039]	[0.039]	[0.039]	[0.039]	[0.039]	[0.039]	[0.039]
Teachers encouragement	0.2388***	0.0782	0.2369***	0.0578	0.2359***	0.0567	0.0509
	[0.063]	[0.058]	[0.064]	[0.053]	[0.064]	[0.053]	[0.051]
Debt averse attitudes			-0.0134	-0.0343***	0.0021	-0.0308**	-0.0295**
			[0.011]	[0.008]	[0.023]	[0.014]	[0.013]
Debt averse attitudes*Upper-class					-0.007	-0.017	-0.0151

					[0.030]	[0.020]	[0.020]
Debt averse attitudes*Middle-class					-0.0295	0.0126	0.0127
					[0.033]	[0.022]	[0.021]
GCSE - 10+ grades A-C							0.0466**
							[0.020]
GCSE – 1-4 grades A-C							-0.1813***
							[0.068]
GCSE - grades D-F							-0.0196
							[0.068]
Observations	1,028	1,427	1,028	1,427	1,028	1,427	1,427
Pseudo R^2	0.203	0.111	0.204	0.125	0.206	0.126	0.149
Wald Chi^2	143.1	118.8	143.9	141.8	154.3	144.8	152.7

Notes: *** significant at 1%, ** significant at 5%, * significant at 10%

Probit estimates. Robust standard errors in parentheses. The dependent variable = 1 if respondents definitely intend to apply for higher education studies, = 0 otherwise. Marginal effects are evaluated at the mean values of other independent variables. The reference categories for social class, age, ethnicity and prior GCSE attainment, respectively, are lower-class, age 19-21, non-white and GCSE – 5-9 grades A-C. For educational institutions the reference category is FE colleges. For definitions of GCSE and social classes, see notes to Table 5.

Table 7: Probit estimates of higher education participation: 17-21 year old students in England, 2002 and 2015 - Marginal effects (evaluated at sample means) – Using index of social disadvantage

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Independent Variable	**2002**	**2015**	**2002**	**2015**	**2002**	**2015**	**2015**
Social disadvantage	-0.0489***	-0.0660***	-0.0475***	-0.0632***	-0.0479***	-0.0622***	-0.0552***
	[0.014]	[0.012]	[0.014]	[0.011]	[0.014]	[0.012]	[0.011]
State school	0.0523**	0.0955***	0.0517**	0.0818***	0.0518**	0.0819***	0.0599**
	[0.022]	[0.025]	[0.022]	[0.024]	[0.022]	[0.025]	[0.024]
Independent school	0.1853***	0.0567**	0.1846***	0.0472*	0.1841***	0.0465*	0.0293

	[0.016]	[0.026]	[0.016]	[0.028]	[0.016]	[0.028]	[0.031]
Female	0.0134	0.0461**	0.0129	0.0429**	0.0126	0.0427**	0.0413**
	[0.022]	[0.019]	[0.022]	[0.019]	[0.022]	[0.019]	[0.018]
Age 17-18	-0.0454**	0.0072	-0.0462**	0.0089	-0.0462**	0.0108	0.0088
	[0.022]	[0.018]	[0.022]	[0.018]	[0.022]	[0.018]	[0.018]
White	-0.1365***	-0.0794***	-0.1390***	-0.0845***	-0.1392***	-0.0848***	-0.0909***
	[0.021]	[0.018]	[0.021]	[0.017]	[0.021]	[0.017]	[0.016]
Friends encouragement	0.1592***	0.1933***	0.1553***	0.1949***	0.1578***	0.1960***	0.1801***
	[0.039]	[0.038]	[0.039]	[0.038]	[0.039]	[0.038]	[0.038]
Teachers encouragement	0.2124***	0.0585	0.2098***	0.0394	0.2110***	0.0371	0.0333
	[0.063]	[0.055]	[0.063]	[0.050]	[0.063]	[0.050]	[0.048]
Debt averse attitudes			-0.0155	-0.0326***	-0.0261	-0.0052	-0.0043
			[0.012]	[0.008]	[0.023]	[0.019]	[0.019]
Debt averse attitudes*Social disadvantage					0.0084	-0.0177	-0.0165
					[0.014]	[0.011]	[0.011]
GCSE - 10+ grades A-C							0.0427**
							[0.019]
GCSE - 1-4 grades A-C							-0.1644**
							[0.067]
GCSE - grades D-F							-0.0483
							[0.078]
Observations	1,028	1,427	1,028	1,427	1,028	1,427	1,427
Pseudo R sqd	0.202	0.131	0.204	0.144	0.205	0.146	0.166
Wald Chi2	132.4	128	133.9	146.1	134.3	152.1	158.1

Notes: See notes to Table 6.

Discussion and conclusions

Higher education participation in England has continued to rise in recent years across all social classes, despite large hikes in tuition fees repaid via government subsidised income-contingent loans, massive increases in student loan debt, and restrictions on maintenance grants. Nonetheless, concerns remain that lower-class students who achieve suitable qualifications to enter higher education may be deterred from participation by the level of debt required.

Drawing on surveys in 2002 and 2015 of high school and further education college students, we tested three hypotheses:

H1: Young people's attitudes to taking out student loan debt were more favourable in 2015 than in 2002.
H2: Where debt averse attitudes exist, they are stronger among lower-class students than among students from other social classes in 2015, as in 2002.
H3: All else being equal, debt averse attitudes contribute to lower rates of planned higher education participation by lower-class students compared to students from other social classes in 2015, as in 2002.

We find clear evidence to support the first hypothesis. In 2015, 74 percent of students agreed with a statement that "borrowing money to pay for a university education is a good investment" compared with 52 percent in 2002. This change partly reflects growth in the proportion of students who agree with the statement, "Students do not worry about their debts while at university because they will get well-paid jobs when they graduate." There is also a widespread understanding that future loan repayments will be income-contingent.

Nonetheless, a sizeable minority of students have debt averse attitudes. We find partial evidence for the second hypothesis, with lower-class students exhibiting more debt averse attitudes than upper-class students in 2015, and much more averse attitudes than lower-class students in 2002. Middle-class students in 2015 are not more debt averse than lower-class students.

We find strong support for the third hypothesis. Lower-class students are still far more likely than students from other social classes to be deterred from planning to enter higher education because of fear of debt. This applies both to the comparison between lower- and upper-class students and between lower- and middle-class students even though levels of debt aversion are similar among

middle-class and lower-class students. Debt aversion seems more likely to deter anticipated higher education participation among lower-class students in 2015 than in 2002.

In 2015, upper class students are four percentage points more likely than lower-class students to anticipate going to university, even after controlling for debt averse attitudes, prior academic attainment and numerous other variables. However, intent to participate is not statistically different for lower- and middle-class students after controlling for other variables.

The gap between upper- and middle-class planned participation cannot be attributed to debt aversion among middle-class students, even though their debt aversion levels are similar to lower-class students. Many factors shape students' higher education enrolment decisions. Our index of social advantage, which captures anticipated financial support from family, parental attendance at university, and family encouragement to attend higher education, is significantly and positively related to planned higher education participation. The high degree of correlation between this social advantage index and social class confirms that such economic and cultural capital is available most of all to upper-class students. Further research would be useful to learn more about how these, and other unevenly distributed family-level influences, contribute to student attitudes to debt and willingness to incur the heavy debts now associated with higher education studies in England.

Prospective students' more relaxed attitude to student loan debt in 2015 is unsurprising. The large tuition fee increases mean very few students have a choice but to take out a loan if they want to go to university. They recognize that higher education is essential for a well-paid job. As higher education participation moves from mass to universal (Trow 1973), young people have few alternative options but to enroll in higher education. By contrast, in 2002, loans were restricted to living costs and students could find ways of minimising these costs, thereby reducing their reliance on loans (Callender and Jackson 2008). Reflecting the ubiquitous policy rhetoric since 2006, and as Essen and Ertl (2016) have shown, higher education has been "sold" successfully to prospective students as a "good investment" with a high graduate earnings premium. Income-contingent loans were promoted as "risk free" because of the expected financial returns to higher education and because the government, not students, bears any financial penalties associated with low graduate earnings.

This analysis shows that, with tuition fees and growth in student loan debt between 2002 and 2015, debt averse attitudes increased among lower-class prospective students, the gap in attitudes between lower- and upper-class students widened, and fear of debt negatively contributed to lower-class

students' anticipated higher education participation relative to other social classes. These changes occurred over a period when real household median disposable incomes grew by just three percent to £28,092 ($36,416), and median full-time gross earnings were unchanged at £27,600 ($35,797) (ONS 2015; 2016). Most potential students are now being asked to borrow about one and a half times their family's annual income.

The similar levels of debt aversion among middle- and lower-class prospective students in 2015, unlike in 2002, also may reflect changes in student funding. These middle-income groups have been particularly "squeezed" by restrictions on grant eligibility, limited access to institutional aid, and parents with no spare disposable income to make up for these losses, making their children increasingly reliant on loans.

The growth of social class differences in debt aversion and planned higher education participation may be related to the increasing dispersion of graduate earnings over time (Green and Zhu 2010). Graduates are much more likely to be employed and earn considerably more than non-graduates. But graduates from wealthier backgrounds earn significantly more than graduates from poorer backgrounds even after completing the same degrees from the same universities and graduate earnings vary depending on the university attended (Britton et al, 2015a). Arguably, there are now even greater risks and uncertainty concerning the returns of higher education for students not attending the "best" universities and from the highest social classes.

A key limitation of our study is its focus on prospective students' intentions about entering higher education. The analyses do not show the impact of debt on prospective students' actual behavior, choices, and decision making. The relationship between attitudes toward debt and actual debt is unclear. We cannot assume that attitudes towards debt affect borrowing behavior. Both cognitive dissonance theory (Festinger 1962) and self-perception theory (Bem 1972) suggest that, if people must acquire debt, they will adjust their attitudes so that they accept debt. Debates about the relationship between attitudes and behaviour have a long history in social science. The potentially powerful impact of perceptions of actuality on behaviour is well established (Kettley et al 2008).

Nor can we assume from this cross-sectional study any causal inferences or that debt averse attitudes result in non-participation. This conclusion would require a longitudinal study tracking students from high school into higher education or alternative paths. This is one area for future research. Another is overcoming other methodological constraints in demonstrating causal links and the need for studies that include randomized controls and/or exploit quasi-experimental situations.

Our exploration of prospective students' higher education intentions and attitudes toward debt from cross-sectional surveys, which no other study has attempted, demonstrates changes over time and provides useful insights for policy. It contributes to the large extant literature on the determinants of, and socio-economic differences in, higher education participation. This study is a useful reminder to policymakers, higher education institutions, and researchers that academic attainment alone cannot explain these variations. Student debt aversion also plays a role, challenging the mindset that the problem of unequal higher education participation lies primarily within the secondary schooling system. Although higher education participation rates have continued to grow in England, despite rises in tuition and student loan debt, policymakers and some researchers, also need to recognize that such changes can influence higher education enrolments, especially among underrepresented groups. Indeed, England's student funding system, predicated on the accumulation of student loan debt, potentially undermines widening participation policies rather than broadening and equalizing higher education participation. Income-contingent loans are not necessarily a protection against this, or student loan debt aversion.

Yet, in September 2016, maintenance grants for low-income students were abolished again and replaced with larger loans, leading to further rises in debt for the poorest 40 percent of students from an estimated £40,500 ($52,383) to £53,000 ($68,55) (Britton et al. 2015b). In September 2017, the tuition cap will be increased to £9,250 while the repayment threshold on loans is to be frozen retrospectively. Debt will be highest among those from the lowest-income families. Will yet more prospective low-income students be deterred from entering higher education and have limited higher education opportunities because of fear of debt?

APPENDIX A: STATISTICAL TABLES

Table A1: National profiles of students aged 17-21 studying for university entry-level qualifications, England, analysed by type of educational institution and type of qualification, 2002 and 2015

Educational Institution	**2002**	**2015**
	% of total students studying for university entry-level qualifications	
State schools-A/AS levels	32	34
Independent schools-A/AS levels	8	8
Further education sector-A/AS levels	35	21
Further education sector-Vocational Level 3	24	30
State schools-Vocational Level 3	2	7
Total	100	100

Sources:

2002: Derived from Callender (2003, Annex 1); Callender and Jackson (2005) who made use of data supplied for England by the Learning and Skills Council (private communication) and DfES Statistical First Release 16/2002; and analysis of Labour Force Survey data for 2002 (Spring quarter).

2015: Derived from https://www.gov.uk/government/publications/participation-in-education-training-and-employment-by-16-to-18-year-olds-in-england-end-2012 (extrapolated to 2015); and analysis of Labour Force Survey data for 2015 (Spring quarter).

Table A2: Descriptive statistics for variables used in multivariate analysis

A: 2002

Variable	Obs	Mean	Std. Dev.	Min	Max
HE participation	1028	0.81	0.40	0	1
Male	1028	0.41	0.49	0	1
Female	1028	0.58	0.49	0	1
Gender_not stated	1028	0.01	0.10	0	1
Age1718	1028	0.55	0.50	0	1
Age1921	1028	0.45	0.50	0	1
White	1028	0.78	0.41	0	1
Nonwhite	1028	0.20	0.40	0	1
Ethnic group_not stated	1028	0.02	0.13	0	1
Independent school	1028	0.16	0.37	0	1
State school	1028	0.28	0.45	0	1
FE college	1028	0.57	0.50	0	1
Upper-class	1028	0.43	0.50	0	1
Middle-class	1028	0.21	0.40	0	1
Lower-class	1028	0.22	0.42	0	1
Social class not known	1028	0.14	0.35	0	1
Family encouragement	1028	0.92	0.27	0	1
Family support	1028	0.60	0.49	0	1
At least one parent attended university	1028	0.35	0.48	0	1
Social advantage index	1028	1.87	0.83	0	3

Friends encouragement	1028	0.84	0.37	0	1
Teachers encouragement	1028	0.93	0.26	0	1
Debt averse attitudes (factor score)	1028	0.00	1.00	-2.22	3.06

B: 2015

Variable	Obs	Mean	Std. Dev.	Min	Max
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HE participation	1427	0.86	0.35	0	1
Male	1427	0.39	0.49	0	1
Female	1427	0.61	0.49	0	1
Gender_not stated	1427	0.00	0.03	0	1
Age1718	1427	0.60	0.49	0	1
Age1921	1427	0.40	0.49	0	1
White	1427	0.72	0.45	0	1
Nonwhite	1427	0.24	0.43	0	1
Ethnic group_not stated	1427	0.04	0.19	0	1
State school	1427	0.72	0.45	0	1
Independent school	1427	0.09	0.28	0	1
FE college	1427	0.19	0.39	0	1
GSCE - 10+ grades A-C	1427	0.60	0.49	0	1
GSCE – 5-9 grades A-C	1427	0.32	0.47	0	1
GSCE - 1-4 grades A-C	1427	0.04	0.20	0	1
GSCE - grades D-F	1427	0.02	0.13	0	1

GCSE - grades not known	1427	0.02	0.13	0	1
Upper-class	1427	0.33	0.47	0	1
Middle-class	1427	0.23	0.42	0	1
Lower class	1427	0.27	0.45	0	1
Social class_not known	1427	0.16	0.37	0	1
Family encouragement	1427	0.95	0.21	0	1
Family support	1427	0.31	0.46	0	1
At least one parent attended university	1427	0.40	0.49	0	1
Social advantage index	1427	1.66	0.78	0	3
Friends encouragement	1427	0.89	0.31	0	1
Teachers encouragement	1427	0.97	0.17	0	1
Debt averse attitudes (factor score)	1427	0.00	1.00	-2.49	3.19

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Endnotes

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[2] Higher education policy within the UK is devolved and funding policies have diverged, leading to English students having the highest debt levels. The reforms discussed relate only to English domiciled students studying full time at public universities. The financial support available to full- and part-time students differs. The vast majority of English higher education institutions are public with only a few private universities. Unlike the US, in England a student loans private market hardly exists. Discussion about loans in this paper refers exclusively to government-funded loans, which are administered and distributed by the government-owned Student Loans Company.

[3] For an exploration of the global rise of cost sharing see Callender (forthcoming).

[4] Exchange rate £1=$1.29, August 8, 2016.

[5] In 2010, the government promised that, from April 2017, this threshold would rise annually with average earnings. In October 2015, after our 2015 survey was completed, the government withdrew this promise.

[6] A-Levels are a national General Certificate of Education qualification usually taken in the final two years of secondary schooling (years 12 and 13) and are traditionally a prerequisite for university entry. For details of the classification of qualifications on this framework in the UK, see: https://www.gov.uk/what-different-qualification-levels-mean/compare-different-qualification-levels.

[7] Further details of response rates and cognitive testing in the process of questionnaire development are available from the authors on request.

[8] The main reason for focussing on England alone was that diverged UK student funding policies have contributed to higher levels of student debt in England. The upper age limit in 2015 was dictated by the fact that ILR records only contained linked data for students up to age 21.

[9] Missing values were disproportionately concentrated among non-white students in 2002 and female students in 2015. Only 7-8 percent of cases were missing values. When these cases are included in analyses that do not include measures of debt attitudes, there is very little difference in the patterns of inference relating to non-white students in 2002 and female students in 2015 from estimates that exclude these cases. Results available from authors on request.

[10] For definitions of social classes, see notes to Table 5.

[11] The Labour Force Survey (LFS) is a quarterly survey of the employment circumstances of the UK population and is the largest household survey in the UK.

[12] Factor test scores for summary measure of debt averse attitudes: 2002: Cronbach's alpha measure of internal reliability: 0.633; Kaiser-Meyer-Olkin measure of sampling adequacy: 0.649; Bartlett's test of sphericity: $p<0.001$; 2015: Cronbach: 0.631; Kaiser-Meyer-Olkin: 0.621; Bartlett: $p<0.001$.

[13] This finding shows the sensitivity of our results to both the geographical coverage and the age-range of the sample. In earlier analysis of the 2002 sample (which covered the whole UK and not just England) and included a proportion of students aged 22 and older as well as 17-21 year olds, Callender and Jackson (2005, Table 3) found that upper-class students were significantly less likely than lower-class students to be debt averse. When we apply the same specifications shown in Table 5, Columns 1 and 3, to the full 2002 sample used by Callender and Jackson (2005), we obtain similarly clear evidence that upper class students are significantly less likely than lower-class students to be debt averse. Analyses available from authors on request.

[14] When we apply the same specifications shown in Table 6 to the UK-wide 2002 sample of students (including some aged 22 and older) that was used by Callender and Jackson (2005), we find a significant negative association between debt averse attitudes and planned higher education participation in that year (and particularly planned higher education participation by lower-class students). Results available from authors on request.

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