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Navigating Higher Education Insurance: An Experimental Study on Demand and Adverse Selection[*]

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Abstract

We conduct a survey-based experiment with 2,776 students at a non-profit university to analyze income insurance demand in education financing. We offered students a hypothetical choice: either a federal loan with income-driven repayment or an income-share agreement (ISA), with randomized framing of downside protections. Emphasizing income insurance increased ISA uptake by 43%. We observe that students are responsive to changes in contract terms and possible student loan cancellation, which is evidence of preference adjustment or adverse selection. Our results indicate that framing specific terms can increase demand for higher education insurance to potentially address risk for students with varying outcomes.

Keywords: education finance, education insurance, income insurance, adverse selection, financial aid, income-share agreement, ISA, student loan, student debt, higher education, income-driven repayment, IDR, income-contingent financing
JEL Codes: D14, D82, G51, H81, I22

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1 Introduction

Insurance products are important tools employed by individuals to hedge risks in their financial lives. Insurance markets allow individuals to pool risks against unexpected, negative outcomes and are well developed in many contexts, like healthcare or real estate.[1] However, risk-hedging opportunities are not readily available in post-secondary education, even though college is an increasingly uncertain investment (Webber, 2022) made only once in a lifetime. While returns to college attendance are positive on average (Lovenheim and Smith, 2022), their distribution is more nuanced (Webber, 2016, Broady and Hershbein, 2020). Financial outcomes for students, for example, vary across institution types (e.g., selective vs. non-selective; four-year vs. two-year), fields of study (e.g., education vs. engineering vs. economics), and macroeconomic conditions upon graduation (Rothstein, 2023). Perhaps more importantly, returns vary within each of these segments given unobservable student skill – which is potentially difficult for the student and/or the institution to identify – and uncertain labor market conditions. Particularly for younger students and those entering longer degree programs, there is uncertainty both in the expected *level* of income and in its *variability*.

Students, educational institutions, and government entities understand and bear these risks to different degrees. For example, work by Stange (2012) shows that many students treat attending their first year of college akin to purchasing an options contract – completing an initial year so as to develop a better sense of their likely returns, after which they decide whether to exercise the option for a second year. Policymakers and advocates often work to transfer the riskiness of the return to taxpayers, e.g., via the free college movement, financial aid policy (both grants and loans), or the Covid-19 student loan repayment pause for loans guaranteed by the federal government.

Interestingly, individual educational insurance policies where students pay a premium to protect themselves from income risk are either not well developed or are non-existent.[2] One reason for the low prevalence of educational insurance in post-secondary markets may be low demand. There is evidence that students can be overoptimistic about future earnings (e.g., Baker et al. (2018)), failing to adequately consider insurance risk at the time of enrollment and financing because of difficulty in predicting future incomes according to major (Arcidiacono et al., 2012; Baker et al., 2018; Conlon, 2021). On the supply side, another explanation could be the presence of adverse selection (Einav et al. (2023)) and moral hazard (Zweifel and

[1] Closest to our setting, individuals purchase insurance to mitigate financial losses (e.g., Arrow, 1963), buffer against income shocks (e.g., Chetty and Szeidl (2007)), and for a variety of other reasons. Guiso and Paiella (2008) document the increasing propensity of households to hedge against labor income risk in particular, indicating a rising awareness of employment/income uncertainties. In the case of financial markets, diversification, including the use of derivative instruments like futures and options, remains a primary strategy for risk management in the face of uncertain economic outcomes (e.g., Bodie (1994); Goyal and Welch (2007)).

[2] Throughout this paper, we will assume that the primary form of insurance in post-secondary education is against the risk of low or uncertain income, and will refer to this as "low income insurance" or "educational insurance."

Manning, 2000) in insurance markets.

Our paper makes a unique contribution to our understanding of student demand for educational insurance and the potential relevance of adverse selection in the viability of low-income insurance in education markets. Students who are unsure about their prospects may demand insurance to protect themselves against downside labor market risks. Adverse selection is related but different: the insured use information that they can easily conceal from the insurance company to take advantage of the insurance's downside protections. Our major contribution is a framing experiment used to tease out insurance demand; our survey allows us to see concealed information unavailable to the hypothetical insurer to test for adverse selection. Using the experiment coupled with the survey, we can test how framing affects a student's demand for education insurance and see if students use concealed information to take up the protections at different rates.

We partnered with a large, non-profit university (hereafter, the University) that typically serves non-traditionally aged students who are often working adults. We conducted a randomized survey lab experiment with 2,776 students to understand their preferences over different educational financing choices.

In the survey, students were asked to choose between a hypothetical federal student loan with the option of an income-driven repayment (IDR) plan and a hypothetical income-share agreement (ISA). Both options provided information on monthly loan payments that are waived for very low incomes and otherwise are capped to a fixed share of an individual's income, with markedly different implementation and paths for satisfying the loan obligation.

In the experiment, students were randomized into two equal groups and, similar to Abraham et al. (2020), the presented hypothetical options differed in terms of level of detail provided for each of the choices. The first group was shown descriptions of the student loan with the option of IDR and the ISA with a risk-neutral framing that explained the differences in monthly payments, general structure of the loan, the baseline payment terms, and the source of funding. The terms of the student loan with IDR and the ISA were set to be actuarially equivalent. We exposed the second group – our treatment group – to the same descriptions of the student loan with the option of IDR and the ISA, but with an additional emphasis on the insurance features (nature of the income contingency and maximum repayment term) of the two financing options.

There are many differences between federal student loans with IDR and ISAs, and many reasons why different borrowers might prefer one over the other. With federal student loans, borrowers who do well in the labor market will pay less in total by paying fixed monthly payments for the minimum number of years (120 payments, or 10 years with no gaps in payment). Since there is no prepayment penalty for federal student loans, they can also be paid off faster than scheduled and may be particularly attractive to students who expect consistently high earnings after college. To access the income contingency, borrowers must follow a series of administrative hurdles in order to qualify for reduced monthly payments capped at a certain percentage of their income, paying nothing if their income falls below a set threshold, but potentially extending their term up to 20 years compared with the standard repayment plan.[3] With an ISA, borrowers' monthly payments are set as a pre-agreed share of income by design, and the repayment term is typically extended to a lesser degree than IDR due to months of non-payment, making an ISA a potentially attractive proposition for borrowers with persistently low or variable earnings. On the other hand, there is no way to "refinance" out of an ISA, and borrowers who end up earning high incomes will pay up to a multiple of the original loan amount, described in our experiment. Finally, borrowers may have preferences over borrowing from the government versus a private lender.

We find that students have a significant preference for the built-in income insurance in the ISA and that our insurance framing greatly increases the demand for the hypothetical ISA – by about 10 percentage points, or 43 percent. Importantly, there is limited heterogeneity in treatment to be found along demographic, academic, or financial lines for students in our sample.[4] The insurance framing has, by far, the largest effect on take-up. Our results suggest that students are not necessarily thinking about income risk or about the potential benefits of educational insurance when they choose how to finance their studies, but that educational and loan providers can help make the potential need for educational insurance salient for borrowers by thoroughly explaining the costs and benefits of such insurance.

Our survey and follow-up questions also allow us to characterize how adverse selection may enter the educational insurance market (Herbst and Hendren, 2021).[5] The survey allows us to solicit information from the student that is unavailable to the ISA originator. Students may be confident about their income potential but can easily conceal this information from financing providers who do not have the ability to price discriminate (i.e., must charge the same interest rate or income share to all). In such an environment, students expecting low incomes will sort into the ISA, while students expecting high incomes will opt for a traditional loan. Educational insurance that looks more like an ISA will not be a sustainable policy choice if students who achieve significant returns to college systematically choose student loans. Overall, there is less evidence suggestive of adverse selection across a variety of variables than we supposed ex ante. Employment uncertainty, for example, does not appear to influence take-up. However, we do find strong suggestive evidence of adverse selection based on the likelihood of future incomes being low.

[3] Recent policy changes around the Saving on a Valuable Education (SAVE) IDR plan simplify some of these processes for federal student loans, but the income protection is still far from built in. Although some currently available IDR plans offered by the U.S. Department of Education extend the repayment term to up to 25 years, we wanted to keep the comparison simple for borrowers and chose the (modal) maximum term of 20 years.

[4] The preregistered baseline variables for heterogeneous treatment effects included race/ethnicity (Black, Hispanic, white), gender (indicator for female respondent/recipient), household size, age (median split), marital status, risk aversion.

[5] Since we cannot follow students after the survey, we cannot shed light on the potential moral hazard from the availability of insurance for students in the treatment group.

To further test for adverse selection, we ask several follow-up questions to investigate how students might change their answers if the offer terms were modestly different. After their initial choice between a student loan and an ISA, we offered students who originally selected a student loan with IDR an actuarially equivalent alternative ISA with a lower income share and a longer term. If students maintained their original choice of a student loan in the second round as well, we then offered them another alternative ISA in the third round – this time with a higher income share and a shorter term than the original ISA. For students who originally selected the hypothetical ISA, we separately offered both alternative ISAs at the same time. We find that both original ISA choosers and original student loan choosers were equally likely to switch to the longer term ISA, with 18% of respondents selecting the longer term ISA over their original choice. Interestingly, respondents who originally chose the ISA were considerably more likely (61%) to choose the shorter term ISA compared with the respondents who chose the student loan with IDR in both the first and second rounds (17%).

We further find that treated students who originally chose the student loan were 5.1 percentage points (17%) more likely to choose the ISA option with a lower share and longer term. The treatment effect for those offered the alternative ISA with shorter term and higher share is not statistically significant. For students who chose the original ISA in our base experiment, treated students were 8.6 percentage points (15%) more likely to choose the alternative ISA option with a higher share and shorter term. We find no significant treatment effects on switching toward the lower share and longer term ISA for students who originally chose the ISA over the student loan with IDR. Overall, our results suggest that the insurance framing helped reinforce student preferences over a shorter maximum repayment term (12 years for ISA vs. 20 years for student loan), and that students selected alternative ISA contracts in our follow-up questions in a way that reflected their stated preference between the initial choice.

Separately, we asked all students whether they would select a student loan if there were a 20% chance that the $10,000 loan they borrowed would be forgiven. We find that students who switched from a loan to an ISA in the second round were 6.4 percentage points more likely to switch back to a loan when offered the chance of student loan forgiveness. Conversely, when students who picked the original ISA were offered a loan with a chance of future debt forgiveness, the prospect of a future balance reduction decreased the willingness/likelihood of switching back to the federal student loan. The students who switched to an ISA in the second round are marginally attached to the ISA and may be easily induced to switch between the two financing choices given relatively small changes to terms, while the original ISA choosers appear to be more set in their ISA preference. Taken together with our results on student preferences over alternative ISA variations compared with a student loan with IDR, our study contributes to the understanding of an optimal design of loan products with income insurance features with regard to both upside protections (like maximum term or total payment amount) and downside protections (like income share).

Though focused on educational insurance markets, our paper contributes to other lines of research, including the literature on financial aid, education finance, and student debt. As the cost of higher education has risen and the purchasing power of public subsidies have fallen along with public financial support to universities (Webber, 2017), families have had to incur debt or forego consumption to afford post-secondary education. Recent research has emphasized the burden that student loans place on students (Chakrabarti et al., 2020), - including on their other consumer spending (e.g., Mezza and Sommer, 2015), "life milestones" (Mezza et al., 2020), and educational outcomes (e.g., Black et al., Forthcoming, Denning and Jones, 2021). Because the monthly payment is proportional to income, education insurance such as IDR and ISAs can hedge against the adverse effects of student loans. As such, take-up of such products, particularly among populations where student loans have had adverse effects (e.g., students at technical or public regional colleges with higher variance in college outcomes), is important.

Many families do not apply for aid – meaning they do not complete the required financial aid forms – because of a lack of information or uncertainty of eligibility (e.g., Kofoed (2017), Bettinger et al. (2012)). Even for families that apply for aid, the protection of some assets within the Pell eligibility formula leads to less financial aid eligibility for students from disadvantaged families (Levine and Ritter, 2023), resulting in higher student loan burdens and decreased access to selective institutions. Forms of built-in educational insurance are potentially more attractive to these students, as they automatically reallocate some of the risk from the student to the provider and may reduce uncertainty around financial aid eligibility.

Additionally, our research contributes to the behavioral literature on student take-up of financial aid programs under varied framing.[6] Abraham et al. (2020) and Marx and Turner (2019) demonstrate that framing matters for government-sponsored IDR plans and traditional student loan take-up, respectively. In this literature, researchers manipulate the students' norms, terms, risk, and costs communicated to students with respect to specific financial instruments. Our paper contributes to this discussion by showing that students prefer income contingent financing when we emphasize the built-in educational insurance of the ISA, with treatment effects for the insurance framing comparable in magnitude to Abraham et al. (2020). The lessons from our study are applicable to the design of any income-contingent education financing product and are particularly salient to ongoing policy discussions around the Department of Education's income-driven repayment plans for federal student loans.

Our paper is organized as follows. Section 2 reviews students' college financing and the prospect for education insurance in financing education. Section 3 details the experimental design of our research

[6]Cox et al. (2020) examine why students don't choose IDR when they are worried about future income expectations. They conduct a laboratory experiment where they provide information about IDR and default students into the plan. They find that extra information and correct defaulting does increase enrollment.

questions. Section 4 lays out our empirical strategy and elaborates on the data collection. Section 5 provides empirical results. Section 6 offers concluding remarks and policy considerations.

2 College Financing and Educational Insurance

This section describes borrower labor market expectations and available (student loan with IDR) and relatively novel (ISAs) higher education financing options with income insurance that motivated our experiment. In Section 2.1, we describe borrowers' income/employment trajectories and potential risks and disruptions to future income and employment. We then proceed to explain the mechanics of an IDR option for a traditional student loan in Section 2.2 and the typical ISA in Section 2.3. In Section 2.4, we discuss how the features of the two financing options might influence choices between them and which types of borrowers might respond to which incentives. Finally, Section 2.5 discusses the motivation behind our experiment and the comparison we offered to students in our study.

2.1 Students' Educational Risks, Earnings Trajectories, and Repayment Shocks

Until recently, students and parents typically repaid government student loans in fixed monthly payments over a given repayment period, akin to a traditional mortgage loan (Karamcheva et al., 2020). This payment remained constant regardless of age, income, employment status, or family situation. Most non-government lenders have offered private loans with a standard, mortgage-style payment schedule, though select lenders are beginning to offer or contemplate alternative options. Some 95% of outstanding student debt is guaranteed by the federal government, so repayment plans designed and offered by the U.S. Department of Education dominate the set of choices available to students.

It is important to consider risk to the returns to college attendance (including borrowing for that attendance) when thinking about future income and employment prospects for students (Akers, 2021; Balakrishnan and Cynamon, 2018; Hendricks and Leukhina, 2018; Webber, 2016). Perhaps the largest risk factor to the repayment of educational debt that students face involves the risk of non-completion. Historically, 6-year completion rates have hovered around 60% and are even lower for nontraditional college students and non-selective institutions (Bowen et al., 2009). Financial circumstances, lack of academic preparedness, and a host of academically oriented challenges may put students' financial investment in college at risk. Additionally, there are "life" risks that students face, including emergencies arising from physical to emotional health to family circumstances. Adult learners, in particular, report that child-care emergencies, children's health, and even transportation emergencies can derail their educational careers (Markle, 2015).

Even for completers, risks to income and employment are many. The average financial return for the median graduate of a 4-year college or university is large and handily outweighs the implicit and explicit costs of attending college, which is why enrollment in a postsecondary program of study makes sense for most students ex ante. But ex post, returns are heterogeneous across many dimensions including major, institution type, and institution prestige. Since student populations particularly at risk of low or negative returns to college enrollment tend to skew toward vulnerable groups, addressing the riskiness of college attendance with product/program design and effective public policy is imperative.

Borrowers also face a variety of income shocks during repayment, such that repayment burdens can vary widely for individuals with variable or uncertain income and/or employment (Chapman and Lounkaew, 2015; Chapman and Dearden, 2017). Borrowers may face *temporary repayment challenges* (e.g., due to periods of unemployment or underemployment) or *chronic repayment struggles* due to low incomes (e.g., because of degree non-completion, or degree/major with poor financial return on investment).

Fixed payments over a 10-year period for borrowers who recently completed or dropped out of a program of study may not be optimal given typical earnings trajectories either. For most borrowers, student loan debt service ratios (i.e., scheduled payments as a share of a borrower's income) are typically greater early in the repayment term, when a borrower's income is lower. This is particularly true for student loan borrowers with little work experience upon entering repayment, for borrowers who typically begin repayment in lower paid early career positions but ultimately earn substantial amounts (e.g., medical doctors), and for borrowers with degrees in majors that traditionally have steep earnings trajectories (e.g., biology).

Considering all of these factors, standard repayment plans with fixed scheduled monthly payments may be burdensome for borrowers and poorly suited for a setting with myriad risks to income and employment.

2.2 Income-Driven Repayment Plans for Federal Student Loans

In response to these earnings patterns, repayment shocks, and increasing debt service ratios, the Department of Education expanded income-contingent repayment programs (sometimes referred to as income-driven repayment, or IDR) for federal student loans. IDR plans reduce student loan payments to 5-15% of discretionary income, defined as the amount of adjusted gross income (AGI) above a multiple of the Federal Poverty Level (FPL). As of the time of our experiment, the dominant IDR plan (and one on which our student loan with IDR option was modeled) was Revised Pay As You Earn (REPAYE) plan. Under REPAYE, borrowers owed 10% of income over 150% of the FPL for up to 20 (undergraduate loans) or 25 (graduate loans) years. The newest IDR plan introduced in 2023, the Saving on a Valuable Education (SAVE) IDR plan, sets scheduled payments to 5-10% of income over 225% of the FPL. As of 2019, about 35% of borrowers with federal Direct student loans enrolled in one of the several IDR plans offered by the Department of Education (Ma et al., 2018), with the rest ineligible for IDR (e.g., parent borrowers) or preferring to remain with the standard plan.

A borrower's payment in an IDR plan is defined below:

$$P_{it} = \begin{cases} 0 & \text{if } DI_{it-1} \leq 0 \\ rDI_{it-1} & \text{if } DI_{it-1} > 0, \end{cases} \tag{1}$$

where last year's discretionary income is $DI_{it-1} = AGI_{it-1} - mFPL_t(n)$, n is the applicant's family size, $m \in \{150\%, 225\%\}$, and $r \in \{0.05, 0.10, 0.15\}$. The IDR obligation is satisfied when a) the original balance and accumulated interest are repaid, or b) the borrower has reached the maximum repayment period of 20 or 25 years (depending on the particular IDR plan), whichever comes first. By design, an IDR plan retains a balance-tracking feature, such that borrowers whose IDR payment is less than the monthly interest experience interest capitalization and can see their balances grow (even balloon), as frequently reported in the popular press.

Again, the hypothetical student loan with IDR in our experiment is modeled after the REPAYE plan, such that $m = 150\% * FPL(n)$, $r = 0.10$, and the maximum repayment period is 20 years. We note that the equation above determines the *maximum* IDR payment, and that a borrower's payment in a particular month may amount to less than this maximum payment, such that the IDR option acts as insurance against low income at the potential cost of a higher aggregate payment amount and/or an extended repayment period relative to the 10 years in the standard plan.

Yet, enrollment rates in these repayment plans remain low for myriad reasons such as administrative hurdles, poor design, and servicer misconduct (e.g., Mueller and Yannelis, 2022). Herbst (2023) uses randomized variation in loan servicer outreach to find that enrollment in an IDR plan reduces student loan delinquencies by 22 percentage points and decreases outstanding balances within a year of take-up. Many students do not qualify for federal student loans – perhaps because they have exhausted the federal lifetime undergraduate borrowing limit (approximately $30,000), or because they are ineligible for federal loans (e.g., due to parental income/assets, due to attending a non-eligible institution, or due to not being US citizens). Other students (and their parents) take out loans that are ineligible for IDR altogether.

2.3 Alternative Income-Contingent Financing: Income Share Agreements

One alternative to student loans are ISAs, or income share agreements. Both states and institutions have experimented with ISAs in the past decade. ISA providers claim to fill funding gaps faced by students and to push programs to align incentives with students because institutions receive repayment as graduates succeed in the labor market because repayment rates are dependent on students' post-college employment and income (Ritter and Webber, 2019). Over the past decade, ISAs have covered the spectrum of post-secondary education, from large public systems and private non-profit colleges to certificate programs and small, for-profit coding bootcamps (Ritter and Webber, 2019; Zaber et al., 2023).

ISAs are neither a traditional loan product nor a traditional financial aid instrument. They are intentionally designed to share some of the risks of pursuing post-secondary education between the student and the ISA provider, including risks to graduation or adverse life events. Under an ISA agreement, students pledge a proportion of their future earnings in lieu of paying tuition in the present. ISAs typically include, as built-in features of the financial product, downside protections (a minimum income threshold below which no payments are due, a maximum repayment window, and/or and maximum number of payments) and upside protections (maximum cap for the amount that can be repaid before the obligation is satisfied).

A borrower's payment in an ISA is defined as below:

$$P_{it} = \begin{cases} 0 & \text{if } I_{it} \leq I_{min} \\ a * s * I_{it} & \text{if } I_{it} > I_{min}, \end{cases} \tag{2}$$

where P_{it} is the scheduled payment under the ISA plan for borrower i in time t, I_{min} is the minimum income threshold, a is the total amount borrowed, and s is the income share per dollar borrowed. Different from the maximum IDR payment specified in Equation 1, which is determined irrespective of the amount borrowed, the ISA payment scales with the amount borrowed.

In terms of the exit criteria from the obligation, ISAs do not track balances, by design. Instead, the provider tests whether the borrower's cumulative amount of payments is above a maximum cap or multiplier of the borrowed amount (e.g., 2X original borrowed amount) in each period, or whether the borrower has reached the maximum number of payments or the maximum term length. In other words, the total amount of payments is subject to the following restriction:

$$CumulativePayments_t = \sum_{1}^{t} P_t \leq c * a \tag{3}$$

s.t. $NumPayments < MaxNumPayments$ and $t < TimeCap$.

As before, a is the total amount borrowed, while c is the multiplier or maximum cap. In other words, an ISA obligation is satisfied if a) the borrower reaches the maximum cumulative payment amount, b) the borrower makes the required number of non-zero payments, or c) the borrower reaches the maximum repayment window. In our experiment, the hypothetical ISA presented to the students closely resembles the one considered by the University – an income share of 2.3% of monthly income, maximum number of nonzero payments of 120 (10 years), maximum term of 13 years, and a max cap of 2X the original borrowed amount.

From a consumer protection perspective, ISAs are currently not as tightly regulated as traditional student loans, with a hodgepodge of state-level approaches to enforcing consumer protection and prudential regulations and an emerging federal regulatory framework for ISAs. The Consumer Financial Protection Bureau considers ISAs private student loans for regulatory purposes but has provided limited guidance regarding how existing regulations apply to ISAs. For example, the Truth in Lending Act governs the disclosures of annual percentage rates (APR), among other things, which is a distinctly loan-specific term and does not straightforwardly apply to an ISA-style contract with variable payments. However, although these important consumer protections concerns exist, we have chosen to abstract from them in our experiment as the typical borrower would be highly unlikely to be aware of any regulatory or consumer protection distinctions between the two financing options.

2.4 Borrower Choice Between Financing Options

While many comparable insurance protections are presently available under IDR plans for federal student loans, they are not the default option in the United States. Borrowers have to bear the time and effort cost of enrolling and often fulfill many requirements in order to remain enrolled, including burdensome annual recertification processes for the most generous IDR plans. Additionally, the menu of IDR programs has changed multiple times since the introduction of the first repayment program of this style – as recently as summer 2023 – meaning that the availability of a particular repayment plan for federal loans is uncertain at best. Therefore, some students may find attractive the ex-ante agreement to repayment terms that will be in effect for the duration of the contract inherent with an ISA. Monthly payments vary with income by design, and there is no interest rate, per se, which could be welcome (as payments will never be overly burdensome) or unwelcome (because payments may be seen as unpredictable) for borrowers.

Turning to the monthly payment incentives to choose a student loan with IDR versus an ISA, there are several factors that may lead to differing payment levels considering the parameters introduced in Equations 1 and 2. This is true both at a point in time and in terms of the cumulative payment amount defined above, which could lead borrowers to prefer one product over the other. For one, the total time obligation of each potential loan product is potentially different. Under an ISA, the length is determined based on (1) the number of non-zero monthly payments, and (2) the total number of months elapsed including months where no payment is required. For simplicity, in the hypothetical ISA we offered to students in our experiment, these terms were both set at 10 years.[7] Therefore, borrowers who have a strong preference against long maximum terms might prefer the ISA.

From an income trajectory perspective, the shorter obligation period of an ISA would be preferable to borrowers who believe they will fall below the income threshold early on (for instance, if they have private knowledge they will be out of the labor market), but may be substantially above the threshold in later years. Apart from the length of obligation, the hard discontinuity in ISA payment calculations close to the threshold can also create a strong incentive to prefer one contract over the other. IDR payment shares only apply to discretionary income, e.g., the marginal income above the 1.5*FPL threshold (for a single borrower, in the neighborhood of $14,000 in 2022). And although the ISA minimum income threshold of $36,000 per year borrower is higher than the IDR minimum income threshold, a borrower making a single dollar above the ISA minimum income threshold will make a payment based on their *entire* income, rather than the marginal amount above the threshold. Thus, borrowers expecting to earn incomes between the two thresholds might be particularly motivated to choose the student loan with IDR.

Finally, we consider borrowers who may anticipate doing particularly well in the labor market and benefiting from the upside protections in either financing option. Borrowers who might like to have the option of paying back their loans more quickly than the initial repayment schedule might prefer the student loan because the repayment term in the standard plan is less than 10 years for borrowers making excess payments above the scheduled amount. Similarly, borrowers expecting to potentially earn high amounts may be attracted by the lower cumulative amount paid on the standard plan ($12,720 for $10,000 borrowed given typical interest rates), compared with the relatively higher maximum cap on the ISA ($20,000 per $10,000 borrowed in our hypothetical ISA). Of course, this potentially lower cumulative amount paid given a high-income outcome is traded off against the possibility of a low-income outcome where the borrower experiences income capitalization and may be required to make payments for up to 20 years.

Ultimately, students' decisions between financing options are ultimately about earnings expectations (both level and time path), preferences over monthly payments and upside/downside protections, risk tolerance, and risk aversion, as described above. They are very similar to the decisions made in contemplating other types of insurance.

2.5 Motivation for the Experiment

Student choices between available financial options could provide information useful not only to educational programs and students, but also to regulators as they decide how to apply or augment regulations in

[7] In practice, while the maximum term length and maximum number of payments could align, most ISA contracts differentiate between total payment length and the number of non-zero payments.

the coming years. Given the similarities between ISAs and IDR plans for federal student loans, insights into student preferences over different features of income-contingent financing can be highly relevant to plans for the expansion or redesign of IDR. As mentioned previously, the Department of Education has recently undertaken the design of a new version of an IDR plan for Direct student loans, the SAVE IDR plan launched in August 2023, so insights from our paper are particularly timely. [8]

Despite the recent proliferation of these financing products, there is a surprising dearth of evidence regarding student preferences over features of income-contingent financing generally or ISAs in particular. Currently, regarding the United States, there are no studies exploring experimentally why students may choose an ISA or a product like it over a more traditional student loan. Even globally, there are limited studies (i.e., Herbst et al., 2022) discussing which types of students may benefit from an ISA or addressing the effects an ISA might have on students' educational success and financial well-being. Understanding the preferences and characteristics of students likely to take up an ISA sheds light on which of them can be helped or harmed by educational insurance and why.

Finally, ISAs offer a useful laboratory for applying lessons on income-contingent financing to public policy on student loans. Our results shed light on IDR plans offered by the Department of Education and other entities – especially given that federal loans generally and IDR plans in particular are not available to many students and programs. Thus, the experimental evaluation we conduct in the present paper has high practical importance.

3 Research Questions and Experimental Setting

3.1 Research Questions

We study the following research questions. First, how can framing or emphasizing a financing product as educational insurance affect student take-up? Second, what factors influence a student's decision to choose educational insurance? Third, what is the nature of adverse selection in educational insurance markets?

The first question involves behavioral testing of whether explicitly emphasizing the low-income insurance features of the ISA affects take-up relative to a federal student loan with the option of IDR. Many students are unaware of the differences in upside and downside risk protections that IDRs and ISAs offer. In the experimental portion of our paper, we randomize students into an educational insurance framing of the ISA to see if insurance-related attributes increase interest in the program and draw students with private information into the risk pool.

[8]For more information on the SAVE IDR plan, see https://studentaid.gov/announcements-events/save-plan.

The second question examines take-up moderators. For example, ISAs are typically offered by universities to help students manage the risks of non-completion, unemployment, and low earnings; as we show below, students with high risks for these situations are precisely the students who stand to benefit the most from the built-in educational insurance and are most likely to take-up the ISA. More generally, we measure how take-up and the efficacy of an insurance framing varies by student characteristics, specifically those associated with the risks that ISAs insure against.

The third question aims to understand the nature of adverse selection and how personal perceptions of risk affect students' decisions to participate in hypothetical ISA programs. In education markets, adverse selection arises when students use information that is not observable (or simply not permissible in a lending decision) about their academic ability, possible choice of major, and potential labor market outcomes to sort into an education financing product with insurance features such as an ISA or IDR in a way that is correlated with repayment rates. Given the rich administrative data provided by the University, and the questions from our survey related to risk tolerance and income expectations, we can show which types of students appear to be interested in educational insurance ex ante.

3.2 Survey and Experimental Settings

The survey targeted a sample of 8,000 students enrolled in programs through which the University considered offering possible ISA funding via a third-party provider. The University received a 35% response rate for the survey. Eligible students were undergraduates who were either juniors or seniors (or approximately two years from degree completion) and who have completed a FAFSA form. The University focused on students majoring in pre-license and post-license nursing, health-information management, cybersecurity, or business administration.

Potential study participants received an invitation from the University offering them the opportunity to help the University better understand the student experience with financial aid. The University offered $10 Amazon gift cards to compensate students for their time and effort, informing them that they could at any time withdraw their consent to be a part of the study. The University branded the study with its logo and name as opposed to the institutions of the research team or the ISA lender.

The survey experiment asked students to choose between a federal student loan with the option of an IDR plan and a hypothetical ISA. Monthly loan payments capped to a fixed share of an individual's income – or waived for very low incomes – are available under both options, with markedly different implementation and paths for satisfying the loan obligation. In the experiment, students were randomized into two equal groups and, similar to Abraham et al. (2020), the presented options differed in terms of level of detail provided for each of the choices. The first group was shown descriptions of the student loan with an option of IDR and the ISA, with a risk-neutral framing that explained the differences in monthly payments, general structure of the loan, the baseline payment terms, and the source of funding. The terms of the student loan with IDR and the ISA were set to be actuarially equivalent. We exposed the second group – our treatment group – to the same descriptions of the student loan with the option of IDR and the ISA, but with an additional emphasis on the insurance features (nature of the income contingency and maximum repayment term) of the two financing options.

We randomized students into two different framings that compared the terms of a hypothetical ISA to a federal student loan with an option of IDR. First, we randomized half of the participants into the treatment arm that emphasized the ISA as a form of insurance that protects against downside employment risk, with the stress placed on fixed repayment terms as opposed to a balance. This treatment measured the effects of emphasizing the possible need of "education insurance," given the potential downside risk of costly human capital investment. The control group consisted of half of the students, receiving a "risk neutral" framing, which focused on monthly payments and repayment terms. In both the treatment and control groups, students were asked their preference and the intensity of their preference between the ISA and the student loan with IDR. This survey experiment serves as our primary comparison throughout the paper. Figure 1 displays a flowchart that describes the randomization in more detail.

Second, given that students' risk and time preferences may shed light on the nature of insurance take-up, we created a subsequent survey module varying the terms of the students' funding choice. If a student chose a federal student loan with the option of IDR in either of the treatment arms, we provided them with alternative options of ISA terms, varying income share percentage and term length to do so, while keeping the internal rate of return (IRR) constant. These alternative ISA options and the students' selections provide a revealed preference measure of discount rates, which could be an important marker of potential adverse selection. Of course, an important caveat is that the sequential nature of the experiment induces selection at each stage, such that the estimates are not representative of the survey population as a whole. We describe this in greater detail in Section 5.4.

Details of the research design and analysis were preregistered on the Social Science Registry (Balakrishnan et al., 2023). We discuss our findings below.

4 Data and Econometric Model

4.1 Data Sources

For our analysis, we combine data from two unique sources: our primary survey and administrative data from the University.

Our first data source comes from the survey of students that we conducted in June-July 2022. Out of 8,000 students invited to complete the survey, the University received 2,776 responses, a 35% participation rate. The survey data include detailed information about household composition, current living situation, personal income as well as household income, financial stability,[9] current education financing, and financial literacy. Within the survey, we randomized how recipients learned about a hypothetical ISA, framing it as either an insurance option or a risk-neutral option in comparison to a federal student loan with an option of IDR. Our dependent variable is whether they selected the ISA or the federal student loan. Given the importance of career expectations on the desirability of insurance, we also ask questions on career, income, and employment expectations, perceptions on graduation, and risk preferences. Our methodology for all derived controls can be found in Appendix A.

The administrative data include detailed information about social and demographic characteristics such as age, gender, race/ethnicity, marital status, state of residency, household size, highest education level, employment status, and household income. Along with academic records showing students' majors, we received information on how many semesters they have completed, attempted and completed number of credits, transfer credits if any, and credits needed to graduate. The sample includes 5,465 observations for 2,776 students – our survey sample – and when available all variables were observed in both June 2022 and July 2022 to match the time frame of the survey's administration. The administrative data also include variables on student finance. The financial aid data include information on students' academic careers such as their enrollment status (active, dropped, taking a term break, etc.), grade level (undergraduate or graduate), academic standing, receipt of financial aid or award, lifetime federal loan borrowings, and proximity to aggregate federal loan limits. The financial aid sample includes 7,028 observations with 2,776 unique students. The data are structured as an unbalanced panel with annual observations of each student for financial aid years on file with the University, between Fall 2018 and Fall 2022. These properties help us track the financial aid history and academic progress of the students.

[9] See Appendix A for definition.

4.2 Econometric Model

To estimate the determinants for ISA take-up, we estimate Equation 4:

$$y_i = \beta_0 + \beta_1 T_i + \beta_2 C_i + \gamma X_i + \epsilon_i, \tag{4}$$

where y_i, the outcome variable of interest, denotes student i's preference for a hypothetical ISA (coded as 1) or a federal student loan (coded as 0). T is a treatment indicator, randomly assigned to respondents, that represents either the insurance-based framing of an ISA (coded as 1) or a risk-neutral framing (coded as 0). C is a vector of the key student characteristics associated with risk and potentially adverse selection. Specifically, we include the following characteristics: current income and employment status, career expectations including both income and employment expectations after graduation, perceived barriers to graduation, and risk preferences.

X is a vector of demographic controls including age, gender, race/ethnicity, and marital status. In the survey administered to students, the University also collected data on household size and current educational status. We also include variables that we solicited in our survey before students observed the education insurance framing. These variables include risk preferences, financial stability, measures for income and employment uncertainty, financing choices for their education, and barriers to graduation.

Unlike in many randomized controlled trials, where respondent characteristics and control variables are primarily included to reduce bias or increase precision, we do have a first-order interest in the coefficients on every variable, as we wish to assess both the existence and extent of adverse selection. In other words, we test for the effects of each variable on ISA preference.

We also test for heterogeneous effects by estimating Equation 5:

$$y_i = \beta_0 + \beta_1 T_i + \beta_2 T_i \times H_i + \beta_3 H_i + \delta C_i + \gamma' X_i + \varepsilon_i, \tag{5}$$

where H_i is an indicator variable for the dimension of heterogeneity including race/ethnicity, gender, household size, age, marital status, and risk aversion. As in Equation 4, T is a treatment indicator, C is a vector of the key student characteristics associated with risk, and X is a vector of demographic variables. In Section 5.2.1, we additionally consider differences in ISA take-up in the control and treatment groups by employment uncertainty and income uncertainty.

4.3 Balance

First, we present summary statistics for our sample and show covariate balance as evidence that our randomization was successful. We regress each of our demographic variables on the treatment indicator. Table 1 summarizes the characteristics of our sample overall and checks for balance between treatment and control groups. We do not see any imbalance between our two randomized groups across pre-treatment covariates that include age, sex, race/ethnicity, marital status, household size, education level, current income and employment, financial stability, future income and employment expectations, risk aversion, current financing choice, and barriers to graduation. The average student in the survey sample is in their late 30s (37.8), employed, and financially stable. A greater fraction of students are white (55%) and female (71%). Half of the students are married. Most students have an associates degree (64%) or a bachelor's degree (20%). For half of the students, their annual total personal income is between $40,000 and $90,000, whereas almost one-third of the students have an annual total household income that is $120,000 or more. Students in our sample believe that they are highly likely to be employed full-time within 5 years of graduation and to earn an income around the average of the individual middle-income spectrum at $80,000. Among barriers to graduation, they see work responsibilities (79%), family constraints (58%), and financial constraints (41%) as the main reasons for not getting as much out of their educational experience as they would like. In terms of enrollment balance, columns 3 and 4 show that the students randomized into the treatment group are overall very similar to those in the control group, confirming that we executed the random assignment across framing narratives correctly.

5 Results

5.1 Impact of Insurance Framing on Take-up

First, we explore whether framing an ISA as a form of educational insurance and putting emphasis on its protection against downside labor market risk is effective in increasing interest in the program. Table 2 summarizes our findings. We present various specification in the following way: Column (1) captures the baseline effect of treatment with no additional controls. Column (2) adds additional controls such as current personal income, employment status, and financial stability (not reported) to the control set. Column (3) adds controls for the expectations for post-graduation career plans (not reported; available upon request), income, and employment. Column (4) adds risk preferences. In Column (5), we incorporate the current financing choice of the student. Model (6) adds controls for barriers to graduation. Finally, Column (7) additionally controls for demographic variables – age, gender, race/ethnicity, marital status, household size, and educational status (we report significant coefficients only). Column (7) reflects the specification listed in our preregistration. Except for Column (1), all specifications include fixed effects for students' major. Table 2 contains corresponding columns for each of our proposed model specifications.

Our results indicate that the insurance framing increases the likelihood of taking up an ISA, compared to a federal loan with the option of IDR, by roughly 10 percentage points. This coefficient is robust to our model choice and statistically significant. Given a mean of 23 percentage points for ISA take-up in the control group, this effect corresponds to a 43% relative increase in the take-up rate for ISAs in the treatment group. The large baseline effect is striking and emphasizes the value that individuals place on the ISA's built-in insurance against adverse employment/income outcomes and the shorter maximum repayment term. Our treatment effects for the insurance framing are comparable in magnitude to Abraham et al. (2020) and is stable across observable dimensions and demographic characteristics. [10]

5.2 Heterogeneous Treatment Effects

Various demographic groups or individuals with different risk preferences may have disparate susceptibilities to default risk and therefore may be affected differently by the framing of a financing contract. We test for heterogeneous treatment effects along several dimensions including race/ethnicity, gender, household size, age, marital status, and risk aversion. We use the Coefficient of Relative Risk Aversion (CRRA), a measure for risk preferences following a similar method to Kimball et al. (2008). We focus on students' characteristics where we would expect to see a differential impact ex ante. But we do not find any statistically significant heterogeneous treatment effects under the context of any of these characteristics. Table 3 presents the heterogeneous treatment effects. For all subsamples we investigate, we observe that the insurance framing is the driving force behind the ISA take-up.[11] One might have expected that some aspects of adverse selection (e.g., future income risk) could lead to heterogeneous impacts; however, we do not find any evidence of adverse selection in this context.

One possible explanation for the lack of differential effects may be related to the imperfect nature of the risk metrics and small subgroup cell sizes that may leave us with little power to precisely estimate any differential effect (Balakrishnan et al., 2023). Additional analysis, including visual evidence and machine-learning methods, is presented in the next section.

[10] We preregistered corrections for multiple comparisons using the false discovery rate. However, since our dependent variable is a dummy variable indicating ISA take-up, we did not need to use this correction.

[11] See Table A1 to Table A6 in Appendix B for detailed results. In addition to the variables in Appendix B, we considered the heterogeneous effects based on income uncertainty and employment uncertainty, but similarly did not find any statistically significant differences; we omit those results for brevity and focus on the analysis in 5.2.1 for these two variables.

5.2.1 Additional Analysis

We further investigate the heterogeneous treatment effects based on future expectations and uncertainty over employment and income to uncover adverse selection, if any. Figure 2 looks at the percentage of students choosing an ISA, given degrees of employment uncertainty and their treatment group. One can observe that treatment increases the percentage of students choosing ISA in every category of employment uncertainty. For example, among the people who are very certain that they would get a job in the future, 22% of students in the control group in this category chose an ISA, whereas the number is 32% for the treated students. We investigate whether these percentages are significantly different from each other within and across categories.

The confidence intervals drawn on the graph answer that question. We see that the percentage of students choosing ISAs is significantly higher in the treatment group than the control group for both those who are very certain and those who are moderately uncertain of their employment prospects. One can also conclude that the percentage of students choosing the hypothetical ISA for treatment and control groups separately across categories are not statistically different from each other at the 5% significance level.[12] Yet there appears to be some evidence that those who have very uncertain employment forecasts have a slightly higher preference for the ISA. That may be why the treatment effect in that subgroup is not statistically significant. Therefore, it could be that an insurance "message" for a group that does not have much concern about employment uncertainty is where there is potential for behavior change.

Figure 3 carries out a comparable analysis for (high) income uncertainty. Similarly to what we observe for employment uncertainty, the treatment increases the percentage of students choosing ISAs in every category of uncertainty over earning a higher income in the future. The gap is the smallest for those with the highest level of uncertainty. For people who are very/moderately certain about their income prospects being high, the treatment significantly increases the percentage of students taking up the hypothetical ISA.[13] Interestingly, the ISA preference in the control group shows considerable heterogeneity, rising 15 percentage points between the very certain and very uncertain categories (with the difference being borderline significant). The treatment effect for the two groups is almost the same, so it is the difference in the baseline that explains the significance of the treatment effect (or lack thereof).

Figure 2 and Figure 3 reveal that the results are most clear for (high) income expectations, likely because this category does not have the added complexity of full-time/part-time expectations. As would be expected,

[12] We note that in the treatment group, the percentage of students choosing an ISA is statistically different at the 10% significance level between those who are moderately uncertain and very certain, and moderately uncertain and very uncertain about their future employment.

[13] One can also note that, for the control group, the percentage of students choosing an ISA is statistically different at the 10% significance level between those who are very certain and very uncertain about their future income being high.

there is a stronger preference for the ISA contract among those with very uncertain beliefs about positive future income and employment prospects. Among the most uncertain respondents, there is no discernible treatment effect. However, as the certainty expressed by respondents increases, the framing of the ISA contract becomes much more important. It is these respondents with relatively certain/secure beliefs about the future that appear to be driving the baseline results.

One possible mechanism driving this result is the salience of downside risk among different types of respondents. Those who initially express significant uncertainty about their future prospects being favorable are already prone to imagining negative outcomes, and hence they did not need the extra framing to view an ISA in terms of its insurance properties. In other words, for those with considerable uncertainty over high future incomes, perhaps no additional messaging about insurance is necessary because that aspect of the ISA is already salient to them. For those with little uncertainty, though, the priming from the treatment may have a greater opportunity to affect salience. One should also, once again, note the smaller sample size – 103 students in the "Very uncertain of high income" category – and the fact that the uncertainty measures in the survey are defined based on Likert scales, which capture risk in limited ways.

As a robustness check and to incorporate the other dimensions of risk, we also employ the data-driven approach by Athey and Imbens (2016) to estimate treatment effect heterogeneity. We investigate several risk factors including perceived barriers to graduation, current financing choices, risk aversion, future income/employment expectations, and demographics[14] as candidates for sources of heterogeneity. The suggested methodology builds on regression tree methods from the prediction-based machine learning literature (Breiman et al., 1984; Breiman, 2001). The sample is first divided into two parts: training and estimation data. We use the training data to partition the population according to covariates, and then we use the estimation data to obtain treatment effects for each subpopulation. This approach provides an advantage for cases where there are many covariates by letting the data tell the researcher which relevant subgroups one should look to for heterogeneity. By separating the datasets used to select the model structure and to estimate, Athey and Imbens (2016) mitigate the possible bias in machine learning methods where spurious correlations between covariates and outcomes affect the selected model. They argue that although the reduced sample size in each step through partition leads to loss of precision, the estimates are unbiased for every subpopulation.

In this exercise, we simulate with different cut-off points in the sample to get the training and the estimation data. In general, all simulations return housing insecurity and other financial constraints, college-related risks, work responsibilities, having government versus private student loans, and risk aversion as the main sources of heterogeneity. We present evidence that many of these subsamples have significant effects;

[14]The demographics include age, gender, marital status, race and ethnicity, household size, and educational attainment.

however, when we test the symmetry of the treatment effects, we find few significant forms of heterogeneous treatment effects.

Figure A1 in Appendix C summarizes our findings when we use 40% of our sample as the training data and the rest as our estimation sample.

5.3 Adverse Selection in Take-up

Adverse selection is a key concern to the stability of any insurance market. In particular, preference for a financing contract that depends on a prediction of future income is difficult to navigate for a lender. If the degree of selection is too large, the market can quickly unravel. Historical examples include dental insurance, certain annuity markets, and even lifetime airfare products (Einav et al., 2023).

There are several dimensions along which adverse selection could present itself in an ISA context. First, the current financial conditions of individuals (high income, stable employment, etc.) and/or future employment/income expectations may play a significant role in whether respondents wish to pledge a percentage of future income in exchange for downside risk protection. These student characteristics may not be observable to the lender or may be observable but not permissible to use in loan decisioning (consistent with, for example, non-discrimination laws). If these characteristics are correlated with loan repayment rates, then adverse selection is present in the market. Contrary to our expectations, we do not find that current income or employment status is predictive of ISA take-up in our student sample, many of whom report income/employment concurrent with their studies.

Similarly, individuals may have private information about their future income/employment prospects, irrespective of their current income/employment, which could substantively influence the decision to buy insurance and is likely to be correlated with eventual repayment rates. Students may believe they are likely to have a high income for any number of reasons. For instance, they may have an internship with a virtually guaranteed job offer or their degree may open up a promotion in their current job. In such cases, this private information would lead to these students selecting out of the insurance market and opting to repay a student loan as quickly as possible at the least amount of total cost. Conversely, students who believe they are unlikely to have incomes above the ISA income threshold would be disproportionately likely to opt for insurance, as it would render their tuition bill effectively free. Such students may include those anticipating being out of the workforce, working part-time, taking low-paying jobs with high nonpecuniary benefits, or others. The measurement of adverse selection is the key determinant of whether a given insurance market is viable and is thus an important aspect of our current investigation.

To examine the potential for adverse selection, we asked students to rate the likelihood (based on a

5-point Likert scale) that they would be employed 5 years after graduating. We presented a comparable question around expectations of future income being low, moderate, or high. Of particular note, at the time students reported their beliefs about future income/employment, they were unaware of the hypothetical education financing choices they would be presented later in our study. As with the current income/employment variables, uncertainty over future employment prospects does not appear to drive ISA preferences, indicating a somewhat surprising lack of adverse selection along this dimension. However, higher uncertainty over future income being high does appear to have an economically large and marginally significant impact on student choice of financing.

Employment and wage risk conditional on degree completion are not the only risks for providers of education financing. Another important dimension where adverse selection might emerge relates to the likelihood that students do not complete their college degree. Students who believe they are less likely to complete based on private information should be more likely to wish to insure against future negative outcomes. We see some evidence of this in the "college-related risks" variable in Table 2.

We also investigate other risks to employment/income, including housing security, family health risks, and current work responsibilities/risks. We find no evidence that these risk factors seem to be driving take-up. We do find that certain student characteristics are strongly associated with take-up. Race, marital status, and the specific way in which students are already financing their education all have some power in predicting take-up.[15] Namely, students who have previously financed their education with federal student loans are considerably more likely to choose a student loan with the option of IDR.

Overall, there is less evidence suggestive of adverse selection across a variety of variables than we might have imagined ex ante. Future employment uncertainty, for example, does not seem to be associated with a higher ISA take-up. However, we do find strong suggestive evidence of adverse selection based on uncertainty around high future incomes. Given that income uncertainty is the focal point for educational insurance decisions, this finding is an important contribution of our study.

5.4 Change in Preferences in Response to Changes in Price

Another dimension we investigate is whether students' preferences change when offered alternative ISA contracts with different income share percentages and term lengths, while keeping the offers actuarially equivalent (comparable internal rate of return). As mentioned in Section 3.2, students who chose a federal student loan with an option of IDR against the original ISA contract (2.3% share for 10 years) in either of the treatment arms were asked if they would switch to an ISA contract where they would pay smaller

[15] We reiterate that there can be adverse selection on variables – such as current employment/income and most demographics – that are "observable" to the lender but may not legally be used in decision-making. Consequently, such variables can be a source of adverse selection even though they are "observable."

installments over a longer period (2.2% share for 12 years). Those who still chose the federal student loan option in this group were then asked to choose between the same federal student loan and another actuarially equivalent ISA contract where they would pay larger installments over a shorter period (2.8% share for seven years). Separately, students who chose the original ISA contract against the federal student loan were then presented with both the alternative ISA options at the same time. Figure 4 and Figure 5 depict the flow of the follow-up questions on alternative ISA options depending on the student's initial choice.

Out of the 2,001 students who initially chose the federal student loan, 365 (18% of the sample) switch to the longer term ISA contract. For those who still preferred the federal student loan over the original and the longer term ISAs, 285 out of 1,636 (17%) would now switch to the actuarially equivalent ISA contract with a shorter term and a higher income share. On the other hand, among 775 students who originally chose the ISA, 162 (21%) would still choose the original ISA, 137 (18%) would switch to the longer term ISA contract where they pay a lower share of their income over a longer time period, while 475 (61%) opt for the shorter term ISA with a higher income share. While a comparable share of students switch to the longer term ISA compared with the original student loan choosers, a much higher share (61%) of original ISA choosers switch to a shorter term ISA compared with the original student loan choosers (17%). Several factors may explain this result. Our student sample is more representative of working adults (re)entering higher education mid-career, as the average age of our sample is 38 and most students are employed while attending college. Compared with traditional-age undergraduate students, they don't perceive a significant employment risk, as we see in Table 2. Moreover, as these students are further along in their age-earnings profile than traditional-age students, they may reasonably expect to earn more than most graduates in subsequent years. They may thus prefer a shorter term ISA to a longer term income-contingent repayment contract during high-income years.

Table 4 considers the treatment effect on the switching behavior, separately for original student loan choosers (Panels A and B) and original ISA choosers (Panels C and D). Panel A shows that treatment increases the likelihood of switching from a student loan to an ISA with a longer term by 5.1 percentage points (33% of control mean) in our preferred model. The effect is robust across all specifications and statistically significant. In Panel B, however, we do not observe a significant treatment effect when we consider the likelihood of switching from a federal student loan to the shorter term ISA contract. Given that treated students were exposed to our insurance framing, part of which emphasized the maximum repayment term for a student loan with IDR (20 years) compared with the ISA (12 years), and picked the student loan anyway, it makes sense that the treated students were much more likely to select the longer term hypothetical ISA over the original hypothetical ISA compared with the control group. Our findings are consistent with

Mumford (2020).

On the other hand, we see contrary results for those who chose the ISA contract in the first round. Panel D shows that treatment increases the likelihood of switching to a shorter term contract significantly for original ISA choosers – by 8.6 percentage points (15% of control mean) in our preferred model. We do not find a similar effect for switching to a longer term ISA from the original ISA in Panel C. In contrast to our results for the original student loan choosers, among the original ISA choosers,the treatment group is more likely to switch to a shorter term ISA after consistently being exposed to our insurance framing of a lower maximum repayment term for the hypothetical ISA (12 years) compared with the student loan with IDR (20 to 25 years) and potentially selecting the ISA in the first round in part because of that factor. When given the opportunity, in follow-up questions to pick an actuarially equivalent shorter term ISA, these students are more likely to do so than the control group.

5.5 Proposed Student Loan Cancellation

Finally, in a separate follow-up question to all students in our survey, we tested whether respondents would prefer the student loan with an IDR if the student loan option incorporated a possibility of student loan cancellation. In the question, we informed respondents of a 20% chance that the federal government would forgive the $10,000 they were borrowing via the federal student loan with the option of an IDR. Students could then respond by saying they were: (a) much more likely to favor a student loan, (b) somewhat more likely to favor a student loan, or (c) that the new information had no effect on their preference for a student loan.

For ease of interpretation, we create an indicator variable that takes the value of 1 if a student expresses any additional interest in student loans (the first two options) and the value of zero if the student expresses no change in preference. Table 5 shows results from this question, with model specifications comparable to those in Table 2, apart from the dependent variable being increased preference for a student loan instead of ISA take-up.

In Panel A, we consider all students who participated in the experiment and highlight whether a student chose an ISA in the first round as an explanatory variable. We find that students who originally chose the ISA are 7.7 percentage points less likely to express an increased preference for student loans when presented with the chance of student loan forgiveness, compared with students who chose the student loan with IDR. Essentially, students who chose the ISA in the first round appear to reinforce their original reluctance to take out a student loan. Taken with the other results in our study, this is consistent with the idea that students choosing the ISA are committed to the ISA or are especially loan averse, even if there is a chance that the federal government will cancel any loans they may take out.

In Panel B, we consider those students who chose a loan in the first round and to whom we subsequently offered the smaller share but longer term hypothetical ISA in the second round. We show that students who switched from the student loan with IDR to the longer term, lower share ISA are 6.4 percentage points more likely (in our preferred specification) to prefer the student loan with IDR if it comes with a 20% chance of loan forgiveness. These students are marginally attached to the ISA (since they changed their choice to an ISA in the second round) and may be easily induced to switch between the two financing choices given relatively small changes to terms. This effect is comparable in size and direction for the group that switched to the shorter term ISA (Panel C); further evidence for our hypothesis of marginal attachment.

Finally, in Panel C, we only consider students who still chose a student loan in the previous two rounds and to whom we offered a higher share but shorter term ISA in the third round. We find that the likelihood of student loan forgiveness induces a significant increase in expressed preference for student loans by 8.9 percentage points, similar to the previous group. Again, this result is evidence that those students marginally attached to an ISA (being switchers to the ISA in the third round) are willing to switch back to a loan if given the prospect of loan forgiveness.

Our results show that offers of student loan forgiveness do little to change the student loan preference of students who initially preferred the hypothetical ISA. However, for students who did switch their preference due to our alternative offers of income share and repayment term, the potential for student loan forgiveness has a large effect on respondents' preferences changing back to a student loan with IDR. These and our previous results provide suggestive evidence that offering a lower share contract that has a longer term may drive more adverse selection to the ISA, and that student loan forgiveness could potentially draw some of that adverse selection back into the federal loan program.

6 Conclusion

Income contingent education financing is designed to lessen the burden of repaying federal student loans with an option of IDR by tying the monthly payments to the borrower's income. Students' preferences, the risk factors that may affect their take-up, and hence the potential adverse selection in educational insurance markets are of interest for both policymakers and researchers. We address these questions by randomizing the messaging of hypothetical financing contracts for 2,766 students at a large, non-profit university to understand how the framing of financial contracts, along with students' characteristics and future expectations, can influence decisions.

The results from this study have key implications for how student financing contracts should be designed, and they offer crucial insights into the behavioral responses of students. First, student choices depend on the presentation of contract terms. The single biggest result from our intervention is the degree to which information and framing impacts students' preferences for how to finance their education. The fact that emphasizing the insurance aspects of an ISA leads to a roughly 43% increase in hypothetical take-up underscores how important messaging is for both private market participants like lenders and servicers, and for the Department of Education.

Our study clearly shows that providing more details about the nuances of financial contracts, and how repayments would be affected by employment and financial circumstances, enables students to make more informed choices about their financing decisions. The distinguishing feature of the hypothetical ISA is its proportional payment structure with built-in insurance features. Specifically, the ISA contract requires repayments proportional to income while providing contingencies in periods of low income; and it caps the maximum amount to repayment. Students do perceive downside income protection risk as an insurance while also creating an income smoothing effect. Our study shows that information about these features has a strong effect on student preference.

Second, uncertainty about future earning potential contributes to adverse selection in the ISA insurance market. The evidence we find is consistent with a connection between the take-up of ISAs and uncertainty about earning a higher income in the future. While current income and future unemployment status are not related to take-up, income uncertainty matters. Other risks, with the exception of college completion risks, do not seem to predict ISA take-up.

Third, contract choice may depend on familiarity with existing financial contracts: A significant barrier that ISA providers (or any alternative form of financing higher education) encounter is that the student loan system is well known, even if not well liked, by many students. Indeed, our survey finds that students currently financing their education with federal student loans are significantly less likely to prefer ISAs. Given the pervasiveness of participation in the federal student loan market, this descriptive result illustrates the uphill climb that any potential competitor to the traditional student loan model faces. This is especially true given the recent expansion of favorable repayment terms via the SAVE IDR plan and the continuing possibility of loan forgiveness being expanded to more federal student loan borrowers. Indeed, many ISA providers largely abandoned their previous or planned ISA offerings shortly after the Biden administration's lowering of mandatory monthly payments.

Finally, there are indications that students prefer different financial contracts when they are presented with different versions of monthly payments and contract lengths. Specifically, students who chose the federal student loans with the option of IDR changed their preference to an ISA when they were given a longer contract with a lower income share percentage. In contrast, students who chose the original ISA contract preferred a shorter term contract with larger monthly payments. Conventional wisdom suggests that borrowers are averse to the long-time horizon for forgiveness offered by previous IDR plans. This proposition is one of the justifications both for system-wide student loan forgiveness and the recent redesign of IDR. Our results cast some doubt on this assertion, as we find that hypothetical borrowers who currently borrow in the student loan system prefer lower payments stretched out over a longer time horizon. This result is likely more useful for the design of future government repayment programs than for ISAs, as the government is in a unique position to be able to forego repayment over a longer period of time.

Our study examines why educational insurance remains underdeveloped or absent despite the income and employment risk to student loan borrowers. We randomized students into a framing that presented a risk neutral choice between a student loan with IDR or an ISA, or a framing that emphasized the insurance attributes of an income share agreement. We find significant evidence for adverse selection among students who had the highest uncertainty about higher future incomes. We also find that the marginal ISA participant prefers a plan with a lower share and higher term; perhaps this suggests that those participants have higher discount rates or present biased preferences. However, we do find that this group will switch back when offered the possibility of student loan forgiveness.

These results show that while there is significant demand for educational insurance, adverse selection among students with higher expected income uncertainty or with present-biased discount rates may make it difficult for traditional firms to provide such insurance in the private market. Furthermore, we find that offers of student loan cancellation may increase the amount of adverse selection present in federal loan programs. These findings are important for our understanding of the nature of insurance in higher education markets and how policymakers could help students make more efficient decisions.

7 Works Cited

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8 Tables

Table 1: Summary Statistics and Balance

	(1) N (overall)	(2) Overall mean (std. dev)	(3) Control mean (std. dev)	(4) Treatment dummy
Current income	2776	70235.951 (37762.513)	69244.060 (37023.692)	1985.211 (1433.248)
Currently employed	2315	0.834 (0.372)	0.839 (0.367)	-0.011 (0.014)
Very uncertain of high future income	2599	0.040 (0.195)	0.040 (0.197)	-0.002 (0.008)
Very uncertain of future employment	2739	0.128 (0.334)	0.125 (0.331)	0.006 (0.013)
Risk aversion (CCRA)	2776	3.854 (1.095)	3.848 (1.108)	0.012 (0.042)
Financially stable	2151	0.775 (0.418)	0.772 (0.420)	0.006 (0.016)
Current financing choice				
Cash (self and from family and friends)	1416	0.510 (0.500)	0.500 (0.500)	0.021 (0.019)
Institutional and federal/state grants	916	0.330 (0.470)	0.328 (0.470)	0.003 (0.018)
Government and private student loans	1205	0.434 (0.496)	0.437 (0.496)	-0.006 (0.019)
Other	777	0.280 (0.449)	0.275 (0.447)	0.010 (0.017)
Barriers to graduation				
Housing insecurity	210	0.076 (0.264)	0.080 (0.271)	-0.009 (0.010)
Difficulty doing college-level work	266	0.096 (0.294)	0.091 (0.287)	0.010 (0.011)
Work responsibilities	2193	0.790 (0.407)	0.790 (0.407)	-0.001 (0.015)
Family constraints	1595	0.575 (0.494)	0.581 (0.494)	-0.013 (0.019)
Disability or health concerns (physical or mental)	576	0.207 (0.406)	0.201 (0.401)	0.013 (0.015)
Financial constraints	1124	0.405 (0.491)	0.400 (0.490)	0.011 (0.019)
Internet connectivity issues	257	0.093 (0.290)	0.088 (0.283)	0.009 (0.011)
Issues with academic support services	260	0.094 (0.291)	0.102 (0.302)	-0.016 (0.011)
Difficulty being a transfer student	59	0.021 (0.144)	0.024 (0.152)	-0.005 (0.005)
Other	123	0.044 (0.206)	0.045 (0.207)	-0.001 (0.008)
Race/Ethnicity				
African American	196	0.071 (0.256)	0.069 (0.254)	0.003 (0.010)
Hispanic	417	0.150 (0.357)	0.143 (0.350)	0.014 (0.014)
Asian	200	0.072 (0.259)	0.068 (0.253)	0.007 (0.010)
Other race/ethnicity	1666	0.600 (0.490)	0.614 (0.487)	-0.028 (0.019)
No ethnicity reported	297	0.107 (0.309)	0.105 (0.307)	0.004 (0.012)
Highest degree earned				
High school degree or less	409	0.147 (0.355)	0.138 (0.345)	0.020 (0.013)
Some college degree	2313	0.833 (0.373)	0.843 (0.364)	-0.020 (0.014)
Graduate degree	46	0.017 (0.128)	0.017 (0.130)	-0.001 (0.005)
Age	2776	37.778 (9.188)	37.917 (9.237)	-0.278 (0.349)
Female	1970	0.710 (0.454)	0.715 (0.452)	-0.011 (0.017)
Married	1399	0.504 (0.500)	0.511 (0.500)	-0.014 (0.019)
Household size	2776	2.932 (1.783)	2.952 (1.717)	-0.042 (0.068)

Notes. For every categorical variable and binary variable, N shows the number of students who fall into that category. For every other variable, N shows the number of students for whom the data are available. For details on derived variables including future employment uncertainty, future uncertainty of high income, and financial stability, see Appendix A.

The minimum age is 19, whereas the maximum is 71. The minimum and maximum values for the household size are 1 and 15, respectively. A continuous current income variable is created from a 12-category categorical variable (less than \$20,000, \$20,000 - \$29,999, ..., \$110,000 - \$119,999, \$120,000 or more), where the middle point of each category is assigned to students who chose that category as their current income value. The minimum current income is \$10,000, whereas the maximum is \$150,000.

Table 2: Determinants of ISA Take-up

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.099***	0.099***	0.104***	0.105***	0.103***	0.103***	0.102***
	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Current income		-0.007	0.000	0.000	0.001	-0.001	-0.003
		(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)
Currently employed		0.020	0.023	0.022	0.027	0.025	0.033
		(0.031)	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)
Very uncertain of high future income†			0.091*	0.091*	0.083*	0.078	0.075
			(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Very uncertain of future employment†			0.015	0.015	0.012	0.010	0.014
			(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
Risk aversion (CCRA)				-0.003	-0.001	-0.001	-0.000
				(0.008)	(0.008)	(0.008)	(0.008)
Current financing choice							
Cash (self and from family and friends)					0.018	0.016	0.016
					(0.022)	(0.022)	(0.022)
Institutional and federal/state grants					0.030	0.029	0.033
					(0.020)	(0.020)	(0.021)
Government and private student loans					-0.069***	-0.072***	-0.074***
					(0.022)	(0.022)	(0.022)
Other					0.011	0.009	0.008
					(0.021)	(0.021)	(0.021)
Barriers to graduation							
Housing security and other financial risks						-0.016	-0.009
						(0.016)	(0.016)
College-related risks						0.031*	0.030*
						(0.017)	(0.016)
Family and health risks						0.013	0.013
						(0.016)	(0.016)
Current work responsibilities and other risks						0.039	0.036
						(0.024)	(0.025)
Race/Ethnicity							
African American							-0.095**
							(0.043)
Hispanic							-0.001
							(0.038)
Asian							-0.012
							(0.046)
Other race/ethnicity							-0.041
							(0.032)
Married							0.034*
							(0.020)
Control Mean	0.230	0.230	0.230	0.230	0.230	0.230	0.230
Control Std	0.421	0.421	0.421	0.421	0.421	0.421	0.421
Total number of observations	2776	2776	2599	2599	2599	2599	2594
Adjusted R-Squared	0.012	0.011	0.013	0.013	0.019	0.020	0.022

Notes. Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The dependent variable is the ISA take-up, which takes the value of 1 if the student chose the hypothetical ISA over a federal student loan with IDR, 0 otherwise. For each independent variable, we report the coefficient and the standard errors in parentheses. The coefficient of interest, the treatment effect on the ISA take-up, is reported in the first row. Except for Model 1, all models include fixed effects for the student's major. The preferred regression model (Column 7) also controls for (not reported or statistically significant) age, gender, household size, highest degree earned, career expectations, and financial stability. We use log-transformation for current income.

† Uncertainty measures for future employment and income are defined as indicator variables taking the value of 1 if the student is very uncertain of their future employment or of earning a high income, and 0 otherwise. See Appendix A for details on these and other derived variables.

For risk aversion, we use the Coefficient of Relative Risk Aversion (CRRA), a measure for risk preferences following a similar method to Kimball et al. (2008). Barriers to graduation – originally 10 variables – are reduced to 4 main categories by maximum likelihood factor analysis. We report the coefficients for the set of standardized factor estimates. College-related risks include difficulty doing college work, being a transfer student, and lack of support from advisor/academic support services.

Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Heterogeneous Treatment Effects on Hypothetical ISA Take-Up

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	White × Treated	Black or African American × Treated	Hispanic × Treated	No response for race/ethnicity × Treated	Female × Treated	Household Size × Treated	Below Median Age × Treated	Married × Treated	Risk Aversion × Treated
ISA take-up	-0.016	0.019	0.058	-0.073	0.002	-0.002	-0.020	0.021	0.019
	(0.056)	(0.080)	(0.069)	(0.075)	(0.039)	(0.010)	(0.035)	(0.035)	(0.016)
Current Income	Y	Y	Y	Y	Y	Y	Y	Y	Y
Current Employment	Y	Y	Y	Y	Y	Y	Y	Y	Y
Financial Stability	Y	Y	Y	Y	Y	Y	Y	Y	Y
Career Expectations	Y	Y	Y	Y	Y	Y	Y	Y	Y
Future Income Uncertainty	Y	Y	Y	Y	Y	Y	Y	Y	Y
Future Employment Uncertainty	Y	Y	Y	Y	Y	Y	Y	Y	Y
Risk Aversion	Y	Y	Y	Y	Y	Y	Y	Y	Y
Current Financing Choice	Y	Y	Y	Y	Y	Y	Y	Y	Y
Barriers to Graduation	Y	Y	Y	Y	Y	Y	Y	Y	Y
Race/Ethnicity	Y	Y	Y	Y	Y	Y	Y	Y	Y
Marital Status	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sample composition	55.37% White	7.06% African American	15.02% Hispanic	10.70% No response	70.97% Female	—	50% below-median age	50.40% married	—

Notes. We only report the estimates based on our preferred model, Column 7 in Table 2. Full estimates from other models can be found in Appendix B.
Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model follows from Equation 3 in the Pre-Analysis Plan. We report the heterogeneous treatment effect on the ISA take-up for each dimension reported in the column and the standard errors in parentheses. The regression model also controls for (not reported) age, gender, household size, and highest degree earned, as well as fixed effects for student's major. We use log-transformation for current income.
Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Responses to Actuarially Equivalent ISA Offers with Different Terms/Shares

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Switching from Student Loan to ISA with Longer Term (2.2% share for 12 years)							
Treatment	0.057***	0.060***	0.051***	0.052***	0.051***	0.051***	0.051***
	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Control Mean	0.156	0.156	0.156	0.156	0.156	0.156	0.156
N	2001	2001	1878	1878	1878	1878	1874
Panel B: Switching from Student Loan to ISA with Shorter Term (2.8% share for 7 years)							
Treatment	-0.017	-0.019	-0.015	-0.014	-0.016	-0.016	-0.013
	(0.019)	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Control Mean	0.182	0.182	0.182	0.182	0.182	0.182	0.182
N	1636	1636	1543	1543	1543	1543	1539
Panel C: Switching from Original ISA to ISA with Longer Term (2.2% share for 12 years)							
Treatment	-0.035	-0.032	-0.022	-0.025	-0.022	-0.022	-0.032
	(0.028)	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Control Mean	0.197	0.197	0.197	0.197	0.197	0.197	0.197
N	775	775	721	721	721	721	720
Panel D: Switching from Original ISA to ISA with Shorter Term (2.8% share for 7 years)							
Treatment	0.088**	0.085**	0.083**	0.085**	0.083**	0.081**	0.085**
	(0.036)	(0.036)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
Control Mean	0.561	0.561	0.561	0.561	0.561	0.561	0.561
N	775	775	721	721	721	721	720
Current Income	N	Y	Y	Y	Y	Y	Y
Current Employment	N	Y	Y	Y	Y	Y	Y
Financial Stability	N	Y	Y	Y	Y	Y	Y
Career Expectations	N	N	Y	Y	Y	Y	Y
Future Income Uncertainty	N	N	Y	Y	Y	Y	Y
Future Employment Uncertainty	N	N	Y	Y	Y	Y	Y
Risk Aversion	N	N	N	Y	Y	Y	Y
Current Financing Choice	N	N	N	N	Y	Y	Y
Barriers to Graduation	N	N	N	N	N	Y	Y
Race/Ethnicity	N	N	N	N	N	N	Y
Marital Status	N	N	N	N	N	N	Y

Notes. Students who chose a federal student loan w/ IDR against the original ISA contract in the first round (in either of the arms) were presented with an actuarially equivalent hypothetical ISA contract where they would pay smaller installments over a longer period (2.2% share for 12 years) in the second round (Panel A). Those who still chose the federal student loan w/ IDR over the longer-term ISA contract in the second round were then given the option to choose between the same student loan w/ IDR and an actuarially equivalent hypothetical ISA contract where they would pay larger installments over a shorter period (2.8% share for 7 years) (Panel B). Separately, students who chose the original ISA contract (2.3% share for 10 years) against a federal student loan with IDR (in either of the arms) were presented both alternative, actuarially equivalent ISA contracts described above at the same time. Our results for switching preference to the longer-term ISA are presented in Panel C, and results for switching preference to the shorter-term ISA in (Panel D). For further details on how we asked these follow-up questions to the students, please see Figure 4 and Figure 5. Variable definitions follow the Pre-Analysis Plan. The regression model in all columns is given by Equation 1 in the Pre-Analysis Plan, with the exception of the dependent variable. The dependent variable takes the value of 1 if the student switched to the alternative contract offered in the particular round, 0 otherwise. We only report the coefficient of interest, the treatment effect on the likelihood of switching to one of the alternative ISAs. Except for Model 1, all models include fixed effects for the student's major. The preferred regression model (Model 7) also controls for (not reported) age, gender, household size, and highest degree earned. We use log-transformation for current income. N is the sample size.
The sample is the 2,001 students who chose the student loan w/ IDR over the original ISA offer in round one for Panel A; 1,636 students who chose the federal student loan w/ IDR in the first round and haven't switched to the longer-term ISA in round two for Panel B; and 775 students who chose the original ISA over the federal student loan w/ IDR for Panels C and D.
Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

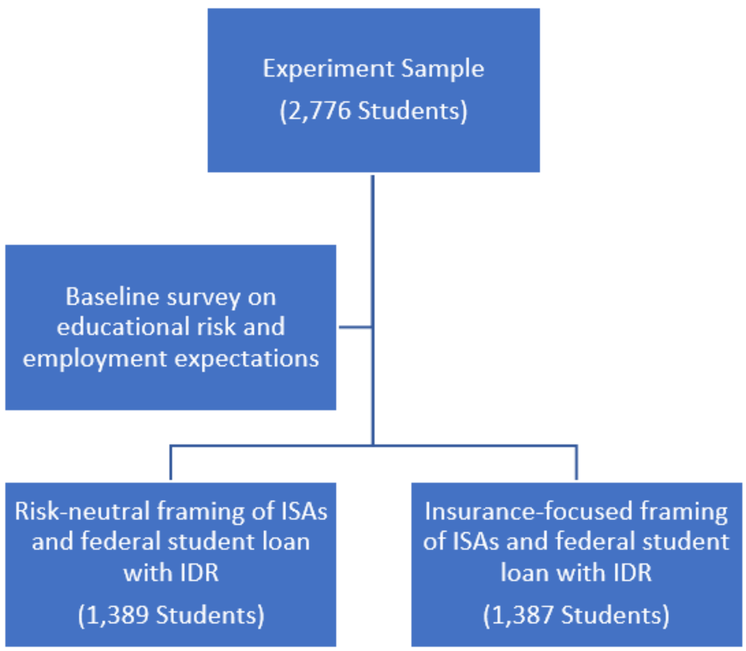
Table 5: Preference for Student Loan w/ IDR if 20% Chance of Loan Forgiveness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Sample = All Respondents (First Round)							
Chose ISA = 1	-0.084***	-0.083***	-0.081***	-0.081***	-0.078***	-0.078***	-0.078***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
N	2776	2776	2599	2599	2599	2599	2594
Panel B: Sample = Chose Student Loan w/ IDR in First Round (Second Round)							
Switched to Longer-Term ISA = 1	0.069**	0.062**	0.069**	0.068**	0.067**	0.064**	0.063**
	(0.028)	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
N	2001	2001	1878	1878	1878	1878	1874
Panel C: Sample = Chose Student Loan w/ IDR in Second Round (Third Round)							
Switched to Shorter-Term ISA = 1	0.096***	0.095***	0.079**	0.078**	0.082**	0.085***	0.088***
	(0.031)	(0.032)	(0.032)	(0.032)	(0.033)	(0.033)	(0.033)
N	1636	1636	1543	1543	1543	1543	1539
Current Income	N	Y	Y	Y	Y	Y	Y
Current Employment	N	Y	Y	Y	Y	Y	Y
Financial Stability	N	Y	Y	Y	Y	Y	Y
Career Expectations	N	N	Y	Y	Y	Y	Y
Future Income Uncertainty	N	N	Y	Y	Y	Y	Y
Future Employment Uncertainty	N	N	Y	Y	Y	Y	Y
Risk Aversion	N	N	N	Y	Y	Y	Y
Current Financing Choice	N	N	N	N	Y	Y	Y
Barriers to Graduation	N	N	N	N	N	Y	Y
Race/Ethnicity	N	N	N	N	N	N	Y
Marital Status	N	N	N	N	N	N	Y

Notes. All students, regardless of their choice between a federal student loan w/ IDR and the hypothetical ISA in the core experiment (round 1) were asked whether a 20% chance that the $10,000 they borrow from the federal government via the student loan may be forgiven in the future would change their preference for the student loan w/ IDR.
Panel A shows how choosing the original ISA in the core experiment is associated with the likelihood of preferring the hypothetical ISA for the full sample (round 1). Panel B repeats the same exercise for the students who initially chose the student loan but were then offered an actuarially equivalent hypothetical ISA with a lower income share and a longer term (round 2). Finally, Panel C repeats the same exercise for the students who chose the student loan in round 2 and were then offered an actuarially equivalent hypothetical ISA with a higher income share and shorter term in round 3. Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. The dependent variable is a discrete variable taking the value of 1 if a student reported being more or much more likely to select the federal student loan if loan forgiveness is available and 0 if they reported no change in their preference. We only report the coefficient of interest, the association between choosing an ISA and the change in preference for a federal student loan with IDR when loan forgiveness is possible. We use log-transformation for current income. N is the sample size.
Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

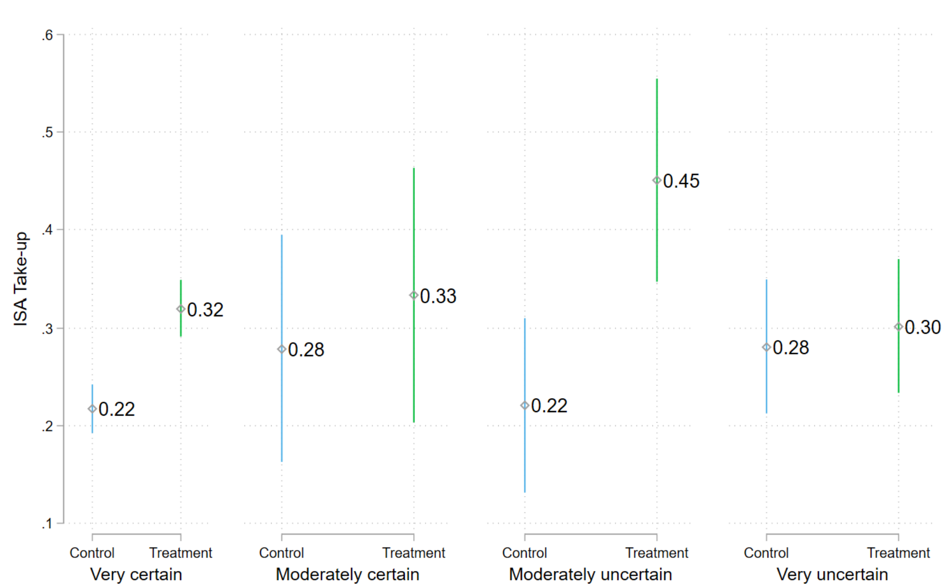
9 Figures

Figure 1: Core Experiment



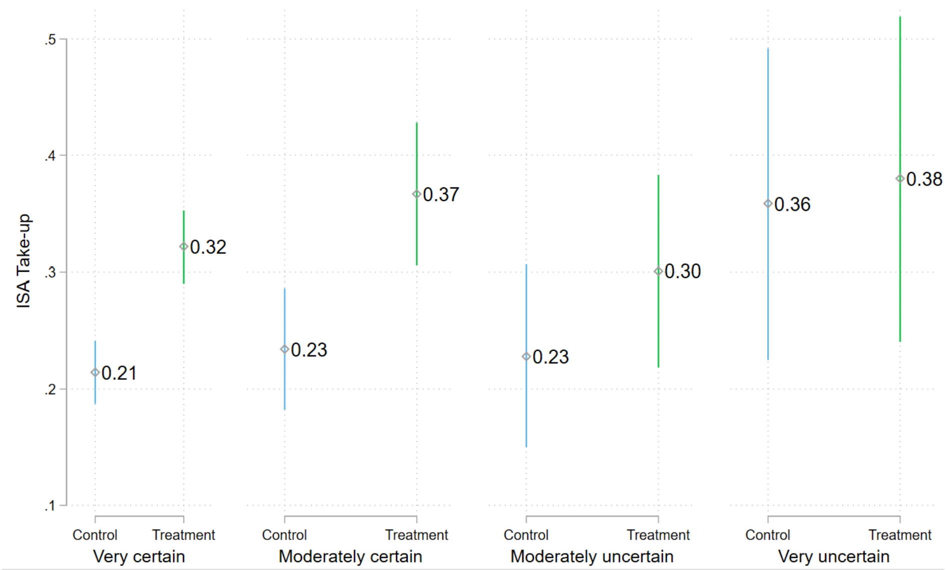
Notes: The survey presented hypothetical financing options to students through two framings. The presented options differed in terms of level of detail provided for each of the choices. Half of the students were randomized into a "risk neutral" framing of the student loan with the option of IDR and the ISA that explained the differences in monthly payments, general structure of the loan, the baseline payment terms, and the source of funding. The terms of the student loan w/ IDR and the ISA were set to be actuarially equivalent. We exposed the other half of students – our treatment group – to the same descriptions of the student loan w/ IDR and the ISA, but with an additional emphasis on the insurance features (nature of the income contingency and maximum repayment term) of the two financing options. Please see Appendix D for the details of the survey.

Figure 2: Hypothetical ISA Take-up by Treatment and Employment Uncertainty



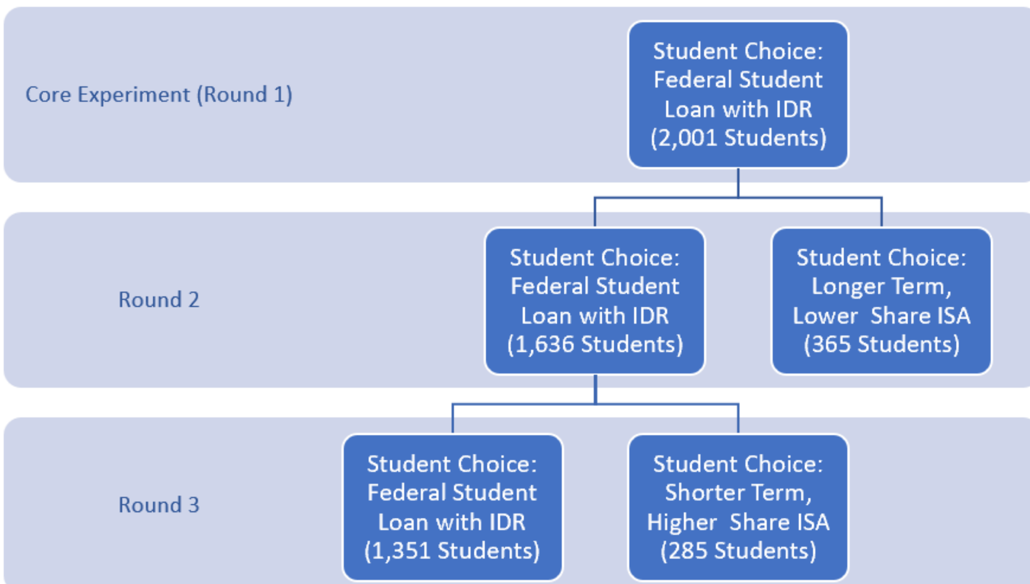
Notes: The figure investigates the share of students choosing the hypothetical ISA given their reported employment uncertainty and their treatment status. For example, among respondents who are very certain that they'd be employed in the future, 22% of control students in this category chose the hypothetical ISA, whereas the share is 32% for the treated students. Treatment increases the share of students choosing the ISA in every category of employment uncertainty. Vertical lines show the confidence intervals. The shares of students choosing the ISA are significantly higher in the treatment group than the control group for those who are very certain or who are are moderately uncertain of their future employment prospects. One can also conclude that the share of students choosing the ISA for treatment and control groups separately across categories are not statistically different from each other at the 5% significance level. See Appendix A for details on our derivation of the employment uncertainty categories.

Figure 3: Hypothetical ISA Take-up by Treatment and (High) Income Uncertainty



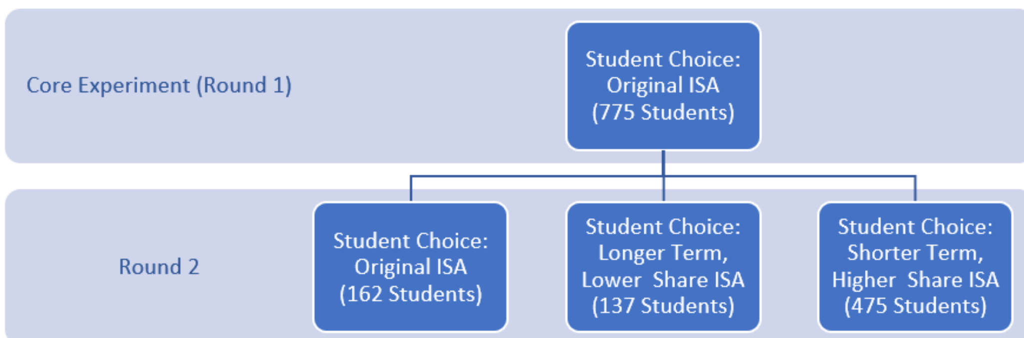
Notes: The figure investigates the share of students choosing the hypothetical ISA given their reported income uncertainty and their treatment status. For example, among the people who are very certain that they'd earn a high income in the future, 21% of control students in this category chose the hypothetical ISA, whereas the share is 32% for the treated students. Treatment increases the share of students choosing the hypothetical ISA in every category of income uncertainty. The gap is the smallest for those with the highest uncertainty over high future income. Vertical lines show the confidence intervals. For students who are very and moderately certain about their high income prospects, treatment significantly increases the share of students taking up the hypothetical ISA. See Appendix A for details on our derivation of the income uncertainty categories.

Figure 4: Testing for Preferences over Actuarially Equivalent ISAs with Alternative Terms – Federal Student Loan w/ IDR Choosers in Core Experiment



Notes: Students who chose a federal student loan with an option of IDR against the original ISA contract (2.3% share for 10 years) in either of the core experiment arms in the first round were asked if they would switch to an ISA contract where they would pay smaller installments over a longer period (2.2% share for 12 years). Those who still chose the federal student loan option in the second round were then asked to choose between the same federal student loan and another actuarially equivalent ISA contract where they would pay larger installments over a shorter period (2.8% share for 7 years). Please see Appendix D for the details of the survey.

Figure 5: Testing for Preferences over Actuarially Equivalent ISAs with Alternative Terms – ISA Choosers in Core Experiment



Notes: Students who chose the original ISA contract (2.3% share for 10 years) against the federal student loan with an option of IDR in either of the treatment arms in the first round were presented with two other ISA contracts at the same time in the second round. The students were asked to choose between the two actuarially equivalent ISA contracts where they would pay smaller installments over a longer period (ISA option #1: 2.2% share for 12 years) or larger installments over a shorter period (ISA option #2: 2.8% share for 7 years). Please see Appendix D for the details of the survey.

Appendix A

Derived Variable Definitions

Future Employment Uncertainty

For certainty of future employment prospects, we use the following convention to categorize respondents:[16]

- Category 1 (Very Certain of Being Employed): People who answered "Likely" to be fully employed and "Unlikely" to be unemployed
- Category 2 (Moderately Certain of Being Employed): People who answered “Unlikely” to be unemployed and “Likely” or “Neither likely nor unlikely” to be employed part-time
- Category 3 (Moderately Uncertain of Being Employed): People who answered “Neither likely nor unlikely” to be unemployed
- Category 4 (Very Uncertain of Being Employed): People who answered “Likely” to be unemployed

Our dummy of "Very uncertain of being employed" takes the value of 1 if the student is in the last category, and 0 otherwise.

Future Income Uncertainty

In a similar manner, the degree of certainty over future income/earnings potential is categorized as follows:

- Category 1 (Very Certain of Earning Higher Income): People who answered “Likely” to earn more than US$75,000 and “Unlikely” to earn less than US$35,000
- Category 2 (Moderately Certain of Earning Higher Income): People who answered "Unlikely" to earn less than US$35,000 and “Likely” or “Neither likely nor unlikely” to earn between US$55,001 and US$75,000
- Category 3 (Moderately Uncertain of Earning Higher Income): People who answered "Likely" to earn between US$35,001 and US$55,000
- Category 4 (Very Uncertain of Earning Higher Income): People who answered “Likely” or “Neither likely nor unlikely” to earn less than US$35,000

Our dummy of "Very uncertain of high income" takes the value of 1 if the student is in the last category, and 0 otherwise.

Financial Stability

The financial stability is assessed using the following question, following the Federal Reserve Board’s Survey of Household Economics and Decisionmaking:

Suppose that your household has an emergency expense that costs $400. Based on your household’s current financial situation, how would your household pay for this expense? If your household would use more than one method to cover this expense, please select all that apply.

- 1. Use a credit card and pay it off in full at the next statement
- 2. Borrow money from a friend or family member
- 3. Use a payday loan, informal loan, deposit advance, or overdraft
- 4. Use money currently in a checking/savings account or use cash
- 5. Use money from a bank loan or line of credit
- 6. Use a credit card and pay it off over time
- 7. Sell something
- 8. Wouldn’t have access to any of the above options

Students are "financially stable" if they chose option 1 or option 4 (in other words, can cover the $400 expense with cash or cash equivalent) and "not financially stable" if they did not.

[16] It is, of course, possible to create more categories given the high level of granularity of the data. The categories here are decided in a manner that the certainty monotonically goes from higher to lower and that there are enough observations to make a meaningful inference in each category.

Appendix B

Heterogeneous Treatment Effects – Full Output

This appendix includes supplementary analysis, with Tables A1-A6 presenting the full results of heterogeneous treatment effects for each dimension that is summarized in Table 3. We report all coefficients, in addition to the interaction term. These tables confirm that the insurance framing is the primary driving force behind the ISA take-up.

Table A1: Treatment Effect on Hypothetical ISA Take-Up by Race

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.092*	0.094**	0.106**	0.107**	0.110**	0.112**	0.109**
	(0.048)	(0.048)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
White	0.026	0.022	0.015	0.015	0.023	0.028	0.080*
	(0.036)	(0.036)	(0.037)	(0.037)	(0.037)	(0.037)	(0.045)
Black or African American	-0.020	-0.019	-0.065	-0.064	-0.065	-0.061	0.002
	(0.051)	(0.052)	(0.051)	(0.051)	(0.051)	(0.051)	(0.057)
Hispanic	0.014	0.011	0.011	0.011	0.015	0.018	0.076
	(0.044)	(0.044)	(0.046)	(0.046)	(0.045)	(0.045)	(0.051)
No response	0.066	0.066	0.063	0.063	0.062	0.069	0.144**
	(0.049)	(0.049)	(0.051)	(0.051)	(0.051)	(0.051)	(0.058)
Treatment × White	0.001	-0.002	-0.007	-0.008	-0.015	-0.018	-0.016
	(0.053)	(0.053)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)
Treatment × Black or African American	0.040	0.037	0.026	0.025	0.026	0.023	0.019
	(0.078)	(0.078)	(0.079)	(0.079)	(0.080)	(0.080)	(0.080)
Treatment × Hispanic	0.049	0.048	0.059	0.059	0.055	0.053	0.059
	(0.065)	(0.065)	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
Treatment × No response	-0.035	-0.041	-0.073	-0.074	-0.075	-0.077	-0.073
	(0.072)	(0.072)	(0.074)	(0.075)	(0.075)	(0.075)	(0.075)
N	2776	2776	2599	2599	2599	2599	2594

Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. We use log-transformation for current income. N is the sample size. Out of 2,776 in the survey, 1,537 are White respondents, 196 are Black or African American respondents, 417 are Hispanic respondents, 329 identify with other race/ethnicity categories, whereas 297 declined to answer. Other race/ethnicity categories include Asian (200), American Indian or Alaska Native (29), Native Hawaiian or Other Pacific Islander (22), and multi-racial (78).
Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Treatment Effect on Hypothetical ISA Take-Up by Gender

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.102***	0.100***	0.098***	0.098***	0.100***	0.102***	0.100***
	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)
Female	-0.011	-0.016	-0.013	-0.012	-0.001	-0.002	-0.004
	(0.025)	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)	(0.030)
Treatment $\times$ Female	-0.004	-0.001	0.009	0.009	0.005	0.001	0.002
	(0.038)	(0.038)	(0.039)	(0.039)	(0.038)	(0.039)	(0.039)
N	2776	2776	2599	2599	2599	2599	2594

Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. We use log-transformation for current income. N is the sample size.

The coefficient for the interaction term in every model captures the heterogeneous treatment effects.

Out of 2,776 respondents, 1,970 are female.

Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Treatment Effect on Hypothetical ISA Take-Up by Household Size

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.100***	0.100***	0.109***	0.109***	0.111***	0.111***	0.107***
	(0.033)	(0.033)	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Household size	0.004	0.005	0.004	0.004	0.005	0.003	0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Treatment × Household size	-0.000	-0.000	-0.002	-0.002	-0.002	-0.003	-0.002
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
N	2776	2776	2599	2599	2599	2599	2594

Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. We use log-transformation for current income. N is the sample size.
The coefficient for the interaction term in every model captures the heterogeneous treatment effects.
The mean household size in our sample is 2.93 with a minimum of 1 and a maximum of 15.
Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Treatment Effect on Hypothetical ISA Take-Up by Age (Median Split)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.114***	0.114***	0.118***	0.118***	0.115***	0.114***	0.112***
	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Below median age	0.031	0.030	0.023	0.022	0.015	0.015	0.024
	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)	(0.024)	(0.034)
Treatment $\times$ Below median age	-0.031	-0.031	-0.027	-0.027	-0.024	-0.023	-0.020
	(0.034)	(0.034)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
N	2776	2776	2599	2599	2599	2599	2594

Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. We use log-transformation for current income. N is the sample size.

The coefficient for the interaction term in every model captures the heterogeneous treatment effects.

The median age in our sample is 37.

Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Treatment Effect on Hypothetical ISA Take-Up by Marital Status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.093***	0.094***	0.099***	0.099***	0.099***	0.096***	0.091***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)
Married	0.029	0.030	0.032	0.032	0.035	0.032	0.023
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.025)
Treatment $\times$ Married	0.013	0.011	0.011	0.011	0.010	0.015	0.021
	(0.034)	(0.034)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
N	2776	2776	2599	2599	2599	2599	2594

Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. We use log-transformation for current income. N is the sample size.

The coefficient for the interaction term in every model captures the heterogeneous treatment effects.

Out of 2,776 respondents, 1,399 are married.

Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Treatment Effect on Hypothetical ISA Take-Up by Risk Aversion

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.058	0.058	0.041	0.041	0.030	0.032	0.027
	(0.062)	(0.062)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)
Risk aversion	-0.012	-0.011	-0.011	-0.011	-0.010	-0.010	-0.010
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Treatment × Risk aversion	0.011	0.011	0.016	0.016	0.019	0.018	0.019
	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
N	2776	2776	2599	2599	2599	2599	2594

Variable definitions follow the Pre-Analysis Plan; see Appendix A for details on our derived variables. The regression model in all columns follows from Equation 3 in the Pre-Analysis Plan. The regression models control for all variables shown in Table 2 in the respective models. We use log-transformation for current income. N is the sample size.

The coefficient for the interaction term in every model captures the heterogeneous treatment effects.

Out of 2,776 respondents, 1,303 (46.94%) are categorized as "Very Risk Averse," 571 (20.57%) as "Moderately Risk Averse," 441 (15.89%) as "Willing to Take Risk," and 461 (16.61%) as "Very Willing to Take Risk."

Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix C

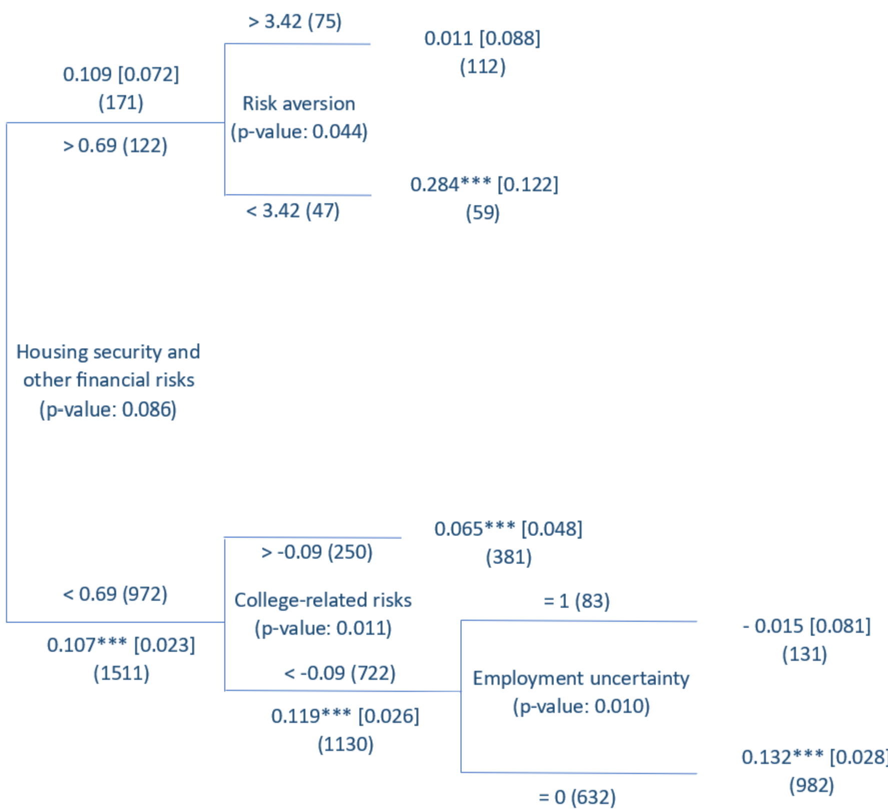
Robustness Check: A Data-Driven Approach to Understanding Adverse Selection

As a robustness check and to incorporate every dimension of risk, we employ the data-driven approach by Athey and Imbens (2016) to estimate treatment effect heterogeneity. We investigate several risk factors including perceived barriers to graduation, current financing choices, risk aversion, and future expectations, as well as demographics[17] as candidates for sources of heterogeneity. The suggested methodology builds on regression tree methods from the prediction-based machine learning literature (Breiman et al., 1984; Breiman, 2001). The sample is first divided into two parts: training and estimation data. We use the training data to create partition of the population according to covariates, and then we use the estimation data to estimate treatment effects for each subpopulation. The approach provides an advantage for cases where there are many covariates by letting the data tell the researcher the relevant subgroups where one should look for heterogeneity. By separating the datasets used to select the model structure and to estimate, Athey and Imbens (2016) mitigate the possible bias in machine learning methods where spurious correlations between covariates and outcomes affect the selected model. They argue that although the reduced sample size in each step through partition leads to loss of precision, the estimates are unbiased for every subpopulation.

In this exercise, we simulate with different cut-off points in the sample to get the training and the estimation data. Figure A1 summarizes our findings when we use 40% of our sample as the training data and the rest as our estimation sample. The training data identifies housing security and other financial risks as the first source of heterogeneity. The second iteration on the subsamples based on housing security and other financial risks return risk aversion and college-related risks as second sources of heterogeneity. Having enough sample size in one of the branches, we carry the third iteration to identify employment uncertainty as another source of heterogeneity. For each subsample, we report the treatment effects and standard errors in brackets based on the estimation data. Although we show significant treatment effects for each subsample, the statistical significance only exists for one of the branches within subsample, i.e., when the index for housing security and other financial risks is less than 0.69 but not the other way around. This lack of symmetry prevents us from having conclusive evidence on heterogeneity and adverse selection. We do, however, present suggestive evidence for potential risk factors that lead to significant heterogeneous treatment effects that may be revealed in larger samples with more power.

[17] The demographics include age, sex, race and ethnicity, household size and educational attainment.

Figure A1: Athey and Imbens (2016) regression tree



Notes: We use the Coefficient of Relative Risk Aversion (CRRA), a measure for risk preferences following a similar method as Kimball, Sahm, and Shapiro (2008). The indices for housing security and other financial risks and college-related risks are created via factor analysis based on students' answers to survey questions on barriers to graduation. The partition, and hence the p-values, that determines the subsamples where treatment heterogeneity exists are based on the training data. The numbers in parentheses at the leaves indicate how many data points in the training data belong to each leaf. All treatment effects are estimated using the estimation data for each subsample with the standard errors shown in brackets and sample size in parentheses.

Appendix D

Core Experiment – Description of the Randomization and Treatment

The survey presented hypothetical financing options to students via two arms in what we consider the "core" experiment. Half of the students were randomized into a "risk neutral" framing. This control arm provided students with limited information on a federal student loan with the option of an IDR and a hypothetical ISA; this information included a basic description of monthly payments, repayment term, and downside protections of the two financing options. The other half of the students were randomly selected into the treatment arm that emphasized educational insurance features that would protect the student against downside employment and income risks, including providing additional information and more detailed examples on repayment caps, income thresholds for no payments due, and obligation satisfaction conditions for each financing method. The exact wording of the choices presented to students is shown below. The additional insurance emphasis for the treatment arm is highlighted in bold text for the reader (but was not highlighted in any way for survey respondents in the treatment group).

Figure A2: Presentation of Hypothetical Financing Options in the Core Experiment: Treatment and Control Groups

Option 1: Student Loan with IDR	**Option 2: ISA**
Repayment Terms: You borrow $10,000 in student loans and pay back the money you owe in equal monthly payments of $106 over the next 10 years. Your payments cover both the interest (calculated at 5% per year) and the amount you borrowed.	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.3% of your monthly pretax personal income for 10 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 10 years.
Lender Type: You borrow from the federal government.	*Lender Type:* You borrow from a bank on your university's preferred lender list.
Borrower Protections: In years in which your income is low, you can apply for and enroll in an income-driven payment plan that caps your monthly payments at 10% of your monthly income over $1,600. ***Because your payments are lower than under the standard plan, you may be paying longer than 10 years, up to 20 years. As long as you make your payments on time, any unpaid balance remaining after 20 years of payments is forgiven; your obligation is satisfied.***	*Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 13 years. ***After at most 13 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***

Alternative Options – Student Loan Choosers in Core Experiment

In subsequent rounds, we tested student preferences over alternative contract terms for the hypothetical ISA. We should note that we will not be able to make causal inferences with these price/term variations, as the sample that was offered the alternative, actuarially equivalent, contracts was endogenous to the core experiment. The exact wording of both alternative, actuarially equivalent, hypothetical ISAs is shown below. As before, the additional insurance emphasis for the treatment arm is highlighted in bold text for the reader (but was not highlighted for survey respondents in the treatment group). The differences in the income shares and the contract lengths between the ISA alternatives are underlined for the reader (but were not underlined for survey respondents).

In the second round, students who chose a federal student loan with an option of IDR against the original ISA contract (2.3% share for 10 years) in either of the treatment arms in the first round were asked if they would switch to an ISA contract where they would pay smaller installments over a longer period (2.2% share for 12 years).

Figure A3: Presentation of Hypothetical Actuarially Equivalent ISAs with Alternative Terms – Original Student Loan w/ IDR Choosers in Core Experiment – Alternative (Option 3): ISA w/ Longer Term (2.2% Share for 12 Years)

Option 1: Student Loan with IDR	**Option 2: ISA**	**Option 3: ISA**
Repayment Terms: You borrow $10,000 in student loans and pay back the money you owe in equal monthly payments of $106 over the next 10 years. Your payments cover both the interest (calculated at 5% per year) and the amount you borrowed.	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.3% of your monthly pretax personal income for 10 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 10 years.	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.2% of your monthly pretax personal income for 12 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 12 years.
Lender Type: You borrow from the federal government.	*Lender Type:* You borrow from a bank on your university's preferred lender list.	*Lender Type:* You borrow from a bank on your university's preferred lender list.
Borrower Protections: In years in which your income is low, you can apply for and enroll in an income-driven payment plan that caps your monthly payments at 10% of your monthly income over $1,600. ***Because your payments are lower than under the standard plan, you may be paying longer than 10 years, up to 20 years. As long as you make your payments on time, any unpaid balance remaining after 20 years of payments is forgiven; your obligation is satisfied.***	*Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 13 years. ***After at most 13 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***	*Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 15 years. ***After at most 15 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***

In the third round, those who still chose the federal student loan option in the second round were then asked to choose between the original federal student loan w/ IDR and another, actuarially equivalent, ISA contract where they would pay larger installments over a shorter period (2.8% share for 7 years).

Figure A4: Presentation of Hypothetical Actuarially Equivalent ISAs with Alternative Terms – Student Loan w/ IDR Choosers in Second Round – Alternative (Option 4): ISA w/ Shorter Term (2.8% Share for 7 Years)

Option 1: Student Loan with IDR	**Option 3: ISA**	**Option 4: ISA**
Repayment Terms: You borrow $10,000 in student loans and pay back the money you owe in equal monthly payments of $106 over the next 10 years. Your payments cover both the interest (calculated at 5% per year) and the amount you borrowed.	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.2% of your monthly pretax personal income for 12 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 12 years.	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.8% of your monthly pretax personal income for 7 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 7 years.
Lender Type: You borrow from the federal government.	*Lender Type:* You borrow from a bank on your university's preferred lender list.	*Lender Type:* You borrow from a bank on your university's preferred lender list.
Borrower Protections: In years in which your income is low, you can apply for and enroll in an income-driven payment plan that caps your monthly payments at 10% of your monthly income over $1,600. ***Because your payments are lower than under the standard plan, you may be paying longer than 10 years, up to 20 years. As long as you make your payments on time, any unpaid balance remaining after 20 years of payments is forgiven; your obligation is satisfied.***	*Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 15 years. ***After at most 15 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***	*Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 10 years. ***After at most 10 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***

Alternative Options – ISA Choosers in Core Experiment

On the other hand, the students who chose the original hypothetical ISA contract over the federal student loan with the option of IDR in the core experiment were also offered the alternative ISA contracts. They were presented with all three ISA options (Option 2, Option 3, and Option 4) with different pricing and payment terms described above at the same time, as shown below. As before, the additional insurance emphasis for the treatment arm is highlighted in bold text for the reader (but was not highlighted for survey respondents in the treatment group). The differences in the income shares and the contract lengths between the ISA alternatives are underlined for the reader (but were not underlined for survey respondents).

Figure A5: Presentation of Hypothetical Actuarially Equivalent ISAs with Alternative Terms –
Initial ISA Choosers in Core Experiment –
Alternatives: ISA w/ Longer Term (2.2% Share for 12 Years) or ISA w/ Shorter Term (2.8% Share for 7 Years)

Option 2: ISA	**Option 3: ISA**	**Option 4: ISA**
Repayment Terms: You take $10,000 in an Income Share Agreement and commit to paying 2.3% of your monthly pretax personal income for 10 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 10 years. *Lender Type:* You borrow from a bank on your university's preferred lender list. *Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 13 years. ***After at most 13 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.2% of your monthly pretax personal income for 12 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 12 years. *Lender Type:* You borrow from a bank on your university's preferred lender list. *Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 15 years. ***After at most 15 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***	*Repayment Terms:* You take $10,000 in an Income Share Agreement and commit to paying 2.8% of your monthly pretax personal income for 7 years. ***Your monthly payment rises and falls with your income.*** If your total payments reach $20,000 (2x the original funding amount), your obligation ends earlier than 7 years. *Lender Type:* You borrow from a bank on your university's preferred lender list. *Borrower Protections:* If your income is at or below $3,000 in a month, you will make no monthly payment. Each monthly payment you skip, your term will extend by a month, but only up to 10 years. ***After at most 10 years, your obligation expires regardless of what you could pay. You will never pay more than $20,000 (2x the original funding amount).***