Moral Hazard and the Sustainability of Income-Driven Repayment Plans*

Chao Fu† Xiaomeng Li‡ Basit Zafar§

January 2025

Abstract

Income-Driven Repayment (IDR) plans tie student loan repayment to income and forgive unpaid debt after certain years of repayment. We investigate how these features affect one's career choices through a survey where the same student is asked to select job profiles under various repayment plans. Consistent with our Ben-Porath style model, the survey results reveal that IDR is a double-edged sword. On the one hand, 36% of students underinvest in their human capital under the standard repayment plan relative to their would-be choices in a debt-free scenario; an IDR resembling the Saving on a Valuable Education (SAVE) plan reduces this fraction to 20%. On the other hand, IDRs induce moral hazards: Under a SAVE-like plan, 22% of students choose job profiles with lower initial wages and higher wage growth than their choices in a debt-free scenario, leaving part of their debt forgiven. A simple calculation indicates that this type of moral hazard *alone* would render SAVE-like plans inviable were they carried out by private lenders; however, government-run IDRs are sustainable due to the government's capacity to collect individuals' lifetime income taxes.

*We thank Micah Baum and Andrew Smith for excellent research assistance. We thank Francesca Truffa and Sarah Turner for thoughtful comments and discussions. This research has been approved by the Institutional Review Board for Social Science and Humanities at the University of Michigan (HUM00242168).

†University of Wisconsin-Madison and NBER. Email: cfu@ssc.wisc.edu

‡University of Michigan. Email: lixiaom@umich.edu

§University of Michigan and NBER. Email: basitak@gmail.com

1 Introduction

Student loans play a fundamental role in facilitating individuals' educational investments. Associated with the increasing college enrollment rate and rising college tuition, student loan balances have grown rapidly in recent decades to become the second-largest source of household debt in the U.S. (Federal Reserve Bank of New York, 2022). The increasing loan repayment burden has triggered keen interest in the structure of loan repayment plans. Traditionally, the vast majority of student loans are repaid under the standard plan (SP), where one repays a fixed amount per period to pay off their debt in 10 years. In recent years, income-driven repayment plans (IDRs) have gained popularity: The fraction of borrowers using these plans more than quadrupled from 10% in 2014 to 42% in 2023 (Federal Student Aid, 2014, 2023). Although they differ in specific terms, IDR plans in the U.S. share two features that distinguish them from SP. The first is income dependence: IDRs adjust repayment to a borrower's income, thus reducing the borrower's repayment burden during low-income periods. The second is a limited repayment horizon: One's debt is forgiven after certain years of repayment.

While reducing individuals' repayment burdens, IDRs are subject to two problems that may render them unsustainable. The first is adverse selection: Individuals with (unobservably) lower earning potentials may be disproportionally attracted to IDRs (Herbst et al., 2022; Herbst and Hendren, 2024). The second concern, which is largely understudied in the literature (Lochner and Monge-Naranjo, 2016; Yannelis and Tracey, 2022), is moral hazard: The same individual may change their income in response to repayment plans.

IDRs' income-dependence feature alone may induce individuals to earn less: A recent study by de Silva (2024) finds evidence that IDRs lower borrowers' labor supply. This type of moral hazard, which lowers one's debt repayment *and* lifetime income, has been considered second-order: It can attenuate the welfare gains from contingent contracts, but cannot explain why IDRs do not exist in private markets (Herbst and Hendren, 2024). However, with both its features (income dependence and a limited repayment horizon), an IDR may induce borrowers to strategically change their career paths and the timing of their income streams. This type of moral hazard, which lowers one's debt repayment without necessarily reducing one's lifetime income (in fact, it may even increase one's lifetime income), can be a more serious threat to IDRs.

How relevant are such moral hazards empirically? Would they threaten the sustainability of IDRs for private lenders? What are their implications for government revenues? Answering these questions from observational data is challenging for several reasons, including the fact that one's counterfactual career paths under alternative repayment plans are not observed. We overcome this barrier and answer these questions through the lens of a student survey that elicits the same students' choice responses to different repayment plans.

To guide our survey design, we develop a simple model that focuses on a college loan borrower's post-education decisions. The model has three periods: an early-career repayment period, a later-career repayment-free period, and a retirement period. An individual makes decisions on human capital investment (a la Ben-Porath 1967) and savings/borrowing, subject to borrowing constraints and debt repayment burdens. IDR operates similarly to an income tax except that it applies only in the repayment period. When an individual's borrowing constraint is non-binding under IDR, they overinvest in human capital and earn less early in their career (when they are under the obligation of debt repayment), compared to a case where their debt is totally forgiven. This is a clearly-defined moral hazard under IDR, which does not exist under SP. Conversely, when an individual is borrowing-constrained (which is more likely to happen under SP than IDR), the debt burden suppresses post-education investment in human capital compared to the debt-forgiven case.

Given the theoretical guidance, we design a survey to study how the repayment structure impacts career choices and administer it to a sample of University of Michigan undergraduates. The survey assigns a given hypothetical end-of-college loan amount to a respondent and asks them to choose from the same set of three job profiles repeatedly, each time under a different repayment plan. The three jobs differ in the initial wage and wage growth but are otherwise identical.[1] We focus on four repayment regimes with increasing generosity: the Standard Payment (SP), two IDR plans resembling the federal Income-Based Repayment (IBR) and Saving on a Valuable Education (SAVE), respectively, and a case with all debt forgiven upon leaving college (Forgiven).[2]

Our survey reveals the following findings. First, the distribution of job choices across

[1] As discussed later, the trade-off between initial earnings and earnings growth is indeed a feature in observational data such as the NLSY97.

[2] Note that we use SAVE and IBR as labels for two different IDRs in the experiment, with SAVE being more generous than IBR. The features of these plans largely aligned with the August 2023 version of these federal IDRs at the time of the survey design, though some changes have occurred since then.

students varies with repayment plans. As the repayment plan becomes more generous, the fraction of students choosing the low-growth job decreases monotonically from 39% under SP to 19% under Forgiven. The relationship between plan generosity and the percentage of students selecting the high-growth job is, however, non-monotone: It is the lowest (44%) under SP and peaks (66%) under SAVE.

Second, zooming into individual-level responses, we find that IDR plans can be double-edged swords. On the one hand, 36% of students choose overly flat job profiles (i.e., they underinvest in their human capital) under SP relative to their choices under Forgiven; this fraction reduces to 20% under SAVE. On the other hand, IDRs induce clearly-defined moral hazards. For example, 22% of students choose job profiles with lower initial wages and higher wage growths under SAVE than their choices under Forgiven, leaving a nontrivial amount of debt unpaid.

Third, to assess the extent to which job market frictions—another leading friction that may distort one's choices—can curb moral hazards, we designed a survey question asking each student, who most prefers Job X under SAVE, to make a job choice again if they were to experience an N-month delay (with zero earnings) before starting Job X but no delay if opting for other jobs. These frictions have large impacts on students' choices: With a 2-month delay, about 60% of students switch to a different job, and this fraction increases to 85% with a 6-month delay. However, we find consistently that a significant fraction—18% to 22%, depending on the length of the delay in Job X—of students would choose job profiles steeper than their choices made under Forgiven (without job market friction and debt burden). This suggests that job market frictions have a limited role in curbing IDR-induced moral hazards.[3]

Fourth, we also find behavioral responses with respect to non-pecuniary job characteristics, in line with previous studies (Luo and Mongey, 2019). After learning about IDRs from our survey, 17% of students reported that they would change their career trade-off between wage and amenities, favoring jobs with higher amenities. In addition, 7% of students said that they would have chosen a different major had they known about IDRs.

Finally, we examine the implication of IDR-induced moral hazard on the sustainability of

[3]Given that this setup introduces frictions asymmetrically (only to one's most preferred job under SAVE) and that most (66%) students prefer the steep job profile under SAVE, it may exaggerate the extent to which labor market frictions could curb moral hazards.

IDRs for private lenders and for the Government. For the former, we calculate the discounted loan profits using students' job profile choices under each of the repayment regimes in the survey. Our results suggest that even in the absence of adverse selection, moral hazards alone would render SAVE unsustainable for private lenders, who would lose $3.2K per $35K debt they lend out. However, government-run IDR plans are sustainable, when individuals' lifetime income tax contributions are accounted for. In fact, assuming full tax compliance, SAVE would generate the highest net government revenue ($225.6K per student), while SP yields the lowest ($212.8K per student).

Admittedly, our survey setting is somewhat stylized compared to those in the related literature (which we review below). However, our approach offers two major advantages. First, for *every* individual in the survey, we observe their choice under *each* of the different repayment plans. That is, we observe the distribution of changes in career choices of *all* respondents as we move across plans, hence shutting down selection bias. In contrast, using observational data, researchers are typically faced with one of two limitations: (1) they observe individuals under one common repayment plan (and hence do not have to worry about selection), but do not observe their careers or other choices under alternative plans (as in de Silva 2024), or (2) they observe cross-sectional variation in career choices and plans but face the challenge of correcting for selection bias.

Second, although only limited forms of heterogeneity analyses (based on observables or parametric assumptions) are possible with observational data, our approach allows a fully flexible and non-parametric approach to document the underlying heterogeneity (see Wiswall and Zafar, 2017, for related discussion). This turns out to be very important in our setting because we find that the variation across individuals in their responses to repayment plans is not correlated with standard observables. Moreover, our model predicts that individuals' choice responses to repayment plans depend on whether they are borrowing-constrained; yet, we find that whether someone faces binding borrowing constraints is inherently difficult to detect empirically.

Of course, for our results to be useful, it needs to be the case that stated choices in these hypothetical scenarios reflect what respondents would do when confronted with similar situations in the real world. The plausibility of this assumption may be questionable in certain cases. However, there is growing evidence that the two approaches of using stated and actual choices yield similar conclusions when the hypothetical scenarios are realistic and relevant

for respondents (Fuster and Zafar, 2023). This condition clearly holds in our context. In addition, in our survey, respondents are asked not only to choose for themselves under different repayment plans but also to provide recommendations for an average University of Michigan student. While our analysis primarily focuses on own choices, we use the recommended choices not only to make sure that respondents understand the features of each repayment plan before making their own choices, but also to allow for potential differences between one's choices for oneself and for others. Overall, we see sensible variation and differences between the two; importantly, we do not find evidence of social desirability or experimenter demand effects impacting our respondents' stated own choices.

Related Literature Starting from Friedman (1955), a thread of literature has studied the optimal design of income-based financing in higher education, advocating its insurance value as well as acknowledging the distortionary costs of state-contingent contracts (Nerlove, 1975; Chapman, 2006; Del Rey and Verheyden, 2011; Gary-Bobo and Trannoy, 2015; Findeisen and Sachs, 2016; Barr et al., 2017; Jacobs, 2021). The insurance value of income-driven loans has been empirically verified, as they appear effective in reducing delinquencies (Herbst, 2023), mortgage defaults (Mueller and Yannelis, 2019), and the pass-through of income to consumption (Gervais et al., 2023). In addition, Catherine and Yannelis (2023) find that IDRs are more progressive in terms of targeting forgiveness to lower-income borrowers.

The issue of adverse selection in state-contingent contracts has drawn substantial amounts of attention in this literature. Herbst et al. (2022) and Herbst and Hendren (2024) explain how adverse selection makes the private provision of these contracts infeasible. Empirically, Mumford (2020) and Herbst et al. (2022) attempt to measure the degree of adverse selection in income-share agreements (ISAs), but find little evidence of selection. Abraham et al. (2020), in a survey where they ask students to choose between different student loan repayment plans, find that emphasizing the insurance aspects of IDRs is more likely to induce students who expect lower earnings and/or employment likelihood after graduation to opt for such plans. Karamcheva et al. (2020) find that selection is less of an issue in countries operating universal IDR programs administered through their respective tax authorities.

While much of the literature agrees that IDRs operate similarly to income taxes and may disincentivize borrowers from working, empirical research on IDR-induced moral hazards is rather limited (Yannelis and Tracey, 2022). The few empirical studies on this issue have

found that the effect of IDRs on labor supply is rather small (Chapman and Leigh, 2009; Britton and Gruber, 2020). In a life-cycle model of labor supply with frictional adjustment, de Silva (2024) concludes that labor supply responses are too small to justify fixed repayment contracts.[4] We contribute to the literature by highlighting that moral hazard issues can extend beyond the reduction in labor supply. Our model, based on the classical Ben-Porath framework, predicts that significant moral hazard problems can occur under IDRs as individuals change how they trade off between initial earnings and earnings growth. Our survey results support this prediction. Importantly, in our hypothetical scenarios, the adverse selection channel is shut down; yet, our results show that moral hazards alone can make IDRs unsustainable for private lenders.

Also related to our paper, a large set of papers have examined the effect of student loans on various aspects of student outcomes. In terms of earnings, researchers have mixed findings, as reviewed by Yannelis and Tracey (2022).[5] Beyond the effect on earnings, studies have found that college loan burden can negatively affect the takeup of public-interest jobs (Field, 2009; Rothstein and Rouse, 2011), entrepreneurship (Mazzone and Folch, 2024), household formation (Black et al., 2023), and home ownership (Mezza et al., 2020), and it can also distort college major choices (Abourezk-Pinkstone, 2023; Hampole, 2024; Murto, 2024) and the amenity-wage trade-off in one's career choices (Luo and Mongey, 2019). More recently, Dinerstein et al. (2024) find that the 2021 federal student loan forgiveness led to a decline in borrowers' earnings and hours. Briones and Turner (2025) find that the 2020-23 federal student loan repayment pause led to noticeable reduction in hours worked, mostly among borrowers who failed to complete a college degree.

The rest of the paper is organized as follows. Section 2 presents the theoretical model that guide our empirical studies; Section 3 describes the survey; Section 4 reports the survey results; Section 5 highlights the implication of our findings on the sustainability of IDR plans; Section 6 concludes the paper; the appendices contain additional results and details.

[4] This is consistent with the small labor supply elasticities documented in the literature (Saez et al., 2012).

[5] Some studies document that higher debt levels are associated with higher initial earnings (Minicozzi, 2005; Rothstein and Rouse, 2011; Chapman, 2016; Daniels Jr and Smythe, 2019; Black et al., 2023); some find the opposite (Weidner, 2016; Ziebarth and Gervais, 2017; Di Maggio et al., 2019); some find no effect (Bucarey et al., 2020; Denning and Jones, 2021; Goodman et al., 2021).

2 Model

An important feature of typical college loan repayment plans is the limited repayment horizon: One makes repayment within certain years after college, and in some plans, one's unpaid debt is forgiven afterwards. This limited-repayment-horizon feature can have important implications for one's career choice. For illustration, we study a college-loan borrower's post-education decisions in a simple three-period model, with an early-career repayment period ($t = 1$), a later-career repayment-free period ($t = 2$), and a retirement period ($t = 3$). An individual makes decisions on post-college human capital investment (a la Ben-Porath 1967) and savings/borrowing, subject to borrowing constraints and the burden of college loan repayment. For simplicity, and consistent with our survey design, we assume that the individual works full time before retirement, hence shutting down the labor-supply margin for moral hazard.

2.1 Primitives

Endowment Upon leaving college, an individual is characterized by three mutually-correlated variables: a college loan amount l_0, a type χ (which enters one's preferences and borrowing constraints), and an initial human capital level k_1. We denote a_{t-1} as one's other asset/debt (other than l_0) at the beginning of period t and assume that $a_0 = 0$.

College Loan Repayment Plans To highlight the key differences across repayment plans, we consider two (simplified) plans: a standard plan (SP) and an income-driven-repayment plan (IDR). Catering to this simple model, under SP, one is required to pay off their college debt in $t = 1$, regardless of their income. Under IDR, one's repayment in $t = 1$ is a fixed proportion (τ) of their income y_1 and the unpaid loan amount is forgiven afterwards. The plan–specific repayment is given by

$$D^p(l_0, y_1) = \begin{cases} l_0 \text{ if } p = SP, \\ \tau y_1 \text{ if } p = IDR. \end{cases} \tag{1}$$

Critically, $D^p(\cdot)$ is blind to one's type and human capital (χ, k_1), while one's decisions depend on (χ, k_1). Combined with the fact that IDR repayment depends on one's (endogenous)

income, this asymmetry exposes IDRs to both adverse selection and moral hazard problems. However, quantifying these problems is challenging because k_1 and χ are (partially) unobserved by the researcher.

Earnings and Human Capital Production A worker can use a fraction of their human capital for skill-enhancing human capital investment and rent the rest to the labor market. Human capital investment therefore involves an opportunity cost in the form of foregone earnings. In particular, for a worker who uses a fraction $i_t \in [0, 1]$ of their human capital (k_t) for skill investment and hence rents $k_t(1 - i_t)$ amount of human capital to the labor market, their earnings in t are given by:

$$y_t = k_t(1 - i_t). \tag{2}$$

In return, their next-period human capital is given by:

$$k_{t+1} = K\left(k_t, i_t\right).$$

Borrowing Constraint An individual faces the following borrowing constraint:

$$a_t \geq \begin{cases} -B\left(k_t, \chi\right) \text{ for } t < 3, \\ 0 \text{ for } t = 3. \end{cases} \tag{3}$$

In $t = 3$, one is not allowed to leave debt upon death ($a_3 \geq 0$). In working periods $t = 1, 2$, one's borrowing constraint $B\left(k_t, \chi\right)$ is a function of one's human capital and type. This constraint may arise from both financial limits and tastes against borrowing (such as debt aversion).[6]

Remark To deliver the essential message and intuition, we have kept our model simple on purpose. First, our model uses a special type of income-dependent repayment (an equity contract) and abstracts from details such as the nonlinearity in repayment schedules and cross-plan differences in repayment horizons and interests. In our survey, we follow the

[6]There is evidence suggesting that debt aversion acts as a barrier to college access (Burdman, 2005; Perna, 2008; Field, 2009).

specifics of each repayment plan and account for all these factors. Second, our model abstracts from frictions other than borrowing constraints that may distort one's choices. One leading example is frictions in the labor market (e.g., search frictions); we assess the effect of such frictions on one's choices and moral hazards in our survey. Third, the model assumes a homogeneous non-labor income level for all individuals (set to zero), hence abstracting away from the effect of factors such as parental transfers on one's choices.[7]

2.2 Worker's Problem

We now solve the worker's problem via backward induction. Given the constraint that $a_3 \geq 0$, a retiree simply consumes their savings. For pre-retirement periods, we use $V_t^p(\cdot)$ to denote a worker's value function in period t under a given repayment plan p.

Period 2 In $t = 2$, one is free of the college debt burden (either through paying off or through debt forgiveness), the state variables in this period include one's type χ, one's human capital k_2, and assets from last period a_1. Given that one will retire in $t = 3$, the optimal human capital investment decision is $i_2 = 0$, and hence one's income is given by $y_2 = k_2$. A worker's asset choice solves the following problem:

$$\begin{aligned} V_2^p(\chi, k_2, a_1) &= \max_{a_2} \{u(c_2) + \beta_\chi u(a_2(1+r))\}, \\ s.t.\ c_2 &= k_2 + (1+r)a_1 - a_2 \\ a_2 &\geq -B(k_2, \chi). \end{aligned}$$

where $u(\cdot)$ is a concave function of consumption, $\beta_\chi \in (0,1)$ is a type-specific discount factor, and r is the interest rate. It is clear that one will optimally choose $a_2 > 0$ to fund consumption in retirement.

Period 1 In $t = 1$, the state variables include one's loan amount l_0, type χ, and human capital k_1. A worker faces non-trivial choices for both asset holding and human capital

[7] Parental transfers may affect selection into IDR plans, income-generating efforts, and loan repayment (Lochner et al., 2021).

investment, given by

$$\begin{aligned} V_1^p(l_0, \chi, k_1) &= \max_{i, a_1} \{u(c_1) + \beta_\chi V_2^p(\chi, k_2, a_1)\} \\ s.t.,\ k_2 &= K(k_1, i) \\ y_1 &= k_1(1-i) \\ c_1 &= y_1 - D^p(l_0, y_1) - a_1 \\ a_1 &\geq -B(k_1, \chi). \end{aligned}$$

2.3 Model Predictions

Although the essential message of this model holds for a wide range of utility and human capital production functions, to sharpen the illustration, we adopt functional forms commonly used in the literature that allow us to solve the model analytically: a CRRA utility function and the following production function

$$k_{t+1} = K(k_t, i_t) = (1-\delta) k_t + A k_t^{\alpha_1} i_t^{\alpha_2},$$

where δ is the rate of human capital depreciation; A, α_1, and α_2 are parameters governing the production efficiency, which exhibits complementarity between baseline human capital and new investments.

We denote i^{IDR}, i^{SP} and $i^{Forgiven}$ as one's optimal period-1 human capital investment under IDR, SP, and the case where one's student debt is (unexpectedly) forgiven upon leaving college and hence one's post-education choices are not distorted by student debt. Our model predicts the following results (proved in Online Appendix A):

1. Under IDR, when one's borrowing constraint is non-binding, $i^{IDR} > i^{Forgiven}$ for any repayment rate $\tau > 0$ and i^{IDR} increases with τ; when one's borrowing constraint is binding, $i^{IDR} < i^{Forgiven}$.

2. Under SP, when one's borrowing constraint is non-binding, $i^{SP} = i^{Forgiven}$; otherwise, $i^{SP} < i^{Forgiven}$.

3. All else being equal, borrowing constraints are less likely to bind with a lower repayment rate (τ) under IDR and are less likely to bind under IDR relative to SP.

Results 1 and 2 relate to how repayment plans may distort one's investment choices. IDR essentially acts as a distortionary income tax that applies only within the repayment period. For those who are not borrowing-constrained, they overinvest in their human capital and earn less in the loan repayment period, relative to their choices in the debt-free scenario (i.e., when their choices are not distorted by student debt). This is a clearly defined moral hazard that is induced by IDRs but absent under SP. Borrowing-constrained workers will underinvest in their human capital under both SP and IDR relative to the debt-forgiven case.

Result 3 says that borrowing constraints are increasingly likely to bind with the stringency of the repayment plan. As mentioned earlier, it is empirically challenging to identify borrowing-constrained individuals, because individuals may appear constrained for both financial- and taste-related reasons. Result 3 is useful for our empirical analysis, where we will exploit within-individual variation in plans with different stringency.

Discussion The extent to which an individual may game against an IDR plan is constrained by frictions (e.g., borrowing constraints and labor market frictions) and it depends critically on how one's gaming actions affect one's earnings during and after the loan-repayment period. For example, in a labor-supply model with an exogenous wage process or with learning-by-doing, one can lower their loan repayment by "doing" less during the loan-repayment period. However, this gaming action or moral hazard is very costly for the individual, especially in the learning-by-doing model, in which such actions will lower not only one's current but also one's future income. In settings such as the Ben-Porath model and models with back-loaded labor contracts, one's choice of lower early-career income is accompanied with higher future income, making moral hazards more relevant.

Naturally, one may question the relevance of such income profiles in real life. Focusing on four-year degree holders in the NLSY97 sample, we examine individuals' initial post-education earnings and earnings 9-11 years later (Appendix D). We find that higher initial earnings are, on average, associated with significantly lower growth rates. Notably, this negative correlation holds even conditional on major and initial occupation.[8]

[8]Earlier studies have found that earnings premium tends to decline rapidly in majors with higher initial earnings (Deming and Noray, 2020).

3 Survey Design

In the spring of 2024, we invited a random sample of freshmen and seniors at the University of Michigan (UM) to participate in our online survey. We target these two groups because freshmen are presumably actively considering their major choices, while seniors are likely thinking about their job choices. In addition, given our focus on federal student loan programs, only US citizens and permanent residents were eligible to participate in the survey. Of the 8,854 eligible students, 627 participated (a 7% response rate); each respondent who completed the survey received a $15 Amazon gift card. Table 1 provides a comparison between the survey sample and the overall survey population (freshmen and seniors at UM). As is common with student surveys, there is a slight over-representation of female students. Because our survey invitation explicitly mentioned student loans, it is not surprising that our survey participants are more likely to be student-loan borrowers (42% vs. 34% in the population). Average student loan balances are quite comparable between the survey sample and population.

The survey was designed to examine how college loan repayment policies may affect one's career choices, focusing mainly on the trade-off between starting wage and wage growth. Answering this question using observational data is challenging: Besides the self-selection into different loan amounts and repayment plans (when multiple plans are available), one never observes counterfactual career choices for the same individual.[9] Our survey addresses these challenges by assigning a given hypothetical end-of-college loan amount to a respondent and asking them to choose from the same set of job profiles repeatedly, each time under a different repayment plan. This allows us to observe the *entire* distribution of behavioral changes. The ability to observe and document the variation in choice responses across individuals (as repayment plans change) is important since, as predicted by our model, these responses *should* differ across individuals depending on whether or not they are borrowing-constrained.

The Repayment Regimes We study students' career choices under four repayment regimes labeled as: Standard Payment (SP), Income-Based Repayment (IBR), Saving on

[9] de Silva (2024) relies on the fact that the only available contract is a government-provided income-driven loan, while Herbst (2023) exploits variation in assignment to an agent to address selection issues in IDR enrollment.

Table 1: Summary Statistics and Comparison with the Survey Sample

	(1) Survey population		(2) Survey sample	
	Mean	S.D.	Mean	S.D.
Freshman	0.50	0.50	0.49	0.50
Age	20.43	2.23	19.89	2.50
Female	0.52	0.50	0.60	0.49
White	0.61	0.49	0.66	0.47
URM	0.18	0.38	0.17	0.38
GPA	3.58	0.45	3.65	0.36
SAT	1,408.47	126.18	1,399.47	119.33
Household income more than $100,000	0.52	0.50	0.46	0.50
Borrowed	0.34	/	0.42	0.50
Average amount borrowed ($)	27,474	/	31,982	27,231
Observations	17,352		627	

Notes: Column (1) summarizes student characteristics for the survey population of all current freshmen and seniors, while Column (2) summarizes characteristics for the survey sample. "URM" represents U.S. citizens or U.S. permanent residents who have self-identified as belonging to specific race/ethnicity categories, including Hispanic, Native American, Black or African American, Native Hawaiian, or Other Pacific Islander. GPA refers to the cumulative GPA at the start of Winter 2024 for Columns (1) and (2). Household income more than $100,000 is a binary variable indicating whether a student's self-reported estimated gross family income exceeds $100,000. Borrowed is a binary variable indicating whether an individual has (or expects to have) taken out any type of student loan by the time of graduation. The average amount borrowed represents the cumulative principal borrowed (or expected to be borrowed) by those who borrowed (excluding zeros), measured at graduation. For the survey sample, these variables are derived from responses to the question: "How much do you expect to have in total student loans by the time you graduate with a bachelor's degree from the University of Michigan? Please include any student loans that your parents may take out for you. Input 0 if you do not expect to have any student debt." Borrowing information for the survey population is based on data from the Common Data Set 2023.

a Valuable Education (SAVE), and unexpected debt forgiveness with zero repayment burden (Forgiven). It should be noted that the plans labeled IBR and SAVE in our survey resemble the official IBR and SAVE plans as of August 2023. Since then, there have been changes in these plans. However, for our purposes, what matters is that the repayment plans have different features. The four repayment regimes, with increasing generosity, in this paper are defined as follows:

- SP requires a fixed payment such that one pays off one's debt in 10 years.
- IBR requires payments of 10% of discretionary income (defined as income above 150% of the poverty guideline), capped by the amount under SP; interest capitalization does not occur until the monthly payment reaches the standard 10-year repayment amount; the remaining debt is forgiven after 20 years.
- SAVE requires payments of 10% of discretionary income (defined as income above 225% of the poverty guideline). SAVE eliminates interest capitalization so the balance never grows; the remaining debt is forgiven after 20 years.
- Forgiven: One's entire student debt is unexpectedly forgiven upon leaving college.

In the survey, when calculating payments, we assume the individual remains single, and this is made explicit in the survey scenario.[10]

An Overview of the Scenario Respondents are randomized into either a high-debt case ($40,000) or a low-debt case ($30,000) upon graduation. To make the cases realistic, we pair the randomized higher debt balance (presumably associated with higher investment in college education) with higher income levels (Table 2). We choose these loan amounts based on two facts: Among UM undergraduates who graduated in 2023 with positive amount of loans, the average cumulative principal is $27,474 (Common Data Set, 2023); nationally, among federal student loan borrowers, the average student debt four years after completing a bachelor's degree in 2015–16 is $45,300 (National Center for Education Statistics, 2023).

In our model (Section 2), one makes a continuous choice of i (the fraction of one's human capital used for skill investment); a higher i lowers one's current earnings in return for higher future earnings. Reflecting the same trade-off in an easy-to-understand survey setting, we ask respondents, under each repayment regime, to rank three job profiles that differ in terms of their annual earnings and earnings growth but are *otherwise identical*. Furthermore, to focus on behavioral responses to repayment plans, we shut down the adverse selection margin

[10] Accordingly, the calculations are based on a single taxpayer using the 2023 Poverty guidelines published annually by the U.S. Department of Health and Human Services, which will adjust based on inflation estimates. For example, the poverty line for a single individual is $14,580. The Congressional Budget Office only provides inflation estimates for the next 10 years. For years beyond this 10-year period, we assume that the Congressional Budget Office's estimate from the 10th year will apply to all subsequent years.

of the problem by giving all respondents within a randomized group the *same* choice set of jobs and hence the same potential earnings paths.

These job profiles are presented in Table 2. Job A offers the highest initial income but the lowest growth rate (i.e., the lowest i), while Job C provides the lowest initial income but the highest growth rate (i.e., the highest i). The last row in each panel shows the discounted lifetime (40-year) income under each job profile. We design the job profiles such that the discounted lifetime income is higher for a job with a steeper (less smooth) income profile; otherwise, a flatter (smoother) profile would dominate a steeper profile for any preference that exhibits concavity. In the survey, we did not show these lifetime income numbers to students, since doing so may have confused, misled, or primed them in some way.

Table 2: Comparison of Job Profiles under High and Low Debt Cases

Panel (a): High Debt Case			
Debt		\$40,000	
	Job A	**Job B**	**Job C**
Initial income	\$62,500	\$52,500	\$45,000
Income growth	1.50%	3.00%	4.25%
Discounted 40-year income ($\beta = 0.95$)	\$1.29m	\$1.38m	\$1.48m
Panel (b): Low Debt Case			
Debt		\$30,000	
	Job A	**Job B**	**Job C**
Initial income	\$55,000	\$47,000	\$37,500
Income growth	1.50%	3.00%	4.75%
Discounted 40-year income ($\beta = 0.95$)	\$1.14m	\$1.24m	\$1.36m

Notes: This table shows the set of three job profiles under a high debt case (\$40,000) in Panel (a) and a low debt case (\$30,000) in Panel (b). Initial income is the annual income after graduation, income growth is the yearly income growth, and discounted 40-year income is the present value of 40 years of income discounted at 0.95. The discounted 40-year income was not shown to participants in the survey.

We ask the respondents to rank the jobs first as a consultant for a hypothetical average UM graduate, "Wolverine", and then for themselves in the same situation (upon graduation). In doing so, we obtain data on both choices for oneself and recommended choices for others. These choices may differ because students may consider their own situation and preferences, which may differ from those of an average student. We will use these data to identify any

systematic differences between the stated own choices and recommendations.

Video Explanation Given the complicated nature of student loan repayment plans, we chose to convey the information through videos. We first ask respondents to watch two videos that explain the details of each plan for "Wolverine". In the first 3.5-minute video, we explain SP and IBR, detailing how monthly repayments are determined, the length of payments, and use an example of a recent UM bachelor's graduate with the middle-profile Job B to illustrate how repayments may (or may not) depend on one's income. In the second 4-minute video, we introduce the SAVE plan, its repayment rules, and loan forgiveness rules. We again use the same example to highlight the differences between SP, IBR, and SAVE in terms of average annual repayments, average annual income net of loan repayments, and debt forgiveness.[11]

Respondents cannot forward the video, but they can pause it at any time and review the video as many times as they want. Each video is followed with understanding check questions, which allow two attempts before showing the explanation for the correct answer.[12] Specifically, after each video, there is an understanding question highlighting key characteristics of the repayment plans.[13] Before making a recommendation, students are asked for each plan—SP, IBR, and SAVE—which job involves debt forgiveness and which job has the lowest average annual loan repayment in years 1-5. These procedures ensure that respondents grasp the information and understand the features of each repayment plan.

Ranking the Jobs After watching the videos, respondents first report their advice for "Wolverine" under each of the three repayment plans (SP, IBR, and SAVE) by ranking the three jobs. After that, the student is asked to rank the jobs for themselves under SP, IBR, SAVE, and Forgiven.[14]

For a given repayment plan, before we ask respondents for their choices, we show them

[11] Appendix E.1 contains the scripts from the videos, and the videos are available at https://tinyurl.com/39mkxdrd.

[12] Approximately 3% of respondents answered the understanding checks incorrectly on their second attempt after each video.

[13] For example, true or false questions such as "Monthly loan repayments are NOT fixed under SP" and "Under IBR, it is possible that there is some remaining debt forgiven after 20 years of repayments" emphasize the fixed payment feature of SP and the possibility of debt forgiveness under IBR.

[14] The Forgiven case is presented toward the end of the survey and the choices are only for oneself.

a detailed table comparing the three jobs in terms of earnings path (starting annual and monthly salaries and earnings growth); debt repayment (number of repayment years, total repayment, amount of debt forgiven, average annual loan repayment at different stages of one's career), and annual income net of debt repayment at different stages of one's career. Figure 1 shows the screenshot of the job-comparison table under SAVE for a student in the high-debt group; Appendix Figure B.1 shows the job-comparison tables under SP and IBR.[15]

The tables shown to students highlight the trade-offs one faces under each repayment plan. In the example shown in Figure 1, under SAVE, if one chooses Job A, one will pay off their debt within 19 years and have a high-starting but low-growth earnings profile net of loan repayment ($61K per year for Years 1-5 and $90K per year for Years 21-30). In contrast, if one chooses Job C, one will have over $9,900 debt forgiven and experience a much steeper net earnings profile ($48K per year for Years 1-5 and $126K per year for Years 21-30).

Job Market Frictions The extent to which an individual may game against an IDR plan is constrained by frictions, including job market frictions. We examine the role of job market frictions in one's choices under SAVE—the plan that provides the highest incentive for borrowers to game the system among all the plans we examine. Specifically, for a respondent who chooses Job X under SAVE for themselves upon graduaton in the baseline (without frictions), we ask them to choose among the three job profiles again if they have to wait for N months (with zero earnings) before Job X can start, while if they choose either of the other two jobs, they can start working without delay. We start with N=2; if the respondent switches to a job other than X, we stop asking additional questions; otherwise, we increase N to 4. If one still chooses Job X, we increase N to 6.

Other Tradeoffs We also asked respondents whether they would change their major choice and/or other aspects of career choices after learning about IDR through the survey, and if so, how. For the latter, we asked respondents, "How do you think the characteristics you would look for in jobs/careers would be different?" The options included seeking riskier jobs with higher pay but lower stability, jobs with better life-work balance or less stress, jobs more related to their interests even if it means lower take-home pay, jobs with more benefits,

[15]The two videos effectively go through the same information as in the table for Job B under the different repayment plans.

Figure 1: Screenshot of Making Recommendations for "Wolverine" under the SAVE Plan

SAVE	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	19	20	20
Total loan repayments paid	$56,761	$58,997	$55,458
Amount of debt forgiven	$0	$3,350	$9,933
Average annual loan repayments in			
Years 1-5	$2,994	$2,128	$1,453
Years 6-10	$3,093	$2,617	$2,187
Year 11 to the last year with positive loan repayment (n)	$3,196 (n=19)	$3,527 (n=20)	$3,726 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$61,410	$53,618	$47,539
Years 6-10	$66,288	$62,008	$58,138
Years 11-20	$74,755	$77,357	$79,147
Years 21-30	$90,094	$108,702	$125,654

If the UM graduate were on SAVE, which job offer would you recommend? Please rank these jobs from your most recommended job (Rank 1) to your least recommended job (Rank 3)

	1: Most recommended	2	3: Least recommended
Job A	○	○	○
Job B	○	○	○
Job C	○	○	○

Notes: This figure displays a screenshot where participants rank three jobs in order of preference, making job recommendations for "Wolverine", an average UM bachelor's graduate.

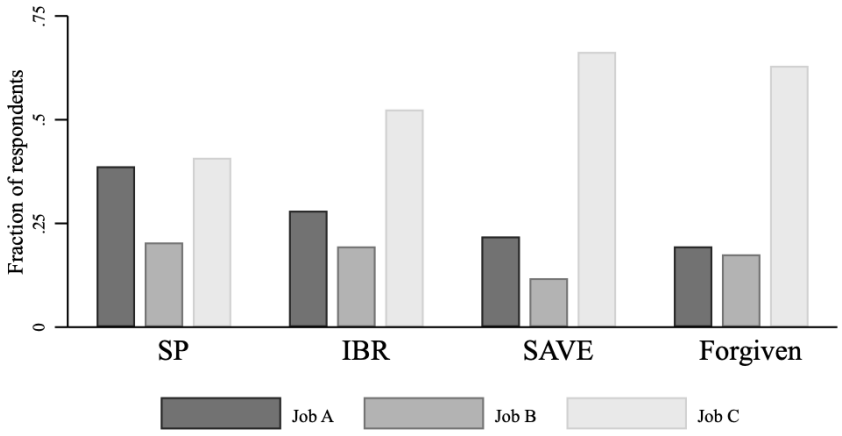
or being more selective when accepting a job even if it means waiting longer to find a job.

4 Empirical Results

In this section, we present results from our survey. Since our results do not differ between the randomized high- versus low-debt groups, we pool the responses from all students. As we described in the previous section, we allow for the possibility that a student's choice for themselves may differ from their recommended choices for others (the average UM graduate "Wolverine" in the survey). In what follows, we will first present results from students' stated choices for themselves in each of the hypothetical scenarios. At the end of this section, we will compare these choices with students' recommendations for "Wolverine".

4.1 Plan-Specific Distribution of Choices

Figure 2: Job Choice Distributions Under Repayment Plans



Notes: This figure shows the distributions of job choices among students under four different repayment plans with increasing degrees of generosity: Standard Payment (SP), Income-Based Repayment (IBR), Saving on a Valuable Education (SAVE), and Forgiven. The job profiles are as follows: Job A (high starting wage and low growth), Job B (medium starting wage and medium growth), and Job C (low starting wage and high growth).

Figure 2 presents the distribution of job choices among students under four different

repayment plans with increasing degrees of generosity: SP, IBR, SAVE, and Forgiven. Under each plan, we show the fractions of students who prefer Job A (high starting wage and low growth), Job B (medium starting wage and medium growth), and Job C (low starting wage and high growth), respectively. Under SP, 39% of students perfer Job A, 20% prefer Job B, and 41% prefer Job C. As the repayment plan becomes more generous, the fraction of students choosing the low-growth Job A decreases monotonically to 28% under IBR, 22% under SAVE, and 19% under Forgiven when loan repayment burden is eliminated. Changes in the fraction of students choosing the high-growth Job C are, however, non-monotone: It increases to 52% under IBR, peaks at 66% under SAVE, and then decreases slightly to 63% under Forgiven.

The distributions of choices differ across plans, suggesting the relevance of repayment plans in governing one's choices.[16] However, Figure 2 masks the changes at the individual level as behavioral responses of different students can go in different directions. For example, our model (Section 2.3) predicts that an individual may switch to a steeper job profile under an IDR plan (relative to Forgiven) if their borrowing constraint is non-binding, and to a flatter job if it does bind. The next set of results examine individual-level responses.

4.2 Within-Individual Choice Comparison

We examine how students' job choices change when moving from Forgiven to various repayment plans (SP, IBR, and SAVE) in Table 3. Row 1 shows that 22% of students choose a steeper (lower initial wage and higher growth) job profile under SAVE than under Forgiven; this fraction is 16% under IBR and 11% under SP. The change under SP is inconsistent with the simple model presented in Section 2. This inconsistency may be due to noise in the survey and/or factors not captured by our model. However, the p-values comparing changes under SAVE/IBR with those under SP indicate that the change under an income-driven repayment plan is significantly larger than under SP. That is, even accounting for potential survey noise, a significant fraction of students choose a steeper job profile under IDRs—particularly SAVE—compared to the Forgiven case. This provides evidence of strictly-defined moral hazards under IDRs: Some students overinvest in their human capital during their early-careers (debt-repayment period) and hence lower their loan repayment.

[16]The Kolmogorov-Smirnov two-sample test and simple regression results suggest that all pairwise distributions differ significantly, except for SAVE versus Forgiven.

Table 3: Changes in Job Choices: From Forgiven to a Repayment Plan

Forgiven to	(1) SAVE	(2) IBR	(3) SP	(1) vs. (3) P-value	(2) vs. (3) P-value
Steeper	0.217***	0.163***	0.115***	0.000	0.001
	(0.016)	(0.015)	(0.013)		
Flatter	0.198***	0.271***	0.364***	0.000	0.000
	(0.016)	(0.018)	(0.019)		
Same	0.585***	0.566***	0.522***	0.010	0.056
	(0.020)	(0.020)	(0.020)		
Observations	627	627	627		

Notes: This table shows how students' job choices change when moving from a debt forgiven scenario to various repayment plans (SP, IBR, SAVE). "Steeper" means that students switch to a job profile with a higher growth rate and lower initial earnings. Conversely, "flatter" means that students switch to a job profile with a lower growth rate and higher initial earnings. "Same" means the job choice is the same under the repayment plan and under Forgiven. Standard errors are reported in parentheses. ***, **, and * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Row 2 shows that 20% (27%) of students choose a flatter job profile under SAVE (IBR) than under Forgiven; this fraction is much higher at 36% under SP. This finding aligns with the hypothesis (based on the model predictions) that the burden of college debt can lead some borrowers to underinvest in their human capital and that this distortion grows with the stringency of repayment plans.

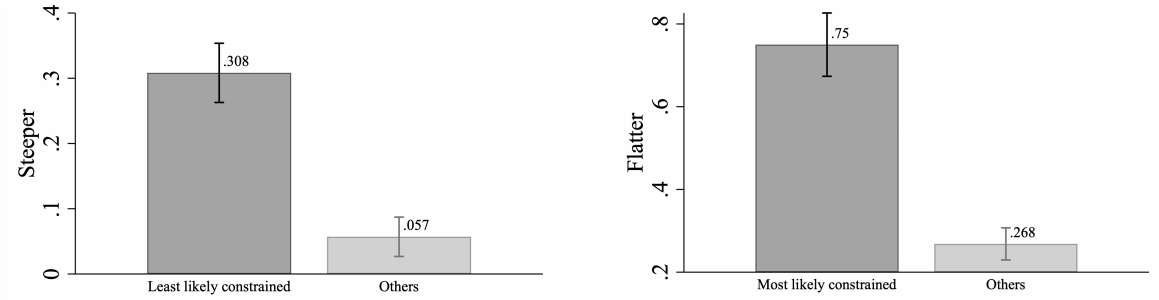
Overall, the patterns in the first two rows of Table 3 suggest that IDRs act as a double-edged sword. On the one hand, many students underinvest in their human capital under SP; IDRs allow them to increase their human capital investment. On the other hand, IDRs induce significant moral hazard problems.

It is natural to ask which students make choices consistent with moral hazard (i.e., choosing a steeper job profile under SAVE/IBR relative to their choices under Forgiven). Appendix Table C.1 shows that students' observables are barely correlated with such moral hazards (R^2 below 0.04). An exception is that students who have student loans in real life are economically and statistically significantly more likely to make such choices. Presumably these students are the ones who have thought more about repayment.

Alternative Measures Row 3 shows that more than 50% of students' job choices remain unchanged with or without a loan burden. Given the limited choice set, some students in Row 3 may be constrained from switching jobs: an even steeper (or flatter) job profile is not available for those who prefer Job C (or Job A) under Forgiven. Consequently, Row 1 of Table 3 provides a lower bound on the severity of the moral hazard problem, while Row 2 provides a lower bound on the severity of underinvestment. Table C.2 in the appendix presents upper bounds on over- and underinvestment using a weakly steeper/flatter classification, confirming both the significant moral hazard issue and the debt-induced underinvestment issue.[17]

Figure 3: Changes in Job Choices by Implied Binding Conditions of Budget Constraints

(a) Changes to Steeper Job Choices: From Forgiven to SAVE (b) Changes to Flatter Job Choices: From Forgiven to SP



Notes: In the left panel (a), the two bars display the fraction of respondents who switch to a steeper job profile from the Forgiven plan to the SAVE plan, based on the implied binding condition of borrowing constraints. A "steeper" profile means that students move to a job with a higher growth rate and lower initial earnings. Conversely, a "flatter" profile means that students switch to a job with a lower growth rate and higher initial earnings. If someone does not switch to a flatter profile from the Forgiven plan to the SP plan, this indicates they are "least likely constrained". In the right panel (b), the two bars show the fraction of respondents who shift to a flatter job profile from the Forgiven plan to the SP plan, also by the implied binding condition of borrowing constraints. If someone switches to a flatter profile from the Forgiven plan to the SAVE plan, this indicates they are "most likely constrained".

Borrowing Constraints and Choices Our model (Section 2.3) predicts that how a repayment plan distorts one's human capital investment (under- versus over-investment) depends on how binding borrowing constraints are for the student loan borrower. In particular, under an IDR plan, an unconstrained individual will overinvest in their human capital rel-

[17]Specifically, the table shows that 68% and 57% of students switch to weakly steeper job profiles when moving from Forgiven to SAVE and IBR, respectively. Additionally, 28%, 36%, and 49% of students switch to weakly flatter job profiles when moving from Forgiven to SAVE, IBR, and SP, respectively.

ative to their choices without any college debt; when borrowing-constrained, an individual will underinvest under both IDR and SP.

As we mentioned earlier, one can behave *as if* they are borrowing constrained for both financial and/or taste-related reasons. Empirically, it is often challenging to detect who is borrowing constrained. However, when making within-individual comparisons, our third model prediction is quite useful: One's borrowing constraints are more likely to bind as the repayment plan becomes more stringent. Therefore, if an individual does not appear to be borrowing constrained under SP (the most stringent plan), i.e., they do not switch to a flatter job profile relative to the Forgiven case (in our sample of 627 individuals, 399 behave this way), they should not be constrained under other plans. We catergorize these individuals as "least likely constrained". Conversely, if an individual appears to be constrained under SAVE (the most generous plan), i.e., they switch to a flatter job profile relative to the Forgiven case (124 students do so in our sample), they should also be constrained under other plans (i.e, "most likely constrained").[18]

These predictions hold in our survey results. In Panel (a) of Figure 3, we examine job-switching patterns from Forgiven to SAVE, showing that the"least likely constrained" participants are significantly more likely to transition to a steeper job profile (31%) compared to others (6%), i.e., moral hazard problems are much more evident among these individuals. In Panel (b), we examine job-switching patterns from Forgiven to SP: The "most likely constrained" participants are substantially more likely to shift to a flatter job profile (75%) compared to others (27%).[19]

One may ask whether implied binding constraints can be predicted using observable characteristics. This is investigated in Table C.3, where we regress our proxies of being constrained or unconstrained by stated behaviors (as described above) onto a rich set of observables. We find that these observables have little predictive power ($R^2 < 0.03$), suggesting that whether someone faces binding borrowing constraints is inherently difficult to detect. This could be because household income and other observables are imperfect proxies for binding financial constraints, or it could be that certain behavioral phenomena such as

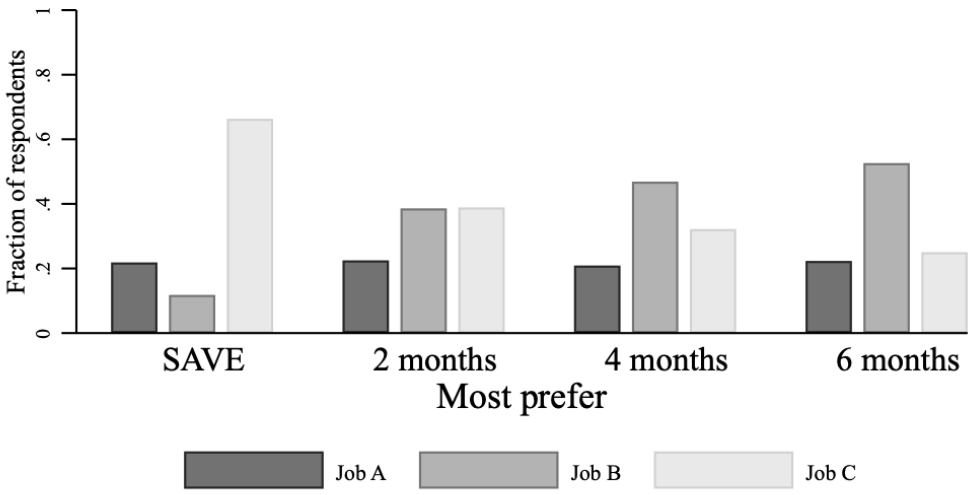
[18]There are 31 respondents (less than 5%) in our survey sample who fall into both groups, i.e., being both most and least likely constrained. This should not happen by definition; these 31 violating cases arise likely due to survey noise (for example, mistakes or lack of attention). We include these individuals in our analysis; our results hold when we exclude them.

[19]The first fraction in Panel (b) is 100% if we exclude the 31 violating cases mentioned in Footnote 18.

debt aversion cause students to act as if they are borrowing constrained even though not financially so. This challenge is analogous to the empirical challenge of identifying households that behave *as if* they are hand-to-mouth.[20] This underscores the value of having within-individual experimental variation to understand how repayment plans affect behaviors.

4.3 The Role of Labor Market Frictions

Figure 4: Distribution of Job Choices with Start Delays Under the SAVE Plan



Notes: This figure illustrates the distributions of students' most preferred job choices under the baseline SAVE plan without labor market frictions, and with job start delays of 2, 4, and 6 months. The job profiles are defined as follows: Job A (high starting wage and low growth), Job B (medium starting wage and medium growth), and Job C (low starting wage and high growth).

So far, all job choices are made without job market frictions, another important factor that may distort one's choices. Indeed, when we introduce labor market frictions, as described in Section 3, students' choices are affected significantly. With a 2-month delay in starting one's originally preferred job under SAVE, about 60% of students switch to a dif-

[20] For example, see Fuster et al. (2020) for a detailed discussion of this issue in the literature that estimates marginal propensities to consume. In that literature, liquid wealth and other standard observables have very limited predictive power to identify hand-to-mouth households.

ferent job; the fraction of switchers increases to 76% (85%) when we extend the delay to 4 (6) months.

As a result, the distribution of students across jobs also changes, as shown in Figure 4. The first three bars represent the distribution under baseline SAVE without frictions (the same as in Figure 2): The fraction of students choosing Jobs A, B and C is 22%, 12% and 66%, respectively.[21] When faced with delays only in Job X (one's preferred job under SAVE without job market frictions), the fraction of students choosing the middle-growth Job B increases from 12% to 38% with a 2-month delay and to 53% with a 6-month delay; in contrast, the fraction choosing the high-growth Job C decreases from 66% to 39% with a 2-month delay and to 25% with a 6-month delay.

Table 4: Changes in Job Choices with Frictions

Forgiven to SAVE with delay in	(1) 0 month	(2) 2 months	(3) 4 months	(4) 6 months	(1) vs. (2) P-value	(1) vs. (3) P-value	(1) vs. (4) P-value
Steeper	0.217***	0.183***	0.190***	0.187***	0.042	0.152	0.122
	(0.016)	(0.015)	(0.016)	(0.016)			
Flatter	0.198***	0.389***	0.443***	0.502***	0.000	0.000	0.000
	(0.016)	(0.019)	(0.020)	(0.020)			
Same	0.585***	0.427***	0.367***	0.311***	0.000	0.000	0.000
	(0.020)	(0.020)	(0.019)	(0.019)			
Observations	627	627	627	627			

Notes: This table shows how students' job choices change when moving from a debt forgiven scenario to SAVE when job start under SAVE is delayed by 0, 2, 4, and 6 months in Columns (1) to (4). "Steeper" means that students switch to a job profile with a higher growth rate and lower initial earnings. Conversely, "flatter" means that students switch to a job profile with a lower growth rate and higher initial earnings. "Same" means the job choice is the same under the repayment plan and under Forgiven. Standard errors are reported in parentheses. ***, **, and * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

With large impacts on job choices, can job market frictions significantly curb the moral hazard issues documented in earlier sections? To answer this question, we contrast students' choices under SAVE with different degrees of job market frictions to their choices without

[21] We show the counterpart of Figure 4 in Appendix Figure B.2 separately for subgroups of students who choose Job A, Job B, and Job C under the frictionless SAVE case.

student debt burden and job market friction, i.e., choices under Forgiven. Column (1) of Table 4 re-presents results from Table 3 by showing the fraction of students who choose a steeper, a flatter, and the same job under SAVE (with no job market friction) relative to their choices under Forgiven. Columns (2), (3), and (4) show corresponding statistics when job choices under SAVE are made with a 2-, 4-, and 6-month delay imposed only on Job X (one's preferred job under SAVE without job market frictions), respectively.

Comparing across columns, we can see that with different degrees of job market frictions, the fraction of students choosing a steeper job profile than their choices under Forgiven remains stable around 18% to 22%. In contrast, job market frictions significantly increase the fraction of students choosing a flatter job profile than their choices under Forgiven (from 20% without job market friction to 50% with a 6-month delay imposed on Job X) and decreases the fraction of students choosing the same job as their choices under Forgiven (from 59% without job market friction to 31% with a 6-month delay imposed on Job X).

Notice that the friction we introduced in the survey is asymmetric in that the delay only applies to one's most preferred job under SAVE without job market frictions (which is Job C—the steepest job profile—for 66% of students). This asymmetry is biased toward lowering the fraction of Job C takers under SAVE with job market frictions and hence overstating the extent to which job market frictions can curb moral hazards. Despite this, we find consistently that a significant fraction (18% to 22%) of students would choose job profiles steeper than their choices under Forgiven, indicating that labor market frictions have a limited role in curbing IDR-induced moral hazards.

4.4 Non-Pecuniary Job Characteristics

As suggested in prior literature, college loan repayment can also distort one's choices of jobs along non-pecuniary dimensions. We also find such patterns in Table 5. Of all respondents, 17% report that they would change their career trade-off between wages and amenities (toward jobs with higher amenities along at least one dimension) after learning about IDRs from the survey (Column (1)). We also see similar patterns for the subsamples of students who are least likely constrained (Column (2)) and most likely constrained (Column (3)), as defined in Section 4.2.

Of the 17% of students who report that they would change their career choices, 37%

mentioned that they would now look for a job with a better work-life balance or less stress, 30% indicated that they would seek a job more aligned with their interests, and 29% said they would look for a job with more benefits (such as vacations or flexible work schedules), even if it meant lower take-home pay.

Table 5: Changes in Career Trade-Offs

	(1) All	(2) Least likely constrained	(3) Most likely constrained
Changed	0.169	0.168	0.185
Unchanged	0.831	0.832	0.815
Observations	627	399	124

Notes: This table shows the proportion of students who report that they would change their career trade-off between wage and amenities (toward jobs with higher amenities along at least one dimension) after learning about income-driven repayment plans (IDRs) from the survey. Column (1) includes all students, Column (2) restricts to students who are "least likely constrained" (not switch to a flatter profile from the Forgiven plan to the SP plan), and Column (3) restricts to students who are "most likely constrained" (switch to a flatter profile from the Forgiven plan to the SAVE plan).

Likewise, consistent with prior literature, we also find that college loan repayment plans can affect major choice: 6.7% of students say they would have chosen a different major once they learn about the income-driven repayment plans. As expected, this proportion is slightly higher for freshmen in our sample (7.4% versus 6% for seniors, p-value of difference is 0.476).

4.5 Own Choices versus Recommendations for "Wolverine"

So far, we have focused on students' stated choices for themselves. We next explore how these compare with their recommendations for "Wolverine," an average UM graduate. There is no reason why, for any given student, the two choices should be identical since students likely have private information about themselves that may justify advice for themselves that differs from that for a typical UM student. In addition, even though the survey is anonymous, some students may be less comfortable – due to experimenter demand effects or social desirability – exhibiting moral hazard in making choices for themselves. This latter type of consideration

would lead to a systematic bias: Even an average UM student would choose differently for themselves than for the average UM student. Our survey design allows us to detect such biases.

Table 6 shows how the recommendations compare to own choices for each of the repayment plans. Specifically, the three columns of the table show the proportion of students whose recommendations for "Wolverine" are flatter, the same, and steeper, relative to their own choices. Panel (a) shows the recommendations and choices are fully aligned for 61% of individuals for the SP plan. The corresponding proportions are slightly higher under IBR and SAVE. Importantly, when recommendations differ from own choices, the fraction recommending flatter job profiles (relative to own choice) is quite similar to the fraction recommending steeper job profiles.

In panel (b), we focus on the subset of individuals who are least likely to be borrowing constrained, i.e., those who do not switch to a flatter job profile under SP (the most stringent plan) relative to the Forgiven case. The majority of these individuals also recommend the same jobs for "Wolverine" as their own choices. However, when they make a recommendation that differs from their own choices, it is significantly more likely to be a flatter job profile than a steeper one, under SP and IBR (the two less generous plans). This suggests that these students realize that a typical UM student is likely to be more constrained than they are, a factor they take into account when making recommendations for others.

Panel (c) shows the results for the most-likely borrowing-constrained students, i.e., those who choose a flatter profile under SAVE (the most generous plan) than under Forgiven. Relative to the top two panels, a lower fraction of these students make recommendations identical to their own choices. Most noticeably, under SAVE, more than half (52%) of these students recommend job profiles steeper than their own choices. Again, this makes sense since these students are more constrained than a typical student.

Overall, the patterns in Table 6 are quite sensible and reassuring. Panel (a) indicates no evidence of a systematic bias in own choices; Panels (b) and (c) show that students meaningfully take private information about their own situations into account when making choices for themselves.

Table 6: Own Choices vs. Recommendations for Others

Compared to own choice, recommendation:	(1) **Flatter**	(2) **Same**	(3) **Steeper**	(1) vs. (3) **P-value**
Panel (a): Sample: All				
SP	0.195	0.614	0.191	0.898
IBR	0.182	0.635	0.183	0.947
SAVE	0.140	0.694	0.166	0.249
Observations			627	
Panel (b): Sample: Least likely constrained				
SP	0.241	0.644	0.115	0.000
IBR	0.201	0.657	0.143	0.049
SAVE	0.128	0.722	0.150	0.394
Observations			339	
Panel (c): Sample: Most likely constrained				
SP	0.194	0.581	0.226	0.581
IBR	0.266	0.516	0.218	0.441
SAVE	0.065	0.419	0.516	0.000
Observations			124	

Notes: The table compares job choices under three repayment plans: SP, IBR, and SAVE, based on respondents' own choices and their recommendations for the average UM graduate "Wolverine." A "flatter" profile means that compared to their own choice, the recommendation involves a job with a lower growth rate and higher initial earnings. Conversely, a "steeper" profile indicates that the recommendation involves a job with a higher growth rate and lower initial earnings. "Same" means that the most preferred job profile for their own choice and their recommendation is identical. Panel (a) presents results for the full sample. Panel (b) includes individuals who are unconstrained under SP; if someone does not switch to a flatter profile when transitioning from the Forgiven plan to the SP plan, they are considered "least likely constrained". Panel (c) focuses on individuals constrained under SAVE; if someone switches to a flatter profile when transitioning from the Forgiven plan to the SAVE plan, they are considered "most likely constrained". The p-values test the significance of the difference between the values in Column (1) and Column (3).

5 Sustainability of IDRs: Private Market vs. and Government

IDR-induced moral hazards, when defined as labor-supply adjustments, have been considered minor in the prior literature in that they cannot explain why IDRs do not exist in private markets. Considering potential moral hazards along the career-path margin, in this section,

we revisit this issue by calculating the profitability of IDRs for private lenders and the Government, using survey respondents' stated own job choices under corresponding repayment plans.

Column (1) of Table 7 presents the discounted net government revenue per student, calculated as the sum of lifetime (40 working years) income taxes and loan repayments, minus the loan amount, all discounted to the year of loan initiation.[22] Column (2) shows the discounted per-student loan repayment minus the loan amount, which represents the profit for a private lender (we refer to it as the loan profit). It should be noted that these calculations are based on the assumption of no default and full tax compliance, which may not hold for all borrowers in reality. As such, our calculations may overestimate government revenue and loan profit.

In Panel (a), we perform these calculations for the three repayment policy regimes (SP, IBR, SAVE) without job market frictions. Government's net revenue is highest under SAVE ($225.6K per student) and lowest under SP ($212.8K per student). This is because individuals tend to choose higher lifetime-income career paths as the repayment plan becomes more generous. However, in terms of loan profits, SAVE is the least profitable, resulting in a *loss* of $3.2K per student.

Panel (b) examines scenarios where we introduce 2-, 4-, and 6-month delays for students' most preferred jobs under SAVE without job market frictions. Losses are reduced as frictions discourage a student from selecting their preferred job profile; for most students, this is Job C, which has a low starting wage and hence low repayment under SAVE. Nevertheless, across all cases, the loan profit is negative. That is, with or without job market frictions, moral hazards alone would make SAVE inviable for private lenders.

Finally, Panel (c) re-computes government revenues and loan profits under IBR and SAVE but with individuals' career choices under SP. The comparison between Panel (a) and Panel (c) highlights the importance of accounting for behavioral responses to loan repayment plans. For example, were one to ignore behavioral responses, one would draw the mistaken conclusion that government's total net revenue is lowest, rather than highest, under SAVE (Column (1)). Moreover, one would also significantly under-estimate the loss from SAVE

[22]Government revenue calculations assume the 2023 federal income tax rate, a standard tax deduction of $13,850 for an individual, single-filing status, and do not include additional tax credits. In our survey, the total hypothetical loan amount is distributed evenly over four college years. All dollar amounts are discounted at an annual interest rate of 4% and expressed in present value terms relative to Year 1 in college.

Table 7: Government Total Net Revenue and Loan Repayment Under Different Plans

($1,000)	(1) Government total net revenue	(2) Repayment - loan
Panel (a): Frictionless		
SP	212.83	0.69
IBR	222.08	1.46
SAVE	225.56	-3.15
Panel (b): With Job Market Friction		
SAVE 2m	214.23	-1.92
SAVE 4m	212.14	-1.63
SAVE 6m	209.01	-1.24
Panel (c): Fixing Job Choice under SP		
IBR with SP choice	213.59	1.45
SAVE with SP choice	210.59	-1.55

Notes: This table illustrates the implications of students' plan-specific choices on the government's budget. Column (1) presents the discounted net revenue per student, which is the sum of one's lifetime (40 working years) income taxes and loan repayment minus the loan amount, all discounted to the year of loan initiation. Column (2) shows the discounted per-student loan repayment minus the loan amount. In panel (a), we perform these calculations for the three repayment policy regimes (SP, IBR, SAVE) without job market frictions. Panel (b) presents the cases where we introduce 2-, 4-, and 6-month delays for one's most preferred job under SAVE. Panel (c) re-computes government revenues and loan profits under IBR and SAVE, assuming individuals' career choices are made under SP.

were it carried out by a private lender (Column (2)).[23]

6 Conclusion

Income-driven repayment plans (IDRs) are becoming increasingly prevalent and generous. Associated with IDRs' benefits (e.g., lowering borrowers' repayment burden during low-income periods) are concerns about adverse selection and moral hazard. Relative to adverse

[23]In our survey, the three job profiles exhibit linear wage growths, while a typical lifetime income growth slows down later in one's career. We therefore re-compute government revenue assuming that after 30 working years, one's income stops growing and remains flat for the last 10 years. Table C.4 in the appendix shows that the qualitative conclusion stays the same: Although SAVE results in a negative loan profit, it leads to the highest government total revenue.

selection, IDR-induced moral hazard is often considered as a second-order issue and therefore has received much less attention in the literature and policy discussions.

We contribute to this discussion by showing, theoretically and empirically, the relevance of IDR-induced moral hazard. Theoretically, we show that IDRs can induce a clearly-defined moral hazard: Student loan borrowers may respond to IDRs by overinvesting in their human capital and earning less early in their career, the period when they are under the debt-repayment obligation, relative to a case where debt is totally forgiven. Empirically, we design a model-guided survey to elicit the same individual's job choices under different debt repayment plans, enabling us to quantify how repayment plans affect one's career choices. We find consistently, with or without labor market frictions, that a significant fraction of students would choose a steeper job profile (with lower initial wages) under an IDR relative to their choices in a debt-forgiven case.

More importantly, recognizing the fact that borrowers can adjust their career paths and the timing of their income streams, we show that, contrary to popular belief, moral hazard *alone* would make a generous IDR plan (e.g., SAVE) inviable for private lenders; this is a novel finding. In contrast, the Government can undo the loss from student loans by collecting borrowers' lifetime income taxes.

On the methodological front, our paper shows how individual-level variation in choices under different plans enables the researcher to uncover behavioral responses that are heterogeneous across individuals (and consistent with our model predictions). The fact that this heterogeneity is not explained by standard observables underscores the value of having variation in choice scenarios at the individual level.

It is worth noting that, in this paper, we focus on how individuals sort into different career paths or income profiles under different repayment plans. In our scenarios, earnings are otherwise deterministic. IDRs obviously provide insurance against income risk (Gervais et al., 2023) and therefore may induce some borrowers to strategically sort into careers with higher income risks. This dimension should be explored in future work.

In addition, to study the relevance of moral hazard issues, we shut down the adverse selection margin in our survey on purpose. Given our finding that moral hazard can be a serious threat to IDRs and the finding from previous literature about the severity of adverse selection (Herbst et al., 2022; Herbst and Hendren, 2024), another important direction for future research is to quantify how the two types of threats interact and how they are jointly

distributed across loan takers. Understanding this is important for the effective design of repayment policies.

References

Abourezk-Pinkstone, H. (2023). Student loan debt and risk preferences on the job market. Working Paper.

Abraham, K. G., E. Filiz-Ozbay, E. Y. Ozbay, and L. J. Turner (2020). Framing effects, earnings expectations, and the design of student loan repayment schemes. *Journal of Public Economics 183*, 104067.

Barr, N., B. Chapman, L. Dearden, and S. Dynarski (2017). Getting student financing right in the us: lessons from australia and england. *Centre for Global Higher Education*.

Ben-Porath, Y. (1967). The production of human capital and the life cycle of earnings. *Journal of Political Economy 75*(4), 352–365.

Black, S. E., J. T. Denning, L. J. Dettling, S. Goodman, and L. J. Turner (2023). Taking it to the limit: Effects of increased student loan availability on attainment, earnings, and financial well-being. *American Economic Review 113*(12), 3357–3400.

Briones, D. and S. Turner (2025). Labor, loans and leisure: The impact of the student loan payment pause. *Working Paper*.

Britton, J. and J. Gruber (2020). Do income contingent student loans reduce labor supply? *Economics of Education Review 79*, 102061.

Bucarey, A., D. Contreras, and P. Muñoz (2020). Labor market returns to student loans for university: evidence from chile. *Journal of Labor Economics 38*(4), 959–1007.

Burdman, P. (2005). The Student Debt Dilemma: Debt Aversion as a Barrier to College Access. *Center for Studies in Higher Education, UC Berkeley*.

Catherine, S. and C. Yannelis (2023). The distributional effects of student loan forgiveness. *Journal of Financial Economics 147*(2), 297–316.

Chapman, B. (2006). Income contingent loans for higher education: International reforms. *Handbook of the Economics of Education 2*, 1435–1503.

Chapman, B. and A. Leigh (2009). Do very high tax rates induce bunching? implications for the design of income contingent loan schemes. *Economic Record 85*(270), 276–289.

Chapman, S. (2016). Student loans and the labor market: Evidence from merit aid programs. *Washington Center for Equitable Growth*.

Common Data Set (2023). Common data set 2023-2024, University of Michigan, Ann Arbor.

Daniels Jr, G. E. and A. Smythe (2019). Student debt and labor market outcomes. In *AEA Papers and Proceedings*, Volume 109, pp. 171–175. American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203.

de Silva, T. (2024). Insurance versus moral hazard in income-contingent student loan repayment. *Available at SSRN 4614108*.

Del Rey, E. and B. Verheyden (2011). Loans, insurance and failures in the credit market for students. *CESifo Working Paper Series* (3410). Available at SSRN: https://ssrn.com/abstract=1808639 or http://dx.doi.org/10.2139/ssrn.1808639.

Deming, D. J. and K. Noray (2020, 06). Earnings dynamics, changing job skills, and stem careers*. *The Quarterly Journal of Economics 135*(4), 1965–2005.

Denning, J. T. and T. R. Jones (2021). Maxed out?: The effect of larger student loan limits on borrowing and education outcomes. *Journal of Human Resources 56*(4), 1113–1140.

Di Maggio, M., A. Kalda, and V. Yao (2019). Second chance: Life without student debt. Technical report, National Bureau of Economic Research.

Dinerstein, M., D. Koustas, C. Yannelis, and S. Earnest (2024). Student loan forgiveness. *Available at SSRN 4899176*.

Federal Reserve Bank of New York (2022). Household debt and credit report. https://www.newyorkfed.org/microeconomics/hhdc.html. Center for Microeconomic Data.

Federal Student Aid (2014). Federal student aid posts new quarterly reports to fsa data center.

Federal Student Aid (2023). Federal student aid posts new quarterly reports to fsa data center.

Field, E. (2009). Educational debt burden and career choice: Evidence from a financial aid experiment at nyu law school. *American Economic Journal: Applied Economics 1*(1), 1–21.

Findeisen, S. and D. Sachs (2016). Education and optimal dynamic taxation: The role of income-contingent student loans. *Journal of Public Economics 138*, 1–21.

Friedman, M. (1955). The role of government in education. *Economics and the public interest 2*(2), 85–107.

Fuster, A., G. Kaplan, and B. Zafar (2020, 11). What would you do with $500? spending responses to gains, losses, news, and loans. *The Review of Economic Studies 88*(4), 1760–1795.

Fuster, A. and B. Zafar (2023). Survey experiments on economic expectations. In R. Bachmann, G. Topa, and W. van der Klaauw (Eds.), *Handbook of Economic Expectations*, pp. 107–130. Academic Press.

Gary-Bobo, R. J. and A. Trannoy (2015). Optimal student loans and graduate tax under moral hazard and adverse selection. *The RAND Journal of Economics 46*(3), 546–576.

Gervais, M., Q. Liu, and L. Lochner (2023). The insurance implications of government student loan repayment schemes. In *AEA Papers and Proceedings*, Volume 113, pp. 535–540. American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203.

Goodman, S., A. Isen, and C. Yannelis (2021). A day late and a dollar short: Liquidity and household formation among student borrowers. *Journal of Financial Economics 142*(3), 1301–1323.

Hampole, M. (2024). Financial frictions and human capital investments. *Working Paper*.

Herbst, D. (2023). The impact of income-driven repayment on student borrower outcomes. *American Economic Journal: Applied Economics 15*(1), 1–25.

Herbst, D. and N. Hendren (2024). Opportunity unraveled: Private information and the missing markets for financing human capital. *American Economic Review 114*(7), 2024–2072.

Herbst, D., M. Palacios, and C. Yannelis (2022). Equity and incentives in household finance. *Available at SSRN 4398141*.

Jacobs, J. A. (2021). Income-share agreements on the job market: Debt versus equity. Technical report, Working Paper.

Karamcheva, N., J. Perry, and C. Yannelis (2020). Income-driven repayment plans for student loans: Budgetary costs and policy options. *Congressional Budget Office*.

Lochner, L. and A. Monge-Naranjo (2016). Chapter 8 - student loans and repayment: Theory, evidence, and policy. Volume 5 of *Handbook of the Economics of Education*, pp. 397–478. Elsevier.

Lochner, L., T. Stinebrickner, and U. Suleymanoglu (2021, February). Parental support, savings, and student loan repayment. *American Economic Journal: Economic Policy 13*(1), 329–71.

Luo, M. and S. Mongey (2019). Assets and job choice: Student debt, wages and amenities. Technical report, National Bureau of Economic Research.

Mazzone, L. and M. Folch (2024). Go big or buy a home: The impact of student debt on career and housing choices. *Available at SSRN 4966497*.

Mezza, A., D. Ringo, S. Sherlund, and K. Sommer (2020). Student loans and homeownership. *Journal of Labor Economics 38*(1), 215–260.

Minicozzi, A. (2005). The short term effect of educational debt on job decisions. *Economics of Education Review 24*(4), 417–430.

Mueller, H. M. and C. Yannelis (2019). The rise in student loan defaults. *Journal of Financial Economics 131*(1), 1–19.

Mumford, K. J. (2020). Student selection into an income share agreement. In *Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association*, Volume 113, pp. 1–42. JSTOR.

Murto, M. J. (2024). Student loans and college majors: The role of repayment plan structure. Working paper.

National Center for Education Statistics (2023). Loans for undergraduate students and debt for bachelor's degree recipients. condition of education. U.S. Department of Education, Institute of Education Sciences.

Nerlove, M. (1975). Some problems in the use of income-contingent loans for the finance of higher education. *Journal of Political Economy 83*(1), 157–183.

Perna, L. W. (2008). Understanding high school students' willingness to borrow to pay college prices. *Research in Higher Education 49*, 589–606.

Rothstein, J. and C. E. Rouse (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics 95*(1), 149–163.

Saez, E., J. Slemrod, and S. H. Giertz (2012). The elasticity of taxable income with respect to marginal tax rates: A critical review. *Journal of economic literature 50*(1), 3–50.

Weidner, J. (2016). Does student debt reduce earnings?.

Wiswall, M. and B. Zafar (2017, 08). Preference for the workplace, investment in human capital, and gender*. *The Quarterly Journal of Economics 133*(1), 457–507.

Yannelis, C. and G. Tracey (2022). Student loans and borrower outcomes. *Annual Review of Financial Economics 14*(1), 167–186.

Ziebarth, N. and M. Gervais (2017). Life after debt: Post-graduation consequences of federal student loans. In *2017 Meeting Papers*, Number 238. Society for Economic Dynamics.

Online Appendix

Table of Contents

A Proofs **40**

A.1 Backward Induction to Derive Interior Optimal Investment i^* 40

A.2 Comparative Statics for Optimal Investment i^* 45

A.3 Corner Solution for Optimal Investment i^* 45

A.4 Condition for Entering Corner Solution 47

B Appendix Figures **49**

C Appendix Tables **51**

D Back-loaded Earning Profiles **56**

E Student Survey **57**

E.1 Video Scripts 58

E.2 Survey 61

A Proofs

To sharpen the illustration, we adopt functional forms commonly used in the literature that allow us to solve the model analytically. In particular, we assume that

$$u(c) = -1/c,$$

and

$$k_{t+1} = K\left(k_t, i_t\right) = \left(1-\delta\right)k_t + Ak_t^{\alpha_1} i_t^{\alpha_2},$$

where δ is the rate of human capital depreciation, A, α_1, and α_2 are parameters governing the effectiveness of human capital production.

A.1 Backward Induction to Derive Interior Optimal Investment i^*

Period 3

In period 3, we have:

$$C_3 = a_2(1+r)$$

The utility from consumption in period 3 is:

$$u(C_3) = -\frac{1}{C_3} = -\frac{1}{a_2(1+r)}$$

Period 2: Express a_2 as a Function of i and a_1

In period 2, we have:

$$C_2 = (1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - a_2 + a_1(1+r)$$

$$u(C_2) + \beta u(C_3) = -\frac{1}{(1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - a_2 + a_1(1+r)} - \frac{\beta}{a_2(1+r)}$$

Using the first-order condition for optimal a_2:

$$\frac{\beta(1+r)}{C_3^2} = \frac{1}{C_2^2}$$

Substitute $C_3 = a_2(1+r)$:

$$a_2 = \sqrt{\frac{\beta}{1+r}} C_2$$

Substitute a_2 into C_2:

$$C_2 = (1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - \sqrt{\frac{\beta}{1+r}} C_2 + a_1(1+r)$$

$$C_2 \left(1 + \sqrt{\frac{\beta}{1+r}}\right) = (1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r)$$

$$C_2 = \frac{(1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r)}{1 + \sqrt{\frac{\beta}{1+r}}}$$

We now have a_2 as a function of i and a_1:

$$a_2 = \sqrt{\frac{\beta}{1+r}} \frac{(1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r)}{1 + \sqrt{\frac{\beta}{1+r}}}$$

Period 1: Solve for a_1 and i

In period 1, under IDR we have:

$$C_1 = k_1(1-\tau)(1-i) - a_1$$

The total utility function is:

$$U = u(C_1) + \beta u(C_2) + \beta^2 u(C_3)$$

$$U = -\frac{1}{C_1} - \frac{\beta}{C_2} - \frac{\beta^2}{C_3}$$

The FOC for a_1 is:

$$\frac{\partial U}{\partial a_1} = -\frac{1}{C_1^2} - \beta \frac{\partial}{\partial a_1}\left(\frac{1}{C_2}\right) - \beta^2 \frac{\partial}{\partial a_1}\left(\frac{1}{C_3}\right) = 0$$

Since $C_2 = \frac{(1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r)}{1+\sqrt{\frac{\beta}{1+r}}}$, we have:

$$\frac{1}{C_2} = \frac{1+\sqrt{\frac{\beta}{1+r}}}{(1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r)}$$

Differentiating with respect to a_1:

$$\frac{\partial}{\partial a_1}\left(\frac{1}{C_2}\right) = -\frac{(1+\sqrt{\frac{\beta}{1+r}})(1+r)}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

Given $C_3 = \sqrt{\beta(1+r)}C_2$, we have:

$$\frac{1}{C_3} = \frac{1}{\sqrt{\beta(1+r)}C_2}$$

Differentiating with respect to a_1:

$$\frac{\partial}{\partial a_1}\left(\frac{1}{C_3}\right) = -\frac{(1+\sqrt{\frac{\beta}{1+r}})(1+r)}{\sqrt{\beta(1+r)}((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

The FOC becomes:

$$\frac{1}{C_1^2} = \frac{\beta(1+r)(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

$$\sqrt{\beta(1+r)}(1+\sqrt{\frac{\beta}{1+r}})(k_1(1-\tau)(1-i) - a_1) = (1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r)$$

Similarly for SP, the FOC becomes:

$$\sqrt{\beta(1+r)}(1+\sqrt{\frac{\beta}{1+r}})(k_1(1-i)-l_0-a_1)=(1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r)$$

Using the FOC for i under IDR:

$$\frac{\partial U}{\partial i}=-\frac{k_1(1-\tau)}{C_1^2}-\beta\frac{\partial}{\partial i}\left(\frac{1}{C_2}\right)-\beta^2\frac{\partial}{\partial i}\left(\frac{1}{C_3}\right)=0$$

We need to differentiate both C_2 and C_3 with respect to i.

$$C_2=\frac{(1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r)}{1+\sqrt{\frac{\beta}{1+r}}}$$

$$C_3=\sqrt{\beta(1+r)}C_2$$

Differentiating with respect to i:

$$\frac{\partial C_2}{\partial i}=\frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}}{1+\sqrt{\frac{\beta}{1+r}}}$$

$$\frac{\partial}{\partial i}\left(\frac{1}{C_2}\right)=-\frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})}{((1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r))^2}$$

$$\frac{\partial C_3}{\partial i}=\sqrt{\beta(1+r)}\frac{\partial C_2}{\partial i}=\sqrt{\beta(1+r)}\frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}}{1+\sqrt{\frac{\beta}{1+r}}}$$

$$\frac{\partial}{\partial i}\left(\frac{1}{C_3}\right)=-\frac{\sqrt{\beta(1+r)}Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})}{\left(\sqrt{\beta(1+r)}((1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r))\right)^2}$$

The FOC becomes:

$$\frac{k_1(1-\tau)}{C_1^2}=\beta\frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})}{((1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r))^2}+\beta^2\frac{\sqrt{\beta(1+r)}Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})}{\left(\sqrt{\beta(1+r)}((1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r))\right)^2}$$

Simplify these terms:

$$\frac{k_1(1-\tau)}{(k_1(1-i)(1-\tau)-a_1)^2} = \beta \frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

Similarly for FOC under SP:

$$\frac{k_1}{(k_1(1-i)-l_0-a_1)^2} = \beta \frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

Combine and Solve for i

Using both conditions, we can solve for i under IDR:

$$\beta \frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2} = k_1(1-\tau) \frac{\beta(1+r)(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

$$i = \left(\frac{(1-\tau)(1+r)}{\alpha_2 A k_1^{\alpha_1-1}}\right)^{\frac{1}{\alpha_2-1}}$$

Similarly for i under SP:

$$\beta \frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2} = k_1 \frac{\beta(1+r)(1+\sqrt{\frac{\beta}{1+r}})^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} + a_1(1+r))^2}$$

$$i = \left(\frac{(1+r)}{\alpha_2 A k_1^{\alpha_1-1}}\right)^{\frac{1}{\alpha_2-1}}$$

Therefore, we have

$$i^* = \begin{cases} \left(\frac{(1-\tau)(1+r)}{\alpha_2 A k_1^{\alpha_1-1}}\right)^{\frac{1}{\alpha_2-1}} & \text{if IDR,} \\ \left(\frac{(1+r)}{\alpha_2 A k_1^{\alpha_1-1}}\right)^{\frac{1}{\alpha_2-1}} & \text{if SP.} \end{cases}$$

A.2 Comparative Statics for Optimal Investment i^*

Since we have

$$i^* = \begin{cases} \left(\frac{(1-\tau)(1+r)}{\alpha_2 A k_1^{\alpha_1 - 1}}\right)^{\frac{1}{\alpha_2 - 1}} & \text{if IDR,} \\ \left(\frac{(1+r)}{\alpha_2 A k_1^{\alpha_1 - 1}}\right)^{\frac{1}{\alpha_2 - 1}} & \text{if SP.} \end{cases}$$

Given that α_1 and α_2 are between 0 and 1, we have the following properties for i^*:

- Increases with A, τ, α_1.
- Is independent of β, l_0.
- Decreases with k_1, r.

A.3 Corner Solution for Optimal Investment i^*

At the corner solution, we have $a_1 = -B$. The FOC for a_1 becomes:

$$\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)(k_1(1-\tau)(1-i)+B) < (1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - B(1+r)$$

$$B < \frac{(1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - \sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)k_1(1-\tau)(1-i)}{\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)+1+r}$$

Similarly, for SP, the FOC becomes:

$$\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)(k_1(1-i)-l_0+B) < (1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - B(1+r)$$

The FOC for i is:

$$\frac{k_1(1-\tau)}{(k_1(1-i)(1-\tau)+B)^2} = \beta \frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2 - 1}\left(1+\sqrt{\frac{\beta}{1+r}}\right)^2}{((1-\delta)k_1 + Ak_1^{\alpha_1} i^{\alpha_2} - B(1+r))^2}$$

$$\frac{\sqrt{k_1(1-\tau)}}{k_1(1-i)(1-\tau)+B} = \frac{\sqrt{\beta A k_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}}\left(1+\sqrt{\frac{\beta}{1+r}}\right)}{(1-\delta)k_1 + Ak_1^{\alpha_1}i^{\alpha_2} - B(1+r)}$$

Note that the RHS is decreasing with i given $\alpha_2 < 1$, as the denominator is increasing with i but the numerator is decreasing with i. Moreover, LHS is increasing with i. Therefore,

$$LHS(\tau=0) < LHS(\tau>0) \Leftrightarrow i^{\tau=0} > i^{\tau>0}$$

where $LHS(\tau=0)$ and $LHS(\tau>0)$ are evaluated at $i^{\tau=0}$:

$$LHS(\tau=0) = \frac{\sqrt{k_1}}{k_1(1-i^{\tau=0})+B}$$

$$LHS(\tau>0) = \frac{\sqrt{k_1(1-\tau)}}{k_1(1-i^{\tau=0})(1-\tau)+B}$$

Note that $LHS(\tau=0) < LHS(\tau>0)$

$$\Leftrightarrow B(1-\sqrt{1-\tau}) < k_1(1-i^{\tau=0})(\sqrt{1-\tau}-(1-\tau)) \Leftrightarrow B < k_1(1-i^{\tau=0})\sqrt{(1-\tau)}$$

In summary, if the borrowing constraint is not overly slack,

$$B < k_1(1-i^{\tau=0})\sqrt{(1-\tau)}$$

and in the corner solution

$$B < \frac{(1-\delta)k_1 + Ak_1^{\alpha_1}i^{\alpha_2} - \sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)k_1(1-\tau)(1-i)}{\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)+1+r}$$

we have

$$i^{\tau=0} > i^{\tau>0}, \quad \text{i.e.,} \quad i^{\text{forgive}} > i^{\text{IDR}}.$$

Similarly, for the FOC under SP:

$$\frac{k_1}{(k_1(1-i)-l_0+B)^2} = \beta \frac{Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}\left(1+\sqrt{\frac{\beta}{1+r}}\right)^2}{((1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}+a_1(1+r))^2}$$

$$\frac{\sqrt{k_1}((1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}-B(1+r))}{(k_1(1-i)-l_0+B)\sqrt{\beta Ak_1^{\alpha_1}\alpha_2 i^{\alpha_2-1}}} = 1+\sqrt{\frac{\beta}{1+r}}$$

LHS increases with l_0, so i needs to decrease as l_0 goes up to keep the LHS unchanged, which leads to $i^{l_0=0} > i^{l_0>0}, \quad i^{\text{forgive}} > i^{\text{SP}}$.

Therefore, we have

$$i^{\text{forgive}} > i^{\text{IDR}} \quad \text{if} \quad B < k_1(1-i^{\text{forgive}})\sqrt{(1-\tau)},$$

$$i^{\text{forgive}} < i^{\text{IDR}} \quad \text{if} \quad B > k_1(1-i^{\text{forgive}})\sqrt{(1-\tau)},$$

$$i^{\text{forgive}} > i^{\text{SP}}$$

A.4 Condition for Entering Corner Solution

The condition for entering the corner solution is

$$\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)(k_1(1-\tau)(1-i)+B) < (1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}-B(1+r)$$

$$B < \frac{(1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}-\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)k_1(1-\tau)(1-i)}{\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)+1+r}$$

Similarly, for SP:

$$B < \frac{(1-\delta)k_1+Ak_1^{\alpha_1}i^{\alpha_2}-\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)(k_1(1-i)-l_0)}{\sqrt{\beta(1+r)}\left(1+\sqrt{\frac{\beta}{1+r}}\right)+1+r}$$

It is straightforward to show that the right-hand side (RHS) is increasing with τ, meaning

stricter repayment plans (i.e., larger τ) will make this condition more likely to hold, thus leading to a corner solution. When comparing SP and IDR, as long as $k_1\tau(1-i) \leq l_0$ (i.e., the loan is not paid off under IDR in period 1), the RHS under IDR is smaller than under SP, making it more likely to violate this condition and thereby reducing the likelihood of reaching a corner solution compared to SP. Therefore, the probability of not entering a corner solution is: lower with higher τ under IDR, and lower under IDR compared to SP.

It is trivial to show that the RHS is increasing with A, α_1, and l_0. As a result, larger values of these parameters will make this condition more likely to hold, i.e., enter the corner solution. Larger B will more likely violate this condition, thereby reducing the likelihood of becoming a corner solution. The RHS is decreasing with β as the denominator is increasing with β but the numerator is decreasing with it. Hence, larger β will make it less likely to be a corner solution.

Therefore, the probability of not entering a corner solution is:

- Smaller with τ under IDR, and smaller under IDR relative to SP.
- Smaller with higher A, α_1, and l_0.
- Larger with higher B and β.

B Appendix Figures

Figure B.1: Screenshot of Eliciting Students' Job Preferences under the SP and IBR Plans

(a) Preferences under the SP Plan

Under the SP for debt repayment, your student debt repayments, net earnings will be as follows for the three jobs:

SP	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment	10	10	10
Total loan repayments paid	$48,598	$48,598	$48,598
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,860	$4,860	$4,860
Years 6-10	$4,860	$4,860	$4,860
Year 11 onwards	$0	$0	$0
Net annual income net of debt repayment in			
Years 1-5	$59,544	$50,886	$44,131
Years 6-10	$64,521	$59,765	$55,465
Years 11-20	$77,631	$80,884	$82,873
Years 21-30	$90,094	$108,702	$125,654

If you were on the SP, which job offer would you choose? Please rank these jobs from your most preferred job (Rank 1) to your least preferred job (Rank 3)

(b) Preferences under the IBR Plan

Under IBR, student debt repayment repayments would **depend on earnings**, your student debt repayments, net earnings will be as follows for the three jobs:

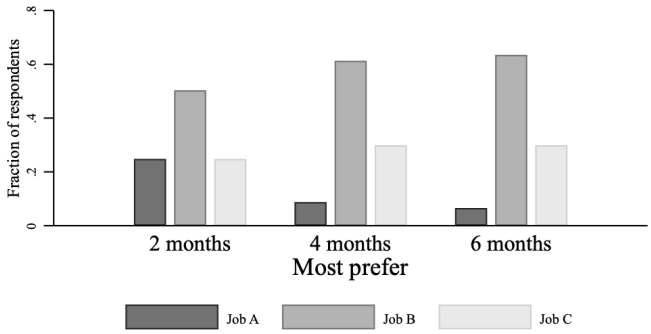
IBR	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	12	14	16
Total repayments paid	$50,516	$53,652	$56,591
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,143	$3,277	$2,601
Years 6-10	$4,374	$3,899	$3,469
Year 11 to the last year with positive loan repayment (n)	$4,535 (n=12)	$4,543 (n=14)	$4,576 (n=16)
Net annual income net of debt repayment in			
Years 1-5	$60,261	$52,469	$46,390
Years 6-10	$65,006	$60,726	$56,856
Years 11-20	$76,724	$79,067	$80,128
Years 21-30	$90,094	$108,701	$125,654

If you were on IBR, which job offer would you choose? Please rank these jobs from your most preferred job (Rank 1) to your least preferred job (Rank 3)

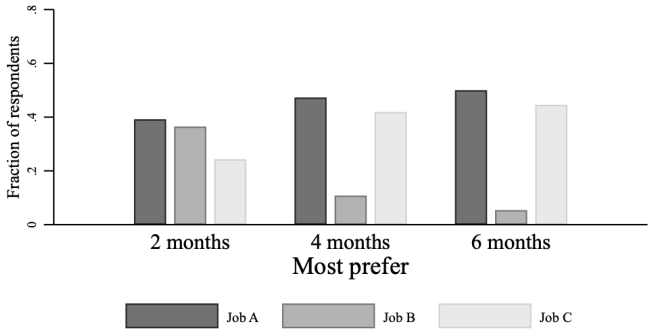
Notes: Notes: This figure displays screenshots where participants rank three jobs in order of preference under the Standard Payment (SP) plan (panel (a)) and the Income-Based Repayment (IBR) plan (panel (b)).

Figure B.2: Distribution of Job Choices with Job Start Delays Under the SAVE Plan

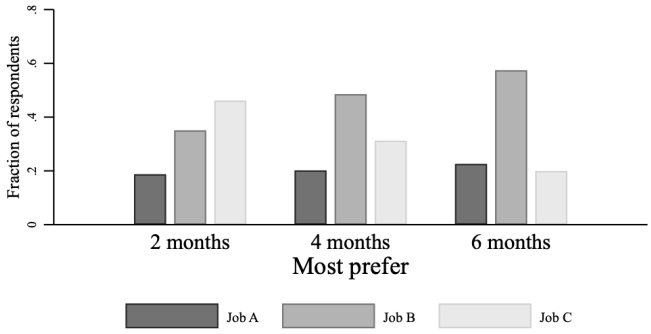
(a) Prefer Job A under SAVE



(b) Prefer Job B under SAVE



(c) Prefer Job C under SAVE



Notes: This figure illustrates the distributions of students' most preferred job choices under the SAVE plan with job start delays of 2, 4, and 6 months. Panels (a) to (c) respectively show the preferences of students who initially prefer jobs A, B, and C under the SAVE plan without frictions. The job profiles are defined as follows: Job A (high starting wage and low growth), Job B (medium starting wage and medium growth), and Job C (low starting wage and high growth).

C Appendix Tables

Table C.1: Prediction of Demographic Characteristics on Choose Steeper Jobs going from Forgiven to SAVE/IBR

Choose Steeper Jobs going from Forgiven to	(1) SAVE	(2) IBR
Female	-0.008	0.003
	(0.037)	(0.033)
Freshman	-0.001	0.026
	(0.036)	(0.032)
Asian/White	0.126**	0.005
	(0.055)	(0.049)
URM	0.013	-0.036
	(0.035)	(0.031)
First generation	0.002	-0.057*
	(0.034)	(0.030)
SAT combined	0.000	-0.000
	(0.000)	(0.000)
HS rank	-0.000	0.002**
	(0.001)	(0.001)
GPA	0.021	0.035
	(0.051)	(0.045)
Total education cost	0.000	0.000
	(0.000)	(0.000)
Total loan so far	-0.000	-0.000
	(0.000)	(0.000)
Have loan so far	0.107**	0.078**
	(0.042)	(0.038)
Family income ($1,000s)	-0.000	-0.000
	(0.000)	(0.000)
Risk preference 1-7	-0.007	-0.003
	(0.013)	(0.011)
P(BE)	-0.047	-0.067
	(0.056)	(0.050)
P(Engineering)	-0.000	0.032
	(0.050)	(0.044)
P(Science)	0.061	0.024
	(0.054)	(0.048)
Constant	-0.007	0.025
	(0.217)	(0.193)
Observations	627	627
Outcome mean	0.22	0.16
R2	0.03	0.04

Notes: This table presents estimates from a linear probability model assessing whether a student choose steeper jobs going from Forgiven to SAVE or IBR in Column (1) and (2). A steeper earnings profile implies that a student transitions to a job with a higher growth rate but lower initial earnings. Female is a binary indicator equal to 1 if the student self-identifies as female. Asian/White is a binary indicator equal to 1 if the student self-identifies as having Asian or White ethnicity. URM (Underrepresented Minority) includes U.S. Citizens or Permanent Residents who identify with any of the following racial or ethnic groups: Hispanic, Native American, Black or African American, Native Hawaiian, or Other Pacific Islander. First-gen is a binary indicator equal to 1 if the student is the first in their family to attend college. GPA refers to the student's current GPA at the time of the survey. Total education cost represents the cumulative cost of education, including tuition, room, and board, funded from all sources such as loans, scholarships, and grants, excluding scholarships or grants that do not require repayment. Have loan is a binary indicator equal to 1 if the student has taken out any loans. Family income is a self-reported value in thousands, ranging from $10,000 to over $550,000. Risk preferences are measured on a scale from 1 to 7, with higher values indicating greater risk tolerance. P(BE), P(Engineering), and P(Science) represent the reported probabilities of majoring in each respective category, where BE refers to Business and Economics. Standard errors are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table C.2: Job Choice Shifts from Forgiven to Repayment Plans

Forgiven to	(1) SAVE	(2) IBR	(3) SP	(1) v.s. (3) P-value	(2) v.s. (3) P-value
Weakly steeper	0.683***	0.565***	0.429***	0.000	0.000
	(0.019)	(0.020)	(0.020)		
Weakly flatter	0.282***	0.360***	0.491***	0.000	0.000
	(0.018)	(0.019)	(0.020)		
Same	0.035***	0.075***	0.080***	0.000	0.631
	(0.007)	(0.011)	(0.011)		
Observations	627	627	627		

Notes: This table shows how students' job choices change when moving from a debt forgiven scenario to various repayment plans (SP, IBR, SAVE), using a weakly steeper/flatter classification. "Weakly steeper" means that students either switch to a job profile with a higher growth rate and lower initial earnings, or they already chose Job C (the steepest job profile) and do not change plans. Conversely, "weakly flatter" means that students either switch to a job profile with a lower growth rate and higher initial earnings, or they already chose Job A (the flattest job profile) and do not change plans. "Same" means the job choice is the same under the repayment plan and under Forgiven. Standard errors are reported in parentheses. ***, **, and * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table C.3: Prediction of Demographic Characteristics on Implied Binding Conditions of Budget Constraints

	(1) Most likely constrained	(2) Least likely constrained
Female	0.009	-0.000
	(0.033)	(0.040)
Freshman	0.035	-0.034
	(0.035)	(0.042)
Asian/White	0.015	0.102
	(0.053)	(0.064)
URM	-0.002	0.006
	(0.033)	(0.040)
First generation	0.046	-0.015
	(0.033)	(0.040)
SAT	-0.000	0.000
	(0.000)	(0.000)
HS rank	0.001	0.001
	(0.001)	(0.001)
GPA	-0.066	0.017
	(0.049)	(0.059)
Total education cost	0.000	0.000
	(0.000)	(0.000)
Total loan so far	0.000	-0.000
	(0.000)	(0.000)
Have loan so far	0.013	0.046
	(0.041)	(0.049)
Family income ($1,000s)	0.000	-0.000
	(0.000)	(0.000)
Risk preference 1-7	0.028**	-0.011
	(0.012)	(0.015)
Constant	0.222	0.456*
	(0.203)	(0.245)
Observations	627	627
Outcome mean	0.20	0.64
R2	0.03	0.02

Notes: This table presents estimates from a linear probability model assessing whether a student is implied to have binding borrowing constraints. A steeper earnings profile implies that a student transitions to a job with a higher growth rate but lower initial earnings, whereas a flatter earnings profile indicates a switch to a job with a lower growth rate but higher initial earnings. If a student transitions to a flatter profile when moving from the Forgiven plan to the SAVE plan, they are classified as "most likely constrained." If a student does not switch to a flatter earnings profile when moving from the Forgiven plan to the Standard Payment (SP) plan, they are classified as "least likely constrained." Female is a binary indicator equal to 1 if the student self-identifies as female. Asian/White is a binary indicator equal to 1 if the student self-identifies as having Asian or White ethnicity. URM (Underrepresented Minority) includes U.S. Citizens or Permanent Residents who identify with any of the following racial or ethnic groups: Hispanic, Native American, Black or African American, Native Hawaiian, or Other Pacific Islander. First-gen is a binary indicator equal to 1 if the student is the first in their family to attend college. GPA refers to the student's current GPA at the time of the survey. Total education cost represents the cumulative cost of education, including tuition, room, and board, funded from all sources such as loans, scholarships, and grants, excluding scholarships or grants that do not require repayment. Have loan is a binary indicator equal to 1 if the student has taken out any loans. Family income is a self-reported value in thousands, ranging from $10,000 to over $550,000. Risk preferences are measured on a scale from 1 to 7, with higher values indicating greater risk tolerance. Standard errors are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table C.4: Government Total Net Revenue and Loan Repayment Under Different Plans When Income Growth is Non-Linear

($1,000s)	(1) Government total net revenue	(2) Repayment - loan
Panel (a): Frictionless		
Forgiven	174.08	-34.82
SP	198.28	0.69
IBR	205.16	1.46
SAVE	206.28	-3.15
Panel (b): With Job Market Friction		
SAVE 2m	198.65	-1.92
SAVE 4m	197.29	-1.63
SAVE 6m	195.23	-1.24
Panel (c): Fixing Job Choice under SP		
IBR with SP choice	199.04	1.45
SAVE with SP choice	196.04	-1.55

Notes: This table illustrates the implications of students' plan-specific choices on the government's budget. Column (1) presents the discounted net revenue per student, which is the sum of one's lifetime (40 working years, with income growth stopping after 30 years and remaining flat for the last 10 years) income taxes and loan repayment minus the loan amount, all discounted to the year of loan initiation. Column (2) shows the discounted per-student loan repayment minus the loan amount. In panel (a), we perform these calculations for the four repayment policy regimes (Forgiven, SP, IBR, SAVE) without job market frictions. Panel (b) presents the cases where we introduce 2-, 4-, and 6-month delays for one's most preferred job under SAVE. Panel (c) re-computes government revenues and loan profits under IBR and SAVE, assuming individuals' career choices are made under SP.

D Back-loaded Earning Profiles

To test the existence of earning profiles consistent with the Ben-Porath model or models with back-loaded contracts, we construct an earnings panel based on the NLSY97 for Bachelor's degree earners. For earnings measures, we use annual reported income divided by annual hours worked, which is then converted to potential annual earnings by multiplying by 2080 hours. Observations below the 1st percentile and above the 99th percentile are dropped. Due to sample attrition, we further bin earnings observed with work experience in 9–11 years for the analysis.[24]

We analyze the relationship between initial earnings and the earnings growth rate, as shown in Table D.1. The first column shows changes in earnings growth rate (%) associated with an increase in initial earnings. This relationship is negative, reflecting a feature of "back-loaded" profiles. Importantly, we see that this negative relationship also holds if we control for major fixed effects and initial occupation fixed effects. This suggests that back-loaded profiles are not solely driven by differences in initial occupations.[25]

Table D.1: Earnings Growth Rate (%) Over 9-11 Years on Initial Earnings

	(1)	(2)	(3)
Initial earnings ($1,000s)	-0.076***	-0.073***	-0.077**
	(0.026)	(0.027)	(0.032)
Observations	1,087	1,077	1,071
Outcome mean	69.50	69.93	70.06
Demographics control	Yes	Yes	Yes
Cohort & major FEs		Yes	Yes
Initial occupation FEs			Yes

Notes: This table presents estimates from an OLS regression of the earnings growth rate from initial earnings to earnings in 9–11 years after. The growth rate is calculated as $\frac{(\text{earnings in 9–11 years} - \text{initial earnings})}{\text{initial earnings}} \times 100\%$. Demographic controls include indicators for gender and race. Cohort fixed effects (FEs) are indicators for each graduation year, major FEs correspond to categories defined by the CIP code, and initial occupation FEs are indicators for each occupation. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

[24] If multiple earnings observations are available for an individual between 9 and 11 years, the maximum value is used.

[25] It is worth noting that measurement errors in earnings could also lead to a negative correlation. Thus, these findings are only suggestive.

E Student Survey

The survey is structured as follows. We first ask respondents to watch two videos that explain the details of each plan for a hypothetical student named "Wolverine". In the first 3.5-minute video, we explain SP and IBR, detailing how monthly repayments are determined, the length of payments, and using an example of a recent UM bachelor's graduate with the middle-profile Job B to illustrate how repayments may (or may not) depend on one's income. In the second 4-minute video, we introduce the SAVE plan, its repayment rules, and loan forgiveness rules. We again use the same example to highlight the differences between SP, IBR, and SAVE in terms of average annual repayments, average annual income net of loan repayments, and debt forgiveness. Appendix E.1 contains the scripts from the videos, and the videos are available at https://tinyurl.com/39mkxdrd.

For each video, the first time respondents cannot forward it but can pause it at any time. On the next page, they can review the video as many times as they want. This approach ensures that respondents indeed watch the videos initially and allows them to revisit the content if needed. We also designed understanding checks, which allow two attempts before showing the explanation for the correct answer, to ensure that respondents grasp the information about loan forgiveness and differences in repayments across the plans.

After watching the videos, we first ask respondents to give advice for the hypothetical character regarding job choices under each repayment plan by ranking the three jobs. Next, we inquire about their own job preferences under each repayment plan, imagining they are in the same situation[26] as the hypothetical character. Under the SAVE plan, we also ask if a delay of 2, 4, or 6 months in starting their preferred job would prompt them to change to another job. This allows us to measure how moral hazard issues can be reduced by job search frictions. Additionally, we ask respondents to rank the three scenarios in which they choose their most preferred job under each repayment plan. Finally, we ask about their job preferences if all the debt is forgiven.

[26]Respondents were asked to imagine they are in the same situation as the UM bachelor graduate with $40,000 ($30,000) in federal student debt. They have three job offers: Job A with the highest starting salary, Job C with the highest earnings growth, and an intermediate option. They were to assume they would accept one of these jobs, stay with it until retirement, and remain single.

E.1 Video Scripts

Video scripts for the high debt case. Numbers used in the low debt case are changed accordingly.

E.1.1 Video 1

In this video, we will explain various student loan repayment plans. Historically, student loan borrowers have primarily used the "Standard Plan" (SP) for repayment. Under the SP, you make fixed monthly payments over a 10-year period to pay off your debt plus interest. In recent years, the US government has been offering the Income-Based Repayment (IBR) plan. It caps debt repayments at 10% of your "discretionary" income, and during any month, you never pay more than the monthly amount you would pay under the Standard Plan. You make loan repayment according to this formula until you pay off your debt plus interests or until 20 years of payment, whichever comes first. Any remaining debt is forgiven after 20 years. Discretionary income is defined as the difference between one's income and 1.5 times the federal poverty line; no loan repayments are made during periods when one earns less than 1.5 times the federal poverty line. The federal poverty line is $14,580 for an individual and increases with family size. So, for an individual, they would only need to pay student loans if their annual income is above $21,870. IBR requires low or zero repayment during times when one's income is low and hence lowers the repayment burden when one needs it the most. Lower-income individuals may spend more than 10 years in student debt and hence pay more in interest payments, and they may have some of their debt forgiven after 20 years of payment.

Let's go through an example. Let's imagine Wolverine, a recent UM bachelor's graduate with $40,000 in federal student debt and a 4% annual interest rate. Wolverine has secured a job with a starting annual salary of $52,500 and the salary grows by 3% each year. Wolverine is committed to this long-term career. For simplicity, we assume Wolverine remains single. Under the Standard Plan, Wolverine would make fixed payments for 10 years, totaling about $48,600 in repayments. No debt is forgiven, and the annual payments are fixed at about $4,800 for each of the first 10 years. The last panel shows the average annual income net of student loan payments. Since income rises over time but student debt payments are fixed, the student debt payments are a larger share of income in one's early career. Under IBR,

the repayment period is longer. Wolverine will pay off his debt in 14 years with a total payment of about $53,600. Since Wolverine will pay off his debt within 20 years, there is no debt forgiven. In the first few years, the payment burden is low relative to Wolverine's earnings. For example, Wolverine will only pay an average of $3,300 during the first five years, as Wolverine's income increases over time, the monthly repayment also grows.

E.1.2 Video 2

But wait, there's more! The Biden administration has introduced a third plan, "Saving on a Valuable Education" (SAVE). Under the current SAVE plan, debt repayment is capped at 10% of one's discretionary income. The definition of discretionary income is different here: it is defined as the difference between one's income and 2.25 times the federal poverty line. So, for an individual, they would only need to pay student loans if their annual income is above $32,805. Under the SAVE plan, borrowers whose original federal student debt is $12,000 or less will receive forgiveness after 10 years of repayment. For those with larger original debt, loan forgiveness requires more years of payment, up to 20 years. In addition, SAVE ensures that borrowers never see their balance grow as long as they keep up with their required payments. Now, let's revisit our example for Wolverine with the SAVE plan: Under the SAVE plan, Wolverine will make student loan payments for a full 20-year term, totaling about $59,000 in payments. In this example, a significant portion of the debt, about $3,350, is forgiven. Similar to the IBR plan, the SAVE plan's monthly payments depend on the income level. In particular, in the first five years, Wolverine only needs to pay an average of about $2,100. We have just given you a lot of information. Now, let's look at the same statistics but, this time, with the three plans next to each other. First, let's examine the average annual repayments. Under SP, the annual repayments remain fixed at about $4,800. In contrast, IBR and SAVE adjust repayments based on income. Both plans put smaller burdens on individuals when their income is lower; as the individual's income increases, their repayment also grows. For example, during the first five years, Wolverine only needs to pay an average of $3,300 per year under IBR, $2,100 under SAVE. The next panel highlights the Average Annual Income net of student loan repayments. Due to the lower repayments under IBR and SAVE, students experience a higher net annual income during the initial years of repayment. However, the downside of lower monthly repayments is a longer time one spends in repayment. In this example, Wolverine makes repayments for 10 years under SP, 14 years

under IBR and 20 years under SAVE. The extended repayment duration also leads to higher accrued interest. As a result, the total loan repayment is highest under SAVE, and lowest under SP.

Lastly, let's assess Wolverine's debt forgiveness in this scenario. By design, Wolverine needs to pay off his debt in 10 years under SP. IBR offers debt forgiveness after 20 years of payment, but Wolverine pays off his debt in less than 20 years and hence has no debt forgiven. Under SAVE, after 20 years of repayment, Wolverine still has an outstanding balance of about $3,350 and this amount is forgiven.

In general, which student loan repayment plan is most suitable for an individual depends on many factors, but here are two key factors that should be considered by any student loan taker:

1. The total amount of student debt they owe.

And

2. Their post-college earnings profile, especially during the loan repayment years. Later in this survey, we will show you different job profiles and how repayment differs under SP, IBR, and SAVE for a given job profile.

E.2 Survey

Student loan survey

consent Please indicate your agreement to participate in this research study:

- ○ Yes (1)
- ○ No (2)

If mobile device detected:
Q242 You must use a **computer or laptop (NOT mobile phones)** to answer the survey questions. If would like to take the survey, please email xxx.edu to request for a new link.

Qscreening1 .Skin #Logo { display:none; } Which school year are you in currently?

- ○ Freshman (1)
- ○ Sophomore (2)
- ○ Junior (3)
- ○ Senior (4)

Qscreening2 Are you a United States Citizen?

- ○ Yes (1)
- ○ No (2)

If screening fails:
screen_fail Thank you for your interest. You are **not eligible** to take the survey. Only **US citizens** who are **freshmen** or **seniors** are supposed to take the survey.

percent_intro .Skin #Logo { display:none; } In some of the following questions, you will be asked about the **PERCENT CHANCE** of something happening. The percent chance must be a number between 0 and 100.
Numbers like 2 or 5% indicate "almost no chance".
Numbers like 19% or so may mean "not much chance".
Numbers like 47 or 55% chance may be a "pretty even chance".
Numbers like 82% or so indicates a "very good chance"
Numbers like 95 or 98% mean "almost certain".

The percent chance can also be thought of as the number of chances out of 100.

Q32 What is the likelihood that you will graduate from the university **primarily** with a major in one of the following categories? We have grouped majors into 6 categories. For details about specific majors within each broad category, please click here. Please note that your answers need to sum to 100.
Business, Economics : _____ (1)
Design, Visual And Performing Arts : _____ (2)
Engineering, Technologies/Technicians : _____ (3)
Health Professions And Related Clinical Sciences : _____ (4)
Humanities/ Social Sciences/Languages/Education : _____ (5)
Sciences And Mathematics : _____ (6)
None of the above (that is, I will drop out of MF) : _____ (7)
Total : _____

Q1 What are your (planned) fields of study? List up to two majors

Q1a Major 1 choice.

▼ Actuarial Mathematics (Sub-Major) (7) ... Women's and Gender Studies (141)

Q1b Major 2 choice. Select N/A if you are not planning to pursue a second major.

▼ N/A (137) ... Women's and Gender Studies (136)

Q2 .Skin #Logo { display:none; } Which are the 2 most likely career categories that you expect to work in after completing your education?

Q2a Career 1 choice.

▼ Agriculture, Food & Natural Resources (2) ... Transportation, Distribution & Logistics (17)

Q2b Career 2 choice.

▼ Agriculture, Food & Natural Resources (2) ... Transportation, Distribution & Logistics (17)

Q296 When choosing a career/job, how important are the following for you? Please answer on a scale of 1 to 7, where 1 is "not important at all" and 7 is "extremely important".

	1 - not important at all 7-extremely important
The starting salary ()	
The growth in earnings ()	
The stability of the job ()	
The good work-life balance ()	
The close relation to my interests ()	
The benefits of the job (such as vacations or flexible work schedules) ()	

Q1.10 How likely is it that you will pursue a post-bachelor's degree (such as a MD, PhD, Masters, etc.) at some point after graduating from the university?

	0 10 20 30 40 50 60 70 80 90 100
()	

Q31 .Skin #Logo { display:none; } On average, a MF bachelor's graduate has an annual income of about $56,000 after graduation, and an annual income of about $74,500 ten years after graduation (Source: U.S. Department of Education College Scorecard / Department of Treasury).

How much do you expect your **annual income** to be assuming you will be working full-time (that is, at least 35 hours in a typical work week)
(Please write your answer in thousands of dollars. For example, if you think your annual salary would be $50,000, write '50'.)

- ○ **RIGHT AFTER** graduating from MF (1)

_____

- ○ **TEN YEARS** after graduating from MF (2)

_____

Q31.2 Your question here

- ○ **TWENTY YEARS** after graduating from MF (1)

_____

Q41 .Skin #Logo { display:none; } What is your cumulative grade point average (GPA)? (Please round up to the nearest tenth)?

0 1 1 2 2 3 3 4

()



Q42.1 .Skin #Logo { display:none; } How much are you paying **per year** for your education at MF, including room and board, funded from all sources? Please include loans taken by you/your family (but take out any scholarships/grants that you receive that you don't need to repay).

(1) _____

Q42.2 How much student loans do you have in total so far? Please input **0** if you do not have any student debt.

(1) _____

Q42.3 An average MF bachelor's graduate has about $27,500 in student loan debt by the time they graduate (Source). How much do you expect to have in total student loans by the time you graduate with a bachelor's degree from the University of Michigan? Please include any student loans that your parents may take out for you. Please input **0** if you do not expect to have any student debt.

(2) _____

Q42.4 You said you expect to have $ ${Q42.3/ChoiceTextEntryValue/2} in student loan debt by the time you graduate from MF. How much of this do you expect to be **federal student loans**?

(1) _____

Q43 .Skin #Logo { display:none; } Are you aware of **Income-Driven Repayment (IDR)** plans for federal student loans? Under these plans, student debt repayments depend on the individual's income rather than a fixed monthly repayment.

Yes (1)

No (2)

Not sure (3)

Q44 Individuals have to apply to enroll in IDR. What is the percent chance (or chances out of 100) that you will **enroll in an IDR plan** at some point after leaving the University of Michigan?

0 10 20 30 40 50 60 70 80 90 100

()

High case as example in the following survey instrument

hvideo1_intro .Skin #Logo { display:none; } You will be asked to watch a 3.5 minutes video (with audio) about student loan repayment plans. Once you are ready to watch the video, please click next.

hvideo1 .Skin #Logo { display:none; } Note that you cannot forward the video, but you can pause it at any time by clicking on it. Once it ends, you will be able to move to the next page and you will have the opportunity to replay the video as many times as you want to.



hvideo1_check .Skin #Logo { display:none; }
We want to make sure you understand the difference in the plans. Keeping the example in mind, for each statement below, please tell us if it is **True or False**

	True (1)	False (2)
Monthly loan repayments are NOT fixed under SP (1)	○	○
If a person's earnings in a given month are too low, their monthly debt repayment may be ZERO under IBR (2)	○	○
Under IBR, it is possible that there is some remaining debt forgiven after 20 years of repayments (3)	○	○

If wrong:

hvideo1_check2 .Skin #Logo { display:none; }

Your answers are **not completely correct**. Please try again. For each statement below, please tell us if it is **True or False**

	True (1)	False (2)
Monthly loan repayments are NOT fixed under SP (1)	○	○
If a person's earnings in a given month are too low, their monthly debt repayment may be ZERO under IBR (2)	○	○
Under IBR, it is possible that there is some remaining debt forgiven after 20 years of repayments (3)	○	○

hvideo1_checkwrong .Skin #Logo { display:none; } **Your answers are <u>not completely correct</u>. Please read carefully to make sure you understand the differences in the plans.**

Monthly loan repayments are NOT fixed under SP: False, monthly loan repayments are fixed under SP.

If a person's earnings in a given month are too low, their monthly debt repayment may be ZERO under IBR: True, this is how IBR reduces the repayment burden when one's income is low.

Under IBR, it is possible that there is some remaining debt forgiven after 20 years of repayments: True, any remaining debt is forgiven after 20 years of repayments.

hvideo1_checkright .Skin #Logo { display:none; } **Well done! Your answers are <u>correct</u>!**

Monthly loan repayments are NOT fixed under SP: False, monthly loan repayments are fixed under SP.

If a person's earnings in a given month are too low, their monthly debt repayment may be ZERO under IBR: True, this is how IBR reduces the repayment burden when one's income is low.

Under IBR, it is possible that there is some remaining debt forgiven after 20 years of repayments: True, any remaining debt is forgiven after 20 years of repayments.

hvideo2_intro .Skin #Logo { display:none; } You will be asked to watch another 4-minute video (with audio) about student loan repayment plans. Once you are ready to watch the video, please click next.

hvideo2 Note that you cannot forward the video, but you can pause it at any time by clicking on it. Once it ends, you will be able to move to the next page and you will have the opportunity to replay the video as many times as you want to.



hvideo2_check .Skin #Logo { display:none; }
We want to make sure you understand the difference in the plans. Keeping the example in mind, for each statement below, please tell us if it is **True or False**

	True (1)	False (2)
Even if a person's earnings in a given month are low, their monthly debt repayment may NEVER be ZERO under SAVE (6)	○	○
Under SAVE, your remaining balance will grow if your monthly payment is less than the interest accrued. (7)	○	○
Your post-college earnings profile will affect your student debt repayment under both IBR and SAVE (8)	○	○

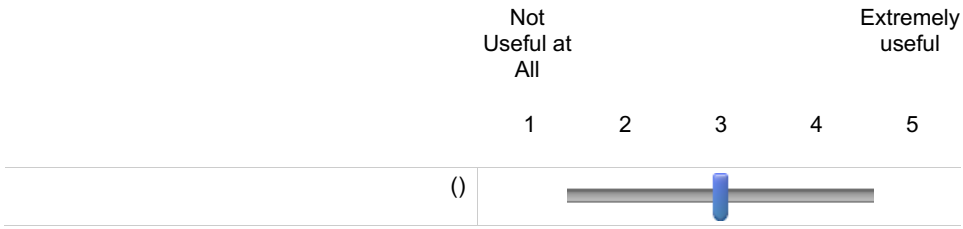
hvideo2_check2 .Skin #Logo { display:none; }
Your answers are **not completely correct**. Please try again. For each statement below, please tell us if it is **True or False**

	True (1)	False (2)
Even if a person's earnings in a given month are low, their monthly debt repayment may NEVER be ZERO under SAVE (6)	○	○
Under SAVE, your remaining balance will grow if your monthly payment is less than the interest accrued. (7)	○	○
Your post-college earnings profile will affect your student debt repayment under both IBR and SAVE (8)	○	○

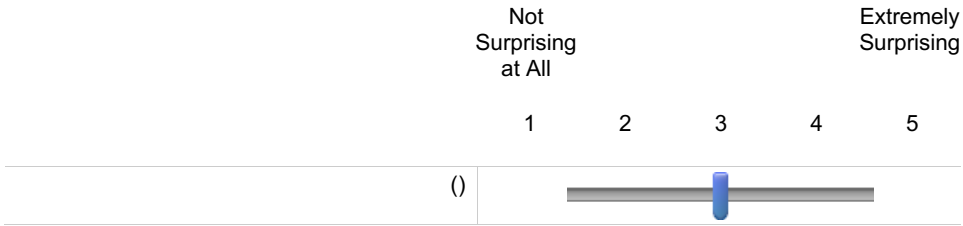
hvideo2_checkwrong .Skin #Logo { display:none; } **Your answers are <u>not completely correct</u>. Please read carefully to make sure you understand the differences in the plans.**
Even if a person's earnings in a given month are low, their monthly debt repayment may NEVER be ZERO under SAVE: False, similar to IRB, the monthly payment can be zero when one's income is low
Under SAVE, your remaining balance will grow if your monthly payment is less than the interest accrued: False, SAVE ensures that borrowers never see their balance grow as long as they keep up with their required payments.
Your post-college earnings profile will affect your student debt repayment under both IBR and SAVE: True, since both IRB and SAVE are income-based repayment plans, your earnings profile matters.

Q154 .Skin #Logo { display:none; } **Well done! Your answers are <u>correct</u>!**
Even if a person's earnings in a given month are low, their monthly debt repayment may NEVER be ZERO under SAVE: False, similar to IRB, the monthly payment can be zero when one's income is low
Under SAVE, your remaining balance will grow if your monthly payment is less than the interest accrued: False, SAVE ensures that borrowers never see their balance grow as long as they keep up with their required payments.
Your post-college earnings profile will affect your student debt repayment under both IBR and SAVE: True, since both IRB and SAVE are income-based repayment plans, your earnings profile matters.

Qinfo1 .Skin #Logo { display:none; } How **useful** do you find the information in the videos? Please answer on a 1-5 scale, where 1 means “Not Useful at All” and 5 means “Extremely Useful”



Qinfo2 How **surprised** are you by the information in the videos? Please answer on a 1-5 scale, where 1 means “Not Surprising at All” and 5 means “Extremely Surprising”



hvideo_summary .Skin #Logo { display:none; } For your convenience, we now repeat the statistics for the 3 repayment plans. Again, in this example, Wolverine, the MF bachelor's graduate has **a federal student debt of $40,000**, which has **a fixed annual interest rate of 4%**. Wolverine is going to work at a job that pays **$52,500 per year** and has an income growth of **3% per year**. Moreover, the student plans to stay at the job for the foreseeable future.

	SP	IBR	SAVE
# Years with positive loan repayment (n)	10	14	20
Total loan repayments paid	$48,598	$53,652	$58,997
Amount of debt forgiven	$0	$0	$3,350
Average annual student loan repayments in:			
Years 1-5	$4,860	$3,277	$2,128
Years 6-10	$4,860	$3,899	$2,617
Years 11 to the last year with positive loan repayment (year n)	$0 (n=10)	$4,543 (n=14)	$3,527 (n=20)
Average annual income net of student loan repayments in:			
Years 1-5	$50,886	$52,469	$53,618
Years 6-10	$59,765	$60,726	$62,008
Years 11-20	$80,884	$79,067	$77,357
Years 21-30	$108,702	$108,702	$108,702

Qinfo6 .Skin #Logo { display:none; } Which of the following student loan repayment plans were you aware of before taking this survey? Please select all that apply.

- ☐ SP (1)
- ☐ IBR (2)
- ☐ SAVE (3)
- ☐ Other (please specify) (4) _____
- ☐ None of the above (5)

Info_summary .Skin #Logo { display:none; } We will now proceed to the primary segment of the survey, in which you will provide advice to a MF bachelor's graduate concerning job choices under various student loan repayment plans. Before we delve into that, you may want to experiment with the **calculator** below, which illustrates net income and debt repayments under each of the available debt plans.
Click ${e://Field/ResponseID?format=urlencode}" id="extLink" rel="noopener" target="_blank">here to play with the calculator.

calculator_rpt .Skin #Logo { display:none; } Are you sure you don't want to play with the calculator first? You can always leave the calculator open and use it thoughout the survey. Click ${e://Field/ResponseID?format=urlencode}" rel="noopener" target="_blank">here if you want to play with the calculator.

Jobs_intro1 .Skin #Logo { display:none; } We will now ask for your advice to a MF bachelor's graduate who is facing the decision of choosing a job offer.

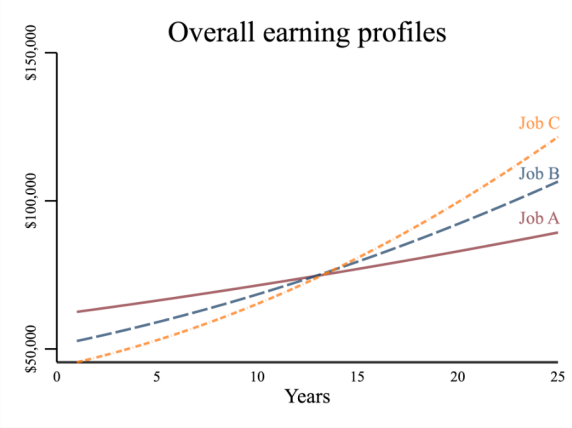
In the following scenarios, the MF graduate will have the option to select from three different job offers. These offers **differ** in terms of their **annual earnings** and **earnings growth** but are *otherwise identical*. The MF graduate intends to commit to the chosen job for the foreseeable future, and your task is to assist them in ranking these job offers.

The MF graduate has a total federal student debt of $40,000.

Jobs_intro2 .Skin #Logo { display:none; } The MF graduate has received the following three job offers. Job A has the highest starting annual earnings, while Job C has the highest earnings growth. Upon accepting any one of these jobs, the MF graduate plans to stay at that job until retirement.

	Annual Earnings in the first year	Earnings Growth
Job A	$62,500	1.5%
Job B	$52,500	3%
Job C	$45,000	4.25%

Because of different earnings growth, the annual earnings in these jobs at different horizons is as follows:



Initially Job A has the highest earnings. However, because Jobs B and C have higher earnings growth, an individual would be earning more at these jobs than in Job A after 14 years. For example, 20 years into the job, an individual would be making $82,934 at job A, $92,059 at job B, and $99,233 at job C.

Jobs_intro3 .Skin #Logo { display:none; }
We will next show you the student debt repayment under different plans. For this example, we will assume the MF graduate remains **single**.

QSP0 .Skin #Logo { display:none; } Under the SP for debt repayment, the MF graduate's student debt repayments, net earnings will be as follows for the three jobs:

SP	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment	10	10	10
Total loan repayments paid	$48,598	$48,598	$48,598
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,860	$4,860	$4,860
Years 6-10	$4,860	$4,860	$4,860
Year 11 onwards	$0	$0	$0
Net annual income net of debt repayment in			
Years 1-5	$59,544	$50,886	$44,131
Years 6-10	$64,521	$59,765	$55,465
Years 11-20	$77,631	$80,884	$82,873
Years 21-30	$90,094	$108,702	$125,654

We first want to make sure you understand the difference between the jobs fully.

QSP1 Under the SP, for which job is debt forgiven? Please select all that apply.

- ☐ Job A (1)
- ☐ Job B (2)
- ☐ Job C (3)
- ☐ None of them (4)

QSP2 Under which job are the average annual loan repayments the lowest in years 1-5?

▼ Job A (1) ... All of them have the same repayments (4)

Q266 .Skin #Logo { display:none; } Your answers are **not correct** in the following quesiton(s). Please try again.
Under the SP for debt repayment, the MF graduate's student debt repayments, net earnings will be as follows for the three jobs:

Q267 Under the SP, for which job is debt forgiven? Please select all that apply.

- [ ] Job A (1)
- [ ] Job B (2)
- [ ] Job C (3)
- [ ] None of them (4)

Q268 Under which job are the average annual loan repayments the lowest in years 1-5?

▼ Job A (1) ... All of them have the same repayments (4)

QSPCRT .Skin #Logo { display:none; } Well done! Your answers are **correct**.
Under SP, there is **no debt forgiven** for any of the jobs.
Under SP, the average annual loan repayments are fixed. All of them have the **same** repayments.

QSPWRG .Skin #Logo { display:none; } Your answers are **not completely correct**. Please read the following explanations carefully.
Under SP, there is **no debt forgiven** for any of the jobs.
Under SP, the average annual loan repayments are fixed. All of them have the **same** repayments.

QSP3 .Skin #Logo { display:none; }

Now, let's move to the main question: If the MF graduate were on the SP, which job offer would you recommend? Please rank these jobs from your most recommended job (Rank 1) to your least recommended job (Rank 3)

SP	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment	10	10	10
Total loan repayments paid	$48,598	$48,598	$48,598
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,860	$4,860	$4,860
Years 6-10	$4,860	$4,860	$4,860
Year 11 onwards	$0	$0	$0
Net annual income net of debt repayment in			
Years 1-5	$59,544	$50,886	$44,131
Years 6-10	$64,521	$59,765	$55,465
Years 11-20	$77,631	$80,884	$82,873
Years 21-30	$90,094	$108,702	$125,654

	1: Most recommended (1)	2 (2)	3: Least recommended (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

QIBR0 .Skin #Logo { display:none; } Now let's look at how student loan repayments would be under the Income-Based Repayment (IBR) plan. Under IBR, student debt repayment repayments would **depend on earnings**. The MF graduate's student debt repayments, net earnings will be as follows for the three jobs:

IBR	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	12	14	16
Total repayments paid	$50,516	$53,652	$56,591
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,143	$3,277	$2,601
Years 6-10	$4,374	$3,899	$3,469
Year 11 to the last year with positive loan repayment (n)	$4,535 (n=12)	$4,543 (n=14)	$4,576 (n=16)
Net annual income net of debt repayment in			
Years 1-5	$60,261	$52,469	$46,390
Years 6-10	$65,006	$60,726	$56,856
Years 11-20	$76,724	$79,067	$80,128
Years 21-30	$90,094	$108,701	$125,654

QIBR1 Under IBR, for which job is debt forgiven? Please select all that apply.

- ☐ Job A (1)
- ☐ Job B (2)
- ☐ Job C (3)
- ☐ None of them (4)

QIBR2 Under which job are the average annual repayments the lowest in years 1-5?

▼ Job A (1) ... All of them have the same repayments (4)

QIBRTRY2 .Skin #Logo { display:none; } Your answers are **not correct** in the following quesiton(s). Please try again.
Under IBR, student debt repayment repayments would **depend on earnings**. The MF graduate's student debt repayments, net earnings will be as follows for the three jobs:

Q278 Under IBR, for which job is debt forgiven? Please select all that apply.

- [ ] Job A (1)
- [ ] Job B (2)
- [ ] Job C (3)
- [ ] None of them (4)

Q279 Under which job are the average annual repayments the lowest in years 1-5?

▼ Job A (1) ... All of them have the same repayments (4)

QIBRWRG .Skin #Logo { display:none; } Your answers are **not completely correct**. Please read the following explanations carefully.

Under IBR, there is **no debt forgiven** for any of the jobs.
Under IBR, the average annual loan repayments is lowest in years 1-5 for **Job C** ($2,601 < $3,277 < $4,143)

QIBRCRT .Skin #Logo { display:none; } Well done! Your answers are **correct**.
Under IBR, there is **no debt forgiven** for any of the jobs.
Under IBR, the average annual loan repayments is lowest in years 1-5 for **Job C** ($2,601 < $3,277 < $4,143)

QIBR3 .Skin #Logo { display:none; }

IBR	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	12	14	16
Total repayments paid	$50,516	$53,652	$56,591
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,143	$3,277	$2,601
Years 6-10	$4,374	$3,899	$3,469
Year 11 to the last year with positive loan repayment (n)	$4,535 (n=12)	$4,543 (n=14)	$4,576 (n=16)
Net annual income net of debt repayment in			
Years 1-5	$60,261	$52,469	$46,390
Years 6-10	$65,006	$60,726	$56,856
Years 11-20	$76,724	$79,067	$80,128
Years 21-30	$90,094	$108,701	$125,654

If the MF graduate were on IBR, which job offer would you recommend? Please rank these jobs from your most recommended job (Rank 1) to your least recommended job (Rank 3)

	1: Most recommended (1)	2 (2)	3: Least recommended (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

QSAVE0 .Skin #Logo { display:none; } Now let's look at how student loan repayments would be under the Saving on a Valuable Education (SAVE) plan. Under SAVE, student debt repayment would also depend on earnings. The MF graduate's annual student debt repayment, net earnings will be as follows for the three jobs:

SAVE	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	19	20	20
Total loan repayments paid	$56,761	$58,997	$55,458
Amount of debt forgiven	$0	$3,350	$9,933
Average annual loan repayments in			
Years 1-5	$2,994	$2,128	$1,453
Years 6-10	$3,093	$2,617	$2,187
Year 11 to the last year with positive loan repayment (n)	$3,196 (n=19)	$3,527 (n=20)	$3,726 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$61,410	$53,618	$47,539
Years 6-10	$66,288	$62,008	$58,138
Years 11-20	$74,755	$77,357	$79,147
Years 21-30	$90,094	$108,702	$125,654

QSAVE1 Under SAVE, for which job is debt forgiven? Please select all that apply.

- ☐ Job A (1)
- ☐ Job B (2)
- ☐ Job C (3)
- ☐ None of them (4)

QSAVE2 Under which job are the average annual loan repayments the lowest in years 1-5?

▼ Job A (1) ... All of them have the same repayments (4)

Q284 .Skin #Logo { display:none; } Your answers are **not correct** in the following quesiton(s). Please try again.
Under SAVE, student debt repayment would also depend on earnings. The MF graduate's annual student debt repayment, net earnings will be as follows for the three jobs:

Q282 Under SAVE, for which job is debt forgiven? Please select all that apply.

- [ ] Job A (1)
- [ ] Job B (2)
- [ ] Job C (3)
- [ ] None of them (4)

Q283 Under which job are the average annual loan repayments the lowest in years 1-5?

▼ Job A (1) ... All of them have the same repayments (4)

QSAVECRT .Skin #Logo { display:none; } Well done! Your answers are **correct**.
Under SAVE, there is some debt forgiven in **Job B ($3,350) and Job C ($9,933)**.
Under SAVE, the average annual loan repayments is lowest in years 1-5 for **Job C** ($1,453 < $2,128 < $2,994)

QSAVEWRG .Skin #Logo { display:none; } Your answers are **not completely correct**. Please read the following explanations carefully.

Under SAVE, there is some debt forgiven in **Job B ($3,350) and Job C ($9,933)**.
Under SAVE, the average annual loan repayments is lowest in years 1-5 for **Job C** ($1,453 < $2,128 < $2,994)

QSAVE3 .Skin #Logo { display:none; }

SAVE	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	19	20	20
Total loan repayments paid	$56,761	$58,997	$55,458
Amount of debt forgiven	$0	$3,350	$9,933
Average annual loan repayments in			
Years 1-5	$2,994	$2,128	$1,453
Years 6-10	$3,093	$2,617	$2,187
Year 11 to the last year with positive loan repayment (n)	$3,196 (n=19)	$3,527 (n=20)	$3,726 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$61,410	$53,618	$47,539
Years 6-10	$66,288	$62,008	$58,138
Years 11-20	$74,755	$77,357	$79,147
Years 21-30	$90,094	$108,702	$125,654

If the MF graduate were on SAVE, which job offer would you recommend? Please rank these jobs from your most recommended job (Rank 1) to your least recommended job (Rank 3)

	1: Most recommended (1)	2 (2)	3: Least recommended (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

Qyou_intro .Skin #Logo { display:none; }

We previously asked for your job advice regarding different repayment plans for a UM graduate. Now, imagine **you are** in the **EXACT same situation** i.e.,

- Upon graduation, you have a total federal student debt of $40,000;
- You have received the following three job offers. Job A offers the highest starting annual earnings, while Job C has the highest earnings growth；
- You have decided to accept one of these jobs, and you plan to stay with that job until retirement;
- Imagine you will remain single.

We would like to know your job preferences in this case.

	Annual Earnings in the first year	Earnings Growth
Job A	$62,500	1.5%
Job B	$52,500	3%
Job C	$45,000	4.25%

QSPown .Skin #Logo { display:none; }
Under the SP for debt repayment, your student debt repayments, net earnings will be as follows for the three jobs:

SP	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment	10	10	10
Total loan repayments paid	$48,598	$48,598	$48,598
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,860	$4,860	$4,860
Years 6-10	$4,860	$4,860	$4,860
Year 11 onwards	$0	$0	$0
Net annual income net of debt repayment in			
Years 1-5	$59,544	$50,886	$44,131
Years 6-10	$64,521	$59,765	$55,465
Years 11-20	$77,631	$80,884	$82,873
Years 21-30	$90,094	$108,702	$125,654

If you were on the SP, which job offer would you choose? Please rank these jobs from your most preferred job (Rank 1) to your least preferred job (Rank 3)

	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

QIBRown .Skin #Logo { display:none; }
Under IBR, student debt repayment repayments would **depend on earnings**, your student debt repayments, net earnings will be as follows for the three jobs:

IBR	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	12	14	16
Total repayments paid	$50,516	$53,652	$56,591
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,143	$3,277	$2,601
Years 6-10	$4,374	$3,899	$3,469
Year 11 to the last year with positive loan repayment (n)	$4,535 (n=12)	$4,543 (n=14)	$4,576 (n=16)
Net annual income net of debt repayment in			
Years 1-5	$60,261	$52,469	$46,390
Years 6-10	$65,006	$60,726	$56,856
Years 11-20	$76,724	$79,067	$80,128
Years 21-30	$90,094	$108,701	$125,654

If you were on IBR, which job offer would you choose? Please rank these jobs from your most preferred job (Rank 1) to your least preferred job (Rank 3)

	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

QSAVEown .Skin #Logo { display:none; }
Under SAVE, student debt repayment would also depend on earnings, your annual student debt repayment, net earnings will be as follows for the jobs:

SAVE	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	19	20	20
Total loan repayments paid	$56,761	$58,997	$55,458
Amount of debt forgiven	$0	$3,350	$9,933
Average annual loan repayments in			
Years 1-5	$2,994	$2,128	$1,453
Years 6-10	$3,093	$2,617	$2,187
Year 11 to the last year with positive loan repayment (n)	$3,196 (n=19)	$3,527 (n=20)	$3,726 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$61,410	$53,618	$47,539
Years 6-10	$66,288	$62,008	$58,138
Years 11-20	$74,755	$77,357	$79,147
Years 21-30	$90,094	$108,702	$125,654

If you were on SAVE, which job offer would you choose? Please rank these jobs from your most preferred job (Rank 1) to your least preferred job (Rank 3)

	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

QSAVE4.0 .Skin #Logo { display:none; } You said, that under SAVE, you prefer ${QSAVEown/ChoiceGroup/SelectedChoicesForAnswer/1} the most. Is this correct? If not, you can choose No and revise your answer in the next page.

Again, recall that the jobs are as follows:

	Annual Earnings in the first year	Earnings Growth
Job A	$62,500	1.5%
Job B	$52,500	3%
Job C	$45,000	4.25%

- ○ Yes (1)
- ○ No (2)

Q249 .Skin #Logo { display:none; }
Please revise your answer here.

SAVE	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	19	20	20
Total loan repayments paid	$56,761	$58,997	$55,458
Amount of debt forgiven	$0	$3,350	$9,933
Average annual loan repayments in			
Years 1-5	$2,994	$2,128	$1,453
Years 6-10	$3,093	$2,617	$2,187
Year 11 to the last year with positive loan repayment (n)	$3,196 (n=19)	$3,527 (n=20)	$3,726 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$61,410	$53,618	$47,539
Years 6-10	$66,288	$62,008	$58,138
Years 11-20	$74,755	$77,357	$79,147
Years 21-30	$90,094	$108,702	$125,654

If you were on SAVE, which job offer would you choose? Please rank these jobs from your most preferred job (Rank 1) to your least preferred job (Rank 3)

	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Job A (1)	○	○	○
Job B (2)	○	○	○
Job C (3)	○	○	○

QSAVE4.1 .Skin #Logo { display:none; }

Now let's say that you would only be able to start at ${e://Field/save} **TWO months after graduation** (i.e., you won't receive any labor income during that period). During that period, you will not be making any student debt repayments.

On the other hand, you could start working at either of the other two jobs **right away**. In such a case, which job would you choose?

SAVE	Job A	Job B	Job C
Starting annual salary in the first year	**$62,500**	**$52,500**	**$45,000**
Starting monthly salary in the first year	**$5,208**	**$4,375**	**$3,750**
Annual earnings growth	**1.5%**	**3%**	**4.25%**
Loan repayments			
# Years with positive loan repayment (n)	19	20	20
Total loan repayments paid	$56,761	$58,997	$55,458
Amount of debt forgiven	$0	$3,350	$9,933
Average annual loan repayments in			
Years 1-5	$2,994	$2,128	$1,453
Years 6-10	$3,093	$2,617	$2,187
Year 11 to the last year with positive loan repayment (n)	$3,196 (n=19)	$3,527 (n=20)	$3,726 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$61,410	$53,618	$47,539
Years 6-10	$66,288	$62,008	$58,138
Years 11-20	$74,755	$77,357	$79,147
Years 21-30	$90,094	$108,702	$125,654

- ○ Job A (1)
- ○ Job B (2)
- ○ Job C (3)

QSAVE4.2 .Skin #Logo { display:none; }
Now let's say that you would only be able to start at ${e://Field/save} **FOUR months after graduation** (i.e., you won't receive any labor income during that period). During that period, you will not be making any student debt repayments.
On the other hand, you could start working at either of the other two jobs **right away**. In such a case, which job would you choose?

- ○ Job A (1)
- ○ Job B (2)
- ○ Job C (3)

QSAVE4.3 .Skin #Logo { display:none; }
Now let's say that you would only be able to start at ${e://Field/save} **SIX months after graduation** (i.e., you won't receive any labor income during that period). During that period, you will not be making any student debt repayments.
On the other hand, you could start working at either of the other two jobs **right away**. In such a case, which job would you choose?

- ○ Job A (1)
- ○ Job B (2)
- ○ Job C (3)

[Sample scenario 1] QALL1aaa .Skin #Logo { display:none; } You said that, if all jobs are immediately available upon graduation, under SP, you would choose ${QSPown/ChoiceGroup/SelectedChoicesForAnswer/1}; under IBR, you would choose ${QIBRown/ChoiceGroup/SelectedChoicesForAnswer/1}; under SAVE, you would choose ${e://Field/save}. The following table describes these 3 scenarios.

	Scenario 1	Scenario 2	Scenario 3
Student loan plan	SP	IBR	SAVE
Job you would choose	Job A	Job A	Job A
# Years with positive loan repayment (n)	10	12	19
Total loan repayments paid	$48,598	$50,516	$56,761
Amount of debt forgiven	$0	$0	$0
Average annual loan repayments in			
Years 1-5	$4,860	$4,143	$2,994
Years 6-10	$4,860	$4,374	$3,093
Year 11 to the last year with positive loan repayment (n)	$0 (n=10)	$4,535 (n=12)	$3,196 (n=19)
Net annual income net of debt repayment in			
Years 1-5	$59,544	$60,261	$61,410
Years 6-10	$64,521	$65,006	$66,288
Years 11-20	$77,631	$76,724	$74,755
Years 21-30	$90,094	$90,094	$90,094

If you had a choice between these 3 scenarios, which one would you prefer? Please rank these 3 scenarios from the most preferred (Rank 1) to the least preferred (Rank 3).

	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Scenario 1 (1)	○	○	○
Scenario 2 (2)	○	○	○
Scenario 3 (3)	○	○	○

[Sample scenario 2] QALL1aab .Skin #Logo { display:none; }
You said that, if all jobs are immediately available upon graduation, under SP, you would choose ${QSPown/ChoiceGroup/SelectedChoicesForAnswer/1}; under IBR, you would choose ${QIBRown/ChoiceGroup/SelectedChoicesForAnswer/1}; under SAVE, you would choose ${e://Field/save}. The following table describes these 3 scenarios.

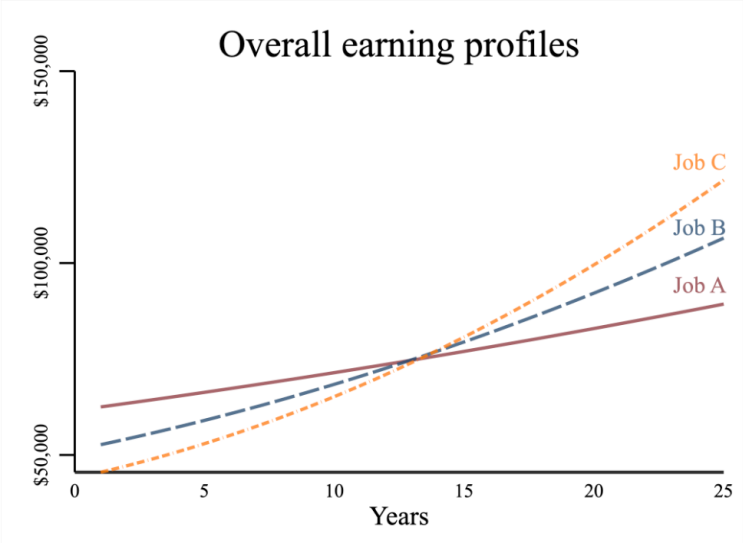
	Scenario 1	Scenario 2	Scenario 3
Student loan plan	SP	IBR	SAVE
Job you would choose	Job A	Job A	Job B
# Years with positive loan repayment (n)	10	12	20
Total loan repayments paid	$48,598	$50,516	$58,997
Amount of debt forgiven	$0	$0	$3,350
Average annual loan repayments in			
Years 1-5	$4,860	$4,143	$2,128
Years 6-10	$4,860	$4,374	$2,617
Year 11 to the last year with positive loan repayment (n)	$0 (n=10)	$4,535 (n=12)	$3,527 (n=20)
Net annual income net of debt repayment in			
Years 1-5	$59,544	$60,261	$53,618
Years 6-10	$64,521	$65,006	$62,008
Years 11-20	$77,631	$76,724	$77,357
Years 21-30	$90,094	$90,094	$108,702

If you had a choice between these 3 scenarios, which one would you prefer? Please rank these 3 scenarios from the most preferred (Rank 1) to the least preferred (Rank 3).

	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Scenario 1 (1)	○	○	○
Scenario 2 (2)	○	○	○
Scenario 3 (3)	○	○	○

QALL2 .Skin #Logo { display:none; } Now, imagine, upon graduation, the federal government announces a surprising policy to **forgive all your student debt** (i.e., you don't have to pay any part of your $40,000 debt back). Please rank the same 3 jobs again from your most preferred job (Rank 1) to least preferred job (Rank 3)

	Annual Earnings in the first year	Earnings Growth
Job A	$62,500	1.5%
Job B	$52,500	3%
Job C	$45,000	4.25%



	1: Most preferred (1)	2 (2)	3: Least preferred (3)
Job A (4)	○	○	○
Job B (5)	○	○	○
Job C (6)	○	○	○

REeliciting_intro .Skin #Logo { display:none; } Now that you know more about the different kinds of income-driven repayment (IDR) plans, such as IBR and SAVE, we would like to re-ask you some questions.

Q44_rpt Earlier you said there was a ${Q44/ChoiceNumericEntryValue/1} percent change that you would enroll in IDR at some point after leaving the University of Michigan. Given the information we have given you about these plans, what do you think is the percent chance (or chances out of 100) that you will **enroll in some IDR (e.g., IBR or SAVE) plan** at some point after leaving University of Michigan?

0 10 20 30 40 50 60 70 80 90 100

()



Q42.2_rpt You earlier said you have $ ${Q42.2/ChoiceTextEntryValue/1} in student loans so far. If you had known more about the **IDR plans** such as the SAVE plan prior to starting at MF, how much would you have borrowed by now? Please input 0 if you do not expect to have any student debt.

(1) _____

Q42.3_rpt You earlier said you expect to have $ ${Q42.3/ChoiceTextEntryValue/2} student loans by the time you graduate from the University of Michigan. Now that with a bachelor's degreeyou know more about the various IDR plans, how much do you expect to have in total student loans by the time you graduate with a bachelor's degree from the University of Michigan? Please input 0 if you do not expect to have any student debt.

(1) _____

Q169 .Skin #Logo { display:none; } Now that you know more about IBR and SAVE plans, what is the likelihood that you will graduate from MF **primarily** with a major in one of the following categories? We have grouped majors into 6 categories. For details about specific majors within each broad category, please click here. Please note that your answers need to sum to 100.
Business, Economics : _____ (1)
Design, Visual And Performing Arts : _____ (2)
Engineering, Technologies/Technicians : _____ (3)
Health Professions And Related Clinical Sciences : _____ (4)
Humanities/ Social Sciences/Languages/Education : _____ (5)
Sciences And Mathematics : _____ (6)
None of the above (that is, I will drop out of MF) : _____ (7)
Total : _____

Q166 Earlier, you mentioned that your top major choice is ${Q1a/ChoiceGroup/SelectedChoices} and your second major choice is ${Q1b/ChoiceGroup/SelectedChoices}. Do you think your top major choice or second major choice would have been **different** if you had known as much about IBR and SAVE plans back then as you know now?

- Yes (1)
- No (2)

Q91 .Skin #Logo { display:none; } What would have been your most preferred fields of study? List up to two majors

Q91.1 .Skin #Logo { display:none; } Major 1 choice.
(1)

▼ Actuarial Mathematics (Sub-Major) (1) ... Women's and Gender Studies (134)

Q91.2 .Skin #Logo { display:none; } Major 2 choice. Select N/A if you are not planning to pursue a second major.
(1)

▼ Actuarial Mathematics (Sub-Major) (1) ... N/A (135)

Q167 .Skin #Logo { display:none; } Earlier, you mentioned that your top career choice is ${Q2a/ChoiceGroup/SelectedChoices} and your second career choice is ${Q2b/ChoiceGroup/SelectedChoices}. Do you think your career would be **different** now that you know more about IBR and SAVE plans?

- ○ Yes (1)
- ○ No (2)

Q261 .Skin #Logo { display:none; } Within those careers, do you think your specific job choices **(e.g., the tradeoff between wage and amenities)** would be **different** now that you know more about IBR or SAVE plans?

- ○ Yes (1)
- ○ No (2)

Q92 .Skin #Logo { display:none; } Now that you know more about IBR and SAVE plans, how do you think the characteristics you would look for in the jobs/careers would be **different**? Please select all that apply.

- ☐ I will now look for a risker job (for example, one that pays more on average, but may have a higher layoff probability or higher fluctuation in earnings) (1)
- ☐ I will now look for a job with a better life-work balance or less stress, even if it means lower take-home pay (2)
- ☐ I will now look for a job more related to my interests, even if it means lower take-home pay (3)
- ☐ I will now look for a job with more benefits (such as vacations or flexible work schedules), even if it means lower take-home pay (4)
- ☐ I will be more selective in terms of what jobs I accept even if it means having to wait longer to find a job (5)
- ☐ Other (please specify) (6) _____
- ☐ No, none of the above. That is, the job/career I will look for will be the same as before. (7)

Q299 .Skin #Logo { display:none; } Now that you know more about IBR and SAVE plans, how likely is it that you will pursue a post-bachelor's degree (such as a MD, PhD, Masters, etc.) at some point after graduating from MF? As a reminder, your previous answer was ${Q1.10/ChoiceNumericEntryValue/1}%.

0 10 20 30 40 50 60 70 80 90 100

() 

Q98 .Skin #Logo { display:none; } Earlier in the survey, you mentioned that you expect your annual income to be $${Q31/ChoiceTextEntryValue/1},000 right after graduating from MF, $${Q31/ChoiceTextEntryValue/2},000 ten years after graduation, and $${Q31.2/ChoiceTextEntryValue/1},000 twenty years after graduating from MF.
Given all the information we have given you about IBR and SAVE plans, how much do you expect your **annual income** to be assuming you will be working full-time (that is, at least 35 hours in a typical work week)
(Please write your answer in thousands of dollars. For example, if you think your annual salary would be $50,000, write '50'.)

- **RIGHT AFTER** graduating from MF (1)
  _____
- **TEN YEARS** after graduating from MF (2)
  _____

Q160 Your question here

- **TWENTY YEARS** after graduating from MF (1)
  _____

Q149 .Skin #Logo { display:none; } We will wrap up the survey by asking you some background questions.

Q1.1 .Skin #Logo { display:none; } What is your birth year?
(1)

▼ 2008 (1) ... Other (31)

Q1.2 Please state the gender with which you identify.

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer not to say (4)
- ○ Prefer to self-describe (5)

_____

Q1.3 What is your race/ethnicity? Please select all that apply

- ☐ White/Caucasian (1)
- ☐ Black/African American (2)
- ☐ American Indian (3)
- ☐ Hispanic/Latino (4)
- ☐ Asian/Pacific Islander (5)
- ☐ Prefer not to answer (6)
- ☐ Other (please specify) (7)

_____

Q1.4 Which of the following best represents the total annual income of your parents last year before taxes?

▼ Less than $10,000 (1) ... $500,000 or more (14)

Q1.5 What is the highest level of education your mother has completed?

- ○ Less than high school (1)
- ○ High school diploma or GED (2)
- ○ Associate's degree (3)
- ○ Bachelor's degree (4)
- ○ Master's degree (5)
- ○ Ph.D., M.D., law degree, or other professional degree (6)
- ○ Don't know/ N/A (7)

Q1.6 What is the highest level of education your father has completed?

- ○ Less than high school (1)
- ○ High school diploma or GED (2)
- ○ Associate's degree (3)
- ○ Bachelor's degree (4)
- ○ Master's degree (5)
- ○ Ph.D., M.D., law degree, or other professional degree (6)
- ○ Don't know/ N/A (7)

Q1.7 What were your scores on the SAT? Please write N/A if you did not take the SAT.

- Verbal (1) _____
- Math (2) _____

Q1.8 What was your composite score on the ACT? (Round up your score to the nearest integer; write N/A if this is not applicable to you)

- (1) _____

Q1.9 What was your rank in your high school graduating class? Please answer on a 1-100 scale, where 1 means you ranked in the top 1%. If your school did not rank graduating classes then please estimate your ranking as best you can. Note that 100 means the lowest rank.

	1 – highest rank	100 – lowest rank
()		

Q1.10 .Skin #Logo { display:none; } Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please select a number between 1 and 7 where 1 means “absolutely unwilling to take risks” and 7 means “fully prepared to take risks”.

	1 - absolutely unwilling to take risks	7- fully prepared to take risks
()		

Q1.11 .Skin #Logo { display:none; } Suppose you had $100 in a savings account and the interest rate was 2% per year. After 2 years, how much do you think you would have in the account if you left the money to grow?

- More than $104 (1)
- Exactly $104 (2)
- Less than $104 (3)
- Don't know (4)

Qattention2 .Skin #Logo { display:none; } Please indicate how much you agree with the following statements.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I made each decision in this study carefully. (1)					
I made decisions in this study randomly. (2)					
I answered all questions the best I could. (3)					
Select the option that is the furthest to the left/top (i.e., the first option). (4)					
Select the option that is the furthest to the right/bottom (i.e., the last option). (5)					

Q141 .Skin #Logo { display:none; } Would you like to learn more about income-driven repayment plans for student loans, including how to apply for it?

- ○ Yes, I would like more information to be emailed to me (1)
- ○ No (2)

Qsimulator1 Earlier in the survey you were shown the loan simulator that shows what your student debt repayments would be under different repayment plans. Would you like to have the link shared with you so that you can use it later?

- ○ Yes (1)
- ○ No (2)

Qsimulator2.1 .Skin #Logo { display:none; } You will now be asked to choose between **receiving a link to the simulator** or **receiving some extra compensation**. In each row below, please tell us whether you would like to receive the simulator link or the compensation (which varies between $0.5 and $5).

Please answer carefully. We will pick one person at random who completes the survey, and implement one of their choices.

	Simulator (19)	Compensation (20)
You receive $0.5 (1)	○	○

Q251 Your question here

	Simulator (1)	Compensation (2)
You receive $1 (1)	○	○

Q300 Your question here

	Simulator (1)	Compensation (2)
You receive $1.5 (1)	○	○

Q254 Your question here

	Simulator (1)	Compensation (2)
You receive $2 (1)	○	○

Q255 Your question here

	Simulator (1)	Compensation (2)
You receive $2.5 (1)	○	○

Q256 Your question here

	Simulator (1)	Compensation (2)
You receive $3 (1)	○	○

Q257 Your question here

	Simulator (1)	Compensation (2)
You receive $3.5 (1)	○	○

Q260 Your question here

	Simulator (1)	Compensation (2)
You receive $4 (1)	○	○

Q258 Your question here

	Simulator (1)	Compensation (2)
You receive $4.5 (1)	○	○

Q259 Your question here

	Simulator (1)	Compensation (2)
You receive $5 (1)	○	○

Qsimulatorlink .Skin #Logo { display:none; } Here is the ${e://Field/ResponseID?format=urlencode}" rel="noopener" target="_blank">link to the simulator. Please save it as a tab.

Q250 .Skin #Logo { display:none; } We showed you a lot of information in this survey. How easy do you think it is to find this information on your own?

- ○ Extremely difficult (1)
- ○ Somewhat difficult (2)
- ○ Neither easy nor difficult (3)
- ○ Somewhat easy (4)
- ○ Extremely easy (5)

Q300 What do you think this survey was about?

_____

Q301 What did you learn from the survey?

_____

Q303 Please provide your mailing address. Note that this question is optional (the gift card will be emailed to you regardless). We are required to ask this question for legal reasons.

_____

end Thank you for completing our survey. Press the right arrow below to submit your survey. The study team will contact you within 6 weeks after the end of the survey with information on how to claim your prize.

Q302 .Skin #Logo { display:none; } If you have any comments about the survey, please write them here.

_____