

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

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Abstract

Income-Driven Repayment (IDR) plans tie student loan repayment to income and forgive unpaid debt after a certain number of 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 hazard: 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 (i.e., they overinvest in human capital), leaving part of their debt to be forgiven. A back-of-the-envelope calculation indicates that this type of moral hazard *alone* would render SAVE-like plans unviable were they carried out by private lenders; however, government-run IDRs are sustainable due to the government's ability to collect taxes on lifetime income. Finally, we also show that stated behavior captured in the survey is consistent with real-life job choices.

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1 Introduction

Income-contingent repayment (IDR) schemes are a central feature of higher-education finance in many countries. In the U.S., IDRs have become increasingly popular alternatives to the Standard Plan (SP), which requires borrowers to repay a fixed amount each period to pay off their debt over a fixed horizon.¹ Besides tying student loan repayment to income, IDR plans in the U.S. often feature a limited repayment horizon: borrowers begin repayment upon leaving college, and any remaining debt is forgiven after a certain number of years of repayment.

While providing insurance against low earnings, IDRs are subject to two problems that may render them unsustainable. The first is adverse selection: individuals with (unobservably) lower earning potentials may be disproportionately attracted to IDRs (Herbst et al., 2022; Herbst and Hendren, 2024). The second concern, which remains largely understudied in the literature (Lochner and Monge-Naranjo, 2016; Yannelis and Tracey, 2022), is moral hazard: the same individual may strategically change their income in response to repayment plans. Relatedly, a common perspective in this literature is that IDR operates similarly to a proportional income tax and thus may reduce labor supply, as evidenced in de Silva (2024). However, this type of moral hazard—which lowers both one’s debt repayment *and* lifetime income—has been considered second-order, in that it can attenuate the welfare gains from contingent contracts, but cannot explain why IDRs do not exist in private markets (Herbst and Hendren, 2024). Moreover, for borrowers who expect to fully repay their debt, reducing labor supply does not eliminate the repayment obligation (Quiggin, 2014).

This paper highlights a distinct and previously underexplored behavioral margin: the intertemporal allocation of earnings. Because IDR links repayment to income over a finite horizon, borrowers may have incentives to shift earnings away from the repayment period. Such behavior differs fundamentally from standard labor supply responses. In particular, individuals may reduce income early in their careers while increasing income later, thereby lowering repayment without necessarily reducing—and potentially increasing—lifetime earnings. This intertemporal distortion arises from the combination of income dependence and a limited repayment horizon, and is absent under fixed payment plans such as SP.

¹The fraction of borrowers using these plans more than quadrupled from 10% in 2014 to 42% in 2023 (Federal Student Aid, 2014, 2023).

How relevant is this type of moral hazard empirically? Would it threaten the sustainability of IDRs for private lenders? What are its implications for government revenues? Answering these questions from observational data is challenging for several reasons, including the fact that individuals' counterfactual career paths under alternative repayment plans are not observed. We overcome these barriers and address these questions using a survey that elicits the same students' choice responses to different repayment plans, as well as a follow-up survey on their post-graduation real-life choices for validation.

To guide our survey design, we develop a simple dynamic model that focuses on a college loan borrower's post-education decisions. An individual makes decisions on human capital investment (a la [Ben-Porath 1967](#)) and savings/borrowing, subject to borrowing constraints and debt repayment burdens. Under IDR, repayments depend on contemporaneous income during the repayment period, after which any remaining debt is forgiven. When borrowing constraints do not bind, individuals overinvest in human capital and earn less early in their career (when they are under the obligation of debt repayment), relative to a debt-free benchmark. This constitutes a clearly defined form of moral hazard that does not arise under SP. When borrowing constraints bind (which is more likely to happen under SP than under IDR), both IDR and SP can lead to underinvestment, highlighting the interaction between contract design and financial frictions.

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 for our main analysis; for robustness checks, we also conduct a complementary survey of college students recruited from Prolific. The main 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.²

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

²This job-choice scenario is easy to understand and reflects the same trade-off as in a Ben-Porath model: initial earnings versus earnings growth. As discussed later, this tradeoff is indeed a feature in observational data such as the NLSY97. In addition, we show that Prolific survey respondents also perceive these trade-offs to be a relevant and important feature of earnings profiles.

college (Forgiven).³

Our main survey reveals the following findings. First, 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. The finding that more students choose the high-growth job under SAVE than under Forgiven cannot be explained by human capital investment being constrained by the burden of loan repayment; rather, it speaks to over-investment under IDR, i.e., moral hazard.

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 hazard. For example, 22% of students choose job profiles with lower initial wages and higher wage growth under SAVE than their choices under Forgiven, resulting in a nontrivial amount of debt unpaid.

Third, since job market frictions can distort individual choices, including one’s decision to overinvest, we examine whether such frictions may curb moral hazard. We ask 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. Consistently, we find that a significant fraction—18% to 22%, depending on the length of the delay in Job X—of students would still overinvest relative to the Forgiven case, suggesting that labor market frictions have a limited role in curbing IDR-induced moral hazard.⁴

Fourth, using the loan repayment and income trajectories implied by students’ job profile choices in the survey, we find that even in the absence of adverse selection, moral hazard alone would render SAVE unsustainable for private lenders, who would lose \$3.2K per \$35.0K

³Note 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 align with the August 2023 version of these federal IDRs at the time of the survey design.

⁴Given that this setup introduces frictions asymmetrically (only to one’s most preferred job under SAVE) and that most (66%) students prefer the steepest job profile under SAVE, it likely exaggerates the extent to which labor market frictions could curb moral hazard.

lent. However, government-run IDR plans are sustainable once lifetime income tax revenues are considered. In fact, assuming full tax compliance, SAVE would generate the highest (\$225.6K) and SP the lowest (\$212.8K) net government revenue per borrower.⁵

In addition, we 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 report that they would change their career trade-off between wages and amenities, favoring jobs with higher amenities. In addition, 7% of students say that they would have chosen a different major had they known about IDRs.

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.⁶ We provide three sets of evidence to enhance our confidence that our approach captures meaningful behavior. The first comes from the main 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 observe 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.

The second set of evidence—which we believe to be the most convincing—comes from a follow-up survey administered to a subsample of our initial survey respondents, who have already graduated from the University of Michigan. The goal of the survey was to investigate whether behaviors observed in the main survey are consistent with real-life choices. When asked to compare their current job to their second-most preferred job offer, which

⁵Our results regarding the sustainability of IDRs are contingent on the debt and earnings parameters used in our stylized scenarios. As we explain below, we designed these scenarios to be relevant for our samples. However, one should be cautious in extrapolating these findings to the broader population. In this sense, we view our results as a proof of concept: they show that moral hazard issues can be first-order.

⁶Some work finds close alignment between stated- and revealed preference experiments in the labor market (Mas and Pallais, 2017); moreover, 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 (Hainmueller et al., 2015; Stantcheva, 2022; Fuster and Zafar, 2023; Dechezleprêtre et al., 2025). This condition clearly holds in our context. For example, in designing the scenarios, we deliberately choose debt balances and starting wages that are relevant for our survey population.

they had declined, students who exhibited IDR-induced moral hazard in the initial main survey are indeed more likely to report that their current jobs have lower starting wages, higher wage growth, better learning opportunities, and better amenities. Although imprecisely estimated due to the small sample size, these real-life within-person job choices are qualitatively consistent with patterns observed in students' hypothetical choices in the main survey.

The third set of evidence comes from the Prolific survey. We show that our findings are robust across survey samples and to changes in survey features (such as the number of jobs students can choose from, whether the amount of debt forgiven is explicitly shown, or whether we explicitly state that the jobs are otherwise identical). In addition, we find direct evidence supporting our theoretical framework. For example, we show that respondents tend to rate wage growth as a more important consideration than initial wages, and that they perceive the trade-off between starting wages and wage growth as a relevant and important feature of real-life career paths.

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 *each* individual in the survey, we observe their choices under *all* of the different repayment plans. That is, we observe the distribution of changes in career choices of *all* respondents as we move across plans, thereby 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 career 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 analysis to document the underlying heterogeneity (see [Wiswall and Zafar, 2017](#), for related discussion). This turns out to be quite 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 standard observables hardly predict who faces binding borrowing constraints.

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 to be 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 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. In a survey setting, [Abraham et al. \(2020\)](#) 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 with universal IDR programs administered through 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 hazard 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.⁷ In a calibrated overlapping-generations model with educational, saving and labor supply decisions, [Matsuda and Mazur \(2022\)](#) find that IDRs increase welfare and that the social costs of adverse selection and moral hazard are small. 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

⁷This is consistent with the small labor supply elasticities documented in the literature ([Saez et al., 2012](#)).

our hypothetical scenarios, the adverse selection channel is shut down; yet, our results show that moral hazard alone can make IDRs unsustainable for private lenders. In addition, by eliciting the same individual’s choices under different repayment plans, our approach allows for a direct and clean investigation of moral hazard issues.

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 \(2022\)](#).⁸ Beyond the effect on earnings, studies have found that college loan burden can negatively affect the take-up 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 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 leads to a decline in borrowers’ earnings and hours. Using a servicer-based IV design, [Boisten et al. \(2025\)](#) find that IDR increases subsequent student loan borrowing, but individuals on IDR are more likely to stay current on their student loans. [Briones and Turner \(2025\)](#) find that the 2020-23 federal student loan repayment pause leads to a noticeable reduction in hours worked, mostly among borrowers who fail to complete a college degree. Moreover, college loan burden can also distort pre-market human capital investment, such as college major choices ([Abourezk-Pinkstone, 2023](#); [Hampole, 2024](#); [Murto, 2024](#)).

The rest of the paper is organized as follows. Section 2 presents the theoretical model that guides our empirical studies; Section 3 describes the survey; Section 4 reports the main results from the survey; Section 5 highlights the implications of our findings on the sustainability of IDR plans; Section 6 presents additional findings; Section 7 presents results from the follow-up survey; Section 8 presents results from the Prolific sample for robustness checks and further information; Section 9 concludes the paper; the Appendices contain additional results and details.

⁸Some 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 a certain number of years after college, and in some plans, one’s unpaid debt is forgiven afterwards.⁹ 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 potential moral hazard at the labor-supply margin.

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. In addition, we also consider a case, where one’s debt is totally forgiven upon leaving college

⁹Although not a focus of this paper, the fact that one is required to repay loans *early* in one’s career also has important implications. For example, using a calibrated overlapping generations model, [Boutros et al. \(2024\)](#) show that alternative contracts that offer partial or full payment deferral until later in life could yield large welfare gains relative to the status quo.

(Forgiven). The plan-specific repayment is given by

$$D^p(l_0, y_1) = \begin{cases} l_0 & \text{if } p = \text{SP}, \\ \tau y_1 & \text{if } p = \text{IDR}, \\ 0 & \text{if } p = \text{Forgiven}. \end{cases} \quad (1)$$

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 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:

$$y_t = k_t(1 - i_t). \quad (2)$$

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

$$k_{t+1} = K(k_t, i_t), \quad (3)$$

a production function that is increasing and concave in both inputs.

Borrowing Constraint An individual faces the following borrowing constraint:

$$a_t \geq \begin{cases} -B(k_t, \chi) & \text{for } t < 3, \\ 0 & \text{for } t = 3. \end{cases} \quad (4)$$

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 $B(k_t, \chi)$ is a function of one’s human capital and type. This constraint may arise from both financial limits and tastes (e.g., debt aversion).¹⁰

Remark To deliver the essential message and intuition, we have deliberately kept our model simple. First, our model uses a special type of income-dependent repayment (an equity contract) and abstracts from details that will not qualitatively affect our model’s predictions, such as the nonlinearity in repayment schedules and cross-plan differences in repayment horizons and interests. In our survey, we follow the 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. A 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 hazard in our survey. Third, the model assumes homogeneous non-labor income and initial (non-college loan) asset levels for all individuals (set to zero), hence abstracting away from the effect of factors such as parental transfers on one’s choices.¹¹

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 asset 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

¹⁰There is evidence suggesting that debt aversion acts as a barrier to college access (Burdman, 2005; Perna, 2008; Field, 2009).

¹¹Parental transfers may affect selection into IDR plans, income-generating efforts, and loan repayment (Lochner et al., 2021).

$y_2 = k_2$. A worker's asset choice solves the following problem:

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

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 investment, given by

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

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:

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

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

We denote i^{IDR} , i^{SP} and $i^{Forgiven}$ as one's optimal period-1 human capital investment

under IDR, SP, and Forgiven. Notice that under Forgiven, one’s post-education choices are not distorted by student debt. Our model predicts the following results (proven 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 underinvest in their human capital under both SP and IDR relative to the debt-forgiven case.¹²

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

¹²Using quantitative life-cycle models, previous studies have examined the issue of human capital underinvestment among young workers who face binding borrowing constraints and the burden of college debt repayment (e.g., Ionescu (2009); Fu et al. (ming); Alon et al. (2024)).

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 hazard more relevant.¹³

Naturally, one may question the realism of the Ben-Porath model and the relevance of its predicted income profiles in real life. We provide two types of evidence for this. First, we directly elicit views from a random sample of college students about career paths suggested by the Ben-Porath model versus the learning-by-doing model (Section 8.2.1). Both types of earning growth models are viewed as equally relevant and important. Second, 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, we show that this negative correlation does not seem to be driven by measurement error and it holds even conditional on major and initial occupation.

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 targeted 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.¹⁴ Based on the amount of time they spent completing the survey (28 minutes at the 50th percentile, 18 minutes at the 5th percentile), we infer that our participants took the survey seriously. Questionnaires of our main survey, follow-up survey, and Prolific survey are available at <https://tinyurl.com/mxz7ysf4>.

Table 1 provides a comparison between the survey sample and the eligible survey pop-

¹³We do not intend to distinguish between the Ben-Porath model and models with back-loaded labor contracts; they are observationally equivalent and have the same implications for our research question.

¹⁴Our response rate is in line with that of typical student surveys.

ulation (eligible 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 the population.

Table 1: Summary Statistics and Comparison with the Survey Sample

	(1)		(2)	
	Survey Population	Survey Sample	Survey Population	Survey Sample
	Mean	S.D.	Mean	S.D.
Freshman	0.35	0.48	0.50	0.50
Age	20.36	2.27	19.89	2.50
Female	0.53	0.50	0.60	0.49
White	0.66	0.47	0.66	0.47
URM	0.18	0.38	0.17	0.38
GPA	3.57	0.45	3.65	0.36
SAT	1,404	127	1,398	119
Household Income More Than \$100,000	0.53	0.50	0.46	0.50
Borrowed	0.34	/	0.42	0.50
Average Amount Borrowed (\$)	27,474	/	31,982	27,231
Observations	15,878		627	

Notes: Column (1) summarizes student characteristics for the survey population of all eligible 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 all current students, not just the eligible survey population (i.e., U.S. citizens or permanent residents).

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.

Studying this topic 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.¹⁵ 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 distribution of behavioral changes among *all* respondents. 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.

Repayment Regimes We study students’ career choices under four repayment regimes labeled as: Standard Payment (SP), Income-Based Repayment (IBR), Saving on a Valuable Education (SAVE), and unexpected debt forgiveness with zero repayment burden (Forgiven). 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; these key features are fully reflected in our survey. 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); interest capitalization is eliminated 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.

¹⁵de 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.

In the survey, when calculating payments, we assume the individual remains single, and this is made explicit in the survey scenario.¹⁶

Scenario Overview Respondents are randomized into either a high-debt case (\$40,000) or a low-debt case (\$30,000) upon graduation. We choose these loan amounts based on two facts: among UM undergraduates who graduated in 2024 with loans, the average cumulative principal is \$27,923 ([Common Data Set, 2024](#)); 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, 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 annual earnings and earnings growth but are *otherwise identical*. It should be noted that, in terms of one’s earnings profile and how it is affected by college loan repayment plans, the same implications would arise from the following two cases: (i) investing in one’s human capital a la Ben-Porath, or (ii) choosing a job with a lower starting wage but higher growth rate. We do not intend to distinguish between these two cases; we choose to present the scenario in the latter format because it is easier for respondents to understand, which is very important in a survey setting.

These job profiles are presented in Table 2. Since we want to keep the scenarios realistic, we take the average earnings of UM bachelor graduates (\$56,626) into account in specifying these initial wages.¹⁷ 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

¹⁶Accordingly, 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.

¹⁷Average earnings of UM bachelor’s graduates (\$56,626) are based on the First Destination Survey of students who graduate from the College of Literature, Science, and the Arts, which accounts for 60% of all UM undergraduates.

is higher for a job with a steeper income profile; otherwise, a flatter profile would dominate a steeper profile for any concave preference for consumption. In the survey, we do not show these lifetime income numbers to students, as doing so may confuse, mislead, or prime them.

Two points are worth mentioning. First, in real life, jobs that differ in wage profiles are likely to differ in other aspects as well. In Section 8.1, we provide evidence that, by explicitly telling students that these jobs are otherwise identical, our survey results are likely to understate the severity of moral hazard issues. Second, to focus on behavioral responses to repayment plans, we shut down adverse selection by giving all respondents within a randomized group the *same* choice set of jobs and hence the same potential earnings paths. 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: 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 (in millions). 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 own choices and choices recommended to others. These choices may differ if students consider their own situations and preferences that differ from

those of an average student; they may also differ due to factors such as experimenter demand effects. 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 choose to convey the information through videos that explain the details of each plan. 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 “Wolverine” with the middle-profile Job B to illustrate the (in)dependence of repayments on one’s income. In the second 4-minute video, we introduce SAVE and explain its features. We again use the “Wolverine” 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.¹⁸

Respondents cannot forward the video, but they can pause it at any time and review it as many times as they want. Each video is followed by understanding checks, highlighting key characteristics of various repayment plans. Each understanding check allows for two attempts before showing the correct answer and explanations. 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.¹⁹

For a given repayment plan, before we ask respondents about their choices, we show them 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.²⁰

¹⁸Appendix F.1 contains the scripts from the videos; the videos are available at <https://tinyurl.com/39mkxdrd>.

¹⁹The Forgiven case is presented toward the end of the survey and the choices are only for oneself.

²⁰The two videos effectively go through the same information as in the table for Job B under the different

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. 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).

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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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 in the high-debt case.

repayment plans.

Job Market Frictions The extent to which an individual can 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 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 away from Job X, we stop asking additional questions; otherwise, we increase N to 4; if one still chooses Job X, we increase N to 6.

Other Trade-offs We also ask respondents whether they would change their major choice and/or other aspects of career choices after learning about IDRs through the survey, and if so, how. For career choices, we elicit how they trade off earnings with aspects such as job stability, life-work balance, flexibility, benefits, and alignment with their own interests.

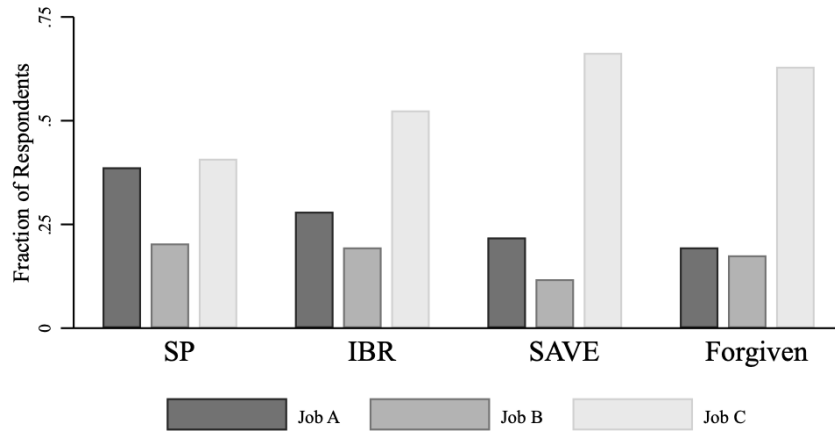
4 Empirical Results

In this section, we present results from our UM survey, focusing on students’ stated choices for themselves in each of the hypothetical scenarios. Section 6.2 compares these choices with students’ recommendations for “Wolverine” and finds qualitatively similar results. Since our results do not differ between the randomized high- versus low-debt groups, we pool the responses from both groups.

4.1 Plan-Specific Distribution of Choices

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 prefer Job A, 20% prefer Job B, and 41% prefer Job C. As the repayment plan becomes more generous, the fraction of

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).

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.²¹ More importantly, it should be noted that although the generosity of repayment plans in itself (without income dependency) can affect students’ job choices, it cannot explain why more students choose the high-growth job under SAVE than under Forgiven. The fact that some students switch to jobs with lower initial earnings but higher growth under an IDR relative to the case where their debt is forgiven (i.e., where they are not constrained by loan repayment) is consistent with moral hazard.²²

²¹The Kolmogorov-Smirnov two-sample test and simple regression results suggest that all pairwise distributions differ significantly, except for SAVE versus Forgiven.

²²The expected discounted value of repayments under the IDRs is, of course, different than under SP. Prior work has shown that changes in net present value of student loan repayments (due do exogenous factors)

To see this more clearly, we need to go beyond Figure 2, which masks individual responses that can go in different directions. For example, our model (Section 2.3) predicts that, relative to their choice under Forgiven, an individual will switch to a steeper job profile under IDR if their borrowing constraint is non-binding but to a flatter job if it is binding. The next set of results examines individual-level responses.

4.2 Within-Individual Choice Comparison

Table 3: Changes in Job Choices: From Forgiven to SAVE, IBR, SP

Forgiven to	(1) SAVE	(2) IBR	(3) SP	(1) vs. (3) P-value	(2) vs. (3) P-value
Steeper	0.217*** (0.016)	0.163*** (0.015)	0.115*** (0.013)	0.000	0.001
Flatter	0.198*** (0.016)	0.271*** (0.018)	0.364*** (0.019)	0.000	0.000
Same	0.585*** (0.020)	0.566*** (0.020)	0.522*** (0.020)	0.010	0.056
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. (x) vs. (y) p-values report the p-values testing the difference in coefficients between Column (x) and Column (y). ***, **, and * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table 3 examines within-individual job choice changes when moving from Forgiven to various repayment plans (SP, IBR, and SAVE). 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 can affect career choice. However, this subsidy channel cannot explain why students may switch to jobs with steeper growth profiles under an IDR relative to Forgiven, since the subsidy amount under an IDR is weakly lower than under Forgiven.

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 hazard under IDRs: some students overinvest in their human capital during their early-careers (debt-repayment period) and hence lower their loan repayment.

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 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, Table 3 suggests that IDRs act as a double-edged sword. On the one hand, many students underinvest in their human capital under SP, while IDRs allow them to increase their human capital investment. On the other hand, IDRs induce significant moral hazard problems.²³

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.2 shows that students' observables are barely correlated with such moral hazard (R^2 below 0.04). An exception is that students who have student loans in real life, i.e., those who presumably have thought more about repayment, are economically and statistically significantly more likely to make such choices.

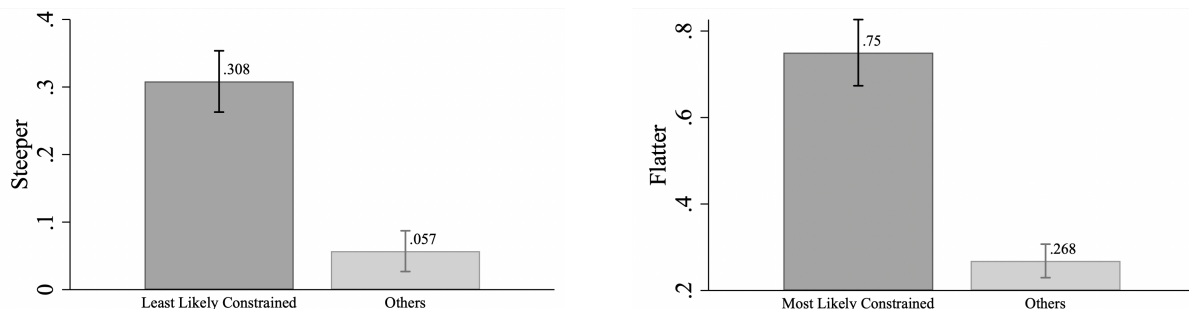
Alternative Measures Table 3 also shows that more than 50% of students' job choices remain unchanged with or without a loan burden. Given the limited choice set, some of these students may be constrained from switching jobs: an even steeper (flatter) job profile is not available for those who prefer Job C (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. Appendix Table C.3 presents

²³These findings also hold when the sample is split by whether students made an above-median number of mistakes in the understanding checks, as shown in Appendix Table C.1. Notably, the fraction of students who move to a steeper profile from Forgiven to SP—potentially due to survey noise—is larger for the subsample of students who make above-median mistakes in answering the knowledge-check questions. This suggests that the inconsistency may partially stem from inattention or a lack of understanding of the survey content.

upper bounds on over- and underinvestment using a weakly steeper/flatter classification.²⁴ We return to the issue of the limited choice set in Section 8.1.

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 one’s borrowing constraints are. Under an IDR plan, an unconstrained individual will overinvest in their human capital relative 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

²⁴Table C.3 shows that 68% and 57% of students switch to weakly steeper job profiles when moving from Forgiven to SAVE and IBR, respectively, and that 28%, 36%, and 49% of students switch to weakly flatter job profiles when moving from Forgiven to SAVE, IBR, and SP, respectively.

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 categorize 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”).²⁵

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 switch to a steeper job profile (31%) compared to others (6%), i.e., moral hazard problems are much more prevalent 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%). It should be noted that these results are not mechanically driven by the definition of the “least/most likely constrained” students.²⁶

One may ask whether choice-revealed borrowing (un)constrained individuals can be detected using observable characteristics. In Table C.4, we regress the dummy of “most (least) likely constrained” 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 debt aversion cause students to act as if they are borrowing constrained even though not financially so.²⁷ The lack of explanatory power of covariates in Table C.4 underscores the value of having within-individual experimental variation to understand how repayment plans affect behaviors.

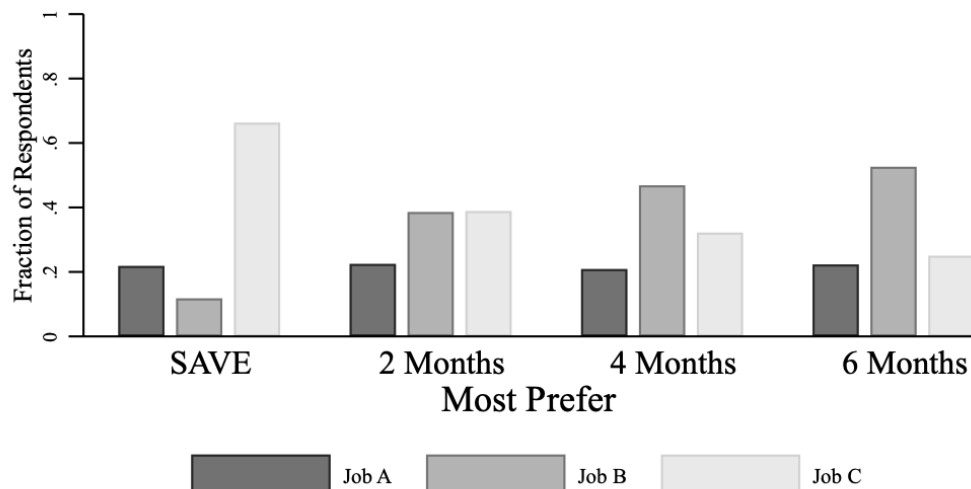
²⁵Most likely due to sample noise (mistakes or lack of attention), 31 respondents (less than 5% of the whole sample) fall into both the least and most constrained groups, which should not happen by definition. We include these individuals in our analysis; our results hold when we exclude them, except that the first fraction in panel (b) of Figure 3 would be 100% if we exclude the 31 violating cases.

²⁶For example, the “least likely constrained” participants are inferred from their choices under SP vs. Forgiven. In contrast, panel (a) of Figure 3 refers to choices under SAVE vs. Forgiven.

²⁷This challenge is analogous to the empirical challenge in the literature that estimates marginal propensities to consume: liquid wealth and other standard observables have very limited predictive power to identify hand-to-mouth households (Fuster et al., 2020).

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 imposed only on one's originally preferred job under SAVE, about 60% of students switch to a different 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. The first three bars in Figure 4 represent the distribution of choices under baseline SAVE without frictions (the same as in Figure 2); the sets of bars to the right represent the distribution with job market frictions.²⁸ 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 with the length of the delay, from 12% in the baseline to 53% with a 6-month delay; in contrast, the fraction choosing the high-growth Job C decreases from 66% to 25% with a

²⁸We 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.

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*** (0.016)	0.183*** (0.015)	0.190*** (0.016)	0.187*** (0.016)	0.042	0.152	0.122
Flatter	0.198*** (0.016)	0.389*** (0.019)	0.443*** (0.020)	0.502*** (0.020)	0.000	0.000	0.000
Same	0.585*** (0.020)	0.427*** (0.020)	0.367*** (0.019)	0.311*** (0.019)	0.000	0.000	0.000
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. (x) vs. (y) p-values report the p-values testing the difference in coefficients between Column (x) and Column (y). ***, **, 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 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 20%. In contrast, job market frictions significantly increase the fraction of students choosing a flatter job profile than their choices under Forgiven (from 20% to 50%) and decrease the fraction of students choosing the same job as their choices under Forgiven (from 59% to 31%).

Notice that the friction we introduce 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 the steepest job profile (Job C) 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 hazard. Despite this, we find consistently that, under SAVE, a significant fraction (18% to 22%) of students choose job profiles steeper than their choices under Forgiven, indicating that labor market frictions have a limited role in curbing IDR-induced moral hazard.

5 Sustainability of IDRs

IDR-induced moral hazard, when defined as labor-supply adjustment, has been considered second-order in the literature in that it cannot explain why IDRs do not exist in private markets. Considering potential moral hazard 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 respondents’ stated job choices under corresponding repayment plans.

Column (1) of Table 5 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.²⁹ 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. However, such factors are unlikely to vary across repayment plans, and so the qualitative comparison across them would still be valid.

In panel (a), we perform these calculations for the three repayment 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

²⁹Government 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. 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 the freshman year.

Table 5: Government Total Net Revenue and Loan Repayment Under Different Plans

(\$1,000)	(1)	(2)
	Government Total Net Revenue	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.

generous. However, in terms of loan profits, SAVE is the least profitable, resulting in a *loss* of \$3.2K per student or per \$35.0K lent.³⁰

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

Finally, panel (c) re-computes government revenues and loan profits following IBR and SAVE rules but using individuals’ career choices under SP. The comparison between panel

³⁰The qualitative conclusions are the same across the high- and low-debt cases (Table C.5).

(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 were it carried out by a private lender (Column (2)).³¹

6 Additional Findings

6.1 Non-Pecuniary Job Characteristics

In line with prior studies, we find that college loan repayment can distort one’s choices of jobs along non-pecuniary dimensions. In response to a question towards the end of the survey, 17% of all respondents 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. Of these students, 37% say that they would now look for a job with a better work-life balance or less stress, 30% indicate that they would seek a job more aligned with their interests, and 29% say they would look for a job with more benefits (such as vacations or flexible work schedules), even if the job has lower take-home pay.

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 had they learned about IDRs. As expected, this proportion is slightly higher for freshmen than seniors (7.4% versus 6%, p-value of difference is 0.476).

6.2 Own Choices versus Recommendations for “Wolverine”

While our analysis primarily focuses on students’ stated choices for themselves, we also compare own choices with students’ recommendations for “Wolverine,” an average UM graduate. There is no reason why, for any given student, the two choices should be identical: after all,

³¹In 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.6 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.

not every student is average. 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: in such a case, even an average UM student would choose differently for themselves than for the (other) average UM student. Our survey design allows us to detect such biases.

As we show in Online Appendix E, overall, students’ recommendations and own choices are fully aligned for 61% to 69% of cases, depending on the repayment plan. 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. That is, we find no evidence of a systematic bias in own choices.

Moreover, among the subset of individuals who are least likely to be borrowing constrained, when they make a recommendation that differs from their own choices, the recommendation is significantly more likely to be a flatter job profile. The opposite is true among the subset of most-likely-constrained students. These findings are very sensible: these students realize that a typical UM student is constrained to a different degree than they are, a factor they take into account when making recommendations for others.

6.3 Adverse Selection into IDRs: Suggestive Evidence

In our hypothetical scenarios, we shut down adverse selection by offering all individuals (within a randomized loan-amount group) the same choice set of job profiles or earnings potentials. We do so intentionally to cleanly study individuals’ career choice responses to repayment plans (i.e., moral hazard issues).

Although not the main focus of our study, at the beginning and end of the survey, we ask students about the probability that they would enroll in an IDR plan. At the start of the survey, only 20% of students are aware of IDRs, and the likelihood of signing up for an IDR is just 14%. This low level of familiarity justifies the inclusion of detailed video instructions and knowledge checks before asking students to make choices under different repayment plans. After the survey, the likelihood of signing up for an IDR increases significantly to 40%.

We examine who would enroll in these plans by regressing baseline enrollment likelihood, endline likelihood, and their differences on a set of demographic variables (Appendix Table

C.7). The results provide suggestive evidence of adverse selection: students who currently have loans, expect to borrow more by graduation, and anticipate lower earnings at graduation are more likely to select into IDRs.

7 Follow-up Survey: Real-life Choices

A typical concern about stated choices in hypothetical scenarios is whether they reflect real-life choices. To probe this, we provide direct evidence through a follow-up survey among the main survey respondents who already graduated from college. In February 2026, we recontacted 317 students who were seniors at the time of the main survey (21 months after their normal graduation date) and elicited their post-graduation real-life job choices. We received responses from 117 of these individuals, 60 of whom report having borrowed some federal student loans.³² Given our focus on how college loan repayment plans affect one’s job choices, our analysis focuses on these 60 respondents, i.e., those whose post-graduation behaviors could have been affected by these plans. Within this subsample, 43 are employed, 4 are unemployed, and 13 are enrolled in graduate school. For each of these 60 respondents, we construct two indicators based on their hypothetical choices in the *initial* survey: (1) moral hazard, defined as having chosen a steeper job profile under SAVE than under Forgiven ($N = 15$), and (2) underinvestment, defined as having chosen a flatter job profile under SP than under Forgiven ($N = 17$).

Cross-individual job comparisons are likely confounded by unobservable traits; instead, we rely on within-individual comparisons. For employed respondents who received multiple job offers when accepting their current job, we elicit the starting salary and the expected salary five years after the start, for both their current job and the most preferred job offer they did not take (i.e., the job they would have taken had they not accepted their current job). For non-working individuals who received some job offer(s), we elicit the corresponding salary information for the most-preferred offer received and the job offer they realistically expect to take. The total number of these two groups is 32 among the 60 federal-loan borrowers.

³²Appendix Table C.8 shows little evidence of selection into the follow-up survey: the likelihood of having a student loan, student loan balances, and the tendency to overinvest (moral hazard) or underinvest in human capital in the initial survey do not differ statistically by follow-up survey participation.

Table 6: Wage Profile Comparison by Proxies for Moral Hazard and Under-Investment

	Starting Salary	Wage Growth (g)	Further Education
	(1)	(2)	(3)
	Higher start	Higher g	1(FT grad school)
<i>Panel (a): Moral hazard proxy</i>			
Steeper under SAVE	-0.169 (0.185)	0.121 (0.188)	0.067 (0.131)
Constant	0.714*** (0.102)	0.333*** (0.106)	0.200*** (0.061)
Observations	32	32	60
<i>Panel (b): Under-investment proxy</i>			
Flatter under SP	0.292* (0.159)	-0.167 (0.189)	-0.056 (0.115)
Constant	0.583*** (0.104)	0.417*** (0.104)	0.233*** (0.066)
Observations	32	32	60

Notes: This table reports OLS estimates from linear probability models in which the dependent variable is a binary indicator for how a respondent’s current job compares to the second-most preferred offer they did not accept (the “foregone offer”). The sample is restricted to follow-up survey respondents who either were employed and received multiple job offers, or nonworking but received at least one offer they did not accept, and who have federal student loans. Columns (1) compare whether the starting salary is higher relative to the foregone offer. Columns (2) compare whether wage growth, g , defined as the ratio of fifth-year salary to starting salary, is higher relative to the foregone offer; column (3) indicates enrollment in full-time graduate school. Panel (a) uses an indicator for whether the respondent chose a steeper job profile under SAVE than under Forgiven in the main survey as the moral hazard proxy. Panel (b) uses an indicator for switching to a flatter job profile from Forgiven to the Standard Plan as the under-investment proxy. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Using these elicited salary profiles, we construct binary indicators for whether the current or expected job has a lower, equal, or higher starting salary than the most-preferred declined offer, and analogously for wage growth, defined as the ratio of fifth-year salary to starting salary. Panel (a) of Table 6 shows that, among the 32 respondents, those who exhibited moral hazard in the main survey (i.e., those who chose a steeper job profile under SAVE than under Forgiven in the main survey) are less likely to report that their current/expected job has higher starting wages, and more likely to report higher wage growth relative to the foregone offer. Panel (b) shows the opposite pattern for those who exhibited underinvestment in the initial survey. Although these estimates are statistically insignificant due to the small sample sizes, the signs are consistent with their hypothetical choices in the initial survey. Consistently, Column (3) shows that, among all 60 federal-loan borrowers, the moral-hazard (underinvestment) group is more (less) likely to be enrolled in graduate school—a profile with

a zero or negative starting income (during graduate school) but high growth (post-graduate school).

Table 7: Why the Current Job by Proxies for Moral Hazard and Under-Investment?

	(1) Starting wage	(2) Wage growth	(3) Skill development	(4) Job amenities
<i>Panel (a): Moral hazard proxy</i>				
Steeper under SAVE	-0.113 (0.187)	0.022 (0.192)	0.303 (0.184)	0.147 (0.131)
Constant	0.476*** (0.113)	0.524*** (0.113)	0.333*** (0.106)	0.762*** (0.096)
Observations	32	32	32	32
<i>Panel (b): Under-investment proxy</i>				
Flatter under SP	0.250 (0.204)	-0.042 (0.211)	-0.250 (0.190)	-0.083 (0.177)
Constant	0.375*** (0.102)	0.542*** (0.105)	0.500*** (0.105)	0.833*** (0.079)
Observations	32	32	32 32	32

Notes: This table reports OLS estimates from linear probability models in which the dependent variable is a binary indicator for whether the respondent somewhat agrees or strongly agrees that their current job (or expected job, for unemployed respondents) is better than the foregone offer along each job dimension. Columns (1)–(3) separately examine whether respondents report that their current job has a better starting wage, wage growth prospects, or skill development prospects. Column (4) reports a composite indicator equal to one if the respondent reports that their current job is better on at least one of the following dimensions: job security, work–life balance, fit with personal interests, non-wage monetary benefits, non-monetary benefits, and location. The sample is restricted to follow-up survey respondents who either were employed and received multiple job offers, or nonworking but received at least one offer they did not accept, and who have federal student loans. Panel (a) uses an indicator for whether the respondent chose a steeper job profile under SAVE than under Forgiven in the initial survey as the moral hazard proxy. Panel (b) uses an indicator for switching to a flatter job profile from Forgiven to the Standard Plan as the under-investment proxy. “Better amenities” combines work–life balance and non-wage benefits. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

To better understand why the employed chose their current job and the unemployed chose to be unemployed, over their most-preferred declined job offer, we present respondents with a list of possible reasons and ask for their agreement with each of the statements (using a Likert scale). For example, one such statement is “*My current job offers better prospects for my future career (e.g., I can learn more in my current job)*”. For each response, we classify answers of “somewhat agree” or “strongly agree” as a positive answer. We regress the binary

indicator of a positive answer to the statements on the moral hazard and underinvestment proxies from the initial survey as in Table 6. Consistent with the results in Section 6.1, Panel (a) of Table 7 shows that those who exhibited moral hazard in the initial survey tend to agree that they chose their current job over other offers because their current job has higher wage growth (though not higher starting wages), better skill development opportunities, and better job amenities overall; Panel (b) shows opposite patterns for those who exhibited underinvestment in the initial survey.

Taken together, findings from this follow-up survey, although imprecise, suggest that the behavioral responses observed in our main survey reflect real-life choices.

8 Prolific Survey: Robustness Checks and Insights

To provide robustness checks and further insights, we conducted a survey using a sample of 428 students currently enrolled in U.S. four-year colleges, recruited through Prolific. These participants completed a validation survey that closely followed the UM student survey. Details of the sample and the survey are presented in Appendix G.

In this survey, participants first watch a short video introducing the features of the SP and SAVE plans, and then make job choices under each plan (SP, SAVE, and Forgiven).³³ For the main set of questions, i.e., those related to job choices under different repayment plans, we randomize the sample into four arms. We explain the purpose for each of these arms below. In addition, we collect information useful for interpreting our main results.

8.1 Robustness Checks

Do the Results Persist in a Different Sample? To assess the robustness of our findings across different samples, we compare the responses of UM students with those of Prolific participants in Arm 1; this arm presents respondents with the same set of messages and questions as the UM student survey. Overall, we find that Prolific participants are somewhat less responsive to changes in repayment plans. Nevertheless, the results are comparable to the UM sample. For example, as shown in Appendix Table G.1, comparing their choices under

³³Because we ask additional questions in this survey, to keep the survey within reasonable lengths, we exclude IBR-related content from this survey and focus on SP, SAVE, and Forgiven.

SAVE versus Forgiven, 18.4% of Prolific participants move to a steeper job profile (overinvestment), and 15.2% move to a flatter job profile (underinvestment). The corresponding fractions in the UM sample are 21.7% for overinvestment and 19.8% for underinvestment.

Do the Results Persist without Highlighting Debt Forgiveness? In our main survey, students see the amount of debt forgiven associated with each job profile, under a given repayment plan (Figure 1). In the real world, this trade-off may not be so salient. Thus, one may be concerned that our setup primes students to think about the amount of forgiven debt and makes them more likely to select jobs that lead to greater debt forgiveness, i.e., steeper job profiles, than they would otherwise select.

We investigate this in Arm 2. Arm 2 differs from Arm 1 only in that, when describing jobs under each plan (counterpart to the table shown in Figure 1), it omits the row that shows the amount of debt forgiven. Comparing their choices under SAVE versus under Forgiven (Appendix Table G.2), 16% of students move to a steeper profile in Arm 2, while 18% do so in Arm 1. This difference is small and statistically insignificant, suggesting that the salience of the amount of debt forgiven is not driving our findings.

What if Non-Wage Job Characteristics also Differ? In our main survey, students are asked to assume that the three jobs differ only in wage profiles and are otherwise identical. However, in real life, jobs that differ in wage profiles may also differ in other aspects that workers care about.

To investigate the impact of such considerations on our results, we implement Arm 3, which differs from Arm 1 only in that it does not inform respondents that jobs are otherwise identical, thereby allowing them to freely assume that jobs may differ in other dimensions. A comparison of Arm 3 with Arm 1 reveals that, if anything, our main results likely understate the severity of moral hazard (Appendix Table G.2): 25% of students in Arm 3 choose a steeper job profile under SAVE versus under Forgiven, higher than the 18% figure in Arm 1 (though the difference is not statistically significant).

This difference appears to be driven by the fact that respondents tend to associate steeper wage profiles with better job amenities. In their answers to our follow-up question, 83% of respondents report that, in real life, jobs with different wage profiles likely differ in amenities. More importantly, when asked to rank jobs *only* with respect to the job amenities, the

steepest job profile (Job C) is ranked best most frequently, by 52% of Arm-3 respondents.

Does the Size of the Choice Set Matter? Respondents in our UM student survey are given a limited set of three jobs to choose from, which may bias us against finding moral hazard (i.e., if students already choose the steepest job profile under Forgiven). To examine this, we implement Arm 4, which differs from Arm 1 only in that it has an additional job (Job D) in one’s choice set under all repayment plans (SP, SAVE, and Forgiven); Job D features a lower starting wage and a higher growth rate than all the other jobs (Table G.3).

We observe more movement across repayment plans when we expand the job choice set: in Arm 4, 26% of students move to a steeper job profile – i.e., overinvestment – under SAVE versus under Forgiven (compared to 18% in Arm 1), and 30% move to a flatter job under SP – i.e., underinvestment – versus under Forgiven (compared to 22% in Arm 1). Although the differences between Arms 4 and 1 are not statistically significant, these results suggest that our main survey findings likely serve as a lower bound on the role of repayment plans in one’s career path choices.

8.2 Putting our Hypothetical Scenarios in Context

To better understand the factors that influence respondents’ job choices and to test whether our hypothetical scenarios (designed based on a Ben-Porath model) are reasonable, we include several questions in the Prolific survey to test how closely our model mechanisms align with students’ perceptions.

8.2.1 The Importance and the Source of Wage Growth

How Informed are Students about Wage Profiles across Careers? Over 70% (59%) of students report being at least moderately well informed about starting salary (salary growth) differences across careers. About 40% of students report that they often look up occupation-specific starting salaries; a similar fraction report that they often look up occupation-specific salaries for an average worker or workers with some experience/tenure; 24% report doing both. These responses suggest that students do care about wage profiles (and not simply initial wages) and have some information about them.

How Important is Wage Growth? We ask students to rank the importance of each of the six job characteristics—starting salary, flexibility, salary growth, job stability, learning opportunity, and enjoying the job—on a scale from least important (1) to most important (7). On average, wage growth receives the second highest importance score (5.7), right after job stability (5.9), while starting salary receives the lowest score (4.9) (Appendix Table G.4).

Ben-Porath versus Learning-by-Doing? We design a question to examine which of these two classical wage growth models is more consistent with students’ perceptions. Specifically, we ask them to compare two cases:

Case 1: jobs that pay relatively less initially but provide opportunities or resources to build up skills, leading to higher earnings later;

Case 2: jobs where one naturally gets better at what they do over time, leading to higher pay as tenure grows.

When asked which case better reflects the kinds of opportunities they expect in their careers, 41% of respondents choose Case 1 (Ben-Porath), 39% choose Case 2 (learning-by-doing), and the rest view both as equally likely. When asked which case is a more important source of income growth, 38% choose Case 1 and 41% chose Case 2. That is, both sources of wage growth—as captured by the Ben-Porath model and the learning-by-doing model—are perceived to be equally prevalent and important.

In addition, 65% of participants report that they are at least somewhat likely to consider a trade-off between starting salary and salary growth in their careers; and they perceive a 56% chance that they will face such a trade-off when making a job choice.

8.2.2 Perceived Prevalence of Moral Hazard

Toward the end of the survey, we directly elicit participants’ beliefs about the prevalence of moral hazard in loan repayment with the following question: *Out of 100 student loan borrowers, how many do you think would strategically choose jobs or careers that have lower early-career earnings and higher earnings later on (so that they would pay less in student loans and potentially have part of their debt forgiven)?*

On average, participants expect that about 50% of student loan borrowers would do so, suggesting that moral hazard is (believed to be) a serious and relevant problem for student loan programs. It is worth noting that this perception echoes our finding from over 90,000

Reddit posts related to student loans and Public Service Loan Forgiveness (PSLF)—which conditions debt forgiveness on qualifying public-sector or nonprofit employment after 120 monthly payments—and student loans: roughly 17% of the posts mention jobs or careers, with many explicitly discussing the trade-off between lower-paying PSLF-eligible jobs and higher-paying private-sector opportunities (Appendix Table C.9).³⁴

9 Conclusion

Income-Driven Repayment plans (IDRs) are becoming increasingly prevalent and generous. Alongside their benefits—for example, reducing borrowers’ repayment burden during low-income periods—there are concerns about adverse selection and moral hazard. Relative to adverse selection, IDR-induced moral hazard is often considered 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 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. Importantly, in a follow-up survey, we show that students’ choices under the hypothetical scenarios in the main survey are reflected in their real-life job choices. We also replicate our findings in a complementary survey that we fielded on Prolific and show that our findings are robust to changes in several important survey features.

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* could make a generous IDR plan (e.g., SAVE) unviable for private lenders; this is a novel finding.³⁵

³⁴We classified posts into themes using keyword matching; most (66%) posts concern general loan and repayment questions (e.g., payment count disputes and interest accrual), while 17% mention job or career considerations (e.g., job, career, salary, employer, occupation).

³⁵Admittedly, these results are contingent on the debt and earnings parameters used in our stylized

In contrast, the Government can undo the loss from student loans by collecting borrowers' lifetime income taxes. More broadly, our findings suggest that state-contingent contracts with limited horizons can induce distortions in the timing of economic activity. Accounting for such intertemporal responses may be important for the design of policies that condition payments on realized outcomes over only part of the life cycle.

On the methodological front, our paper shows how individual-level variation in choices under different plans enables researchers 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 deliberately shut down the adverse selection margin in our hypothetical scenarios and associated survey questions. In a separate set of survey questions, we do find some suggestive evidence of adverse selection. 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.

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Moral Hazard and the Sustainability of Income-Driven Repayment Plans (Online Appendix)

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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

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

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 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 :

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

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

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

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

The FOC becomes:

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

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:

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

$$i = \left(\frac{(1-\tau)(1+r)}{\alpha_2 Ak_1^{\alpha_1-1}} \right)^{\frac{1}{\alpha_2-1}}$$

Similarly for i under SP:

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

$$i = \left(\frac{(1+r)}{\alpha_2 Ak_1^{\alpha_1-1}} \right)^{\frac{1}{\alpha_2-1}}$$

Therefore, we have

$$i^* = \begin{cases} \left(\frac{(1-\tau)(1+r)}{\alpha_2 Ak_1^{\alpha_1-1}} \right)^{\frac{1}{\alpha_2-1}} & \text{if IDR,} \\ \left(\frac{(1+r)}{\alpha_2 Ak_1^{\alpha_1-1}} \right)^{\frac{1}{\alpha_2-1}} & \text{if SP.} \end{cases}$$

A.2 Comparative Statics for Optimal Investment i^*

Since we have

$$i^* = \begin{cases} \left(\frac{(1-\tau)(1+r)}{\alpha_2 Ak_1^{\alpha_1-1}} \right)^{\frac{1}{\alpha_2-1}} & \text{if IDR,} \\ \left(\frac{(1+r)}{\alpha_2 Ak_1^{\alpha_1-1}} \right)^{\frac{1}{\alpha_2-1}} & \text{if SP.} \end{cases}$$

Given that α_1 and α_2 lie between 0 and 1, the following properties of i^* are straightforward to verify:

- 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:

$$\frac{k_1(1-\tau)}{(k_1(1-i)(1-\tau) + B)^2} = \beta \frac{Ak_1^{\alpha_1}\alpha_2i^{\alpha_2-1} \left(1 + \sqrt{\frac{\beta}{1+r}} \right)^2}{((1-\delta)k_1 + Ak_1^{\alpha_1}i^{\alpha_2} - B(1+r))^2}$$

$$\frac{\sqrt{k_1(1-\tau)}}{k_1(1-i)(1-\tau) + B} = \frac{\sqrt{\beta Ak_1^{\alpha_1}\alpha_2i^{\alpha_2-1}} \left(1 + \sqrt{\frac{\beta}{1+r}} \right)}{(1-\delta)k_1 + Ak_1^{\alpha_1}i^{\alpha_2} - B(1+r)}$$

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 $i^{l_0=0} > i^{l_0>0}$, $i^{\text{forgive}} > i^{\text{SP}}$.

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 entering a corner solution: 1) decreases with lower τ under IDR, and is smaller under IDR relative to SP; 2) decreases with lower A , α_1 , and l_0 , and 3) decreases 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:

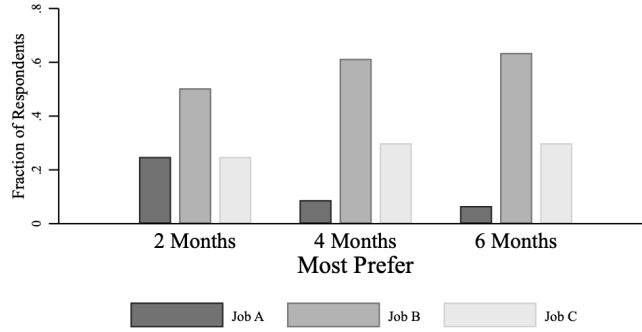
IBR	Job A	Job B	Job C
Starting annual salary in the first year	\$62,500	\$52,500	\$45,000
Starting monthly salary in the first year	\$5,208	\$4,375	\$3,750
Annual earnings growth	1.5%	3%	4.25%
Loan repayments			
# Years with positive loan repayment (n)	12	14	16
Total repayments paid	\$50,516	\$53,652	\$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)

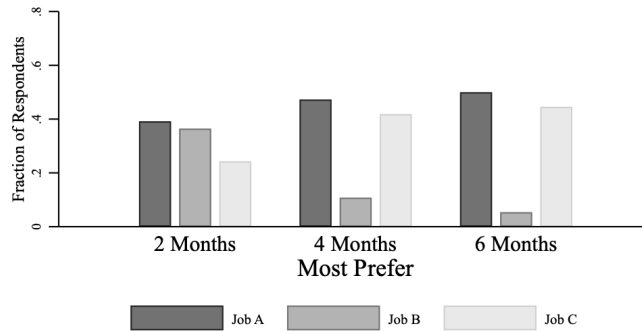
Notes: This figure displays screenshots where participants rank three jobs in order of preference under the Standard Payment (SP) plan (panel (a)) and the Income-Based Repayment (IBR) plan (panel (b)) under the high-debt case.

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

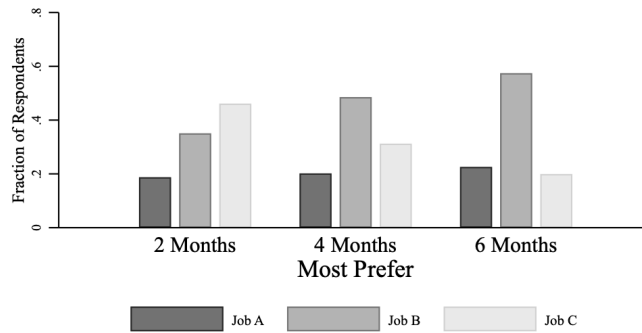
(a) Prefer Job A under SAVE



(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: Heterogeneity of Changes in Job Choices: From Forgiven to a Repayment Plan

Forgiven to	(1) SAVE	(2) IBR	(3) SP	(4) SAVE	(5) IBR	(6) SP
	Below-Median Wrong Attempts			Above-Median Wrong Attempts		
Steeper	0.241*** (0.024)	0.133*** (0.019)	0.093*** (0.016)	0.191*** (0.023)	0.195*** (0.023)	0.139*** (0.020)
<i>vs. SP P-value</i>	0.000	0.002		0.028	0.023	
Flatter	0.099*** (0.017)	0.225*** (0.023)	0.340*** (0.026)	0.304*** (0.026)	0.320*** (0.027)	0.389*** (0.028)
<i>vs. SP P-value</i>	0.000	0.000		0.002	0.017	
Same	0.660*** (0.026)	0.642*** (0.027)	0.568*** (0.028)	0.505*** (0.029)	0.485*** (0.029)	0.472*** (0.029)
<i>vs. SP P-value</i>	0.008	0.014		0.348	0.713	
Observations	324	324	324	303	303	303

Notes: This table shows how students' job choices change when moving from a debt-forgiven scenario to various repayment plans (SP, IBR, SAVE), split by whether respondents made fewer or more than the median number of wrong attempts. There are 14 understanding questions, each allowing up to two attempts, for a total of 28 possible attempts. The median number of wrong attempts is 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. *vs. SP* p-values report the p-values testing differences under SAVE or IBR compared to SP. ***, **, and * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table C.2: Prediction of Demographic Characteristics on Choosing Steeper Jobs Going from Forgiven to SAVE/IBR

Choose Steeper Jobs Going from Forgiven to	(1) SAVE	(2) IBR
Female	0.002 (0.036)	0.003 (0.032)
Freshman	0.013 (0.036)	0.037 (0.032)
Asian/White	0.128** (0.055)	0.003 (0.049)
URM	0.009 (0.035)	-0.039 (0.031)
First Generation	0.002 (0.034)	-0.056* (0.031)
SAT	0.000 (0.000)	-0.000 (0.000)
HS Rank	0.000 (0.001)	0.002** (0.001)
GPA	0.023 (0.050)	0.033 (0.045)
Total Education Cost (\$1,000)	0.000 (0.001)	0.001 (0.000)
Total Loan at Graduation (\$1,000)	-0.001 (0.001)	-0.000 (0.001)
Have Loan So Far	0.099** (0.044)	0.062 (0.039)
Annual Income at Graduation (\$1,000)	0.000 (0.001)	-0.000 (0.001)
Family Income (\$1,000)	-0.000 (0.000)	-0.000 (0.000)
Risk Preference (1-7)	-0.010 (0.013)	-0.004 (0.011)
Constant	-0.035 (0.212)	0.033 (0.190)
Observations	627	627
Outcome Mean	0.22	0.16
R2	0.02	0.03

Notes: This table presents estimates from a linear probability model assessing whether a student chooses 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. Total loan at graduation represents the expected total amount of debt accumulated by the time of graduation. Have loan so far is a binary indicator equal to 1 if the student has taken out any loans. Annual income at graduation refers to the expected annual income at the time of graduation. 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.3: Job Choice Shifts from Forgiven to Repayment Plans

Forgiven to	(1) SAVE	(2) IBR	(3) SP	(1) vs. (3) P-value	(2) vs. (3) P-value
Weakly Steeper	0.683*** (0.019)	0.565*** (0.020)	0.429*** (0.020)	0.000	0.000
Weakly Flatter	0.282*** (0.018)	0.360*** (0.019)	0.491*** (0.020)	0.000	0.000
Same	0.035*** (0.007)	0.075*** (0.011)	0.080*** (0.011)	0.000	0.631
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 have already chosen 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 have already chosen 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.4: Prediction of Demographic Characteristics on Implied Binding Conditions of Budget Constraints

	(1)	(2)
	Most Likely Constrained	Least Likely Constrained
Female	0.010 (0.035)	0.004 (0.042)
Freshman	0.033 (0.034)	-0.033 (0.042)
Asian/White	0.013 (0.053)	0.102 (0.064)
URM	-0.002 (0.033)	0.006 (0.040)
First Generation	0.047 (0.033)	-0.015 (0.040)
SAT	-0.000 (0.000)	0.000 (0.000)
HS Rank	0.001 (0.001)	0.001 (0.001)
GPA	-0.067 (0.049)	0.016 (0.059)
Total Education Cost (\$1,000)	0.000 (0.000)	0.000 (0.001)
Total Loan at Graduation (\$1,000)	0.000 (0.001)	-0.000 (0.001)
Have loan so far	0.003 (0.042)	0.048 (0.051)
Annual Income at Graduation (\$1,000)	0.000 (0.001)	0.000 (0.001)
Family Income (\$1,000)	0.000 (0.000)	-0.000 (0.000)
Risk Preference (1-7)	0.027** (0.012)	-0.012 (0.015)
Constant	0.224 (0.205)	0.441* (0.248)
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. Total loan at graduation represents the expected total amount of debt accumulated by the time of graduation. Have loan so far is a binary indicator equal to 1 if the student has taken out any loans. Annual income at graduation refers to the expected annual income at the time of graduation. 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.5: Government Net Revenue and Loan Repayment Under Different Plans, Without Job Market Frictions, by High and Low Debt Cases

	(1)	(2)	(3)	(4)
(\$1,000)	Government	Total Net Revenue	Repayment - Loan	
	Low Debt	High Debt	Low Debt	High Debt
Forgiven	180.11	206.02	-29.85	-39.80
SP	195.75	229.97	0.59	0.79
IBR	204.97	239.25	1.33	1.59
SAVE	209.75	241.43	-3.85	-2.45

Notes: This table illustrates the implications of students' plan-specific choices on the government's budget. We perform these calculations for four repayment policy regimes (Forgiven, SP, IBR, and SAVE) without job market frictions, by high and low debt cases. Columns (1) and (2) present the discounted net revenue per student, defined as the sum of each student's lifetime (40 working years) income taxes and loan repayments minus the loan amount, all discounted to the year of loan initiation, for high and low debt cases, respectively. Columns (3) and (4) show the discounted per-student loan repayment minus the loan amount, for high and low debt cases, respectively.

Table C.6: Government Total Net Revenue and Loan Repayment Under Different Plans When Income Growth is Non-Linear

	(1)	(2)
(\$1,000s)	Government Total Net Revenue	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.

Table C.7: Prediction of IDR Enrollment by Demographic Characteristics

	(1)	(2)	(3)
	Baseline	Endline	Changes
Female	-0.799 (2.210)	0.938 (2.374)	1.738 (2.744)
Freshman	0.057 (2.200)	3.466 (2.364)	3.409 (2.731)
Asian/White	0.531 (3.396)	-1.279 (3.647)	-1.810 (4.215)
URM	1.060 (2.133)	-1.220 (2.291)	-2.280 (2.648)
First Generation	0.706 (2.113)	-0.176 (2.270)	-0.882 (2.623)
SAT	-0.003 (0.003)	-0.007** (0.003)	-0.003 (0.003)
HS Rank	-0.009 (0.045)	0.098** (0.048)	0.107* (0.056)
GPA	-1.727 (3.117)	-2.944 (3.348)	-1.217 (3.869)
Total Education Cost (\$1,000)	-0.003 (0.031)	0.010 (0.034)	0.012 (0.039)
Total Loan at Graduation (\$1,000)	0.216*** (0.052)	0.222*** (0.055)	0.005 (0.064)
Have Loan so Far	11.254*** (2.688)	23.290*** (2.887)	12.036*** (3.337)
Annual Income at Graduation (\$1,000)	-0.092*** (0.036)	-0.168*** (0.038)	-0.076* (0.044)
Family Income (\$1,000)	-0.019** (0.008)	-0.021** (0.008)	-0.002 (0.010)
Risk Preference 1-7	1.688** (0.776)	2.464*** (0.833)	0.775 (0.963)
Constant	18.369 (13.098)	47.390*** (14.069)	29.021* (16.258)
Observations	627	627	627
Outcome Mean	13.97	40.03	26.06
R2	0.19	0.32	0.06

Notes: This table presents estimates from OLS regressions assessing the likelihood of enrolling in IDR at baseline and endline in Columns (1) and (2), respectively, while Column (3) reports the change in likelihood. 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. Total loan at graduation represents the expected total amount of debt accumulated by the time of graduation. Have loan so far is a binary indicator equal to 1 if the student has taken out any loans. Annual income at graduation refers to the expected annual income at the time of graduation. 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.8: Follow-up Survey: Sample Composition

	Follow-up Sample	Did not Respond	P-values
<i>Panel (a): Sample selection</i>			
Age	24.32	24.60	0.35
Female	0.58	0.60	0.68
White	0.69	0.64	0.34
URM	0.09	0.14	0.26
GPA	3.66	3.60	0.07
SAT	1,400.68	1,403.74	0.86
Household income more than \$100,000	0.47	0.47	0.93
Borrowed	0.50	0.52	0.68
Average amount borrowed (\$)	25,119.71	30,482.16	0.22
Steeper under SAVE	0.24	0.21	0.62
Flatter under SP	0.30	0.35	0.31
Total	117	200	
	No federal loan	Federal borrower	Total
<i>Panel (b): Sample composition</i>			
Employed	43	43	86
Unemployed	1	4	5
Full-time grad school	13	13	26
Total	57	60	117
	N	Steeper under SAVE	Flatter under SP
<i>Panel (c): Proxy indicators among federal borrowers</i>			
Total	60	0.25	0.28
With foregone offer	32	0.34	0.25

Notes: Panel (a) compares respondents who responded to the follow-up survey ($n = 117$) with those who did not respond ($n = 200$) among students who were seniors in the original survey. Age is measured in 2026. Female is a binary indicator equal to 1 if the student self-identifies as female. White is a binary indicator equal to 1 if the student self-identifies as White. 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. GPA refers to the student's GPA at the time of the original survey. Household income greater than \$100,000 is a binary indicator equal to 1 if the student's self-reported estimated gross family income exceeds \$100,000. Borrowed is a binary indicator equal to 1 if the student has taken out any loans by the time of the original survey. Average amount borrowed represents the total amount of debt accumulated by the time of the original survey. Steeper under SAVE indicates that the respondent chose a steeper job profile under SAVE than under Forgiven in the initial survey. Flatter under SP indicates that the respondent chose a flatter job profile from Forgiven to the Standard Plan in the initial survey. Panel (b) reports the composition of the 117 follow-up survey respondents by employment status and federal loan status. Panel (c) reports the mean of each proxy indicator among federal borrowers. With foregone offer refers to the subset of federal borrowers who are employed or unemployed and have a foregone offer comparison.

Table C.9: Selected Reddit posts mentioning job and career considerations from student debt forums.

Source	Date	Post Title	Illustrative Quote
r/StudentLoans	Sep 2019	<i>Higher Salary Job or Lower Paying PSLF Job?</i>	“Surely my salary at both would go up, so I’d likely miss out on some earning potential over those 10 years; however, job B will give me some great training that I could leverage in the private market later for a much bigger salary. . . I’m inclined to do PSLF for 10 years and switch to the private market where I can earn more.”
r/PSLF	Oct 2023	<i>Any post-forgiveness career changers out there?</i>	“I would love to hear how people have made the transition to a different career while. . . shifting to the private sector. I’ve definitely gotten quite tunnel-visioned over the past decade and am struggling with how my skills and experience can translate to the private sector.”
r/PSLF	May 2024	<i>Grad PLUS Loan — Looking for Advice for Future PSLF</i>	“My plan eventually is to work in public service for 10 years (obviously. . .), and after that maybe go into private practice, research, or teaching. I’m still figuring that part out since I have a little bit before I officially decide what I want to do when I grow up.”
r/PSLF	Jan 2025	<i>Advice Parent PLUS Loan and PSLF. And strategy help!</i>	“I’m thinking I might work two more years to hit my 10-year mark, then jump into for-profit tech which in my same job would bump my salary by at least 40K.”
r/PSLF	Feb 2025	<i>Age old question — do I leave my PSLF job that I hate for a higher-paying corporate job?</i>	“Here to get your advice. . . leaving my PSLF-qualifying non-profit job for a higher-paying corporate job. I am 31 years old. . . making around \$62,500. At the corporate job I’d make [\$110k+].”

Notes: This table shows illustrative posts that mention job or career considerations in the context of student loan repayment. We collected all posts from r/PSLF and r/StudentLoans from January 2020 through February 2026 using the Arctic Shift Reddit archive, yielding a cleaned corpus of 90,785 posts after removing bots and low-engagement posts.

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.³⁶

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.

It is worth noting that mean-reversion-type measurement errors in earnings could also lead to a negative correlation. To address this concern, we use earnings in year 2 as an instrumental variable (IV) for earnings in the first year in panel (b). Specifically, the IV approach uses variation in second-year earnings to predict first-year earnings, helping to isolate persistent earnings differences and address measurement error concerns. As shown in panel (b) of Table D.1, the IV estimates are significant and substantially more negative than the OLS estimates.³⁷

³⁶If multiple earnings observations are available for an individual between 9 and 11 years, the maximum value is used.

³⁷In addition, note that in panel (a) of Table D.1 we regress long-term earnings growth (earnings 9-11 years out versus initial earnings, $w_9 - w_0$) onto initial earnings w_0 . The built-in bias would be greater if one were to regress earnings growth ($w_9 - w_0$) onto earnings in the first or second year (w_1 or w_2) (Brown, 1980). Running the latter regression does not give a more negative estimate than what we show in Table D.1, suggesting that measurement error in earnings is not what is driving the patterns in Table D.1.

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

Panel (a): OLS			
	(1)	(2)	(3)
Initial Earnings (\$1,000s)	-0.939** (0.367)	-1.033** (0.410)	-1.023** (0.437)
Observations	1,013	1,003	999
Outcome Mean	183.10	184.11	184.47
Demographics Control	Yes	Yes	Yes
Cohort & Major FEs		Yes	Yes
Initial Occupation FEs			Yes
Panel (b): IV			
	(1)	(2)	(3)
Initial Earnings (\$1,000s)	-1.478 (0.911)	-1.777* (0.982)	-2.812** (1.163)
Observations	944	935	931
Outcome Mean	182.79	183.75	184.13
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 years 9–11 in panel (a). The growth rate is calculated as $\frac{(\text{earnings in years 9–11} - \text{initial earnings})}{\text{initial earnings}} \times 100\%$. In panel (b), we regress earnings in year 2 on initial earnings (including all controls and fixed effects as indicated) and then use the predicted values of initial earnings in the regression for earnings growth. Demographic controls include indicators for gender and race. Cohort fixed effects (FEs) refer to graduation year indicators, major FEs correspond to categories defined by 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.

E Own Choices versus Recommendations for “Wolverine”

Table E.1 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 that 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.

Table E.1: Own Choices vs. Recommendations for Others

Compared to Own Choice, Recommendation:	(1)	(2)	(3)	(1) vs. (3)
	Flatter	Same	Steeper	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).

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.

Overall, the patterns in Table E.1 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.

F 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 F.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 design 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 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.³⁸ 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.

F.1 Video Scripts

Video scripts for the high debt case. The numbers used in the low-debt case are changed accordingly.

F.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

³⁸Respondents 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.

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.

F.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.

G The Validation Survey

To assess the robustness of the results from the UM student survey, we recruited an additional student sample from Prolific in June 2025. To be eligible for the study, participants had to have completed at least 100 prior submissions on Prolific with an approval rating of 95% or higher, and reside in the United States. We pre-screened participants to ensure that they were currently enrolled in a four-year college in the U.S., were U.S. citizens or permanent residents, and were between the ages of 18 and 24. We further refined the sample by excluding participants who completed the survey too quickly or too slowly, resulting in a final sample of 428 students who completed the survey. The median completion time was 26 minutes, and each valid completion was compensated with \$6.

The validation survey closely follows the structure of the UM student survey, with some simplifications: we set the debt level at \$30,000 and only include SAVE as the IDR example. We also create three additional treatment arms with minor modifications relative to the UM student survey to test different aspects of the robustness of our findings. Appendix Table G.3 shows the set of four job profiles used in the validation survey.

In the study, student participants first watch a short video introducing the features of the SP and SAVE repayment plans and then make job choices under each plan (SP, SAVE, and Forgiven). After the video, participants answer comprehension questions; each question allows up to two attempts before revealing the correct answer and an explanation. The median number of incorrect attempts among the 11 understanding-check questions (22 attempts total) is three.

For the main set of questions, i.e., those related to job choices under different repayment plans, we randomize the sample into four arms. Arm 1 presents respondents with the same set of messages and questions as the UM student survey (Baseline Arm). Arm 2 differs from Arm 1 only in that, when describing jobs under each plan (counterpart to the table shown in Figure 1), it omits the amount of debt forgiven. Arm 3 differs from Arm 1 only in that it does not inform respondents that jobs are otherwise identical, thereby allowing them to freely assume that jobs may differ in other dimensions. Arm 4 differs from Arm 1 only in that it adds a fourth job choice, Job D, which features a lower starting wage and a higher growth rate than Job C. In addition, we design several additional questions (see Section 1.1 in <https://tinyurl.com/mxz7ysf4> for details) to collect information useful for interpreting

our main results.

Table G.1: Changes in Job Choices: From Forgiven to a Repayment Plan

	(1)	(2)	(1) vs. (2)
Forgiven to	SAVE	SP	P-value
Steeper	0.184*** (0.035)	0.120*** (0.029)	0.088
Flatter	0.152*** (0.032)	0.224*** (0.037)	0.095
Same	0.664*** (0.042)	0.656*** (0.043)	0.880
Observations	125	125	

Notes: This table shows how students’ job choices change when moving from a debt forgiven scenario to various repayment plans (SP, SAVE) based on Prolific participants in the Baseline Arm. “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.

Table G.2: Changes in Job Choices: From Forgiven to a Repayment Plan

	(1)	(2)	(3)	(4)
	Arm 1	Arm 2	Arm 3	Arm 4
Forgiven to SAVE: Steeper	0.184*** (0.035)	0.160*** (0.033)	0.248*** (0.039)	0.257*** (0.041)
vs. Arm 1 P-value:	.	0.617	0.224	0.177
Forgiven to SP: Flatter	0.224*** (0.037)	0.248*** (0.039)	0.240*** (0.039)	0.301*** (0.043)
vs. Arm 1 P-value:	.	0.657	0.772	0.179
Observations	125	125	121	113

Notes: This table shows how students’ job choices change when moving from a debt-forgiven scenario to various repayment plans (SP, SAVE) across the four treatment arms. The four arms are: (1) Arm 1, which mirrors the UM student survey; (2) Arm 2, which omits the amount of debt forgiven when describing jobs; (3) Arm 3, which does not inform respondents that jobs are otherwise identical, allowing them to assume jobs differ in other aspects; and (4) Arm 4, which adds an additional job choice with a lower starting wage and higher growth rate. “Steeper” means that students switch to a job profile with a higher growth rate and lower initial earnings, while “Flatter” means they switch to a profile with a lower growth rate and higher initial earnings. “Same” means the job choice remains unchanged between the repayment plan and the Forgiven scenario. “vs. Arm 1 P-value” reports the p-value testing for a difference between each arm and Arm 1. Standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table G.3: Comparison of Job Profiles in the Validation Prolific Survey

Debt	\$30,000			
	Job A	Job B	Job C	Job D
Initial Income	\$55,000	\$47,000	\$37,500	\$35,000
Income Growth	1.50%	3.00%	4.75%	5.10%
Discounted 40-Year Income ($\beta = 0.95$)	\$1.14m	\$1.24m	\$1.36m	\$1.36m

Notes: This table shows the set of four job profiles used in different arms of the validation survey. Initial income refers to annual income after graduation; income growth is the yearly income growth rate; and discounted 40-year income is the present value of 40 years of income, discounted at 0.95 (in millions). The discounted 40-year income is not shown to participants in the survey.

Table G.4: Importance of Job Characteristics

	Mean	Median	S.D.
Starting Salary	4.92	5.00	1.23
Flexibility	5.05	5.00	1.53
Salary Growth	5.72	6.00	1.21
Job Stability	5.93	6.00	1.23
Opportunities to Learn	5.57	6.00	1.43
Enjoying Work	5.68	6.00	1.35
Observations		484	
F-test: P-value		0.00	

Notes: This table reports summary statistics of students' responses to the survey question: "When choosing a career, how important are each of the following to you? Please answer on a 1 to 7 scale, where 1 is 'Not important at all' and 7 is 'Extremely important'." F-test: P-value reports the significance level of a joint test that the listed coefficients are simultaneously equal to each other.