The Effects of Income-Driven Repayment on Default and Consumption

Non-Technical Summary[*]

Daniel Herbst, Princeton University

Each year, roughly one million borrowers default on their student debt, and millions more struggle to make loan payments averaging over $300 per month. Income-driven repayment (IDR) plans, which peg monthly minimum payments to a fixed percentage of post-graduate income, have become a popular option for borrowers to ease this financial burden. Enrollment in IDR has tripled since 2014, but its effects on borrowers are largely unknown. IDR is designed to benefit borrowers by making their loan payments more affordable (see Figure 1), but may come at a cost if IDR payments are too low to satisfactorily pay down borrowers' debts. Without estimates of these benefits and costs, it is impossible to judge the success of IDR.

In collaboration with a large loan servicer ("LLS"), this study provides the first estimates of IDR's effects on student loan repayment and financial health. Using a first-of-its-kind dataset linking LLS's monthly loan records to administrative credit bureau information from TransUnion, I identify the causal effect of IDR enrollment on repayment rates, credit scores and proxies for consumption and homeownership.

Research Design

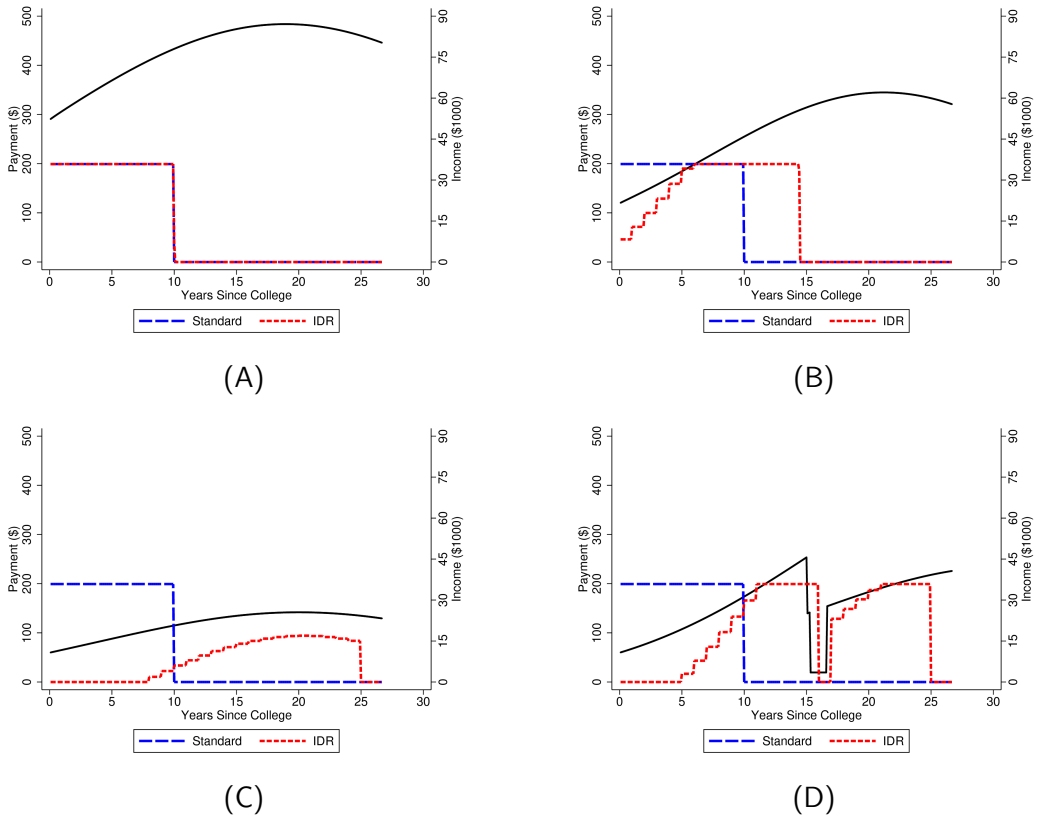
An ideal experiment evaluating IDR's effects would randomly assign borrowers into one of two groups: a "treatment" group of individuals enrolled in IDR, and a "control" group of individuals remaining on the standard ten year repayment plan. In the real world, however, borrowers can self-select into the repayment plan of their choosing. Borrowers who decide to take up IDR might be more financially savvy, expect lower future earnings, or hold particularly high debt loads compared to non-IDR borrowers. As a result, a direct comparison of IDR and non-IDR borrowers is likely to suffer from *selection bias*. To avoid this bias, I can use "natural experiments" using the loan servicing operations of LLS.

As a part of its customer outreach, LLS places outgoing phone calls encouraging IDR sign-up to borrowers who fall ten or more days delinquent on their loan payments. I use two complementary research designs to estimate the IDR effect among borrowers who answer these calls and receive enrollment instructions from their loan servicing agent. First, I estimate the difference-in-differences between IDR-enrollees (the "treatment group") and non-enrollees (the "control group") before and after delinquency calls. By comparing post-call outcomes relative to pre-call baselines for each group, this strategy removes any bias that operates through level differences between the two groups.

Second, I make use of the fact that calls placed to borrowers in my sample are randomly assigned to loan servicing agents. While all agents provide IDR guidance, some are more successful than others in facilitating enrollment. Indeed, identical IDR sign-up rates across agents would be implausible, as agents likely vary in their experience, demeanor, and natural ability. Because

[*]May 15, 2018. Full text version available here.

Figure 1: Hypothetical Repayment Scenarios: IDR versus Standard Repayment



Note: This figure plots hypothetical repayment paths for standard and IDR plans under various income scenarios. Each panel represents an alternative income/repayment scenario for a borrower holding $18,000 of student debt at the time they leave college. The solid black line, plotted against the right axis, represents annual post-college income. The dashed blue and dotted red lines, plotted against the left axis, represent monthly payments under standard and IDR plans, respectively. The x-axis denotes years since leaving college. Repayment paths assume a 6.0 percent interest rate and no late payments.

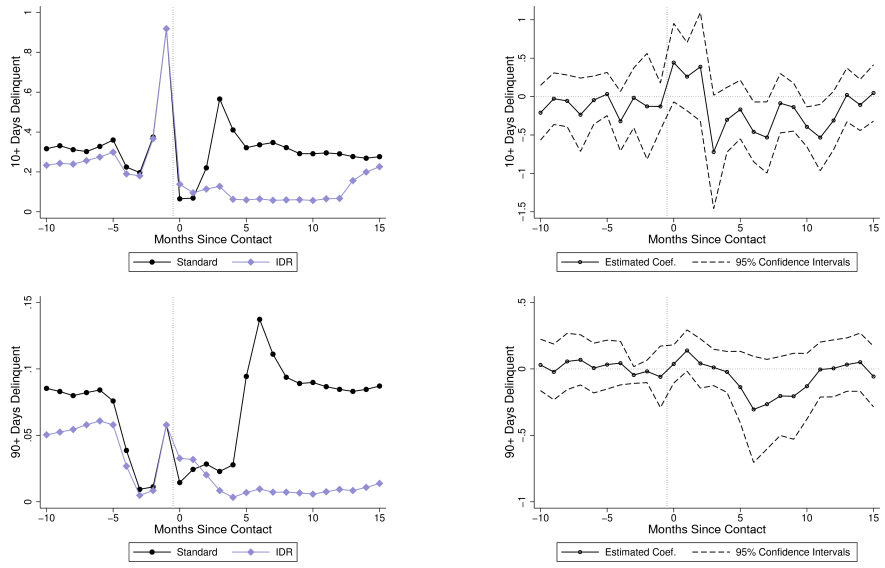
phone calls are randomly assigned, the setting creates a natural experiment–by chance, borrowers assigned to particularly effective agents are somewhat more likely to enroll in IDR than the typical borrower. I construct an instrumental variable (IV) which effectively runs this experiment, comparing borrowers by their assigned agent to identify an unbiased estimate of the IDR effect.

Results

1. Delinquencies decrease dramatically after borrowers are successfully counseled into IDR

Figure 2 provides estimates of IDR's impact on two measures of delinquency. In the difference-in-differences analysis, IDR borrowers are 21 percentage points less likely to fall ten or more days delinquent relative to standard borrowers in the four to seven months following the delinquency call. Estimates for ninety or more days delinquent exhibit a similar pattern: the likelihood of falling ninety or more days delinquent falls by 8pp within seven months. IV estimates for the effect of IDR on delinquencies are qualitatively similar to difference-in-differences estimates, though less precise and larger in magnitude. Given the prevalence and severity of student loan defaults, estimates of delinquency effects alone suggest IDR may go a long way towards improving the financial welfare of student borrowers. Student loan defaults cannot be discharged in bankruptcy and can result in damaged credit or garnished wages, so encouraging borrowers to keep current on their payments may prevent them from falling into financial ruin. Note, however, that the increase in the 10-day delinquency rate for borrowers in IDR starting twelve months after the initial delinquency call suggests that borrowers who responded to that outreach may benefit from another call reminding them of the annual income certification requirement.

Figure 2: The Effects of IDR on Borrower Delinquency



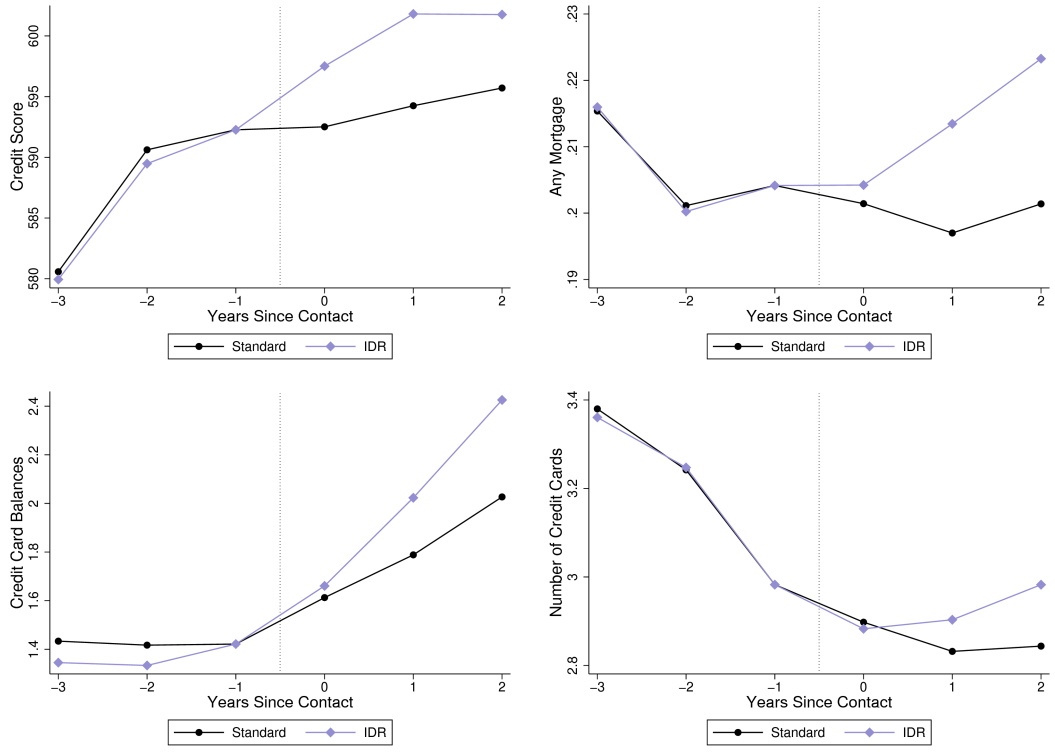
(A) Diff-in-Diff (B) IV

Note: This figure plots delinquency effects. The horizontal axis denotes time, in months, relative to the month of the loan servicing call. Panel 2A provides raw outcomes for the difference-in-differences design, normalized to the average for non-enrollees in the month prior to the call. Panel 2B reports instrumental variables (IV) estimates, where dashed lines represent 95% confidence intervals.

2. IDR appears to increase borrowers' homeownership, consumption, and credit

As shown in Figure 3, enrolling in IDR improves several measures of financial health found in student borrowers' credit reports. IDR enrollees have credit scores which are 7.5 points higher, hold 0.1 more credit cards, and carry $240 higher credit card balances than non-enrollees within one year. IDR enrollees are also 2 percentage points more likely than non-enrollees to hold a mortgage after two years, an increase of 10 percent off of the pre-call mean. These results suggest borrowers facing lower student loan payments are able to increase their spending on credit card purchases and new homes, as they have higher cash-on-hand and access to credit than they did under standard repayment plans.

Figure 3: Pre/Post-Call Trends in Credit Scores, Mortgages, and Credit Cards

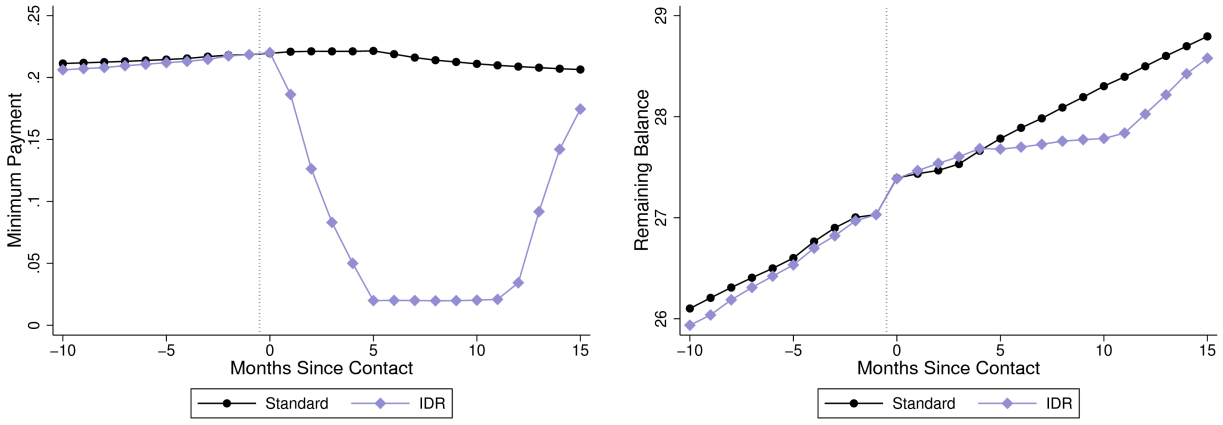


Note: This figure plots the IDR enrollees and non-enrollees holding mortgages or auto loans in the analysis sample, as well as their relative number of credit cards and credit card balances (in thousands of US dollars). The horizontal axis denotes time, in years, relative to the year of the loan servicing call. Outcomes are normalized to the average for non-enrollees in the year prior to the call.

3. Borrowers on IDR plans pay down *more* debt than those on standard repayment plans

Many have voiced concerns over the long-term debt implications of IDR; if IDR borrowers face *permanently* low income, they will fail to pay down their balances, imposing future costs on the borrower or the government through forgiven loans. While IDR has not been around long enough to definitively speak to these concerns, my results suggest IDR does no worse than standard repayment plans in reducing loan balances. While IDR reduces monthly minimum payments by an average of $140 through a mechanical "first-stage" effect, the effect of reduced minimums on loan balances is dominated by more timely repayment; IDR borrowers pay down $90 more student debt each month, on average, than those on standard repayment plans. As shown in Figure 4, relative to standard borrowers, IDR enrollees pay down $70 to $90 more debt each month than they did before their delinquency calls.

Figure 4: Pre/Post-Call Trends in Repayment Outcomes



Note: This figure plots the average minimum monthly payment and loan balance (in thousands of US dollars) for IDR enrollees and non-enrollees in the analysis sample. The horizontal axis denotes time, in months, relative to the month of the loan servicing call. Outcomes are normalized to the average value of the outcome for non-enrollees in the month prior to the call.

Conclusion

My analysis suggests IDR improves borrower welfare by providing short-term increases to cash-on-hand in periods of financial distress. Results show that, after receiving servicing phone calls that lead to successful IDR sign-up, borrowers have fewer delinquencies, higher credit scores, and are more likely to buy homes than borrowers who remain in standard repayment plans.

These results come with several important caveats. First, my analysis sample, which includes only delinquent FFEL borrowers who might benefit from IDR, is limited to a specific population of financially distressed borrowers several years after leaving college. One should take caution in extrapolating these results to the larger borrowing population. Second, the IDR effects I estimate are *relative to standard borrowers* in the sample; borrowers on IDR may still be under considerable financial distress. For instance, while borrowers on IDR pay down more of their balances than those on than standard repayment plans, neither group is adequately paying down their debt. In fact, more than fifty percent of IDR borrowers in my sample have payments of zero dollars.[1] Likewise, the mortgage-holding results, while encouraging, are driven by a small subset of borrowers–more than seventy percent of IDR enrollees are still without a mortgage by the end of the sample period. Finally, the data I use are limited and cannot provide a complete picture of IDR's effects. I cannot observe some important outcome variables like income, nor can I measure effects at longer time horizons. Many of the outcomes I can observe, like credit card balances and mortgage-holding rates, are merely proxies for variables of interest like consumption and homeownership. For this reason my analysis stops short of calculating the welfare benefits of IDR.

In light of these caveats, future research should be aimed at helping us more fully understand the welfare effects of different student loan repayment policies. How do repayment terms relate to borrower income and employment? How do student loan defaults affect borrowers and how do they compare to defaults on other lines of credit? What measures might prevent default, and how can we help already defaulted borrowers return to financial health? These are important policy questions that require a deeper understanding of borrowers' repayment behavior. More generally, the question of what makes the "best" student loan repayment system remains an open question. The various methods for financing higher education–traditional debt, IDR, public grants, etc.–each offer their own strengths and weaknesses, and a well-designed student loan system would likely incorporate elements from each. While it is by no means a "silver bullet" to solving the student debt crisis, IDR may provide an important first step towards designing such a system and improving the financial lives of millions of student borrowers.

[1] For a more thorough investigation of zero versus non-zero IDR payments, see the full text.