Framing Effects, Earnings Expectations, and the Design of Student Loan Repayment Schemes

Online Appendices: Not for Publication

March 2018

Appendix A Survey Experiment Treatment Parameters

No.	Type of IDR Plan	Framing of Alternative Plan	Amount Borrowed	Order of Income Percent Paid Under Alternative Plan
1	Fixed amount	Neutral	$30,000	High/low
2	Fixed amount	Neutral	$30,000	Low/high
3	Fixed amount	Neutral	$60,000	High/low
4	Fixed amount	Neutral	$60,000	Low/high
5	Fixed amount	Cost	$30,000	High/low
6	Fixed amount	Cost	$30,000	Low/high
7	Fixed amount	Cost	$60,000	High/low
8	Fixed amount	Cost	$60,000	Low/high
9	Fixed amount	Insurance	$30,000	High/low
10	Fixed amount	Insurance	$30,000	Low/high
11	Fixed amount	Insurance	$60,000	High/low
12	Fixed amount	Insurance	$60,000	Low/high
13	Fixed length	Neutral	$30,000	High/low
14	Fixed length	Neutral	$30,000	Low/high
15	Fixed length	Neutral	$60,000	High/low
16	Fixed length	Neutral	$60,000	Low/high
17	Fixed length	Cost	$30,000	High/low
18	Fixed length	Cost	$30,000	Low/high
19	Fixed length	Cost	$60,000	High/low
20	Fixed length	Cost	$60,000	Low/high
21	Fixed length	Insurance	$30,000	High/low
22	Fixed length	Insurance	$30,000	Low/high
23	Fixed length	Insurance	$60,000	High/low
24	Fixed length	Insurance	$60,000	Low/high

*Note*s: Monthly payments under the standard plan when the amount borrowed is $30,000 equal $318. When the amount borrowed is $60,000, monthly payments for the standard plan equal $636.

Appendix B Survey Instrument

Demographics

The purpose of this survey is to better understand student choices about how to pay back money they borrow for college. Some major changes to the repayment plans available to student borrowers have been proposed. The information you provide will help us to evaluate how the new plans might work in practice and inform attempts to improve repayment options for student borrowers.

The survey is being conducted on behalf of the University of Maryland. Your answers will remain confidential. Your participation is voluntary and should take approximately 10 minutes. At the end of the survey, you will have the opportunity to be entered into a sweepstakes drawing for three iPad Air 2s that will be awarded as prizes.

Thank you in advance for your help. Let's get started! To begin the survey, please click the forward arrow below.

What year in school are you?

- ○ Freshman
- ○ Sophomore
- ○ Junior
- ○ Senior

Do you have a major?

- ○ Yes
- ○ No

What is your major? Please select the category from the list below that includes your major.

Click here for a detailed list of majors included in each category.

- ○ Agriculture, agricultural sciences, natural resources, and conservation
- ○ Area, ethnic, cultural, gender, and group studies
- ○ Arts and architecture
- ○ Biological sciences
- ○ Business, economics, and management
- ○ Communications, journalism, and related programs
- ○ Computer and information sciences
- ○ Engineering (including computer engineering)
- ○ Education
- ○ Foreign languages, literatures, and linguistics
- ○ English language and literature, history, and philosophy
- ○ Health professions and related programs
- ○ Mathematics and physical sciences
- ○ Social sciences (excluding economics)

Demographics

What is your likely major? Please select the category from the list below that includes your most likely choice of major.

Click here for a detailed list of majors included in each category.

- ○ Agriculture, agricultural sciences, natural resources, and conservation
- ○ Area, ethnic, cultural, gender, and group studies
- ○ Arts and architecture
- ○ Biological sciences
- ○ Business, economics, and management
- ○ Communication, journalism, and related programs
- ○ Computer and information sciences
- ○ Engineering (including computer engineering)
- ○ English language and literature, history, and philosophy
- ○ Education
- ○ Foreign languages, literatures, and linguistics
- ○ Health professions and related programs
- ○ Mathematics and physical sciences
- ○ Social sciences (excluding economics)

Do you plan to obtain a graduate or professional degree after completing your bachelor's degree?

- ○ Yes, very likely
- ○ Yes, somewhat likely
- ○ No, not at all likely
- ○ Definitely not

Earnings 1 point

The next few questions relate to what you expect to be earning at different points in the future.

What do you expect to earn **in the first full calendar year after you graduate from college**?

Please round to the nearest thousand.

$,000 per year

Earnings 1 %

What do you think the chances are that you will be unemployed or not working for pay, earn up to $35,000, earn $35,001 to $75,000 or earn more than $75,000 **in your first full calendar year out of college**?

The percentages you give should add up to 100 percent.

Percent chance you will be unemployed or not working for pay 0 %

Percent chance your annual earnings will be $35,000 or less

	0 %
Percent chance your annual earnings will be $35,001 to $75,000	0 %
Percent chance your annual earnings will be more than $75,000	0 %
Total	0 %

Earnings 2 point

How much do you expect to earn in a year **when you are 30 years old**?

Please answer in thousands of today's dollars. Don't try to adjust for inflation between now and age 30.

$,000 per year

Earnings 2 %

What do you think the chances are that you will be unemployed or not working for pay, earn up to $35,000, earn $35,001 to $75,000 or earn more than $75,000 **when you are 30 years old**?

Please answer in terms of today's dollars. The percentages you give should add up to 100 percent.

Percent chance you will be unemployed or not working for pay	0 %
Percent chance your annual earnings will be $35,000 or less	0 %
Percent chance your annual earnings will be $35,001 to $75,000	0 %
Percent chance your annual earnings will be more than $75,000	0 %
Total	0 %

Earnings 3 point

How much do you expect to earn in a year **when you are 40 years old**?

Please answer in thousands of today's dollars. Don't try to adjust for inflation between now and age 40.

$,000 per year

Earnings 3 %

What do you think the chances are that you will be unemployed or not working for pay, earn up to $35,000, earn $35,001 to $75,000 or earn more than $75,000 **when you are 40 years old**?

Please answer in terms of today's dollars. The percentages you give should add up to 100 percent.

Percent chance you will be unemployed or not working for pay	0 %
Percent chance your annual earnings will be $35,000 or less	0 %
Percent chance your annual earnings will be $35,001 to $75,000	0 %
Percent chance your annual earnings will be more than $75,000	0 %
Total	0 %

Loan repayment plan preferences

Now we would like you to read a scenario relating to the repayment of your student debt. You will be asked to assume that you are about to graduate from the University of Maryland and that you have borrowed a specific amount of money to pay for your education. All you need to do is read the descriptions of the two options and tell us which one you prefer. There is no right or wrong answer—we just want to understand how you would think about what to do in this situation given your expectations about your earnings.

To keep things as simple as possible, when you are making your choice please assume that:

- Once you have chosen a repayment plan, you cannot change it later.
- You will not be required to make payments in the first six months after you graduate.
- If you go to graduate school, your repayment obligations will be paused.
- You are answering just for yourself, not thinking about how a spouse's income or debt might affect your answers.

You will graduate from the University of Maryland this May. You have borrowed $30,000 at an interest rate of 5% per year to pay for your education. You will not be required to begin making payments until December 2016.

You will need to choose one of the following repayment plans:

Plan A	Plan B
• You will pay back the money you owe over the next 10 years.	• You will make monthly payments on your loan for up to the next 20 years. Your payments will stop once you have paid off your loan. Any money that you still owe after 20 years will be forgiven.
• You will make a fixed monthly payment of $318 per month, which will cover both the interest that you owe and your loan principal.	• You will not make payments in any month in which your income is less than $1,000 (in 2016 dollars). • In months when your income exceeds $1,000, your payments will equal 20% of the amount you earn above $1,000. • If you make no payment or if your payment isn't enough to cover the interest you owe, any unpaid interest will be added to your loan balance.
• With this plan, you know exactly how much you will have to pay each month for the next 10 years. Over the life of the loan, in addition to repaying the amount you borrowed, you will pay a total of $8,184 in interest.	• With this plan, you could end up paying substantially more than you would pay under Plan A and you could be required to make payments for a longer period of time.

Which of these repayment options would you prefer?

- Strongly prefer Plan A
- Slightly prefer Plan A
- Indifferent between Plan A and Plan B
- Slightly prefer Plan B
- Strongly prefer Plan B

Now we would like you to consider the same repayment options, except Plan B requires you to pay **15%** of your income above $1,000 per month (instead of **20%** of your income above $1,000 per month).

You will graduate from the University of Maryland this May. You have borrowed $30,000 at an interest rate of 5% per year to pay for your education. You will not be required to begin making payments until December 2016.

You will need to choose one of the following repayment plans:

Plan A	Plan B
• You will pay back the money you owe over the next 10 years.	• You will make monthly payments on your loan for up to the next 20 years. Your payments will stop once you have paid off your loan. Any money that you still owe after 20 years will be forgiven.
• You will make a fixed monthly payment of $318 per month, which will cover both the interest that you owe and your loan principal. •	• You will not make payments in any month in which your income is less than $1,000 (in 2016 dollars). • In months when your income exceeds $1,000, your payments will equal 15% of the amount you earn above $1,000. • If you make no payment or if your payment isn't enough to cover the interest you owe, any unpaid interest will be added to your loan balance.
• With this plan, you know exactly how much you will have to pay each month for the next 10 years. Over the life of the loan, in addition to repaying the amount you borrowed, you will pay a total of $8,184 in interest.	• With this plan, you could end up paying substantially more than you would pay under Plan A and you could be required to make payments for a longer period of time.

Which of these repayment options would you prefer?

- Strongly prefer Plan A
- Slightly prefer Plan A
- Indifferent between Plan A and Plan B

- ○ Slightly prefer Plan B
- ○ Strongly prefer Plan B

Loan repayment indifference question

Now we would like you to think about whether there is a percentage of your income above $1,000 per month that you would pay under Plan B that would make you indifferent between the two plans.

You will graduate from the University of Maryland this May. You have borrowed $30,000 at an interest rate of 5% per year to pay for your education. You will not be required to begin making payments until December 2016.

You will need to choose one of the following repayment plans:

Plan A	Plan B
• You will pay back the money you owe over the next 10 years.	• You will make monthly payments on your loan for up to the next 20 years. Your payments will stop once you have paid off your loan. Any money that you still owe after 20 years will be forgiven.
• You will make a fixed monthly payment of $318 per month, which will cover both the interest that you owe and your loan principal.	• You will not make payments in any month in which your income is less than $1,000 (in 2016 dollars). • In months when your income exceeds $1,000, your payments will equal __% of the amount you earn above $1,000. • If you make no payment or if your payment isn't enough to cover the interest you owe, any unpaid interest will be added to your loan balance.
• With this plan, you know exactly how much you will have to pay each month for the next 10 years. Over the life of the loan, in addition to repaying the amount you borrowed, you will pay a total of $8,184 in interest.	• With this plan, you could end up paying substantially more than you would pay under Plan A and you could be required to make payments for a longer period of time.

What percentage in the payment formula for Plan B would make you indifferent between the two plans?

Setting payments under Plan B to equal _____% of my monthly earnings above $1,000 in Plan B would make me indifferent between Plan A and Plan B.

[ ] % of earnings over $1,000 per month

Current Debt

Now we have a few more general questions related to your personal experience with debt and other financial matters.

Do you have any student loan debt in your name (e.g., federal direct or FFEL loans, federal Perkins loans, private loans)?

Do not consider loans your parents may have taken out.

- ○ Yes
- ○ No

What is your current outstanding student loan balance, counting student loans from all sources? Only include student loans taken out in your name, not any taken out by your parents.

Please answer in whole dollars.

$

Do you have any debt other than student loan debt?

- ○ Yes
- ○ No

What type(s) of other debt do you have?

- ☐ Credit card debt (other than balances you pay off every month)
- ☐ Auto loan
- ☐ Mortgage on a home
- ☐ Other (please specify):

Financial Literacy

Suppose you owe $1,000 on your credit card and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?

- ○ Less than 2 years
- ○ 2 to 4 years
- ○ 5 to 10 years
- ○ 11 or more years
- ○ Not sure

Suppose you owe $3,000 on your credit card. The Annual Percentage Rate (APR) on the balance owed is 12% (or 1% per month). You make a payment of $30 each month. How many years would it take to eliminate your credit card debt if you made no additional new charges?

- Less than 5 years
- 5 to 10 years
- 11 to 15 years
- More than 15 years
- Never, you will continue to be in debt
- Not sure

Risk Aversion

Suppose there is a lottery ticket that offers you a 50% chance of winning $500 and a 50% chance of winning $1,000. What is the maximum amount you would be willing to pay for this lottery ticket?

Please enter a value in dollars.

$

In general, how willing are you to take risks in financial matters? Please tick a box on the scale, where the value 0 means: "not at all willing to take risks" and the value 10 means: "very willing to take risks".

Not at all willing to take risks										Very willing to take risks
0	1	2	3	4	5	6	7	8	9	10

Demographics

What is your gender?

- Female
- Male

In what year were you born?

Drawing Statement

As a thank you for completing the survey, you are eligible to be entered in a drawing to win one of three iPad Air 2s.

Please click "Yes" below if you would like to be entered in the drawing.

- Yes, please enter me in the drawing
- No, please do not enter me in the drawing

If you are a winner of one of the three iPads, we will contact you at the email address at which you received the invitation to participate in this survey.

If you would prefer that we use a different email address or call you on the telephone, please enter the contact information you would like us to use here:

Thank you for participating in our survey about student loan debt. Your answers will be very helpful.

Please click the forward arrow below to exit the survey.

Appendix C Invitation and Reminder Emails

Figure C.1: Initial Invitation

Subject: Please complete a short survey on student loan repayment plans

Dear [First Name],

I am writing to ask for your help with a short survey regarding student loan debt. The purpose of the survey is to better understand student choices about how to pay back money they borrow for college. Some major changes to the repayment plans available to student borrowers have been proposed. The information you provide will help us to evaluate how the new plans might work in practice. To ensure that the conclusions drawn from the survey are valid, we need to hear from you even if you do not have any student loan debt.

The survey is being conducted on behalf of the University of Maryland. Your answers will remain confidential. Your participation is voluntary and should take approximately 10 minutes. At the end of the survey, you will have the opportunity to be entered into a sweepstakes drawing for three iPad Air 2s that will be awarded as prizes.

Please click here to access the survey: [Survey Link].

If you would like more information about this survey, please contact the principal investigator, Lesley Turner (email: turner@econ.umd.edu; phone: 301-405-3512).

Thank you in advance for your assistance with this important study!

Follow the link to opt out of future emails: [Link]

Figure C.2: First Reminder Email

Subject: Reminder: Please respond to a short survey about student loan repayment plans

Dear [First Name],

A few days ago, I wrote to you regarding an important survey about student loan debt. If you have already completed the survey, thank you. If not, I hope you will do so now. It should take only about 10 minutes of your time.

The purpose of the survey is to better understand student choices about how to pay back money they borrow for college. Some major changes to the repayment plans available to student borrowers have been proposed. The information you provide will help us to evaluate how the new plans might work in practice. **To ensure that the conclusions drawn from the survey are valid, we need to hear from you even if you do not have any student loan debt.**

The survey is being conducted on behalf of the University of Maryland. Your participation is voluntary and your answers will remain confidential. At the end of the survey, you will have the opportunity to be entered into a sweepstakes drawing for three iPad Air 2s that will be awarded as prizes.

Please click here to access the survey: [Link].

If you would like more information about this survey, please contact the principal investigator, Lesley Turner (email: turner@econ.umd.edu; phone: 301-405-3512).

Thank you in advance for your assistance with this important study!

Follow the link to opt out of future emails: [Link]

Figure C.3: Second Reminder Email

Subject: Reminder: We need your help with short survey about student loan repayment

Dear [First Name],

Time is running out to complete the survey about student loan debt being conducted on behalf of the University of Maryland. **I am writing to you again because it is important that we hear from you, whether or not you have any student debt**. If you have already completed the survey, thank you. If not, I hope you will do so now. It should take only about 10 minutes of your time.

The purpose of the survey is to better understand student choices about how to pay back money they borrow for college. Some major changes to the repayment plans available to student borrowers have been proposed. The information you provide will help us to evaluate how the new plans might work in practice.

Your participation in the survey is voluntary. Your answers will be kept confidential. At the end of the survey, you will have the opportunity to be entered into a sweepstakes drawing for three iPad Air 2s that will be awarded as prizes.

Please click here to access the survey: [Link].

If you would like more information about this survey, please contact the principal investigator, Lesley Turner (email: turner@econ.umd.edu; phone: 301-405-3512).

Thank you in advance for your assistance with this important study!

Follow the link to opt out of future emails: [Link]

Figure C.4: Third Reminder Email

Subject: Last chance to win iPad Air: Student loan survey will close this Thursday

Dear [First Name],

The survey about student loan debt being conducted on behalf of the University of Maryland will close on this Thursday, March 10th and I would like to be sure you have a chance to respond before it does. **If you have already completed the survey, thank you. If not, I hope you will do so now, as it is important that we hear from you even if you do not have any student debt**. Completing the survey should take only about 10 minutes of your time.

The purpose of the survey is to better understand student choices about how to pay back money they borrow for college. Some major changes to the repayment plans available to student borrowers have been proposed. The information you provide will help us to evaluate how the new plans might work in practice.

Your participation in the survey is voluntary. Your answers will be kept confidential. At the end of the survey, you will have the opportunity to be entered into a sweepstakes drawing for three iPad Air 2s that will be awarded as prizes.

Please click here to access the survey: [Link].

If you would like more information about this survey, please contact the principal investigator, Lesley Turner (email: turner@econ.umd.edu; phone: 301-405-3512).

Thank you in advance for your assistance with this important study!

Follow the link to opt out of future emails: [Link]

Appendix D Additional Figures and Tables

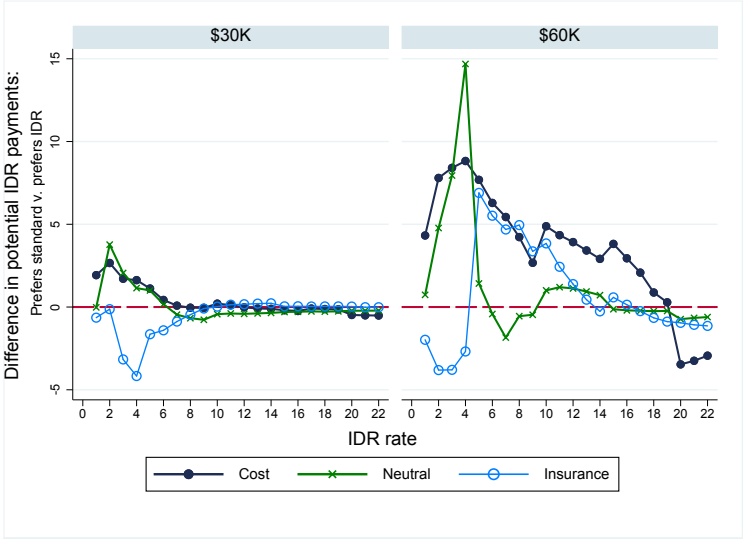
Figure D.1: Respondents Expected Earnings versus Population Average Earnings

Notes: Each marker represents the relationship between average population earnings for graduates in the specified major using data from the American Community Survey and the average expected earning for survey respondents in the specified major. Larger markers represent a larger underlying survey respondent sample size. The black diagonal line represents 45 degrees.

Figure D.2: Fixed Amount IDR Take-up by Frame, Loan Size, and Payment Rate

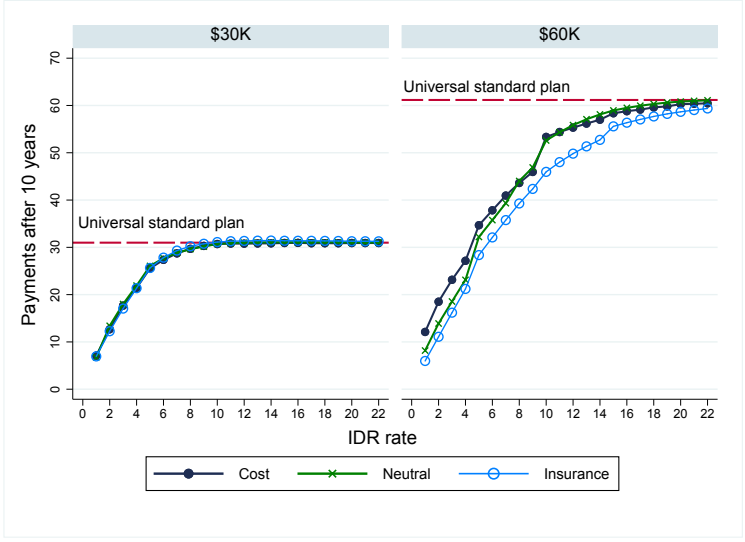
Notes: Simulated take-up of IDR by payment rate and framing (see Section 6 for details). Payment rate is the IDR payment as a percent of disposable income.

Figure D.3: Selection into Fixed Amount IDR by Frame, Loan Size, and Payment Rate



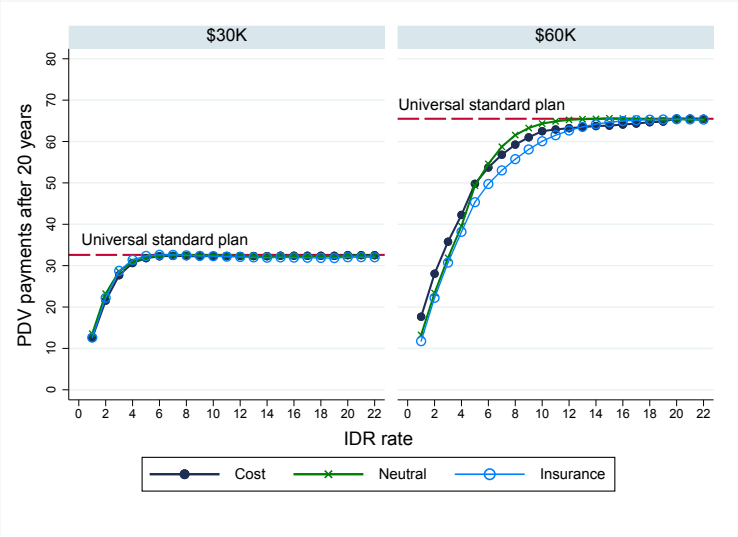
Notes: Simulated difference in average IDR payments for borrowers that chose the standard plan and borrowers that chose IDR, by payment rate and framing (see Section 6 for details). Payment rate is the IDR payment as a percent of disposable income.

Figure D.4: PDV of Payments After 10 Years by Frame, Loan Size, and Payment Rate



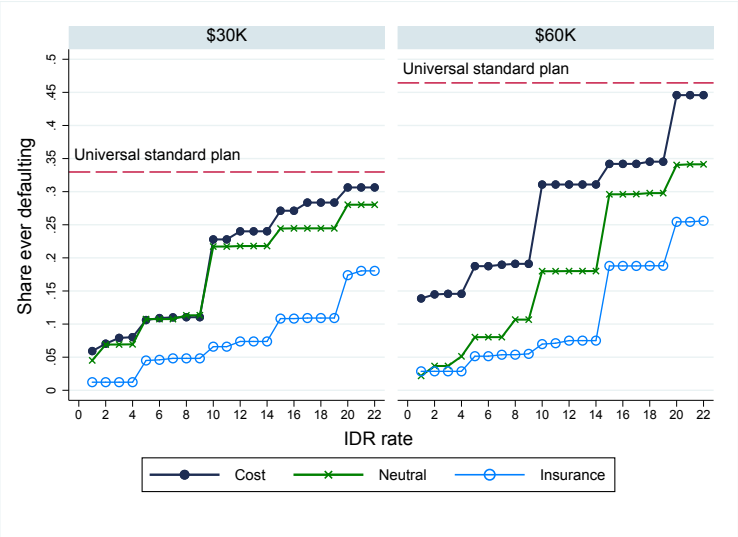
Notes: Simulated average present discounted value of loan payments after 10 years, by payment rate and framing, using a 3 percent discount rate (see Section 6 for details). Payment rate is the IDR payment as a percent of disposable income.

Figure D.5: PDV of Payments After 20 Years by Frame, Loan Size, and Payment Rate



Notes: Simulated average present discounted value of loan payments after 10 years, by payment rate and framing, using a 3 percent discount rate (see Section 6 for details). Payment rate is the IDR payment as a percent of disposable income.

Figure D.6: Share of Borrowers Defaulting within 20 Years by Frame, Loan Size, and Payment Rate



Notes: Simulated probability of defaulting within 20 years of entering repayment, by payment rate and framing (see Section 6 for details). A borrower defaults if her required loan payment exceeds 50 percent of her income for two consecutive years. Students choosing IDR are assumed to never default. Payment rate is the IDR payment as a percent of disposable income.

Table D.1: Correlations between Additional Selected Predetermined Characteristics and Treatment Parameters

Dependent variable:	(1) Age	(2) Asian	(3) URM	(4) White	(5) GPA	(6) First gen. student	(7) MD resident	(8) FAFSA submitted	(9) EFC ($1k)	(10) Any UMD loans	(11) Cum. grants ($1k)	(12) Cum. loans ($1k)
Sample mean	20.11	0.201	0.226	0.515	3.24	0.240	0.830	0.876	20.3	0.496	6.7	9.0
Fixed payment length	0.01	-0.016	0.009	0.005	-0.01	0.006	0.015	0.011	0.5	0.007	-0.1	-0.3
	(0.06)	(0.012)	(0.013)	(0.015)	(0.02)	(0.013)	(0.011)	(0.010)	(0.7)	(0.015)	(0.4)	(0.5)
Framing (rel. to neutral)												
Cost	-0.01	0.022	-0.014	-0.011	0.04	-0.012	-0.011	-0.025	0.5	-0.033	-0.2	-1.1
	(0.07)	(0.015)	(0.016)	(0.019)	(0.02)+	(0.016)	(0.014)	(0.012)*	(0.9)	(0.019)+	(0.5)	(0.6)+
Insurance	-0.04	0.008	-0.004	-0.015	0.02	-0.002	-0.034	-0.017	-0.4	-0.015	0.3	-0.9
	(0.07)	(0.015)	(0.015)	(0.018)	(0.02)	(0.016)	(0.014)*	(0.012)	(0.9)	(0.018)	(0.5)	(0.6)
Low payment in 1st scenario	0.03	-0.011	0.027	-0.018	0.0001	0.024	-0.010	-0.004	0.1	0.012	0.1	1.0
	(0.06)	(0.012)	(0.013)*	(0.015)	(0.02)	(0.013)+	(0.011)	(0.010)	(0.7)	(0.015)	(0.4)	(0.5)*
Loan amount = $60,000	-0.04	-0.008	-0.013	0.022	0.003	-0.011	0.010	-0.006	0.3	0.003	-0.4	-0.2
	(0.06)	(0.012)	(0.013)	(0.015)	(0.02)	(0.013)	(0.011)	(0.010)	(0.7)	(0.015)	(0.4)	(0.5)
Test of joint sig. (*p* -val.)	0.951	0.382	0.218	0.516	0.701	0.456	0.092	0.269	0.865	0.555	0.775	0.144

Notes: Analysis sample (N = 4,399); column (5) specification limited to students with nonmissing GPA (N = 3,189); column (9) specification limited to students who submitted a FAFSA in 2015-16 (N = 3,855). URM = underrepresented minority (Black, Hispanic, or Native American student). Regression of specified characteristic on treatment parameters. Robust standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.2: Characteristics of Students by Treatment Arm: Fixed Payment Amount

	Loan Amount = $60,000						Loan Amount = $30,000					
	Interest frame		Neutral frame		Insurance frame		Interest framing		Neutral frame		Insurance frame	
	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low	(7) High	(8) Low	(9) High	(10) Low	(11) High	(12) Low
Number of students	173	186	169	191	203	184	171	171	163	213	217	179
Administrative data												
Age	19.9	20.3	20.0	20.1	20.1	20.0	20.1	20.1	20.1	20.3	20.1	20.0
Female	0.51	0.52	0.41	0.52	0.49	0.49	0.49	0.50	0.47	0.45	0.51	0.49
Race/ethnicity												
Asian	0.27	0.20	0.21	0.14	0.24	0.21	0.23	0.23	0.20	0.20	0.18	0.20
Black	0.09	0.11	0.15	0.13	0.11	0.11	0.17	0.12	0.15	0.15	0.10	0.10
Hispanic	0.07	0.11	0.09	0.10	0.07	0.14	0.09	0.12	0.13	0.03	0.12	0.14
Other/multi-racial	0.02	0.08	0.08	0.05	0.04	0.07	0.07	0.05	0.05	0.05	0.08	0.06
Class standing												
New transfer student	0.08	0.05	0.09	0.08	0.05	0.07	0.11	0.08	0.10	0.08	0.07	0.08
Sophomore	0.14	0.13	0.13	0.16	0.20	0.18	0.16	0.15	0.13	0.15	0.18	0.14
Junior	0.20	0.31	0.23	0.30	0.27	0.23	0.25	0.23	0.23	0.25	0.26	0.26
Senior	0.35	0.32	0.30	0.29	0.32	0.28	0.30	0.35	0.32	0.31	0.33	0.31
STEM/business/econ. major	0.61	0.51	0.54	0.54	0.58	0.54	0.55	0.57	0.50	0.55	0.51	0.60
Undecided major	0.09	0.09	0.14	0.12	0.08	0.15	0.10	0.09	0.16	0.10	0.10	0.09
SAT percentile (if nonmissing)	84	82	83	82	83	83	81	83	81	81	84	82
GPA (if nonmissing)	3.29	3.25	3.20	3.29	3.18	3.25	3.22	3.33	3.14	3.24	3.25	3.27
First generation student	0.20	0.23	0.21	0.23	0.27	0.24	0.29	0.22	0.31	0.21	0.20	0.26
Maryland resident	0.86	0.80	0.86	0.81	0.84	0.80	0.81	0.85	0.85	0.83	0.80	0.79
Completed 2015-16 FAFSA	0.86	0.86	0.87	0.88	0.87	0.84	0.89	0.85	0.88	0.90	0.88	0.85
2015-16 EFC ($1k; if nonmissing)	21.9	20.4	18.7	21.9	17.9	20.6	19.3	18.9	18.5	21.4	19.7	20.4
Any loan at UMD	0.46	0.49	0.52	0.51	0.50	0.46	0.49	0.46	0.57	0.50	0.47	0.49
Cumulative loans ($1k)	7.4	10.6	8.5	12.5	8.1	7.1	9.0	9.5	11.4	8.8	8.9	8.5
Cumulative grants ($1k)	6.1	6.4	7.4	5.6	7.9	6.3	7.5	6.5	8.2	6.2	6.6	7.1
Survey data												
Expected earnings at graduation ($1k)	59.6	55.6	55.8	61.2	55.8	57.8	58.4	57.4	55.4	59.7	57.4	56.1
At age 30 ($1k)	106.8	94.7	100.2	101.6	100.3	99.7	104.1	95.6	99.7	109.0	98.9	107.8
At age 40 ($1k)	132.7	118.6	124.7	126.5	132.8	126.0	128.6	121.7	126.8	139.2	126.3	140.1
Expected pr(unemp) at graduation	0.15	0.14	0.16	0.16	0.18	0.15	0.12	0.17	0.13	0.15	0.17	0.13
At age 30	0.04	0.04	0.03	0.04	0.04	0.03	0.04	0.05	0.04	0.03	0.04	0.03
At age 40	0.02	0.03	0.02	0.03	0.04	0.02	0.03	0.04	0.03	0.03	0.03	0.02
Has student loan	0.38	0.41	0.49	0.43	0.44	0.41	0.43	0.42	0.45	0.44	0.45	0.44
Outstanding loan debt ($1k)	8.2	9.6	8.1	9.4	8.6	7.3	9.7	8.5	10.9	9.6	8.0	8.7
Has other debt	0.10	0.10	0.08	0.10	0.11	0.13	0.12	0.10	0.14	0.13	0.09	0.09
Financial literacy: num. correct (0-2)	0.7	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8
Willingness to take risks (1-10)	4.8	4.5	4.6	4.7	5.0	4.6	4.8	4.7	5.2	4.9	4.8	5.0

*Note*s: Expected earnings are conditional on having nonzero earnings. Skipped financial literacy questions are considered incorrect. Survey data measures reported for students that did not skip the specified question.

Table D.3: Characteristics of Students by Treatment Arm: Fixed Payment Amount

	Loan Amount = $60,000						Loan Amount = $30,000					
	Interest frame		Neutral frame		Insurance frame		Interest framing		Neutral frame		Insurance frame	
	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low	(7) High	(8) Low	(9) High	(10) Low	(11) High	(12) Low
Number of students	166	207	203	183	190	168	178	161	175	170	185	191
Administrative data												
Age	19.9	20.3	20.0	20.2	19.9	20.2	20.2	19.9	20.1	20.1	20.2	20.1
Female	0.48	0.55	0.51	0.46	0.48	0.51	0.50	0.60	0.53	0.48	0.49	0.49
Race/ethnicity												
Asian	0.20	0.19	0.18	0.16	0.17	0.18	0.15	0.22	0.23	0.21	0.22	0.20
Black	0.08	0.12	0.12	0.16	0.16	0.14	0.12	0.11	0.15	0.14	0.14	0.14
Hispanic	0.09	0.13	0.09	0.09	0.07	0.10	0.13	0.09	0.09	0.09	0.10	0.10
Other/multi-racial	0.05	0.07	0.07	0.02	0.08	0.08	0.08	0.04	0.03	0.08	0.04	0.07
Class standing												
Sophomore	0.17	0.17	0.18	0.23	0.16	0.18	0.16	0.20	0.14	0.15	0.17	0.15
Junior	0.22	0.20	0.21	0.25	0.23	0.24	0.24	0.20	0.24	0.26	0.27	0.26
Senior	0.29	0.31	0.39	0.30	0.31	0.35	0.35	0.30	0.33	0.28	0.32	0.31
New transfer student	0.10	0.12	0.07	0.09	0.12	0.05	0.10	0.09	0.09	0.08	0.06	0.07
STEM/business/econ. major	0.62	0.57	0.60	0.56	0.52	0.55	0.65	0.57	0.57	0.56	0.55	0.53
Undecided major	0.10	0.09	0.08	0.10	0.13	0.09	0.06	0.11	0.07	0.15	0.08	0.10
SAT percentile (if nonmissing)	82	83	84	80	83	84	82	82	82	80	84	83
GPA (if nonmissing)	3.29	3.23	3.21	3.20	3.26	3.29	3.22	3.26	3.29	3.17	3.24	3.18
First generation student	0.21	0.23	0.25	0.25	0.2	0.3	0.25	0.23	0.23	0.28	0.23	0.26
Maryland resident	0.82	0.86	0.81	0.90	0.86	0.81	0.84	0.84	0.91	0.79	0.8	0.8
2015-16 EFC ($1k)	18.4	18.3	17.9	18.0	18.9	18.1	16.7	21.1	18.6	17.9	17.7	16.3
Any loan at UMD	0.46	0.48	0.52	0.49	0.54	0.54	0.49	0.49	0.44	0.55	0.49	0.50
Cumulative loans ($1k)	7.8	8.2	10.2	8.6	8.4	9.5	8.4	7.9	6.9	10.6	9.8	9.9
Cumulative grants ($1k)	5.0	7.7	6.9	5.7	5.5	7.5	7.9	4.4	6.3	7.4	7.1	8.0
Survey data												
Expected earnings at graduation ($1k)	50.1	47.5	47.6	50.7	49.8	47.5	48.6	46.5	49.7	47.3	48.4	49.2
At age 30 ($1k)	103.2	92.6	100.3	95.5	112.3	92.5	105.1	107.4	98.4	101.1	101.9	94.6
At age 40 ($1k)	136.3	121.7	144.9	117.9	145.1	111.3	133.5	136.3	127.9	130.3	137.8	123.5
Ann. earnings growth (linear term)	8.9	7.6	8.2	7.5	9.9	7.9	9.4	10.0	8.6	9.4	8.9	7.5
Expected pr(unemp) at graduation	0.14	0.18	0.16	0.14	0.15	0.16	0.17	0.17	0.13	0.13	0.16	0.17
At age 30	0.04	0.04	0.03	0.04	0.04	0.05	0.03	0.03	0.04	0.02	0.04	0.04
At age 40	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.03
Has student loan	0.40	0.46	0.45	0.44	0.46	0.43	0.44	0.40	0.39	0.45	0.44	0.46
Outstanding loan debt ($1k)	7.7	9.5	9.2	9.5	6.6	8.5	7.3	6.5	5.3	9.6	9.6	8.9
Has other debt	0.10	0.13	0.08	0.13	0.10	0.10	0.12	0.06	0.12	0.12	0.12	0.13
Financial literacy: num. correct (0-2)	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.6	0.8	0.8	0.8	0.7
Willingness to take risks (1-10)	4.7	4.8	4.9	5.0	5.0	4.7	4.5	4.8	4.9	4.9	5.0	4.6

Notes: See Table D.2 notes.

Table D.4: Student Characteristics Correlated with Selection into the Analysis Sample

	(1) Analysis sample	(2) Other students	(3) Pr(analysis sample)
Demographic characteristics			
Age	20.1	20.5	-0.009
			(0.001)**
Female	0.50	0.45	0.026
			(0.005)**
Race (relative to white)			
Asian	0.20	0.16	0.017
			(0.007)*
Black	0.13	0.13	-0.021
			(0.008)**
Hispanic	0.10	0.10	-0.005
			(0.008)
Other/multi	0.06	0.06	0.001
			(0.010)
Class standing (rel. to freshmen)			
New transfer	0.08	0.07	0.021
			(0.012)+
Sophomore	0.16	0.18	-0.030
			(0.008)**
× GPA ($\mu = 0$)	0.01	-0.002	0.032
			(0.009)**
Junior	0.24	0.26	-0.024
			(0.008)**
× GPA ($\mu = 0$)	0.01	-0.002	0.025
			(0.008)**
Senior	0.32	0.31	-0.006
			(0.008)
× GPA ($\mu = 0$)	0.03	-0.01	0.063
			(0.009)**
STEM/business/econ major	0.56	0.50	0.035
			(0.006)**
Undecided major	0.10	0.12	-0.010
			(0.008)
Nonmissing SAT scores	0.87	0.86	-0.035
			(0.015)*
× SAT math percentile (0-100)	71.5	70.2	0.0003
			(0.0002)
First generation student	0.24	0.21	0.014
			(0.007)*
Maryland resident	0.83	0.78	0.041
			(0.006)**
Financial aid			
FAFSA submitted in 2015-16	0.88	0.81	0.037
			(0.007)**
× 2015-16 EFC ($1k)	$17.7	$17.3	-0.0001
			(0.0001)
Any UMD loans?	0.50	0.42	0.030
			(0.007)**
Cumulative loans ($1k)	$9.0	$7.6	0.001
			(0.0002)**
Cumulative grants ($1k)	$6.7	$5.2	0.001
			(0.0003)**
Students	4,399	21,036	25,435

*Note*s: Columns 1 and 2 display the mean characteristics of students in the analysis sample and of students who were invited to complete the survey but did not provide sufficient information or were otherwise ineligible to be included in the analysis sample, respectively. Column 3 displays coefficients from a linear probability regression in which the dependent variable is 1 if the person is included in the analysis sample, 0 otherwise and the listed characteristics are included as explanatory variables. GPA standardized to have mean = 0 within class levels. Robust standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.5: Correlations between Student Characteristics, Treatment Parameters, and Selection into the Analysis Sample for Students who Opened the Survey

A. Demographic characteristics			
Age	-0.039	STEM/business/econ major	0.035
	(0.002)**		(0.013)**
Female	-0.047	Undecided major	-0.010
	(0.011)**		(0.020)
Race (relative to white)		Class standing (relative to freshman)	
Asian	0.001	New transfer	0.084
	(0.014)		(0.025)**
Black	-0.043	Sophomore	0.027
	(0.018)*		(0.018)
Hispanic	-0.017	× GPA ($\mu = 0$)	-0.029
	(0.019)		(0.027)
Other/multi	-0.007	Junior	0.094
	(0.023)		(0.017)**
Nonmissing SAT scores	-0.015	× GPA ($\mu = 0$)	-0.027
	(0.036)		(0.021)
× SAT math percentile (0-100)	0.0002	Senior	0.114
	(0.0004)		(0.018)**
First generation student	0.023	× GPA ($\mu = 0$)	0.003
	(0.014)+		(0.020)
Maryland resident	0.033		
	(0.015)*		
B. Financial aid			
FAFSA submitted in 2015-16	-0.0001	Any loans?	0.005
	(0.0003)		(0.014)
× 2015-16 EFC ($1k)	0.0004	Cumulative loans ($1k)	0.0004
	(0.0005)		(0.0004)
		Cumulative grants ($1k)	0.0004
			(0.001)
C. Treatment parameters			
Framing (rel. to neutral)		Alternate plan = fixed length IDR	-0.012
Cost	-0.015		(0.010)
	(0.013)	Loan amount = $60K	0.002
Insurance	-0.012		(0.010)
	(0.012)	Lower interest rate presented first	-0.004
			(0.010)
Test of joint significance (p-value): 0.689			

*Note*s: Coefficients from linear probability regression of probability of being in the analysis sample on student characteristics and survey treatment parameters for students who opened the survey (N = 5,500) . GPA standardized to have mean = 0 within class levels. Robust standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.6: Correlations between Expected Earnings, Population Earnings, and Student Characteristics

	Expected (conditional) earnings ($1k) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Population (conditional) earnings ($1k) at:			
Expected graduation age	0.85	0.40	0.15
	(0.10)**	(0.21)+	(0.30)
Age 30	0.20	0.04	0.22
	(0.10)*	(0.22)	(0.31)
Age 40	-0.10	0.28	0.40
	(0.04)*	(0.08)**	(0.11)**
Female	-2.03	-15.22	-25.79
	(1.19)+	(2.26)**	(3.03)**
Underrepresented minority	2.49	4.88	7.59
	(1.48)+	(2.53)+	(3.48)*
First generation student	-0.26	-7.46	-9.09
	(1.30)	(2.26)**	(3.31)**
Age	-0.43	-4.36	-4.18
	(0.53)	(0.90)**	(1.28)**
In-state student	-0.29	-7.69	-12.98
	(1.20)	(2.70)**	(3.87)**
Class standing (rel. to freshman)			
New transfer	3.13	8.21	4.25
	(2.62)	(5.10)	(6.94)
Sophomore	11.90	18.09	20.19
	(5.34)*	(9.81)+	(13.36)
Junior	8.81	16.84	13.52
	(5.48)	(10.27)	(13.58)
Senior	6.37	27.52	32.01
	(5.84)	(11.07)*	(14.70)*
SAT percentile	1.04	-6.18	-6.30
	(4.20)	(7.95)	(10.33)
Sophomore, junior, senior × GPA	-3.04	-4.30	-4.10
	(1.51)*	(2.78)	(3.74)
Parent income ($1k)	-0.002	0.02	0.03
	(0.01)	(0.01)+	(0.02)
Student income ($10k)	0.25	0.24	0.53
	(0.15)+	(0.15)	(0.33)
More risk averse	-2.77	-12.04	-20.60
	(1.08)*	(2.02)**	(2.84)**
Financially literate	-0.16	-3.43	-4.30
	(1.05)	(2.04)+	(2.78)
Very likely to attend grad school	-2.59	11.94	16.30
	(1.14)*	(1.96)**	(2.75)**
Observations	3,945	3,945	3,945

*Note*s: Expected and population earnings conditioned on employment. Undecided majors are excluded. Population earnings within broad major categories. See Section 3 for details. All regressions also include indicators for nonmissing SAT score, nonmissing parent income, nonmissing student income, and whether the student skipped the risk aversion question. More risk averse are student who chose value of 4 or less on a scale of 0 to 10 where 0 is "not willing to take risks" and 10 is "very willing to take risks." Financially literate are students who answered at least one of the two financial literacy survey questions correctly (skipped questions are considered incorrect answers). Robust standard errors, clustered at the student level in parentheses; ** $p<0.01$, * $p<0.05$, + $p<0.1$.

Table D.7: Correlations between Expected Probability of Unemployment, Student Characteristics, and Population Nonemployment Rates

	Expected Pr($0 earnings) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Population Pr($0 earnings) at:			
Graduation	0.294	-0.068	-0.033
	(0.136)*	(0.054)	(0.055)
Age 30	0.538	0.233	0.179
	(0.268)*	(0.107)*	(0.113)
Age 40	-0.149	0.202	0.279
	(0.330)	(0.144)	(0.140)*
Female	0.033	0.005	0.007
	(0.008)**	(0.003)	(0.003)*
Underrepresented minority	0.001	-0.001	-0.003
	(0.009)	(0.004)	(0.004)
First generation student	0.003	0.004	-0.001
	(0.009)	(0.004)	(0.004)
Age	0.006	0.008	0.003
	(0.003)+	(0.002)**	(0.002)+
In-state student	0.025	0.007	0.005
	(0.009)**	(0.003)*	(0.003)+
Class standing (rel. to freshman)			
New transfer	0.029	0.012	-0.003
	(0.017)+	(0.009)	(0.007)
Sophomore	0.012	-0.007	-0.016
	(0.032)	(0.013)	(0.013)
Junior	0.016	-0.011	-0.015
	(0.031)	(0.013)	(0.013)
Senior	0.019	-0.016	-0.019
	(0.032)	(0.014)	(0.013)
SAT percentile	0.029	0.002	-0.010
	(0.029)	(0.012)	(0.011)
Sophomore, junior, senior × GPA	0.001	0.003	0.004
	(0.009)	(0.004)	(0.004)
Parent income ($1k)	-0.00002	-0.00002	-0.00002
	(0.00001)	(0.00001)	(0.00001)
Student income ($10k)	-0.0005	0.0001	-0.0004
	(0.0005)	(0.0004)	(0.0003)
More risk averse	0.027	0.005	0.001
	(0.007)**	(0.003)+	(0.003)
Financially literate	-0.022	0.001	0.004
	(0.008)**	(0.003)	(0.003)
Very likely to attend grad school	0.056	-0.005	-0.012
	(0.008)**	(0.003)	(0.003)**
Observations	3,945	3,945	3,945

*Note*s: Undecided majors are excluded. Population probability of $0 earnings within broad major categories. See Section 3 for details. All regressions also includes indicators for nonmissing SAT score, nonmissing parent income, nonmissing student income, and whether the student skipped the risk aversion question. More risk averse are students who chose value of 4 or less on a scale of 0 to 10 where 0 is "not willing to take risks" and 10 is "very willing to take risks." Financially literate = answered at least one of the two financial literacy survey questions correctly (skipped questions are considered incorrect answers). Robust standard errors, clustered at the student level in parentheses; ** $p<0.01$, * $p<0.05$, + $p<0.1$.

Table D.8: Correlations between Expected Probability of Low Earnings, Student Characteristics, and Population Rates of Low Earnings

	Expected Pr(income in ($0, $35k]) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Population Pr(income in ($0,$35k]) at:			
Graduation	0.647	0.115	0.073
	(0.046)**	(0.026)**	(0.020)**
Age 30	0.059	0.278	0.149
	(0.134)	(0.077)**	(0.059)*
Age 40	-0.001	-0.043	0.020
	(0.155)	(0.086)	(0.062)
Female	0.027	0.011	0.009
	(0.009)**	(0.005)*	(0.004)*
Underrepresented minority	0.002	0.003	-0.002
	(0.011)	(0.006)	(0.005)
First generation student	0.012	0.010	0.009
	(0.010)	(0.006)	(0.005)*
Age	0.002	0.015	0.008
	(0.004)	(0.003)**	(0.002)**
In-state student	0.019	0.017	0.013
	(0.010)+	(0.005)**	(0.004)**
Class standing (rel. to freshman)			
New transfer	0.009	-0.023	-0.011
	(0.020)	(0.013)+	(0.010)
Sophomore	0.104	-0.031	-0.024
	(0.036)**	(0.021)	(0.016)
Junior	0.122	-0.047	-0.030
	(0.037)**	(0.022)*	(0.017)+
Senior	0.136	-0.072	-0.052
	(0.039)**	(0.024)**	(0.018)**
SAT percentile	0.054	0.043	0.012
	(0.032)+	(0.020)*	(0.015)
Sophomore, junior, senior × GPA	-0.036	0.003	0.002
	(0.010)**	(0.006)	(0.004)
Parent income ($1k)	-0.00002	-0.0001	-0.00003
	(0.00005)	(0.00003)**	(0.00002)
Student income ($10k)	-0.002	-0.000	-0.000
	(0.001)**	(0.001)	(0.000)
More risk averse	0.029	0.015	0.012
	(0.008)**	(0.004)**	(0.003)**
Financially literate	0.004	-0.003	-0.002
	(0.008)	(0.005)	(0.004)
Very likely to attend grad school	0.013	-0.023	-0.025
	(0.008)	(0.005)**	(0.004)**
Observations	3,945	3,945	3,945

Notes: Undecided majors are excluded. Population probability of positive earnings < $35,000 within broad major categories. See Section 3 for details. All regressions also includes indicators for nonmissing SAT score, nonmissing parent income, nonmissing student income, and whether the student skipped the risk aversion question. More risk averse are students who chose value of 4 or less on a scale of 0 to 10 where 0 is "not willing to take risks" and 10 is "very willing to take risks." Financially literate are students who answered at least one of the two financial literacy survey questions correctly (skipped questions are considered incorrect answers). Robust standard errors, clustered at the student level in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.9: Robustness of the Effect of Framing on Willingness to Pay for IDR

	(1) No controls	(2) Adtl. admin conts	(3) RA, debt, FL	(4) Drop low FL	(5) UMD borrowers	(6) At least 5 minutes	(7) Drop outliers
A. Fixed amount							
Framing							
Insurance	5.92	5.82	5.91	5.08	6.40	5.90	5.49
	(0.88)**	(0.88)**	(0.88)**	(1.13)**	(1.21)**	(0.94)**	(0.92)**
Interest	-3.62	-3.73	-3.66	-3.21	-3.66	-3.93	-4.01
	(0.76)**	(0.78)**	(0.77)**	(1.09)**	(1.11)**	(0.82)**	(0.78)**
Test of eq. (p-val.)	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Loan size ($10K)	0.75	0.76	0.74	0.75	0.75	0.77	0.81
	(0.23)**	(0.23)**	(0.23)**	(0.31)*	(0.32)*	(0.24)**	(0.24)**
Observations	1,283	1,283	1,283	764	648	1,154	1,163
B. Fixed length							
Framing							
Insurance	4.12	4.05	4.11	3.45	4.31	3.84	4.09
	(0.67)**	(0.65)**	(0.66)**	(0.83)**	(1.03)**	(0.72)**	(0.70)**
Interest	-2.19	-1.94	-1.97	-1.94	-2.27	-2.41	-2.04
	(0.44)**	(0.44)**	(0.45)**	(0.49)**	(0.73)**	(0.48)**	(0.46)**
Test of eq. (p-val.)	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Loan size ($10K)	0.68	0.72	0.70	0.71	1.22	0.77	0.73
	(0.16)**	(0.16)**	(0.16)**	(0.20)**	(0.26)**	(0.17)**	(0.17)**
Observations	1,248	1,248	1,248	763	610	1,116	1,138

*Note*s: Dependent variable: payment as a percentage of income that would make student indifferent between standard plan and IDR. Students reporting a willingness to pay that conflicts with earlier answers or a payment equal to 0 or 100 percent of income are excluded. See Table 3 for descriptions of various specifications and sample limitations. Robust standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.10: Expected Labor Market Outcomes and Preferences for IDR: Robustness to Alternate Specifications & Sample Restrictions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)
Expected earnings										
At graduation	0.007	-0.002	0.002	0.0004	-0.001	0.007	-0.0004	0.002	-0.003	-0.002
	(0.009)	(0.002)	(0.003)	(0.004)	(0.005)	(0.010)	(0.005)	(0.003)	(0.004)	(0.004)
Age 30	-0.011	-0.000	-0.0001	-0.001	0.002	-0.001	-0.0001	-0.002	0.001	-0.0001
	(0.015)	(0.002)	(0.003)	(0.003)	(0.004)	(0.011)	(0.002)	(0.002)	(0.003)	(0.003)
Age 40	0.005	-0.000	-0.0002	-0.0004	-0.002	-0.006	-0.0004	0.0003	-0.001	-0.0003
	(0.014)	(0.001)	(0.002)	(0.002)	(0.002)	(0.012)	(0.001)	(0.001)	(0.002)	(0.002)
Probability of $0 earnings										
At graduation	0.170	0.158	0.165	0.203	0.232	0.039	0.035	0.0003	0.081	0.054
	(0.043)**	(0.045)**	(0.046)**	(0.065)**	(0.070)**	(0.035)	(0.043)	(0.037)	(0.050)	(0.057)
Age 30	0.075	0.102	0.044	0.161	0.008	0.038	0.051	0.214	0.067	0.144
	(0.174)	(0.175)	(0.178)	(0.219)	(0.240)	(0.143)	(0.142)	(0.138)	(0.166)	(0.179)
Age 40	-0.003	-0.012	0.033	0.017	0.128	-0.058	-0.064	-0.204	-0.092	-0.188
	(0.162)	(0.164)	(0.168)	(0.195)	(0.212)	(0.125)	(0.126)	(0.111)+	(0.125)	(0.136)
Probability of earnings < $35,000										
At graduation	0.111	0.090	0.138	0.111	0.140	0.134	0.121	0.146	0.113	0.121
	(0.038)**	(0.037)*	(0.042)**	(0.044)*	(0.049)**	(0.037)**	(0.041)**	(0.040)**	(0.042)**	(0.046)**
Age 30	0.132	0.140	0.108	0.119	0.085	0.144	0.149	0.111	0.132	0.149
	(0.098)	(0.098)	(0.105)	(0.103)	(0.112)	(0.096)	(0.095)	(0.102)	(0.109)	(0.119)
Age 40	-0.017	-0.027	0.010	-0.036	0.009	0.027	0.027	0.043	0.027	0.003
	(0.124)	(0.124)	(0.138)	(0.132)	(0.148)	(0.127)	(0.127)	(0.139)	(0.139)	(0.152)
Observations	4,440	4,440	3,844	4,058	3,518	4,358	4,358	3,762	3,972	3,460
Specification:										
Standardized earnings (μ=0, σ=1)	X					X				
Unconditional earnings ($10k)		X					X			
Earnings | employment ($10k)			X	X	X			X	X	X
Sample restrictions:										
At least 5 minutes on survey			X		X			X		X
Dropping outliers				X	X				X	X

*Note*s: Dependent variable: prefers or strongly prefers IDR plan. All regressions also include controls for treatment parameters (loan size, payment as a percentage of income, scenario order, and framing), major (STEM/business/economics, undecided, or other major), gender, class standing (freshman, sophomore, junior, senior, or new transfer), an indicator for missing SAT scores, and SAT math percentile. Robust standard errors, clustered at the student level in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.11: Heterogeneity in the Effects of Framing by Expected Labor Market Outcomes at Graduation

	Fixed payment amount		Fixed payment length	
	(1)	(2)	(3)	(4)
Framing (rel. to neutral)				
Interest	-0.109	-0.101	-0.039	-0.053
	(0.050)*	(0.028)**	(0.054)	(0.021)*
Insurance	0.108	0.132	0.128	0.134
	(0.058)+	(0.033)**	(0.064)*	(0.029)**
Earnings | employment at graduation				
× Interest framing	0.002		0.000	
	(0.004)		(0.003)	
× Neutral framing	0.001		0.002	
	(0.004)		(0.006)	
× Insurance framing	0.004		0.004	
	(0.005)		(0.005)	
Test of equality (p-value)	*0.882*		*0.887*	
Pr(earnings = $0)				
× Interest framing	0.092	0.091	-0.002	-0.002
	(0.064)	(0.064)	(0.034)	(0.034)
× Neutral framing	0.254	0.256	0.094	0.096
	(0.073)**	(0.072)**	(0.065)	(0.065)
× Insurance framing	0.225	0.222	0.109	0.110
	(0.067)**	(0.068)**	(0.067)	(0.067)
Test of equality (p-value)	*0.181*	*0.179*	*0.194*	*0.188*
Pr(earnings > $0, ≤ $35k)				
× Interest framing	0.026	0.018	-0.026	-0.027
	(0.049)	(0.043)	(0.038)	(0.035)
× Neutral framing	0.068	0.066	0.177	0.165
	(0.061)	(0.057)	(0.062)**	(0.055)**
× Insurance framing	0.305	0.286	0.349	0.332
	(0.066)**	(0.060)**	(0.068)**	(0.061)**
Test of equality (p-value)	*0.002*	*0.001*	*<0.001*	*<0.001*
Observations	4,440	4,440	4,358	4,358

Notes: Dependent variable = prefers or strongly prefers IDR plan. All regressions also include controls for major, gender, class standing, missing SAT scores, SAT math percentile, and whether the high cost IDR option was presented first.. Robust standard errors, clustered at the student level in parentheses; ** p<0.01, * p<0.05, + p<0.1.

Table D.12: Characteristics of the UMD Survey Respondent Sample and 2012 Bachelor's Degree-Seeking Borrowers Nationwide

	UMD survey respondents		3. NPSAS
	1. Unweighted	2. Weighted	
Age	20.0	20.6	23.5
First generation student	0.22	0.30	0.30
Parent income	$114,551	$82,444	$80,338
In-state student	0.82	0.76	0.76
Expected family contribution	$18,857	$12,477	$8,903
EFC = 0	0.17	0.33	0.33
Pell Grant eligible	0.36	0.57	0.57
Female	0.48	0.57	0.57
Class standing = junior or senior	0.59	0.59	0.59
Race			
Asian	0.19	0.05	0.05
Black	0.11	0.17	0.17
Hispanic	0.09	0.13	0.13
White	0.55	0.61	0.61
SAT score	1157	1084	1019
Missing SAT scores	0.11	0.19	0.19
Major			
Science, math, health	0.18	0.21	0.21
Business and economics	0.13	0.19	0.19
Computer/information sciences	0.09	0.04	0.04
Education	0.04	0.07	0.07
Engineering	0.18	0.05	0.05
General studies	0.01	0.03	0.03
Humanities	0.05	0.10	0.10
Other applied fields	0.10	0.17	0.17
Social sciences	0.10	0.11	0.11
Undecided	0.10	0.02	0.02

*Note*s: Column 1 displays average characteristics of UMD survey respondents who gave a rational response to the survey question asking what IDR payment, as a percentage of income, would make them indifferent between IDR and the standard plan. Column 2 contains average characteristics of the reweighted UMD survey sample, where weights generated via raking to represent the 4.5 million bachelor's degree-seeking borrowers enrolled in college in 2012. Column 3 displays average characteristics of bachelor's degree-seeking borrowers in the 2012 NPSAS using the NPSAS sampling weights. Average parent income and SAT scores are only reported for students with nonmissing values.

Appendix E Simulation results for fixed length IDR

Figure E.1 displays the simulated IDR take-up rate by IDR frame and payment rate in the case of fixed-length IDR. We focus on a smaller range of payment rates, as most proposed fixed-length IDR plans do not involve payments that exceed 15 percent.[1] As is the case for fixed amount IDR, take-up is substantially

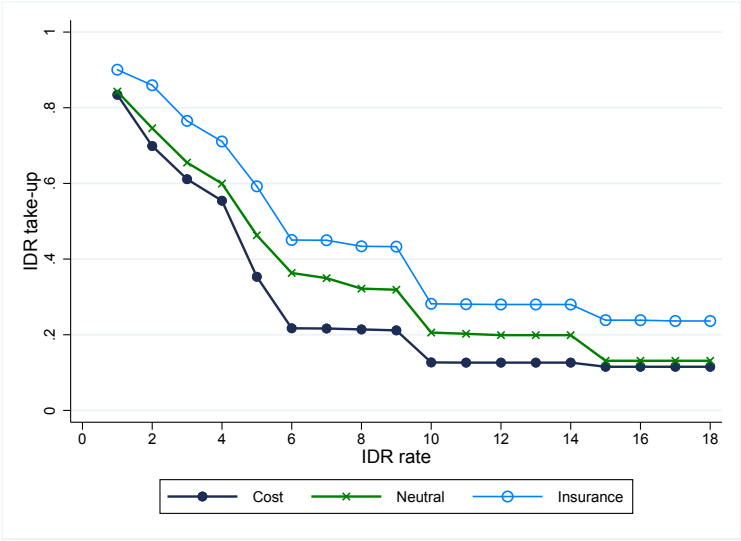
[1]For example, Purdue University's "Back a Boiler" income share agreement program offers contracts with payment rates up to 15 percent of income, but total payments are capped at 250 percent of the original loan. See https://purdue.edu/backaboiler/ for details. The original Oregon "Pay it Forward" income share agreement proposal set payment rates at 0.75 percent per year

higher under the insurance frame at every price, although differences are smaller at lower, more generous payment rates.

In contrast our finding of advantageous selection into fixed amount IDR under the insurance frame, borrowers adversely select into fixed length IDR under every frame for most payment rates. The insurance and neutral frames generate approximately the same degree of adverse selection, which is increasing in the payment rate (Figure E.2). For payment rates above 9 percent, selection into fixed-length IDR under the cost frame is slightly advantageous, but at these prices, very few students take up IDR, so this finding could be an artifact of the small underlying sample size.

Cumulative payments at 10 and 20 years do not vary substantially across frames for lower payment rates (Figure E.3). The 10-year break-even point relative to a universal standard repayment plan is approximately 7 percent of income for all three frames, while 20 years later, the break-even rate is just 3 percent. At higher IDR prices, our simulation predicts that federal revenue increases substantially, with the largest amount collected under the insurance frame. Even with adverse selection into IDR, we predict that on average, borrowers' earnings will not be so low as to generate a loss. Similar to our findings in the case of fixed amount IDR, for every IDR payment rate, defaults are lowest when IDR is framed as insurance, and highest when the costs of IDR are emphasized (Figure E.4).

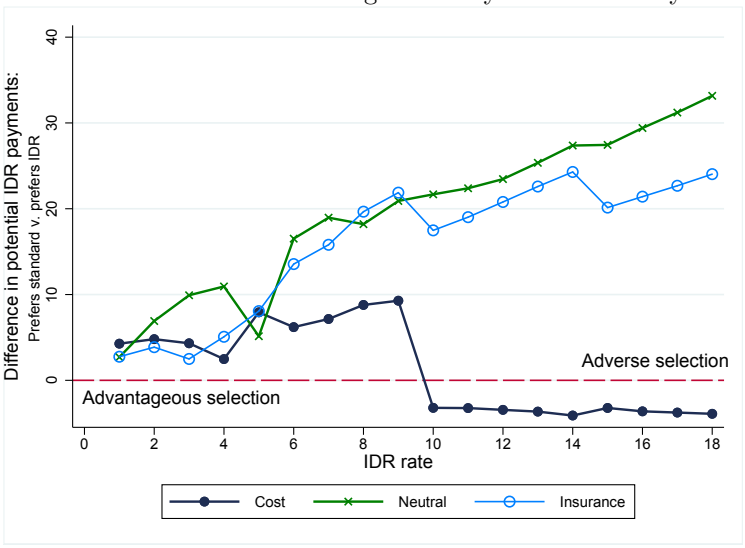
Figure E.1: Fixed Length IDR Take-up by Frame and Payment Rate



Notes: Simulated take-up of fixed-length IDR by payment rate and framing (see Section 6 for details). Payment rate is the IDR payment as a percent of disposable income. .

of college (e.g., 3 percent of income over a 20 year period in exchange for four years of college tuition).

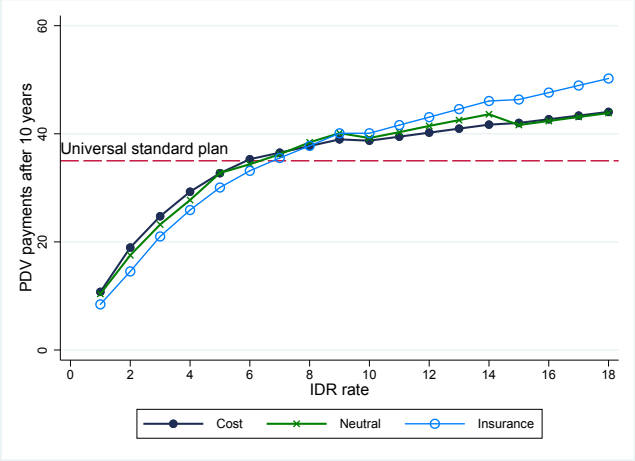
Figure E.2: Selection into Fixed Length IDR by Frame and Payment Rate



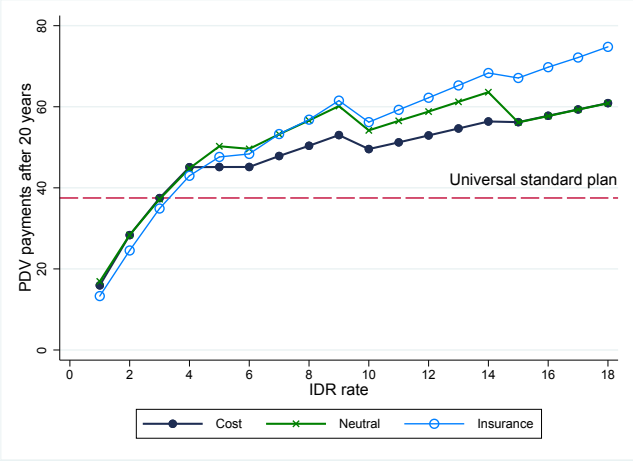
Notes: Simulated difference in average fixed-length IDR payments for borrowers that chose the standard plan and borrowers that chose IDR, by payment rate and framing (see Section 6 for details). Payment rate is the IDR payment as a percent of disposable income.

Figure E.3: Present Discounted Value of Payments by Frame and Fixed Length IDR Payment Rate

A. After 10 years

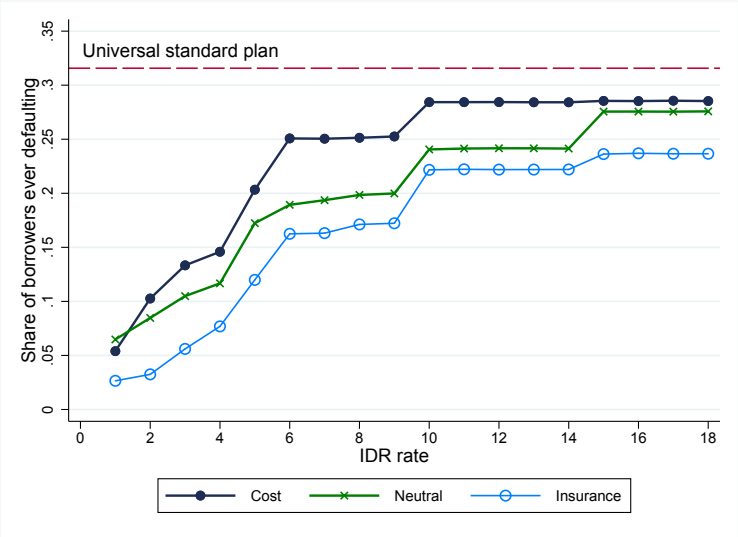


B. After 20 years



Notes: Simulated average present discounted value of loan payments after 10 and 20 years, by payment rate and framing, using a 3 percent discount rate (see Section 6 for details). Payment rate is the fixed length IDR payment as a percent of disposable income.

Figure E.4: Share of borrowers defaulting within 20 years by Frame and Fixed Amount IDR Payment Rate



Notes: Simulated probability of defaulting within 20 years of entering repayment, by payment rate and framing (see Section 6 for details). A borrower defaults if her required loan payment exceeds 50 percent of her income for two consecutive years. Students choosing IDR are assumed to never default. Payment rate is the IDR payment as a percent of disposable income.