



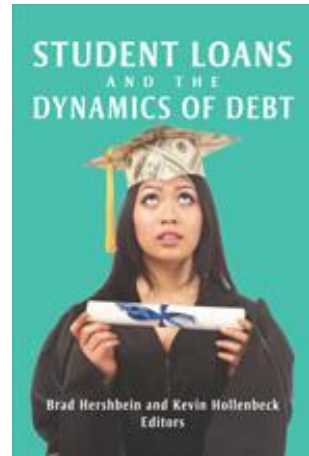
Upjohn Institute Press

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Chapter 13 (pp. 415-446) in:
Student Loans and the Dynamics of Debt
Brad Hershbein, Kevin M. Hollenbeck, eds.
Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 2015.
DOI: 10.17848/9780880994873.ch13

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2015

W.E. Upjohn Institute for Employment Research
Kalamazoo, Michigan

Library of Congress Cataloging-in-Publication Data

Hershbein, Brad.

Student loans and the dynamics of debt / Brad Hershbein. Kevin M. Hollenbeck.
pages cm

Includes index.

ISBN 978-0-88099-484-2 (pbk. : alk. paper) — ISBN 0-88099-484-3 (pbk. : alk. paper) — ISBN 978-0-88099-485-9 (hardcover : alk. paper) — ISBN 0-88099-485-1 (hardcover : alk. paper)

1. Student loans—United States. 2. Finance, Personal—United States. I. Title.
LB2340.2H47 2014

378.3'620973—dc23

2014043892

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W.E. Upjohn Institute for Employment Research
300 S. Westnedge Avenue
Kalamazoo, Michigan 49007-4686

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Cover design by Alcorn Publication Design.

Index prepared by Diane Worden.

Printed in the United States of America.

Printed on recycled paper.

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Measuring the Benefits of Income-Based Repayment for Graduate and Professional Students

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The federal government has maintained a student loan program since the 1960s, and since the early 1990s the program has been available to all undergraduate, subbaccalaureate, and graduate students without regard to family income. Since 2006, graduate students have been able to use the program to finance the entire cost of their educations as determined by the institution they attend (in any program, for any credential, and including living expenses) without limit (*Deficit Reduction Act of 2005*).

From a federal policy perspective, a government loan program is a logical tool to help ensure that people can obtain a postsecondary education. In essence, loans allow students to move some of the future earnings that they would gain from that education to the present to finance the education itself. The government's role in sponsoring such a program is sound on a theoretical basis as well: A robust private market for student lending is unlikely to develop because of information asymmetries and poor economies of scale (i.e., relatively small loans with multiple disbursements and long repayment terms); a private market would likely make credit most readily available to those who need it least (i.e., students from more affluent families or those attending elite

institutions of higher education); and a private lending market would restrict credit availability in times of economic stress, the point at which demand for higher education tends to surge.

Despite its appeal, there is a downside to a loan arrangement for the student. If his future earnings are lower than expected or erratic, he may not be able to repay the loan on time or in full and would incur penalties, fees, accrued interest charges, a damaged credit history, etc. That problem falls away, however, if the student can repay the loan as a share of his income.

That reasoning led policymakers to add an income-based repayment plan to the federal loan program in the mid-1990s, coupling it with loan forgiveness, which was ultimately set in regulations at 25 years of payments (*Omnibus Budget Reconciliation Act of 1993*). That early version of income-based repayment, which remains available today, suffered from a number of limitations and has never been widely used.¹ Those limitations prompted student aid advocates to argue in 2006 that the program should be redesigned to make it more widely available and offer lower payments to borrowers.² Ultimately, lawmakers agreed and enacted the Income-Based Repayment program in 2007 and implemented it in 2009.

Under this version of the Income-Based Repayment (IBR) program (which this chapter refers to as Old IBR to distinguish it from an even more recent version of the program), borrowers make payments equal to 15 percent of their adjusted gross income after an exemption equal to 150 percent of the federal poverty guidelines adjusted for household size (see Table 13.1). Remaining debt is forgiven after 25 years of payments. All borrowers are eligible for the program if it would reduce their monthly payments below what they would pay under a 10-year fixed amortization, which is also known as the standard repayment plan.³ Policymakers also added a new loan forgiveness provision when they enacted IBR: public service loan forgiveness (PSLF). Under PSLF, borrowers using IBR who work for most nonprofit organizations or any government position can have unpaid debt forgiven after 10 cumulative years of payments.⁴

In 2010, only months after borrowers could first enroll in Old IBR, President Obama proposed that Congress modify the program for all borrowers by reducing monthly payments to 10 percent of discretionary income and shortening the loan forgiveness term to 20 years of pay-

Table 13.1 Comparing Terms for New and Old Income-Based Repayment (IBR) Plans

Repayment term	Old IBR	New IBR
Eligible borrowers	All borrowers with federal student loans not in default	Borrowers who took out first federal loan on or after October 1, 2007, and also took out a loan on or after October 1, 2011; and all new borrowers as of October 1, 2011
Eligible loans	All federal student loans (except Parent PLUS loans)	Same
Income definition	Adjusted Gross Income (AGI) on prior year federal tax return; can exclude spouse's income if filing separately	Same
Exemption	150% of federal poverty guidelines adj. for household (\$17,235 single, plus \$6,030 ea. additional person, including spouse)	Same
Payment as share of income above exemption (annual)	15%	10%
Maximum payment regardless of income	Payment on original loan balance using a 10-year fixed monthly payment	Same
Public Service Loan Forgiveness eligibility	120 cumulative monthly payments (10 years) in qualified job	Same
General loan forgiveness eligibility (all enrollees)	25 years	20 years

SOURCE: Based on data from the U.S. Department of Education.

ments. All other terms under IBR would be left unchanged. Congress passed this proposal in early 2010 as part of a larger health care reform bill (*Health Care and Education Reconciliation Act of 2010*). While this law made the New IBR terms available to new borrowers as of 2014, the Obama administration used its authority under a different statute to accelerate the start date to December 2012 for new borrowers as of October 1, 2007.⁵ This “bridge” program is called Pay As You Earn. This chapter refers to both Pay As You Earn and the IBR that begins for new borrowers in 2014 as New IBR. The terms of the two programs are virtually identical, with only one minor exception: Pay As You Earn includes a limit on how much interest can be capitalized at a certain point in repayment, but it does not limit how much interest can accrue. This is unlikely to have any effect on most borrowers, and a negligible effect on the limited universe of borrowers with high debt balances—over \$50,000—who experience prolonged low incomes with sudden, large increases in incomes that are sustained.

In summary, the federal government has offered student loan borrowers repayment plans based on income since the early 1990s but later added the IBR plan and then modified it shortly thereafter to further reduce borrower payments. This chapter focuses on the most recent changes to the program.

UNDERSTANDING NEW IBR

To better understand how New IBR would affect borrowers over their entire repayment terms, in 2012 we developed a calculator that incorporates all of the repayment parameters and rules (i.e., income exemption, interest accrual, loan forgiveness, etc.) for both New and Old IBR to compare how the changes would affect different types of borrowers based on various debt and income scenarios. That is, our analysis examines how the program would work over a borrower’s entire 20- or 25-year repayment term. Such an approach is the best way to understand how the multiple repayment terms in the program interact over many years with other factors such as inflation, interest accrual, income changes, and changes in household size.

Using the calculator, we analyze hundreds of hypothetical borrower scenarios (Delisle and Holt 2012). One of our main conclusions is that the changes to IBR made the program much more generous than was commonly understood, particularly for graduate students. Borrowers with debt from graduate school, despite earning high incomes, stand to have substantial debts forgiven. Under Old IBR, such a scenario would be highly unusual. (See Table 13.2 for a comparison.) Moreover, New IBR can work like tuition assistance for graduate students because a borrower can still qualify for substantial amounts of loan forgiveness, even when he earns an income that is average relative to national or peer incomes. Meanwhile, New IBR provides relatively small increases in benefits for undergraduate students and lower-income borrowers compared to Old IBR.⁶

Those findings are more thoroughly explained in Delisle and Holt (2012), but they can be described briefly with the following points. Graduate students stand to benefit the most from the changes because they can borrow federal student loans to finance their entire educations and then repay all federal student loans—from both undergraduate and graduate studies—as one balance under IBR, whereas undergraduate borrowers are subject to annual and aggregate borrowing limits. Under Old IBR, monthly payments and the 25-year term before loan forgiveness were sufficient to repay even large amounts of graduate student debt, but changes under New IBR reduce borrowers' monthly payments by 33 percent compared to Old IBR, and then shorten the repayment time before loan forgiveness by 5 years. Those changes result in a large increase in benefits for graduate students because of the rules on what they may borrow in federal loans.

For dependent undergraduates the payment reductions under New IBR increase benefits as well, but dependent undergraduate debt levels are not high enough such that New IBR results in significantly larger amounts of loan forgiveness compared to Old IBR.

Lastly, lower-income borrowers see little effect from the changes under New IBR, because the income exemption is the same under both plans, and these borrowers have too little income over that exemption such that the changes in the repayment rate and loan forgiveness term under New IBR do not translate into a large reduction in payments.

Table 13.2 Comparing a Borrower under Old and New IBR Plans

Starting loan balance: \$65,000 at 6.0% interest

	Repayment year						Total payments	Forgiven
	1	5	10	15	20	25		
Income (\$)	45,000	58,986	82,731	116,034	162,744	228,257		
Old IBR (\$)								
Monthly payment	291	259	472	713	722	—	132,459	—
Loan balance	65,410	67,112	63,815	46,187	12,993	—		
New IBR (\$)								
Monthly payment	194	173	315	475	694	—	88,045	55,817
Loan balance	66,574	72,908	77,210	73,241	55,817	—		

NOTE: Loan balance reflects principal and accrued unpaid interest at the end of the repayment year indicated. Borrower's income increases at 7 percent annually. Income reflects total income, but payments are calculated on the basis of adjusted gross income, which is reduced by an assumed amount explained in Note 10 at the end of the chapter. The exemption is calculated for a household size of one for the first three years and a size of two each year thereafter to reflect a spouse.

SOURCE: Delisle and Holt (2012).

GRADUATE STUDENTS AND THE “NO MARGINAL COST THRESHOLD”

In this chapter, we delve more deeply into the benefits that New IBR will provide to graduate and professional students, using our prior work as a foundation. Our findings from that initial work suggest that the policy and market implications of the New IBR are significant in the graduate and professional education arena; namely, New IBR could act as a form of tuition assistance, as students borrow knowing that all or some of the incremental debt they incur will ultimately be forgiven. However, that work relied on somewhat generic (though plausible) debt and income scenarios, making it difficult to gauge the size and scope of the tuition-assistance effect and what types of degree programs could be most affected (Delisle and Holt 2012). Furthermore, our initial work did not factor in PSLF. That benefit applies to 25 percent of jobs in the economy, owing to the government’s very broad definition of “public service” and makes the benefits we highlighted in our initial work several times larger because loan forgiveness occurs after only 10 years of payments (U.S. Department of Education Office of Federal Student Aid n.d.).

To build on our prior analysis, we develop income projections for individuals working in certain professions who have graduate and professional credentials. We also include the effects of PSLF in all of our analyses.

For the income estimates, we opt to estimate incomes by profession rather than lump together broader categories of graduate and professional degrees, such as all masters’ of arts or all masters’ of science. This allows for more distinctions in probable earnings between different professions. Moreover, many students who seek a graduate or professional degree do so to obtain employment or advancement in a defined field. For example, a student seeking a Juris Doctor typically intends to practice law or work in a field that requires that credential, and a student pursuing a master’s of education likely intends to work in primary or secondary education. Thus, we can link specialized graduate and professional degrees to specific career and income paths. One limitation of this approach, however, is that it does not capture the incomes of borrowers who earn a degree in one area but are employed in another.

Obtaining complete and reliable information on the amounts that graduate students borrow for specific degrees and what specific programs cost is more problematic. Programs for the same graduate credential can have a range of costs, students can incur debt to finance a wide range of living costs, and they can attend part time or full time.⁷ In a few cases we located debt figures by profession or specialized degree type, but most often those sources report only mean debt levels and understate the loan balances that borrowers would actually repay in New IBR because they do not include accrued interest or debt from undergraduate studies. Thus it is difficult to pinpoint the cost and debt incurred for a particular graduate or professional credential. However, to provide context for our analysis, we incorporate federal student loan debt levels for graduate and professional students by broad degree-type category as reported by the federal government in the 2012 National Postsecondary Student Aid Survey. (See Table 13.3.)

Instead of using cost or debt levels as the central focus of our analysis, we use a “no marginal cost threshold” (NMCT) measure. This places the analysis on what students would repay based on their projected incomes, not necessarily the amount that they borrow.

Table 13.3 Graduate Degree Categories and Debt Levels (\$)

Degree by Dept. of Education survey category	Degree-profession profile	Debt level by percentile		
		25th	50th	75th
Education (any master’s)	K-12 Teacher	23,000	42,000	69,000
Other master’s degree	Accountant	29,000	49,000	85,000
	Reporter			
	Social Worker			
	Speech Pathologist			
Other master of science (MS)	Engineer	23,000	47,000	75,000
	Nurse			
Other health science degree	Pharmacist	98,000	132,000	199,000
	Veterinarian			
Law (LLB or JD)	Lawyer	86,000	140,000	191,000

NOTE: Debt figures reflect cumulative federal loan amount owed, principal and interest, from undergraduate and graduate studies for those who completed a degree in 2011–12, rounded to nearest \$1,000.

SOURCE: U.S. Department of Education National Postsecondary Student Aid Survey 2012; Authors’ calculations.

Because we already know the terms of New IBR and have built them into a calculator, we can determine how much an individual would repay on her student loans once we have estimated her future income over 20 years. That is, what she repays in total is a function of her income. We can also find the level of debt at which she ceases to incur any increases in her future loan payments if she borrows an additional dollar. Taking on more debt at that point increases only how much debt she has forgiven after 10 or 20 years, not her monthly or total payments.

The NMCT concept may best be understood in relation to a traditional loan. Under a traditional loan arrangement, the more a student borrows, the more she must repay. Under New IBR, for a set income level and path, there must be an amount of debt where that relationship ends, and the more a student borrows, the more she has forgiven.

This NMCT is a convenient indicator for identifying the implications of New IBR. If the NMCT is below what a graduate degree costs, then most borrowers holding those degrees will receive loan forgiveness. Schools could also raise prices with impunity, as those increases are borne by the federal government through loan forgiveness, and students would be encouraged to borrow for the full cost of attendance. Alternatively, an NMCT that is far below the typical cost of a graduate degree in a particular field might indicate that the New IBR is doing what its supporters wanted—it is subsidizing socially valuable credentials that a student's future income gains would not justify alone. There are a number of other ways to interpret the NMCT, and we highlight those in the discussion section of this chapter.

METHODOLOGY

Estimating Incomes by Profession and Credential

We selected 10 professions for our analysis: 1) lawyer, 2) pharmacist, 3) teacher, 4) accountant, 5) registered nurse, 6) social worker, 7) reporter (journalist), 8) engineer, 9) speech pathologist, and 10) veterinarian. The selection process aimed partly to present a wide range of professions that have varying earnings levels among the employment

categories available in the data we used, and partly to capture graduate and professional programs that vary in cost.

To generate a 20-year income trajectory for each profession, we use age-based income data reported in the American Community Survey (ACS) for 2003–2011 for individuals who indicated that they worked in the specified profession and held a master's degree or higher level of education. The data do not allow us to confirm that the respondent held a degree that matches that profession; however, we selected professions where that would generally be the case (e.g., a lawyer with a Juris Doctor, a social worker with a Master of Social Work). Nevertheless, it is the income of individuals in a given profession that matters most for our analysis.

The income model roughly shows what a lawyer earns when she is 30 years old, when she is 31 years old, and so on. We assume all borrowers graduate and begin repaying their loans at age 27. Therefore, a 30-year-old lawyer is in her third year of loan repayment.⁸ We generate two categories for each income profile, one at the 50th percentile and one at the 75th. Thus, the model roughly shows what a 30-year-old lawyer earns at the 50th and 75th percentiles for his profession.

Whereas a longitudinal data set would offer advantages over the ACS for developing our income projections, the available longitudinal data sets, such as the Bureau of Labor Statistics' National Longitudinal Survey of Youth or the Panel Study of Income Dynamics, are limited to broad profession categories or include too few respondents within a specific profession. The ACS data set, on the other hand, includes many individual professions with a large number of respondents in each and includes an indicator for level of education. That allows us to focus on individual professions and individuals with masters' or professional degrees rather than having to use more generic categories.

We chose to generate income estimates at the 50th and 75th percentiles because they give a sense of where the NMCT occurs for what might be considered a typical graduate in a given profession, and what it would be for a graduate who earns more than most of his peers, respectively. It is important to keep in mind that for borrowers who earn less than these amounts, the NMCT is lower. For graduates whom one could reasonably expect to earn below the 50th percentile (e.g., a teacher who plans to teach in a rural area, or graduates from the lowest-ranked law schools), the NMCT is also lower than the figures we stated.

Because we use data over the 2003–2011 period, we first adjust all figures for inflation and convert them to 2011 dollars. Then we inflate them again to match the future year in the borrower’s repayment plan. Thus, the income projections begin in 2011, and a borrower’s income in his 20th year of repayment is inflated to adjust for those 20 future years.

We also aggregate the earnings information because of the somewhat limited number of respondents in a given profession at a specific age. Therefore, we use five-year age ranges to approximate earnings by age and then interpolate and extrapolate income with increases for age. For example, we use the income information for veterinarians aged 30–34 to approximate the earnings of a 32-year-old veterinarian and income information for veterinarians aged 35–39 to approximate the earnings of a 37-year-old veterinarian. Then we interpolate incomes in the intervening years in even, incremental steps, where earlier years are lower and later years are incrementally higher.

That approach tends to produce smoother increases in incomes each year in a borrower’s repayment term than individuals are likely to experience. When combined with the 2.5 percent annual inflation increases, our income projections show borrowers increasing their incomes every year in the repayment term based on both age and inflation. That effect also likely overstates borrowers’ incomes because of issues such as negative income shocks that occur over an individual’s life, although some of those effects should be captured in the data we used to build the models. However, biasing a borrower’s income higher than it is likely to be in reality means our analysis *overestimates* what a borrower would pay on his student loans under New IBR, *underestimates* the amount of debt that would be forgiven, and it indicates that the NMCT for borrowing an additional dollar is likely *below* what we present. Table 13.25 (pp. 436–437) shows all of the income projections.

New IBR Calculator and Important Repayment Assumptions

The calculator we use to determine loan payments and the NMCT reflects all of the repayment rules for New IBR and several important assumptions and adjustments.⁹ Annual payments are equal to 10 percent of a borrower’s adjusted gross income (AGI). However, AGI tends to be lower than a borrower’s stated income due to pretax fringe benefits and above-the-line deductions and credits. The calculator adjusts

for those benefits by reducing total income to reflect an AGI figure.¹⁰ We assume that all borrowers make IBR payments based only on their income, exclusive of any income from a spouse, as is allowed under New IBR.¹¹

New IBR also reduces a borrower's AGI by an exemption amount equal to 150 percent of the federal poverty guidelines, based on household size. For this chapter, we assume that all borrowers have a household size of one for the first five repayment years and a household size of two each year thereafter to reflect a spouse (a larger household size increases the exemption).¹² The calculator increases the exemption by 2.5 percent each incremental repayment year to reflect adjustments for inflation.

New IBR includes a maximum payment cap based on how much debt a borrower has when entering repayment. This monthly payment cap is equal to the payment the borrower would make if he were paying his initial loan balance off on a 10-year amortization schedule. Therefore, a borrower's payment cannot exceed this level while enrolled in IBR, no matter how high his income. This payment cap is also the initial eligibility test for enrolling in IBR. If a borrower's payments are below this cap, he may enroll in New IBR, though if they later exceed it, he is not disqualified from IBR's other important benefit: loan forgiveness.

Consistent with the rules under New IBR, interest on the loan accrues and payments are first credited to unpaid accrued interest before principal. Unpaid accrued interest during repayment is not added to the borrower's principal balance (i.e., capitalized or compounded) unless and until his payments reach the capped payment discussed above.

We set the fixed interest rate on the borrower's debt at the weighted average of the rates on federal student loans (unsubsidized Stafford Loans and Grad PLUS), which were 6.8 percent and 7.9 percent, respectively, in the 2012–2013 school year. Those are still reasonable proxies, despite a recent change in law that will reduce those rates in the near term, because the rates are projected to rise in the near future above the 6.8 and 7.9 percent rates.¹³ We assume the first \$45,000 of debt a borrower incurs is unsubsidized Stafford Loans, and any above that is Grad PLUS, except for lawyers, pharmacists, registered nurses, and veterinarians, for which we assume the first \$65,000 is unsubsidized Stafford Loans, reflecting the fact that borrowers with those degrees likely borrowed unsubsidized Stafford Loans for three, rather than two,

years in their graduate studies. Unsubsidized Stafford Loans have lower interest rates, but those loans are subject to annual and aggregate limits. Students take out Grad PLUS Loans once they have reached the annual or aggregate unsubsidized Stafford Loan limits.

Outstanding principal and interest on the loans is forgiven after 10 years of payments for PSLF and 20 years for all other cases. Loan forgiveness at the 20-year mark is taxable, although estimated tax liability is excluded for the purposes of this chapter. We assume that lawmakers will make loan forgiveness tax free in the near future.

ANALYSIS PRESENTATION

Loan Repayment Tables by Profession and Income Category

We have arranged the results of our analysis in Tables 13.4–13.24. Table 13.4 is a summary table for all of the degree-profession categories.

There are sets of two tables for each degree-profession category (where each profession is linked to the most likely degree they were awarded), one for a borrower earning at the 50th percentile and one for a borrower earning at the 75th percentile in that degree-profession category. The “Debt level for completer” column states the cumulative undergraduate and graduate federal debt levels (including capitalized and noncapitalized interest) for program completers, of those who borrowed, reported in the 2011–2012 National Postsecondary Student Aid Study (NPSAS) database at the 25th, 50th, and 75th percentiles of indebtedness. The NPSAS data include general categories for graduate and professional programs, and we attempted to match the best NPSAS category with the degree-profession categories in this analysis.

The “Debt level for IBR no marginal cost” columns show the level of debt at which a student in the stated degree-profession category, earning at the percentile indicated in the table title, would bear no incremental cost in repayment if she borrowed an additional dollar. Under that heading, PSLF indicates where that point is for a borrower who qualifies for loan forgiveness after 10 years of payments under PSLF. We assume the borrower makes her qualifying payment consecutively and all in the first 10 years of repayment, although eligibility is based

Table 13.4 Debt Level for IBR No Marginal Cost Threshold (\$)

Degree/profession	Loan Forgiveness Program			
	PSLF		20-year	
	Earnings percentile		Earnings percentile	
	50th	75th	50th	75th
Accountant	37,000	70,000	52,000	100,000
Engineer	50,000	74,000	88,000	113,000
Lawyer	54,000	116,000	86,000	179,000
Nurse	32,000	49,000	47,000	68,000
Pharmacist	70,000	82,000	91,000	114,000
Reporter	20,000	40,000	32,000	58,000
Social worker	17,000	27,000	26,000	41,000
Speech pathologist	22,000	31,000	32,000	46,000
K-12 teacher	16,000	25,000	26,000	41,000
Veterinarian	31,000	76,000	44,000	114,000

NOTE: When an accountant earning a master's degree accumulates \$37,000 in federal student loans, borrowing an additional dollar does not increase his total payments on that debt, if he earns an income at the 50th percentile based on his age and qualifies for Public Service Loan Forgiveness (PSLF). If he earns at the 75th percentile, once he accumulates \$70,000 in federal student loans, borrowing an additional dollar does not increase his total payments.

Borrower's debt is forgiven after 10 years of payments in IBR. For all other borrowers in IBR, debt is forgiven after 20 years of payments, denoted as "20-year" in this table. "No marginal cost" is the debt level at which a borrower repaying through IBR incurs no cost in borrowing an additional dollar above that debt level, excluding potential taxes that apply to amounts forgiven under IBR 20-year. No taxes apply to debt forgiven under PSLF.

SOURCE: Authors' calculations.

on cumulative payments at any point in the repayment term. The values under "20-year" indicate the NMCT for borrowers who do not qualify for PSLF and have their debt forgiven after 20 years of payments.

Lastly, on the left side of the table, "Total payments PSLF" and "Total payments 20-year" show the total principal and interest payments the borrower in the stated degree-profession category would make for the corresponding debt level indicated at the top of the column. The payments are discounted to the present at a rate of 2.5 percent.

As a rule, a borrower's total payments for a debt level above the NMCT will not exceed the payments she would make for a debt level at

the NMCT. For example, if the NMCT is \$61,000, the borrower’s total payments will be the same if she leaves school with a loan balance of exactly that amount or any amount greater.

The following notes apply to Tables 13.5–13.24.

NOTE: Borrower’s debt is forgiven after 10 years of payments in IBR. For all other borrowers in IBR, debt is forgiven after 20 years of payments, denoted as “20-yr” in this table.

^a“Low” is 25th percentile, where 25 percent of degree completers finish with the stated debt level or less; “Mid” is 50th percentile; “High” is 75th percentile.

^bBorrower incurs no cost in borrowing an additional dollar above the stated debt level, excluding potential taxes that apply to amounts forgiven under IBR 20-year. No taxes apply to debt forgiven under PSLF.

^cTotal payments under each plan are the present discounted value of all principal and interest payments made under that plan during the duration of the loan using 2.5 percent discount rate.

Table 13.5 Student Loan Payments (\$) Using Income-Based Repayment Accountant with Master’s Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	70,000	100,000
Total payments PSLF ^c	Ineligible	53,470	59,462	59,462	—
Total payments 20-yr ^c	Ineligible	64,524	137,032	—	143,267

Table 13.6 Student Loan Payments (\$) Using Income-Based Repayment Accountant with Master’s Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	37,000	52,000
Total payments PSLF ^c	34,608	37,908	37,908	37,908	—
Total payments 20-yr ^c	36,305	73,333	79,444	—	79,444

Table 13.7 Student Loan Payments (\$) Using Income-Based Repayment Engineer with Master's Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	23,000	47,000	75,000	74,000	113,000
Total payments PSLF ^c	Ineligible	54,779	66,612	66,612	—
Total payments 20-yr ^c	Ineligible	59,644	109,300	—	157,066

Table 13.8 Student Loan Payments (\$) Using Income-Based Repayment Engineer with Master's Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	23,000	47,000	75,000	50,000	88,000
Total payments PSLF ^c	Ineligible	47,715	48,090	48,090	—
Total payments 20-yr ^c	Ineligible	62,738	112,189	—	115,127

Table 13.9 Student Loan Payments (\$) Using Income-Based Repayment Lawyer with JD Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	86,000	140,000	191,000	116,000	179,000
Total payments PSLF ^c	92,057	100,435	100,435	100,435	—
Total payments 20-yr ^c	115,451	226,611	248,668	—	248,668

Table 13.10 Student Loan Payments (\$) Using Income-Based Repayment Lawyer with JD Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	86,000	140,000	191,000	54,000	86,000
Total payments PSLF ^c	47,661	47,661	47,661	47,661	—
Total payments 20-yr ^c	121,219	122,696	121,696	—	121,219

Table 13.11 Student Loan Payments (\$) Using Income-Based Repayment Nurse with Master's Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	23,000	47,000	75,000	49,000	68,000
Total payments PSLF ^c	Ineligible	49,409	49,535	49,535	—
Total payments 20-yr ^c	Ineligible	61,761	103,546	—	103,546

Table 13.12 Student Loan Payments (\$) Using Income-Based Repayment Nurse with Master's Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	23,000	47,000	75,000	32,000	47,000
Total payments PSLF ^c	Ineligible	35,112	35,112	35,112	—
Total payments 20-yr ^c	Ineligible	70,929	70,929	—	70,929

Table 13.13 Student Loan Payments (\$) Using Income-Based Repayment Pharmacist with PharmD Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	98,000	132,000	199,000	82,000	114,000
Total payments PSLF ^c	88,049	88,049	88,049	88,049	—
Total payments 20-yr ^c	140,742	179,107	179,107	—	179,107

Table 13.14 Student Loan Payments (\$) Using Income-Based Repayment Pharmacist with PharmD Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	98,000	132,000	199,000	70,000	91,000
Total payments PSLF ^c	57,956	57,956	57,956	57,956	—
Total payments 20-yr ^c	133,865	133,865	133,865	—	133,865

Table 13.15 Student Loan Payments (\$) Using Income-Based Repayment Reporter with MA Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	40,000	58,000
Total payments PSLF ^c	33,595	38,052	38,052	38,052	—
Total payments 20-yr ^c	36,904	73,342	82,852	—	82,852

Table 13.16 Student Loan Payments (\$) Using Income-Based Repayment Reporter with MA Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	20,000	32,000
Total payments PSLF ^c	20,234	20,234	20,234	20,234	—
Total payments 20-yr ^c	41,485	41,706	41,706	—	41,706

Table 13.17 Student Loan Payments (\$) Using Income-Based Repayment Social Worker with MSW Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	27,000	41,000
Total payments PSLF ^c	24,604	24,604	24,604	24,604	—
Total payments 20-yr ^c	41,213	56,815	56,815	—	56,815

Table 13.18 Student Loan Payments (\$) Using Income-Based Repayment Social Worker with MSW Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	17,000	26,000
Total payments PSLF ^c	14,027	14,027	14,027	14,027	—
Total payments 20-yr ^c	33,911	33,911	33,911	—	33,911

**Table 13.19 Student Loan Payments (\$) Using Income-Based Repayment
Speech Pathologist with Master's Earning 75th Percentile
by Age**

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	31,000	46,000
Total payments PSLF ^c	34,012	34,315	34,315	34,315	—
Total payments 20-yr ^c	36,343	68,730	68,730	—	68,730

**Table 13.20 Student Loan Payments (\$) Using Income-Based Repayment
Speech Pathologist with Master's Earning 50th Percentile
by Age**

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	29,000	49,000	85,000	22,000	32,000
Total payments PSLF ^c	22,726	22,726	22,726	22,726	—
Total payments 20-yr ^c	42,737	45,041	45,041	—	45,041

**Table 13.21 Student Loan Payments (\$) Using Income-Based Repayment
K-12 Teacher with Master's Earning 75th Percentile by Age**

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	23,000	42,000	69,000	25,000	41,000
Total payments PSLF ^c	23,964	24,149	24,149	24,149	—
Total payments 20-yr ^c	30,249	55,443	55,443	—	55,443

**Table 13.22 Student Loan Payments (\$) Using Income-Based Repayment
K-12 Teacher with Master's Earning 50th Percentile by Age**

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	23,000	42,000	69,000	16,000	26,000
Total payments PSLF ^c	23,964	24,149	24,149	24,149	—
Total payments 20-yr ^c	30,249	55,443	55,443	—	55,443

Table 13.23 Student Loan Payments (\$) Using Income-Based Repayment Veterinarian with DVM Earning 75th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	98,000	132,000	199,000	76,000	114,000
Total payments PSLF ^c	71,166	71,166	71,166	71,166	—
Total payments 20-yr ^c	155,593	160,551	160,551	—	160,551

Table 13.24 Student Loan Payments (\$) Using Income-Based Repayment Veterinarian with DVM Earning 50th Percentile by Age

	Debt level for completers ^a			Debt level for IBR no marginal cost ^b	
	Low	Mid	High	PSLF	20-yr
	98,000	132,000	199,000	31,000	44,000
Total payments PSLF ^c	34,475	34,475	34,475	34,475	—
Total payments 20-yr ^c	64,431	64,431	64,431	—	64,431

KEY FINDINGS AND DISCUSSION

Public Service Loan Forgiveness

The NMCT for borrowers who qualify for PSLF is one of the most significant findings from the analysis. It is important to understand that “public service” under PSLF is quite broad, and borrowers who might not be considered employed in traditional public service jobs will qualify for loan forgiveness after 10 years. Employment at any 501(c)(3) tax-exempt nonprofit qualifies, as does any government position (state, federal, local, and tribal). This is why the federal government estimates that 25 percent of all jobs in the economy would qualify (Consumer Financial Protection Bureau 2013).

For borrowers who qualify for PSLF, the point at which they bear no incremental cost in borrowing more is low relative to what many graduate and professional degrees cost, without even factoring in what students may borrow to pay for living costs, what they may have borrowed in undergraduate debt, or the interest they would accrue on their

federal loans while in school. This suggests that through New IBR, the federal government has provided a very large source of tuition assistance for graduate and professional students who work in the governmental or not-for-profit sectors.

In fact, this tuition assistance is large enough that it could become common for the government to pay for a student's entire graduate education via loan forgiveness under PSLF, especially in some professions. Moreover, certain categories of students will pursue graduate degrees knowing that they will *only* work in PSLF-qualified employment, such as teachers and social workers. An example using the social worker profile helps illustrate this point.

Imagine a student who, having already accumulated a loan balance of \$29,000 during her undergraduate studies, pursues a Master of Social Work and borrows the entire cost of the education, including living expenses. Assume she earns at the 75th percentile for a social worker with a master's degree by age for her first 10 years after graduate school. Because she began the program with debt well in excess of the NMCT (\$23,000), every dollar she borrows will be forgiven by the federal government and will not increase her payments beyond those she would make on the debt she accumulated in undergraduate studies. This borrower need not earn an income that is unexpectedly low for this to be true. In fact, she can earn a relatively high income for a social worker with a master's degree, as this example reflects an income at the 75th percentile.

Note that for undergraduate students, the effects of New IBR and PSLF are much different. It would be impossible for an undergraduate student to fully finance an undergraduate degree through PSLF. Borrowers must incur costs for the initial amounts they borrow below the NMCT, and they will take out their initial loans pursuing an undergraduate degree. Furthermore, annual and aggregate loan limits in the federal loan program that apply to dependent undergraduates are generally set below or near the NMCT for all but the lowest-paid professions we profiled.

Stafford Loans Alone Allow for Significant Loan Forgiveness

Delisle and Holt (2012) show how high-income borrowers could qualify for loan forgiveness by amassing high-debt balances through

Table 13.25 Income Projections by Percentile for Degree-Profession Categories by Loan Repayment Year (\$)

Repayment year	1	2	3	4	5	6	7	8	9
Accountant with master's									
50th percentile	59,017	62,644	66,415	70,336	74,411	78,647	82,169	85,819	89,599
75th percentile	73,544	79,842	86,410	93,255	100,390	107,822	114,104	120,632	127,416
Engineer with master's									
50th percentile	69,747	74,356	79,153	84,142	89,332	94,729	99,776	105,017	110,457
75th percentile	82,445	88,282	94,360	100,686	107,269	114,119	119,987	126,078	132,398
Lawyer with JD									
50th percentile	59,065	66,031	73,308	80,908	88,842	97,123	102,786	108,672	114,788
75th percentile	95,425	106,326	117,712	129,601	142,011	154,961	164,898	175,235	185,986
Nurse with master's									
50th percentile	54,842	58,462	62,228	66,146	70,221	74,459	77,197	80,025	82,947
75th percentile	72,876	77,591	82,496	87,598	92,903	98,419	101,843	105,377	109,023
Pharmacist with PharmD									
50th percentile	58,692	68,269	78,289	88,767	99,719	111,164	116,013	121,034	126,234
75th percentile	108,019	113,095	118,358	123,814	129,468	135,327	138,952	142,674	146,495
Reporter with master's									
50th percentile	39,660	42,419	45,293	48,283	51,394	54,631	55,849	57,094	58,365
75th percentile	53,070	58,167	63,485	69,032	74,817	80,849	85,211	89,741	94,444
Social worker with MSW									
50th percentile	24,131	28,821	33,730	38,867	44,240	49,857	51,586	53,371	55,212
75th percentile	37,955	42,269	46,774	51,478	56,389	61,512	64,330	67,250	70,276
Speech pathologist with master's									
50th percentile	49,359	50,373	51,407	52,461	53,536	54,631	55,766	56,923	58,103
75th percentile	60,729	62,439	64,196	66,003	67,859	69,767	71,772	73,832	75,951
K-12 teacher with master's									
50th percentile	34,671	36,775	38,964	41,238	43,603	46,059	48,391	50,810	53,321
75th percentile	43,541	46,126	48,812	51,604	54,505	57,519	60,558	63,713	66,988
Veterinarian with DVM									
50th percentile	62,133	63,551	64,968	66,386	68,128	69,869	71,611	73,352	75,094
75th percentile	85,585	92,579	99,868	107,465	112,933	118,608	124,496	130,604	136,940

NOTE: The table shows the 20-year income projections developed and used in this chapter. Loan payments under the Income Based Repayment plan are calculated using these income projections. All figures are in nominal dollars.

Table 13.25 (continued)

10	11	12	13	14	15	16	17	18	19	20
93,515	97,571	100,603	103,726	106,942	110,254	113,665	116,155	118,698	121,297	123,951
134,463	141,784	146,794	151,966	157,306	162,817	168,506	173,219	178,062	183,040	188,155
116,104	121,964	126,761	131,721	136,850	142,153	147,636	152,920	158,375	164,008	169,824
138,955	145,758	151,903	158,265	164,849	171,664	178,717	185,627	192,770	200,154	207,787
121,142	127,742	133,164	138,778	144,589	150,605	156,830	160,425	164,101	167,862	171,707
197,164	208,786	219,750	231,131	242,944	255,203	267,924	275,288	282,852	290,623	298,606
85,965	89,082	91,309	93,592	95,932	98,330	100,788	104,911	109,177	113,591	118,157
112,787	116,670	119,923	123,266	126,702	130,232	133,859	138,053	142,372	146,821	151,404
131,619	137,193	140,069	143,002	145,995	149,048	152,162	157,142	162,277	167,570	173,026
150,418	154,446	158,937	163,555	168,306	173,192	178,216	183,417	188,767	194,269	199,929
59,665	60,993	62,848	64,758	66,724	68,748	70,831	75,391	80,135	85,069	90,199
99,326	104,393	106,189	108,010	109,856	111,726	113,621	119,612	125,831	132,286	138,986
57,113	59,073	61,387	63,779	66,253	68,810	71,454	73,566	75,738	77,974	80,273
73,411	76,659	79,460	82,354	85,343	88,430	91,618	94,490	97,448	100,495	103,634
59,307	60,534	63,151	65,860	68,666	71,570	74,577	78,128	81,810	85,627	89,584
78,130	80,370	83,174	86,067	89,052	92,134	95,313	99,794	104,439	109,254	114,244
55,925	58,626	60,769	62,982	65,268	67,629	70,067	72,681	75,381	78,171	81,054
70,387	73,914	76,901	79,991	83,187	86,494	89,913	93,370	96,943	100,637	104,454
77,079	79,064	81,049	83,034	85,019	86,047	87,075	88,103	89,130	90,158	91,122
140,829	144,827	148,936	153,161	157,504	166,542	175,933	185,690	195,825	206,351	207,939

the federal Grad PLUS Program, which allows graduate students to borrow whatever a school charges (plus living costs as determined by the school) once they have exhausted the annual (\$20,500) or aggregate (\$138,500) Stafford Loan limit.

Some observers may therefore believe that New IBR only has implications for graduate education and borrowing when combined with Grad PLUS Loans. This analysis shows, however, that in many of the cases we profile, borrowers will reach the NMCT well before they would have to access Grad PLUS Loans. This is even more so the case if a borrower enters graduate school with a debt from undergraduate studies and repays the combined balance through New IBR.

For example, a student who borrows the maximum in undergraduate loans for a dependent over five years would enter graduate school with a balance of about \$34,000 (including accrued interest and assuming he did not make any payments), and if he attends graduate school for two years and borrows the maximum in Stafford Loans, his combined loan balance (including accrued interest from both sets of loans) would total approximately \$80,000 in Stafford Loans alone. That figure exceeds the NMCT for all but the highest-earning degree-profession categories that we profiled.

Declining Marginal Costs for More Debt

Even though our analysis focuses on the NMCT, as a borrower's debt level approaches that point, it is significant that the incremental cost of borrowing an additional dollar begins to decline. This effect occurs because some, but not all, of the added cost of borrowing more is forgiven. Thus, borrowers face declining costs in borrowing additional sums before their debt reaches the NMCT. It is as if the borrower faces a declining interest rate (and even a negative interest rate) the more he borrows as he approaches the NMCT.

For example, a lawyer earning at the 75th percentile by age, who repays his loans for 20 years under New IBR, pays a total of \$226,611 (present value) and fully repays his loan when he enters repayment with a \$140,000 balance at 7.65 percent interest; when he enters repayment with a balance of \$179,000, or \$39,000 more, his total payments increase by only \$22,000 (present value) over the same 20-year repayment term. That is far less than what would be needed to fully repay the

incremental \$39,000 in debt plus interest over 20 years. Consequently, he has \$67,000 forgiven (present value) after 20 years of payments when he borrows the additional amount. In short, borrowing more only marginally increases his costs, because much of the added cost is forgiven.

Payments for Median and High Debt Levels

In most of the cases we profiled, borrowers make payments under New IBR (PSLF or 20-year forgiveness) that are identical (or nearly identical) for median *and* high debt levels. That is because the NMCT for most of the cases we profile is close to median federal debt levels for borrowers who complete the specified graduate and professional programs according to federal data.

For example, a nurse with a master's degree earning at the 50th percentile by age would make the same payments on his loans if he left school with the median (\$47,000) or the 75th percentile level (\$75,000) of federal student loans for graduates with masters' of science.

This dynamic could have a significant impact on students' decisions about what schools to attend and how much to borrow. It could make attending an averaged-priced program the same cost as attending the highest-cost program, with the difference subsidized completely through loan forgiveness. Alternatively, a student who might consider using his own funds to finance some of his education, or work part time to finance his education, could decide that on the margin, whatever those choices would save him in future loan payments would simply be forgiven under New IBR and he should therefore borrow rather than use his own resources.

Schools also face altered incentives when borrower payments are the same for median and high debts. If a school is aware that the median amount of debt that students graduate with is above the NMCT for students who earn at the 75th percentile (or even higher), then any incremental price increases will be borne by the federal government through loan forgiveness, provided the students use federal loans to finance those costs. In such a scenario the school might take steps to inform students about this effect, making students insensitive to prices that exceed the NMCT, or the effects might simply work their way into the graduate school marketplace as schools raise prices without any drop-off in demand. If the cost of attendance is already above the

NMCT at a given program or school, then New IBR could artificially increase supply and demand irrespective of the labor market value of that graduate degree.

Implications for Scholarships and School-Provided Financial Aid

Some graduate and professional programs provide financial aid to certain students. Other organizations also offer scholarships for graduate and professional studies. New IBR may change whether, how, and to whom schools and other organizations provide this aid. Schools and scholarship providers may see the aid they are providing as supplanting loans that would have been forgiven by the federal government anyway. They may then put that money to other uses.

For example, a student who borrows \$10,000 more than the NMCT for her degree-profession profile effectively receives a \$10,000 grant from the federal government to finance her education. Her financial situation would be unchanged had she received the same amount from her school or a third party in the form of a scholarship.

Examples of Behavioral Changes in the Market

When scanning the market for examples of school and student responses to New IBR, it is important to keep in mind that the program has been available only since December 2012, the date at which eligible borrowers could first enroll. Moreover, the eligible cohorts of borrowers who would be out of school and in repayment—those who started borrowing more recently—is limited. Thus, student and school familiarity with the program is likely still in its very early stages. Even so, some early examples have emerged that illustrate how schools and students are responding to the benefits of New IBR.

Financial planners and consultants are helping clients understand the program, how to use it, and how to optimize the benefits it provides. This is not completely surprising given that the program is new and its benefits are not widely known. Also, many of the terms and rules for IBR are complicated and thus lend themselves to financial planning services, such as those for federal income tax preparation or retirement savings, where individuals can take actions that will reduce their

monthly and total payments, significantly boosting the debt that they have forgiven, and thereby justifying fee-for-service financial planning.

Graduate and professional schools are also starting to inform current and prospective students about the benefits of New IBR. Most of these are focused on the benefits of PSLF. Many law schools offer special repayment programs for borrowers who use New IBR combined with PSLF, whereby the school pays a portion or all of a former student's loan payments as long as he earns below a certain income threshold. Georgetown's law school aggressively markets the benefits of its program to current and prospective students with seminars and other materials. A video recording of one such seminar includes testimonials from former students enrolled in the program who say the program allows them to take jobs with lower salaries and "ignore" debt balances, which often exceed \$100,000.¹⁴

CONCLUSION AND POLICY RECOMMENDATIONS

The findings in this chapter show that the repayment terms policymakers designed for New IBR are unlikely to cause many graduate and professional students to fully repay their loans—even if they earn a competitive salary in their chosen careers—which will likely provide an incentive for graduate and professional students to borrow more rather than less, particularly for some professions. It should also make graduate students less sensitive to the price of a graduate or professional degree, allowing institutions to charge higher tuitions, especially for certain programs where borrowers could qualify for PSLF.

Policymakers need not completely roll back the changes made to IBR to mitigate these effects. In our 2012 paper (Delisle and Holt 2012) we demonstrated a limited approach to curtailing some of the benefits of New IBR. Our proposal would allow only the lowest-income borrowers (those earning less than 300 percent of the federal poverty guidelines) to make payments at 10 percent of income, require all others to pay 15 percent of their incomes above IBR's exemption, and require borrowers with higher debt levels to pay for longer before they receive loan forgiveness.

Alternatively, policymakers could allow all borrowers to pay 10 percent of their incomes but reduce New IBR's exemption to \$10,000 for all borrowers from the current level of 150 percent of the federal poverty guidelines based on household size (\$17,235 for a single person in 2013). All borrowers would qualify for loan forgiveness after 20 years of payments, except those with more than \$50,000 in federal loans, who would qualify after 30 years of payments.

To address the extremely high subsidies and moral hazard issues inherent in PSLF, policymakers could simply cap the amount that can be forgiven under that benefit. Under current law, there is no limit.

Without changes like these, New IBR, along with PSLF, could have a very large impact on the graduate education marketplace and borrowing behavior in the coming years.

Notes

1. The program, called Income-Contingent Repayment, requires borrowers to make payments equal to 20 percent of adjusted gross income after an exemption equal to the federal poverty guidelines. Borrowers can often obtain much lower payments under other repayment options that are fully amortizing and not based on income by extending the duration of the loan and by making payments that slowly increase over time. Moreover, borrowers must have loans under the Direct Loan Program to use Income-Contingent Repayment, which up until about 2010 represented at most about 25 percent of loan issuance. The balance of the loans was made by private lenders and backed by the federal government but was not eligible for Income-Contingent Repayment.
2. The advocates' most compelling argument for modifying the program was that a borrower who defaulted on his loans and had his wages garnished by the U.S. Department of Education would pay roughly the same share of his income as under the Income-Contingent Repayment plan. (See Baum and Schwartz [2006], which was cited by advocates to make the case for payments based on smaller share of income than under the Income-Contingent Repayment option, and Shireman et al. [2006]).
3. For example, if a borrower's monthly payment based on a 10-year amortization schedule is \$300, but her payments based on the IBR formula would be \$290, she qualifies to enroll in IBR. If her income later increases such that her payments would exceed the amount she would pay on a 10-year amortization, then her payments are capped at \$300 but she may remain enrolled in IBR and still qualifies for loan forgiveness after the required number of payments.
4. When Congress debated legislation to enact Old IBR in 2007, lawmakers focused exclusively on the loan forgiveness benefits of the program for borrowers in public

service jobs, PSLF. They viewed that provision as the main legislative change; few mentioned that the program would allow borrowers to make lower monthly payments than the Income-Contingent Repayment program in place at the time.

5. The Obama administration used the authority under a provision added to the Higher Education Act in 1993 that allows the Secretary of Education to offer an income-contingent repayment plan within certain parameters (20 U.S.C. § 1087e). A “new borrower” for purposes of the plan is someone who takes out a federal student loan for the first time on or after the specified date. For the Pay As You Earn plan, the borrower must also have taken out a loan on October 1, 2011, or after, or have become a new borrower on or after October 1, 2011. Someone who borrowed initially prior to that date but repaid the earlier loans in full before borrowing again on or after that date is also considered a “new borrower.”
6. Undergraduates face relatively low limits in the federal loan program, thereby limiting the benefits of loan forgiveness. A dependent undergraduate borrower can borrow a maximum of \$5,500 in her first year, \$6,500 in her second, and \$7,500 each year thereafter. The aggregate limit is \$31,000. An independent undergraduate can borrow \$4,000 more in the first two years and \$5,000 more in later years, with an aggregate limit of \$57,500. Note that borrowers can enter repayment with balances higher than the aggregate limit due to interest accrual. Additionally, a small share of undergraduate borrowers have federal Perkins Loans in addition to Stafford Loans, which may be repaid through New IBR as a consolidation loan. Perkins Loans do not count toward the aggregate loan limit for Stafford Loans. If eligible, certain students may therefore borrow \$5,500 annually through the program, in addition to the Stafford limit, with a separate aggregate limit of \$27,500. Borrowers with persistently low incomes make similar payments under both the Old and New IBR plans, owing to the exemption that is the same under both programs. Both Old and New IBR plans calculate a borrower’s payments on income after an exemption equal to 150 percent of the federal poverty guidelines, adjusted for household size. If a borrower’s income is below that threshold, then his payment is \$0 regardless of which IBR he is using. Furthermore, borrowers with incomes slightly above the threshold make similar payments because 10 percent and 15 percent of the nonexempt income translates into only slightly different payments.
7. Students can finance their housing, food, transportation, and other costs using federal loans. Those costs are determined by the school itself with little to no parameters set by the federal government. A review of a number of graduate school programs’ calculations suggests that the typical figure for such costs is \$13,000 per year, though some schools set the figure as high as \$25,000 per year.
8. IBR calculates a borrower’s payments based on his prior year federal income tax return, and the program often updates his payments many months after his most recent tax return is filed. Therefore, a borrower will make payments under IBR that reflect his income in the prior year or even later, not his current income; that is, a 27-year-old borrower would make payments based on his income when he was age 25 or 26. Our analysis does not account for this lag and likely overstates the income and loan payments borrowers make.

9. The version of the New America IBR calculator used for this chapter is available in Microsoft Excel format at the URL below. Note that the calculator does not display loan payments in discounted present value. The analysis in this chapter reports loan payments displayed in the calculator in discounted present value using a constant discount rate of 2.5 percent. <http://edmoney.newamerica.net/sites/newamerica.net/files/articles/NAF%20IBR%20Calculator%20with%20PSLF%20for%20New%20IBR.xlsx> (accessed April 22, 2014).
10. Income levels entered into the calculator that are less than \$68,000 equate to an AGI of 90 percent of total income. Income between \$68,001 and \$100,000 equates to an AGI of 85 percent of total income. Income between \$100,001 and \$150,000 equates to an AGI of 95 percent of income. Income between \$150,001 and \$200,000 equates to an AGI of 98 percent of income. Income of \$200,000 and above is not reduced. The calculator automatically increases those income brackets by 2.5 percent each successive year in the calculator. For example, the \$68,000 income threshold at which point a borrower's AGI reflects 90 percent of total income increases by 2.5 percent per year so that in the second year it is \$69,700, and so on. The rationale for those brackets is the following. Fringe benefits and the student loan interest deduction, even though small on an absolute basis, can easily reduce a borrower's income by a large percentage. The 90 percent threshold is conservative. As borrowers earn more, the threshold increases because these earners are more able to take advantage of fringe benefits, particularly pretax retirement contributions. At high incomes, the reduction is reduced because we assume that these borrowers have unearned income that partially or fully offsets any pretax fringe benefits or other above-the-line deductions and credits.
11. Borrowers would have to file a separate federal income tax return from their spouses to do this. While this may cause them to pay slightly more in income taxes, the reduced loan payments and increase in loan forgiveness far outweigh those costs.
12. Under the IBR rules, borrowers may include a spouse in their household size calculation, even if the couple files separate federal income tax returns. Children may be included in a borrower's household size if the borrower provides for more than half of a child's care, regardless of which spouse claims the child as a dependent on his or her tax return.
13. In 2012, Congress and the president amended the federal loan program such that interest rates on newly issued loans are based on the interest rates on 10-year Treasury notes plus a mark-up (*Bipartisan Student Loan Certainty Act of 2013*). Based on Congressional Budget Office estimates in 2013, interest rates on graduate Stafford Loans and Grad PLUS Loans will remain lower than rates in effect prior to enactment of the *Bipartisan Student Loan Certainty Act* only through 2015, after which they will remain above those rates.
14. Georgetown removed this video from its Web site after we published a post on the Higher Ed Watch blog regarding the Georgetown Law loan repayment program. The referenced footage can still be viewed on the *Ed Money Watch* blog. See Delisle and Holt (2013).

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