Estimating the Effect of Losing the Federal Loan Subsidy on Debt Accumulation for Law and Professional Students in the United States: Evidence from a Natural Experiment.

By

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Abstract

This study addresses this important gap in the literature by analyzing a recent policy change, the Budget Control Act of 2011, that eliminated the federal student loan interest subsidy. This change directly targeted the graduate and professional students who participated in the Stafford Loan program beginning July 1st, 2012. The loss of subsidized loan eligibility meant that professional and law students' interest accrues on all Stafford loans while still in school, which we hypothesize will drastically increase their overall debt accumulation. This study is timely and relevant for the following reasons. The first is that today's college-goers are the most indebted students in the country's history (Baum, 2015). Second, there is almost no evidence about determinants of debt levels for graduate or professional students (Belasco, Trivette & Webber, 2014). Related to this point, the role of federal policy in shaping graduate students' debt accumulation remains an understudied topic. Results indicated that Law students may be the most negatively affected group among graduate and professional students as their reliance on Stafford support increase by more than $5000 dollars before the policy implementation took place. From this view, given that Law students are relying more heavily on Stafford loans, the loss of the federal subsidy will translate into greater debt burden due to the accrual of interest while still enrolled in graduate education. Accordingly, the analysis of the NPSAS:16 remains an important endeavor.

Key Words: Graduate and Professional Education; Federal Aid Policy; Natural Experiments; Quasi-Causation in the Social Sciences.

Introduction

Today's college-goers are the most indebted students in the country's history (Baum, 2015). In fact, they are significantly more indebted than those who preceded them just a decade ago, as borrowing increased 51% in inflation-adjusted dollars from 2001-02 to 2012-13 (College Board, 2014). Although many researchers emphasize that college is still a worthwhile investment for the average student (Avery & Turner, 2012; Baum, 2015; Toutkoushian, Shafiq & Trivette, 2013), others are concerned about the potential deleterious effects associated with borrowing. Recent studies have suggested that borrowing may decrease a student's likelihood of owning a home (Shand, 2007), starting a family (Dwyer, Hodson & McCloud, 2013), or pursuing a lower-paying public service profession (Field, 2009; Rothstein & Rouse, 2011). It is worth noting that, even though federal aid comprises 67% of all graduate student aid (College Board Advocacy and Policy Center, 2012), the majority of the studies examining loan debt are focused on undergraduate education. Consequently, the role of the federal loan program on the affordability of graduate and professional degrees is an important topic that deserves more attention. Accordingly, this study aims to assess the impact of federal policy on law and professional students borrowing behaviors.

This study is timely and relevant for the following reasons. The first is that there is almost no evidence about determinants of debt levels for graduate or professional students (Belasco, Trivette & Webber, 2014). Related to this point, the role of federal policy in shaping graduate students' debt accumulation remains an understudied topic. While there are a number of individual (Houle, 2014; Perna, 2000), institutional (Monks, 2014; Thomas, 2003), and state-level determinants (Chen & Wiederspan, 2014; Monks, 2014) associated with undergraduate

debt accumulation, few researchers (King, 1999; Perna, 2001; Redd, 1999) have examined the role of federal policy in shaping student debt, much less law and professional students' debt.

Study purpose and rationale

This study addresses this important gap in the literature by analyzing a recent policy change, the Budget Control Act of 2011, that eliminated the federal student loan interest subsidy. Specifically, this change directly targeted the graduate and professional students who participated in the Stafford Loan program beginning July 1st, 2012. The loss of subsidized loan eligibility meant that professional and law students' interest accrues on all Stafford loans while still in school, which we hypothesize will drastically increase their overall debt accumulation. This change represents an ideal natural experiment setting to assess the magnitude of this federal policy change on the levels of indebtedness of professional and law students. Specifically, this change allows for the natural identification of participants affected by the policy before and after its implementation, along with the identification of participants who were not affected by this change across time periods.

The current study takes advantage of this scenario and measures the impact of this change through a difference-in-differences (henceforth "DD") approach. The identification strategy uses undergraduate independent students from the four-year sector as a control group for those law and professional students affected by the policy change. While a few comparison groups are plausible (e.g., didn't experience a change in federal loan policy during our timeframe), independent undergraduate students are the optimal control group, as they are 1) financially independent; 2) have access to more Stafford loan dollars than their dependent peers and 3) are more likely to be older and have families. Because costs and borrowing patterns differ

substantially by sector, with two-year students overwhelmingly coming from low-income backgrounds, only four-year students will be part of the control group.

The main outcome of interest is the overall measure of debt accumulation in the Stafford loan program. In addition, the estimation procedure will analyze variations in other forms of self-help aid that students may substitute away to (e.g., private loans, PLUS loans, and full- or part-time jobs). While it is expected that professional and law students continued borrowing at the same levels and thus incurred more debt through the accumulation of interest as the result of the policy change (Androitis, 2012), there is no empirical evidence to corroborate this claim; consequently, the magnitude, and even the directionality, of this assumed change in debt accumulation/burden remains an open question. Finally, considering that prior research (Dowd, 2008; Heller, 2008; Hillman, 2015) suggests that students' borrowing behaviors differ significantly across socioeconomic status, race, and sector, this study will test for heterogeneity of the treatment effect by estimating models conditional on socioeconomic status, race, institutional sector and discipline (please see the Appendix section for the study's logic model).

Literature and Theoretical Grounding

To date, little to no literature exists on the borrowing behavior of law and professional students. That said, there is a vast literature on undergraduate student borrowing from which to draw upon. This literature includes three contexts or levels that may influence graduate student borrowing: 1) individual and family characteristics; 2) institutional characteristics and policies; and 3) federal policy. At the individual or family level, researchers have investigated borrowing behaviors by demographics and characteristics such as race/ethnicity, family income, academic preparation, and college major. A number of studies that examine debt burden (e.g. monthly debt-to-income ratio) have found that borrowing and career outcomes vary significantly by race

and income (Chen & Wiederspan, 2014; Price, 2004; Thomas, 2003). Collectively, these studies found that lower income students and ethnic minorities are more likely to have larger debt burdens, though Price (2004) attributes this difference to lower earnings, rather than higher indebtedness overall. Notably, however, these studies only include undergraduate students who finished college, which have raised some concerns about their generalizability to college goers regardless of degree attainment.

To date only one study has focused on graduate debt broadly (Belasco, et. al., 2014). Belasco, et. al., analyzed student (e.g., race and gender) and family-related (e.g., marital status, children) characteristics that may help explain graduate debt. The authors found that being married or having children increased a student's probability of borrowing as well as the total amount borrowed. Additionally, the authors examined debt accumulation by degree program. Among the most remarkable results is that law students consistently accrued more debt than students enrolled in a masters' of science.

Other studies suggest institutional characteristics are equally important in shaping student borrowing behavior. For example, students attending private, nonprofit four-year institutions frequently carry greater debt loads than those attending public institutions (Chen & Wiederspan, 2014; Houle, 2014; Price, 2004; Thomas, 2003). Chen and Wiederspan (2014) also suggested the influential role of location, as students attending urban schools—which potentially offer more work opportunities for students while enrolled in school—had lower amounts of debt and higher probabilities of zero-debt burden than students attending more suburban or rural institutions. With regards to measures of institutional wealth and student body composition, institutional endowment levels have been found to be negatively related to average student debt (Macy & Terry, 2007), and colleges and universities enrolling more Pell Grant recipients had higher

amounts of average student debt (Monks, 2014). Both of these findings buttress prior research suggesting that wealthier institutions may be better able to subsidize student costs (Winston, 1999).

Finally, several researchers have studied the effects of federal policy changes upon student indebtedness. The 1992 Higher Education Act reauthorization introduced several significant changes that permitted greater availability of student aid for middle- and upper-income borrowers, leading to an increase in the number of high-income borrowers and a 53% increase in federal loan debt over just three years (Redd, 1994, 1999). The 1992 changes were also found to increase the tendency of students to borrow at the federal limit. Drawing on data from the National Postsecondary Student Aid Survey, Perna (2001) found that the increased use of federal loan funds occurred primarily among dependent undergraduate students from middle-income families. Similarly, Hart and Mustafa (2008) note that students from lower-middle-income and upper-middle-income families were more likely to increase borrowing following an increase in the availability of additional Perkins Loan funds, though low-income students were more likely to increase the amount of Perkins loans borrowed without increasing overall borrowing (e.g., substituting away from higher risk loans). These findings align with King (1999), who suggested that students often borrow for convenience, using loans to augment other sources of funding.

From the literature reviewed, it is clear that the research on undergraduate debt is well-developed. Accordingly, this study will use this literature to inform the methodological decisions to model the effect of the policy change on borrowing behaviors and levels of indebtedness of law and professional students. The use of current research is particularly important, given that

the control group(s) are undergraduate students who were borrowing from the same program, but who did not lose the federal subsidy.

Conceptual Framework

Consistent with prior research on student borrowing and loan debt, this study relies upon a human capital framework to better understand students' choices regarding educational attainment (Becker, 1962, 1975; Mincer, 1958). Human capital theory posits that students are rational agents and utility maximizers who weigh the direct and indirect costs of attendance against the long-term benefits and increased earnings that they expect to receive as a result of their postsecondary education. Within this framework, the decision to borrow is a rational and warranted investment in one's human capital, as those who attend college and earn a degree are rewarded not only in the form of labor market payoffs, but also in additional quality of life outcomes (Avery & Turner, 2012). As part of the rational choice process, students may reconsider their opportunity costs and revise their borrowing decisions based on the federal government policy change. It is conceivable that as a result of such policy changes, students may borrow less due to interest accruement, borrow the same amount but end up owing more, or increase their number of work hours, rather than borrowing more unsubsidized dollars. Although any of these options seems feasible, in reality there is a dearth of knowledge about graduate student debt, in general, and about the effect of this policy change on borrowing behaviors of law and professional students affected, in particular, which conceptually and empirically justify the study of the research questions (shown below). To close, while human capital and rational choice theories purport that students will make decisions about their education based on the information available to them, maximizing their utility, the magnitude of the effect may vary conditional on availability of resources (Calendar & Jackson, 2005; Perna, 2008). Accordingly, these

uncertainties justify the evaluation of how policy changes, such as loss of subsidy, affect the borrowing decisions of different groups of students.

Research Methods

Most prior research on student debt relies upon naïve estimations often using Ordinary Least Squares or Logit models. Dowd (2008) suggests a need for methodological approaches that "disentangle these complex interactions and complex relationships" between student indebtedness and policy (p. 233). Accordingly, this study aims to fill that gap using a natural experiment setting and a quasi-experimental design to examine whether a specific change in federal aid policy affected law and professional student borrowing behaviors not only in the Stafford loan program but also in borrowing from private sources, the PLUS program, or the number of hours worked.

Research questions

1. Are law and professional students responding to these federal loan policy changes by borrowing less from the Stafford Loan program?

2. Has the level of indebtedness of the affected students increased given the policy change? If so, what is the magnitude of this increase?

3. Are these same policy changes causing students to change behaviors with regard to self-help aid, such as working more hours or borrowing more from other loan programs, or are they borrowing less across all programs?

4. How do the answers to the aforementioned questions differ by race, socioeconomic status, and institutional sector?

Methods

The study will utilize three iterations of the National Postsecondary Student Aid Survey (NPSAS): 2007-08, 2011-12 and 2015-16. The natural experiment setting and the repeated cross-sections structure of the data provided by NPSAS allow for the implementation of DD models. In the DD approach, at least two groups are observed across two time periods (T0, T1), with T0 as the pre-policy change and T1 as the post-policy change. These two groups are comprised of participants who either were affected or were not affected by the policy change, respectively. In this study, affected participants are law and professional students. As previously discussed, policy implementation took place on July 1st, 2012; consequently, all law and professional participants in the 2015-16 survey were exposed to the effects of this policy, and thus, represent our treatment group (Tr=1) in the implementation time (T1). Law and professional students who participated in the 2007-08 and 2011-12 surveys were not yet affected by this change, but still belong to the treatment or affected condition. Finally, as independent undergraduate students were not affected by this policy change, they constitute the control group (Tr=0) before and after the policy took place. Treatment and control status do not change across time, allowing for the estimation of the DD as a collection of conditional means of the outcome of interest. Since one can identify Tri at T1 and T0, the DD is estimated as follows:

$$DD=[E(Y|Tr=1,T1)-E(Y|Tr=1,T0)]-[E(Y|Tr=0,T1)-E(Y|Tr=0,T0)], \quad (1)$$

where Y is the outcome of interest across time and treatment statuses. The regression-based form of the equation is

$$Y=\beta0+\beta1*Tr+\beta2*Ti+\beta3(Tri*Ti)+\beta j*Xj+ui, \quad (2)$$

where β3 is the coefficient that captures DD in equation (1). The coefficient of interest may be affected by other important predictors and control variables, as well as by unobserved state characteristics, all of which are accounted for in βj. As mentioned, the dataset built to estimate the DD models presented here was taken from three repeated cross-sectional datasets. Because of this data structure, some authors (see Duflo, 2004) have argued that the time variable should be interacted with the remaining control variables included in the models. This process, however, would potentially result in less efficient models and the corresponding loss of degrees of freedom. The main models in this study will be estimated with and without that interaction.

To answer the first two research questions, equation (2) will use Stafford borrowing as the outcome of interest. As an example of one potential scenario, if β3 results in a negative point estimate, then law and professional students responded to the loss of the interest subsidy by decreasing their borrowing from the Stafford loan program. In answering the third research question, the models will include PLUS, and private loans as the outcomes of interest. An additional model will include working hours as the outcome variable. It should be noted that the models for secondary loan sources and work hours are limited to only those who borrowed from the Stafford loan program, so that one could determine if Stafford borrowers (i.e., affected participants) were changing borrowing behaviors as a result of the policy change.

DD relies upon the assumption that the external shock resulting from the policy change is the main factor affecting the expected variation of the outcome of interest across affected participants. Thus, in the absence of this policy change, the outcomes of both treated and control participants should have remained unchanged. To corroborate this assumption, a series of placebo tests will be implemented (Bertrand, Duflo, and Mullainathan, 2004). In the placebo test framework, researchers drop all the observations that were observed after the real policy change

took place and artificially set a new time for a fake policy implementation before such policy took effect. The treatment and control statuses of the students are maintained, while the coefficient of interest is created using the false time for policy implementation. In this study, the time observations corresponding to 2007-08, 2011-12 were measured before the policy change occurred. Accordingly, in the placebo test models will omit the time period 2015-16, instead setting 2007-08 as T0 and 2011-12 as T1. Treated and control groups will remain unchanged and the coefficient of interest (β3) should either be non-significant or have the opposite sign compared to the sign observed in the real DD model. If the results from the placebo test mirror the magnitude and direction of β3 found in the real DD, then the significance associated with the policy change was merely the result of previous trends in the data or unaccounted for factors and not the result of the policy change.

It is unlikely that the magnitude of β3 would be the same across different sub-groups of students. Accordingly, the analytic plan will measure effect heterogeneity by estimating models conditional on different levels of socioeconomic status, ethnicity, gender, institutional sector, selectivity level and discipline.

The analytic procedures just described are summarized in Figure 1 below.

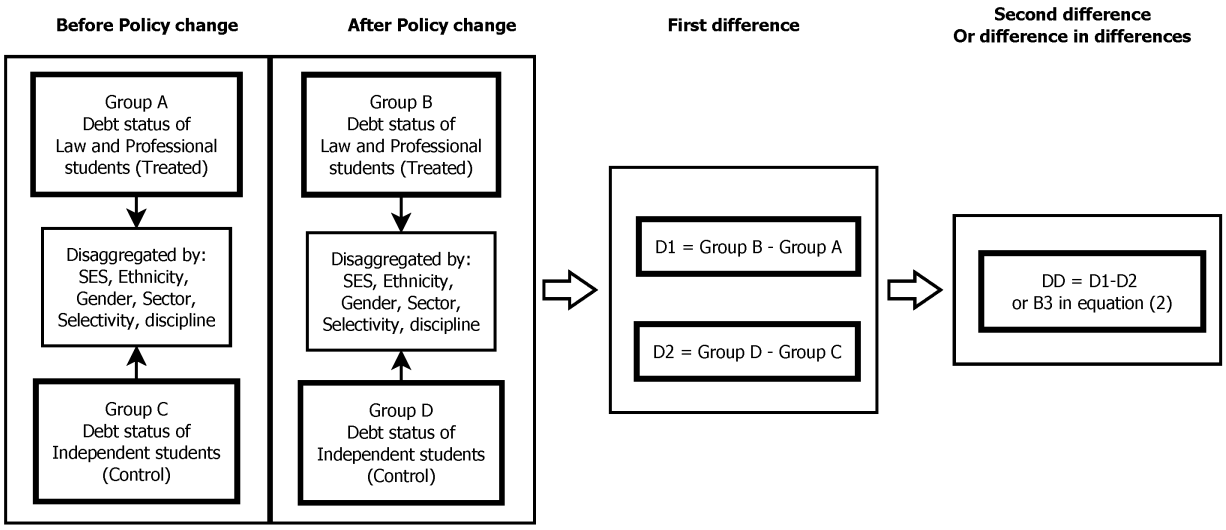

Figure 1. Summary of Analytic Approach

This figure reflects the analytic samples and the comparisons conducted to estimate the effect of the policy change. The first inferential step consisted of estimating models including treated and control participants. The next set of estimations will be disaggregated conditional on SES, ethnicity, gender, sector, selectivity, and discipline. Note that this figure refers to the actual before and after policy implementation times, in the placebo tests these times are moved away in time to only account to the before implementation time. Given the unavailability of data, the findings presented in the following section correspond to this placebo tests and show important methodological implications for the analytic procedures to be conducted with the actual pos-implementation data contained in NPSAS:16 (please see the Appendix section for official communication regarding expected release date of this dataset).

Findings

Table 1 contains summary statistics of the loan, individual-, institutional-, and geographic-level characteristics included in the analyses. The analytic sample is limited to independent students who applied for federal aid, were full-time, enrolled in the 4-year sector (control) or any graduate program (treated), and attended a school within the US. Considering

that independent undergraduate students (control) had their Stafford loan limits increased between these two cross-sections (by $2,000)—this trend can be observed in this table in the intersection between Stafford Loans and Independent Students in the 2007-08 and 2011-12 sections—, the analyses that include the NPSAS:16 will be limited to the comparisons of the 11-12 & 15-16 iterations of NPSAS.[1] With respect to treated students, there is no drastic change in the mean distribution of Stafford Loans across these two NPSAS iterations. The only notable increase was observed in the mean disbursement of Grad Plus Loans, wherein treated students practically doubled the mean average amount in this indicator in the 2011-12 sample.

With respect to race and ethnicity the two samples consistently indicated that two thirds of the treated sample were White. The corresponding distribution for controls was about 55% across iterations. The distribution of African American, Hispanic, Asian, Native American, Pacific Islander, and Multiracial were consistent across datasets. This similarity in the distribution was also true for gender, with a similar representation of women across treated and control groups and datasets reaching at least about 60% of the analytic samples.

Across datasets, 40% of treated participants were classified as first generation in college compared to about 70% of independent students. Differences in annual income remained about $5,000 between treated and control students across datasets, with an interesting decline in the 2011-12 dataset with a magnitude of $3,000 across treated and control groups with respect to the observed mean incomes of the 2008-08 analytic samples. An important indicator that validates the selection of this control group is the participants' age. The age difference across treated and

[1]The second study completed as a supplement to this research initiative presents a comprehensive analysis of this federal policy change taking place in 2011-12.

control students was one year in the two datasets with the 2011-12 sample being about six months older, on average, than the 2007-08 sample.

The selectivity-level of the institution is accounted by the Barron's rank. This index shows important discrepancies across treated and control participants, wherein treated participants tended to attend schools that were in the most and highly competitive categories in both the 2007-08 and 2011-12 samples compared to their control counterparts. The last indicator accounts for rent cost in the area where students live. Notably, this indicator shows about $100 discrepancy in the in 2007-08 comparison groups, but this difference reduced to $50 in the 2011-12 sample.

Table 1.

Summary statistics of treated and control participants pre-policy implementation

	2007-08		**2011-12**	
	Independent Students	**Graduate Students**	**Independent Students**	**Graduate Students**
Total Loans	8886.37 (6420.39)	24109.35 (13697.56)	8606.96 (5636.04)	24916.95 (18095.22)
Stafford Loans	6714.68 (4163.19)	18221.95 (9014.84)	7692.63 (4487.92)	18120.39 (10296.41)
Private Loans	2006.19 (4525.86)	2174.95 (4588.40)	806.88 (3037.03)	568.42 (2923.55)
Grad Plus Loans	0.00 (0.00)	3304.18 (7447.42)	0.00 (0.00)	6056.78 (12190.21)

	165.50	408.28	107.45	171.36
Perkins Loans	(741.60)	(1170.38)	(559.32)	(860.65)
Individual				
White	0.559	0.684	0.555	0.648
	(.543)	(.394)	(.495)	(481)
Black	0.213	0.124	0.216	0.135
	(.448)	(0.280)	(.409)	(.344)
Latino	0.133	0.095	0.137	0.090
	(.371)	(.248)	(.342)	(.288)
Asian	0.044	0.069	0.037	0.089
	(.225)	(.215)	(.188)	(.286)
	0.006	0.004	0.011	0.002
Native American	(.082)	(.052)	(.103)	(.050)
	0.006	0.003	0.006	0.008
Pacific Islander	(.083)	(.048)	(.074)	(.089)
Multiracial	0.040	0.021	0.039	0.028
	(.214)	(.123)	(.192)	(.166)
Female	0.637	0.593	0.615	0.603
	(.526)	(.417)	(.484)	(.493)
Firstgen	0.713	0.406	0.696	0.403
	(.494)	(.417)	(.458)	(.494)
Income	25864.54	30713.47	22020.53	27631.15

	(27564.04)	(35371.48)	(28555.80)	(35734.16)
Age	29.73	28.83	30.46	29.27
	(9.02)	(6.21)	(8.79)	(7.85)
Institutional and Geographical-level				
Most_Competitive	0.010	0.153	0.005	0.099
	(0.098)	(0.360)	(0.069)	(0.299)
HighlyCompetitive	0.036	0.116	0.012	0.090
	(0.187)	(0.320)	(0.108)	(0.286)
Very_Competitive	0.138	0.180	0.054	0.173
	(0.345)	(0.384)	(0.225)	(0.378)
Competitive	0.360	0.266	0.179	0.284
	(0.480)	(0.442)	(0.384)	(0.451)
Less_Competitive	0.115	0.030	0.078	0.043
	(0.318)	(0.169)	(0.268)	(0.204)
Non_Competitive	0.318	0.242	0.658	0.283
	(0.466)	(0.428)	(0.474)	(0.451)
Special	0.024	0.014	0.014	0.028
	(0.154)	(0.116)	(0.117)	(0.165)
Rent	784.251	885.887	805.690	856.043
	(231.671)	(264.622)	(222.26)4	(247.636)

*Standard errors in parenthesis.

Table 2 presents a more nuanced depiction of the variation of the outcome of interest by field of study of graduate students. The first and second columns of this table are the average amounts borrowed in Stafford amounts in 2007-08 and 2011-12. The column called difference simply reflects the difference between columns 2 and 1. In this sense, positive figures accounts for increases with respect to amounts borrowed in the recent sample and negative figures account for decreases. The fourth column uses a studentisized t-test comparison of these differences as proposed by DeMaris (2004) as follows

$$t = \frac{b_j - b_k}{\sqrt{seb_j^2 + seb_k^2}} \quad (3)$$

where the numerator reflects the figures of comparison and the denominator their corresponding standard errors associated with each comparison point. Depending on sample size, the resulting coefficient of these comparisons will follow a t-test distribution, with their corresponding degrees of freedom. In this case, the cut-off point is plus or minus 1.96, indicating that higher absolute values departing from 1.96 will reach significant differences. Notable, none of the comparisons reached significance. This statement holds true even for Law students, whose differences reached almost $5,000. The field of study that showed the greatest variation in the reduction of average reliance on Stafford loans is Math/Engineering/Comp Sciences with a decrease of $2271.10 with respect to the amounts observed in 2007-08, followed by Business and Management majors with a reduction of $1347.45. The second highest increase in this form of debt was observed for Health majors with a magnitude of $1382.73.

Table 2.

Borrowing by Graduate Students' Program of Study

	Total Borrowing		**Difference**	**Significance**
	2007-08	**2011-12**		
Humanities	18573.49	19486.26	912.77	0.04
	(12867.85)	(16055.49)		
Social/Behavioral Sciences	23138.50	22731.35	-407.15	-0.02
	(12233.93)	(20500.05)		
Life Sciences	17658.08	17162.34	-495.74	-0.02
	(16402.15)	(17959.39)		
Math/Engineering/Comp Sci	16308.26	14037.16	-2271.10	-0.11
	(11455.07)	(16468.28)		
Education	17508.99	16932.56	-576.43	-0.04
	(8981.374)	(9707.25)		
Business/Management	21699.19	20351.74	-1347.45	-0.10
	(8866.08)	(9688.46)		
Health	29004.80	30387.53	1382.73	0.06
	(14579.08)	(18576.27)		
Law	35250.17	39406.96	4156.79	0.16
	(16540.04)	(20943.86)		
Others	18750.09	19693.93	943.84	0.06

(10079.62) (13594.11)

*Standard errors in parenthesis.

Inferential Results from Placebo Estimation Procedures

The coefficient of interest discussed in equations (1) and (2) is Treat*Post in Table 3. This estimate accounts for the effect of the policy change. Recall that the models contained in Table 3 are the placebo tests, wherein all participants outcomes were observed before actual policy change took place. The significance of these coefficients in the placebo models should be null for the quasi-causal interpretations to hold true regarding the effect of the policy change in this setting. Notably, all the estimates found indicated that the over $1,000.00 increase in treated students' reliance on Stafford loans remained non-significant in the placebo models. If the final set of models with actual policy changes reach significance, then this would validate the quasi-causal effect of the DD framework. Specifically, column 1 in Table 3 provides us with the simple differences in conditional means ([Treat1-Treat0]-[Control1-Control0]) across cohorts. Columns 2 and 3 add the covariates available to account for differences across demographics.

While the cohorts of included in the table did not change in significant ways before across the 2007-08 and 2011-12 iterations (see Table 1), the greatest threat to identification within a DD framework when making cross-cohort comparisons is a contemporaneous change in policy or in the program participants. One way to mitigate potential biases due to this threat is to statistically allow the covariates to vary across time, which implies interacting individual-level indicators with the time indicator. The third column in Table 3 includes such interactions of each covariate with the post-policy indicator variable to capture demographic changes across time. Only two of these interactions reached statistical significance, Native America*Post and

Income*Post (where post indicates the fake policy implementation year). Notably, the coefficient of interest remained insignificant and with a similar magnitude ($1,224.13)

Table 3.

Placebo Models for All Graduate Students compared to Independent Undergraduates

	DD No Controls	DD w/Controls	DD w/Interactions
VARIABLES	**totalloan**	**totalloan**	**totalloan**
Black		328.434	
		(301.484)	
Latino		-484.600	
		(424.068)	
Asian		9.659	
		(617.699)	
Native American		-1,722.952*	
		(820.020)	
Pacific Islander		83.251	
		(1,488.758)	
More than 1 Race		622.518	
		(579.303)	
Age		-16.115	
		(17.826)	
Female		-220.991	

	(290.266)	
Firstgen	-918.752**	
	(286.531)	
Income	-0.025***	
	(0.006)	
Black*Post		-949.320
		(557.761)
Latino*Post		-286.612
		(873.080)
Asian*Post		-258.750
		(1,200.998)
Native American*Post		-4,402.745**
		(1,683.814)
Pacific Islander*Post		-5,517.315
		(2,901.150)
More than 1 Race*Post		637.854
		(1,089.968)
Age*Post		21.781
		(38.972)
Female*Post		-283.028
		(577.727)
Firstgen*Post		219.381

			(560.618)
Income*Post			-0.027*
			(0.012)
Highly_comp*Post			-2,306.200
			(3,053.645)
Very_comp*Post			-732.278
			(2,880.295)
Comp*Post			-2,636.634
			(2,809.024)
Less_comp*Post			-3,736.566
			(2,816.769)
Non_comp*Post			-3,037.093
			(2,941.810)
Special*Post			-3,283.649
			(3,538.033)
Rent*Post			-1.294
			(1.635)
Post	-279.412	-374.607	-59.322
	(254.407)	(284.401)	(1,160.365)
Treat	15,222.985***	15,057.817***	14,997.120***
	(628.140)	(645.299)	(660.966)
Treat*Post	1,087.008	1,098.729	1,224.487

	(1,079.911)	(1,069.822)	(1,092.127)
Constant	8,886.368***	10,794.050***	10,594.325***
	(154.950)	(538.866)	(936.026)
Observations	23,331	23,331	23,331
R-squared	0.302	0.308	0.309

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Race Ref Group is White

Table 4 limits the placebo estimates shown in Table 3 to law students as the treated group while maintaining independent undergraduate students in the control condition. The disaggregation of the sample conditional on these indicators proved important given that in the three models contained in the table the coefficient of interest reached statistical significance. This result, which aligns with the descriptive nature of the estimates shown in Table 2, invalidates the main assumption behind DD. More specifically, these estimates show that Law students relied more heavily on Stafford across datasets even in the absence of a policy.

Table 4.

Placebo Models for Law Professional Students compared to Independent Undergraduates

	DD No Controls	DD w/Controls	DD w/Interactions
VARIABLES	totalloan	totalloan	totalloan
Black		379.551	

	(215.410)	
Latino	-344.050	
	(292.299)	
Asian	-1,586.906**	
	(484.019)	
Native American	-2,343.583**	
	(794.776)	
Pacific Islander	1,913.032*	
	(802.531)	
More than 1 Race	347.412	
	(536.017)	
Age	54.285***	
	(9.708)	
Female	366.418	
	(194.667)	
Firstgen	-268.641	
	(195.385)	
income	0.008	
	(0.005)	
Black*Post		636.227
		(422.151)
Latino*Post		7.674

	(594.040)
Asian*Post	-633.189
	(941.655)
Native	
American*Post	-3,206.178
	(1,814.529)
Pacific	
Islander*Post	-2,526.681
	(1,533.196)
More than 1	
Race*Post	2,188.455*
	(1,035.977)
Age*Post	25.555
	(19.036)
Female*Post	518.978
	(372.288)
Firstgen*Post	-96.326
	(386.063)
Income*Post	-0.016
	(0.009)
Rent*Post	-3.155**
	(1.148)

Highly_comp*Post			-3,777.917
			(3,156.145)
Very_comp*Post			-713.903
			(2,950.866)
Comp*Post			-1,727.086
			(2,889.284)
Less_comp*Post			-2,385.575
			(2,909.609)
Non_comp*Post			-1,814.768
			(2,919.006)
Special*Post			-3,173.261
			(3,523.143)
Post	-279.412	-283.836	-1,080.892
	(254.419)	(246.310)	(693.237)
Treat	26,268.973***	26,449.958***	26,381.501***
	(1,153.819)	(1,166.260)	(1,180.506)
Treat*Post	4,989.231**	5,168.196**	5,315.979**
	(1,677.341)	(1,677.946)	(1,689.445)
Constant	8,886.368***	7,049.783***	7,509.284***
	(154.958)	(330.731)	(508.141)
Observations	16,213	16,213	16,213
R-squared	0.499	0.504	0.505

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Race Ref Group is White

Discussion

The findings presented in Table 4 are relevant as they indicate that Law students experience a significant increase in their reliance on loans compared to the control group that cannot be attributed to the policy change. Recall that the control participants were allowed to increase their Stafford limits by magnitude of up to $2000.00 with respect to their previous limit in 2011-12. accordingly, this situation may indicate that the observed gap of above $5,000 may be lower than a gap observed in the absence of this $2,000 increase allowed by the Federal government affecting the 2011-12 sample.

Given that Law students are relying more heavily on Stafford loans, the loss of the federal subsidy will translate into greater debt burden due to the accrual of interest while still enrolled in professional education. Accordingly, the analysis of the NPSAS:16 remains an important endeavor. Once these data are available, the final models will limit the analyses to 2011-12 & 2015-16 iterations of NPSAS to get at borrowing that was not affected by a policy change other than the removal of subsidized loans. The analytic samples will continue to be limited to those independent students who applied for federal aid, were full-time, enrolled in the 4-year sector (control) or any graduate program (treatment), and attended a school within the United States.

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Appendix

From: Hunt-White, Tracy <Tracy.Hunt-White@ed.gov>
Sent: Monday, November 28, 2016 12:43 PM
To: Jason Lee
Subject: RE: NPSAS '16

Hi Jason,

We are giving the timeframe of late-2017 or by end of CY 2017 just to be on the safe side. We are still in data collection for a few more weeks. Also, the data processing takes time.

Keep checking. Also, make sure that you sign up for NewsFlash to get alerts about NCES data releases: http://ies.ed.gov/newsflash/.

IES Newsflash

ies.ed.gov

The News Flash Subscription Service is an e-mail-based alert service, designed to help anyone with an interest learning quickly about IES news, information and ...

Sincerely,
->Tracy

Tracy Hunt-White, PhD
National Postsecondary Student Aid Study (NPSAS), Project Officer
National Center for Education Statistics

From: Jason Lee [mailto:jasonlee@uga.edu]
Sent: Monday, November 28, 2016 11:46 AM
To: Hunt-White, Tracy
Subject: NPSAS '16

Good morning Dr. Hunt-White,

I hope this message finds you well. I'm reaching out to inquire about the availability of the 2016 iteration of NPSAS. To my knowledge, data collection should conclude this fall and the data set should be made available in its restricted-use form some time in 2017. Are you able to share a more narrow window for release? Perhaps the fall of '17?

Thanks so much,
Jason C. Lee
Institute of Higher Education
University of Georgia
724-822-1815