Taxing Nonprofit Colleges: Institutional Responses and Policy Implications

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November 20, 2024

Trump Proposed to Tax Private Nonprofit Colleges to Fund the American Academy

How Much Taxes Do the Wealthy Paid?

Musk owns **$240 billion** in total wealth and paid **$11 billion** in taxes in 2021 (**4.6%**)

Harvard owns **$50 billion** in total wealth and paid **$35 million** in taxes in 2021 (**0.07%**)

Tax Exemptions to Nonprofit Colleges

- Nonprofits have historically benefited from tax exemptions
  - The annual federal tax benefit for nonprofit colleges is $22 billion, making up 1% of total federal tax revenue (Brody & Cordes, 2006)
  - Indirect government support through tax exemptions surpasses direct subsidies (Humphreys & Solomon, 2012; Baum & Lee, 2019)
- It is **invisible** and **unaccountable**
- Colleges do not leverage tax benefits to improve their services (Cowan, 2007; Nichols & Santos, 2016; Herring et al., 2018)
  - While the average capital return rate excesses 10%, colleges spend less than 5% of their wealth (Cowan, 2007; Nichols & Santos, 2016)

Net Investment Income Tax on Nonprofit Colleges

- The 2017 Tax Cuts and Jobs Act (TCJA) imposed a **1.4%** net investment income tax on non-profit colleges with:
  - Enrolling more than 500 tuition-paying students
  - Hold $500,000 or more assets per student
- Only 32 colleges are taxed in the first year

List of Colleges
Choice of Case

> "The net investment income tax will impede our efforts to help students and improve education...We will each have less to give in aid, less for research, and less to support public engagement."
>
> —*Letters from 48 Colleges to the House*

> "The tax will reduce funds available from the endowment to support financial aid and support for our core academic mission."
>
> —*Stanford University*

> "The provision will constrain the resources that enable us to provide the financial aid that makes college more affordable and accessible."
>
> —*Harvard University*

> "It will reduce MIT's ability to undertake extensive financial aid for students, innovative education, and pioneering research."
>
> —*MIT*

Research Questions

- **Big Question:** Does taxing nonprofit colleges **improve** or **undermine** the overall society benefits and equity?

1. How do colleges respond to the tax?
2. What's the impact of their behavioral response on education opportunities?
3. Who gets benefits, and who gets hurt by the policy?

Theoretical Framework

Different Types of Behavioral Responses on Tax

1. ~~**Tax Evasion**: Illegal practice to reduce tax liability~~
   - e.g., Hiding income
2. **Tax Avoidance**: Utilizes legal loopholes or ambiguous areas of the tax system to reduce tax liability
   - e.g., Research grants vs. honorarium
   - e.g., Adjusting financial metrics to stay below tax thresholds
3. **Tax Shifting**: Shifting the tax burden from one party to another
   - e.g., Businesses increase prices to pass the tax burden onto customers

Theoretical Framework

Data and Sample

Data and Sample

- Data
  - Integrated Postsecondary Education Data System (IPEDS)
  - Form 990 (Tax return of organizations exempt from income tax)
- Sample
  - **Private non-profit colleges** reported in the IPEDS and e-filed Form 990 every year from 2010 to 2023
  - Sample size: 993 Colleges
- Sample Period
  - From 2010 (July 2010 to June 2011) to 2022 (July 2022 to June 2023)

Data and Sample

Research Method

Empirical Strategy: Difference-in-Differences

Treatment and Comparison Groups

Tax Avoidance

Tax Shifting

Details
Estimated Equation

Tax Avoidance

Tax Avoidance: Log Student Enrollment

Regression Estimates
SCM Estimates

Tax Avoidance: Log Assets and Assets per Student

Log Total Assets

Log Assets per Student

$$\uparrow \frac{\cancel{\Delta}\ Assets}{Enrollment} \geq 500,000 \downarrow$$

▸ Estimates by Asset Categories
▸ SCM Estimates

Tax Shifting

Tax Shifting: Log Total Spending & Financial Aids

Log Total Spending

Log Institution Financial Aids

▸ Estimates by Spending Categories
▸ SCM Estimates

Tax Shifting: Log Listed Tuition

Estimates by Categories
SCM Estimates

Implication on Welfare Distribution

Impact on Student Composition

By Race/Ethnicity

By Financial Aid Status

▸ Regression Estimates

Conclusion

Research Findings

- **Tax Avoidance:** Colleges opt to **increase enrollment** rather than ~~reduce assets~~
- **Tax Shifting:** Colleges opt to **increase tuition** rather than ~~cut spending~~
  - Reduces college access for Hispanic and middle-low-income students

Broader Policy and Politics Implication

- Policies aimed at redistributing wealth may unintentionally harm vulnerable communities
  - Considering behavioral responses is crucial in policy design
- With effective policy design, colleges can be incentivized to act in ways that benefit society
  - Targeted tax incentives may be more effective than blanket tax exemptions

Thank You!

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Slides:

https://yungyutsai.github.io/files/JobTalk_USU.pdf

Main Presentation
- Introduction
- Policy Background
- Theoretical Framework
- Data & Sample
- Research Method
- Tax Avoidance
- Tax Shifting
- Student Composition
- Conclusion

Background
- Case Choice
- Asset Composition
- Wealth Inequality
- List of Affected Colleges
- Policy Timeline
- Estimated Burden
- Related Proposals
- Nonprofit Taxation

Literature
- Nonprofit Tax
- Higher Ed Literature
- Submerged State
- Instutionalism

Measurements
- Assets
- Student Enrollment
- Investment income

Methods
- DID
- DDD
- SCM

Robustness Checks
- Restricted to Selective Colleges
- DDD
- SCM

Additional Results
- Student Enrollment
- Assets
- Spending
- Tuition & Charges
- Race/Ethnicity
- Financial Aids
- Income Groups
- Cost-benefit Analysis
- Bunching Analysis

Research Agenda

Teaching Interest

Why is This Case Suitable?

1. Wealth inequality challenges the justification for nonprofit tax exemptions
   - Investment income tax (or any asset-related tax) is a primary consideration for taxing nonprofits
2. Higher education is a significant sector of nonprofits
   - The wealthiest organizations
   - The second-highest revenue and expenditure, only surpassed by hospitals
   - Enjoys the largest share of tax exemptions
3. The specific tax threshold design in this policy allows colleges to respond by changing enrollment or assets
   - Offers an opportunity to examine whether nonprofits, when given a choice, respond in alignment with **self-interest** or **societal benefits**

▸ Policy Background

Asset Composition

Wealth Distribution

Inequality in Wealth Distribution in Higher Education

Assets Composition

Inequality in Wealth Distribution Has Grown Overtime

List of Affected Colleges

Research Universities	Master Colleges	Liberal Arts	Specialized
CalTech**	Middlebury**	Amherst**	Baylor College†
Dartmouth**	Trinity*	Bowdoin**	Wisconsin†
Duke**		Bryn Mawr**	Juilliard School†
Emory**		Claremont McKenna**	Cooper Union**
Harvard**		Grinnell*	
MIT**		Hamilton**	
Princeton**		Pomona**	
Rice**		Smith*	
Stanford**		Swarthmore**	
U of Notre Dame**		U of Richmond**	
U Pennsylvania**		Washington & Lee**	
WashU St Louis**		Wellesley**	
Yale**		Williams**	

Barron's Ranking: **Most competitive, *Highly competitive, †Special

Policy Background

Map of Affected Colleges

Policy Timeline

- Timeline of the TCJA
  - November 2, 2017: Proposed to the House
    - Targeting colleges with more than $100,000 assets per student
  - November 27, 2017: Sent to the Senate
    - Targeting colleges with more than $250,000 assets per student
  - December 20, 2017: Passed by the Senate
    - Targeting colleges with more than $500,000 assets per student

Estimated Tax Burden

$$\frac{\textit{Investment Income}}{\textit{Total Revenue}}$$

$$\frac{\textit{Tax Payment}}{\textit{Total Expenditure}}$$

Related Proposals in the Congress

- **Trump** proposes taxing nonprofit colleges' endowment to fund the American Academy
- **Bill S.3514**: Increasing the tax rate to 35% for colleges with endowments above $10 billion (affecting around 12 institutions) — James David Vance (vice president elected)
- **H.R.8883**: Suggests a 10% rate for colleges with per-student endowment assets above $250,000 (affecting over 150 institutions) — Jim Banks
- **Bill S.3465**: Proposes a one-time 6% tax on total endowment assets above $9 billion (affecting around 15 institutions) — Tom Cotton

Nonprofits Taxation Initiative

- Governments at various levels have been considering taxing nonprofits
  - Many local governments have started requesting nonprofits to pay property taxes (Fan et al., 2016)
  - Federal and state governments have begun reviewing the tax-exempt status of some museums and considering taxes on their profit-seeking or tourism-related activities (Halperin, 2015; Fobes, 2016)
  - The federal government has started taxing some colleges on their investment income and eliminated the charitable giving deduction for season tickets for sports (Kisska-Schulze, 2019; Seltzer, 2020)
  - Some legislators have proposed bills to tax nonprofit hospitals (Muoio, 2023). Some state governments have also begun reviewing the tax-exempt status of nonprofit hospitals (Miller & Hawryluk, 2023)

Literature: Nonprofit Tax Avoidance

- Do nonprofits engage in tax avoidance?
  - Yes (Sansing & Yetman, 2006; Omer & Yetman, 2007; Schmidt, 2007; St. Clair, 2016; Marx, 2018)
- Do they respond by **increasing** or **reducing** their service level?
  - The policy context investigated by previous studies usually only provides nonprofits with one direction to respond
    - Nonprofits need to be exempted from reporting/auditing requirements by becoming **smaller** (St. Clair, 2016; Marx, 2018)
    - Nonprofits merely play some "trick" on the financial reports to avoid unrelated business income tax, **without any real change** in production level (Hofmann, 2007; Omer & Yetman, 2007)
    - Private foundations need to qualify for lower tax rates by spending **more** (Sansing & Yetman, 2006)
- For the context examined in this study, colleges can choose:
  - Reduce asset values (become **smaller**) $\downarrow$
  - Increase enrollment (become **larger**) $\uparrow$

$$\frac{Assets}{Enrollment} \geq 500,000$$

Nonprofit Tax Shifting

- Do nonprofits engage in tax shifting?
  - They do **not** do so by cutting spending or service level
    - Nonprofit hospitals do not respond to tax exemption by changing community service level (Herring et al., 2018)
    - Nonprofits only have minimum to null responses to property tax by changing service level (Grimm Jr, 1999; Fei et al., 2016)
    - Private foundations do not respond to excise tax by cutting spending (Sansing & Yetman, 2006)
  - Do they try to do so by raising the service charges or gathering more revenue with other means?
    - Unknown

Colleges Response to Financial Schock

- Negative capital market shocks (**temporary**)
  - Cutting spending (Brown et al., 2014; Rosen & Sappington, 2019; Bulman, 2022)
  - No change in tuition (Bulman, 2022)
- Government funding cut (**long-term, visible**)
  - Cutting spending (Mumper & Freeman, 2005; Altundemir, 2012)
  - Increasing tuition and fees (Filippakou et al., 2019; Civera et al., 2021)
- How about cutting in **invisible** & **strctured** tax benefit?

Submerged State

- A collection of government policies that deliver benefits through **indirect** means rather than **direct** government programs (Mettler, 2011)
  - Tax expenditure
  - Subsidies through private market
  - Contracting out
- Less visible to the public
- Undermine public trust and accountability

Perspectives from New Instutionalism

- **Rational Choice Institutionalism**
  - Colleges would choose the approach that best aligns with their self-interest, minimizing costs and maximizing benefits
  - They might choose to **cut** resource investments and spending, and/or **increase** tuition
- **Sociological Institutionalism**
  - Colleges' behaviors would be shaped by social norms, institutional mission, and interactions with other colleges
    - Nonprofits tend to maximize their public service output instead of self-interest (Brooks, 2005; Chang & Jacobson, 2011)
    - These colleges need to compete with other elite colleges for their academic standing (Bulman, 2022)
  - They might choose to **expand** student enrollment and be more cautious about cutting spending

Theory Implications

- Implications for the Submerged State
  - Taxing nonprofits disproportionately impacts underrepresented groups
    $\rightarrow$ Tax exemption might benefit these groups
  - No direct connection between tax payment and college spending
    $\rightarrow$ Tax exemption does not directly boost public service provision
  - Invisible tax exemption vs. visible government revenue (and associated spending)
- Implications for New Institutionalism
  - Nonprofit college responses align more with **Sociological Institutionalism** than **Rational Choice Institutionalism**
  - Institutional behaviors are shaped by norms, mission, and interactions with other actors
    $\rightarrow$ Government can leverage this to design policies that guide organizations to respond positively

Measurements: Assets

- **IRS' definition**: The aggregate **fair market value** of assets at the end of the preceding taxable year (other than assets used directly in carrying out the institution's exempt purpose)
  - **Fair market value**: The regulations at 53.4942(a)-2(c) allow the organization to use any reasonable method, but require that they use the chosen method consistently
  - **Related Organizations**: Colleges have to take into account assets held by "related organizations"
- **Definition in dataset**: Value of endowment assets at the end of the fiscal year. Consists of gross investments of endowment funds, term endowment funds, and funds functioning as endowment for the institution and any of its foundations and other affiliated organizations.

Measurements: Student Enrollment

- **IRS' definition**: Daily average number of full-time equivalent (FTE) students
  - **Full-time equivalent**: The school should base its counts on the daily average number of full-time students attending the institution, with part-time students being taken into account on a full-time equivalent basis
- **Definition in dataset**:
  - **Full-time student**: Undergraduate: A student enrolled for 12 or more semester (quarter) credits credits. Graduate: A student enrolled for 9 or more semester (quarter) credits or a student involved in thesis or dissertation preparation
  - **Full-time equivalent**: Full-time students $+ \frac{1}{3} \times$ Part-time students
  - **Reporting Timing**: Enrollment as of October 15 or the official fall reporting date of the institution

Measurements: Net Investment Income

- **IRS' definition**: Net investment income = (gross investment income + capital gain net income) – allowable deductions
  - **Gross Investment Income**: Interest, dividends, rents, payments on securities loans, royalties, and similar sources
  - **Allowable deductions** Ordinary and necessary expenses paid/incurred for production or collection of gross investment income, or management, conservation, or maintenance of property held for the production of such income
- **Definition in dataset**: Investment return includes the following:
  - All investment income (i.e., interest, dividends, rents and royalties)
  - Gains and losses (realized and unrealized) from holding investments
  - Student loan interest
  - Amounts distributed from irrevocable trusts held by others

Form 990 Part V and Form 4720, Schedule O

Form 990 (2023) Page **5**

Part V **Statements Regarding Other IRS Filings and Tax Compliance** *(continued)*

			Yes	No
14a	Did the organization receive any payments for indoor tanning services during the tax year?	**14a**		
b	If "Yes," has it filed a Form 720 to report these payments? *If "No," provide an explanation on Schedule O*	**14b**		
15	Is the organization subject to the section 4960 tax on payment(s) of more than $1,000,000 in remuneration or excess parachute payment(s) during the year?	**15**		
	If "Yes," see the instructions and file Form 4720, Schedule N.			
16	Is the organization an educational institution subject to the section 4968 excise tax on net investment income? If "Yes," complete Form 4720, Schedule O.	**16**		
17	**Section 501(c)(21) organizations.** Did the trust, or any disqualified or other person, engage in any activities that would result in the imposition of an excise tax under section 4951, 4952, or 4953?	**17**		
	If "Yes," complete Form 6069.			

Form **990** (2023)

SCHEDULE O—Excise Tax on Net Investment Income of Private Colleges and Universities (Section 4968)

		(a) Name	**(b)** EIN	**(c)** Gross investment income (See instructions.)	**(d)** Capital gain net income	**(e)** Administrative expenses allocable to income included in cols. (c) and (d)	**(f)** Net investment income (See instructions.)
1	Filing Organization						
2	Related Organization						
3	Related Organization						
4	Related Organization						
5	Total from attachment, if necessary						
6	**Total**						
7	Excise Tax on Net Investment Income. Enter 1.4% of the amount in 6(f) here and on Part I, line 14						

Form **4720** (2023)

Tax Avoidance: Treatment and Comparison Groups

- **Treatment Group**: Colleges around the tax threshold (with assets per student between \$400,000–\$600,000)
  - **Just above the threshold**: They need only reduce their assets or increase enrollment by 0.05–17% to remain tax-exempt
  - **Just below the threshold**: They would face taxation if their assets grow by 7–24%, but their average annual asset growth rate is 3–6%

Tax Avoidance: Treatment and Comparison Groups

- **Comparison Group**: Colleges far **below** the tax threshold (with assets per student less than $400,000)

Tax Shifting: Treatment and Comparison Groups

- **Treatment Group**: Colleges subject to the tax (with assets per student above $600,000)
- **Comparison Group**: Colleges unaffected by the tax (with assets per student below $400,000)
- **Exclusion Group**: Colleges near the tax threshold (with incentives for tax avoidance)

Estimated Equations: Difference-in-Differences

$$Y_{it} = \beta_k \, Cutoff_i \times \sum_{k \neq 2016} \textbf{Year}[t = k] + \theta_i + \delta_t \times X_i + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \beta_k \, Wealthy_i \times \sum_{k \neq 2016} \textbf{Year}[t = k] + \theta_i + \delta_t \times X_i + \varepsilon_{it} \quad (2)$$

- Y_{it}: Outcomes of college i in fiscal/academic year t
- $Cutoff_i$: Had assets per student between \$400,000 and \$600,000
- $Wealthy_i$: Had assets per student above \$600,000
- $\sum \textbf{Year}[t = k]$ A series of year dummies
- θ_i: Institution fixed effect
- δ_t: Year fixed effect
- X_i: Time-invariant college characteristics: Carnegie categorization

Tax Avoidance: DID vs. DDD

Difference-in-Differences

Around the Cutoff
vs. Far below the Cutoff

Triple-Difference

$(T_1 - C_1)$
vs. $(T_2 - C_2)$

Tax Shifting: DID vs. DDD

Difference-in-Differences

Above Cutoff
vs. Below the Cutoff

Triple-Difference

$(T_1 - C_1)$
vs. $(T_2 - C_2)$

Tax Avoidance: DDD Equation

Difference-in-Differences

$$Y_{it} = \beta_k \, Cutoff_i \times \sum_{k \neq 2016} \textbf{Year}[t = k] + \theta_i + \delta_t \times X_i + \varepsilon_{it} \tag{3}$$

Triple-Difference

$$Y_{it} = \gamma_k \, Cutoff_i \times Large_i \times \sum_{k \neq 2016} \textbf{Year}[t = k] + \theta_i \tag{4}$$
$$+ \, Cutoff_i \times \delta_t + Large_i \times \zeta_t + \varepsilon_{it}$$

- Y_{it}: Outcomes of college i in fiscal/academic year t
- $Cutoff_i$: Had assets per student between \$400,000 and \$600,000 in 2016
- $Large_i$: Had number of total student above 500 in 2016

Tax Shifting: DDD Equation

Difference-in-Differences

$$Y_{it} = \beta_k Wealthy_i \times \sum_{k \neq 2016} \textbf{Year}[t = k] + \theta_i + \delta_t \times X_i + \varepsilon_{it} \tag{5}$$

Triple-Difference

$$Y_{it} = \gamma_k Wealthy_i \times Large_i \times \sum_{k \neq 2016} \textbf{Year}[t = k] + \theta_i + Wealthy_i \times \delta_t + Large_i \times \zeta_t + \varepsilon_{it} \tag{6}$$

- Y_{it}: Outcomes of college i in fiscal/academic year t
- $Wealthy_i$: Had assets per student above \$600,000 in 2016
- $Large_i$: Had number of total student above 500 in 2016

Illustration of DDD

Illustration of DDD: Trend in Total Spending

Large & Wealthy
vs. Large & Non-wealthy

Small & Wealthy
vs. Small & Non-wealthy

Illustration of DDD: Trend in Total Spending

Synthetic Control Method

$$\widehat{\beta_{it}} = (Y_{it} - Y_i) - \sum_{j=1}^{M} w_j^* (Y_{jt} - Y_j)$$

For example:

$$\begin{aligned} Harvard = {} & 0.45 \times University\ of\ Southern\ California \\ & + 0.27 \times New\ York\ University \\ & + 0.11 \times Brown\ University \\ & + 0.04 \times CMU + ... \end{aligned}$$

Tax Avoidance by Increasing Enrollment

	(1)	(2)	(3)	(4)	(5)
	Log FTE	By Enrollment Status		By Student Level	
	Enrollment	Full-time	Part-time	Undergraduate	Graduate
Panel A: All Colleges					
Cutoff × *Post*	0.076***	0.077***	0.003	0.071***	–0.032
	(0.022)	(0.022)	(0.116)	(0.026)	(0.177)
Observations	9,997	9,997	9,997	9,997	9,997
Baseline Mean (Thousand)	6.915	6.617	0.894	3.774	3.141
Panel B: Colleges Below the Assets Threshold					
Cutoff × *Post*	0.107***	0.111***	0.057	0.107***	0.182
	(0.025)	(0.025)	(0.171)	(0.033)	(0.300)
Observations	9,880	9,880	9,880	9,880	9,880
Baseline Mean (Thousand)	5.578	5.288	0.870	3.242	2.336
Panel C: Colleges Above the Assets Threshold					
Cutoff × *Post*	0.046	0.046	–0.045	0.037	–0.225
	(0.031)	(0.031)	(0.145)	(0.035)	(0.153)
Observations	9,893	9,893	9,893	9,893	9,893
Baseline Mean (Thousand)	8.103	7.798	0.915	4.246	3.857

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Main Estimate

Tax Avoidance by Increasing Enrollment: Subgroup

By Tax Status

By Carnegie Categorization

Tax Avoidance by Reducing Assets

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log Assets		By Restricted Status		By Category			
	Total	Per-student	Non-restricted	Restricted	Capital	Investment	Others	Liability
Panel A: All Colleges								
Cutoff × *Post*	0.043	–0.025	0.094	0.066**	0.075*	0.100**	–0.788	0.166*
	(0.039)	(0.038)	(0.251)	(0.032)	(0.040)	(0.047)	(0.826)	(0.091)
Observations	9,228	9,228	9,228	9,228	9,228	9,228	9,228	9,228
Baseline Mean (Million)	3,463	0.485	2,217	2,377	2,802	4,221	12	1,853
Panel B: Colleges Below the Assets Threshold								
Cutoff × *Post*	0.013	–0.084*	–0.074	0.074	0.067	0.044	–1.093	0.046
	(0.054)	(0.046)	(0.218)	(0.047)	(0.069)	(0.054)	(1.258)	(0.083)
Observations	9,120	9,120	9,120	9,120	9,120	9,120	9,120	9,120
Baseline Mean (Million)	2,432	0.426	1,247	1,805	1,639	2,845	22	1,167
Panel C: Colleges Above the Assets Threshold								
Cutoff × *Post*	0.070	0.029	0.249	0.057	0.084**	0.149**	–0.482	0.276*
	(0.050)	(0.050)	(0.318)	(0.037)	(0.036)	(0.066)	(0.958)	(0.142)
Observations	9,132	9,132	9,132	9,132	9,132	9,132	9,132	9,132
Baseline Mean (Million)	4,380	0.538	3,079	2,885	3,835	5,443	4	2,462

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Main Estimate

Tax Shifting Estimates by Expenditure Categories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Log Expenditure						
	Total	Instruction	Research	Public Service	Institution Support	Auxiliary Facilities	Institution Grant
Panel A: All Colleges							
Treat × *Post*	0.020	–0.002	0.005	0.021	–0.007	–0.019	0.220
	(0.034)	(0.037)	(0.088)	(0.097)	(0.047)	(0.046)	(0.160)
Observations	9,312	9,312	9,312	9,312	9,312	9,312	9,312
Baseline Mean (Million)	1,524	478	222	28	121	459	123
Panel B: Research Universities							
Treat × *Post*	0.062	0.047	0.267	–0.104	–0.112	0.014	–0.037
	(0.070)	(0.072)	(0.173)	(0.144)	(0.092)	(0.075)	(0.131)
Observations	3,756	3,756	3,756	3,756	3,756	3,756	3,756
Baseline Mean (Million)	2,866	957	411	15	227	871	227
Panel C: Liberal Arts Colleges							
Treat × *Post*	0.019	0.006	–0.075	0.126	0.053	–0.014	0.259
	(0.042)	(0.051)	(0.104)	(0.131)	(0.061)	(0.058)	(0.212)
Observations	5,556	5,556	5,556	5,556	5,556	5,556	5,556
Baseline Mean (Million)	407	79	65	38	33	115	36

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Main Estimate

Tax Shifting by Changing Enrollment or Tuition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log FTE Enroll.	Log Listed Price			Log Revenue			
		Tuition		Room & Board	Tuition		Auxiliary	
		Undergrad	Graduate		Total	Per Stdnt.	Total	Per Stdnt.
Panel A: All Colleges								
Treat × *Post*	0.034**	0.026***	0.002	0.040**	0.137***	0.107***	0.031	0.014
	(0.016)	(0.009)	(0.026)	(0.017)	(0.034)	(0.032)	(0.046)	(0.046)
Observations	10,088	10,088	10,088	10,088	9,312	9,312	9,312	9,312
Baseline Mean (Thousand)	6.037	42.853	31.228	12.572	178,833	26.235	67,258	10.067
Panel B: Research Universities								
Treat × *Post*	–0.005	0.015	0.068***	0.022	0.023	0.017	0.071	0.075
	(0.022)	(0.011)	(0.023)	(0.031)	(0.036)	(0.026)	(0.088)	(0.089)
Observations	4,069	4,069	4,069	4,069	3,756	3,756	3,756	3,756
Baseline Mean (Thousand)	11.127	46.025	43.484	13.497	334,854	25.547	125,134	10.406
Panel C: Liberal Arts Colleges								
Treat × *Post*	0.060***	0.034**	–0.040	0.052***	0.212***	0.166***	0.005	–0.027
	(0.019)	(0.013)	(0.039)	(0.018)	(0.045)	(0.047)	(0.049)	(0.047)
Observations	6,019	6,019	6,019	6,019	5,556	5,556	5,556	5,556
Baseline Mean (Thousand)	1.795	40.210	21.015	11.800	48,815	26.808	19,028	9.785

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

▸ Main Estimate

Tax Shifting by Increasing Tuition: Subgroup

Undergraduate Tuition

Graduate Tuition

Impact on Student Composition by Race/Ethnicity

Regression Estimates

Impact on Student Enrollment by Race/Ethnicity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log FTE Enrollment							
	White	Black	Hispanic	Asian	NHPI	AIAN	TMR	NRA
Panel A: Tax Avoidance, All Colleges								
Cutoff × *Post*	0.091***	0.040	0.007	0.052	0.064	–0.043	0.190***	0.062
	(0.030)	(0.039)	(0.047)	(0.045)	(0.050)	(0.060)	(0.063)	(0.068)
Observations	9,997	9,997	9,997	9,997	9,997	9,997	9,997	9,997
Baseline Mean (Thousand)	2.331	0.298	0.386	0.646	0.002	0.010	0.163	0.889
Panel B: Tax Shifting, All Colleges								
Treat × *Post*	0.022	0.007	–0.128***	0.017	0.088**	0.099*	–0.102*	0.102*
	(0.026)	(0.033)	(0.041)	(0.039)	(0.043)	(0.051)	(0.054)	(0.058)
Observations	10,088	10,088	10,088	10,088	10,088	10,088	10,088	10,088
Baseline Mean (Thousand)	2.739	0.336	0.516	0.840	0.004	0.017	0.241	1.159
Panel C: Tax Shifting, Research Universities								
Treat × *Post*	–0.023	0.033	–0.128**	–0.054	0.133*	–0.047	–0.039	0.009
	(0.036)	(0.050)	(0.056)	(0.055)	(0.080)	(0.079)	(0.083)	(0.088)
Observations	4,069	4,069	4,069	4,069	4,069	4,069	4,069	4,069
Baseline Mean (Thousand)	2.739	0.336	0.516	0.840	0.004	0.017	0.241	1.159
Panel D: Tax Shifting, Non-Research Universities								
Treat × *Post*	0.052	–0.011	–0.129**	0.063	0.059	0.194***	–0.144**	0.162**
	(0.036)	(0.044)	(0.056)	(0.053)	(0.048)	(0.067)	(0.071)	(0.077)
Observations	6,019	6,019	6,019	6,019	6,019	6,019	6,019	6,019
Baseline Mean (Thousand)	2.739	0.336	0.516	0.840	0.004	0.017	0.241	1.159

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

▸ Main Estimate

Impact on Student Composition by Financial Aid Status

Regression Estimates

Impact on Student Enrollment by Financial Aid Status

	(1)	(2)	(3)	(4)	(5)
	Log Number of Students with:				
	No Fin. Aid	Any Fin. Aid	Pell Grant	Federal Loan	Institutional Aid
Panel A: Tax Avoidance, All Colleges					
Cutoff × *Post*	0.090	0.045*	0.195***	–0.070**	0.006
	(0.134)	(0.026)	(0.028)	(0.032)	(0.042)
Observations	8,388	8,388	8,388	8,388	8,388
Baseline Mean (Thousand)	1.638	2.253	0.552	1.002	0.516
Panel B: Tax Shifting, All Colleges					
Treat × *Post*	0.266**	–0.002	0.149***	–0.285***	0.000
	(0.120)	(0.023)	(0.025)	(0.028)	(0.037)
Observations	8,448	8,448	8,448	8,448	8,448
Baseline Mean (Thousand)	1.654	2.221	0.553	0.801	0.498
Panel C: Tax Shifting, Research Universities					
Treat × *Post*	–0.029	–0.073**	0.155***	–0.445***	–0.041
	(0.151)	(0.033)	(0.040)	(0.041)	(0.041)
Observations	3,696	3,696	3,696	3,696	3,696
Baseline Mean (Thousand)	1.654	2.221	0.553	0.801	0.498
Panel D: Tax Shifting, Liberal Arts College					
Treat × *Post*	0.460***	0.044	0.145***	–0.179***	0.028
	(0.175)	(0.031)	(0.032)	(0.039)	(0.056)
Observations	4,752	4,752	4,752	4,752	4,752
Baseline Mean (Thousand)	1.654	2.221	0.553	0.801	0.498

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Main Estimate

Impact on Student Enrollment by Income Groups (Within Student with Financial Aids)

	(1)	(2)	(3)	(4)	(5)
	Log Number of Students in Income Groups:				
	0–30K	30–48K	48–75K	75–110K	> 110K
Panel A: Tax Avoidance, All Colleges					
Cutoff × *Post*	0.125**	0.141***	0.120**	–0.048	–0.080
	(0.049)	(0.053)	(0.053)	(0.060)	(0.070)
Observations	8,386	8,386	8,386	8,386	8,386
Baseline Mean (Thousand)	0.045	0.044	0.053	0.057	0.169
Panel B: Tax Shifting, All Colleges					
Treat × *Post*	0.104**	0.159***	0.133***	–0.014	–0.143**
	(0.043)	(0.047)	(0.047)	(0.053)	(0.062)
Observations	8,446	8,446	8,446	8,446	8,446
Baseline Mean (Thousand)	0.047	0.045	0.049	0.047	0.133
Panel C: Tax Shifting, Research Universities					
Treat × *Post*	0.183***	0.190***	0.208***	0.016	–0.153
	(0.066)	(0.070)	(0.071)	(0.084)	(0.093)
Observations	3,696	3,696	3,696	3,696	3,696
Baseline Mean (Thousand)	0.047	0.045	0.049	0.047	0.133
Panel D: Tax Shifting, Non-Research Universities					
Treat × *Post*	0.053	0.140**	0.083	–0.033	–0.136
	(0.057)	(0.063)	(0.063)	(0.069)	(0.083)
Observations	4,750	4,750	4,750	4,750	4,750
Baseline Mean (Thousand)	0.047	0.045	0.049	0.047	0.133

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Cost-and-Benefit Analysis

	Cost	Benefit
Tax Avoidance		
Tax Revenue Lost	$31 Million	
Enrollment Opportunity		$350 Million
Cost Shifting		
Tax Revenue		$1,621 Million
Price Increased Paid	$1,435 Million	

Bunching

Pre-Policy

Post-Policy

Restricted Sample to Selective Colleges

- Restricting the sample to institutions that:
  - With Barron's Selectivity Index of Most Competitive, Highly Competitive, or Very Competitive
  - Ranked in the top 100 by U.S. News in 2016
- Some examples are Cornell, Furman University, University of Dallas, Johns Hopkins University, Central College, Westminster College, etc.

	Number of Units	
Sub-sample	Treatment Group	Comparison Group
Tax Avoidance		
Main Results	17	752
Barron's Selectivity Index Above Very Competetive	16	268
US News' Ranking Top 100	14	108
Tax Shifting		
Main Results	24	752
Barron's Selectivity Index Above Very Competetive	20	268
US News' Ranking Top 100	19	108

Restricted Sample to Selective Colleges

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Tax Avoidance			Tax Shifting			
	Enrollment	Assets	Assets per Student	Total Expenditure	Enrollment	Listed Tuition	Tuition Revenue
Panel A: Barron's Rank Above Very Competetive							
Treat × *Post*	0.076***	–0.006	–0.095*	0.005	0.015	0.027*	0.109**
	(0.019)	(0.056)	(0.049)	(0.036)	(0.027)	(0.014)	(0.047)
Panel B: US News' Ranking Top 100							
Treat × *Post*	0.057***	–0.011	–0.088	–0.055	0.009	0.018*	0.042
	(0.020)	(0.062)	(0.054)	(0.050)	(0.025)	(0.010)	(0.050)

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

DDD Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Tax Avoidance			Tax Shifting			
	Enrollment	Assets	Assets per Student	Total Expenditure	Enrollment	Listed Tuition	Tuition Revenue
Treat × *Large* × *Post*	0.181	–0.136	–0.536**	0.002	–0.084	0.100***	0.214
	(0.134)	(0.132)	(0.249)	(0.043)	(0.079)	(0.033)	(0.212)

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

DDD Results: Tax Avoidance

Student Enrollment

Total Net Assets

DDD Results: Tax Shifting

Total Expenditure

Listed Tuition

SCM Results: Tax Avoidance

Student Enrollment

Assets Per Student

SCM Results: Enrollment-Related Tax Avoidance Response

Main Estimate

SCM Results: Assets-Related Tax Avoidance Response

Main Estimate

SCM Results: Tax Shifting

Total Expenditure

Tuition Revenue

SCM Results: Expenditure-Related Tax Shifting Response

Main Estimate

SCM Results: Tuition-Related Tax Shifting Response

Main Estimate

Research Agenda

- Education Policy and Inequality
  - **College Access and School Segregation**: How do governments and institutions ensure equitable access to educational opportunities?
  - **Policy Compliance**: How do schools and colleges respond to government policies, and what factors influence their compliance?
  - **Social Mobility**: How does education contribute to intergenerational social mobility and address socioeconomics inequality?
- Policy Implementation
  - **Administrative Burden in Public Service Delivery**: How can policies be designed to reduce barriers to access?
  - **Information Signal**: How do government policy signals unintentionally impact policy outcomes?
- Diversity and Representation
  - **Impact on Service Delivery**: How do diversity and representation in public and education sectors impact service delivery?
  - **Strategy to Enhance**: How do governments and educational institutions use HR tools to enhance organizational diversity and representation?

Teaching Interest

- **Public Policy**
  - POLS 3810 - Introduction to Public Policy
  - POLS 5100 - Politics and Public Policy
  - POLS 5110 - Social Policy
  - POLS 6020 - Public Policy Analysis
- **Public Administration**
  - POLS 3180 - Introduction to Public Administration
- **Method**
  - POLS 3000 - Introduction to Political Research
  - POLS 6010 - Research Design
- **AP, IR, and CP**
  - POLS 1100 - United States Government and Politics
  - POLS 3150 - State and Local Government
  - POLS 4260 - Asian Government and Politics
  - POLS 3250 - Chinese Government and Politics
- **Courses Development**
  - Education Policy and Politics
  - Administrative Politics
  - Public Budgeting and Taxation