Talent at the top: effects of taxation on college presidents' compensation and performance

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(Job Market Paper)
November 2024
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Abstract

I examine how U.S. college presidents and institutions respond to financial incentives arising from the 2017 Tax Cuts and Jobs Act (TCJA), which introduced a 21% excise tax on nonprofit compensation exceeding $1 million. Using an event study design, I find that total presidential compensation decreased by 26%, a reduction driven by declines in non-taxable and other forms of compensation, and their probability of exit increased by 19%. Presidents adapted their behavior in response to this drop in compensation by prioritizing easily observable financial outcomes instead of student expenditure and success, increasing net incomes by 30% and investment returns by 23%, while the most taxed presidents decreased student net financial aid by 0.56% per additional 1% of their tax burden. The impact of the TCJA also varies by president demographics: female presidents' compensation decreases were twice as large as those found for their male counterparts. I also find that the returns to experience are substantial, as presidents coming from the private sector or government underperform their counterparts with higher education experience.

JEL codes: I23, H22, L31, M52

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I especially thank Judith Scott-Clayton and Alex Eble for their excellent feedback and constant support. I gratefully acknowledge Sebastián Otero, Cristóbal Otero, Carolina Concha-Arriagada, Fabio Sánchez, Dora Gicheva, Julio Rodríguez, Daniel Sparks, Nicolás Rojas, Alejandra Quintana and Alejandra Campos for their comments and suggestions. I thank the participants at the Columbia Economics of Education Seminar, AEFP 2024, and workshop participants at Teachers College. This work received support from the Institute for Humane Studies under grant IHS018564, and multiple small research grants at Teachers College.

1 Introduction

How administrators and institutions respond to monetary incentives is a central question across fields, and one with particular relevance in education. A growing body of evidence underscores the role of effective leadership in improving institutional performance: for example, principal quality is positively associated with student achievement in primary and secondary schools in the U.S. (Bartanen, Grissom, and Rogers (2019), Coelli and Green (2012)). In higher education, where institutions are disproportionately larger and more complex—averaging 162 instructors and 396 staff members (IPEDS, 2022)—the importance of governance quality is even greater. If colleges were classified as firms, their scale would place them in the top 0.5% of U.S. businesses by size, highlighting the challenges in administering institutions of these sizes, as well as the importance of the incentives of individuals at the top of these organizations. Furthermore, support programs generally regarded as effective in fostering student success, such as academic advising and career support, require a competent administration in the background to be effective.

This paper explores two main questions: first, how do institutions respond to increases in the cost of governance? An ideal experiment would randomize the cost of executive salaries across colleges, allowing us to observe institutional responses to these changes. Second, how does the compensation of college presidents affect institutional performance? A natural experiment for this question would vary president salaries randomly and examine the effects on institutional outcomes. I leverage a quasi-experimental approach combining both ideal experiments to address both questions, using the implementation of the 2017 Tax Cuts and Jobs Act (TCJA) as a source of exogenous variation. The TCJA introduced a 21% excise tax levied on insitutions on compensation over $1 million for employees of nonprofit organizations, effectively increasing the cost to institutions of highly paid college presidents. The policy change allows us to observe institutional responses to higher governance costs, and, in turn, the effects of the tax on presidents' absolute compensation allow us to observe how institutional outcomes are affected by changes in compensation.

To address these questions, I use executive compensation data from private colleges and universities' IRS 990 filings, and compile a new dataset of college presidents' educational background and work experience. I use the design of the excise tax to implement an event study design, comparing institutions and presidents who were subject to the tax to those who were not. I find that the TCJA led to a significant reduction in president compensation - an average of 26 percentage points, implying a tax pass-through rate of 123% and the

presence of overshooting or additional bargaining power for the institution. Reductions in compensation are concentrated in non-taxable and other forms of compensation rather than base salaries or bonuses, suggesting that colleges may have opted to shift the composition of executive compensation in response to the new tax. These reductions happen within individual presidents' compensation, ruling out reductions due to composition effects driven by the entrance of new, lower paid presidents. The effects are especially concentrated in the highest-paid presidents, as an increase of 1% in the distance of presidential compensation to the tax threshold reduces total compensation by 0.59%, and other compensation by 1.39%.

Presidents appear to shift their behavior as a response to reduced compensation, First, the tax results in a 19 percentage point increase in the probability of exit for affected presidents, and affects the highest paid presidents more, with an additional 0.28% exit probability per additional 1% distance of presidential compensation to the tax threshold. Second, presidents shift their priorities to easily legible financial outcomes. After the TCJA's implementation, presidents increased net income by 30 percentage points and investment returns by 23 percentage points, while directing an additional 9 percentage points of expenditure to academic support. These outcomes are easily observable by boards, suggesting that presidents may prioritize outcomes that are readily measurable and likely to be valued by board members.

Lastly, the effects of the TCJA vary by president characteristics. Female presidents experienced almost double the reduction in compensation as their male counterparts (40% vs. 23%). Additionally, characteristics such as educational background and previous industry experience are predictive of presidential productivity. Presidents without a PhD or with prior experience outside academia generally underperform, suggesting that academic experience may yield substantial returns in this context. These results underscore the importance of executive characteristics in shaping institutional responses to policy changes and suggest that colleges may benefit from a more nuanced approach to leadership selection and compensation.

This paper contributes to several strands of related literature. In first place, this paper is one of the first to analyze the effects of management quality and incentives in higher education, as part of a broader literature on the effects of management in educational outcomes. This paper is tied both a broad literature finding mixed outcomes of financial incentives in education (Berlinski and Ramos (2020), Biasi (2021), Cowan and Goldhaber (2018), Goodman and Turner (2013), Mbiti et al. (2019), Steele, Murnane, and Willett

(2010)), a literature that finds that leadership quality has positive effects on educational outcomes (Bartanen, Grissom, and Rogers (2019), Branch, Hanushek, and Rivkin (2012), Coelli and Green (2012), Grissom and Bartanen (2019), Miller (2013), Muñoz and Prem (forthcoming)), and a literature that finds mixed effects of interventions aimed at improving managerial quality in education, suggesting substantial sorting and returns to experience (Asim et al. (2024), Beg, Fitzpatrick, and Lucas (2023), Fryer et al. (2017), Muralidharan and Singh (2020), Romero et al. (2022)). This paper ties these strands together, by extending their results to higher education, a setting with larger institutions where leaders face higher-powered incentives. Furthermore, this paper extends a strand of research on the effects of top managers in government settings (Fenizia (2022), Munoz and Otero (2022), Limodio (2021)), by extending their research questions to a space where large private institutions coexist with public institutions in carrying out public functions.

Also, this paper is one of the first to provide causal evidence in a broad literature that studies the correlates of the compensation of college presidents. While there is a broad range of correlates of presidential compensation (Bai (2014), Bartlett and Sorokina (2005), Civera et al. (2024), Cheng (2014), He and Callahan III (2017), Huang and Chen (2013), Hunt, Tandberg, and Park (2019), Monks (2007)), these correlates are vulnerable to the critique raised for similar studies in the private sector by Edmans, Gabaix, and Jenter (2017). As compensation arrangements are endogenous, resulting from the interaction between executives, boards, compensation consultants, and the labor market, they are inevitably correlated with observable and unobservable firm, industry, and executive characteristics. This makes it impossible to interpret any observed correlation between executive pay and firm outcomes as a causal relationship. To address this weakness requires a source of variation affecting executive compensation, which this paper is the first to use in a higher education context.

Finally, this paper contributes to the multiple evaluations of the effects of the Tax Cuts and Jobs Act, and finds results in line with the existing evidence, by providing an evaluation of institutional and individual response to the tax . A broad set of these evaluations focus on the effects of the TCJA on private sector executive compensation (Balsam, Evans III, and Yurko (2019), De Simone, McClure, and Stomberg (2022),Durrant, Gong, and Howard (2021),Luna, Schuchard, and Stanley (2023),Ohrn (2023)), usually finding that executive compensation increased after the implementation of a similar measure that eliminated the performance-based pay exception. Additionally, other studies find that firm-level investment increased as a result of the reform (Crawford and Markarian (2024),Wagner,

Zeckhauser, and Ziegler (2020),Chodorow-Reich et al. (2024)), but that charitable giving was severely desincentivized (Han, Hungerman, and Ottoni-Wilhelm (2024)).

2 Institutional context

2.1 What do college presidents do?

The role of a college president involves setting the overall strategy for the institution and managing the interests of a wide range of stakeholders, with fundraising, public relations, and financial sustainability being usually of central importance. For this reason, the role has been compared by college presidents as comparable to the role of a CEO in a private company. [1]. This role, as a result, involves a large amount of communication, with a college president giving 175 speeches in a given year, all of them geared to motivate and engage all stakeholders into supporting the organizational mission. [2].Furthermore, the role is heavily shaped by the individual style and priorities of presidents. James Duderstadt, president of the University of Michigan, states that

> "Each presidency is characterized by a distinctive style that, over time, tends to affect—or infect—the rest of the institution. Contributing to this style are the way the president approaches the challenge of leadership; the nature of the president's working relationships with students, faculty, and staff; the spirit of teamwork the president inspires among other university leaders; and even the character of university events." Duderstadt (2009)

One of the most important responsibilities for presidents is ensuring the continued financial viability of their institutions. This involves continued relationships with donors and alumni, aiming to secure financial support for the institution - as a result, presidents spend significant time and effort in fundraising and related activities. Additionally, presidents often engage in lobbying efforts, working with local, state, and federal governments to ensure that proposed policies support, or at least do not harm, the institution's mission. For example, this role requires continued engagement with federal regulations, via the process of negotiated rulemaking with the Department of Education in issues that affect students, or negotiations with the National Science Foundation or other external research

1. What Does a College President Do? US News.
2. The President's Many Roles, Inside Higher Education.

funders to ensure financing. Furthermore, their role requires contact with state and local governments, given the existence of local educational support programs, such as loans and grants, and the outsized impacts that institutions can have on local economies. As a result, the role involves a significant amount of travel.

On top of setting strategies and ensuring financial sustainability, college presidents also have to exercise leadership within the campus community, as they are expected to be actively involved in ensuring the welfare of the institutional community. This responsibility involves multiple aspects - managing parental concerns, addressing student issues that may result in disruptive protests, and reconciling the interests of faculty and administration. At institutions where collegiate sports are a major factor, presidents are also expected to address the issue if their teams are underperforming as well. Presidents face additional responsibilities outside of campus as well, as they often are expected to serve in institutional associations, such as the American Association of Universities, as well as possible advisory positions in government or outside paid engagements in the boards of external companies.

The role is year-round, with different pressures depending on the season. During the fall, presidents often deal with incoming students and their issues, while the winter break is focused on receptions and fundraising. During the spring, administrators usually focus on budgets, while, as the academic year is over, the summer is focused on political and regulatory issues. The pressures involved and the increasing amounts of responsibility are leading to shorter tenures, both due to the personal costs involved and the difficulty in maintaining the trust of many, usually antagonistic, actors involved at the same time.

2.2 How are college presidents hired and paid?

Colleges and universities are increasingly relying on executive-search firms, or "head-hunters," to fill key leadership positions, including presidents, provosts, and even deans. This trend reflects a relatively recent shift, with the global search-firm industry now valued at nearly $13 billion, including a U.S. market share of $4 billion. Despite limited research on their role and cost in higher education, these firms have become crucial for managing leadership transitions. Closed searches have surged over the past two decades, driven by concerns that presidential candidates seeking new positions might lose their positions or cause potential donor unrest if their intentions to change positions were discovered. The use of these firms has recently extended as well to other positions, such as vice-presidents,

provosts, and even deans. [3]

After an agreement is made, presidential hiring is increasingly marked by complex contracts that resemble those of corporate CEOs rather than the letters of appointment of traditional academic leaders. While the specifics of these agreements are often difficult to obtain—especially at private universities— Finkelstein and Wilde find, using a sample of 116 public university presidential contracts, that presidential contracts have grown more intricate, with terms and incentives mirroring those found in CEO contracts. This "CEO-ization" of the university presidency highlights a shift in how university leaders are compensated and managed, reflecting a more corporate approach to higher education governance. [4]

University presidential contracts are typically multiyear agreements, with initial terms ranging from three to five years and renewals commonly extending for five years. Compensation includes a base salary, deferred compensation, and tax-optimized agreements. Incentives such as signing, performance, retention, and completion bonuses are often determined by the president and approved by the governing board, though they are rarely made public or defined in measurable terms. Presidents also receive extensive benefits, including life and disability insurance, health coverage, and special retirement benefits, often structured to minimize tax liability via the addition of 'gross-up' payments intended to offset any remaining tax liabilities. Perks like housing and cars are common, as they are required for fulfilling their travel and hosting duties. Contracts usually provide provisions for outside activities, including speaking engagements and paid corporate directorships, which may require board approval. Evaluations typically involve the president setting annual goals for board review, but generally use general language. Termination clauses frequently guarantee payouts, sometimes for the full remaining contract term, or at a maximum of one year's salary.

3 Data

I use compensation data from the Chronicle of Higher Education between 2012 and 2019, along with IPEDS data on financial and academic outcomes for colleges. This period of time allows me to compare compensation trends before and after the implementation of the TCJA. Below, I describe the data sources and sample construction and present descriptive

3. Hiring a Search Firm? Do Your Homework First. Chronicle of Higher Education.
4. The CEO-ization of the President's Contract. Inside Higher Ed.

statistics.

3.1 IRS 990 filings

The Chronicle of Higher Education provides executive compensation data for private colleges between 2012 and 2019, based on the IRS 990 filings for each college listing highly compensated and key employees, as defined by the IRS, in the respective Schedule J. This data, available at the individual level, provides individual names, titles, occupational categories (presidents, athletic employees, academics, administrators, medical personnel, lawyers, and former employees), and total compensation. Additional data is available for presidents: their compensation broken down by base salary, bonuses, other compensation, non-taxable compensation, and deferred compensation, along with their start and end dates in the position. This dataset provides a detailed panel of key employees, providing insight into institutional governance and compensation. The Chronicle, however, does not provide data on the universe of private colleges and universities, reporting data only for colleges with at least 100 million in annual revenue.

The Chronicle changed its criteria for inclusion into their data in 2017, from institutions with the largest 500 endowments to institutions with annual revenues of at least $100 million, leading to significant attrition in their original data. To ensure that my results are not driven by reporting or selection issues, I balance the panel to institutions that report at least one year after 2017. This data restriction leads to a sample with 262 institutions and 457 presidents spread between 2012 and 2019. [5] Additionally, all compensation information is presented in 2018 constant dollars.

3.2 IPEDS

I complement the Chronicle compensation data with IPEDS data for colleges between 2012 and 2019, to test the relationship between changes in compensation and the presence of effects on institutional-level outcomes.

As presidents, by their own admission, tend to focus on financial outcomes, I focus on financial outcomes that presidents are more likely to be able to influence - both by setting

5. This restriction leads to dropping 377 colleges out of 666, 56% of all the institutions that ever appear in the sample. However, these dropped colleges are disproportionately small, affecting a minority of students. Out of a total student population of 1.447.054 students in 2017, this restriction leads to dropping 27% of them.

the strategic direction of the institution, and by spending priorities. Specifically, I focus on:

- Total revenue
- Total expenditures
- Net income (revenues minus expenditures)
- Tuition revenue
- Returns on investments.

However, additional resources are not necessarily translated into increased access to resources for students, as they can be directed into overhead or other institutional goals depending on policy priorities. To address this issue, I use the following measures:

- Total expenditure in instruction per capita: includes expenses for instruction, across both credit and noncredit activities.
- Total expenditure in research: includes activities specifically organized to produce research outcomes and commissioned by an agency either external to the institution or separately budgeted by an organizational unit within the institution.
- Expenditure in academic support: includes libraries, administration, personnel development, curriculum development, and IT.
- Net grant aid per capita, defined as the portion of scholarships and fellowships granted by an institution that exceeds the amount applied to institutional charges such as tuition and fees or room and board.

Table 1 describes the components of compensation and outcomes for the sample. Treated institutions, defined as institutions paying their presidents $1M or more in 2017, offer substantially higher presidential compensation, with a mean of $1,284,677 compared to $553,128 for control institutions. The first fact is that college presidents receive most of their compensation as base salaries, with bonuses being less than 10% of total mean compensation and the median bonus being zero. This is consistent with the structure of the job, as multiple tasks are required and performance monitoring by the board is

imperfect, leading to contracts where salary is the main driver of total compensation, and consistent with previous research. Significantly, other aspects of compensation, such as other kinds of compensation or non-taxable (in kind) compensation, play a larger role than bonuses, accounting for between 14% and 20% of total compensation. Turnover rates are slightly lower in the treated group (8%) than in the control group (13%), possibly reflecting greater stability in leadership. Treated institutions also report significantly larger financial resources, with mean total assets of $7,384.32 million compared to $1,097.81 million in the control group, and much higher total liabilities and endowments. Revenue generation is stronger among treated institutions across tuition, public funding, private funding, and investment returns. Finally, treated institutions spend more per capita on instructional and academic support, as well as research, suggesting a greater investment in educational and research outcomes.

However, this sample is not representative of the universe of non-profit or public institutions - and any intuitions about the presidents of these institutions is not likely to extend to the presidents of smaller non-profit or public insitutions. Table 2 compares institutions in the sample with the universe of private non profit institutions, and the universe of public institutions, using available IPEDS data on institutional characteristics, enrollment, and finances. Treated institutions are much larger, with an average enrollment of 15,485, compared to 7,689 in the sample, 1,747 in all non-profits, and 8,964 in all public institutions. The racial composition shows that treated institutions have a higher percentage of Asian students (10.12%) but lower percentages of Black and Hispanic students compared to the broader population of non-profits and public institutions. The treated institutions also have a greater focus on graduate education, with 39.86% of their students in post-graduate programs, compared to just 6.46% in public institutions. Unlike public and other non-profit institutions, treated institutions do not have open admissions, with a highly selective average admission rate of 35.27%. Financially, treated institutions are far wealthier, with average assets of $9,094 million and endowments of $4,818.9 million, significantly surpassing other groups. Finally, their revenue and expenses are substantially higher, with treated institutions earning an average net income of $243.4 million, compared to only $2.7 million among all non-profit institutions.

Table 1: descriptive statistics, compensation and outcomes

	Control		Treated		Full sample	
	Mean	Median	Mean	Median	Mean	Median
Total compensation	553129	495001	1284677	1088551	719293	560739
Turnover	0.13	0	0.08	0	0.12	0
Base salary	412826	399458	792341	769145	499029	437489
Bonuses	34157.6	0.05	140073	0.05	58215.3	0.05
Non-taxable compensation	47329.8	36776.1	92713.1	62556.3	57638.2	39319.8
Other compensation	57776.3	17240.6	257134	83327.5	103059	22899
Total assets	1097.81	574.13	7384.32	2848.58	2534.11	701.92
Total liabilities	288.96	168.4	2246.84	1016.88	736.28	199.83
Total endowment	605.79	230.99	3922.62	1363.28	1360.5	299.2
Total revenue	244.7	151.66	1883.28	871.51	619.08	177.04
Total expenditures	219.34	137.73	1692.18	806.38	555.85	160.79
Net income	25.36	6.76	191.11	41.54	63.23	9.04
Tuition revenue	110.49	76.91	352.18	265.22	165.39	92.49
Public funding	15.28	2.81	253.57	112.39	69.41	3.44
Private funding	27.92	14.8	245.84	104.81	77.42	18.16
Investment return	40.27	9.42	311.34	56.96	101.84	12.62
Instructional expenditure per capita	99515.9	79446.2	333983	171818	153651	87850.1
Research	14.09	1.5	284.38	135.76	75.49	2.17
Academic support	24.11	14.62	140.65	62.36	50.58	17.05
Net aid per capita	798.74	0	6216.47	0	2049.61	0
Observations	467		1589		2056	

3.3 Who are the college presidents?

I manually collected comprehensive education and employment data for all the presidents in my sample. This dataset includes detailed information on their educational background, specifying the institutions and fields of study for their undergraduate and advanced degrees. Additionally, I gathered data on their professional experience, documenting their roles and institutions in their two most recent positions.

Table A-1 describes presidents' levels of education. The table shows the distribution of college presidents' highest degrees and their fields of study, providing insight into the academic backgrounds of leaders in higher education. The most common degree held by college presidents is a PhD, with 1,007 individuals holding one. Among these, 17.78% had

Table 2: comparison of institutions in the sample with the universe of private non-profit and public institutions

	Treated	Sample	All nonprofits	All public
Enrollment	15485	7689	1747	8964
Percent Black	7.94%	9.11%	13.28%	13.37%
Percent Hispanic	9.45%	9.36%	9.28%	13.53%
Percent Asian	10.12%	6.48%	3.90%	4.06%
Percent Female	52.91%	56.58%	55.80%	57.63%
Percent post-grad	39.86%	26.05%	28.22%	6.46%
Open admissions	0.00%	1.49%	18.73%	65.61%
Admission rate	35.27%	53.24%	78.48%	89.45%
Assets	9094.0	2307.7	191.4	93.0
Liabilities	2500.7	643.1	59.4	180.7
Endowment	4818.9	1178.3	97.6	96.4
Revenue	2350.6	587.2	59.8	207.9
Expenses	2107.1	500.6	57.1	197.5
Net income	243.4	86.6	2.7	10.4
N	53	261	1971	1725

Source: IRS 990 filings and IPEDS component, 2012-2019.

unspecified fields ("Unavailable"), while Education (16.09%) and Social Sciences (11.22%) were the next most represented fields. Philosophy and Religious Studies (9.24%) and Psychology (5.46%) also made up significant portions. Notably, fields like Engineering (3.97%), History (3.87%), and Business (2.58%) are less common but still relevant. For those with an MA (93 presidents), the most frequent field was Business, Management, Marketing, and Related Support Services, accounting for 31.18%. Health Professions and Education followed at 10.75% and 8.60%, respectively. In contrast, JD holders (136 presidents) had no detailed breakdown by field, and for BA holders (92 presidents), the vast majority (86.96%) had unspecified fields of study.

Table A-2 provides an overview of the institutions where college presidents obtained their highest degrees, broken down by the degree level (PhD, JD, and MA). The data suggests a concentration of degrees from elite universities but also highlights a wide variety of institutions contributing to leadership in higher education. For PhD holders, Harvard leads with 5.09% of all PhDs awarded, followed by the University of Pennsylvania (3.27%) and Yale (3.18%). Despite these prominent institutions, a significant portion of PhD holders

(56.45%) received their degrees from other universities, and 18.64% of PhD data is listed as "Unavailable." Among JD holders, Harvard again stands out, accounting for 13.97% of all law degrees, with Yale (7.35%) and the University of Virginia (4.41%) following. While top law schools are well-represented, nearly 39% of JDs were awarded by other institutions, and 17.65% of JD data is unavailable. For MA degrees, Harvard (8.60%) and the University of Iowa (4.30%) are prominent, with Yale and Drexel University also contributing. A notable 25.81% of MA degree data is unavailable, and 40.86% of presidents received their MA from other institutions.

Table A-3 presents the last role of college presidents, highlighting that the majority of college presidents come from academic leadership roles, particularly from positions such as Vice President, President, Provost, and Dean. A significant 74.85% of presidents had their last job in academia. Of these, 28.67% were Vice Presidents, 25.55% were already serving as Presidents, 18.21% were Deans, and 18.01% were Provosts. Smaller percentages held positions as Directors, Chairs, Professors, or other academic administrative roles. Outside academia, 3.61% of presidents previously worked in government roles, while 3.77% came from the non-profit sector, and 10.02% transitioned from the private sector. A smaller portion, 1.88%, had their last job in religious organizations. For 5.87% of the presidents, the data on their prior work experience is unavailable.

4 Effects of the TCJA

4.1 Policy

Congress undertook a wide-ranging revision of the tax code in 2017 via the Tax Cuts and Jobs Act (TCJA), with provisions affecting the non-profit sector - and, by extension, private colleges and universities, since they are classified as nonprofits (501(c)(3) organizations). While some measures are aimed at individuals, such as changes in the tax deduction for charitable donations and an increase in estates exempt from estate tax, most measures are aimed at closing loopholes for nonprofit organizations, putting them on a similar footing to private sector firms. In first place, the TCJA eliminated deductions for unrelated business income obtained by nonprofits carrying out revenue-raising activities outside their core mission, disallowing offsetting revenue from unrelated businesses with losses from another unrelated business to minimize tax burdens. In second place, the TCJA imposed a 1.4%

excise tax on the net investment income of colleges of universities with large endowments, affecting institutions with at least 500 students and at least $500.000 in investment assets per student. This excise tax applies to approximately 40 institutions in the country and is intended to equalize the tax treatment between foundations and universities, as foundations were already subject to a similar excise tax. Finally, the TCJA imposed a 21% excise tax on remuneration in excess of 1 million for covered employees. This threshold is constant and is not indexed to inflation. On average, this tax affects the top 20% of the compensation distribution.

The implementation of this excess compensation tax follows the given stages for non-profit organizations, as defined in Section 501(a). The identification of covered employees falls to the individual organization, regardless of the remuneration paid to any of its employees. The IRS defines covered employees as any one of the 5 highest compensated employees in the organization for the year, or any employee who has ever been defined as a covered employee. The excise tax applies to all aspects of compensation, including compensation received from related organizations, but excludes Roth IRA contributions and any compensation to medical professionals for medical services. If an employee is subject to the tax, the nonprofit organization calculates the amount of tax due, pro-rating if necessary its contribution to the total due if it does not pay the total remuneration of the employee.

4.2 Effects on compensation

To identify the effects of the TCJA on presidents' outcomes, I implement an event study at the institution level of the form

$$y_{ist} = \sum_{t \neq 2017} \beta_t \times T_{st} \times I(t = t) + \gamma_s + \eta_t + \gamma_s \cdot t + e_{st} \tag{1}$$

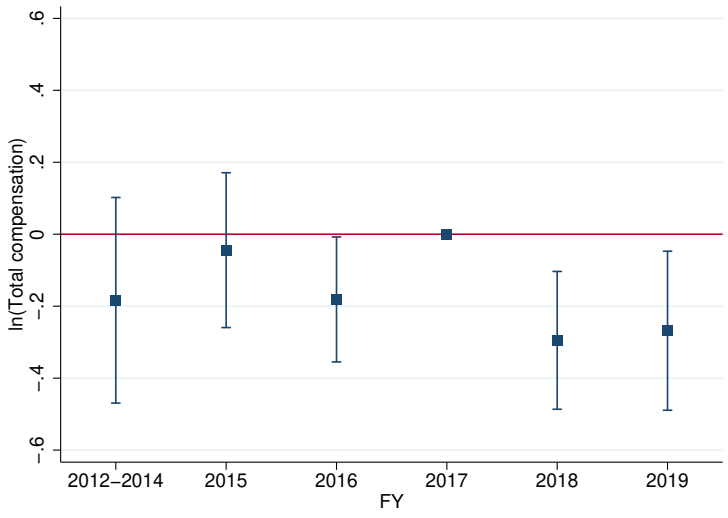
where y_{st} is the outcome for institution s in year t, T_{ist} is an indicator variable for whether the institution was paying its president $1M or more in 2017, γ_s is an institution fixed effect, η_t is a year fixed effect, and $\gamma_s \cdot t$ is an institution-specific time trend. The coefficient of interest, β_t, captures the average difference in outcomes for employees subject to the excise tax before and after its implementation. The reference year is 2017, the year the TCJA was passed, as its implementation began in 2018. I bin all years prior to 2014 in a single coefficient, and cluster standard errors and the institution level to address temporal

correlation issues. It is worth recalling that, due to the inclusion of unit-specific trends, the counterfactual becomes the outcome compared to the reference period, net of underlying linear trends in the counterfactual between that period and now - i.e., a comparison within individuals, instead of across the treatment and control group. (Miller (2023))

The key identifying assumption permitting a causal interpretation of the β_t parameters is that the compensation of covered employees subject to the tax would have trended similarly to the compensation of other employees, absent the introduction of the excise tax. This assumption is likely to hold, as the passage of the TCJA was unexpected prior to the 2016 election, making it unlikely that institutions anticipated the reform. Additionally, the event study results show no evidence of anticipatory effects for college presidents, providing additional evidence in favor of the parallel trends assumption.

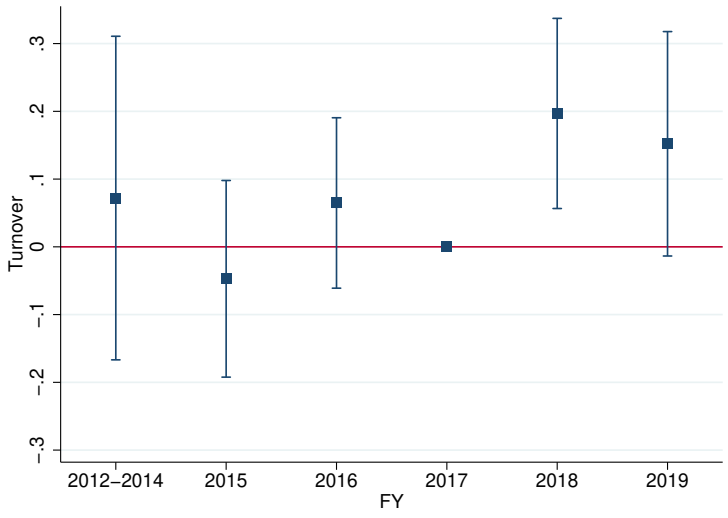
Figures 1 and 2 present point estimates and confidence intervals from estimating Equation 1 for log total compensation and presidential turnover as outcomes. Total compensation decreases markedly, falling by 29 percentage points in the first year and by 26 percentage points with respect to the baseline year. Additionally, turnover also increases significantly - institutions affected by the TCJA are more likely to see presidential turnover, by 19 percentage points in the first year and 15 percentage points in the second year. These patterns are consistent with the effects of a payroll tax, or an increase in the cost of specialized skills: institutions shift this cost increase on to their employees, or attempting to replace them for lower-paid alternatives. Furthermore, these results imply an institutional tax elasticity of -1.23.

Figure 1: Effects of the TCJA on compensation



Notes: Regressions include institution and year fixed effects and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

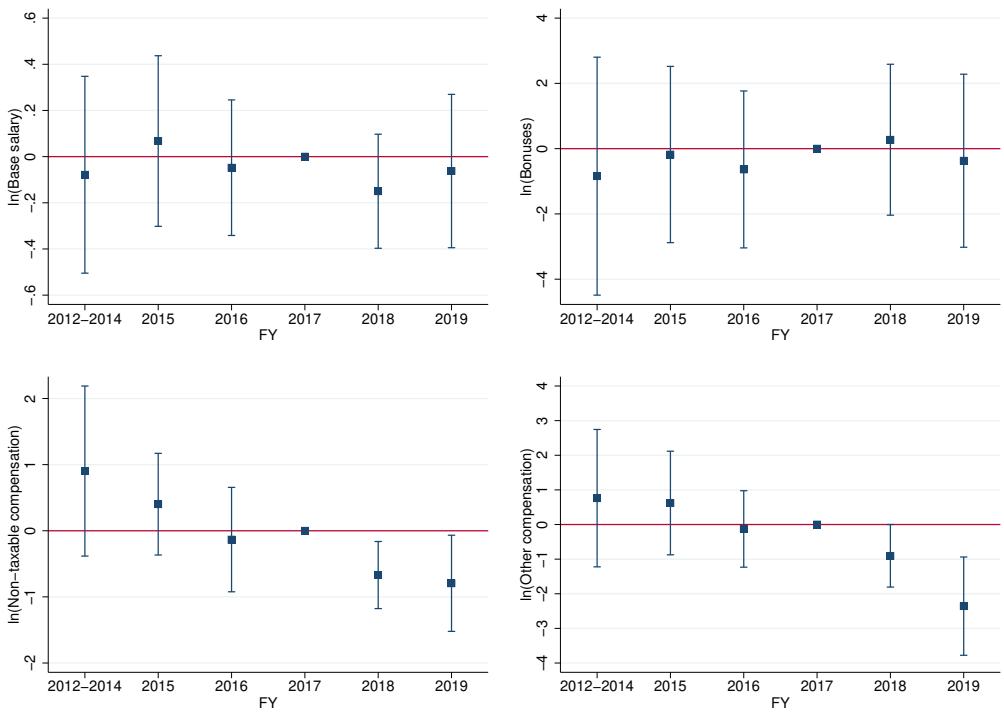
Figure 2: Effects of the TCJA on turnover



Notes: Regressions include institution and year fixed effects and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Figure 3 presents the above results for the disaggregated components of presidential compensation - a result of interest, as the TCJA affects primarily non-taxable and other forms of compensation, instead of top-line salaries and bonuses. Non-taxable compensation falls by 0.66 log points in the first year (49%), and 0.79 log points in the second year (55%). Furthermore, other compensation falls significantly, by 0.9 log points in the first year (60%), and 2.35 log points in the second year (91%). However, base salaries and bonuses are unaffected. This pattern is consistent with both the compensation structure and the objectives of the TCJA - as compensation agreements tend to be rigid, especially regarding salaries and bonuses, institutions adjust via less transparent aspects of compensation.

Figure 3: Effects of the TCJA on compensation by components



Notes: Regressions include institution and year fixed effects and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Individual vs. composition effects

As the above approach is carried out at the institution levels, results are likely to be composed of within-president changes in compensation, and changes in average compensation caused by presidential turnover, as new presidents are lower-paid on average. [6] To address

6. A complementary approach to avoid composition effects is to keep only the institutions in the sample who did not change their presidents after the implementation of the TCJA and re-estimate the above models. The results of this approach are similar to the results in this section, and are available upon request.

this, I estimate an event study of the form:

$$y_{ist} = \sum_{t \neq 2017} \beta_t \times T_{ist} \times I(t = t) + \gamma_s + \delta_i + \eta_t + \gamma_s \cdot t + e_{ist} \quad (2)$$

where y_{ist} is the outcome for individual i in institution s in year t, T_{ist} is an indicator variable for whether the institution was paying its president $1M or more in 2017, γ_s is an institution fixed effect, δ_i is an employee fixed effect, η_t is a year fixed effect, and , and $\gamma_s \cdot t$ is an institution-specific time trend. As before, I bin all years prior to 2014 in a single coefficient, and cluster standard errors and the institution level to address temporal correlation issues.

Appendix Figures A-1 and A-2 present point estimates and confidence intervals from estimating Equation 1 for log total compensation and presidential turnover as outcomes. As before, total compensation for individual presidents decreases, falling by 23 percentage points in the first year and by 20 percentage points with respect to the baseline year. Additionally, turnover also increases at the individual level - presidents at institutions affected by the TCJA are more likely to see presidential turnover, by 14 percentage points in the first year. As the results are similar to institution-level results, it is plausible that results are driven by individual changes in compensation, instead of composition effects due to president turnover. Furthermore, this implies a smaller individual tax elasticity, of -1.095, compared to an institutional tax elasticity of -1.38.

Appendix Figure A-3 presents the above results for the disaggregated components of presidential compensation - a result of interest, as the TCJA affects primarily non-taxable and other forms of compensation, instead of top-line salaries and bonuses. Non-taxable compensation falls by 0.56 log points (43%) in the first year, and 0.75 log points (53%) in the second year. Furthermore, other compensation falls significantly, by 1.08 log points (67%) in the first year, and 2.05 log points (88%) in the second year. However, as before, base salaries and bonuses are unaffected.

4.3 Threats to identification and robustness tests

Selection into treatment issues

A first threat to identification is the fact that institutions or presidents may strategically alter their compensation in order not to be affected by the tax, especially for individuals close to the cut-off. For example, a president earning marginally more than a million dollars would be worse off than a president just under this threshold, and manipulate their compensation structure in order to avoid being subject to the tax. This manipulation would change the composition of the treatment and control groups, changing the interpretation of the estimates and possibly affecting their respective trends. However, there are no presidents who earned more than a million dollars in 2017 or before, and who subsequently earned less than this amount during the following years at the same institution - avoiding biases due to changes in the composition of the treatment and control group.

Anticipation effects

This identification strategy could be biased if institutions anticipated the tax increase, giving them time to adjust by preemptively altering presidential compensation patterns or dismissing particularly high-paid presidents. However, it is likely that this tax was unexpected for several reasons. First, the most discussed provision of the TCJA regarding academia was the introduction of the endowment tax, while the excess compensation tax received minimal attention, and the elimination of deductions for unrelated business income was scarcely mentioned. A source even referred to the excess compensation tax as "another cost of doing business" that would be incorporated into the already substantial expenses of hiring top employees, alongside search fees, salaries, and benefits packages [7]. Second, the TCJA did not immediately go into full effect; although colleges began complying with the new law, the IRS issued additional guidance in 2018 that clarified the definition of covered employees and the payments subject to the tax [8]. Lastly, the pretrends in the event study design do not show a clear trend, further suggesting that the legislation and its effects were not anticipated.

7. Tax Law's Effects on Colleges Unfolding. Inside Higher Ed.
8. Interim Guidance Under Section 4960

Joint test of pre-treatment coefficients

Testing the parallel trends assumption by individual inspection of the pre-treatment coefficients is likely to involve issues with low statistical power to detect any violation (Roth (2022)). In first place, I implement the Freyaldenhoven et al. (2021) recommendation and implement a joint test for all pre-treatment coefficients to be jointly equal to zero. Appendix Table A-4 presents the results of this approach. I find that pre-treatment coefficients are not jointly statistically significant at the 5% level for presidential turnover, total compensation, base salaries, bonuses, and non-taxable compensation, suggesting that the parallel trends assumption holds in this setting.

Rambachan and Roth (2023) sensitivity analysis

Finally, I implement the Rambachan and Roth (2023) approach based on bounding the true treatment effect, using the intuition that pre-trends are informative about violations of parallel trends. Their central insight is that the violations of parallel trends in the post-treatment period cannot be substantially larger than those in the pre-treatment period, by some constant M larger than the maximum violation of parallel trends in the pre-treatment period. The value of $M = 1$, for instance, imposes that the post-treatment violation of parallel trends is no larger than the largest pre-treatment violation of parallel trends. This approach can be used for sensitivity analyses, by reporting different confidence intervals for the treatment effect for different values of M, and reporting the breakdown value of M - the largest value for which the treatment effect is still statistically significant.

I present the results of this analysis in Appendix Figures A-4, A-5, and A-6 for a standard 5% significance level. I find that the critical M values are close to 0.15 for presidential turnover and 0.5 for total compensation, indicating that for the result to remain statistically significant the maximum violation of parallel trends in the post-treatment period can be, at most, 15% and 50% of the maximum pre-treatment violation of parallel trends. For the statistically significant results on the effects of the TCJA (other compensation and deferred compensation paid), I find that the critical M value is close to 0.55 for non-taxable compensation and 1.25 for other compensation. As the results are driven by changes in non-taxable and other compensation, it is possible to suggest that they are robust to possible deviations from the parallel trends assumption in the post-treatment period.

I repeat this analysis for the specification including president fixed effects in Appendix Figures A-7, A-8, and A-9 , and find broadly similar results - the critical M values are close to zero for presidential turnover and 0.3 for total compensation, indicating that for the result to remain statistically significant the maximum violation of parallel trends in the post-treatment period can be, at most, zero and 30% of the maximum pre-treatment violation of parallel trends. For the statistically significant results on the effects of the TCJA (other compensation and deferred compensation paid), I find that the critical M value is close to 0.2 for non-taxable compensation and 1 for other compensation.

Two-way fixed effects approach

I also estimate a standard two-way fixed effects model of the form:

$$y_{st} = \alpha(D_{st} \times Post_{st}) + \gamma_s + \eta_t + \gamma_s \cdot t + e_{st} \tag{3}$$

where y_{st} is an outcome for institution s in year t, D_{st} is a indicator for whether the institution paid its president \$1M in 2017, $Post_{st}$ is an indicator for years after policy implementation, γ_s is an institution fixed effect, η_t is a year fixed effect, and $\gamma_s \cdot t$ is an institution-specific trend. This approach is complementary to the event study approach described above, but involves trade-offs, as it provides additional power for identifying treatment effects for the full post-treatment period, at the cost of averaging any existing dynamic treatment effects.

Appendix Figure A-10 describes the result of this model. This specification finds that total compensation decreases by 26 percentage points, with turnover increasing by 19 percentage points, while non-taxable compensation falls by 44 percentage points and other compensation falls by 1.36 log points (75%). A similar specification in Appendix Figure A-11 with the addition of president fixed effects to address composition effects, finds similar results: total compensation decreases by 17 percentage points, with turnover increasing by 13 percentage points, while other compensation falls by 1.21 log points (71%).

4.4 Effects on institutional outcomes

Based on the effects of the TCJA on presidential compensation and turnover, and the fact that presidents explain a significant fraction of variation in academic and financial out-

comes, I test whether the introduction of the TCJA affected these institutional outcomes. I use a standard two-way fixed effects model of the form:

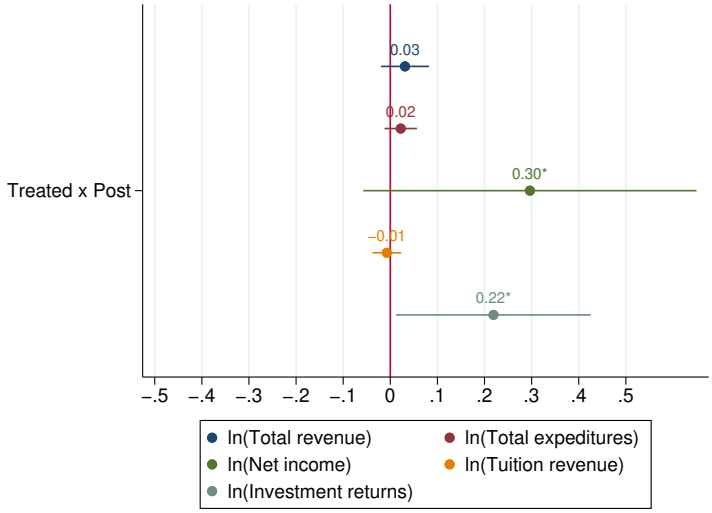
$$y_{st} = \alpha(D_{st} \times Post_{st}) + \gamma_s + \eta_t + \gamma_s \cdot t + e_{st} \tag{4}$$

where y_{st} is an outcome for institution s in year t, D_{st} is a indicator for whether the institution paid its president \$1M in 2017, $Post_{st}$ is an indicator for years after policy implementation, γ_s is an institution fixed effect, η_t is a year fixed effect, and $\gamma_s \cdot t$ is an institution-specific trend. Standard errors are clustered at the institution level.

First, I test whether the parallel trends assumption is appropriate in this setting, by estimating an event study design (not reported) and reporting the joint test of pre-treatment coefficients being jointly equal to zero. Table A-5 presents the results of this test, finding that the test is not statistically significant for any of the outcomes, providing evidence in favor of the parallel trends assumption.

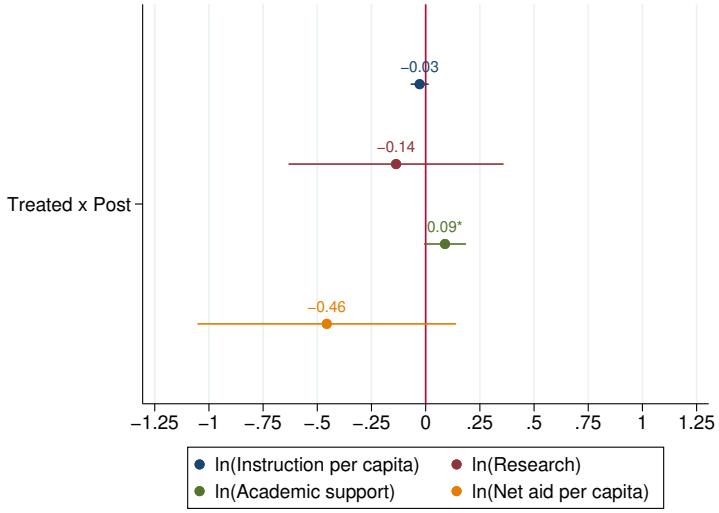
Figure 4 presents the coefficients of this model for revenue composition, and Figure 5 presents the coefficients of this model for expenditure composition. On average, presidents increased net income (revenues minus expenditures) by 30 percentage points, while investment returns also increased by 22 percentage points. Furthermore, expenditures were also affected, as academic expenditures increased by 9 percentage points. This result implies that, when faced with a worsened bargaining position, due to their increased cost to the institution, presidents deliver improvements on selected, easily legible outcomes. In first place, presidents improve revenues via the most flexible tool available to them - investment returns, as other components of revenue adjust more slowly. In second place, presidents improve net incomes, an easily observable financial metric. Third, presidents increase expenditures on administration and programs that are easily legible to the board, instead of investing on student support projects that may be less visible.

Figure 4: effects of the TCJA on revenues



Notes: coefficients from a two-way fixed effect regression on a binary treatment indicator including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure 5: effects of the TCJA on expenditures



Notes: coefficients from a two-way fixed effect regression on a binary treatment indicator including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Appendix Figure A-12 presents the coefficients of this model for revenue composition, and Figure A-13 presents the coefficients of this model for expenditure composition, for individual presidents, excluding possible composition effects. On average, investment returns increased by 23 percentage points, while there were no statistically significant effects on expenditures, showing broadly similar patterns as before. However, the null result on expenditures points towards new presidents, instead of existing ones, increasing expenditures as a means to shore up their new positions inside the institution.

4.5 Heterogeneous effects by treatment intensity

As higher-paying institutions have a larger tax burden, they face higher absolute costs and different incentives than less-affected institutions. As a result, higher-paying institutions may react differently to the tax. To address this issue, I test whether the introduction

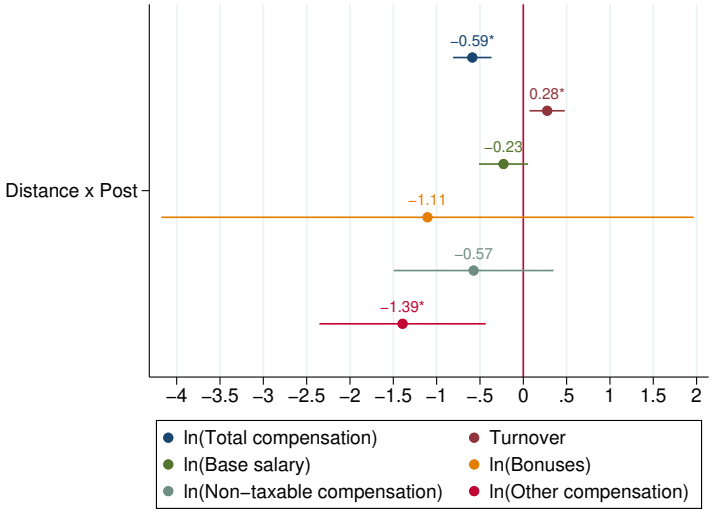
of the TCJA affected institutional compensation and outcomes differently based on their prospective absolute tax costs. I use a standard two-way fixed effects model of the form:

$$y_{st} = \alpha(Distance_{st} \times Post_{st}) + \gamma_s + \eta_t + \gamma_s \cdot t + e_{st} \tag{5}$$

where y_{st} is an outcome for institution s in year t, D_{st} is the distance from the \$1M threshold of an institution's president salary in 2017, $Post_{st}$ is an indicator for years after policy implementation, γ_s is an institution fixed effect, η_t is a year fixed effect, and $\gamma_s \cdot t$ is an institution-specific trend. Standard errors are clustered at the institution level.

Figure 6 presents the coefficients of this model for presidential compensation outcomes. On average, an additional 1% distance from the threshold reduces total compensation by an extra 0.59 percentage points, and increases the probability of turnover by 0.28 percentage points. Furthermore, other compensation falls by an additional 1.39 percentage points for each additional 1% distance from the threshold.

Figure 6: effects of the TCJA on compensation, continuous treatment



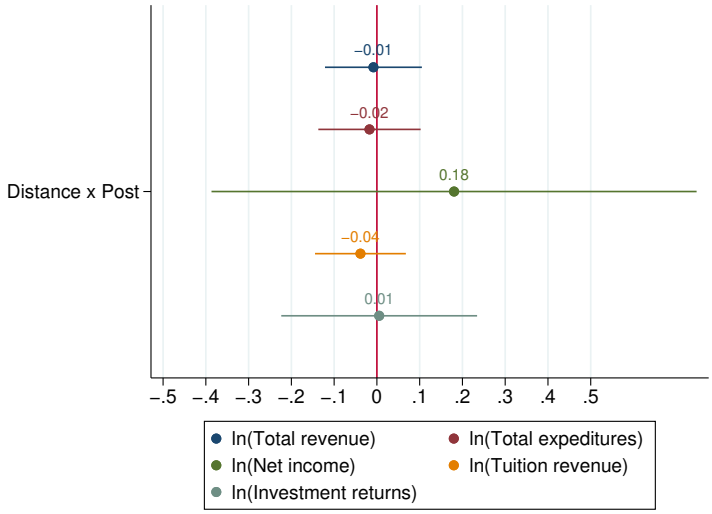
Notes: coefficients from a two-way fixed effect regression on a continuous treatment measure including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Appendix Figure A-14 presents the coefficients of this model for presidential compensation outcomes, including individual president fixed effects. On average, an additional 1% distance from the threshold reduces total compensation by an extra 0.41 percentage points, but does not affect the overall probability of turnover. Furthermore, other compensation falls by an additional 1.30 percentage points for each additional 1% distance from the threshold.

Figure 7 presents the coefficients of this model for revenue composition, and Figure 8 presents the coefficients of this model for revenue composition. On average, there are no effects on revenues or revenue composition, and few effects on expenditure composition. The only notable result is that an additional 1% distance from the threshold reduces net aid per capita by an extra 0.59 percentage points. As net aid is aid after institutional

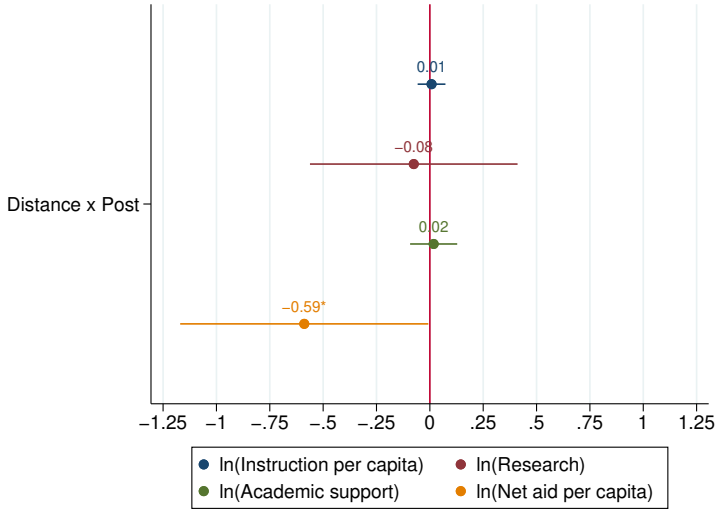
charges, this result implies additional incentives for cost-cutting via either reducing aid (unlikely) or increasing institutional charges to match existing grant aid.

Figure 7: effects of the TCJA on revenue, continuous treatment



Notes: coefficients from a two-way fixed effect regression on a continuous treatment measure including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure 8: effects of the TCJA on expenditures, continuous treatment



Notes: coefficients from a two-way fixed effect regression on a continuous treatment measure including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Appendix Figure A-15 presents the coefficients of this model for revenue composition, and Appendix Figure A-16 presents the coefficients of this model for revenue composition, including individual president fixed effects. As before, there are no effects on revenues or revenue composition, and few effects on expenditure composition. The only notable result is that an additional 1% distance from the threshold reduces net aid per capita by an extra 0.56 percentage points, close to the earlier result. The similarity implies that this policy is not due to new presidents changing institutional priorities by cutting costs, but instead is due to existing presidents adjusting the use of existing resources.

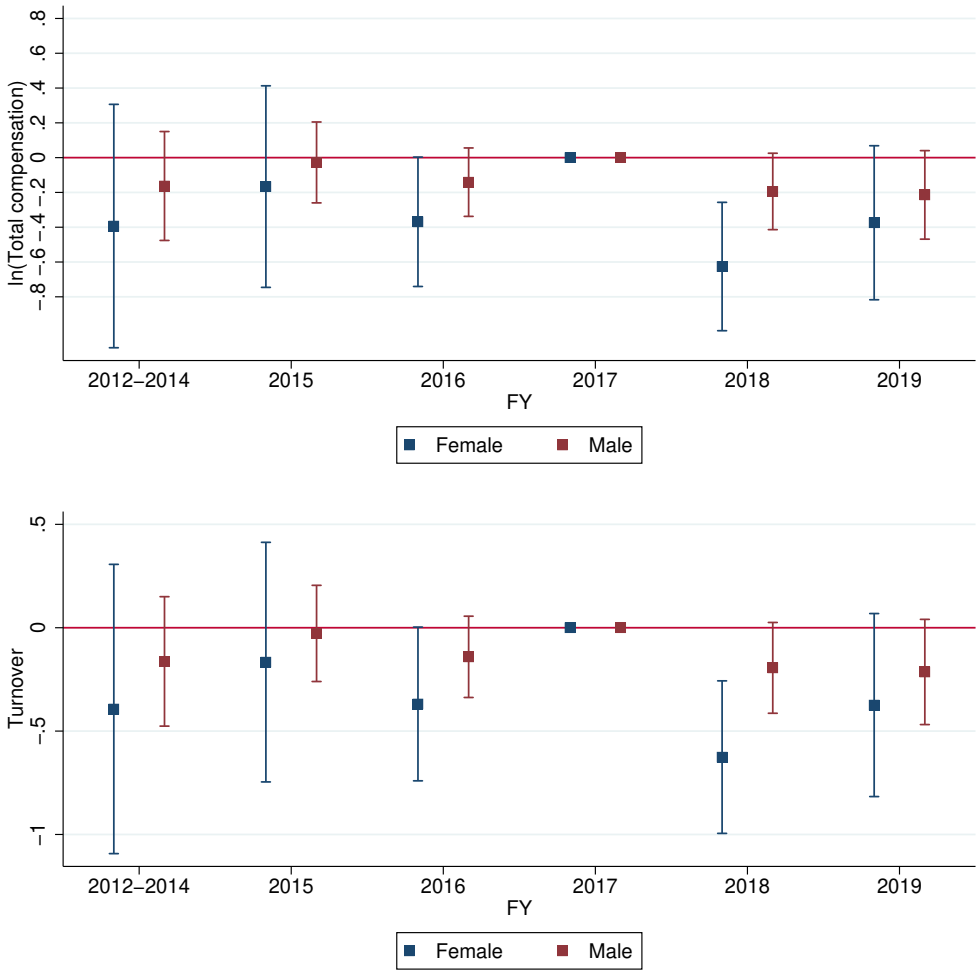
4.6 Heterogeneous effects by president characteristics

Examining how presidents' characteristics affect outcomes is also valuable, since factors as demographics, education, and experience can mediate the individual effects of the TCJA

via their skills, bargaining power and outside options. Demographic circumstances may affect presidents' bargaining, while presidents with more relevant experience or different qualifications may have better institutional management skills or outside options, leading to stronger leverage in pay discussions and different effects of the tax by group. In this setting, I use the original event study specification, using the institution as the level of analysis.

Figure 9 presents the results of an event study approach by gender on total compensation and turnover. I find that the effects of the TCJA are disproportionately concentrated on female presidents, with their compensation falling between 40 and 50 log points (approximately 33-40%). Effects for male presidents are closer to the overall result, with their compensation falling by 21%. However, beyond a dip on the probability of turnover for female presidents in the first period, there are no significant patterns by gender on turnover. This result is likely to reflect imbalances in bargaining power by gender, as female presidents may face either direct discrimination or weaker outside labor market options.

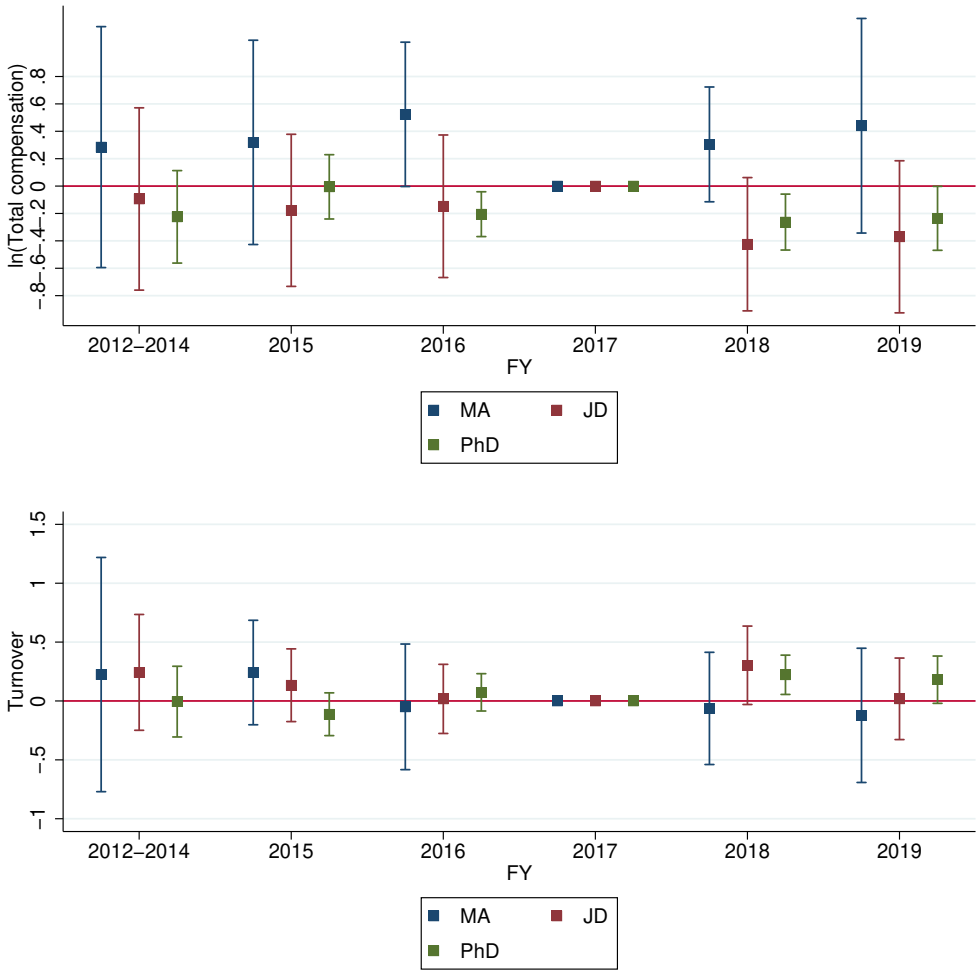
Figure 9: effects of the TCJA on compensation and turnover by gender



Notes: regressions include institution and year fixed effects and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Figure 10 presents the results of an event study approach by education levels on total compensation and turnover. The effects of the TCJA are disproportionately concentrated on presidents holding PhDs, with noisy coefficients for other education levels - a consistent result with a large majority of college presidents holding PhDs.

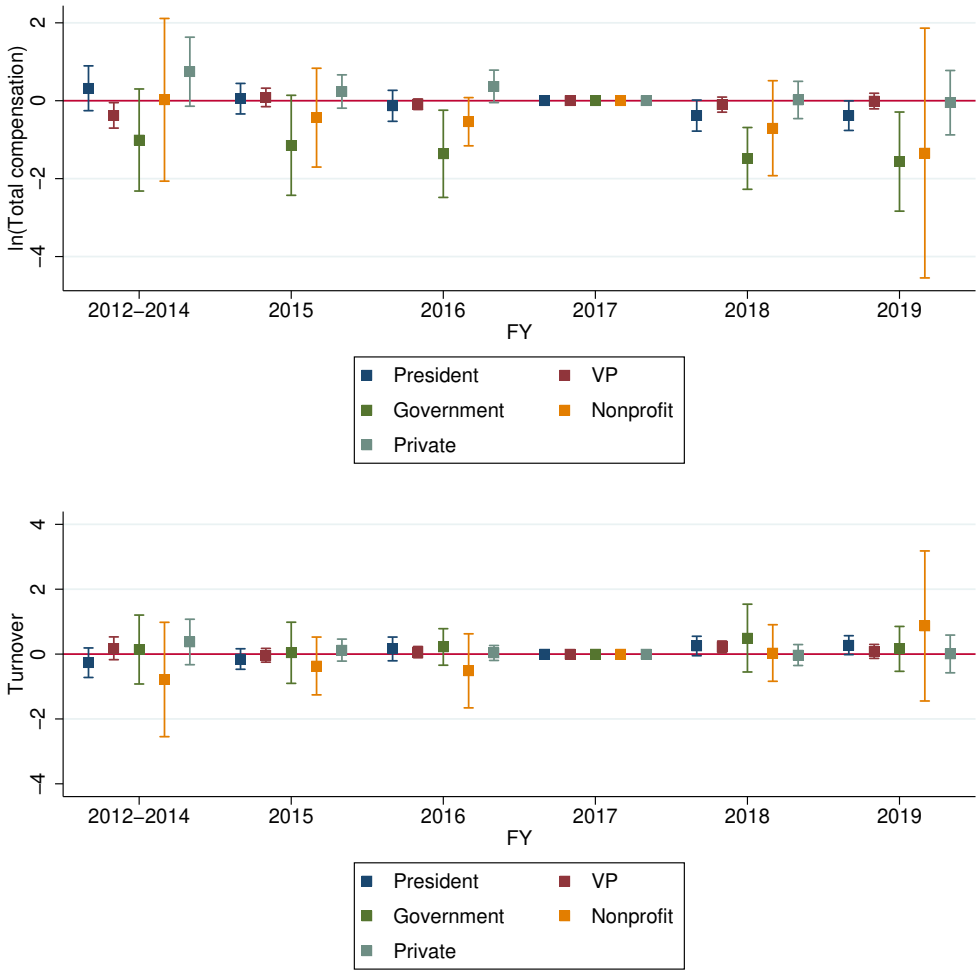
Figure 10: effects of the TCJA on compensation and turnover by education



Notes: regressions include institution and year fixed effects and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Figure 11 presents the results of an event study approach by last position levels on total compensation and turnover. I find that the effects of the TCJA tend to be concentrated in two groups - former college presidents and individuals coming from the public sector face the largest falls in compensation, while other groups appear to be unaffected. However, there is no clear pattern related to turnover. As before, this result is likely to reflect different bargaining positions - presidents who were presidents before at another institution are closer to the end of their careers, while former public servants may have limited options, so their outside options may be weaker than those of individuals with additional room for career advancement, such as former academic vice-presidents, or with options for lateral moves, such as former private sector or non-profit employees.

Figure 11: effects of the TCJA on compensation and turnover by experience



Notes: regressions include institution and year fixed effects and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

5 Covariates of presidential productivity

As seen above, college presidents can predict institutional outcomes, and respond to monetary incentives by either leaving or changing their behavior, which is reflected in metrics of financial performance, as seen with the effects of the TCJA. Their demographic characteristics also influence their bargaining power, with the tax affecting them unevenly. However, examining the impact of demographics on outcomes directly may be challenging, as presidents are matched with institutions based on both their productivity and demographic profiles, a sorting that makes the parallel trends assumptions unlikely to hold. A practical alternative is to revisit the R-squared decomposition by institution, year, and president fixed effects, and analyze how president-level residuals are correlated with demographic characteristics.

Presidential productivity can vary widely across tasks, due to the diverse responsibilities they hold. I focus on the financial aspect, as presidents often prioritize this part of their role. A useful measure of institutional financial health is net income (revenues minus expenditures), which offers an first measure of whether an institution generates surplus funds—a critical foundation for any potential investments in academics, research, and other key areas.

In first place, I estimate a model of the form

$$NetIncome_{ist} = \alpha_s + \beta_t + \gamma_i + \delta_c + e_{st} \tag{6}$$

where α_s is a institution fixed effect, β_t is year fixed effect, and γ_i are president fixed effects, which capture presidential productivity (specific to a given person) and are assumed to be constant and portable across institutions. However, these fixed effects are not necessarily identified in the base two way fixed effect model. To make direct comparisons across these fixed effects, every single president-institution pair needs to be linked directly or indirectly across the data. This is not the case in this sample, as limited presidential mobility across institutions divide the sample into different connected (or mobility) sets, defined as networks of presidents or institutions where each president-institution pair is directly or indirectly linked, allowing the entire group's fixed effects to be identified relative to each other.[9] As the sample is divided into multiple connected sets, I control for δ_c,

9. See Abowd, Kramarz, and Margolis (1999) for a canonical explanation in a worker and firm fixed effect setting, and Bartanen and Husain (2022) for an application to school principals.

connected set fixed effects, to allow for comparisons across connected sets.

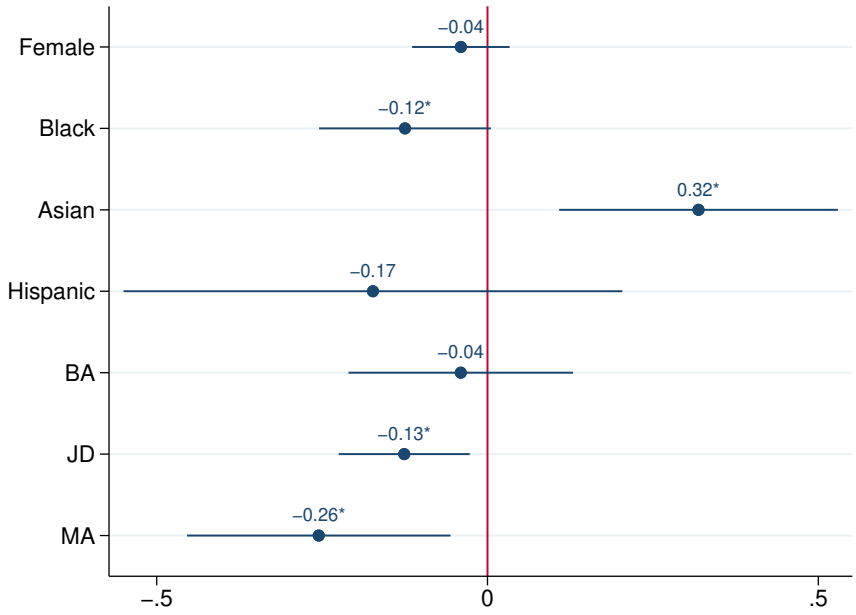
After estimating these president fixed effects, I estimate how presidential characteristics are correlated with the standardized presidential fixed effects for surpluses, in terms of standard deviations of unobserved productivity.

I estimate

$$FEi = \alpha \cdot Demographics_i + \beta \cdot Education_i + \delta_c + e_i \tag{7}$$

Figure 12 presents the results of this model. Black presidents are associated with 0.12 lower standard deviations in productivity, while Asian presidents are associated with 0.32 higher standard deviations in productivity, compared to a White president baseline. Presidents holding a JD are associated with 0.13 lower standard deviations, while presidents holding a MA are associated with 0.26 lower standard deviations, compared to a baseline of presidents with PhDs. The group trends are likely to reflect sorting, as Black presidents are less likely to preside over the largest and wealthiest institutions which are more likely to produce surpluses. Educational trends are consistent with selection as well, as presidents holding JDs or MAs are more likely to have previous external experience, limiting their experience and effectiveness in managing educational institutions.

Figure 12: correlation of individual presidential fixed effects with demographics and education



Notes: coefficients from a regression of individual presidents' standardized fixed effects on covariates. President fixed effects are the president-level residuals of a decomposition of net income on institution, year, and president fixed effects. * p<0.1, ** p<0.05, *** p<0.01

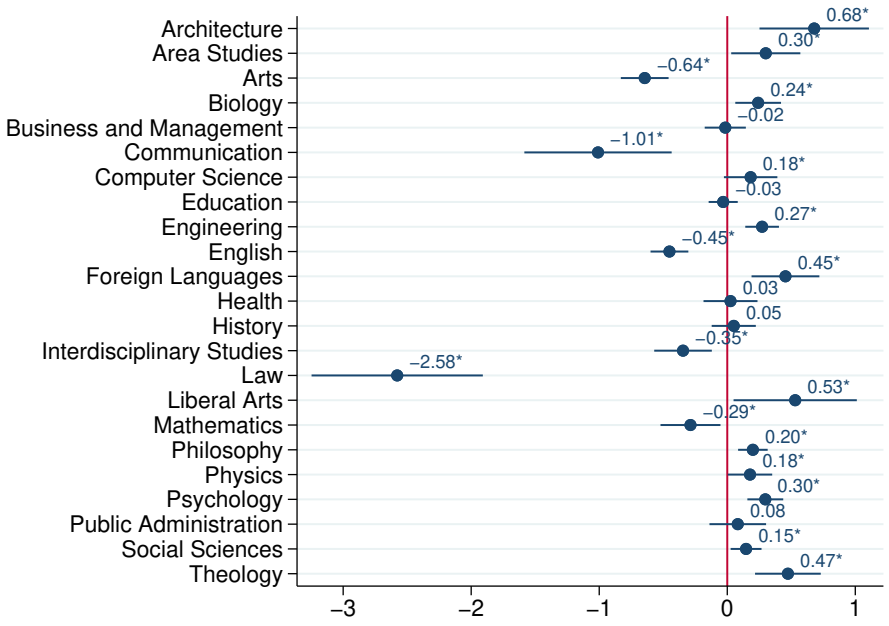
To address the correlation between field of study in their highest degree and president fixed effects, I estimate

$$FEi = \alpha \cdot Demographics_i + \beta \cdot Field_i + \delta_c + e_i \tag{8}$$

Figure 13 presents the results of this model. On average, most fields are weakly positively related with productivity, with extreme negative outliers being Arts, Communication and Law - reflecting a combination of sorting issues, as presidents with this background tend to manage relatively small and troubled institutions in the first place. Significantly, Business

and Management graduates have coefficients close to zero, in contrast to Acemoglu (2023) and Muñoz and Otero (2024), who find a positive relationship between business training and executive quality.

Figure 13: correlation of individual presidential fixed effects with field of study



Notes: coefficients from a regression of individual presidents' standardized fixed effects on covariates. President fixed effects are the president-level residuals of a decomposition of net income on institution, year, and president fixed effects. * p<0.1, ** p<0.05, *** p<0.01

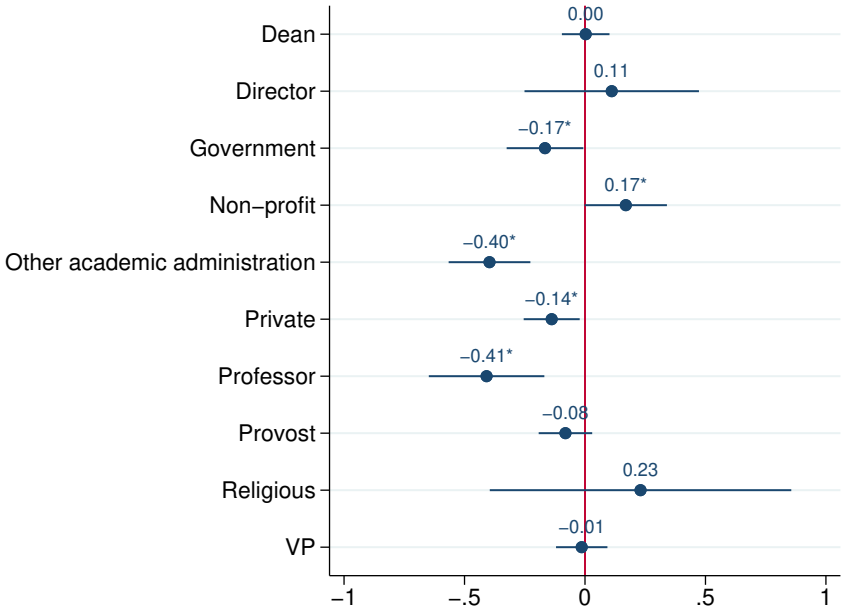
I finally turn to the correlation wit presidents' previous experience, using previous experience as a college as a president as a baseline. I estimate:

$$FEi = \alpha \cdot Demographics_i + \beta \cdot Experience_i + \delta_c + e_i \tag{9}$$

Figure 14 presents the results of this model. Significantly, the returns to experience of previously having been a college president (the base category) are high, as no other

category, except former non-profit directors, outperform them. Significantly, backgrounds from the public and private sector significantly underperform, being associated with 0.17 and 0.14 lower standard deviations in productivity. The returns to experience in upper administration are also evident, as former vice-presidents, deans, directors, or provosts do not underperform former presidents - but former professors or other administrators significantly underperform.

Figure 14: correlation of individual presidential fixed effects with experience



Notes: coefficients from a regression of individual presidents' standardized fixed effects on covariates. President fixed effects are the president-level residuals of a decomposition of net income on institution, year, and president fixed effects. * p<0.1, ** p<0.05, *** p<0.01

6 Conclusion

In this paper, I study how college presidents and their institutions respond to the financial incentives created by the 2017 Tax Cuts and Jobs Act (TCJA), which introduced a 21% excise tax on nonprofit employee compensation over $1 million, directly impacting highly compensated university presidents. My findings indicate that the TCJA effectively reduced president compensation by an average of 26 percentage points, while increasing turnover rates by 19 percentage points, resulting in a calculated tax elasticity of compensation of -1.38. This reduction in compensation is largely due to cuts in non-taxable and other forms of compensation, instead of base salaries.

In response to the reduced compensation, college presidents appear to shift their behavior. Following the implementation of the TCJA, presidents increased net income by 30 percentage points and investment returns by 23 percentage points, and directed an additional 9 percentage points toward academic support expenditures. These changes highlight a tendency for presidents to prioritize outcomes that are easily observable and likely to be appreciated by boards, suggesting that presidents focus on generating results that are readily measurable and that align with board expectations.

The TCJA's impact also varies depending on president characteristics, with female presidents experiencing a larger reduction in compensation (around 40%) compared to their male counterparts. Moreover, characteristics such as educational background and prior industry experience are linked to differences in presidential productivity. Specifically, presidents without a PhD or with backgrounds in government or the private sector generally exhibit lower performance, suggesting that the returns to experience within academia are likely to be substantial.

These findings open avenues for further research on how presidents answer to their boards, and how institutional objectives are formed in this interaction. Future studies can also explore the dynamics of decision-making within university leadership teams, including the responses of vice presidents and other high-ranking officials to similar incentives. Additionally, examining the role of bargaining and potential discrimination in the selection and compensation of college presidents could yield insights into how leadership characteristics shape institutional performance and equity across executive roles.

References

Abowd, John M, Francis Kramarz, and David N Margolis. 1999. "High wage workers and high wage firms." *Econometrica* 67 (2): 251–333.

Asim, Salman, Ravinder Casley Gera, Donna Harris, and Stefan Dercon. 2024. "Does Effective School Leadership Improve Student Progression and Test Scores?"

Bai, Ge. 2014. "University president compensation: Evidence from the United States." *Higher Education Studies* 4 (6): 1–14.

Balsam, Steven, John H Evans III, and Amy JN Yurko. 2019. "The impact of regulation on executive compensation: IRC section 162 (m) and the unexpected exclusion of CFOs." *The Journal of the American Taxation Association* 41 (2): 59–81.

Bartanen, Brendan, Jason A Grissom, and Laura K Rogers. 2019. "The impacts of principal turnover." *Educational Evaluation and Policy Analysis* 41 (3): 350–374.

Bartanen, Brendan, and Aliza N Husain. 2022. "Connected networks in principal value-added models." *Economics of Education Review* 90:102292.

Bartlett, Robin L, and Olga Sorokina. 2005. "Determinants of presidential pay at national liberal arts institutions." *The Review of Higher Education* 29 (1): 53–68.

Beg, Sabrin A, Anne E Fitzpatrick, and Adrienne Lucas. 2023. *Managing to learn.* Technical report. National Bureau of Economic Research.

Berlinski, Samuel, and Alejandra Ramos. 2020. "Teacher mobility and merit pay: Evidence from a voluntary public award program." *Journal of Public Economics* 186:104186.

Biasi, Barbara. 2021. "The labor market for teachers under different pay schemes." *American Economic Journal: Economic Policy* 13 (3): 63–102.

Branch, Gregory F, Eric A Hanushek, and Steven G Rivkin. 2012. *Estimating the effect of leaders on public sector productivity: The case of school principals.* Technical report. National Bureau of Economic Research.

Cheng, Shaoming. 2014. "Executive compensation in public higher education: does performance matter?" *Research in Higher Education* 55:581–600.

Chodorow-Reich, Gabriel, Matthew Smith, Owen M Zidar, and Eric Zwick. 2024. *Tax policy and investment in a global economy.* Technical report. National Bureau of Economic Research.

Civera, Alice, Erik E Lehmann, Michele Meoli, Jonah M Otto, and Stefano Paleari. 2024. "Exit strategy or springboard for career development? The case of university executives' remuneration." *Higher Education Quarterly* 78 (3): 730–744.

Coelli, Michael, and David A Green. 2012. "Leadership effects: School principals and student outcomes." *Economics of Education Review* 31 (1): 92–109.

Cowan, James, and Dan Goldhaber. 2018. "Do bonuses affect teacher staffing and student achievement in high poverty schools? Evidence from an incentive for national board certified teachers in Washington State." *Economics of Education Review* 65:138–152.

Crawford, Steven, and Garen Markarian. 2024. "The effect of the tax cuts and jobs act of 2017 on corporate investment." *Journal of Corporate Finance* 87:102619.

De Simone, Lisa, Charles McClure, and Bridget Stomberg. 2022. "Examining the effects of the Tax Cuts and Jobs Act on executive compensation." *Contemporary Accounting Research* 39 (4): 2376–2408.

Duderstadt, James J. 2009. *The view from the helm: leading the American university during an era of change.* University of Michigan Press.

Durrant, Jon, James Jianxin Gong, and Jennifer Howard. 2021. "In the nick of time: Performance-based compensation and proactive responses to the Tax Cuts and Jobs Act." *Journal of Management Accounting Research* 33 (1): 53–74.

Edmans, Alex, Xavier Gabaix, and Dirk Jenter. 2017. "Executive compensation: A survey of theory and evidence." *The handbook of the economics of corporate governance* 1:383–539.

Fenizia, Alessandra. 2022. "Managers and productivity in the public sector." *Econometrica* 90 (3): 1063–1084.

Freyaldenhoven, Simon, Christian Hansen, Jorge Pérez Pérez, and Jesse M Shapiro. 2021. *Visualization, identification, and estimation in the linear panel event-study design.* Technical report. National Bureau of Economic Research.

Fryer, Roland G, et al. 2017. *Management and student achievement: Evidence from a randomized field experiment.* Technical report. National Bureau of Economic Research.

Goodman, Sarena F, and Lesley J Turner. 2013. "The design of teacher incentive pay and educational outcomes: Evidence from the New York City bonus program." *Journal of Labor Economics* 31 (2): 409–420.

Grissom, Jason A, and Brendan Bartanen. 2019. "Principal effectiveness and principal turnover." *Education Finance and Policy* 14 (3): 355–382.

Han, Xiao, Daniel M Hungerman, and Mark Ottoni-Wilhelm. 2024. *Tax Incentives for Charitable Giving: New Findings from the TCJA.* Technical report. National Bureau of Economic Research.

He, Lerong, and Charles Callahan III. 2017. "Presidential Compensation in Public Higher Education Institutions: Is There Pay for Performance?." *Journal of Academic Administration in Higher Education* 13 (1): 47–56.

Huang, Ying Sophie, and Carl R Chen. 2013. "Are college chief executives paid like corporate CEOs or bureaucrats?" *Applied Economics* 45 (21): 3035–3043.

Hunt, James M, David A Tandberg, and Toby J Park. 2019. "Presidential compensation and institutional revenues: Testing the return on investment for public university presidents." *The Review of Higher Education* 42 (2): 619–640.

Limodio, Nicola. 2021. "Bureaucrat allocation in the public sector: Evidence from the world bank." *The Economic Journal* 131 (639): 3012–3040.

Luna, LeAnn, Kathleen Schuchard, and Danielle Stanley. 2023. "The impact of TCJA on CEO compensation." *Journal of Accounting and Public Policy* 42 (6): 107136.

Mbiti, Isaac, Karthik Muralidharan, Mauricio Romero, Youdi Schipper, Constantine Manda, and Rakesh Rajani. 2019. "Inputs, incentives, and complementarities in education: Experimental evidence from Tanzania." *The Quarterly Journal of Economics* 134 (3): 1627–1673.

Miller. 2023. "An introductory guide to event study models." *Journal of Economic Perspectives* 37 (2): 203–230.

Miller, Ashley. 2013. "Principal turnover and student achievement." *Economics of Education Review* 36:60–72.

Monks, James. 2007. "Public versus private university presidents pay levels and structure." *Economics of Education Review* 26 (3): 338–348.

Munoz, Pablo, and Cristóbal Otero. 2022. *Managers and public hospital performance.* Technical report. Working Paper.

Muñoz, Pablo, and Mounu Prem. Forthcoming. "Managers' productivity and recruitment in the public sector: The case of school principals." *American Economic Journal: Economic Policy.*

Muralidharan, Karthik, and Abhijeet Singh. 2020. *Improving public sector management at scale? experimental evidence on school governance india.* Technical report. National Bureau of Economic Research.

Ohrn, Eric. 2023. "Corporate tax breaks and executive compensation." *American Economic Journal: Economic Policy* 15 (3): 215–255.

Rambachan, Ashesh, and Jonathan Roth. 2023. "A more credible approach to parallel trends." *Review of Economic Studies* 90 (5): 2555–2591.

Romero, Mauricio, Juan Bedoya, Monica Yanez-Pagans, Marcela Silveyra, and Rafael De Hoyos. 2022. "Direct vs indirect management training: Experimental evidence from schools in Mexico." *Journal of Development Economics* 154:102779.

Roth, Jonathan. 2022. "Pretest with caution: Event-study estimates after testing for parallel trends." *American Economic Review: Insights* 4 (3): 305–322.

Steele, Jennifer L, Richard J Murnane, and John B Willett. 2010. "Do financial incentives help low-performing schools attract and keep academically talented teachers? Evidence from California." *Journal of Policy Analysis and Management* 29 (3): 451–478.

Wagner, Alexander F, Richard J Zeckhauser, and Alexandre Ziegler. 2020. *The Tax Cuts and Jobs Act: Which Firms Won? Which Lost?* Technical report. National Bureau of Economic Research.

Appendix

Table A-1: field of study by highest degree

PhD		MA		JD		BA	
Unavailable	17.78%	Business	31.18%	Law	100%	Unavailable	86.96%
Education	16.09%	Health	10.75%			Social Sciences	4.35%
Social Sciences	11.22%	Education	8.60%			Business	3.26%
Philosophy	9.24%	Unavailable	8.60%			Visual Arts	1.09%
Psychology	5.46%	Visual Arts	6.45%			English	1.09%
English	5.26%	Public Administration	6.45%			Liberal Arts	1.09%
Engineering	3.97%	Theology	5.38%			Law	1.09%
History	3.87%	Social Sciences	5.38%			Health	1.09%
Theology	3.48%	Psychology	4.30%				
Visual Arts	2.88%	Architecture	2.15%				
Physics	2.68%	Engineering	2.15%				
Biology	2.68%	Liberal Arts	2.15%				
Business	2.58%	Biology	1.08%				
Health	2.48%	Communication	1.08%				
Foreign Languages	2.09%	Philosophy	1.08%				
Mathematics	1.79%	History	1.08%				
Interdisciplinary Studies	1.29%	Foreign Languages	1.08%				
Public Administration	1.19%	English	1.08%				
Communication	1.09%						
Area Studies	0.89%						
Computer Science	0.70%						
Liberal Arts	0.30%						
Law	0.20%						
Fitness Studies	0.20%						
Architecture	0.20%						
Social Skills	0.20%						
Law Enforcement	0.10%						
Human Sciences	0.10%						
N	1007		93		136		92

(return)

Table A-2: institution, highest degree received

PhD	Harvard University	56	5.09%
	University of Pennsylvania	36	3.27%
	Yale University	35	3.18%
	Princeton University	30	2.73%
	University of Chicago	28	2.55%
	Stanford University	20	1.82%
	Fordham University	18	1.64%
	Columbia University	18	1.64%
	University of Wisconsin-Madison	17	1.55%
	Northwestern University	16	1.45%
	All others	621	56.45%
	Unavailable	205	18.64%
JD	Harvard University	19	13.97%
	Yale University	10	7.35%
	University of Virginia	6	4.41%
	Columbia University	5	3.68%
	University of Chicago	4	2.94%
	University of Florida	3	2.21%
	Pepperdine University	3	2.21%
	Hamline University	3	2.21%
	University of Pennsylvania	3	2.21%
	Duke University	3	2.21%
	All others	53	38.97%
	Unavailable	24	17.65%
MA	Harvard University	8	8.60%
	University of Iowa	4	4.30%
	Yale University	4	4.30%
	Drexel University	3	3.23%
	University of Evansville	2	2.15%
	University of Illinois Springfield	2	2.15%
	Howard University	2	2.15%
	New York University	2	2.15%
	Columbia University	2	2.15%
	Boston College	2	2.15%
	All others	38	40.86%
	Unavailable	24	25.81%

(return)

Table A-3: most recent position before becoming presidents

Academia		994		74.85%
	President	254	25.55%	
	VP	285	28.67%	
	Provost	179	18.01%	
	Dean	181	18.21%	
	Director	12	1.21%	
	Chair	18	1.81%	
	Professor	16	1.61%	
	Other academic administration	49	4.93%	
Government		48		3.61%
Non-profit		50		3.77%
Private		133		10.02%
Religious		25		1.88%
Unavailable		78		5.87%
		1328		

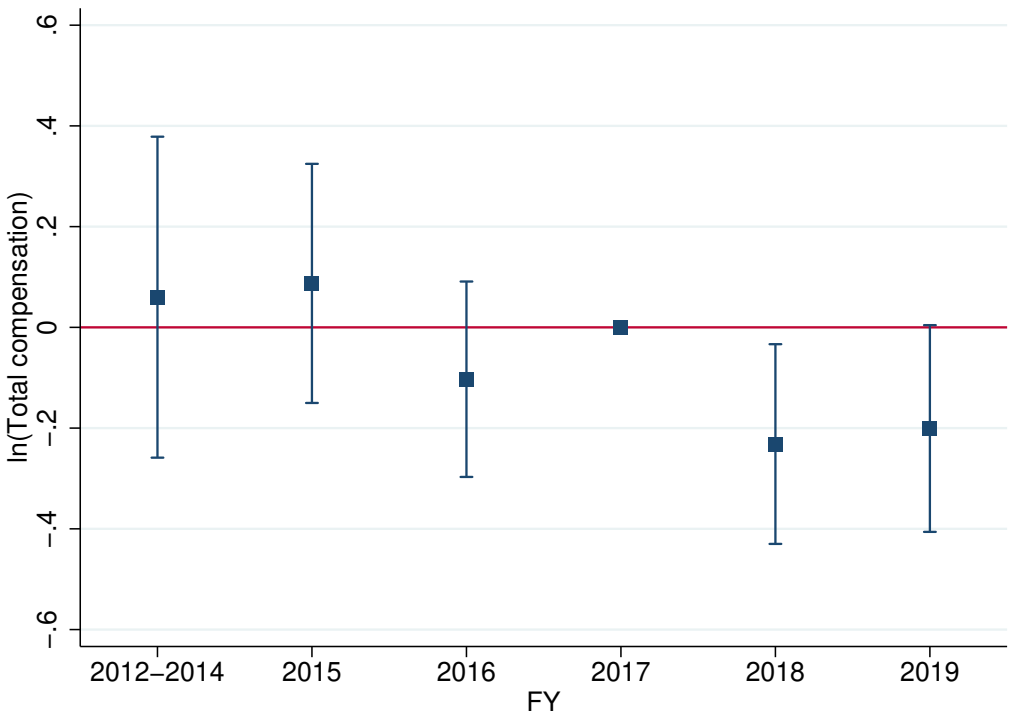
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Table A-4: pre-trends test, joint test that all pre-treatment coefficients equal 0

	p-value, joint test of leads = 0
ln(Total compensation)	0.068
Turnover	0.136
ln(Base salary)	0.757
ln(Bonuses)	0.909
ln(Non-taxable compensation)	0.276
ln(Other compensation)	0.737

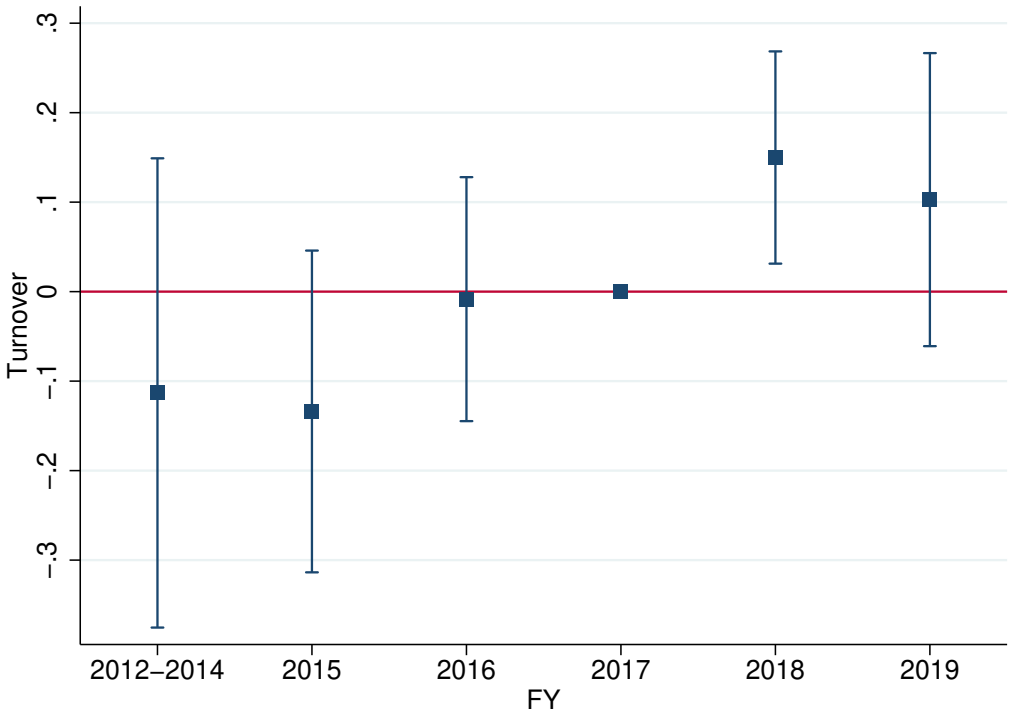
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Figure A-1: effects of the TCJA on compensation, president FE (back)



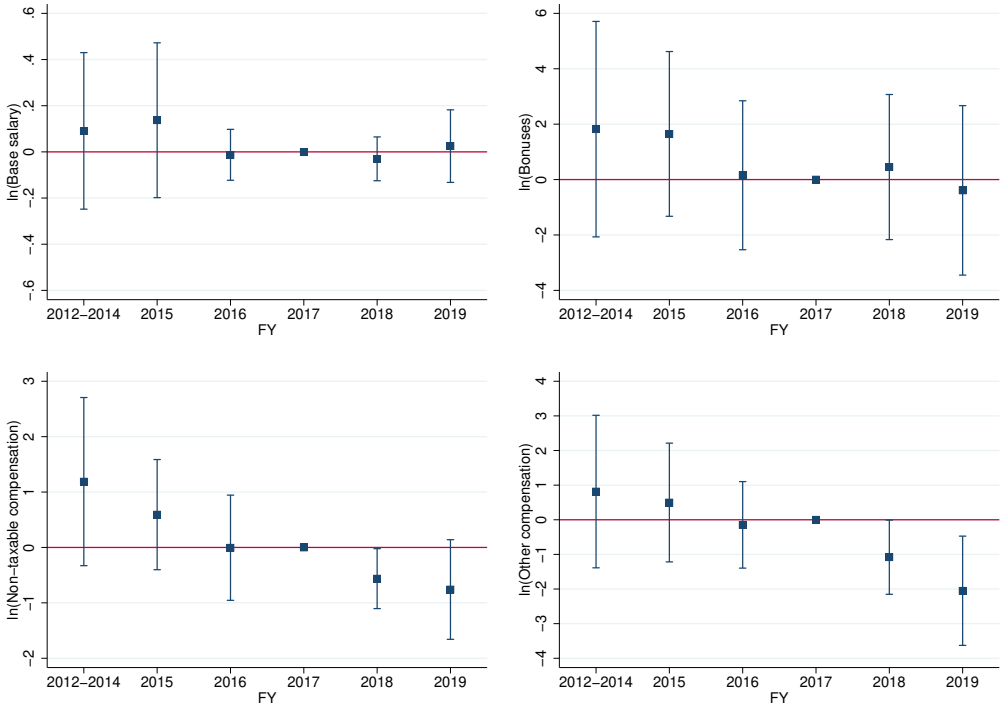
Notes: regressions include president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Figure A-2: effects of the TCJA on turnover, president FE (back)



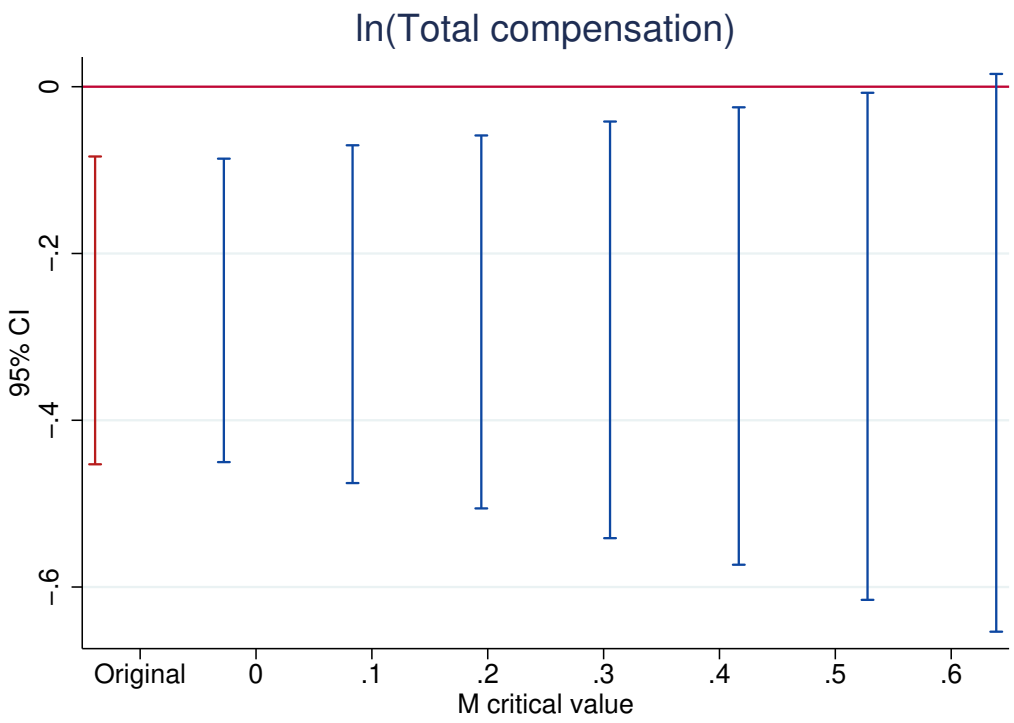
Notes: regressions include president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Figure A-3: effects of the TCJA on compensation by components, president FE (back)



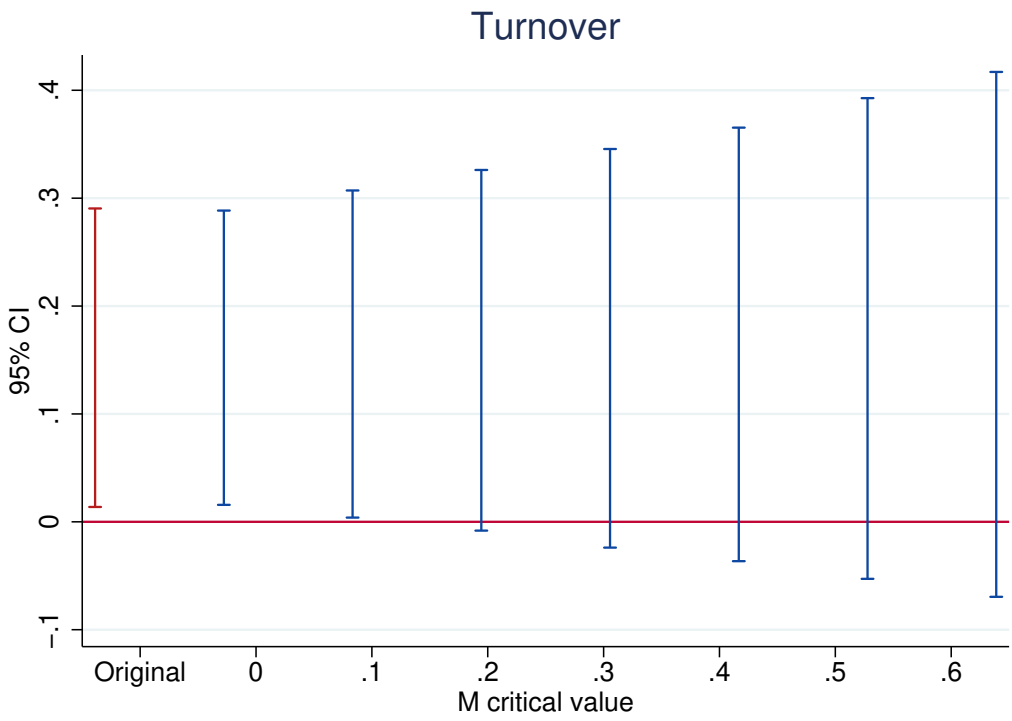
Notes: regressions include president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. Pre-treatment periods before 2014 are binned into a single coefficient.

Figure A-4: Rambachan and Roth (2023) sensitivity analysis for parallel trend violations, compensation (back)



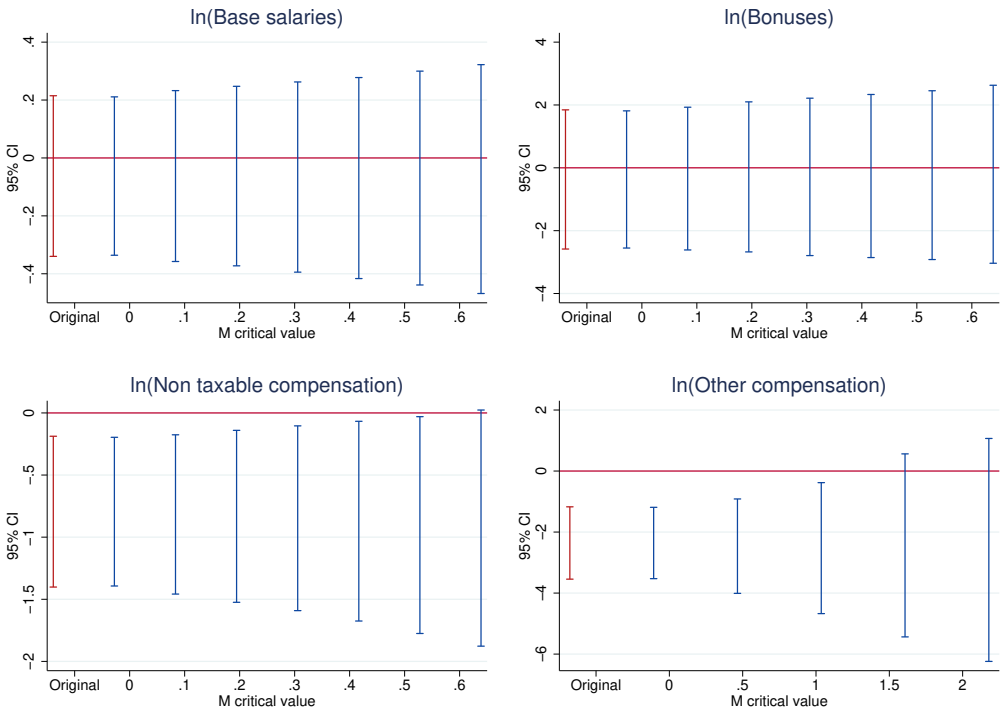
Notes: Rambachan and Roth (2023) sensitivity analysis, presenting how the treatment effect across all post-treatment periods varies by critical values of M, the maximum pre-treatment parallel trends violations.

Figure A-5: Rambachan and Roth (2023) sensitivity analysis for parallel trend violations, turnover (back)



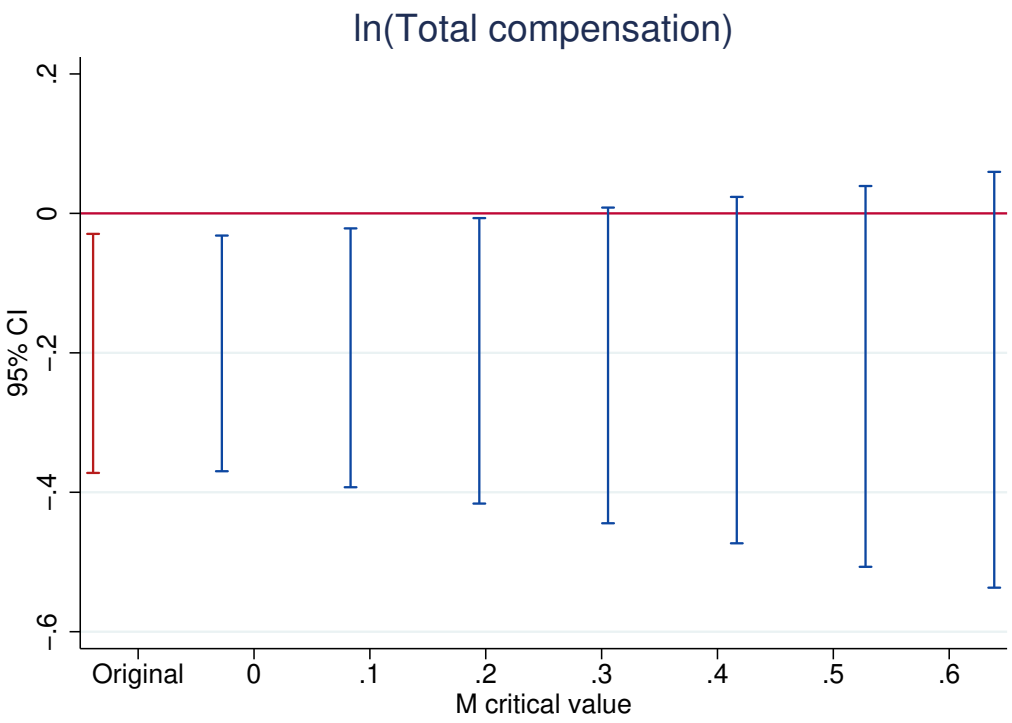
Notes: Rambachan and Roth (2023) sensitivity analysis, presenting how the treatment effect across all post-treatment periods varies by critical values of M, the maximum pre-treatment parallel trends violations.

Figure A-6: Rambachan and Roth (2023) sensitivity analysis for parallel trend violations, components of compensation (back)



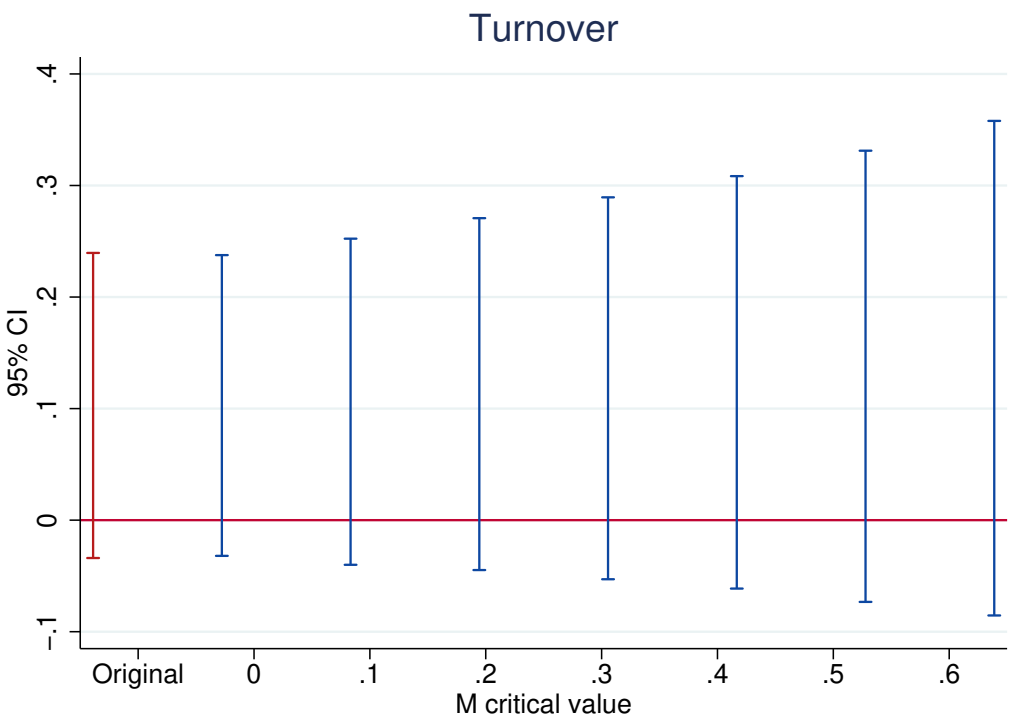
Notes: Rambachan and Roth (2023) sensitivity analysis, presenting how the treatment effect across all post-treatment periods varies by critical values of M, the maximum pre-treatment parallel trends violations.

Figure A-7: Rambachan and Roth (2023) sensitivity analysis for parallel trend violations, compensation with president FE (back)



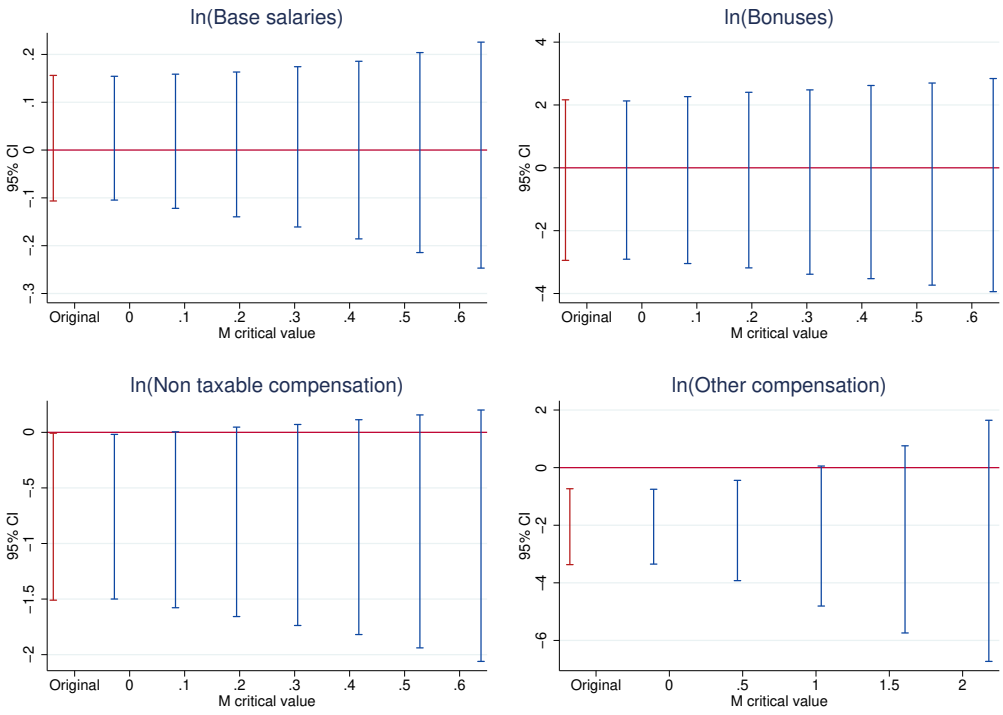
Notes: Rambachan and Roth (2023) sensitivity analysis, presenting how the treatment effect across all post-treatment periods varies by critical values of M, the maximum pre-treatment parallel trends violations.

Figure A-8: Rambachan and Roth (2023) sensitivity analysis for parallel trend violations, turnover with president FE (back)



Notes: Rambachan and Roth (2023) sensitivity analysis, presenting how the treatment effect across all post-treatment periods varies by critical values of M, the maximum pre-treatment parallel trends violations.

Figure A-9: Rambachan and Roth (2023) sensitivity analysis for parallel trend violations, components of compensation with president FE (back)



Notes: Rambachan and Roth (2023) sensitivity analysis, presenting how the treatment effect across all post-treatment periods varies by critical values of M, the maximum pre-treatment parallel trends violations.

Figure A-10: effects of the TCJA on compensation, TWFE (back)



Notes: coefficients from a two-way fixed effect regression on a binary treatment indicator including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure A-11: effects of the TCJA on compensation, TWFE and president FE (back)



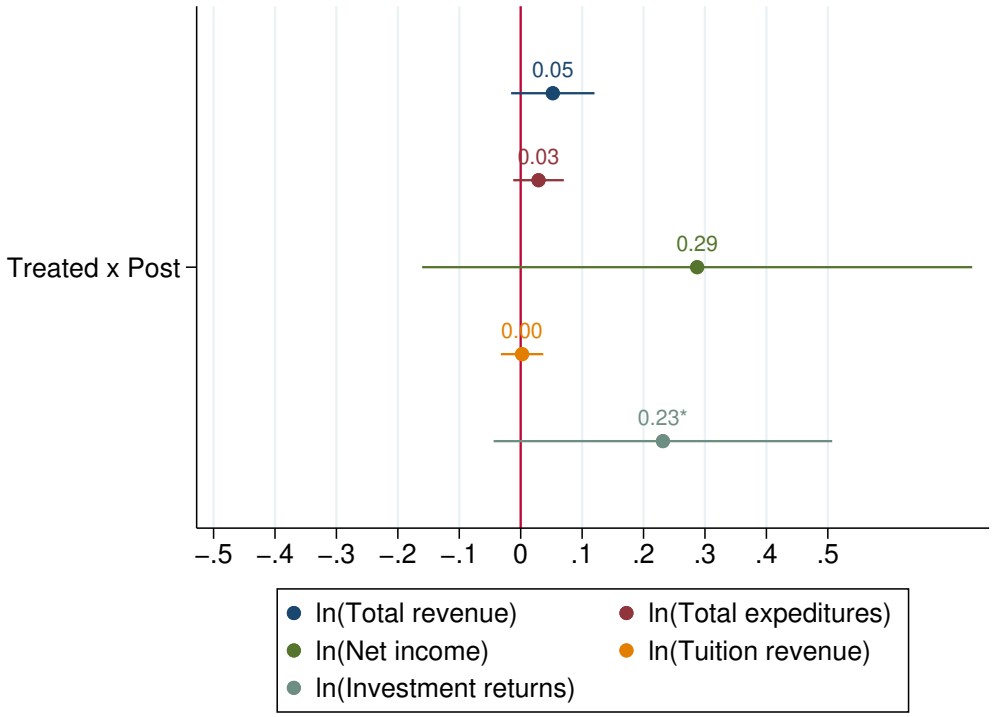
Notes: coefficients from a two-way fixed effect regression on a binary treatment indicator including president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Table A-5: pre-trends test, joint test that all pre-treatment coefficients equal 0

	p-value, joint test of leads = 0
ln(Total revenue)	0.129
ln(Total expenditures)	0.376
ln(Net income)	0.465
ln(Tuition revenue)	0.314
ln(Investment returns)	0.439
ln(Instructional expenditure per capita)	0.432
ln(Research expenditure)	0.648
ln(Academic support expenditure)	0.463
ln(Net aid per capita)	0.357

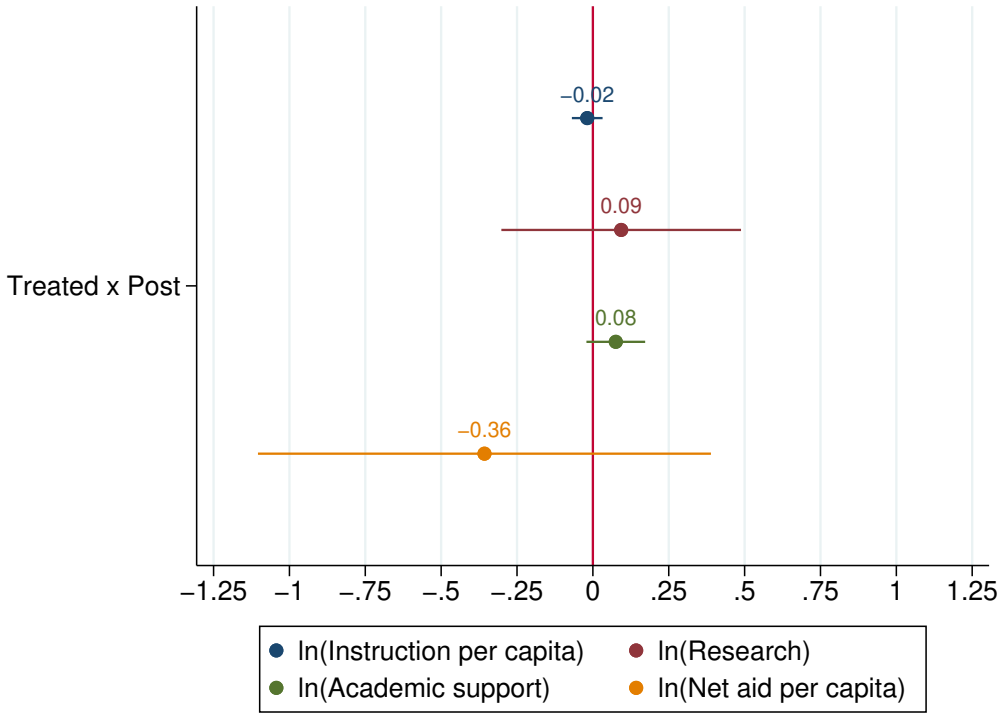
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Figure A-12: effects of the TCJA on assets and revenue (back)



Notes: coefficients from a two-way fixed effect regression on a binary treatment indicator including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure A-13: effects of the TCJA on expenditures (back)



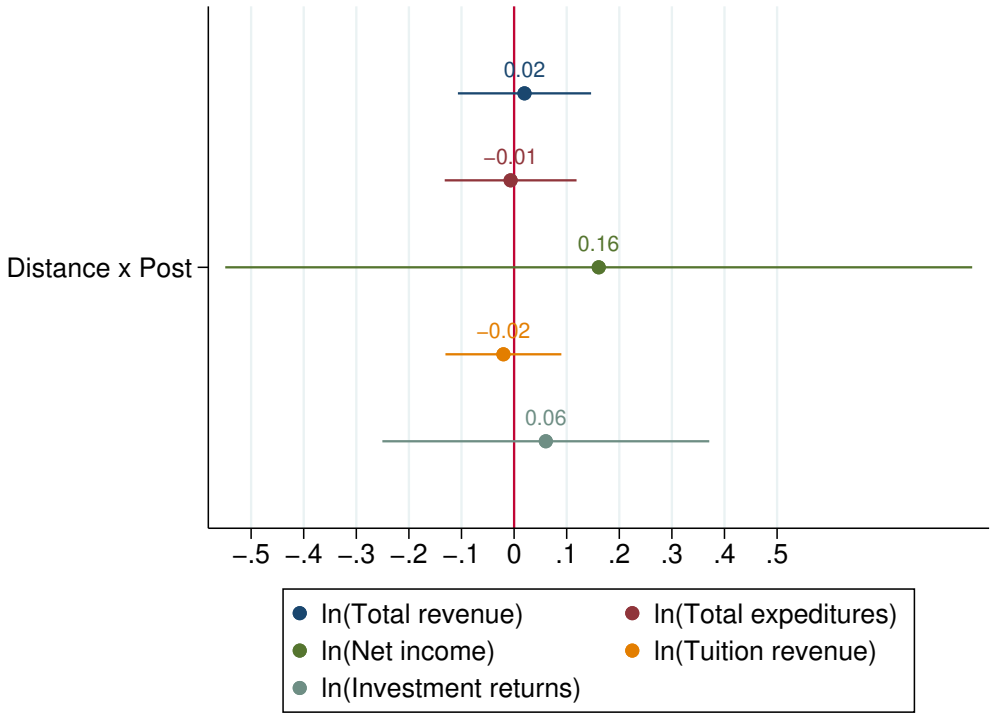
Notes: coefficients from a two-way fixed effect regression on a binary treatment indicator including institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure A-14: effects of the TCJA on compensation, continuous treatment and president FE (back)



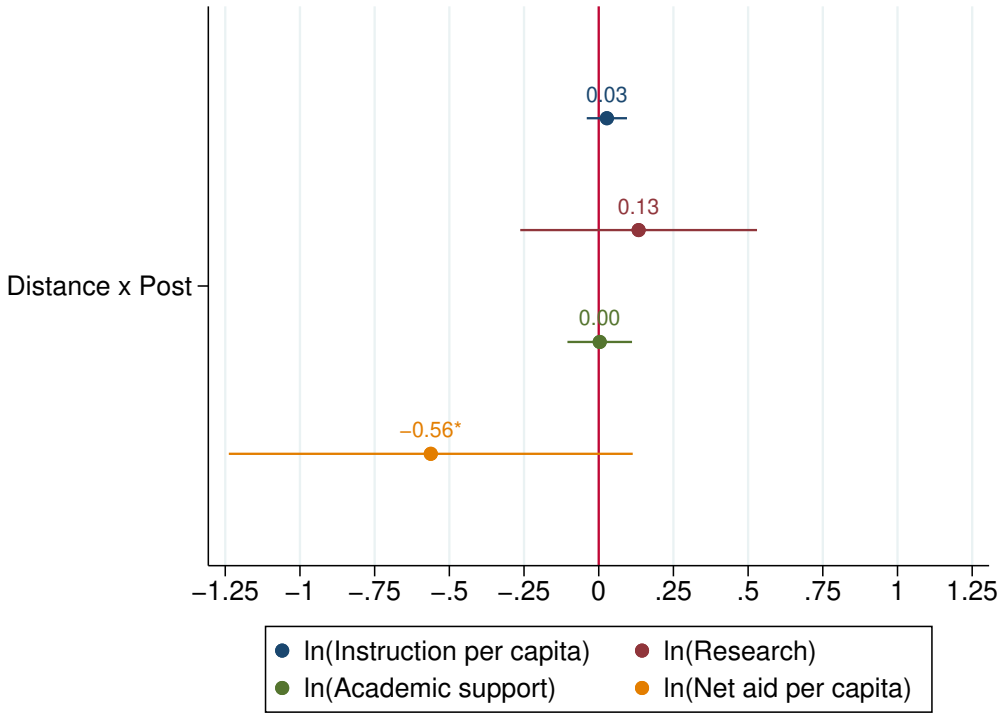
Notes: coefficients from a two-way fixed effect regression including president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure A-15: effects of the TCJA on assets and revenue, continuous treatment and president FE (back)



Notes: coefficients from a two-way fixed effect regression including president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01

Figure A-16: effects of the TCJA on expenditures, continuous treatment and president FE (back)



Notes: coefficients from a two-way fixed effect regression including president, institution and year fixed effects, and institution-specific time trends. Standard errors are clustered at the institution level. * p<0.1, ** p<0.05, *** p<0.01