The Effect of Academic Calendars on Internship Participation and Employment: Evidence from LinkedIn Profiles*

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June 27, 2025

Abstract

Internships have become increasingly important for college students, yet much remains unknown about how higher education institutions can be structured to support internship participation. In this study, I estimate the impact of academic calendar systems on students' internship participation, using educational and employment histories from public LinkedIn profiles. Leveraging quasi-experimental variations in the timing of transitions from quarter to semester systems across institutions in Ohio, I find that semester systems increase students' internship participation by 16%. These additional internship experiences enhance students' labor market outcomes, increasing the likelihood that they secure non-entry-level positions with higher starting salaries after college.

JEL classification: I23, I28, J31

Keywords: Internship, Academic Calendar, Higher Education, Labor Market

*The LinkedIn data is accessed through Revelio Labs under a data license from Stanford Graduate School of Business Library. I thank Valerie Bostwick, Yoav Goldstein, Ruixue Jia, Luigi Pistaferri, Shaoda Wang, Zhengren Zhu, and seminar participants at AEFP for helpful comments.

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1 Introduction

Internships have become increasingly important for college students. According to the National Association of Colleges and Employers (NACE), in 2024, more than two-thirds of graduating seniors reported engaging in an internship experience during their college careers. These internship experiences are valued by future employers. Descriptive evidence shows that students with paid internships tend to receive more job offers and enjoy higher average starting salaries than their peers (NACE, 2024). Causal analyses, including resume audit studies and studies leveraging the introductions of mandatory internship policies, demonstrate that internships increase graduates' likelihood of receiving job interviews (Nunley et al., 2016; Baert et al., 2021) and boost earnings (Bolli et al., 2021; Margaryan et al., 2022).

Despite the importance of internships, little is known about the factors that influence college students' participation, including which institutional factors accommodate and encourage it. One such factor is the design of academic calendars—specifically, semester versus quarter systems—which is believed to affect students' ability to secure summer internships and has drawn the attention of institutions, students, and policymakers. For example, in 2025 the University of California, with most campuses on the quarter system, is once again debating whether to switch to a semester system.[1] In fact, since 1987, over 100 institutions in the U.S. have transitioned from quarter to semester systems (Bostwick et al., 2022).[2] One of the primary reasons for this shift is to increase students' opportunities to secure summer internships. The semester system is considered more advantageous in this regard because it concludes earlier in the spring than the quarter system and is more widely adopted. As a result, firms tend to design their summer internship programs around the more common semester calendar, creating scheduling conflicts for students on the less common quarter system. However, transitioning to semester systems can be costly, both academically—negatively impacting four-year graduation rates (Bostwick et al., 2022)—and financially.[3] Given the large costs and the ongoing debates at institutions still using quarter systems, it is crucial to assess whether converting to semester systems truly increases internship participation and to examine its impact on students' post-graduation outcomes.

This study examines the impact of academic calendar systems on students' internship participation during college and their labor market outcomes after graduation. The analysis leverages quasi-

[1] `https://cucfa.org/2025/01/common-systemwide-calendar-workgroup/`.
[2] As of 2023, 167 degree-granting institutions at the baccalaureate level or higher still use quarter systems.
[3] For example, the estimated cost of converting California State University's East Bay campus to a semester system was $12.1 million. `https://www.csueastbay.edu/semester/faculty/questions-and-answers-for-faculty.html`.

experimental changes in academic calendars among colleges and universities in Ohio, the state with the highest number of calendar system transitions over the past 30 years. I obtain data on the calendar system used by each institution for every academic year since 1990 from the Integrated Postsecondary Education Data System. Students are matched to the academic calendars they experienced based on the education information provided in their public LinkedIn profiles, which typically include the names of the colleges attended and the years of enrollment. I also use LinkedIn profiles to collect students' self-reported internship experiences and post-college employment histories.

Using a dynamic difference-in-differences approach, I find that students are 1.17 percentage points more likely to participate in summer internships (April–September) when their institution switches to the more common semester system. There is a small and insignificant crowding-out effect on their likelihood of doing internships in other seasons (October–March). Overall, the semester system increases students' internship participation by 1.0 percentage point each calendar year. An individual level analysis shows that college students who are fully exposed to semester systems graduate with 0.068 more summer internships but 0.014 fewer off-cycle internships. Overall, semester systems increase students' total number of internships throughout college by 0.054 (16%).

More internship participation under the semester system improves students' labor market outcomes after college. Based on students' self-reported employment history on their LinkedIn profiles, I find that students who are fully exposed to semester systems during college are 1.2 percentage points more likely to have a non-entry-level first job after college, possibly due to more work experience accumulated during college. Additionally, their starting salary is predicted to be 846 dollars higher.[4] Further analysis suggests that with more internship experience, students are more likely to enter high-paying occupations such as business, management, and engineering, while their likelihood of pursuing advanced degrees remains mostly unaffected. The benefits in the labor market could be further amplified in the long run if we consider the network effects of having more alumni holding senior positions in high-paying occupations.

This study contributes to the literature as the first to document how institutional factors causally affect college students' internship participation—a key channel through which institutional features may influence students' labor market outcomes. Surveys and interviews (Hora et al., 2019, 2021) highlight academic, financial, and social concerns as barriers to securing college internships. This study specifically examines the role of academic calendars; hence, it also relates to the literature on

[4]In Section 4.2, I discuss whether and how the reduced-form estimates can be causally interpreted as the labor market return to internship experience.

the effects of calendar systems on postsecondary students.[5] Existing research has primarily focused on academic outcomes, showing that switching to semester systems negatively affects students' enrollment (Rosenthal, 2000) and academic performance (Gibbens et al., 2015), reduces students' credit hour loads and increases course withdrawals (Coleman et al., 1984). In their comprehensive analysis using panel data on nearly all four-year institutions in the US, Bostwick et al. (2022) find that transitioning from a quarter system to a semester system reduces on-time graduation rates by 3.7 percentage points.

In this study, I examine whether and how the academic calendar affects students' employment, including internship participation during college and labor market outcomes after graduation. While not the primary focus, Bostwick et al. (2022) also explores the relationship between academic calendars and summer internship participation. They use whether students earned positive income during the summer from non-food-service and non-retail industries as a proxy for summer internships, finding limited evidence of positive effects. In contrast, this study identifies internship experiences directly from LinkedIn profiles. As a professional networking platform, LinkedIn allows students to share their education and employment history with connections and potential employers. Thus, LinkedIn profiles provide a more comprehensive record of career-relevant employment, including both paid and unpaid internships.[6] Beyond improving the measurement of internships, this study extends the analysis by examining the downstream effects of increased internship participation on post-graduation outcomes, contributing to the literature on the benefits of internships.

Finally, this study adds to the literature on causal estimates of the return to internship participation. Leveraging mandatory firm internships at German universities, Margaryan et al. (2022) finds that mandatory internships reduce graduates' unemployment risk and raise earnings by 6%. Bolli et al. (2021) similarly reports positive income effects, while Klein and Weiss (2011) and Weiss et al. (2014) find no wage impact. Resume audit studies show that students with internship experience are perceived as more employable (Pinto and Pereira, 2019; Jaeger et al., 2023) and receive more job interview invitations (Nunley et al., 2016; Baert et al., 2021). Utilizing random selection into internship programs in Yemen and internship subsidy programs in Finland, McKenzie et al. (2016)

[5] Broadly speaking, this study also relates to the literature that explores different school calendars in primary and secondary education. The school structures discussed in the literature include four-day school weeks (e.g., Anderson and Walker, 2015; Fischer and Argyle, 2018; Morton, 2021; Thompson, 2021), extended school days (Battistin and Meroni, 2016; Figlio et al., 2018), extended or shortened school years (Pischke, 2007; Parinduri, 2014; Aucejo and Romano, 2016), and year-round academic calendars (Graves, 2010, 2011; McMullen and Rouse, 2012; Graves, 2013; Depro and Rouse, 2015).

[6] Unlike Bostwick et al. (2022), which captures only paid employment, LinkedIn includes both paid and unpaid internships and covers students from both public and private institutions, whereas Bostwick et al. (2022) includes only public institutions.

and Virkola (2021) find that treated students accumulated more work experience and achieved higher earnings. Evidence from Portugal and Brazil also shows improved employability from internship experience (Silva et al., 2016, 2018; Della Rocca et al., 2025). This study offers a causal assessment of the labor market benefits of internships in the United States, leveraging variation in internship participation induced by quasi-experimental changes in academic calendars.

2 Background and Data

2.1 Academic Calendar Systems

In the United States, colleges and universities operate under different academic systems, with the semester system and the quarter system being the most common. The semester system, adopted by the majority of institutions, organizes the academic year into two 15- to 16-week terms (fall and spring), followed by a summer break. The quarter system splits the academic year into four 10-week terms. Students typically attend three quarters (fall, winter, and spring) and may take the summer as an optional quarter. There are two other systems that are much less common: the trimester system, which divides the year into three terms, and the four-one-four system, which includes two four-month blocks separated by a one-month block. Following the categorization in Bostwick et al. (2022), I classify the trimester system as the quarter system and the four-one-four system as the semester system in the analysis due to their relative similarities in scheduling.[7]

Compared to the semester system, the quarter system features shorter terms with fewer courses taken simultaneously, making it more flexible for course scheduling but also resulting in an increased pace and more frequent evaluations. More relevant to this study, the two systems also differ in the timing of the summer break. Under the semester system, the academic year typically concludes in May and resumes in late August. In contrast, under the quarter system, the school year ends in June and recommences in September. Since many firms structure their internship programs according to the more prevalent semester system schedule, students on the quarter system often miss these opportunities because their summer break starts about a month later.

The data on the academic calendar of each institution are obtained from the Integrated Postsecondary Education Data System (IPEDS). IPEDS is maintained by the U.S. Department of Education's National Center for Education Statistics. It gathers information from every institution that participates in federal student financial aid programs. Specifically, for each academic year,

[7]The empirical results are robust to excluding the three institutions in the sample that have ever used the trimester or four-one-four systems.

all institutions report their predominant calendar system. The options include semester, quarter, trimester, four-one-four, other nontraditional academic systems, or calendars that differ by program.

In this study, the analyses focus on institutions in Ohio, as it is the state that has experienced the most transitions from quarter systems to semester systems over the past 30 years.[8] This is mainly because the Ohio Department of Higher Education mandates that all public universities and colleges in Ohio switch to semester systems. Specifically, the policy required all public institutions that were operating under quarter systems to adopt the semester system by the fall of 2012.[9] The goal of the policy is to make it easier for students to transfer between institutions. Using records from IPEDS, I constructed a panel that includes the academic calendars of all degree-granting institutions in Ohio that are at the baccalaureate level or higher, spanning from 1990 to 2019. To study the impact of the transition from quarter to semester systems, I restrict the sample to institutions that initially operated under quarter systems between 1990 and 1995.[10] For each institution, I identify the academic year in which it transitioned to a semester system, and exclude those that used non-traditional calendars or underwent multiple calendar transitions.

Appendix Table A1 lists the 17 colleges and universities included in the final sample for analysis. These institutions transitioned from the quarter system to the semester system between 1996 and 2013, except for Franklin University, which remains on the trimester system. Many of these universities have multiple campuses across the state, and campuses belonging to the same university share the same year of transition. As of 2019, these institutions collectively enrolled approximately 55% of the total undergraduate student population in Ohio.

2.2 LinkedIn Profiles

Students' educational and employment records are obtained from their public LinkedIn profiles through Revelio Labs. LinkedIn is a business- and employment-focused social media platform. It first launched in 2003 and now has 200 million users in the United States. The platform is more commonly used by college-educated white-collar workers, the sample this study intends to focus on. Through Revelio Labs, I have access to all public profiles created by LinkedIn users as of early 2023. LinkedIn profiles serve as online resumes where individuals share their education and employment histories with their connections, recruiters, and the general public. The education section includes the

[8] Appendix Figure A1 compares the prevalence of quarter systems between 1995 and 2019. The share of institutions using quarter systems in Ohio decreased from above 30% to below 5%.

[9] `https://transfercredit.ohio.gov/educational-partners/educational-partner-resources/academic-calendar-conversion/overview`.

[10] The results remain robust when including the "always treated" units.

institutions users have attended or are currently attending, years of attendance, and degrees obtained or in progress. The employment section includes users' past and current employers, employment start and end dates (year and month), job titles, and brief job descriptions.

Revelio Labs preprocesses the raw data. First, they predict users' genders by feeding their first names into a model trained on the Social Security Administration data. Similarly, they predict users' race and ethnicity using a model trained on U.S. Census data, which considers users' first names, last names, and locations. For each employment record, Revelio Labs assigns a seniority level and an O*NET code based on the job title, company, and industry. Finally, Revelio Labs imputes the salary for each position using information specific to the position, including job title, seniority level, company, and location, as well as user-specific information such as years of experience. The model is trained on salary data from publicly available labor certification applications, self-reported data, and information from online job postings.[11]

The main sample of analysis includes college students with public LinkedIn profiles who were enrolled in the 17 Ohio colleges and universities between 1990 and 2019.[12] For each student, I observe their imputed demographics, duration and field of study, and post-graduation outcomes. The post-graduation outcomes include whether they enroll in advanced degree programs, when they start their first job, as well as the imputed salary, seniority level, and occupation of their first job. Most importantly, I identify all their internship experiences while enrolled in college. An employment record is classified as an internship if the job title includes the keyword "intern" or "internship." Following Bostwick et al. (2022), I classify an internship experience as a "summer internship" if it begins between April and September of the year.[13] I refer to the remaining ones as "off-cycle internships." Appendix Table A2 provides the summary statistics. On average, a student reports completing a total of 0.28 internships while in college, with the majority being summer internships.[14]

[11] The imputed wage data have been validated and used by Amanzadeh et al. (2024) and Dorn et al. (2024).
[12] Years after 2020 are excluded to avoid the impact of the COVID-19 pandemic.
[13] This definition of summer is broad enough to cover the summer break for students on both semester and quarter systems.
[14] Appendix Figure A2 plots the share of students who report internship participation on LinkedIn, by year of college entry. The rapidly growing trend reflects both the increased reporting on LinkedIn and a rise in internship participation.

3 Internship Participation: Individual-by-Year Level Analysis

3.1 Empirical Strategy

I exploit the staggered transitions from quarter to semester systems to estimate the impact of the academic calendar on students' internship participation. Specifically, I build a panel data with students enrolled at the 17 Ohio institutions between 1990 and 2019, recording whether they participated in internships in each calendar year. As a baseline specification, I estimate the following two-way fixed-effect (TWFE) event study model with staggered adoption:

$$Y_{ist} = \sum_{k=-7}^{7} \theta_k SemSys_{stk} + \gamma_s + \eta_t + \rho_{g(s)} \times t + \varepsilon_{ist}, \tag{1}$$

for student i who enrolls at institution s in calendar year t. The outcome variable Y_{ist} denotes whether student i from institution s participates in internships in year t. In particular, I consider three different measures: (1) whether a student participates in a summer internship, (2) whether a student participates in an off-cycle internship, and (3) whether a student participates in any internship during the year. For example, for a student enrolled at Ohio State University from 2010 to 2014, I examine whether the student participated in internships in each calendar year t—2010, 2011, $\cdots$, and 2014—and distinguish between summer and off-cycle internships.[15]

The variable $SemSys_{stk}$ is an indicator for k years since institution s transitioned to the semester system. For Ohio State University, which transitioned to the semester system in the fall of 2012, $k = 0$ in the calendar year $t = 2013$, $k = -1$ in calendar year 2012, and $k = 1$ in 2014.[16] I normalize the coefficient in the year immediately preceding the switch (θ_{-1}) to zero. θ_ks are the coefficients of interest. Following Bostwick et al. (2022), I assume the effect of the treatment at least seven years before or after the shift to be unchanging, with the average effects being captured by θ_{-7} and θ_7. γ_s and η_t denote the institution and calendar year fixed effects, respectively. I additionally control for group-specific linear time trends $\rho_{g(s)} \times t$, where a group includes the institutions that made the transition in the same year. The standard error ε_{ist} is clustered at the institution level.

To better quantify the average treatment effect, I also estimate the TWFE staggered difference-in-differences model:

$$Y_{ist} = \beta SemSys_{st} + \gamma_s + \eta_t + \rho_{g(s)} \times t + \varepsilon_{ist}. \tag{2}$$

[15] I measure internships by calendar year rather than academic year because LinkedIn profiles only show the calendar year of enrollment, making it difficult to determine the specific term in which the student started.

[16] Since this study focuses on summer internships, and the transition to the semester system occurred in the fall of 2012, I consider 2012 as the year before the treatment and 2013 as the first year of treatment. The results are not sensitive to an alternative coding of the first treatment year as quarter 4 of 2012 to quarter 3 of 2013.

The model includes similar covariates as in equation (1), but instead of examining each year relative to the transition separately, it uses a single dummy variable, $SemSys_{st}$, indicating whether institution s operates under the semester system in calendar year t. The coefficient β captures the average treatment effect of transitioning to semester systems, assuming (1) parallel trends and (2) treatment effect homogeneity.

The parallel trends assumption requires that students' internship participation across different institutions would have followed the same trend if they had all continued using the quarter system. I control for any institution-specific, time-invariant variations by including institution fixed effects, and I account for any time trends in internship participation that are common across all institutions by including year fixed effects. Additionally, by including adoption group-specific linear trends, I control for the possibility that institutions adopting the semester system in different years were following differential linear trends in internship participation. This provides a weaker version of the parallel trends assumption, requiring only that institutions follow their group-specific differential linear trends in the absence of treatment. I also present the results without group-specific linear trends, as well as the results with institution-specific linear trends.

Since I use students' self-reported internship experiences on their LinkedIn profiles as a proxy for actual internship participation, the parallel trends assumption also requires that students' engagement with LinkedIn is uncorrelated with the transition to semester systems. Any institution-level heterogeneity and overall time trends in LinkedIn usage are accounted for by including institution and year fixed effects. In Appendix Table A3, I further show that students' LinkedIn usage, measured by the share of graduates with profiles, the share reporting employment information, the share with recent profile updates, and the average number of connections, is unrelated to changes in the academic calendar. It is also important to ensure that students do not select institutions based on the current or future academic calendar. Appendix Table A4 verifies that the characteristics of students enrolled at these institutions do not change in response to the transition to semester systems. Finally, to rule out any anticipation effects, I visually examine the estimates of equation (1) prior to the calendar transition and find no evidence that students delayed their internships in anticipation of the future adoption of semester systems or any other forms of pretrends.

We additionally require that the treatment effects are homogeneous across institutions and over time to interpret the coefficient of interest β in equation (2) as the average treatment effect on the treated (e.g., De Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021). Later, I relax this assumption by presenting results using heterogeneity-robust estimators.

3.2 Baseline Results

Figure 1(a) presents the estimates of θ_k from equation (1) for the three measures of internship participation. The near-zero and statistically insignificant coefficients before the transition to semester systems suggest that the parallel trends assumption is met. There are no significant deviations from trends in internship participation (in the summer or other seasons) across institutions with different calendar change timings. We observe a significant increase in summer internship participation in the year immediately following the adoption of semester systems. The treatment effects remain stable, with a slight increase over time, possibly due to an overall rise in internship participation and reporting on LinkedIn. Meanwhile, internship participation during non-summer seasons decreases after the transition to the semester system. This may be because, under semester systems, students take more courses concurrently, making it harder to add an internship to their schedules. This could also be due to a crowding-out effect, as students become less likely to participate in off-cycle internships when more summer opportunities are available. When combining both types, students are significantly more likely to have internship experiences when their institutions operate under semester systems.

Panel A of Table 1 reports the results from equation (2), where I control for adoption group-specific linear time trends. Columns (2), (4), and (6) also control for student characteristics, including imputed gender, imputed race and ethnicity, and fields of study in college. The estimates remain unchanged with the inclusion of student characteristics. Column (2) suggests that, under the semester system, students are 1.17 percentage points (pp) more likely to undertake internships *each summer*, which represents a 28% increase relative to the sample mean. Meanwhile, column (4) indicates a slight, statistically insignificant decrease in off-cycle internship participation under the baseline specification. Overall, according to column (6), students are 1.00 pp (18%) more likely to have internship experiences *each year* after their institutions transition to semester systems. The magnitude of the average treatment effect should be interpreted with caution because we only observe internship experiences listed on LinkedIn profiles. Given that not everyone reports every internship experience they had—especially individuals who were in college many years before LinkedIn became available—it is not possible to directly map the sample mean or the estimates one-to-one to actual internship participation. However, the 18% *relative* increase compared to the sample mean is informative and suggests that academic calendars can have large impacts on internship participation.

It is important to note that all estimates reflect the impact of switching to the more common semester system, but they do not disentangle whether the benefits arise from the features of the

semester calendar itself or from aligning with the prevailing system. Since the semester calendar has always been the more common structure, the two effects cannot be separated.

3.3 Robustness

Appendix Figure A3 and Panels B-E of Table 1 show the results under alternative specification. Appendix Figure A3(a) presents the estimates without group-specific linear time trends, showing slight differences in the trends that different institutions followed prior to the calendar change, which leads to an overestimated average treatment effect (Panel B of Table 1). Figure A3(b) and Panel C of Table 1 report the results with institution-specific linear trends instead of group-specific trends, which do not impact the estimates. Figure A3(c) and Panel D of Table 1 report the results excluding the first and fifth or later years of college enrollment for each student. For a typical student who enrolls in the fall of their first year and graduates before the summer of their final year, internship participation during those partial years is unlikely to be affected by the academic calendar. By focusing only on the three full calendar years in college, this specification also addresses the concern that students who do not graduate on time are more heavily weighted in the baseline sample. The average treatment effects are larger after excluding the partial and extra years. Finally, Appendix Figure A3(d) and Panel E of Table 1 include graduate students in the analysis and find a smaller treatment effect than when focusing only on undergraduate students in the baseline specification.

Additionally, in Appendix Table A5, I estimate the impact of switching to semester systems on internship participation *separately* for the summers following years 1, 2, and 3 of college. The point estimate is strongest in the summer before senior year, driven entirely by the higher baseline internship participation during that summer. Appendix Table A7 shows that the results are robust to excluding the three institutions in the sample that were ever on trimester or four-one-four systems.

More importantly, recent econometric literature points out that TWFE estimators in staggered setups require homogeneous treatment effects across both units and time periods to ensure consistency. Alternatively, I employ newly proposed methods that are robust to potential heterogeneity in treatment effects (Callaway and Sant'Anna, 2021; Sun and Abraham, 2021; Borusyak et al., 2024; De Chaisemartin and d'Haultfoeuille, 2024). Figures 1(b)-(d) present the results separately for the three measures of internship participation. Although different estimators are not perfectly comparable to one another due to differences in sample selection and methodology, it is reassuring to see that the heterogeneity-robust estimators exhibit patterns very similar to those of the TWFE estimators.

4 Post-Graduation Outcomes: Individual Level Analysis

4.1 Empirical Design

To estimate the impact of semester systems on students' total number of internships while in college and on their post-graduation outcomes, I conduct an individual level analysis that leverages the variation in their entry years relative to the year of the calendar change. Specifically, I consider a student as fully exposed to the semester system if she enters college in the year of or after the transition to semester systems. I consider a student as partially exposed if she enters college one or two years before the transition, meaning that her institution transitions to semester systems during her sophomore or junior years. I do not consider students who are in their senior year at the transition as treated because, if they graduate on time, there are no summers left for them to do internships while in college. Some students do not graduate on time, so they become de facto exposed by spending extra years in college. However, as shown in Bostwick et al. (2022), the on-time graduation rate is endogenous to academic calendars. Therefore, rather than using their actual exposure, I define it as "intended" exposure assuming everyone graduates on-time and estimate the intent-to-treat effects.

I estimate the same TWFE event study model as in equation (1) but at the individual level, with t now denoting the college entry year of student i. The outcome variable Y_{ist} represents the number of internships or some post-graduation outcomes of student i who enters institution s in year t. The θ_ks are the coefficients of interest: θ_0 captures the treatment effect for students who enter college in the year of the calendar change, and θ_{-1} (θ_{-2}) captures the effect for students who are in their sophomore (junior) year when the institution transitions to a semester system. I normalize θ_{-3} to zero. Similarly, I control for institution and entry year fixed effects and group-specific linear trends, and cluster standard errors at the institution level.

I also estimate the difference-in-differences model that is parallel to equation (2):

$$Y_{ist} = \beta_1 Partial_{st} + \beta_2 Full_{st} + \gamma_s + \eta_t + \rho_{g(s)} \times t + \varepsilon_{ist}, \tag{3}$$

where $Partial_{st}$ denotes whether students who enter institution s in year t are partially exposed to semester systems if they graduate on time, and $Full_{st}$ denotes whether they are fully exposed. The sample for analysis includes college students who entered the 17 institutions in Ohio between 1990 and 2015. I exclude students who spent fewer than four years or more than six years in college.[17] I conduct a placebo analysis and show in Appendix Table A4 that students' characteristics, including

[17] Bostwick et al. (2022) finds transitioning to semester systems reduces four-year graduation rates but has no significant impact on six-year graduation rates.

gender, racial minority status, and fields of study, do not change in response to the transition to semester systems. This helps alleviate concerns that students select institutions based on their academic calendars.

4.2 Results

Figure 2 presents the estimates from the event study model. Figure 2(a) overlays the coefficients for three internship measures: the total number of internships undertaken throughout college that are (1) summer internships, (2) off-cycle internships, and (3) both types combined. There are no differential pretrends in internship participation across institutions that transitioned to semesters in different years. The coefficients suggest that students graduate with significantly more summer internships if their institutions transition to a semester system in their junior or sophomore years. The effects are stronger if the transition occurs in their freshman year or before they enroll. Meanwhile, we observe a small and marginally significant decrease in off-cycle internship participation for students who are partially or fully exposed to semester systems. The increase in summer internships outweighs the decrease in off-cycle internships, leading to more overall internship experiences, especially for students who are fully exposed.[18]

Figure 2(b) shows the impact of semester systems on the share of students with a non-entry-level first job after college. Specifically, I use the seniority levels imputed by Revelio Labs, which characterize positions such as assistants, clerks, and trainees as entry level. The coefficients suggest that students exposed to semester systems are more likely to have their first non-internship job after college classified as non-entry-level, although the estimates are noisier and only marginally significant. Figure 2(c) shows the impact of semester systems on students' starting salaries. The outcome variable is the imputed starting salary of students' first non-internship job after college, adjusted to 2010 dollars. Students who are partially exposed to semester systems earn higher starting salaries, and the effects are larger and statistically significant for students who are fully exposed.

Table 2 presents the regression results from equation (3). According to column (1), students who are partially exposed to semester systems complete 0.034 more summer internships throughout college, while fully exposed students complete 0.068 more summer internships—a 27% increase relative to the sample mean. However, column (2) suggests that the transition to a semester system decreases the number of off-cycle internships by 0.014 for fully exposed students. Overall, when institutions

[18] Appendix Figure A4 presents the heterogeneity-robust estimators separately for the three internship measures. I exclude the Callaway and Sant'Anna (2021) estimator because the number of covariates is too large given the sample size.

transition to semester systems, students who are partially exposed have 0.025 more internships in college (statistically insignificant), and fully exposed students have 0.054 more internships, a 16% increase relative to the sample mean of 0.339 internships.[19] These results are consistent with the findings from the individual-by-year level analyses. For post-graduation outcomes, column (4) shows that partial exposure to semester systems makes students 0.8 pp more likely to land a non-entry-level job after college, while full exposure increases this likelihood by 1.2 pp, or 2.2% relative to the sample mean. Column (5) shows a positive but statistically insignificant change in starting salary for partially exposed students, and a significant $846 (1.5%) increase in salary for fully exposed students.

Table 2 finds that when institutions adopt semester systems, students gain more (summer) internship experiences and see improved labor market outcomes after college. Descriptively, this finding is consistent with the literature, which suggests that internship participation increases labor market opportunities and boosts earnings. However, caution is needed in interpreting these reduced-form estimates as a causal quantification of the impact of internships on labor market outcomes, for two main reasons. First, the exclusion restriction is not satisfied if we use calendar changes as an instrument for internship participation. Specifically, academic calendars can influence students' labor market outcomes through channels other than internships, such as academic performance. For instance, Bostwick et al. (2022) finds that students have worse academic performance and lower on-time graduation rates under semester systems. Assuming that academic performance is positively correlated with labor market outcomes, this implies that IV estimates will *underestimate* the benefits of internship participation on labor market outcomes.

Second, the magnitudes should be interpreted with caution because LinkedIn profiles do not necessarily include all internship experiences or complete employment histories. If we assume that, during the sample period, students have an average of 0.7 internships throughout college, this implies that only half (0.339/0.7) of these internships are listed on their LinkedIn profiles. Consequently, the point estimate of the effect of full exposure to semester systems on the number of internships (0.054) is about half of the actual magnitude. Even if the exclusion restriction holds, the IV estimate of the effect of one additional internship on earnings ($846/0.054) would be twice the actual magnitude.

Therefore, I rely on the relative magnitudes to interpret the results. According to column (3), students' internship participation increases by 16% (0.054/0.339) if they are fully exposed to semester systems. Assuming the exclusion restriction holds, this 16% increase in internship participation leads to an $846 increase in their starting salaries. By linear extrapolation, the results suggest that

[19] Appendix Table A8 shows that, as the number of internships changes, exposure to semester systems increases students' earnings from summer internships and decreases earnings from off-cycle internships.

students' starting salaries would increase by $5,287.5 if their total number of internships in college were to double.[20] Similarly, the likelihood of students finding a non-entry-level job after college would increase by 7.5 percentage points if their number of internships doubled. Finally, considering the likely violation of the exclusion restriction, it is possible that these labor market benefits of internships are underestimated and may actually be stronger.

4.3 Additional Results

I explore whether increased internship experience under semester systems affects other post-graduation outcomes. Appendix Table A9 illustrates how students enter different occupations when their institutions transition to semester systems. Based on the O*NET code of their first job after college, I find that more students enter high-paying occupations—such as business and management, engineering, and mathematics—when they are exposed to semesters. This may help explain the positive impact on students' earnings after college. Appendix Table A10 examines the likelihood that students' first post-college employment is in the same company, industry, or occupation as one of their internships. The estimates suggest that under semester systems, students are more likely to receive and accept "return offers," i.e., jobs at the same companies where they complete internships.

Appendix Figure A5 examines medium-term outcomes. I track students' employment positions eight years after college entry and find that the salary gains associated with semester systems persist, while the effect on seniority diminishes.

I also explore whether academic calendars affect students' pursuit of advanced degrees. Appendix Table A11 shows that exposure to semester systems does not affect the gap between college graduation and students' first job. The likelihood of students pursuing advanced degrees (one year, three years after graduation, or ever) remains unchanged. However, semester systems appear to reduce the likelihood of earning a doctorate degree by 0.6 pp (8.3%, statistically insignificant). It suggests that semester systems may be less academically beneficial, consistent with Bostwick et al. (2022).

Appendix Table A12 shows little impact of academic calendars on students' participation in non-internship positions, such as teaching or research assistant roles, while in college.

Robustness Appendix Table A13 reports the results of alternative specifications of equation (3). Panel A excludes student characteristics (gender, race and ethnicity, and field of study) as covariates in the regression. Panel B restricts the sample to students who graduate on time, and Panel C includes

[20] The 9.6% salary increase substantially exceeds the typical return to a few months of work experience, indicating that internships generate benefits beyond simple experience accumulation.

all college students regardless of their duration of study. The results are quantitatively similar to the baseline results in Table 2, except for a smaller impact on the starting salary of on-time graduates.

Heterogeneity Appendix Tables A14, A15, and A16 present the heterogeneity of individual-level analyses by gender, racial minority status, and fields of study. Overall, the adoption of semester systems increases internship participation across all student backgrounds, especially for female and racial minorities, and for students who major in business, economics, and engineering. However, it seems that male and white students enjoy larger benefits for labor market outcomes, along with students majoring in business and economics.

5 Conclusion

For college students, internships have become a critical part of their educational experience, offering practical training, financial benefits, and future job opportunities. Therefore, it is crucial for policymakers and institutions to ensure that internship participation is both accommodated and encouraged as part of the higher education experience. Specifically, the choice of academic calendar is widely believed to affect students' access to internships. Under the less common quarter system, the summer starts one month later, which can cause scheduling conflicts for students seeking summer internships. However, to date, there lacks empirical evidence confirming the negative impacts of the quarter system on students' internship participation.

This study leverages the quasi-experimental variation in the timing of the transition from quarter to semester systems across colleges and universities in Ohio. Using students' internship experiences reported on their LinkedIn profiles and a staggered difference-in-differences design, I document that the transition to a semester system increases students' internship participation. In particular, college students graduate with 27% more summer internship experiences, and there is a net increase of 16% after accounting for the slight negative impact on off-cycle internships. These additional internship experiences improve students' labor market outcomes, making them more likely to secure non-entry-level jobs with higher starting salaries. The findings have important policy implications, both for institutions currently debating whether to change their academic calendars and for the broader higher education system. How institutions are structured can have long-term impact on students' well-being beyond their academic success.

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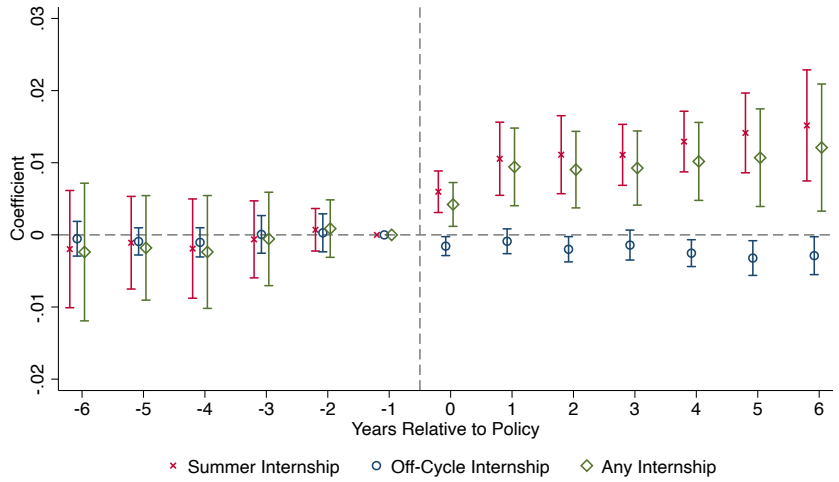
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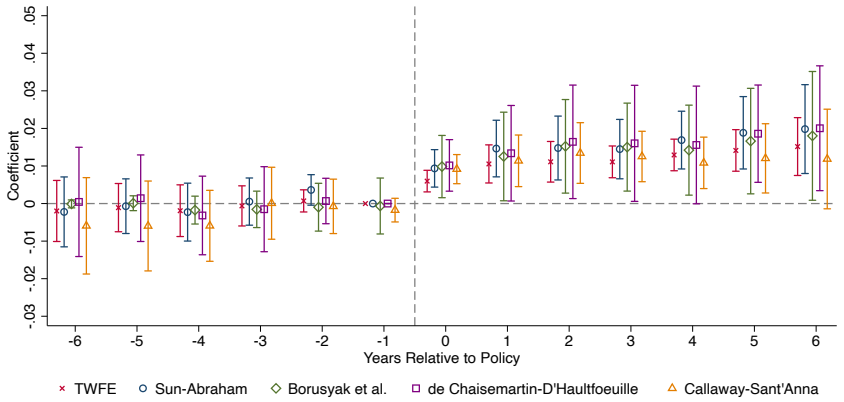
Figures and Tables

Figure 1: Effect of Switching to Semesters on Internship Participation: Individual-by-Year Level Analysis

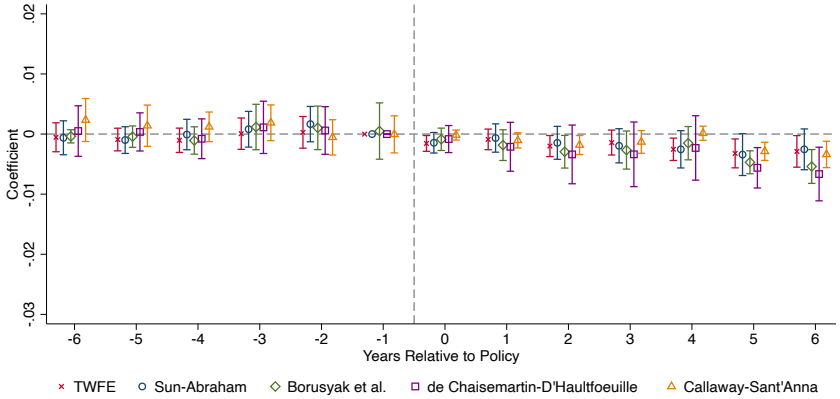
(a) TWFE Estimators



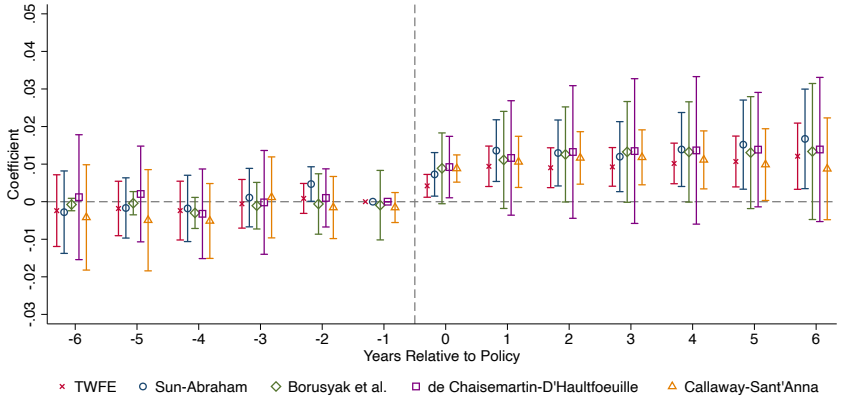
(b) Robust Estimators: Summer Internship



(c) Robust Estimators: Off-Cycle Internship



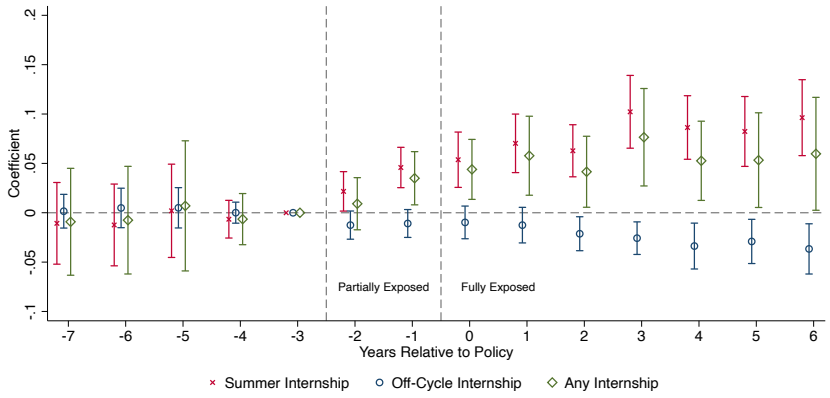
(d) Robust Estimators: Any Internship



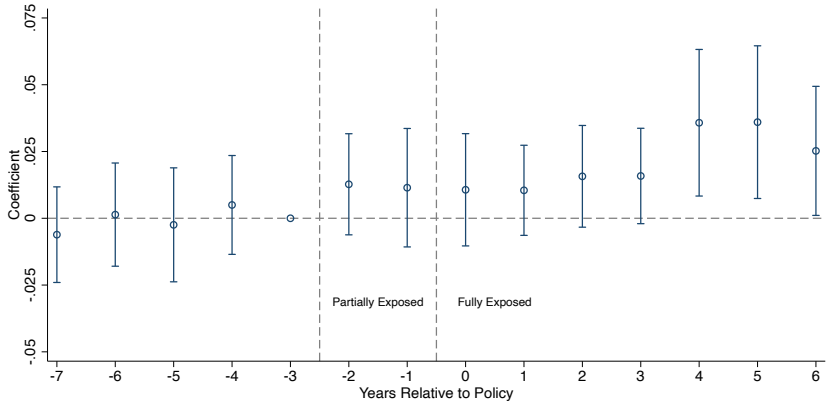
Notes: Sub-figure (a) presents the estimated coefficients, θ_k, of equation (1). The outcome variables are as follows: (1) whether the student participates in a summer internship, (2) whether the student participates in an off-cycle internship, and (3) whether the student participates in any internship during the year. Sub-figures (b)-(d) overlay the event-study plots constructed using five different estimators for the three outcomes: the staggered TWFE model (equation 1), Sun and Abraham (2021), Borusyak et al. (2024), De Chaisemartin and d'Haultfoeuille (2024), and Callaway and Sant'Anna (2021). All specifications control for institution and year fixed effects, along with group-specific linear time trends. I normalize the coefficients to zero in the year immediately preceding the switch to semester systems. The 95% confidence intervals are calculated based on standard errors that are clustered at the institution level. For Borusyak et al. (2024), I conduct a two-step estimation. I regress the outcome variable on group-specific linear time trends, institution, and year fixed effects, and I use the residuals for the event study analysis.

Figure 2: Effect of Switching to Semesters on Internship Participation and Post-Graduation Outcomes: Individual Level Analysis

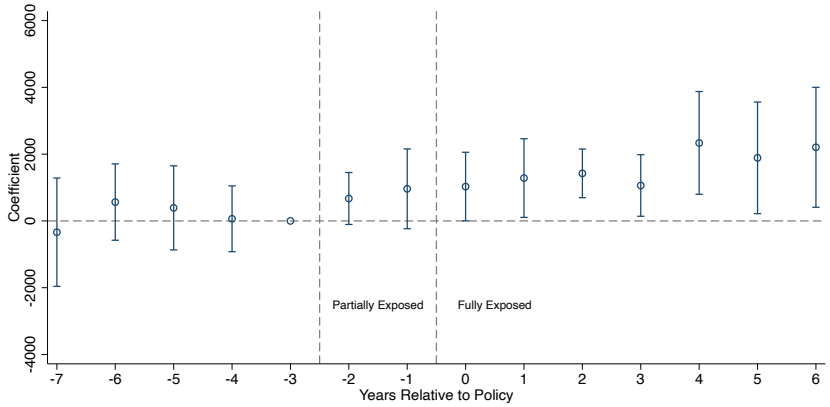
(a) Internship Participation



(b) Non-Entry-Level Job



(c) Starting Salary (in 2010 Dollars)



Notes: This figure presents the estimated coefficients of equation (1) but at the individual level. The outcome variables in sub-figure (a) are as follows: (1) whether the student participates in a summer internship, (2) whether the student participates in an off-cycle internship, and (3) whether the student participates in any internship during the year. The outcome variable in sub-figure (b) is whether the student has a non-entry-level first job after college. The outcome variable in sub-figure (c) is the imputed starting salary in 2010 dollars. All specifications control for institution and year fixed effects, along with group-specific linear time trends. I normalize the coefficients to zero for the cohort that enter college three years prior to the switch. The 95% confidence intervals are calculated based on standard errors that are clustered at the institution level.

Table 1: Effect of Switching to Semesters on Internship Participation: Individual-by-Year Level Analysis

	Summer Internship		Off-Cycle Internship		Any Internship	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Baseline Specification						
Semester	0.0116**	0.0117**	-0.0014	-0.0012	0.0098*	0.0100*
	(0.0044)	(0.0044)	(0.0011)	(0.0010)	(0.0049)	(0.0049)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.042	0.042	0.014	0.014	0.053	0.053
N	2,356,765	2,356,765	2,356,765	2,356,765	2,356,765	2,356,765
Panel B: No Group-Specific Linear Trend						
Semester	0.0178**	0.0177***	-0.0003	-0.0001	0.0167**	0.0168**
	(0.0062)	(0.0060)	(0.0016)	(0.0015)	(0.0072)	(0.0069)
Group-specific Trend						
Student Characteristics		x		x		x
Mean(Y)	0.042	0.042	0.014	0.014	0.053	0.053
N	2,356,765	2,356,765	2,356,765	2,356,765	2,356,765	2,356,765
Panel C: Institution-Specific Linear Trend						
Semester	0.0114**	0.0115**	-0.0015	-0.0014	0.0096*	0.0098*
	(0.0044)	(0.0044)	(0.0012)	(0.0011)	(0.0050)	(0.0050)
Institution-specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.042	0.042	0.014	0.014	0.053	0.053
N	2,356,765	2,356,765	2,356,765	2,356,765	2,356,765	2,356,765
Panel D: Excluding the First and Fifth or Later Calendar Years of Enrollment						
Semester	0.0164**	0.0165**	-0.0010	-0.0009	0.0148**	0.0150**
	(0.0062)	(0.0062)	(0.0013)	(0.0012)	(0.0068)	(0.0067)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.055	0.055	0.016	0.016	0.067	0.067
N	1,357,581	1,357,581	1,357,581	1,357,581	1,357,581	1,357,581
Panel E: Including Graduate Students						
Semester	0.0073*	0.0074*	-0.0013	-0.0013	0.0056	0.0058
	(0.0035)	(0.0036)	(0.0009)	(0.0008)	(0.0041)	(0.0041)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.033	0.033	0.012	0.012	0.042	0.042
N	4,215,816	4,215,816	4,215,816	4,215,816	4,215,816	4,215,816

Notes: This table presents the estimates of equation (2). The sample includes undergraduate students enrolled in the 17 institutions between 1990 and 2019. The outcome variables are as follows: (1) whether the student participates in a summer internship, (2) whether the student participates in an off-cycle internship, and (3) whether the student participates in any internship during the year. All regressions control for institution and year fixed effects, along with group-specific linear time trends for Panels A, D, and E. Columns (2), (4), and (6) additionally controls for students' gender, race and ethnicity, as well as their fields of study in college. Panel B does not control for the group-specific linear time trend. Panel C controls for institution-specific linear time trend. Panel D excludes each student's first and fifth or later calendar years of enrollment. Panel E includes both undergraduate and graduate students in the sample. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table 2: Effect of Switching to Semesters on Internship Participation and Post-Graduation Outcomes: Individual Level Analysis

	Number of Internships			Post-Graduation Outcomes	
	(1) Summer	(2) Off-Cycle	(3) Any	(4) Non-Entry Level	(5) Starting Salary
Partial	0.034*	-0.010	0.025	0.008*	508.033
	(0.018)	(0.006)	(0.021)	(0.004)	(364.543)
Full	0.068**	-0.014*	0.054*	0.012***	845.645**
	(0.023)	(0.008)	(0.027)	(0.003)	(315.569)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.250	0.089	0.339	0.548	54966.181
N	255,441	255,441	255,441	255,441	255,441

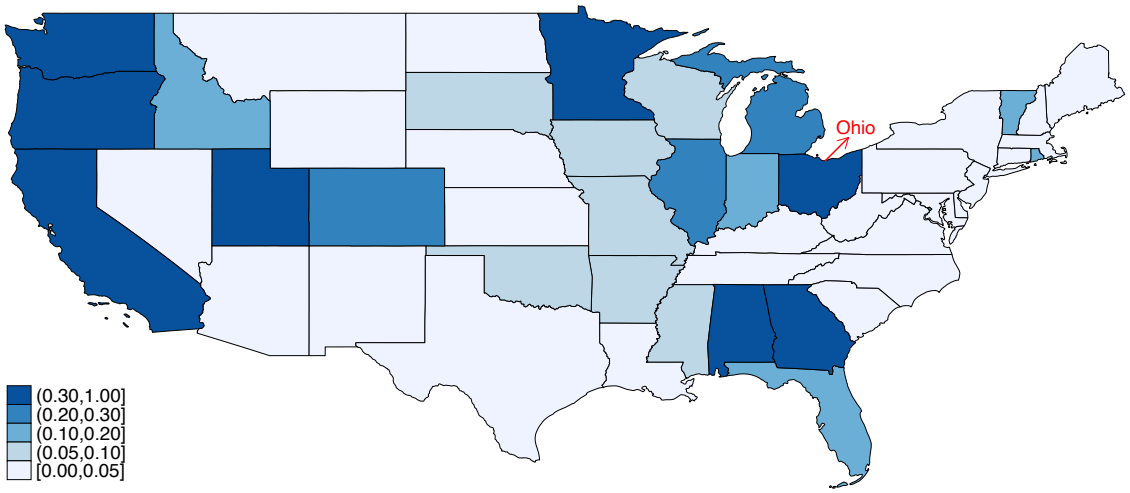
Notes: This table presents the estimates of equation (3). The sample includes college students who entered 17 institutions in Ohio between 1990 and 2015. I exclude students who spent fewer than four years or more than six years in college, those without information on their first job after college, and students from Antioch University due to its small sample size. The outcome variables are as follows: (1) the number of summer internships undertaken throughout college, (2) the number of off-cycle internships undertaken throughout college, (3) the total number of internships undertaken throughout college, (4) finding a non-entry-level job after college, and (5) imputed starting salary in 2010 dollars. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

ONLINE APPENDIX

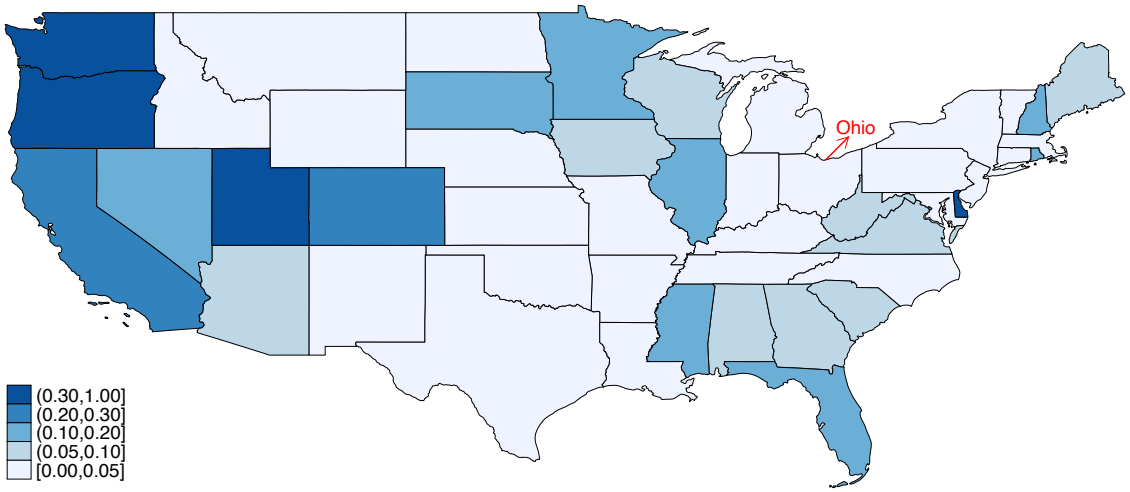
A Additional Figures and Tables

Figure A1: Share of Colleges and Universities Operating under Quarter Systems by State

(a) 1995

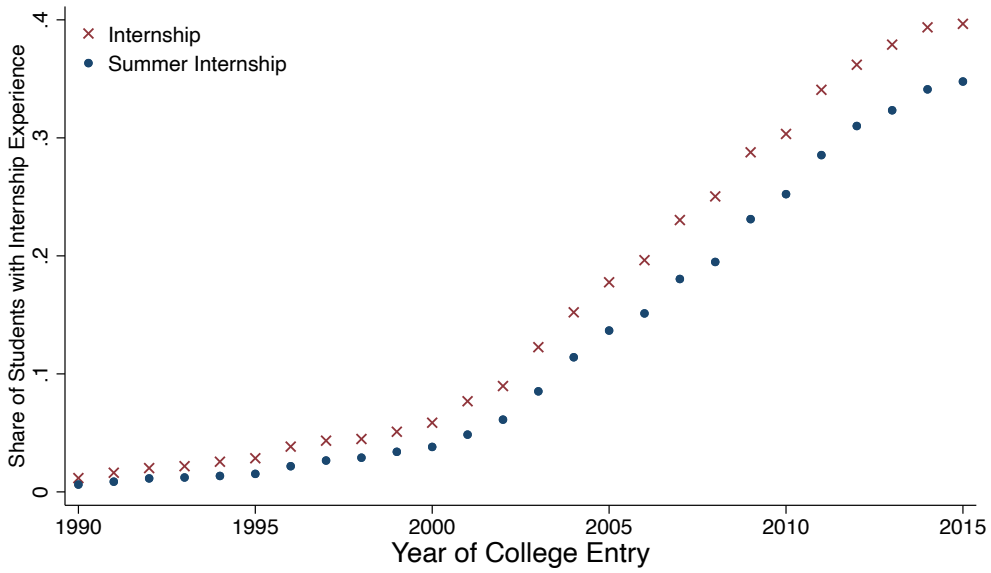


(b) 2019



Notes: This figure shows the share of colleges and universities operating under quarter systems by state in 1995 (a) and 2019 (b). The sample includes degree-granting institutions at the baccalaureate level or higher. Alaska and Hawaii are excluded from the map.

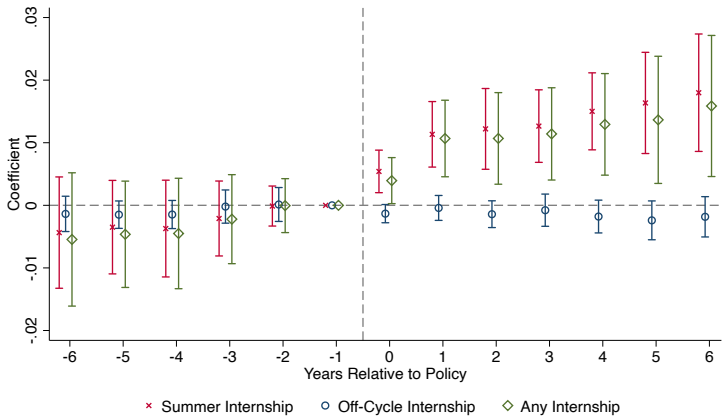
Figure A2: Share of Students with Internship Experience by Year of College Entry



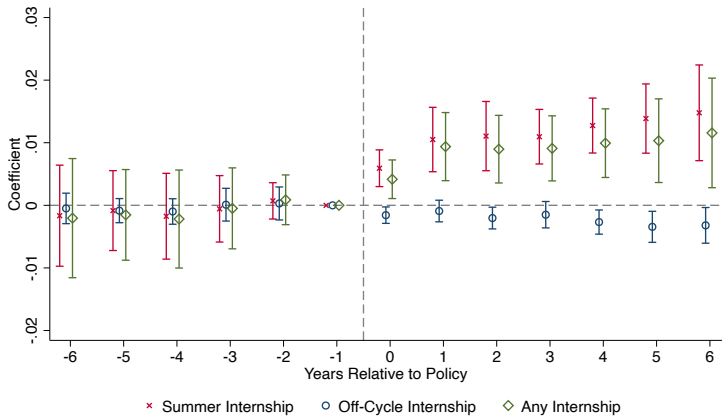
Notes: This figure presents the share of students with at least one internship and at least one summer internship during their years of college enrollment, by year of college entry. The sample includes students who entered 17 institutions in Ohio between 1990 and 2015. I exclude students who spent fewer than four or more than six years in college.

Figure A3: Effect of Switching to Semesters on Internship Participation: Individual-by-Year Level Analysis

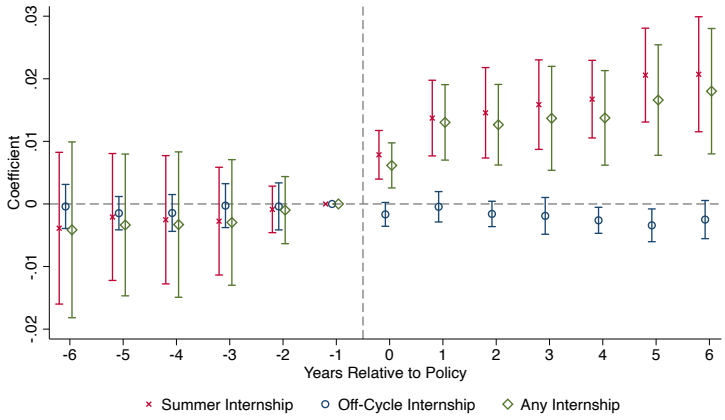
(a) No Group-Specific Linear Trend



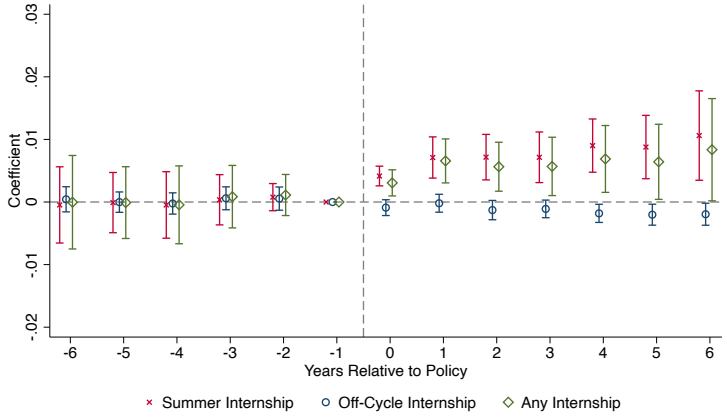
(b) Institution-Specific Linear Trend



(c) Excluding the First and Fifth or Later Calendar Years of Enrollment



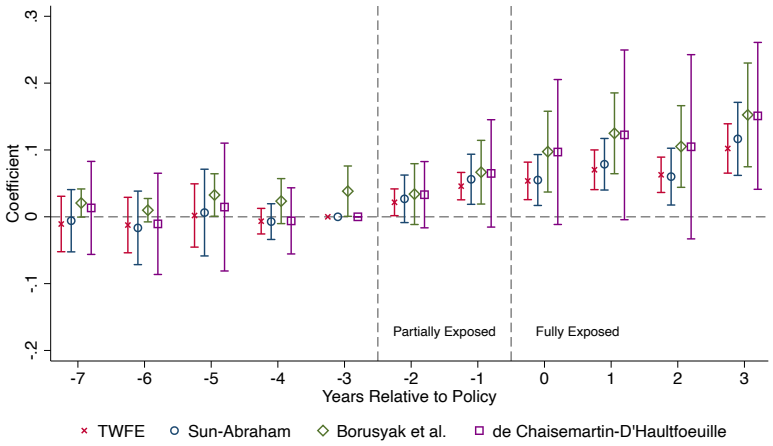
(d) Including Graduate Students



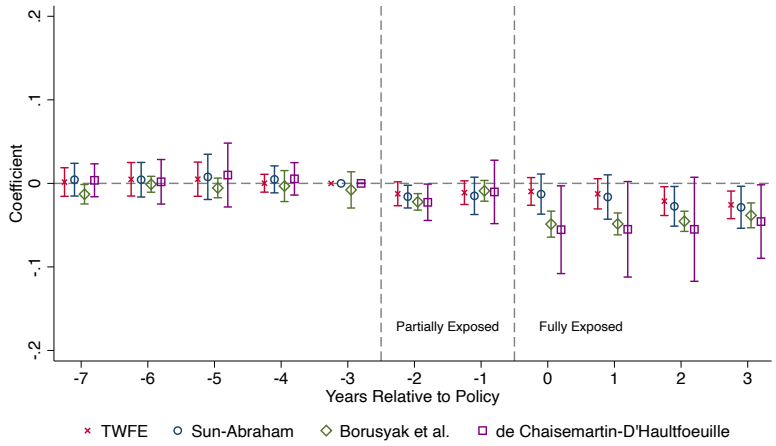
Notes: This figure presents the estimated coefficients, θ_k, of equation (1). The outcome variables are as follows: (1) whether the student participates in a summer internship, (2) whether the student participates in an off-cycle internship, and (3) whether the student participates in any internship during the year. All specifications control for institution and year fixed effects, along with group-specific linear time trends for sub-figures (c) and (d). I normalize the coefficients to zero in the year immediately preceding the switch to semester systems. The 95% confidence intervals are calculated based on standard errors that are clustered at the institution level. Sub-figure (a) does not control for the group-specific linear time trend. Sub-figure (b) controls for the institution-specific linear time trend. Sub-figure (c) excludes the first and fifth or later calendar years of enrollment. Sub-figure (d) includes both undergraduate and graduate students in the sample.

Figure A4: Effect of Switching to Semesters on Internship Participation: Individual Level Analysis, Robust Estimators

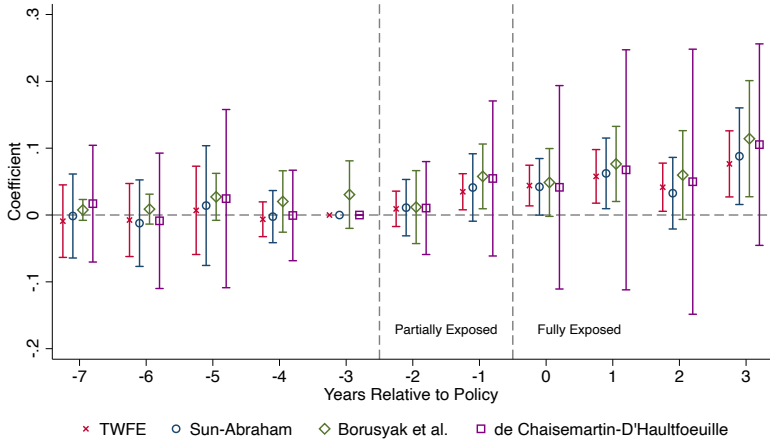
(a) Robust Estimators: Number of Summer Internships



(b) Robust Estimators: Number of Off-Cycle Internships



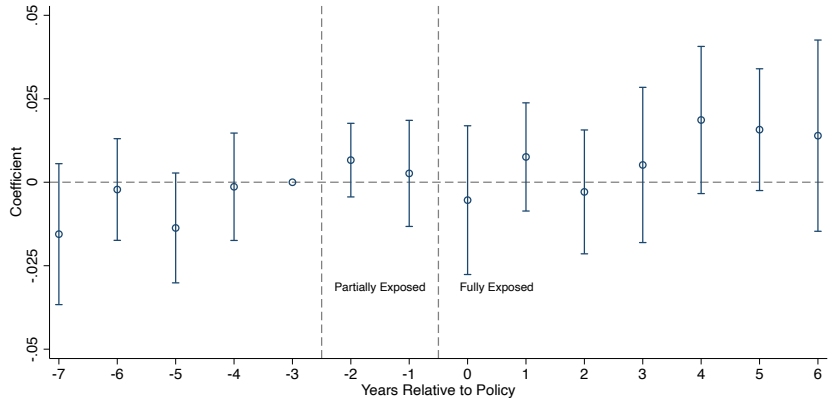
(c) Robust Estimators: Number of Internships



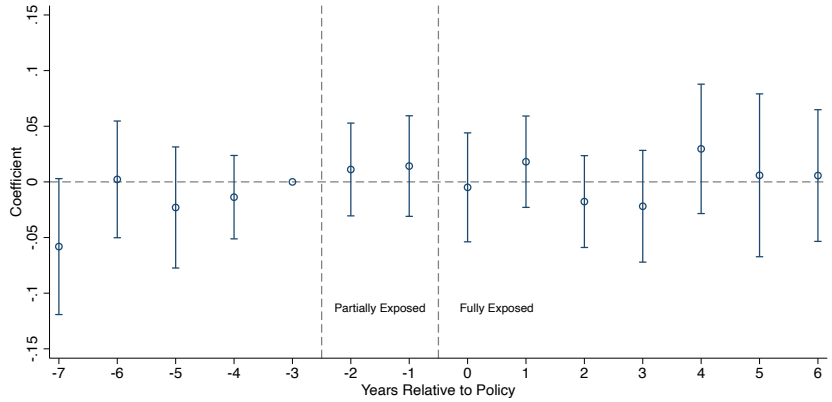
Notes: This figure overlays the event-study plots constructed using different estimators for the following outcomes: (1) the number of summer internships undertaken throughout college, (2) the number of off-cycle internships undertaken throughout college, and (3) the total number of internships undertaken throughout college. The estimators include the staggered TWFE model, Sun and Abraham (2021), Borusyak et al. (2024), and De Chaisemartin and d'Haultfoeuille (2024). All specifications control for institution and year fixed effects, along with group-specific linear time trends. I normalize the coefficients to zero for the cohort that enter college three years prior to the switch. The 95% confidence intervals are calculated based on standard errors that are clustered at the institution level.

Figure A5: Effect of Switching to Semesters on Medium-Term Outcomes: Individual-by-Year Level Analysis

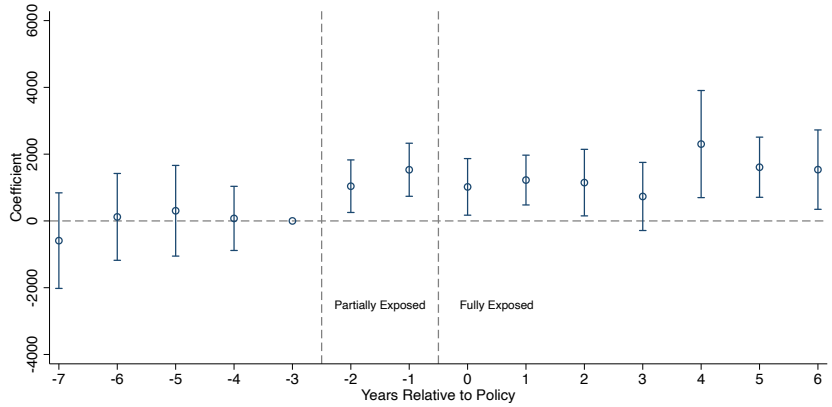
(a) Non-Entry-Level Job



(b) Job Seniority



(c) Imputed Salary (in 2010 Dollars)



Notes: This figure presents the estimated coefficients of equation (1) but at the individual level. It tracks students' employment positions eight years after college entry. The outcome variable in sub-figure (a) is an indicator for whether the student holds a non-entry-level job at that time. The outcome variable in sub-figure (b) is the seniority level on a 7-point scale. The outcome variable in sub-figure (c) is the imputed salary in 2010 dollars. All specifications control for institution and year fixed effects, along with group-specific linear time trends. I normalize the coefficients to zero for the cohort that enter college three years prior to the switch. The 95% confidence intervals are calculated based on standard errors that are clustered at the institution level.

Table A1: Year of Switch to Semesters

Institution	Year
Hiram College	1996
Baldwin Wallace University	1998
University of Toledo	1998
Bluffton University	1999
Cleveland State University	1999
Youngstown State University	2000
Cedarville University	2002
Central State University	2005
University of Dayton	2005
Shawnee State University	2007
Otterbein University	2011
Ohio State University	2012
Ohio University	2012
University of Cincinnati	2012
Wright State University	2012
Antioch University	2013
Franklin University	–

Notes: This table presents the 17 colleges and universities in Ohio that are included in the analysis sample, along with the academic year in which they transitioned from quarter to semester systems.

Table A2: Summary Statistics

Variable	Mean	Std Dev	Num of Obs
Panel A: Student Characteristics			
Female	0.488	0.500	407,517
White	0.855	0.352	407,517
Black	0.086	0.281	407,517
Asian Pacific Islander	0.039	0.193	407,517
Hispanic	0.018	0.132	407,517
Duration of Study: $<$ 4 yrs	0.242	0.428	407,517
Duration of Study: 4 yrs	0.501	0.500	407,517
Duration of Study: 5 yrs	0.199	0.399	407,517
Duration of Study: 6 yrs	0.038	0.191	407,517
Duration of Study: $>$ 6 yrs	0.019	0.138	407,517
Field of Study: Biz & Econ	0.261	0.439	407,517
Field of Study: Engineering	0.141	0.348	407,517
Field of Study: Other	0.598	0.490	407,517
Panel B: Internship Uptake			
Number of Internships: Summer	0.207	0.566	407,517
Number of Internships: Off-Cycle	0.075	0.309	407,517
Number of Internships	0.282	0.704	407,517
Panel C: Post-Graduation Outcomes			
Enrollment in Advanced Degree Program in 1 Year	0.146	0.353	407,517
Enrollment in Advanced Degree Program in 3 Years	0.205	0.404	407,517
Enrollment in Advanced Degree Program at Any Time	0.338	0.473	407,517
Enrollment in Doctorate Degree Program at Any Time	0.070	0.255	407,517
Gap to 1st Job (in Months)	22.545	39.602	342,345
Starting Salary (in Thousands, 2010 Dollars)	54.788	25.801	342,345
Non-Entry Level	0.549	0.498	342,345
Occupation: Biz & Mgmt	0.242	0.428	342,345
Occupation: Eng & Math	0.151	0.358	342,345
Occupation: Sales & Adm	0.166	0.372	342,345
Occupation: Education	0.086	0.280	342,345
Occupation: Healthcare	0.074	0.262	342,345

Notes: This table presents the mean, standard deviation, and number of observations for the key variables. The sample includes college students who entered 17 institutions in Ohio between 1990 and 2015.

Table A3: Effect of Switching to Semesters on LinkedIn Usage: Entering Cohort Level Analysis

	Share with LinkedIn Profiles		Share with First Job Details		Share with Updates Since '23		Avg Number of Connections	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Partial	-0.001	-0.006	0.001	-0.004	0.005	-0.000	0.816	1.481
	(0.022)	(0.019)	(0.019)	(0.017)	(0.010)	(0.005)	(18.790)	(18.313)
Full	0.013	-0.023	0.010	-0.020	0.001	0.002	-2.566	0.169
	(0.025)	(0.027)	(0.021)	(0.022)	(0.007)	(0.006)	(15.531)	(16.666)
Group-Specific Trend	x	x	x	x	x	x	x	x
Weight by Avg Cohort Size		x		x		x		x
Mean(Y)	0.387	0.470	0.323	0.393	0.889	0.885	224.939	251.568
N	225	225	225	225	225	225	225	225

Notes: This table presents the TWFE estimates of the effect of switching to semesters on students' LinkedIn usage. I consider a cohort as fully exposed to the semester system if they enter college in the year of or after the transition to semester systems. I consider a cohort as partially exposed if they enter college one or two years before the transition. The sample includes entering cohorts of undergraduate students from 2000 to 2015, excluding Antioch University and Franklin University due to their small cohort sizes. To measure students' LinkedIn usage by each institution's entering cohort, I calculate the share of college graduates who have LinkedIn profiles (columns (1) and (2)) and those who provide detailed information about their first employment after college (columns (3) and (4)). The denominator is the number of full-time, first-time, degree-seeking undergraduate students in each entering cohort from 2000 to 2015, as obtained from IPEDS. The outcomes in columns (5) and (6) are the share of college graduates who have updated their profiles since 2023, conditional on having a public LinkedIn profile, while the outcomes in columns (7) and (8) are the average number of LinkedIn connections. In columns (2), (4), (6), and (8), observations are weighted by the average size of the entering cohorts at each institution. All regressions control for institution and year fixed effects, as well as group-specific linear time trends. Standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A4: Effect of Switching to Semesters on Students' Characteristics: Individual Level Placebo Analyses

	(1) Female	(2) Minority	(3) Biz & Econ	(4) Engineering	(5) Other Majors
Partial	-0.002	-0.001	-0.001	0.012	-0.011
	(0.005)	(0.006)	(0.010)	(0.008)	(0.008)
Full	0.007	0.011*	0.006	0.005	-0.011
	(0.008)	(0.006)	(0.010)	(0.009)	(0.015)
Group-Specific Trend	x	x	x	x	x
Mean(Y)	0.475	0.132	0.249	0.164	0.587
N	255,441	255,441	255,441	255,441	255,441

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are as follows: (1) whether the student is female, (2) whether the student is a racial minority, (3) whether the student studies business and economics majors, (4) whether the student studies engineering majors, and (5) whether the student studies majors other than business, economics, or engineering. All regressions control for institution and year fixed effects, and group-specific linear time trends. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A5: Effect of Switching to Semesters on Summer Internship Participation: Individual-by-Year Level Analysis, Separately for Summers Following Years 1, 2, and 3

	Summer After Year 1		Summer After Year 2		Summer After Year 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Semester	0.0095***	0.0094***	0.0148**	0.0148**	0.0212**	0.0214**
	(0.0028)	(0.0028)	(0.0066)	(0.0068)	(0.0073)	(0.0073)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.019	0.019	0.050	0.050	0.088	0.088
N	308,836	308,836	308,836	308,836	308,836	308,836

Notes: This table presents the estimates of equation (2). The sample includes college students who entered 17 institutions in Ohio between 1990 and 2015. I exclude students who spent fewer than four years, and students from Antioch University due to its small sample size. The outcome variables are as follows: (1) whether the student has an internship in the summer after their first year in college; (2) whether the student has an internship in the summer after their second year in college; and (3) whether the student has an internship in the summer after their third year in college. All regressions control for institution and year fixed effects, along with group-specific linear time trends. Columns (2), (4), and (6) additionally controls for students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.

Table A6: Effect of Switching to Semesters on Summer Internship Participation: Individual-by-Year Level Analysis, by Locations of Internship Companies

	(1) Ohio	(2) States with $>10\%$ Quarter	(3) States with $\leq 10\%$ Quarter	(4) Outside US
Semester	0.0067***	0.0005	0.0030**	0.0017**
	(0.0023)	(0.0011)	(0.0011)	(0.0006)
Group-Specific Trend	x	x	x	x
Student Characteristics	x	x	x	x
Mean(Y)	0.025	0.005	0.009	0.003
N	2,356,765	2,356,765	2,356,765	2,356,765

Notes: This table presents the estimates of equation (2). The sample includes undergraduate students enrolled in the 17 institutions between 1990 and 2019. The outcome variables are as follows: (1) whether the student has a summer internship within Ohio; (2) whether the student has a summer internship in states where more than 10% of undergraduate students are enrolled in quarter-system institutions; (3) whether the student has a summer internship in states where no more than 10% of undergraduate students are enrolled in quarter-system institutions; and (4) whether the student has a summer internship outside the U.S. The share of undergraduate students enrolled in quarter-system institutions is based on fall 2012 data. States where over 10% of undergraduates attended quarter-system institutions in 2012 include Oregon, Washington, Arizona, California, Utah, Illinois, Rhode Island, Delaware, Michigan, Georgia, Florida, New Hampshire, and Nevada. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A7: Effect of Switching to Semesters on Summer Internship Participation: Individual-by-Year Level Analysis, Excluding the Institutions Ever Under the 4-1-4 System or Trimester System

	Summer Internship		Off-Cycle Internship		Any Internship	
	(1)	(2)	(3)	(4)	(5)	(6)
Semester	0.0116**	0.0118**	-0.0022*	-0.0020*	0.0091	0.0094
	(0.0047)	(0.0047)	(0.0011)	(0.0010)	(0.0053)	(0.0053)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.042	0.042	0.015	0.015	0.054	0.054
N	2,125,103	2,125,103	2,125,103	2,125,103	2,125,103	2,125,103

Notes: This table presents the estimates of equation (2). The sample excludes Otterbein University, which used the 4-1-4 system between 2011 and 2014, Franklin University, which remained on the trimester system from 1984 to 2022, and University of Dayton, which used the trimester system from 1990 to 2004. The outcome variables are as follows: (1) whether the student participates in a summer internship, (2) whether the student participates in an off-cycle internship, and (3) whether the student participates in any internship during the year. All regressions control for institution and year fixed effects, along with group-specific linear time trends. Columns (2), (4), and (6) additionally controls for students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A8: Effect of Switching to Semesters on Internship Earnings: Individual Level Analysis

	(1) Summer	(2) Off-Cycle	(3) Total
Partial	350.540	-177.283	173.256
	(326.644)	(156.429)	(411.766)
Full	1050.608**	-319.885*	730.723
	(436.485)	(172.446)	(573.406)
Group-Specific Trend	x	x	x
Student Characteristics	x	x	x
Mean(Y)	5285.703	2330.392	7616.094
N	255,441	255,441	255,441

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are the total earnings from internships undertaken throughout college that are (1) summer internships, (2) off-cycle internships, and (3) both types combined. Earnings are calculated based on the imputed monthly salary for the internships and their duration. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A9: Effect of Switching to Semesters on Occupation of the First Job: Individual Level Analysis

	(1) Biz & Mgmt	(2) Eng & Math	(3) Sales & Adm	(4) Education	(5) Healthcare
Partial	0.012***	-0.000	0.000	0.002	-0.002
	(0.003)	(0.002)	(0.004)	(0.002)	(0.003)
Full	0.011**	0.008**	0.002	-0.001	-0.003
	(0.004)	(0.003)	(0.004)	(0.002)	(0.003)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.238	0.164	0.161	0.087	0.066
N	255,441	255,441	255,441	255,441	255,441

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables include whether their first job is in the occupation of business and management, engineering and mathematics, sales and administration, education, or healthcare. The occupation is defined by the first two digits of the O*NET code. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A10: Effect of Switching to Semesters on First Job Match in Internship's Company, Industry, and Occupation: Individual Level Analysis

	Same Company		Same Industry		Same Occupation	
	(1)	(2)	(3)	(4)	(5)	(6)
Partial	0.001	0.001	0.002	0.001	0.005	0.004
	(0.002)	(0.002)	(0.005)	(0.005)	(0.006)	(0.006)
Full	0.007**	0.007*	0.009	0.009	0.009	0.009
	(0.003)	(0.004)	(0.005)	(0.006)	(0.007)	(0.007)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.045	0.045	0.075	0.075	0.116	0.116
N	255,441	255,441	255,441	255,441	255,441	255,441

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are whether the first job after graduation is in the same company, industry, and occupation as at least one internship. The occupation is defined by the first two digits of the O*NET code, and the industry is defined by the first two digits of the NAICS industry code. All regressions control for institution and year fixed effects, along with group-specific linear time trends. Columns (2), (4), and (6) additionally controls for students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A11: Effect of Switching to Semesters on Gap to the First Job and Enrollment in Advanced Degrees: Individual Level Analyses

	Gap to 1st Job	Enrollment in Advanced Degree			Doctorate
	(1) In Months	(2) In 1 Year	(3) In 3 Years	(4) Ever	(5) Ever
Partial	0.560	0.007	0.006	0.001	-0.004
	(0.409)	(0.006)	(0.007)	(0.005)	(0.003)
Full	-0.125	-0.000	-0.001	0.003	-0.006
	(0.393)	(0.006)	(0.006)	(0.007)	(0.004)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	21.385	0.154	0.217	0.335	0.072
N	255,442	300,911	300,911	300,911	300,911

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. I include students without information on their first job after college for columns (2)–(5). The outcome variables are (1) the gap between college graduation and the first job in months, (2) whether students enroll in advanced degree programs within one year of college graduation, (3) within three years of college graduation, (4) ever, and (5) whether they ever enroll in doctorate degree programs. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A12: Effect of Switching to Semesters on Participation in Non-Internship Positions: Individual Level Analysis

	Any Non-Intern Jobs		Number of Non-Intern Jobs		Duration of Non-Intern Jobs	
	(1)	(2)	(3)	(4)	(5)	(6)
Partial	-0.000	-0.001	-0.012	-0.013	-0.309	-0.285
	(0.009)	(0.010)	(0.018)	(0.019)	(0.449)	(0.463)
Full	0.016	0.017	0.037	0.037	0.239	0.285
	(0.014)	(0.015)	(0.025)	(0.026)	(0.568)	(0.576)
Group-Specific Trend	x	x	x	x	x	x
Student Characteristics		x		x		x
Mean(Y)	0.359	0.359	0.649	0.649	12.855	12.855
N	255,441	255,441	255,441	255,441	255,441	255,441

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables include whether students have any non-internship jobs while in college, as well as the total number and duration of these jobs. The first and final calendar years, during which they are not enrolled for the full year, are excluded. Examples of non-internship jobs include positions such as teaching and research assistants, peer mentoring and private tutoring roles, and co-op positions. All regressions control for institution and year fixed effects, along with group-specific linear time trends. Columns (2), (4), and (6) additionally controls for students' gender, race and ethnicity, as well as their fields of study in college. The standard errors are clustered at the institution level. Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A13: Effect of Switching to Semesters on Internship Participation and Post-Graduation Outcomes: Individual Level Analysis, Robustness

	Number of Internships			Post-Graduation Outcomes	
	(1) Summer	(2) Off-Cycle	(3) Any	(4) Non-Entry Level	(5) Starting Salary
Panel A: No Student Characteristics					
Partial	0.035*	-0.010	0.025	0.011*	693.176
	(0.019)	(0.006)	(0.022)	(0.006)	(405.658)
Full	0.068**	-0.015*	0.054*	0.013**	935.298**
	(0.023)	(0.008)	(0.027)	(0.005)	(359.859)
Group-Specific Trend	x	x	x	x	x
Student Characteristics					
Mean(Y)	0.250	0.089	0.339	0.548	54966.181
N	255,441	255,441	255,441	255,441	255,441
Panel B: Undergraduate Students with a Study Duration of 4 Years					
Partial	0.037*	-0.006	0.032	0.005	141.603
	(0.018)	(0.007)	(0.020)	(0.006)	(313.327)
Full	0.077***	-0.009	0.068**	0.012**	354.461
	(0.021)	(0.010)	(0.025)	(0.005)	(325.700)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.274	0.085	0.359	0.528	53980.055
N	174,714	174,714	174,714	174,714	174,714
Panel C: All Undergraduate Students, Regardless of Duration of Study					
Partial	0.025	-0.006	0.019	0.004	475.482
	(0.016)	(0.005)	(0.020)	(0.005)	(346.655)
Full	0.063**	-0.010	0.053*	0.012**	903.030***
	(0.026)	(0.007)	(0.030)	(0.005)	(284.851)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.219	0.079	0.299	0.549	54779.119
N	342,039	342,039	342,039	342,039	342,039

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are as follows: (1) the number of summer internships undertaken throughout college, (2) the number of off-cycle internships undertaken throughout college, (3) the total number of internships undertaken throughout college, (4) finding a non-entry-level job after college, and (5) imputed starting salary in 2010 dollars. All regressions control for institution and year fixed effects, and group-specific linear time trends. Panels B and C control for students' gender, race and ethnicity, as well as their fields of study in college. Panel B only includes undergraduate students who graduate on time. Panel C includes all undergraduate students, regardless of their duration of study. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A14: Effect of Switching to Semesters on Internship Participation and Post-Graduation Outcomes: Individual Level Analysis, Heterogeneity by Gender

	Number of Internships			Post-Graduation Outcomes	
	(1) Summer	(2) Off-Cycle	(3) Any	(4) Non-Entry Level	(5) Starting Salary
Panel A: Male Students					
Partial	0.024	-0.007	0.017	0.004	750.429*
	(0.017)	(0.006)	(0.019)	(0.005)	(416.717)
Full	0.058**	-0.011*	0.048*	0.016**	1009.805***
	(0.025)	(0.005)	(0.025)	(0.006)	(283.468)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.245	0.080	0.325	0.621	59316.599
N	134,071	134,071	134,071	134,071	134,071
Panel B: Female Students					
Partial	0.046**	-0.013*	0.033	0.013**	244.539
	(0.020)	(0.006)	(0.025)	(0.004)	(338.266)
Full	0.079***	-0.018	0.062*	0.009	655.316
	(0.025)	(0.012)	(0.035)	(0.006)	(419.524)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.256	0.099	0.355	0.467	50160.506
N	121,370	121,370	121,370	121,370	121,370

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are as follows: (1) the number of summer internships undertaken throughout college, (2) the number of off-cycle internships undertaken throughout college, (3) the total number of internships undertaken throughout college, (4) finding a non-entry-level job after college, and (5) imputed starting salary in 2010 dollars. All regressions control for institution and year fixed effects, group-specific linear time trends, students' race and ethnicity, as well as their fields of study in college. Panel A includes only male students, and Panel B includes only female students. Students' gender are predicted based on their names. The standard errors are clustered at the institution level.

Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A15: Effect of Switching to Semesters on Internship Participation and Post-Graduation Outcomes: Individual Level Analysis, Heterogeneity by Race

	Number of Internships			Post-Graduation Outcomes	
	(1) Summer	(2) Off-Cycle	(3) Any	(4) Non-Entry Level	(5) Starting Salary
Panel A: White Students					
Partial	0.031*	-0.011*	0.020	0.009	546.310
	(0.017)	(0.006)	(0.021)	(0.005)	(418.195)
Full	0.065**	-0.014*	0.050*	0.010***	713.204**
	(0.024)	(0.008)	(0.028)	(0.003)	(275.733)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.245	0.088	0.333	0.548	54978.504
N	221,761	221,761	221,761	221,761	221,761
Panel B: Minority Students					
Partial	0.055*	-0.000	0.055	-0.000	244.519
	(0.027)	(0.011)	(0.033)	(0.014)	(940.069)
Full	0.086***	-0.012	0.073**	0.025	1836.776*
	(0.023)	(0.007)	(0.026)	(0.018)	(967.976)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.284	0.095	0.379	0.546	54885.042
N	33,680	33,680	33,680	33,680	33,680

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are as follows: (1) the number of summer internships undertaken throughout college, (2) the number of off-cycle internships undertaken throughout college, (3) the total number of internships undertaken throughout college, (4) finding a non-entry-level job after college, and (5) imputed starting salary in 2010 dollars. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. Panel A includes only white students, and Panel B includes black, Hispanic, Asian, and Pacific Islander students. Students' race and ethnicity are predicted based on their names and locations. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.

Table A16: Effect of Switching to Semesters on Internship Participation and Post-Graduation Outcomes: Individual Level Analysis, Heterogeneity by Fields of Study

	Number of Internships			Post-Graduation Outcomes	
	(1) Summer	(2) Off-Cycle	(3) Any	(4) Non-Entry Level	(5) Starting Salary
Panel A: Business and Economics Majors					
Partial	0.065**	-0.004	0.061**	0.011	931.563*
	(0.025)	(0.013)	(0.025)	(0.012)	(476.598)
Full	0.110***	-0.015	0.095***	0.026**	1730.142***
	(0.020)	(0.019)	(0.023)	(0.010)	(570.555)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.320	0.104	0.424	0.614	57906.151
N	63,623	63,623	63,623	63,623	63,623
Panel B: Engineering Majors					
Partial	0.026	-0.010	0.015	-0.006	-479.725
	(0.023)	(0.008)	(0.025)	(0.007)	(444.519)
Full	0.082***	-0.014**	0.068**	0.010	1215.998*
	(0.024)	(0.006)	(0.024)	(0.011)	(579.836)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.374	0.094	0.468	0.753	66991.335
N	41,922	41,922	41,922	41,922	41,922
Panel C: Other Majors					
Partial	0.029*	-0.011	0.017	0.013*	794.547*
	(0.014)	(0.008)	(0.019)	(0.007)	(430.856)
Full	0.047**	-0.011	0.036	0.009	500.467
	(0.017)	(0.008)	(0.023)	(0.006)	(371.837)
Group-Specific Trend	x	x	x	x	x
Student Characteristics	x	x	x	x	x
Mean(Y)	0.186	0.081	0.267	0.463	50355.197
N	149,896	149,896	149,896	149,896	149,896

Notes: This table presents the estimates of equation (3). See notes under Table 2 for more information on the analysis sample. The outcome variables are as follows: (1) the number of summer internships undertaken throughout college, (2) the number of off-cycle internships undertaken throughout college, (3) the total number of internships undertaken throughout college, (4) finding a non-entry-level job after college, and (5) imputed starting salary in 2010 dollars. All regressions control for institution and year fixed effects, group-specific linear time trends, students' gender, race and ethnicity, as well as their fields of study in college. Panel A includes students who study business and economics majors. Panel B includes students who study engineering majors. Panel C includes students who study majors other than business, economics, or engineering. The standard errors are clustered at the institution level.
Significance levels: *: $p < 0.10$, **: $p < 0.05$, and ***: $p < 0.01$.