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The Effect of the Gainful Employment Regulatory Uncertainty on Student Enrollment at For-Profit Institutions of Higher Education

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Abstract
In 2010, the Obama Administration proposed new regulations designed to hold institutions of higher education (IHEs) accountable for student outcomes. I examine the effects of the regulatory uncertainty surrounding these "Gainful Employment" (GE) regulations on enrollment at for-profit IHEs. I utilize informational debt rates of GE institutions along with enrollment data from the integrated postsecondary education data system to employ a difference in difference design that compares enrollment before and after the GE regulatory proposal at for-profit IHEs to enrollment at public and nonprofit IHEs. My results suggest that for-profit IHEs experienced slower enrollment growth relative to public and nonprofit IHEs in the post-GE period. Additionally, enrollment of low-income students appeared to be disproportionately affected by the GE regulatory uncertainty.

Keywords For-profit colleges · Gainful employment · Student enrollment · Higher education · Regulatory uncertainty

Introduction

For-profit institutions of higher education[1] have experienced tremendous growth that has increased their visibility in the higher education sector. From 2000 to 2010, enrollment at for-profit institutions more than tripled in response to increased demand for postsecondary education (NCES Digest of Education Statistics 2017 table 303.20). For-profit institutions have been praised for their innovativeness and ability to scale rapidly to reach millions of students. For-profit colleges have been especially effective at providing higher education

[1] Throughout the paper, I also refer to for-profit institutions of higher education as "for-profit colleges" and "for-profit institutions".

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access to students typically underserved in the nonprofit and public sector (i.e. minorities and working adults), thus enabling for-profit institutions to play an important role in the higher education sector.

With the growth of the for-profit sector has come increased attention on institutional practices and student outcomes at for-profit institutions. For-profit institutions tend to charge tuition that is substantially higher than tuition charged at institutions offering similar programs. For example, average tuition at 2-year for-profit institutions is more than four times tuition charged at community colleges (NCES Digest of Education statistics table 330.10), but research suggests that earnings gains for students that complete a for-profit 2-year degree is less than earnings gains for completers from community colleges (Cellini and Chaudhary 2014). Researchers have also found that students that attend for-profit institutions borrow more money, have higher levels of unemployment and are less satisfied with the education and price of for-profit institutions (Belfield 2013; Cellini 2012; Cellini and Darolia 2017; Deming et al. 2012; Looney and Yannelis 2015). In addition, many students at for-profit institutions fail to complete their program and are left with high debt burdens (Cottom and Darity 2017).

The concerns over undesirable practices at for-profit institutions led to new regulatory and legislative proposals to increase the accountability of the sector[2] including the controversial Gainful Employment Regulations (GE) proposed by the Obama Administration in 2010.[3] Under GE, nearly all education programs at for-profit institutions[4] and non-degree and certificate programs at public and nonprofit institutions are required to publicly disclose information about program graduates and to ensure the debt-to-earnings ratio of program graduates is within the limits set by the regulations. Programs that fail to meet the requirements of GE would be at risk for losing access to federal financial aid. While GE applies to all sector schools including public and nonprofit colleges that offer non-degree and certificate programs, the effects of GE are likely to be most prominent at for-profit institutions since more than 90% of for-profit institutions have GE programs.[5] If for-profit institutions lose access to federal aid, some may be forced to shut down due to the loss of a major portion of their revenue.

While the final GE rules went into effect July 2015, the 2010 GE proposal appeared to serve as a signal to for-profit institutions of increased federal scrutiny that could adversely affect their business (Hentschke and Parry 2015). Several of the major publicly traded parent companies of for-profit colleges raised concerns about the regulations in annual financial reports to the Securities and Exchange Commission soon after the regulations were first proposed. For example, in the Strayer Education Inc. annual report for 2010, the company discusses how the uncertainty surrounding the GE regulations had negatively affected the industry.[6] Since the time of the GE proposal, some for-profit institutions have adopted new initiatives, such as mandatory orientation, limited financial aid, and more selective admissions requirements, which could suggest increased attention on student outcomes at

[2] See Protecting Students from Worthless Degrees Act at https://www.congress.gov/bill/114th-congress/senate-bill/1165S.2098; Students Before Profits Act of 2015 at https://www.congress.gov/bill/114th-congress/senate-bill/2098/text; Defense to repayment at https://federalregister.gov/a/2016-14052.

[3] See https://federalregister.gov/a/2010-17845.

[4] According to the GE Manual, "Debt-to-Earnings Ratios are measures of the average share of the GE Program's former students' income that must be used to repay student loan debt incurred by the students for attendance in the GE Program".

[5] Author's calculations using GE data merged with data from the Integrated Postsecondary Education Data System. Refer to Table 1.

[6] See https://www.sec.gov/Archives/edgar/data/1013934/000095012311016592/w80904e10vk.htm.

for-profit schools (Fain 2011; Hentschke and Parry 2015). On the other hand, for-profit institutions have also experienced declines in enrollment and major for-profit chains, including Corinthian Colleges and ITT Technical Institute, have shut down operations, thus suggesting the increased oversight of the for-profit sector may have resulted in unintended consequences for those students who are left with uncertainty about their options for finishing their programs and repaying their loans.[7]

Little research has been done on how institutions of higher education respond to uncertainty surrounding regulations such as GE. This paper contributes to the literature by exploring the effects of the regulatory uncertainty created by the 2010 GE proposal on enrollment at for-profit institutions. For the first time in June 2012, the Department of Education released informational debt measures on GE programs to provide institutions with a preliminary idea of how many programs would be at risk for failing the GE requirements. Using the GE data and enrollment data from the Integrated Postsecondary Education Data System (IPEDS), I employ a difference-in-difference design that compares enrollment before and after the 2010 GE regulatory proposal at for-profit institutions to enrollment at public and non-profit institutions to determine if the regulatory uncertainty surrounding GE has led to any significant changes at for-profit institutions. To my knowledge, this is the first academic paper to utilize the GE information rates and to explore the preliminary effects of GE on student enrollment. I also look at changes in enrollment of student demographic groups to examine whether there is any variation in the types of students that enrolled at for-profit institutions in the pre and post GE period. The Trump Administration has taken steps to rescind the GE regulations, thus the future of GE is uncertain.[8] Nevertheless, understanding the effects of the GE regulatory proposal can provide policymakers with a better sense of how federal policy impacts the behavior of students and institutions of higher education, and the extent to which the response is in line with the intentions of the policy.

I find that average enrollment at for-profit colleges increased by approximately 600 students in the post GE-period when controlling for institution and year fixed effects. However, the increase in enrollment is significantly less than the average increase in enrollment at public and nonprofit institutions of approximately 1100 students. I also find that among the student subgroups, for-profit institutions enrolled significantly fewer Pell grant recipients in the post-GE period. Overall, the results suggest that GE may have slowed the rapid growth of for-profit colleges, and that low-income students may be disproportionately affected by the GE regulatory uncertainty.

A History of Federal Oversight of For-Profit Institutions of Higher Education

Federal oversight of for-profit colleges has been an ongoing policy concern. Title IV of the Higher Education Act (HEA) of 1965 created financial aid programs such as the Educational Opportunity Grant Program (currently known as the Pell Grant Program) and the guaranteed student loan program, to provide middle and lower income students with greater opportunities to attend college (Carleton 2002). Under the original HEA, for-profit

[7] See https://studentaid.ed.gov/sa/about/announcements/itt/faq and https://studentaid.ed.gov/sa/about/announcements/corinthian.

[8] See https://www.ed.gov/news/press-releases/us-department-education-proposes-overhaul-gainful-employment-regulations.

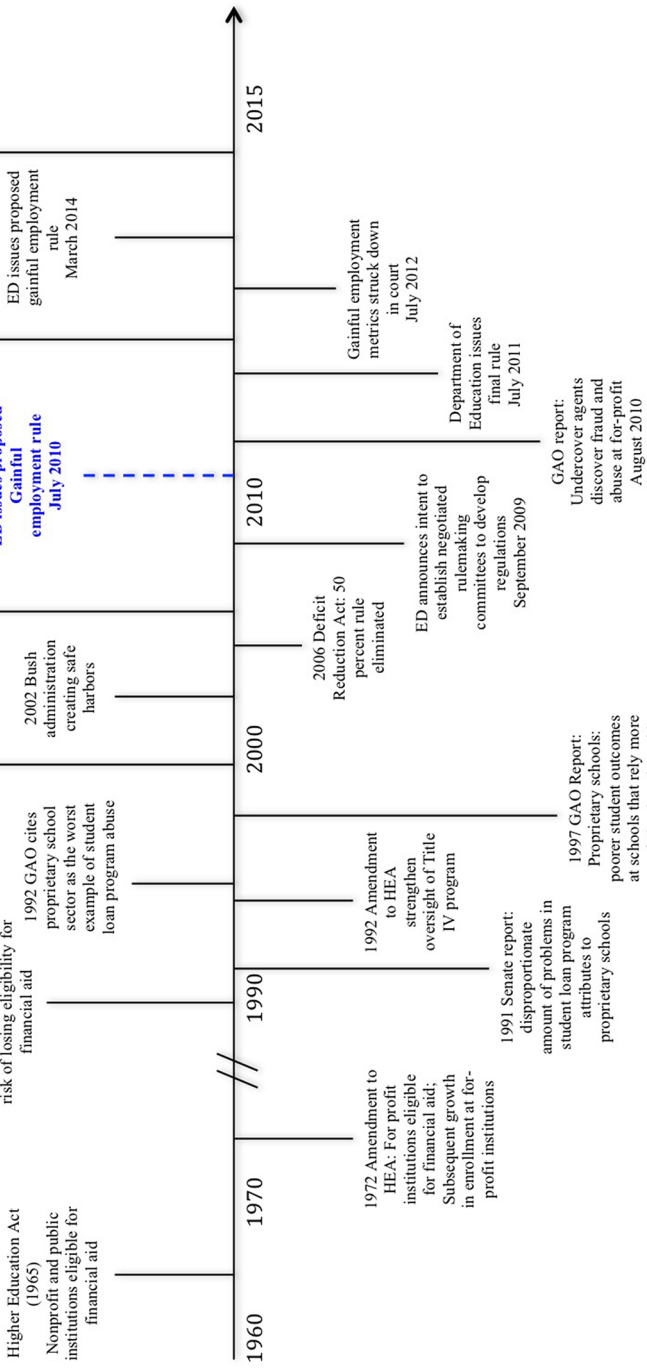


Fig. 1 Timeline of major events affecting for profit institutions of higher education

instituitons were not eligible to participate in the financial aid programs. It wasn't until 1972 that for-profit institutions became eligible to participate in all of the HEA Title IV aid programs and there was a subsequent growth spurt in enrollment a for-profit instituitons. Figure 1 provides a timeline that illustrates the major regulatory and legislative events that affected for-profit institutions between 1965 and 2014.

Nearly two decades after for-profit colleges gained access to federal aid, reports of abuse in the student loan program and high student loan default rates, particularly at for-profit colleges, led lawmakers to impose stricter requirements on institutions receiving federal financial aid under the 1992 amendments to the HEA. Key among the provisions was the establishment of a program integrity triad that consists of accrediting agencies, states, and the Department of Education to control access to financial aid programs. In addition, in order for for-profit institutions to remain eligible for federal aid, they were required to receive at least 15% of their total revenue from non-title IV funds and no more than 50 percent of their programs could be offered online.[9]

Between 1998 and 2008, the restrictions on for-profit institutions loosened. Under current rules, institutions are allowed to receive up to 90% of their revenue from financial aid, as opposed to the original 85 percent limit, and institutions have to violate the rule two consecutive years before losing eligibility for federal aid. In the 2013–2014 academic year, for-profit colleges received 23 billion dollars in federal funds, with many of those colleges receiving more than 80% of their revenue from federal funds. In addition, federal aid benefits for active and former military members are not included in the 90% revenue calculation, which could create an incentive for for-profit institutions to target military students, and essentially exceed the 90% threshold (Wong 2015).

While for-profit institutions continued to receive billions of dollars in federal aid, concerns over student outcomes grew. In a 2010 report, undercover GAO investigators found that several for-profit colleges provided students with misleading information on tuition costs, encouraged students to enter fraudulent information on financial aid forms, and engaged in aggressive recruitment strategies (GAO 2010). In addition, student loan default rates tend to be higher at for-profit institutions than any other sector. For example, in 2015, 11.8% of student borrowers at all institutions defaulted on loans within 3 years of repayment, and 15.8% of those defaulters attended for-profit institutions, while 11.7% and 6.8% attended public and non-profit institutions respectively.[10]

Concerns over undesirable practices at for-profit colleges led to the GE proposal in 2010. The HEA requires that certain institutions, including for-profit instituitons, provide programs of training that prepares students for gainful employment in a recognized occupation in order to participate in Title IV aid programs. Under the GE regulations, the Department of Education defines "gainful employment" as the debt to earnings ratio of program graduates. In order for a GE program to remain eligible for federal financial aid, the debt to earnings ratio of the program graduates has to be less than or equal to 8% when calculated on total earnings, or less than or equal to 20% when calculated on discretionary earnings. Programs with debt-to-earnings ratios that exceed these rates for consecutive

[9] See https://www.congress.gov/bill/102nd-congress/senate-bill/1150

[10] http://www2.ed.gov/offices/OSFAP/defaultmanagement/cdr.html.

years risk becoming ineligible for financial aid[11] (Federal Register 2014). Prior to GE, the Omnibus Reconciliation Act of 1990 made institutions accountable for the student loan debt measured by the cohort default rate. The GE regulations go a step further by holding institutions accountable for student earnings relative to their debt and could create incentives for institutions (i.e. lower costs for students, increase enrollment requirements) and students (i.e. choose institutions with better student outcomes, not enroll in school at all).

Conceptual Framework

For-profit institutions are unlike non-profit and public institutions in that they are owned and operated by private individuals or companies and are "ultimately accountable by law for the returns they produce for shareholders" (HELP 2012). Thus, for-profit institutions have a major incentive to earn a profit, which could come at the expense of the quality of education and services provided to students. The GE regulations were designed to protect students and taxpayers by issuing requirements that promote both accountability and transparency (Federal Register 2014).

Accountability

In terms of accountability, the GE regulations require institutions to certify that their GE programs meet state and federal licensure, certification, and accreditation requirements and that they meet the debt to earnings ratio limits. Institutions that fail to meet either accountability standard risk losing their eligibility for financial aid. Little research has been done on how institutions of higher education respond to increased federal oversight, although several studies have discussed the high cost for institutions of higher education to comply with federal laws and regulations (Bender 1977; Perlman 1977; Stein 1979; Hunter and Gehring 2005). Two recent studies explore how federal policy influences institutions of higher education using Pfeffer and Salancik's (1978, 2003) resource dependence theory (Hossler and Kwon 2015; Hentschke and Parry 2015). Resource dependence theory suggests that organizations that depend on outside resources for survival will change their behavior in response to policies that threaten those resources. Many for-profit institutions rely heavily on federal financial aid and may not be able to survive in the higher education market without it (Moore 1995), although researchers have also found that many for-profit institutions without financial aid are still thriving (Cellini and Goldin 2014). In response to the threat of losing federal aid under GE, Hentschke and Parry found that for-profit institutions considered initiatives that generally fell into four categories: price, admissions/students, program, and staff (Hentschke and Parry 2015).

[11] Programs pass, fail, or are placed in a "zone" based on the metrics. Programs that pass the metrics have a debt to earnings ratio that is less than or equal to 8% of total earnings or less than or equal to 20% of discretionary earnings. Programs are placed in a "zone" if they have a debt to earning ratio that is greater than 8% but less than 12% of annual earnings or greater than 20% but less than 30% of discretionary earnings. Programs with a debt to earnings ratio that exceeds 12% of annual earnings or 30% of discretionary earnings fail the metrics. A program loses eligibility for financial aid if it "fails" for 2 out of 3 consecutive years or if it is placed in the zone for 4 years.

In terms of price, GE's emphasis on student debt and earnings could incentivize for-profit institutions to lower the cost for students to attend a GE program. Some initiatives that for-profit institutions have taken include reductions in the cost of tuition and course materials and increased institutional aid (Fain 2011; Hentschke and Parry 2015). In addition, some institutions have reduced the length of GE programs in order to reduce the cost to students (Karp 2011; Hentschke and Parry 2015). Lower costs of attendance at for-profit institutions could increase student access. However, to the extent that the incentives created by GE conflict with incentives created by other federal policies (i.e. 90/10 rule),[12] for-profit institutions may be limited in their ability to lower tuition in response to GE (Hentschke and Parry 2015).

Another approach to addressing student debt and earnings is to enroll students that have a higher likelihood of repaying their student debts. There is a body of research that suggests that student demographics may play a role in the student loan default rate (Christman 2000; Dynarski 1994; Gladieux and Perna 2005; Goodwin 1991; Greene 1989; Harrast 2004; Herr and Burt 2005; Knapp and Seaks 1992; Podgursky et al. 2002; Steiner and Teszler 2003; Volkwein and Cabrera 1998; Volkwein and Szelest 1995; Wilms et al. 1987; Woo 2002a, b). For-profit institutions tend to enroll more "non-traditional" students that tend to come from lower-income families, are more likely to be first generation college students, and are more likely to experience poorer labor market outcomes (Looney and Yannelis 2015). Currently, most for-profit institutions have open admissions policies with minimal enrollment requirements for new students. GE could create the incentive for institutions to increase admission requirements that could have mixed effects on student access. For instance, some institutions have implemented conditional enrollment measures to ensure students are progressing in their program before taking on student debt, thus maintaining student access but ensuring that students are successful (Fain 2011; Hentschke and Parry 2015). On the other hand, for-profit institutions could implement more selective admissions policies that could negatively impact access for certain groups of students.

In terms of program and staff, GE could create an incentive for for-profit institutions to improve GE programs and allocate resources towards services that can help students succeed. One way that for-profits can improve programs is to ensure their programs are effectively linked to employment opportunities (Hentschke and Parry 2015). For-profit institutions can also improve student outcomes by spending more on academic support and student services. For-profit colleges have been criticized by lawmakers for the large amount of expenditures that are spent on marketing services, while expenditures for instruction and student services are lower than what is spent at public and nonprofit institutions that offer similar programs (HELP 2012). The accountability measures of GE could thus incentivize for-profit colleges to change their spending practices to ensure students are provided with adequate services to complete their programs and find jobs to repay student loans.[13]

[12] Critics of the 90/10 rule suggests that the rule incentivizes for-profit institutions to raise tuition when federal student aid funding increases. See http://www.finaid.org/loans/90-10-rule.phtml.

[13] Institutional expenditures are explored further in forthcoming paper by author.

Transparency

In terms of transparency, the GE regulations require that institutions make public disclosures regarding the performance and outcomes of their gainful employment programs including information on costs, earnings, debt and completion rates. Some studies have found that students are generally misinformed about financial aid and future earnings, and that better information can lead to changes in student behavior (Betts 1996; Bettinger et al. 2012; Dinkelman and Martínez 2014; Long et al. 2014; Wiswall and Zafar 2015). For instance, researchers have found that students who are provided with more simplified information on the financial aid application process are more likely to enroll in college (Bettinger et al. 2012), and that early exposure to financial aid information can even lead students to make college preparatory decisions as early as high school (Dinkelman and Martínez 2014). Researchers have also found that students tend to select majors based on potential earnings, and better information on earnings can lead students to adjust their expectations (Wiswall and Zafar 2015). Thus, the GE informational disclosures could lead students to enroll in better performing programs.

On the other hand, one commonality among the studies of the effects of information on student behavior, is that the information provided to students was issued through a targeted effort. For instance, Bettinger et al. found that providing information on financial aid eligibility without providing assistance with completing the form was not an effective way to increase access (2012). If students are unable to understand the disclosures, or access them, then the disclosures may do little to affect student behavior, and students may continue to enroll in poor performing programs.

Overall, the accountability and transparency framework of GE could have a mixed impact on student enrollment.

Data

In order to explore the effects of the regulatory uncertainty surrounding GE, this paper addresses the following research questions:

(1) Has the uncertainty surrounding the GE regulations led to a change in enrollment at for-profit institutions?

   a. If so, does the change in enrollment differ by types of institutions (e.g. 2-year vs. 4-year)?

(2) Has the uncertainty surrounding the GE regulations led to a change in the demographics of students who enroll at for-profit institutions?

This paper uses IPEDS data from 2000 through 2014. IPEDS is a collection of annual surveys of postsecondary institutions that participate in federal financial aid programs and includes various institutional characteristics that are important for my model such as enrollment, admissions policies, student demographics, size of institution, and cost of tuition.

My outcome variable is student enrollment at postsecondary institutions. IPEDS measures enrollment three ways: fall enrollment, unduplicated headcount, and full-time equivalent enrollment. The fall enrollment variable measures the number of students who were

Table 1 Title IV institutions GE status by control of institution

Control	GE school (n = 2862)		Non-GE school (n = 2179)		Total
Public	*58%*		*42%*		*100%*
		38%		36%	
Private non-profit	*19%*		*81%*		*100%*
		11%		59%	
Private for-profit	*94%*		*6%*		*100%*
		51%		4%	
Total		100%		100%	

Italics represent the row totals, while the non-italics are the column totals

An institution is considered a "GE school" if it is included in the Departments 2011 GE information rates as having a program that falls under the GE regulations

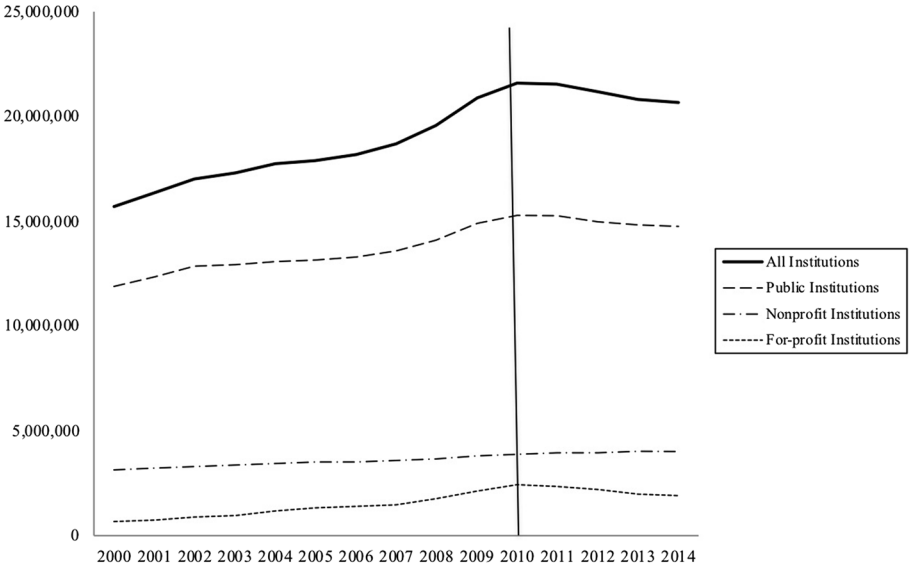
Control (of institution) is a classification of whether an institution is operated by publicly elected or appointed officials or by privately elected or appointed officials and derives its major source of funds from private sources

Source Author's calculations from GE2011 merged with IPEDS 2000–2014 dataset; Institutions with missing years of data dropped

enrolled for credit in the fall[14]; the unduplicated headcount measures the number of students who enrolled over a 12-month period; and the full-time equivalent enrollment uses data on instructional activity to derive the 12-month full-time equivalent enrollment. For my analysis, I use the fall enrollment count, as I believe it provides the most comparable measure of enrollment at a specific point in time across different types of institution. It is also the only enrollment variable that is available for all the pre-period years, and has complete information on student demographic groups. However, I run my model using all three measures of enrollment, and find the results to be quite consistent across each measure (see Table 10 in Appendix B).

In looking at the change in enrollment at institutions, I am also interested in the effects of the regulations on the enrollment patterns of student subpopulations. As previously mentioned, research suggests that students from certain demographic groups (i.e., low-income) may face additional barriers to completing postsecondary programs and repaying student loans (Christman 2000; Harrast 2004; Herr and Burt 2005; Podgursky et al. 2002; Steiner and Teszler 2003; Woo 2002a, b). The GE regulations could incentivize for-profit institutions to implement more selective admissions and recruitment policies that could negatively impact enrollment of underserved groups. To explore this possibility, I look at the change in enrollment by race, income, and gender after GE to determine if there are any changes in student demographics that could suggest increased selectivity by the institutions.

[14] Institutions with traditional academic calendars report the enrollment by Oct 15 or the official fall reporting date of the institutions; institutions with 12-month academic calendars report it for students that enrolled anytime between August and October 31.



Source: NCES Digest of Education Statistics 2015 Table 303.20

Fig. 2 Trend in fall enrollment at title IV postsecondary institutions

In order to explore the treatment effects of GE, I merge the IPEDS data with the 2011 GE informational rates released by the Department of Education. The GE dataset provides a list of the institutions with GE programs and is useful for identifying the number of public and nonprofit institutions affected by GE. Table 1 shows that 58% of public institutions, 19% of nonprofit, and 94% of for-profit institutions have programs that fall under GE. My calculations likely underestimate the number of for-profit institutions affected by GE since for-profit institutions that entered the sector after the release of the informational rates are excluded from the calculation.[15] In my model, I thus assume that all for-profit institutions are subject to GE, and are more likely to be affected by GE.

Figure 2 illustrates the trends in enrollment of for-profit, public, and nonprofit institutions from 2000 to 2014. Enrollment at all institutions appears to experience a steady growth until it reached its peak of 21.6 million in 2010 (NCES Digest 2015 table 303.20). By 2014, enrollment dropped to 20.6 million at all institutions and appears to be largely driven by the decline in enrollment at for-profit institutions of 23%. Public institutions also saw a slight drop in enrollment of 3% while enrollment at nonprofit institutions increased by 3%. The overall trends suggest that for-profit institutions that are most affected by GE may have experienced a larger decline in enrollment relative to public and nonprofit institutions in the post GE period. The GE informational rates also provide the number of programs within an institution that are subject to GE, and the annual and discretionary debt-to-earnings ratio for each GE program. Given the structure of GE, I hypothesize that institutions with more GE programs or with higher debt-to-earnings ratios are more likely to see enrollment declines after GE.

Table 2 shows the number of institutions affected by GE by level of institution. Twenty-three% of 4-year institutions, 77% of 2-year, institutions and 93% of less than 2-year institutions fall under GE.

[15] The number of nonprofit and public institutions decreased in the post GE period, so I am less concerned about my estimated calculation of GE public and nonprofit institutions.

Table 2 Title IV Institutions GE status by level of institution

Level	GE school (n = 2862)		Non-GE school (n = 2179)		Total
Four or more years	*23%*		*77%*		100%
		17%		78%	
2-years or less than 4-years	*77%*		*23%*		100%
		48%		19%	
Less than 2-years	*93%*		*7%*		100%
		35%		3%	
Total		100%		100%	

Italics represent the row totals, while the non-italics are the column totals

An institution is considered a "GE School" if it is included in the Departments 2011 GE information rates as having a program that falls under the GE regulations

Level of institution is a classification of whether an institution's programs are 4-year or higher (4 year), 2-but-less-than 4-year (2 year), or less than 2-year

Source Author's calculations from GE2011 merged with IPEDS 2000–2014 dataset; Institutions with missing years of data dropped

Methodology

In order to isolate the effects of the GE proposal on enrollment at for-profit institution, I employ a difference-in-difference (DID) design that compares the pre-GE versus post-GE trends in enrollment at for-profit institutions relative to trends at public and nonprofit institutions. An important assumption of the DID model is that the treatment and comparison groups experience similar trends in the outcome variable prior to the treatment, so that the comparison group serves as a counterfactual of what would have happened without the treatment. Figure 2 suggests similar trends in enrollment among public, nonprofit and for-profit institutions in the pre-GE period, so I run my model first using all nonprofit and public institutions as my comparison group. To determine whether the GE proposal affected all schools with GE programs, irrespective of sector, I run my model a second time using the nonprofit and public GE institutions as my comparison group.

I control for many unobserved differences between for-profit and public and nonprofit institutions by including institution fixed effects to control for differences in time-invariant characteristics of institutions (e.g., admissions policies, sector) and year fixed effects to control for changes over time that should affect all schools similarly (e.g., population growth, the economy). I also control for any remaining factors available in IPEDS that vary within schools over time (e.g., tuition).

Model

I estimate enrollment for institution *i* in year *t* as follows:

$$\text{Enroll}_{it} = \beta_0 + \beta_1\left(\text{Post}_t\right) + \beta_2\left(\text{Post}_t \times \text{For - profit}_i\right) + \beta_3 X_{\text{it}} + d_t + d_i + \varepsilon_{\text{it}}$$

$\text{Enroll}_{\text{it}}$ is the outcome of interest measuring fall enrollment in each institution and year. For my model, I rely on the fall enrollment variable, but also run the model using full-time

equivalent and unduplicated headcount for robustness. Post_t is a binary variable that takes on a value of 1 for 2011 and beyond and a value of 0 for years prior to gainful employment discussions.[16] For - profit_i is a binary variable set to 1 for for-profit institutions and 0 for public and nonprofit institutions. β_1 measures the change in enrollment for institution i before and after the gainful employment uncertainty; β_2 measures the differential effect of GE on for-profit institutions relative to public and non-profit institutions. The total effect of GE on the for-profit sector is then measured by $\beta_1 + \beta_2$. The model also includes a vector, X_{it}, to control for time-varying factors that may also affect enrollment, such as tuition. I also include year fixed effects d_t, to capture changes before and after GE that are common to all institutions. Most importantly, I also include fixed effects for each institution, d_i, to control for time-invariant unobservable characteristics of institutions that may be correlated with both enrollment and sector such as admissions policies. I cluster standard errors at the institution level to account for serial correlation in the observations.

DID Assumptions and Model Limitations

One assumption of the DID design is that there are no other simultaneous policy changes or shocks that could have had a differential effect of enrollment at for-profit institutions than at public and nonprofit institutions. For instance, in 2010, GAO released its report on deceptive and aggressive recruitment practices at for-profit institutions, and the Senate HELP Committee conducted investigations into the business practices of some of the major for-profit institutions. In addition, around the 2010 GE proposal, there were numerous news reports discussing the ongoing investigations of the for-profit sector. To the extent that these various investigations led to a change in behavior by for-profit institutions or students, their effect on enrollment is likely being picked up in my model. However, I argue that these additional investigations do not necessarily violate the assumptions of the DID model as they all demonstrate the increased oversight of the sector and are related to the general regulatory uncertainty surrounding GE.

It is also possible that changes in the economy around the time of GE could have differentially affected enrollment at for-profit institutions relative to other sector schools. At the time of the GE proposal, the economy was recovering from the Great Recession. Research suggests that enrollment in postsecondary education tends to increase during periods of high unemployment as the opportunity cost of attending college is lower (Brown and Hoxby 2014). Given the innovativeness of for-profit institutions, it is possible that we could see a differential effect of the recession on for-profit institutions relative to nonprofit and public institutions as for-profit institutions may be in better position to respond to increased demand. Nevertheless, while the recession ended in 2009, the unemployment rate continued to rise for several months and remained high in 2010. Therefore, it is unlikely that the recession led to an economic shock in 2010 that could explain differential changes in enrollment at institutions of higher education.

An additional limitation of my model is that I am using institution-level data to identify changes in enrollment when GE actually affects institutions at the program level. Thus,

[16] The Department of Education first mentioned "Gainful Employment" in 2009 and anecdotal information from the securities exchange commission suggests that institutions began paying attention to the GE talks in 2010. Therefore, I expect any enrollment response to begin in the fall of 2011.

institutions with more GE programs would be more likely to be affected by GE than institutions with fewer GE programs. To address this limitation, I run my model adding various measures of the "intensity" of the treatment to explore the relationship between the number of failing GE programs and enrollment.

Using institution-level data also limits my ability to disentangle the effects of student behavior from institutional selectivity. Specifically, if I observe a significant effect of GE on enrollment, it will be difficult to determine if the effect is due to students choosing different institutions or institutions choosing different students. To partially address this limitation, I run different models to look at enrollment changes of certain groups of students. Under GE, students more likely to default on student loans pose a greater risk to institutions that heavily rely on Title IV funds. Thus, GE could inadvertently incentivize institutions to implement more selective enrollment policies that adversely affect these groups of students. I explore enrollment trends of these subgroups to examine if there is variation in the types of students the for-profit institutions admitted pre and post GE.

Results

In Table 3, I provide mean descriptive statistics of my key variables, and in Table 4, I provide summary statistics of the pre- and post-GE means by sector. Consistent with the literature, for-profit institutions enroll proportionately more Pell grant recipients, women, blacks and Hispanics, and older students than public and nonprofit institutions. For-profit institutions also have more GE programs than public and nonprofit institutions. Both public and for-profit institutions tend to have open admissions policies, and there appears to be no change in the % of institutions with open admissions policies in the post-GE period. In the post GE period, for-profit institutions experienced a decline in the enrollment of Pell grant recipients while both public and nonprofit institutions saw gains. I explore the extent to which these declines are explained by GE in my discussion below on student subgroups.

Regression Results

In Table 5, I run my baseline DID model on my full sample of institutions.[17] In all of my specifications, the coefficient on Post_t is positive and statistically significant suggesting that public and nonprofit institutions experienced an increase in enrollment after GE. The result might be expected if public and nonprofit institutions absorbed students from the for-profit sector in the post-GE period.

In contrast, the coefficient on the variable of interest, $\text{Post}_t \times \text{for-profit}_i$ is negative across all specifications, revealing slower enrollment growth in the for-profit sector relative to public and nonprofit institutions. In specification (1), I run an ordinary least squares regression (OLS) while controlling for institutional characteristics including dummy variables for institutional control and level, HBCU status, and whether the institution has an open admissions policy. I observe a decrease in enrollment of 307 students at for-profit institutions relative to public and nonprofit institutions. When combined with the estimated difference in enrollment of 296

[17] My full sample excludes institutions missing one or more years of data. Therefore, schools that closed since GE are not included in the sample.

Table 3 Descriptive statistics

	For-profit				Public				Nonprofit			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
IPEDS variables												
Fall enrollment	527	1960	0	77,966	7109	8716	0	100,272	2276	4077	0	81,459
Open admissions (%)	54	50	0	1	62	0.49	0	1	11	32	0	1
Tuition[a]	4165	6765	0	150,781	2916	2715	0	39,060	14,302	11,169	0	82,770
Pell grant recipients[b]	155	440	0	21,189	312	371	0	7406	103	163	0	2533
Women	333	1391	0	57,390	4006	4757	0	59,789	1315	2352	0	55,747
Men	194	656	0	20,576	3104	4051	0	40,884	961	1825	0	33,130
Black	96	515	0	18,914	743	1398	0	19,970	211	662	0	27,889
Hispanic	98	488	0	20,876	843	2256	0	46,806	194	762	0	17,325
White	193	670	0	26,920	3747	5168	0	72,299	1190	2153	0	41,898
Asian	14	54	0	1391	388	1119	0	18,634	104	378	0	7696
Students over age 25	192	1387	0	65,785	1902	2981	0	50,807	582	1822	0	65,763
Students under age 25	149	463	0	13,300	3464	5627	0	53,735	936	2070	0	31,097
Number of observations	23,460				28,080				24,075			
Number of institutions		1564				1872				1605		
GE variables												
Number of GE programs	8	11	1	93	4	5	1	33	5	6	1	39
Number of failing GE programs	0	1	0	14	0	0	0	0	0	0	0	3
Number of observations	21,945				16,320				4665			

Statistics are per institution averages from 2000 to 2014

[a]Tuition is published tuition and fees

[b]Pell grant recipien calculation is based on the number of federal grant recipients. Pell grant recipient's were not separately reported prior to 2008, but they comprise more than 80% of federal grant recipients within an institution; Institutions missing one or more years of data are dropped from the dataset

Source IPEDS and GE 2011 Informational Rates

Table 4 Summary statistics: pre versus post GE

	Pre-GE period 2000–2010			Post-GE period 2011–2014		
	For-profit	Public	Nonprofit	For-profit	Public	Nonprofit
Fall enrollment	498	6902	2186	609	7679	2520
Tuition ($)	3795	2559	12,757	5180	3900	18,547
Open admissions (%)	54	62	11	54	62	11
Pell grant recipients	157	270	96	152	429	123
% of enrollment	32	4	4	25	6	5
Women	311	3909	1262	396	4273	1462
% of enrollment	62	57	58	65	56	58
Men	187	2993	925	213	3407	1058
% of enrollment	38	43	42	35	44	42
Black	81	671	184	139	943	284
% of enrollment	16	10	8	23	12	11
Hispanic	85	697	165	132	1243	272
% of enrollment	17	10	8	22	16	11
White	181	3592	1118	226	4172	1389
% of enrollment	36	52	51	37	54	55
Asian	14	366	94	15	449	134
% of enrollment	3	5	4	2	6	5
Students age 25 and over	177	1913	569	234	187	619
% of enrollment	36	28	26	38	24	25
Students under age 25	148	3403	920	153	3629	983
% of enrollment	30	49	42	25	47	39

Statistics are per instituiton averages; Institutions missing one or more years of data are dropped from dataset

Source IPEDS

Table 5 Change in enrollment at for-profit institutions after GE, fall enrollment

	(1)	(2)	(3)	(4)
Post	296***	1103***	498***	1114***
	[58]	[31]	[46]	[59]
Post*for-profit	−307***	−477***	−424***	−481***
	[65]	[26]	[63]	[64]
Observations	71,595	71,595	71,595	71,595
Institution characteristics	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Institution FE	No	No	Yes	Yes
Number of institutions	4773	4773	4773	4773

Robust standard errors clustered at the institution level in brackets

Post*for-profit is an indicator variable that turns on for institutions identified as for-profit in IPEDS for 2011 through 2014; Institution characteristics includes dummy variables for public, twoyear, fouryear, tuition, hbcu, and admissions policy. Institutions missing one or more years of data are dropped

***$p < 0.01$

Table 6 Change in fall enrollment at for-profit institutions, GE schools

	All	GE schools		
	(1)	(2)	(3)	(4)
Post	1114***	1296***	1297***	1020***
	[59]	[95]	[79]	[307]
Post*for-profit	−481***	−626***	−628***	−621**
	[64]	[89]	[73]	[293]
Notes	Preferred specification from Table 5		Dropping non-profit institutions	Dropping public institutions
Observations	71,595	41,820	37,350	25,815
Number of institutions	4773	2788	2490	1721

Robust standard errors clustered at the institution level in brackets; all regressions include year and institutions fixed effects and controls for institutional characteristics that vary over time such as tuition

Post*For-profit is an indicator variable that turns on for institutions identified as for-profit in IPEDS for 2011 through 2014; GE schools include nonprofit and public GE schools and all for-profit schools

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

students at public and non-profit institutions, the overall effect of GE on for-profit institutions is a small decrease in enrollment of 11 students, on average.

In specification (2) of Table 5, I add calendar year fixed effects and the change in enrollment at for-profit institutions jumps to about 1100, while the change in enrollment at for-profit institutions is approximately 500 for an overall gain of 600 students at for-profit institutions in the post-GE period. In my fully loaded DID model (4) with institution and year fixed effects, the overall gain in enrollment at for-profit institutions is relatively unchanged at about 600 students. In Table 9 in Appendix A, I include the coefficients for the year fixed effects, which illustrates lower enrollment in years 2012–2014 relative to my omitted years (2000 and 2011).

To mitigate the influence of outliers and to generate coefficients in % age terms, I rerun my model using the natural logarithm of fall enrollment (see Table 10 in Appendix B). The results suggest a negative 4.8 log point (5%) difference in enrollment at for-profit institutions compared to public and non-profit institutions.

In Table 6, I run the fully loaded DID model again, limiting my sample to GE institutions, which includes all for-profit institutions, and all public and nonprofit institutions that have programs that fall under GE. As with the full sample, the coefficient on $Post_t$ is positive and statistically significant while the coefficient on $Post_t \times$ for-profit$_i$ is negative suggesting that for-profit institutions experienced slower gains in enrollment than public and nonprofit GE schools in the post-GE period. Similar to the full sample results, for-profit institutions experience a change in enrollment of about 600 students for an overall gain of 670 students in the post GE period. In column (3), I run my model again dropping nonprofit institutions to explore the relative differences in enrollment of for-profit to public institutions and the results remain the same.

In specification (4), I run my model using nonprofit GE institutions as my comparison group. The results suggest similar changes in enrollment of about 600 students at for-profit institutions relative to nonprofit GE institutions and a slightly lower overall gain of 400 students at for-profit institutions.

Table 7 Heterogeneous effects of GE on fall enrollment, GE schools

	For-profit interactions			
	(1)	(2)	(3)	(4)
	2-year or less than 2-year	Small institutions	Number of GE programs	Number of failing GE programs
Post	1873***	1550***	969***	1314***
	[284]	[104]	[179]	[96]
Post*for-profit	−1040**	−191	−444**	−647***
	[425]	[441]	[192]	[90]
Post*Twoyearorless	−713***			
	[276]			
Post*for-profit*Twoyearorless	583			
	[432]			
Post*SmallSchools		−774***		
		[155]		
Post*for-profit*SmallSchools		47		
		[461]		
Post*GEprograms			73*	
			[44]	
Post*for-profit*GEprograms			−52	
			[45]	
Post*FailingGEprograms				−326***
				[55]
Post*for-profit*FailingGEprograms				402***
				[101]
Observations	40,440	40,440	40,440	40,440
Number of institutions	2696	2696	2696	2696

Robust standard errors clustered at the institution level in brackets; all regressions include year and institutions fixed effects and controls for institutional characteristics that vary over time such as tuition

Post*twoyearorless is an indicator variable that turns on for 2 year and less than 2 year institutions for 2011 through 2014; post*for-profit*twoyearorless is an indicator variable that turns on for 2 year and less than two year for-profit institutions in years 2011 through 2014; post*smallschools is an indicator variable that turns on for institutions classified as small in years 2011 through 2014; post*for-profit*smallschools is an indicator variable that turns on for small for-profit institutions in years 2011 through 2014; post*GEprograms is an indicator variable that turns on in years 2000 and 2014 and is multiplied by the total number of GE programs within the institution; post*for-profit*GEprograms is an indicator variable that turns on for for-profit institutions in years 2011 through 2014 and is multiplied by the number of GE programs within the institution. Post*FailingGEprograms is an indicator variable that turn on in years 2011 through 2014 and is multiplied by the number of an institution's GE programs that fail the GE metrics. Post*For-profit*FailingGEprograms is an indicator variable that turns on in years 2011 through 2014 for for-profit institutions and is multiplied by the number of an institution's GE programs that fail

***p < 0.01, **p < 0.05, *p < 0.1

Overall, the results suggest that for-profit institutions experienced gains in enrollment in the post-GE period when controlling for institution and year effects, but the gains were significantly lower than those of the public and nonprofit institutions. The results could suggest that students switched from for-profit institutions to public or nonprofit institutions

that offer similar programs. To explore this theory further, I look at the enrollment of different subgroups of students below.

Heterogeneous Effects of GE

In Table 7, I explore the differential effect of GE on for-profit institutions by level, size of institution, and number of GE programs. As previously mentioned, for-profit and two-year institutions[18] appear to be most affected by GE, so I expand my model to test whether these institutions saw larger changes in enrollment. In specification (1) I run a DID and a triple difference (DDD) using two-year institutions. The results suggest that two-year institutions experienced smaller gains in enrollment of about 700 students relative to four-year institutions. I run my DID and DDD with an indicator for the size of the institution.[19] The results are similar to two-year institutions, and suggest that smaller institutions experienced losses in enrollment of about 700 students relative to larger institutions, while the effects on small for-profit institutions are smaller and not statistically significant.

In specifications (3) and (4), I explore the intensity of the GE treatment and its effect on enrollment. GE affects institutions at the program level, so I would expect institutions with more GE programs to experience stronger effects from GE. The number of GE programs within an institution ranges between 1 and 98 programs, and among those programs, each institutions has between 0 and 14 programs that fail the GE metrics (refer to Table 3). In specification (3), I run a DID using the number of GE programs, and the results suggests that for every additional GE program, institutions saw a small gain in enrollment of 73 students. When interacted with for-profit, the coefficient is negative and not statistically significant. Next, I run my model on the number of failing GE programs. The results suggest that for every additional failing GE program, institutions saw a drop in enrollment of about 326 students. Interestingly, when I add the interaction for for-profit institutions, enrollment increases by 402, suggesting a smaller relative effect of failing GE programs on for-profit schools than public and nonprofit GE schools. However, this could be due to the fact that nonprofits and public had very few failing GE programs. Overall, the results suggest that two-year, smaller institutions, and institutions with more failing GE programs may have experienced smaller relative gains in enrollment in the post GE period.

Enrollment of Student Subgroups

The results thus far suggest a slowdown in enrollment at for-profit institutions in the post-GE time period. In Table 8, I explore the changes in enrollment by income, age, gender and race in order to determine whether certain groups were more affected by GE. The coefficient on $\text{Post}_t \times \text{for-profit}_i$ is negative on all but one of my demographic groups. For Pell grant recipients and Asian students, the total effect of GE is a decrease in enrollment, while the remaining groups saw smaller gains in enrollment relative to public and nonprofit institutions. The effect on Pell Grant recipients is quite large as for-profit institutions

[18] For simplicity, my references to "two-year" include both 2 year and less than 2-year institutions.

[19] Small schools are those schools classified as having fewer than 1000 students in the first Carnegie classification completed in 2005.

Table 8 Effect of GE on enrollment at for-profit institutions, student subgroups in GE sample

	[A]		[B]		[C]		[D]			
	Income		Age		Gender		Race			
Post	230***	0.873***	1546***	2321***	739***	572***	330***	533***	489***	55***
	[9]	[0.025]	[73]	[93]	[62]	[37]	[32]	[36]	[47]	[8]
Post*for-profit	− 144***	− 0.528***	82**	− 186***	− 279***	− 337***	− 213***	− 468***	− 446***	− 62***
	[9]	[.026]	[39]	[25]	[60]	[34]	[33]	[35]	[48]	[8]
Notes	Pell grant enrollment	Ln Pell grant enrollment	Number age 25 and over	Number under age 25	Women	Men	Black	Hispanic	White	Asian
Observations	40,440	38,613	40,440	40,440	40,440	40,440	40,440	40,440	40,440	40,440
Institutions	2696	2647	2696	2696	2696	2696	2696	2696	2696	2696

Robust standard errors in brackets; All regressions includes year and institutions fixed effects and controls for institutional characteristics that vary over time; Institutions missing one or more years of data are dropped; years 2000 through 2014

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

experienced a decline of 144 Pell grant recipients[20] relative to public and nonprofit institutions that experienced a gain of 230 Pell grant recipients. When I run the regression on the natural log of Pell grant student enrollment, the results suggest a 53 log point (70%) drop in Pell grant enrollment at for-profit institutions relative to public and nonprofit institutions. However, given the smaller relative gains in enrollment of other key demographic groups, I am hesitant to conclude that the drop in enrollment of Pell Grant recipients provides enough evidence of a change in the demographics of students enrolling at for-profit institutions.

Discussion and Conclusion

The goal of the GE regulations is to increase transparency and accountability of institutions of higher education, particularly programs at for-profit institutions. While the future of the GE regulations is uncertain under the current administration, policymakers have signaled an interest in increasing oversight of institutions of higher education. This paper explores the extent to which the uncertainty of increased federal oversight has led to a change in behavior by for-profit institutions.

Using data from IPEDS and the GE informational rates, I find that on average, for-profit institutions actually experienced an increase in enrollment after the GE regulatory uncertainty of about 600 students when controlling for institution and year fixed effects. However, the increase was significantly lower than the average increase in enrollment of around 1100 students at public and non-profit institutions, suggesting that GE may have slowed the rapid growth of for-profit institutions. When I look at the change in enrollment for the subsample of schools that are accountable under GE, I find slightly higher gains in enrollment of about 700 students at for-profit institutions, while public and nonprofit GE institutions experienced gains of about 1300 students. Thus among the GE schools, the uncertainty surrounding the regulation seems to have had more adverse effects on for-profit schools than nonprofit and public GE schools. In addition, when I look at the effects of GE by level and size of institution, the results suggest that the regulatory uncertainty surrounding GE may have had more negative effects on enrollment in two-year and smaller institutions.

Understanding what could be driving the differential effects of the regulatory uncertainty on enrollment has important policy implications. If institutions are responding to the threat of GE by closing the poorest performing programs, or students are responding to the increased transparency by choosing higher performing institutions, then GE could have achieved its objective to protect students and taxpayers. I do find some evidence that the effect of the uncertainty was more prominent at schools with more GE programs in any sector and on institutions with more failing GE programs. However, the effect of failing GE programs seems to be more prominent for public and nonprofit institutions than for-profit institutions, which is surprising since on average, for-profit schools had more failing GE programs.

[20] Prior to 2008, Pell grant recipients were lumped in with other federal grant aid recipients in the IPEDS. Based on the author's calculations, grant recipients comprise between 96 to 99% of federal grant aid recipients from 2008 through 2014. Thus, in order to ensure consistency, I use the federal grant aid measure for all my years.

On the other hand, if the change in enrollment at for-profit institutions is due to increased selectivity that puts certain at-risk groups at a disadvantage, then policymakers could be concerned about GE's potential effect on student access to higher education. My results suggest large significant declines in enrollment of Pell grant recipients at for-profit institutions, which could suggest that for-profit institutions have implemented more selective recruitment strategies to avoid enrolling low-income students that participate in Title IV programs. However, I also find smaller relative gains in enrollment of other key demographic groups including women, older students, and blacks and Hispanics, which suggests the effects of GE have been widespread among student groups. In short, GE may be reducing the enrollment of low-income students in for-profit colleges, but this selectivity does not appear to differentially affect students in other underserved groups.

A key policy concern that remains is the extent to which students who do not enroll in for-profit colleges enroll in other institutions. While my results are not definitive, the positive effects I find in public and nonprofit institutions suggest that perhaps for-profit students are re-absorbed into lower-cost institutions that may have more positive outcomes. In this sense, GE could be effective in improving student outcomes, but much more research is needed to know if this is indeed the case. My research is further limited in that I cannot disentangle whether the changes in enrollment are completely driven by changes in institution behavior or if students began to respond to the uncertainty created by GE. Nevertheless, my research does suggest some effects of the regulatory uncertainty on for-profit institutions, and it could serve as an indicator for policymakers of how increased oversight might affect the sector.

Appendix A

See Table 9.

Table 9 Change in enrollment at for-profit institutions after GE, fall enrollment (with year fixed effects)

Post	1114***
	[59]
Post*for-profit	−481***
	[64]
Year fixed effects	
2001	131***
	[9]
2002	269***
	[13]
2003	311***
	[15]
2004	367***
	[18]
2005	402***
	[23]
2006	442***
	[23]
2007	522***
	[26]
2008	654***
	[32]
2009	891***
	[41]
2010	987***
	[45]
2012	−44**
	[18]
2013	−91***
	[20]
2014	−118***
	[22]
Observations	71,595
Institution characteristics	Yes
Institution FE	Yes
Number of institutions	4773

Robust standard errors clustered at the institution level in brackets

Post*for-profit is an indicator variable that turns on for institutions identified as for-profit in IPEDS for 2011 through 2014; Institution characteristics includes dummy variables for public, twoyear, fouryear, tuition, hbcu, and admissions policy. Institutions missing one or more years of data are dropped

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

Appendix B

See Table 10.

Table 10 Change in enrollment at for-profit institutions after GE using alternative measures of enrollment

	Fall enrollment	Ln fall enrollment	Unduplicated headcount	Full-time equivalent
Post	732***	0.172***	938***	631***
	[49]	[0.008]	[87]	[146]
Post*for-profit	−388***	−0.048***	−429***	−520***
	[56]	[0.013]	[98]	[154]
Observations	52,503	52,479	52,503	52,503
Number of institutions	4773	4773	4773	4773

Robust standard errors clustered at the institution level in brackets; All regressions include year and instittuions fixed effects and controls for institutional characteristics that vary over time such as tuition

Post*for-profit is an indicator variable that turns on for institutions identified as for-profit in IPEDS for 2011 through 2014; Institution characteristics includes dummy variables for public, twoyear, fouryear, tuition, hbcu, and admissions policy. Data years are 2004 through 2014; Institutions missing one or more years of data are dropped

***$p < 0.01$

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