

Estimated Profit: The Operating Margins of Public and Private Not-for-Profit Postsecondary Institutions

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ABSTRACT

Non-profit private and public higher education institutions are not motivated by profit maximization. However, many non-profit public and private colleges and universities generate excess revenues on a consistent basis. In this study, we examine the excess revenues of various non-profit higher education teaching institutions in the United States that are baccalaureate and above. We find that there are positive and significant associations between current and lagged profits in both the public and private sectors, and that the factors influencing profits differ considerably between them.

INTRODUCTION

There is significant interest among higher education researchers, policy makers, and stakeholders in learning how colleges and universities generate and spend their money. This interest in higher education finances stems in large part from efforts to keep costs down so as to limit tuition increases and improve access to higher education. There is concern among higher education critics that colleges are inefficient organizations, and that the inefficiency is driving up costs and being passed along to students and their families in the form of higher prices (Baumol, 1996). Finally, higher education finances are important to understand as institutions struggle at times to generate enough revenues to cover their expenditures (Alexander & Ehrenberg, 2003; Toutkoushian, 2003).

Although a number of books have focused on higher education finances (Bowen, 1980; Clotfelter, 1996; Ehrenberg, 2006; McPherson, Schapiro, & Winston, 1993; Paulsen & Smart, 2001; Weisbrod, Ballou, & Asch, 2009), and journal articles have examined finance topics such as tuition discounting (e.g., Breneman, Doti, & Lapovsky, 2001; Martin, 2002), revenue sources (e.g., Cheslock & Gianneschi, 2008; Kaufman & Woglom, 2008; Kerlin & Pollak, 2011; Liefner, 2003; Toutkoushian, 2001), and economies of scale and scope (e.g., Brinkman, 1990; Cohn, Rhine, & Santos, 1989), we still do not yet fully understand how finances relate to the operations of postsecondary institutions. Furthermore, economists disagree as to whether colleges are trying to maximize profits, revenues, prestige, utility, or something else.

One curious omission from the literature on higher education finance is the excess revenues (or operating margins) that colleges often generate.¹ Because all public and many private colleges are not-for-profit organizations, it may be thought that these institutions try to

¹ Postsecondary institutions refer to profits by a variety of names, including excess revenues, surplus, operating margin, and changes to net assets. In this paper, we use these terms interchangeably.

spend all of the revenues brought in and thus should come very close to breaking even on their operations each year. Nonetheless, not-for-profit institutions are permitted to earn and retain excess revenues from year to year, and they frequently do so in both the private and public sectors. To illustrate, our calculations from Integrated Postsecondary Education Data System (IPEDS) data show that in academic year 2013-14 public colleges and universities generated an estimated \$29 billion in excess revenues, and private not-for-profit institutions realized an additional \$56 billion in excess revenues. On a per-student basis, the revenue surpluses at four-year institutions in 2013-14 were about \$4,000 per student for public and \$17,000 per student for private not-for-profit institutions.² Except in recessionary times, it is the norm that many public and private not-for-profit institutions earn more in revenues than they spend on their operations.

Although these excess revenues are not technically profits because they cannot be distributed to owners or shareholders as in the for-profit world, they arguably function in a similar manner as profits for colleges and universities. Colleges can transfer operating margins into quasi-endowments that can be saved and used in the future to support their educational activities and mission. As a result, some economists have treated colleges as profit-maximizing organizations (James, 1978; 1983; Paulsen, 2000), while others such as Bowen (1980), Garvin (1980), Baumol and Blackman (1995) and Winston (1999) have offered different models for university behavior such as utility or prestige maximization.

Currently very little attention has been directed in the academic literature at these “profits” in higher education. In fact, it is difficult to even find mention of profits in the higher education finance literature, and yet the presence and magnitude of these excess revenues raises a number of important questions: How large are the excess revenues for not-for-profit

² These estimates are based on author calculations using data from the *Digest of Education Statistics 2015*, Tables 333.10, 333.40, 334.10, and 334.40.

institutions? How have they varied over time? Are certain types of colleges better than others at generating profits? And in particular, do profits within the not-for-profit sector differ between public and private institutions?

In this study, we use institution-level data from the Delta Cost Project for selected years to examine the excess revenues earned by public and private four-year, not-for-profit institutions. We begin by reviewing economic theories of institutional behavior and how they relate to the generation of operating margins. We then present descriptive statistics for this sample to quantify the average operating margin levels in higher education, how they have changed over time, and how they differ among specific types of institutions with a focus on differences between public and private institutions. Our analysis concludes with a series of cross-sectional regression models to investigate whether operating margins are affected by factors such as the public/private status of an institution, its research intensity, size, selectivity, and reliance on key sources of revenue. In particular, we test whether the operating margins in one year are correlated, either positively or negatively, with lagged operating margins. If the associations are positive, then it suggests that operating margins are systematic and persistent over time for certain institutions. On the other hand, negative effects with lagged operating margins suggest that they are simply intertemporal adjustments due to the uneven flows of revenue and expenditures.

LITERATURE REVIEW

Academics have offered a number of competing models and theories to describe the behavior of not-for-profit colleges and universities. There is no general consensus within the field as to which is the most appropriate model. The most obvious starting place for economists is to assume that the goal of not-for-profit colleges is the same as for firms: namely, to maximize

profits. Advocates for this point of view argue that even not-for-profit colleges act in ways that are similar to for-profit organizations: they can and do earn revenues that exceed expenditures, and they frequently look for ways to cut costs and increase revenues. Many economists have used this as the framework for their studies (e.g., James, 1978; 1990). A related theoretical concept to profit maximization is discretionary budget maximization (Migue & Belanger, 1974; Niskanen, 1975; Blais & Dion, 1991; Paulsen, 2001). They argued that there are some items in college budgets that cannot be controlled by institutions, and as a result colleges and universities strive to maximize only those portions of the budget where they have some discretion. Nonetheless, this model is similar in spirit to profit maximization.

Other academics have offered alternatives to the profit maximization framework. Most notably, Howard Bowen (1980) speculated that colleges act as if they were revenue maximizers, in that they seek to bring in as much money as possible and then spend what they generate. The presumed goal in Bowen's model is prestige maximization, however, and not revenue maximization. This theory helps explain rising educational costs, but also suggests that profits would be minimal because any excess revenues are quickly spent to raise prestige. In fact, profits in this framework are only a temporary phenomenon because ultimately it is in the best interest of the institution to spend it. Finally, other researchers argue that the goal of colleges is not to maximize profits or revenue, but rather something such as their prestige or reputation. In this model, revenue and hence profit is used to help raise an institution's prestige (Garvin, 1980).

There are a number of important features about colleges and universities that distinguish their finances from many other types of organizations and impact profits. First, all public and many private institutions are not-for-profit organizations. Many economists have examined not-for-profit sectors of various industries (e.g., Ashley & Faulk, 2010; Easley & O'Hara, 1983;

Hansmann, 1986; 1987; James, 1983; Kim, 2014; Newhouse, 1969; Steinberg, 2003; Weisbrod, 2009). Second, colleges are multi-product firms that provide services in the areas of research, teaching, and service (Cohn, Rhine, & Santos, 1989; James, 1978; Pfouts, 1961; Panzar & Willig, 1977; Teece, 1982). Colleges receive revenues from a variety of sources, including students and their families, governments (federal, state, local), donors (private and organizational), and auxiliary activities. This is different from many private for-profit firms where revenues are mainly obtained by sales of goods and services to customers.

As noted by Winston (1997; 1999), these revenues are used to help subsidize the price paid by students to enroll in college. Toutkoushian and Paulsen (2016), building on the pricing framework developed by Winston (1999), show how subsidies and profits are combined to set the average price paid by students. More formally, the profit or operating margin of an institution (π) is defined as total revenue (R) minus total cost (C). Then the average net price paid by students (\bar{P}) can be defined as cost per student (C/Q) plus operating margin per student (π/Q) minus subsidy per student (G/Q):

$$(1) \quad \bar{P} = C/Q + \pi/Q - G/Q$$

According to this equation, rising net prices for students could be due to either rising expenditures, rising operating margins, falling subsidies, or some combination of the three. Equation (1) is important because it shows that operating margins per student may contribute to higher prices paid by students. Rewriting this equation shows that the operating margin per student is defined as tuition plus subsidy (i.e., total revenue) per student minus total cost per student:

$$(2) \quad \pi/Q = \bar{P} + G/Q - C/Q$$

Profits could also be written as a percentage of total revenue (π/R).

Casual observers of higher education often do not realize that not-for-profit organizations can and do generate profits (Calabrese, 2012; Chang & Tuckman, 1990), and that this applies to not-for-profit public and private institutions. As noted by Paulsen (2001, p.199), “Although it may in some ways appear that public universities are not allowed to experience budgetary surpluses or positive discretionary budgets, this is not accurate.” Paulsen (2001) goes on to explain how public institutions can often add excess revenues to their endowment for providing educational services in the future. Other articles that have discussed profits in higher education markets include Brady (2000), Breneman (1994), Fried (2011), Gose (1999), James (1990), and Kaufman and Woglom (2008).

Although excess revenues cannot be distributed to owners / shareholders as is true for for-profit organizations, in many ways they function much like profits. They can be moved into an institution’s endowment and saved for use at a later date. Despite the implicit intent that these operating margins for not-for-profit organizations will eventually be used for the activities of the organization, there is no specific rule or time limit by which the monies must be spent by colleges and universities. It has been well documented that the endowments of colleges vary greatly in size, with some institutions such as Harvard having endowments in the billions of dollars. Endowments benefit institutions in several ways. First, colleges can draw down a portion of endowments (typically ~5%) each year to help fund operations without reducing the endowment. These revenues can pay for endowed professorships, and other things that help raise the prestige of the institution. Second, endowments provide a safety net in the event of an unexpected downturn in revenues. Accordingly, both provide an incentive for institutions to seek out profits from their operations.

There are several competing explanations for how profits may arise in higher education markets. First, profits could be a result of conservative budgeting practices used by colleges. Due to the uncertainty of revenues and expenditures, institutions have an incentive to overestimate their planned expenditures and underestimate their planned revenues when developing budgets for the upcoming year (Serna & Weiler, 2016). Doing so will help increase the chances that the institution has sufficient funds to cover their costs for the year. This is particularly important for higher education institutions given that they have less flexibility to adjust revenues and expenditures during the year than is true for a typical for-profit organization in other industries.³ On average, then, this conservative budgeting practice may result in revenues exceeding expenditures by a certain amount on average from year to year. Of course, it is also possible that external shocks such as a recession could lead to a financial loss in a particular year.

Profits could also be affected by the budgeting model used by an institution. Under Responsibility Centered Management (RCM) budgeting models, academic units (or Responsibility Centers) are permitted and even encouraged to earn and save excess revenues from year to year (Brinkman, 1993; Hearn, Lewis, Kallsen, Holdsworth & Jones, 2006; Priest, Becker, Hossler & St. John, 2002; Whalen, 1991). One goal of an RCM budgeting model is to provide a mechanism for academic units to reduce expenditures, produce profits or excess revenues, and use them in conjunction with longer-term planning to pay for initiatives in the future. RCM is used more frequently by private institutions but has become more popular in the public sector as well. The incentive provided by RCM budgetary model is to generate positive excess revenues so that units have greater options in the subsequent period. The RCM model is

³ Colleges typically collect tuition revenue at two or three designated times of the year at set prices, whereas firms in the for-profit world sell their services to customers on a more continuous basis and can more readily adjust prices over time. Likewise, the tenure system in higher education places an important restriction on a college's ability to cut costs in bad financial times.

consistent with observations by Slaughter and Rhodes (2004), Washburn (2008) and Bok (2009) that colleges are becoming more entrepreneurial over time and adopting practices that are more commonly found in the for-profit sector.

Alternatively, profits may simply be a temporary phenomenon due to the irregular timing at which revenues and expenditures are incurred by institutions. For example, the revenues and expenditures for a large federal research grant may be received and incurred in different years, and donations may be received at one point in time and spent later. In this case, positive operating margins in one year will tend to be offset by losses in subsequent years. This explanation would presume that in the long run operating margins would be very small and negatively correlated over time.

It could also be the case that some colleges earn profits on a regular basis, and that certain types of colleges are consistently more profitable than others. This might be due to differences in their mission, market power, degree of competition, geographic location, and so on. For example, between 2005 and 2015, the University of Alabama reported positive and sizable operating margins in ten of the eleven years. Economists argue that firms with more market power, for example, may be able to capture larger profits. And at least anecdotally, we know that there are some institutions that are highly successful financially (e.g., those with large endowments), and others such as less-prestigious private institutions that struggle to bring in enough revenue each year to cover expenditures. Thus profits may be tied to peculiar circumstances of institutions and may be a recurring feature of certain types of institutions.

Finally, profits for colleges and universities may vary over time. Revenue sources such as private donations may well fluctuate with the state of the economy, in that in bad times private giving goes down and vice-versa (Brown & Hoxby, 2015). Even when an institutions budgets for

the coming year, they may be greatly affected by unanticipated shocks to the economy such as a recession or boom. Because expenditures tend to be more stable and commitments for them are made for the entire academic year in advance, these revenue shocks play a larger role in creating profits or losses.

DATA AND METHODS

Data

The data that we used in this study were taken from the Integrated Postsecondary Education Data System (IPEDS), as assembled in the Delta Cost Project (DCP) dataset. The DCP is a panel dataset with information on selected variables from IPEDS for the years 1987-88 to 2012-13. The DCP dataset offers the advantage of having standardized financial variables for public and private institutions for the years in question. We restricted our analysis to public and private not-for-profit institutions offering four-year degrees and higher, in part because financial and related data are missing for many private for-profit institutions and two-year institutions/community colleges over the time period that we considered. We excluded all institutions that have multi-campus systems and where financial data of individual campuses is aggregated and only attributed to an abstract “parent” entity (Jaquette & Parra, 2016).

Dependent Variables

In this study, we focused on two different dependent variables, where each is a standardized measure of profits or operating margins. Profit or operating margin was defined in the Delta Cost Project database as total current funds revenues minus total current funds expenditures.⁴ For the first dependent variable, we represented operating margin as a percentage

⁴ The corresponding variable in the Delta Cost Project dataset is `gross_operating_margin`. See the Data Dictionary for the Delta Cost Project (<http://www.deltacostproject.org/delta-cost-project-database>) for more information.

of total revenue. As an alternative, we also defined operating margin per student by dividing the operating margin by FTE enrollments. This variable was expressed in 2013 constant dollar terms for all years.

Explanatory Variables

We identified a series of explanatory variables that theory suggests may have an influence on the profits or operating margins of a college or university. The variables were placed into six different groups. The first group contains variables that are related to the mission of an institution. We included these variables because colleges differ in the emphasis that they give to the research, teaching, and service aspects of their mission, and some activities may be more likely to generate more profits than others. The variables we used in this category include the Carnegie classification level of each institution (eight groups based on research intensity and highest degree offered), and a dummy variable for whether an institution has a hospital or medical school.

The second group of explanatory variables represents finance-related measures that may arguably affect the operating margins for a college or university. The key finance variable that we used was the percentage of total revenue that an institution receives from donations, because institutions that rely more heavily on donations may have more variability in revenues and expenditures due to unpredictable shocks due to changes in the economy.

The third group of variables captures factors that are related to the degree of competition or market power of an institution. Economic theory suggests that organizations that have more market power and/or face less competition should be able to earn more profit. The competition-related variables that we considered were the percentage of applicants who were admitted, and the geographic region (or state) where the institution is located. Institutions with lower

acceptance rates are more selective, and may be able to choose more students who can pay full price, thus increasing profits. Finally, geographic region may matter for profit because higher education markets are often state or regional in nature and thus colleges that are located in certain regions (such as New England where there are many institutions within close proximity of each other) may have more competition than others and thus be able to generate fewer profits. The geographic variables may also capture variations in governance structures and oversight of higher education.

The fourth group of variables contains variables for lagged profits. We examined model specifications with one- and two-year lags for each dependent variable. These variables enabled us to test whether profits in the current year are related to profits from earlier years. If the relationships between current and lagged profits are positive, then it suggests that profits persist over time and that some institutions are simply more successful than others at generating profits. If the associations are instead negative, then profits would be due to the unpredictability of timing of revenues and expenditures. If there is no association between current and lagged profits, then profits are not systematic and are more random and perhaps due to errors in budgeting revenues and expenditures.

Finally, the last group of explanatory variables represents other institutional characteristics that may nonetheless affect the profitability of colleges. These variables included the level of enrollments and squared enrollments, the age and squared age of the institution, the percentage of students who were part-time, the percentage of professional degrees awarded, and whether the institution is public or private. Enrollments were used to determine whether profitability was affected by the scale of operations. This is particularly useful in the regression models where the dependent variable was the level of profit per student. The public/private status

may affect profits in that public institutions are under more pressure to disclose finances and keep tuition low, and as a result may have lower profit levels. Age of the institution and squared age of the institution is also included in the regression because the reputation of the institution as well as donor and alumni base depends on the age. We include percentage of part-time students and percentage of professional degrees as a share of total degrees as a university with a large part-time student body and with a large percentage of professional students is also likely to have a different revenue and cost structures. Moreover, alumni who were part-time students or professional students such as business school or law school students have a different propensity to donate money to the institution in the future. We used the full-time student retention percentage of the institution as a proxy of student satisfaction. If the full-time student retention percentage is low, then even the students who do not dropout and graduate may be less likely to donate money to the institution. Moreover, a university with a low full-time student retention percentage may have a different cost structure due to reasons such as spending less money on auxiliary student services.

In Table 1, we present descriptive statistics for the variables in our study for the last academic year under consideration (2012-13). There were 303 public and 696 private not-for-profit four-year institutions in the sample (total = 999). Their average operating margin in this particular year was \$25.8 million, which translates into 8.9% of total revenue or \$5,126 per student.

----- Insert Table 1 Here -----

In Table 2, we show how the mean operating margins vary by type of institution for 2012-13. The first two rows compare public and private not-for-profit institutions. As can be seen in the data, the average profit for public institutions in this year was very close to zero. In

contrast, private not-for-profit institutions earn substantial profits in this year (13.2% of total revenue or \$7,343 per student). Accordingly, the large average profit shown in Table 1 was driven by the profitability of private institutions. When we broke down the sample by Carnegie classification of institutions, we found that the largest variation in average operating margins were for liberal arts bachelor-level institutions (mean = 18.7% of revenue or \$13,560 per student). This category typically includes a number of highly-selective private institutions that focus on undergraduate education (such as Williams College, Carleton College, etc.).

----- Insert Table 2 Here -----

We next explored the distribution of operating margins for public and private institutions, as shown in Figure 1. In each case, the distributions roughly approximate a normal distribution. An important difference, however, is that although the distribution for public institutions is centered around zero, the mean for private institutions is positive and substantively large as shown in Table 2. It is striking to see how much more volatile operating margins are for private than for public institutions. This is not surprising given that revenues are generally more stable for public institutions that can rely on state appropriations to help cover expenditures and because there are a larger number of private non-profit institutions of varying financial heft, ranging from elite universities like Harvard University to smaller private colleges that are on the verge of shutting down.

----- Insert Figure 1 Here -----

In Table 3, we focus on how the average operating margins for these institutions changed between 2003-04 and 2012-13. We report the statistics separately for public and private institutions to illustrate the substantial differences in the levels and patterns of operating margins across the two sectors. In general, the average operating margins were positive for most years

except for the recessionary period 2008-10. In the public sector, average operating margins varied within two percentage points of zero for most years in this sample. The story is different for private institutions, where in most years there were double-digit average operating margins as a percent of total revenue. The last column in Table 3 illustrates that these operating margins were sizable in dollar terms as well. Finally, the average operating margins were much more volatile in the private sector than in the public sector. As noted earlier, this could be attributed to the greater reliance on donations in the private sector and less access to state governmental support.

----- Insert Table 3 Here -----

Methods

We now describe the different statistical models that we estimated in this study. The models are written as follows:

$$(3) (OM/R)_{it} = \alpha + \beta X_{it} + \mu_{it}$$

$$(4) (OM/E)_{it} = \alpha + \beta X_{it} + \mu_{it}$$

$$(5) (OM/R)_{it} = \alpha + \beta X_{it} + \delta_1(OM/R)_{i\ t-1} + \delta_2(OM/R)_{i\ t-2} + \mu_{it}$$

$$(6) (OM/E)_{it} = \alpha + \beta X_{it} + \delta_1(OM/E)_{i\ t-1} + \delta_2(OM/E)_{i\ t-2} + \mu_{it}$$

where $(OM/R)_{it}$ denotes operating margin as a proportion of total revenue for institution i in time period t , $(OM/E)_{it}$ is operating revenue per FTE student, X_{it} is a set of institutional variables described earlier, and μ_{it} is the error term of the regression equation. In equations (5) and (6), we added one- and two-year lagged values of the respective dependent variables to each model to determine whether there is a persistent pattern in operating revenues over time. For the latest academic year for which we have data, 2012-13, we estimate the above four models for

private only, public only, and all non-profit universities separately. We also estimated the regression models for selected years, including academic year 2012-13, to determine whether the relationships observed for 2012-13 apply to earlier years as well.

RESULTS

Table 4 provides linear regression coefficients of the academic year 2012-13 for equations (3) and (4). We estimated the models separately for public and private institutions, as well as the pooled sample. Overall, it is striking how different the results are for public and private institutions, even though all are not-for-profit organizations. The estimated coefficients for the private non-profit variable in columns 1 and 4 show that even after controlling for other selected institutional characteristics, operating margins were significantly higher in the private sector. The differences in other characteristics appear to explain little of the mean difference in operating margins between public and private institutions. Furthermore, the sector-specific regression models were notably different in terms of which variables had a significant effect on operating margins.

Beginning with public institutions, we found that the size of the institution was the only factor that had a consistent significant (and quadratic) impact on operating margins. Nonetheless, the models explained about 20% to 24% of the variation in operating margins. The lack of significance of other variables for public universities can be attributed to stricter financial scrutiny at those institutions due to which profits or losses, an aberration for a non-profit organization, that systematically depend on some institutional characteristic other than enrollment size are not allowed to happen. Larger enrollment size brings larger uncertainty in the picture. Consequently, larger public institutions in terms of enrollments are allowed larger

discretion in setting their expenditure and revenue goals for the coming academic year, leading to larger profits. Size was also a significant factor in the operating margins for private institutions; however, there were also a number of other characteristics that helped explain their profitability. In the private sector, operating margins were also affected by the Carnegie classification of institutions, reflecting the presence of highly-selective private liberal arts institutions and elite doctoral institutions, the latter being the baseline category for the regressions. Operating margins in the private sector were also lower for institutions that had more part-time students. A larger share of part-time students is associated with smaller revenues and greater costs, and thus the profits are likely to be smaller. Moreover, the operating margin was smaller for institutions with a higher percentage of admitted students. Having a larger admitted student percentage indicate more competition with other institutions and less prestige for an institution. Consequently, the larger the admit percentage, the lower the profit is likely to be. Operating margins also varied across regions, possibly reflecting different state or regional oversight and governance structures of postsecondary institutions. Institutions that are located in the Southeast or Mideast portions of the United States have smaller operating margins. Finally, operating margins for private institutions were significantly higher for those that relied more heavily on donations to subsidize their activities. Having a larger percentage of revenue from donation increases the financial flexibility of a private institution and therefore, increases the operating margin.

----- Insert Table 4 Here -----

In Table 5, we estimated equations (5) and (6) in which we added the one- and two-year lags of operating margins to each equation shown in the previous table. We only report the results for the lagged operating margins here. The results show that the one-year and especially

the two-year lagged profits had positive and statistically significant effects on current profits for most models. The presence of positive lags suggests that there is some degree of continuity among institutions in terms of their profitability over time, in that institutions that earn positive operating margins in one year are more likely to do the same in the next two years. This held for both public and private institutions, providing evidence against the notion that profits are an intertemporal smoothing from prior years. Curiously, the two-year lag effect was larger than the one-year lag in all of the six models. This may indicate that institutions take into account the operating margin of the preceding year as they are planning for the subsequent year as well as a higher profit two years earlier increases the expenditure the subsequent year so that the excess revenue is not as high. This seems to be especially true for private institutions as the difference between the one- and two-year lag effects were greatest for private institutions. The difference between private and public institutions for one-year lag, both in profit as a percent of revenue and for profit per student. Another way to state the same observation is that the difference in coefficients of one-year and two-year lags is also smaller for public institutions. It suggests that private institutions having more flexibility in managing their finances increase their expenditure every other year.

----- Insert Table 5 Here -----

Finally, in Table 6 we reestimated the regression models in equations (3) and (4) for three separate academic years (2005-06, 2009-10, 2012-13) using all the institutions, both public and private non-profit, to determine whether our findings were sensitive to the year chosen. We selected these years because they represent periods of time prior to the recession of 2008-09, immediately after the recession, and then the most current year. Looking across the models, it appears as though the patterns that we uncovered for 2012-13 were also in place for the years

2005-06 and 2009-10. With regard to the public/private difference, the gap between the sectors was smallest in 2009-10, perhaps due to the proximity to the recession. The coefficients for various independent variables are most different for year 2000-10, perhaps for the same reason.

----- Insert Table 6 Here -----

SUMMARY

Higher education finance remains an enduring topic of interest in higher education. Among the many puzzles and sources of confusion is the role of profits in higher education. In this study, we used data on almost 1,000 not-for-profit institutions in both the public and private sectors to examine profitability in higher education. We found that the majority of private institutions earned profits, and the levels of profit were sizable enough to be of interest and perhaps concern to higher education policy makers.

Of particular note are the differences in profitability between public and private not-for-profit institutions. Even though all of the institutions in our sample were not-for-profit organizations, private institutions generated significantly more profits than did their public counterparts. The results for the public sector are mixed. On the one hand, the average operating margins are close to zero in most years over the period that we considered. This is consistent with the notion that public institutions tend to spend what they bring in. Contrary to this, however, we found that there were positive and significant correlations in profits from year to year among public institutions. This finding suggests that some institutions are more successful than others at generating operating revenues, and that profits are not simply a temporary adjustment to either uneven revenues and expenditures or random errors between budgeted and actuals.

Turning to private institutions, we found that despite the fact that they were all not-for-profit institutions, they did in fact earn positive and substantively large profits in most years over this period of time. In 2012-13, these profits amounted to more than \$5,000 per student, and were largest among the more highly-selected liberal arts colleges. As in the public sector, the positive and significant lagged effects shows that some private institutions are more successful than others at earning operating margins year after year.

It is unclear what to make of the substantial differences in profitability between the public and private sectors. The differences may, in part, reflect the influence of the stability of revenues across sectors, and thus private institutions may feel the need to build in a larger financial cushion. Nonetheless, public institutions also face financial pressures to raise sufficient revenues to cover their expenditures, and with state funding failing to keep pace with expenditures we might expect to see a similar behavior among public institutions. Or perhaps public institutions face more financial scrutiny from state policymakers, and thus budget revenues to be closer to planned expenditures. This is relaxed only for public institutions of larger enrollment sizes that need more flexibility in financial planning and more cushion against unexpected expenditures.

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Table 1: Descriptive Statistics for 2012-13

<u>Variable</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Minimum</u>	<u>Maximum</u>
Operating Margin (%)	8.90	12.46	-50.38	61.85
Operating Margin / Student (\$)	\$5,126	\$12,156	-\$13,032	\$123,964
Enrollment (100s)	58.73	76.36	1.02	467.07
Enrollment Squared	9,273	24,878	1.04	218,154
Doctoral: Extensive	.09	.27	0	1
Doctoral: Intensive	.06	.24	0	1
Master: Group I	.35	.48	0	1
Master: Group II	.08	.27	0	1
Bachelor: Lib Arts	.18	.38	0	1
Bachelor: General	.22	.41	0	1
Bachelor: Associate	.02	.13	0	1
Private	.70	.45	0	1
Hospital or Medical	.08	.27	0	1
Age of Institution	121	43	36	320
Age Squared	16,426	11,106	1,296	102,400
Pct Part-Time	20.09	15.22	0.07	81.32
Acceptance Rate	63.11	17.98	6.61	100.00
Pct Revenue from Donations	8.07	7.08	-1.02	48.87
Region: Northeast	.08	.27	0	1
Region: Mid East	.18	.38	0	1
Region: Great Lakes	.18	.38	0	1
Region: Plains	.11	.31	0	1
Region: Southeast	.26	.44	0	1
Region: Southwest	.07	.26	0	1
Region: Rocky Mountains	.03	.16	0	1
Region: Far West	.09	.29	0	1

Notes: Sample size = 999. Data include institutions offering bachelor degrees and without missing values on the variables used in the panel dataset.

Figure 1: Operating Margin as Percent of Total Revenue by Type of Institution, 2012-13

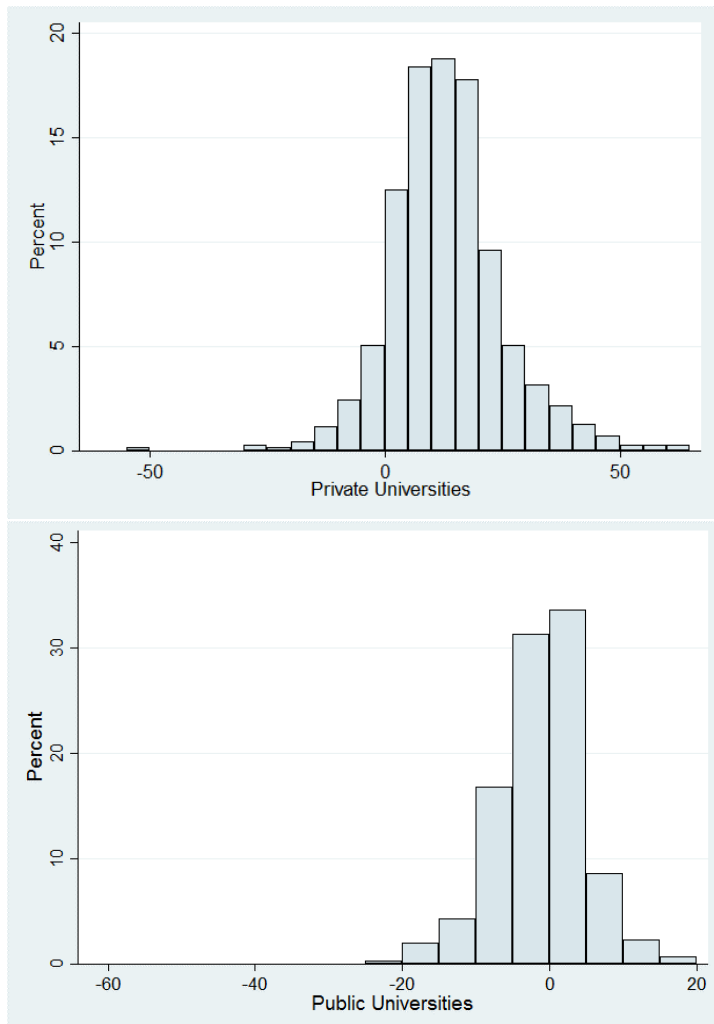


Table 2: Breakdown of Average Operating Margin by Type of Institution, 2012-13

Type of Institution	Operating Margin (%)	Operating Margin per Student (\$)
Public Non-Profit	-0.9%	\$31
Private Non-Profit	13.2%	\$7,343
Doctoral: Extensive	6.9%	\$9,956
Doctoral: Intensive	5.9%	\$3,396
Master: Group I	5.4%	\$1,835
Master: Group II	7.9%	\$2,043
Bachelor: Liberal Arts	18.7%	\$13,560
Bachelor: Comprehensive	9.0%	\$3,120
Bachelor: Associate	3.9%	\$1,106
All Institutions	8.9%	\$5,126

Table 3: Mean Profit Levels by Year and Public/Private Status, 2003-04 to 2012-13

Year	Profit as Percent of Revenue			Profit Per Student		
	All	Public	Private	All	Public	Private
2003-04	11.1%	1.2%	15.0%	\$6,303	\$551	\$8,599
2004-05	8.2%	1.3%	11.0%	\$4,622	\$638	\$6,217
2005-06	13.4%	5.4%	16.7%	\$6,483	\$1,324	\$8,605
2006-07	14.7%	2.1%	20.0%	\$9,652	\$935	\$13,301
2007-08	-0.4%	-0.0%	-0.5%	-\$344	-\$4	-\$489
2008-09	-19.0%	-3.9%	-25.5%	-\$10,384	-\$1,192	-\$14,284
2009-10	9.0%	2.4%	11.8%	\$4,396	\$823	\$5,906
2010-11	13.4%	2.7%	18.0%	\$8,104	\$1,078	\$11,136
2011-12	-1.3%	-1.0%	-1.4%	-\$399	-\$158	-\$503
2012-13	8.9%	-0.9%	13.2%	\$5,126	\$31	\$7,344

Note: Profits per student for various academic years are in 2013 constant dollars.

Table 4: Determinants of Profit for Four-Year Not-for-Profit Institutions, 2012-13

Variable	Y = Profit as Percent of Revenue			Y = Profit per Student		
	All	Public	Private	All	Public	Private
Enrollment (100s)	0.105*** (0.014)	0.060*** (0.013)	0.217*** (0.035)	73.756*** (16.359)	12.959** (6.270)	156.724*** (37.431)
Enrollment Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.226*** (0.050)	-0.024 (0.020)	-0.452*** (0.102)
Doctoral II	1.256 (1.433)	-1.376 (1.411)	4.322 (2.629)	-4.3e+03* (2247.546)	-765.436 (557.943)	-9.3e+03* (4857.813)
Masters I	2.639* (1.495)	-0.127 (1.448)	9.230*** (3.030)	-3.7e+03 (2300.372)	-292.290 (549.357)	-5.5e+03 (4956.043)
Masters II	2.993* (1.740)	-0.492 (2.215)	9.846*** (3.237)	-3.9e+03 (2411.750)	-381.952 (657.376)	-4.7e+03 (5020.729)
Baccalaureate Liberal Arts	8.846*** (1.913)	4.148* (2.211)	14.901*** (3.357)	2751.207 (2887.115)	619.152 (720.056)	1441.150 (5342.690)
Baccalaureate General	2.248 (1.804)	3.109 (2.136)	8.789*** (3.386)	-4.3e+03* (2540.090)	221.534 (649.532)	-5.0e+03 (5160.865)
Baccalaureate/Associate	-0.405 (3.757)	1.277 (3.193)	5.623 (5.341)	-5.4e+03** (2739.301)	-177.199 (783.801)	-6.4e+03 (5381.896)
Private Non-Profit	12.934*** (0.939)	-----	-----	5634.258*** (900.550)	-----	-----
Hospital/Medical	-1.430 (1.251)	-0.473 (1.183)	-5.983*** (2.187)	1848.231 (2193.375)	551.742 (694.293)	-297.244 (4156.132)

Variable	Y = Profit as Percent of Revenue			Y = Profit per Student		
	All	Public	Private	All	Public	Private
Age	-0.007 (0.027)	0.041 (0.025)	-0.034 (0.040)	-48.094 (39.715)	3.073 (10.454)	-93.324* (48.940)
Age Squared	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.262 (0.178)	0.024 (0.042)	0.449** (0.218)
Pct Part-Time Students	-0.074*** (0.024)	0.024 (0.035)	-0.114*** (0.029)	-72.783*** (20.135)	5.797 (8.572)	-102.722*** (26.748)
Pct Students Admitted	-0.074*** (0.024)	0.010 (0.024)	-0.117*** (0.032)	-217.067*** (34.328)	-9.797 (14.023)	-260.825*** (43.508)
Pct Revenue from Donations	0.320*** (0.081)	0.011 (0.172)	0.379*** (0.087)	143.440* (82.242)	22.427 (77.011)	164.155* (90.670)
Region: Mideast	-2.863** (1.203)	-2.382 (2.077)	-2.379* (1.404)	-4.5e+03*** (1645.253)	-719.671 (584.367)	-4.1e+03** (1936.397)
Region: Great Lakes	-0.556 (1.256)	3.130 (2.003)	-1.385 (1.485)	-2.3e+03 (1580.135)	968.154* (585.474)	-3.0e+03 (1870.836)
Region: Plains	-1.214 (1.589)	-0.005 (2.125)	-1.755 (1.876)	-1.3e+03 (1950.077)	244.368 (556.590)	-1.8e+03 (2329.348)
Region: Southeast	-4.396*** (1.256)	-0.803 (1.895)	-5.231*** (1.485)	-5.4e+03*** (1622.463)	76.972 (544.546)	-6.0e+03*** (1884.925)
Region: Southwest	0.876 (1.649)	-1.085 (2.160)	2.969 (2.182)	-1.2e+03 (1959.922)	-267.726 (556.969)	-969.905 (2654.507)

Variable	Y = Profit as Percent of Revenue			Y = Profit per Student		
	All	Public	Private	All	Public	Private
Region: Rocky Mountains	-0.783 (1.868)	0.188 (2.260)	-1.369 (3.615)	-3.0e+03 (1938.173)	405.387 (666.364)	-6.5e+03** (3088.652)
Region: Far West	-3.611*** (1.394)	-3.154 (2.164)	-2.053 (1.686)	-2.2e+03 (2146.101)	-778.213 (593.459)	-36.476 (2774.577)
Constant	-2.229 (3.278)	-9.830** (3.903)	6.681 (4.719)	2.0e+04*** (4454.491)	-1.0e+03 (1301.190)	3.0e+04*** (6532.591)
Sample Size	999	303	696	999	303	696
R-Squared	0.42	0.24	0.27	0.37	0.20	0.39

Notes: Standard errors are shown in parentheses. Data are for the 2012-13 academic year. Dependent variable in columns 1-3 is profit as a percentage of total revenue, and the dependent variable in columns 4-6 is profit per FTE student. Reference category for region is New England (CT ME MA NH RI VT). Region: Mid East includes DE DC MD NJ NY PA. Region: Great Lakes includes IL IN MI OH WI. Region: Plains includes IA KS MN MO NE ND SD. Region: Southeast includes AL AR FL GA KY LA MS NC SC TN VA WV. Region: Southwest includes AZ NM OK TX. Region: Rocky Mountains includes CO ID MT UT WY. Region: Far West includes AK CA HI NV OR WA. * p<.10, ** p<.05, *** p<.01.

Table 5: Effect of One- and Two-Year Lagged Profits on Current Profits, 2012-13

Sample	Dependent Variable	One-Year Lag	Two-Year Lag
All	Profit as Percent of Revenue	+0.032*** (0.010)	+0.570*** (0.042)
Public	Profit as Percent of Revenue	+0.386*** (0.076)	+0.390*** (0.074)
Private	Profit as Percent of Revenue	+0.025** (0.012)	+0.549*** (0.046)
All	Profit per Student	+0.018 (0.069)	+0.580*** (0.023)
Public	Profit per Student	+0.373*** (0.054)	+0.466*** (0.034)
Private	Profit per Student	-0.003 (0.071)	+0.573*** (0.024)

Notes: Sample sizes are 303 public institutions and 696 private institutions. Regression models include all of the control variables shown in Table 3. ***p < .01, **p<.05 (two-tailed test).

Table 6: Determinants of Profit for Four-Year Not-for-Profit Institutions for Years 2005-06, 2009-10 and 2012-13

Variable	Y = Profit as Percent of Revenue			Y = Profit per Student		
	2005-06	2009-10	2012-13	2005-06	2009-10	2012-13
Enrollment (100s)	0.155*** (0.021)	0.095*** (0.014)	0.105*** (0.014)	63.514*** (20.109)	44.910*** (11.106)	73.756*** (16.359)
Enrollment Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.275*** (0.071)	-0.134*** (0.032)	-0.226*** (0.050)
Doctoral II	2.648 (1.891)	2.052 (1.590)	1.256 (1.433)	-6.5e+03 (4057.901)	-2.2e+03 (1679.809)	-4.3e+03* (2247.546)
Masters I	8.533*** (1.912)	4.000** (1.621)	2.639* (1.495)	-7.0e+03* (3990.344)	-2.3e+03 (1742.220)	-3.7e+03 (2300.372)
Masters II	6.674*** (2.192)	5.406*** (1.874)	2.993* (1.740)	-8.5e+03** (4127.840)	-2.3e+03 (1840.566)	-3.9e+03 (2411.750)
Baccalaureate Liberal Arts	9.931*** (2.356)	8.721*** (1.966)	8.846*** (1.913)	-3.6e+03 (4722.822)	2502.515 (2195.877)	2751.207 (2887.115)
Baccalaureate General	3.946* (2.236)	3.677* (1.901)	2.248 (1.804)	-1.0e+04** (4392.446)	-2.9e+03 (1943.037)	-4.3e+03* (2540.090)
Baccalaureate/Associate	4.735 (3.187)	3.282 (3.098)	-0.405 (3.757)	-9.5e+03** (4640.010)	-3.7e+03* (2145.353)	-5.4e+03** (2739.301)
Private Non-Profit	9.713*** (1.002)	7.040*** (0.892)	12.934*** (0.939)	4900.179*** (1064.550)	2190.156*** (713.418)	5634.258*** (900.550)
Hospital/Medical	-2.671 (1.673)	-2.812* (1.566)	-1.430 (1.251)	2564.135 (3357.862)	835.295 (1571.289)	1848.231 (2193.375)

Variable	Y = Profit as Percent of Revenue			Y = Profit per Student		
	2005-06	2009-10	2012-13	2005-06	2009-10	2012-13
Age	-0.025 (0.038)	0.022 (0.030)	-0.007 (0.027)	-70.508 (48.846)	-15.362 (29.628)	-48.094 (39.715)
Age Squared	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.373* (0.218)	0.096 (0.131)	0.262 (0.178)
Pct Part-Time Students	-0.115*** (0.023)	-0.010 (0.021)	-0.074*** (0.024)	-125.219*** (22.880)	-41.830*** (13.258)	-72.783*** (20.135)
Pct Students Admitted	-0.096*** (0.023)	-0.064*** (0.023)	-0.074*** (0.024)	-214.321*** (35.744)	-147.258*** (25.685)	-217.067*** (34.328)
Pct Revenue from Donations	0.414*** (0.052)	0.464*** (0.083)	0.320*** (0.081)	209.023*** (64.451)	302.815*** (78.564)	143.440* (82.242)
Region: Mideast	-4.618*** (1.316)	-1.260 (1.085)	-2.863** (1.203)	-6.7e+03*** (2318.443)	-2.1e+03* (1138.732)	-4.5e+03*** (1645.253)
Region: Great Lakes	-3.656** (1.456)	0.356 (1.152)	-0.556 (1.256)	-4.1e+03* (2229.347)	-458.530 (1089.735)	-2.3e+03 (1580.135)
Region: Plains	-4.473** (1.769)	-0.793 (1.398)	-1.214 (1.589)	-4.6e+03** (2239.160)	-635.539 (1382.379)	-1.3e+03 (1950.077)
Region: Southeast	-6.986*** (1.391)	-2.527** (1.106)	-4.396*** (1.256)	-7.7e+03*** (2268.714)	-3.3e+03*** (1047.291)	-5.4e+03*** (1622.463)
Region: Southwest	-1.169 (1.944)	-1.532 (1.454)	0.876 (1.649)	-3.2e+03 (2668.802)	-1.7e+03 (1229.208)	-1.2e+03 (1959.922)

Variable	Y = Profit as Percent of Revenue			Y = Profit per Student		
	2005-06	2009-10	2012-13	2005-06	2009-10	2012-13
Region: Rocky Mountains	-4.989** (2.061)	1.781 (1.837)	-0.783 (1.868)	-4.5e+03* (2461.801)	-408.747 (1552.246)	-3.0e+03 (1938.173)
Region: Far West	-5.122*** (1.572)	-0.979 (1.348)	-3.611*** (1.394)	-6.1e+03** (2419.863)	-778.253 (1441.246)	-2.2e+03 (2146.101)
Constant	4.260 (3.912)	-4.519 (3.222)	-2.229 (3.278)	3.1e+04*** (7411.349)	1.3e+04*** (3401.430)	2.0e+04*** (4454.491)
Sample Size	971	990	999	971	990	999
R-Squared	0.39	0.33	0.42	0.38	0.34	0.37

Notes: Standard errors are shown in parentheses. Data are for the years 2005-06, 2009-10, and 2012-13. Dependent variable in columns 1-3 is profit as a percentage of total revenue, and the dependent variable in columns 4-6 is profit per FTE student.. Reference category for region is New England (CT ME MA NH RI VT). Region: Mid East includes DE DC MD NJ NY PA. Region: Great Lakes includes IL IN MI OH WI. Region: Plains includes IA KS MN MO NE ND SD. Region: Southeast includes AL AR FL GA KY LA MS NC SC TN VA WV. Region: Southwest includes AZ NM OK TX. Region: Rocky Mountains includes CO ID MT UT WY. Region: Far West includes AK CA HI NV OR WA. * p<.10, ** p<.05, *** p<.01. Variables measured in dollars are in terms of 2013 constant dollars.