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Estimated Profit: A Look at the Excess Revenues of Private Four-Year Nonprofit Postsecondary Institutions

Robert Toutkoushian
Institute of Higher Education, University of Georgia, rtoutkou@uga.edu
&
Manu Raghav
DePauw University

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Robert Toutkoushian
Institute of Higher Education
Meigs Hall 114
University of Georgia
Athens, GA 30602
e-mail: rtoutkou@uga.edu

and

Manu Raghav
Department of Economics and Management
7 East Larrabee Street
Harrison Hall, Room 202
DePauw University
Greencastle, IN 46135
e-mail: manuraghav@depauw.edu

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Abstract

In this study, we use institution-level data for the period 2004 to 2016 from the Integrated Postsecondary Education Data System (IPEDS) to examine the excess revenues of private four-year nonprofit institutions. We present data on the magnitude of excess revenues for these institutions over this period, examine how excess revenues are associated with different types of private institutions, and how within-institution excess revenues are affected by changes in time-varying factors such as their size, selectivity, revenue structure, and expense distribution. We found that across most years in our sample, private four-year nonprofits averaged double-digit excess returns. The results show that variations over time in excess revenues are related to a number of factors including institution size, yield rates, net tuition revenue and tuition discount rates.

<A>Introduction

The higher education industry in the United States is comprised of many types of institutions. One of the most commonly-made distinctions between colleges is with regard to their "nonprofit" and "forprofit" status. Nonprofit institutions differ from for-profit institutions in that nonprofits do not distribute excess revenues[1] to shareholders (i.e., the "non-distribution constraint"), and they enjoy tax-exempt status. According to the National Center for Education Statistics (NCES 2018), in Fall 2017 there were almost 1,000 private nonprofit, degree-granting institutions at the four-year level or higher in the U.S. This group provided educational services to approximately 3.7 million students (~20% total), and varied from highly-research intensive institutions such as Harvard and Princeton to small, teaching-oriented liberal arts colleges such as Barclay College and the College of St. Joseph.

Although some in higher education may assume that nonprofit institutions must by definition break even on their operations, they can and often do earn more in revenue than they spend in a given year (Calabrese 2012; Chang and Tuckman 1990). To illustrate, data from the Integrated Postsecondary Education Data System (IPEDS) show that the private nonprofit institutions in our sample in academic year 2014-15 realized almost $19 billion in excess revenues. Except in recessionary times, it is the norm that many private nonprofit institutions earn more in revenues than they spend in a given year. Despite this, we currently have little understanding of how large these excess revenues might be, and what institutional factors help account for them.

[1] Postsecondary institutions refer to excess revenue by a variety of names, including estimated profit, surplus, operating margin, and change to net assets. There are also different ways to define excess revenue using financial data for colleges and universities.

There is a rather sizable literature in economics that has focused on the existence and operations of nonprofit organizations (NPOs) in a variety of industries (e.g., Anheier 2014; Berman 2006; Bryson 2018; Hansmann 1980; James 1983; Maier, Meyer, and Steinbereithner 2016; Newhouse 1970; Steinberg 2003; Weisbrod 2009). Some researchers (Hansmann 1980; Steinberg and Gray 1993; Weisbrod 1975, 1989) proposed that NPOs thrive in industries such as higher education where the quality of the product or service may not be fully known to the customer. Alternatively, Holtmann (1983) built a theoretical model to explain that uncertain or stochastic demand is the primary reason behind the existence of NPOs, and Weisbrod (1975) argued that nonprofit organizations exist due to heterogeneous tastes and preferences for public goods among consumers.

In the general economics literature on NPOs, it is widely accepted that over time NPOs have been increasingly acting in ways that are similar to for-profit organizations. As noted by Maier, Meyer, and Steinbereithner (2016, p. 64), "…the becoming business-like of nonprofit organizations is a well-established global phenomenon…". The same trend has been seen in higher education, where the notion of academic capitalism (Slaughter and Rhodes 2004) holds that nonprofit colleges have adopted practices and behavior similar to for-profit businesses (Bok 2009; Christensen and Eyring, 2011; Washburn 2008). Although NPOs in fields such as health care, religion, and education often have altruistic missions, they not only earn excess revenues but they actively seek to do so as is the case for their for-profit counterparts.

Despite the large body of literature on NPOs in non-academic settings, little attention has been given to nonprofit colleges and universities and the excess revenues that they often generate. There are two major questions to ask with regard to excess revenues in higher education: (1) How often do nonprofit colleges earn excess revenues? and (2) What factors

influence the excess revenues that they generate? For example, are particular types of nonprofit colleges better than others at generating excess revenues? Does estimated profitability vary by the research intensity of an institution, or the degree of market competition that they face for students? And as institutions become more reliant on specific sources of revenue, can it have an impact on their ability to earn excess revenues?

Of particular interest is the group of private nonprofit institutions. Unlike their public counterparts, private nonprofit colleges are not beholden to the demands and oversight of state governments, nor can they rely on state appropriations to help fund their operations. At the same time, because private nonprofit institutions receive federal funding from Title IV and for research purposes and enjoy tax-exempt status, they still face some level of accountability to the government for their operations. In recent years, some of these institutions have come under added scrutiny from the federal government for the size of their endowments.

In this study, we use institution-level data from IPEDS for the period 2004 to 2016 to examine the excess revenues of private four-year nonprofit institutions. We present data on the magnitude of excess revenues for these institutions over this period, examine how excess revenues are associated with different types of private institutions, and how within-institution excess revenues vary due to changes in time-varying factors such as their size, revenue structure, and expense distribution. We first rely on cross-sectional regression models for each year to examine how excess revenues are related to selected institutional characteristics, and how these relationships changed over time. We then utilize a fixed effects panel data model to focus on within-institution fluctuations in excess revenues and their relationship to time-varying factors such as distributions of revenues and expenses. Among our key findings are that private NPOs that rely more heavily on tuition revenue earn lower excess revenues, midsized private NPOs are

the most profitable in terms of excess revenues, and increases in yield rates are associated with lower excess revenues.

The study of excess revenues for private nonprofit institutions is important for several reasons. First, it is valuable to know the extent to which private NPOs earn more revenues than they spend, and how estimated profitability in this sector has changed over time. Second, our analyses provide insights into how excess revenues are generated by private nonprofit institutions. This is of particular interest given that during the span of our study many private colleges have increasingly turned to tuition revenue to finance their operations, and have used tuition discounting to attract and retain students. Finally, examining excess revenues and the factors that are associated with them can inform policy discussions about the financial health of private nonprofit institutions, many of which are small and heavily dependent on tuition revenue, and the extent to which federal government subsidies are needed for them.

<A>Theories and Hypotheses

<B>Goals and Objectives of NPOs

Significant attention has been given in the economics literature as to the rationale for nonprofit organizations and their goals and objectives. NPOs are often found in fields such as medicine, art, and religion where the organization has a service mission such as administering to the health needs of citizens or supporting the spiritual development of parishioners (Rose-Ackerman 1996; Topaloglu, McDonald, and Hunt 2018; Wallis and Dollery 2005). This certainly applies to the higher education industry as well, where colleges are multi-product organizations (Cohn, Rhine, and Santos 1989; Teece 1982) that seek to disseminate knowledge through teaching, produce new knowledge through research, and apply knowledge in the service aspects of their missions. Colleges not only receive revenues from customers (students and their

families), but also financial support from governments (federal, state, local) and donors (private and organizational) and additional revenues from investments and auxiliary activities. As noted by Winston (1999) and Toutkoushian and Paulsen (2016), these revenues are used to help subsidize the cost of education and reduce the net price paid by students when they enroll in college. This is different from the situation faced by for-profit entities, where revenues are obtained primarily from customers and the organization seeks to maximize profits and distribute excess revenues to shareholders.

Despite the altruistic dimension of their missions, NPOs still must make financial decisions that are similar to their for-profit counterparts. NPOs need to generate sufficient revenues to cover their expenses if they intend to stay in business and fulfill their missions. Resource Dependency Theory (Pfeffer and Salancik 1978; Froelich 1999) describes the various ways in which NPOs must rely on funding from customers, donors, and the like. Economists have argued that over the past 20-30 years, NPOs have increasingly focused on raising revenues and containing expenses as do for-profit organizations. The same holds true for nonprofit colleges and universities. 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 nonprofit 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), and Gose (1999).

With regard to higher education, various theories and models have been used to describe the goals of nonprofit colleges and universities and how they relate to financial decision making. Although these models differ in their implicit objective function, they are all consistent with the

notion that nonprofit institutions either seek to earn excess revenues from their operations, or act in ways that are consistent with this assumption. There is no general consensus within the field as to what nonprofit colleges and universities are trying to optimize. An obvious starting place is to assume that the goal of nonprofit colleges is the same as for most firms: namely, to maximize profits. Advocates for this point of view argue that even nonprofit colleges act in ways that are similar to for-profit organizations: they can and do earn revenues that exceed expenses, and they frequently look for ways to cut costs and increase revenues. Many economists such as James (1990) have used this as the theoretical framework for their studies.

A related theoretical concept to profit maximization is discretionary budget maximization (Migue, Belanger, and Niskanen 1974; Paulsen 2001). According to this model, colleges and universities strive to maximize only those portions of the budget over which they have some discretion. As a result, this model is similar in spirit to profit maximization in terms of the implications for institutional behavior, and yet recognizes a key difference between nonprofit and for-profit institutions.

Other academics have offered alternatives to the profit maximization framework for postsecondary institutions. Most notably, Howard Bowen (1980) speculated that in the pursuit of prestige maximization colleges seek to bring in as much money as possible and then spend what they generate. This theory has been used to help explain rising educational costs, but also suggests that profits should be temporary because any excess revenues are quickly spent to raise prestige. Finally, other researchers argue that the goal of colleges is not to maximize profits or revenue, but rather something else. In his model, for example, Garvin (1980) posits that revenue and hence profit is used to help raise an institution's prestige.

<B>Determinants of Excess Revenues in Higher Education

There are several competing explanations for how excess revenues may arise in higher education markets. First, they could simply be a result of budgeting practices used by nonprofit colleges. Due to the uncertainty of revenues and expenses, financial planners have an incentive to overestimate expenses and underestimate revenues when developing budgets for the upcoming year to help increase the chances that the institution has sufficient funds to cover their expenses (Serna and Weiler 2016). This is particularly important for higher education institutions given that they have less flexibility to adjust revenues and expenses during the year than is true for a typical for-profit organization in other industries. Colleges typically collect tuition revenue at only 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 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. On average, then, this conservative budgeting practice may result in revenues exceeding expenses by a certain amount on average from year to year. Excess revenues could also be due to the budgeting model used by an institution. Under decentralized budgeting models such as Responsibility Centered Management (RCM), academic units (or Responsibility Centers) are permitted and even encouraged to earn and save excess revenues from year to year (Priest et al. 2002; Whalen 1991).

Another explanation for the presence of excess revenues is that they are simply an intertemporal phenomenon due to the irregular timing at which revenues are received and expended by institutions. For example, the revenues and expenses for a large federal research grant may be received and incurred in different years, and donations received in one year could be spent in another year. In this case, excess revenue in one year will tend to be offset by losses

in subsequent years and should average close to zero. This explanation would presume that in the long run excess revenues would be very small and negatively correlated over time.

It is possible that specific types of private nonprofit institutions tend to have more excess revenue on a regular basis. Institutions with greater market power may be better positioned to extract surplus from customers. Accordingly, institutions with low acceptance rates, high yield rates, or students with higher standardized test scores may be able to charge higher prices and in turn earn excess revenues. Because higher education markets tend to be regional in nature, the degree of competition within proximity to an institution may play a role in its ability to earn excess revenues. Private institutions in particular engage in substantial tuition discounting to attract and retain students (e.g., Martin 2002). It is important to know whether increased tuition discounting comes at the expense of net revenues. Likewise, institutions that can take advantage of economies of scale may be able to generate excess revenues through cost savings (Cohn, Rhine, and Santos 1989; Toutkoushian and Lee 2018).

Excess revenues may also be related to an institution's reliance on specific revenue streams to fund its operations. Some revenue sources such as externally-funded research grants and auxiliaries show up as both a revenue and expense in an institution's financial statement because the revenues must be expended for a specific purpose. These "pass throughs" should be associated with lower excess revenues because institutions have less flexibility in how to manage these revenues. In contrast, revenues from tuition are not tied to a specific expense and could result in excess revenues in a given year. The same holds true for expenses, in that expenses for research and auxiliary enterprises also show up as revenues and provide less flexibility in terms of generating excess revenues.

Finally, it is possible that external shocks such as a recession could lead to a financial loss in a particular year. While expenses for nonprofit institutions are fairly stable year to year, revenues can fluctuate considerably due to forces beyond the institution's complete control. The most obvious category would be an institution's investment return, which is determined by the size of an institution's endowment and the returns on how the monies have been invested. Similarly, in bad times private giving goes down and vice-versa (Toutkoushian 2003; Brown and Hoxby 2015). Even when institutions budget for the coming year, they may be greatly affected by unanticipated shocks to the economy such as a recession or boom.

<A>Data and Methods

<B>Data

The data that we used in this study were taken from the Integrated Postsecondary Education Data System. Institutions that receive federal Title IV funding are required to submit data on an annual basis to the government through a series of surveys. IPEDS contains institution-level data for more than 7,000 postsecondary institutions, and the database is maintained by the federal government through the National Center for Education Statistics. Colleges and universities report financial data in October of each year through the IPEDS Finance Survey. Private nonprofit institutions are required to follow accounting standards and practices developed by the Financial Accounting Standards Board (FASB) when submitting data to the federal government.

Our dataset consisted of private institutions that met the following criteria: (1) nonprofit, (2) degree-granting, (3) Title IV eligible, (4) classified as a Research, Master's, or Bachelor's institution according to the 2000 Carnegie classification scheme, and (5) enrolled full-time undergraduates. This resulted in a population of approximately 840 institutions per year. We limited our study to the years 2004 through 2016 when data were made available on all of the

variables used in our models. In addition, in 2008 and 2009 an aligned financial form was phased into use by IPEDS for private nonprofit institutions following FASB requirements. This change in the financial reporting requirements for private nonprofit institutions in 2008 and 2009 resulted in the revenues in these two years not being comparable to prior or subsequent years, and thus we omitted them from the analyses. After dropping institutions with missing data on the variables in our models, we were left with between 780 and 810 institutions in each year. The vast majority of institutions (n=724) had complete data for each of the 11 years in our sample.

<B>Dependent Variable

The dependent variable in our study was an institution's excess revenue as a percentage of total expenses.[2] Excess revenue (π) was defined as the difference between total revenues and investment return (R) and total expenses (C). Total revenues and investment return R include revenues from: net tuition and fees; government appropriations; government grants and contracts; auxiliary enterprises; private gifts, grants, and contracts; investment return; sales and services; hospital revenue; independent operations; and other revenues. Total expenses C includes expenses for instruction, research, public service, academic support, student services, institutional support, auxiliary enterprises, net grant aid to students, hospital services, independent operations, and other expenses.[3] Some subcategories show up as both a revenue and an expense as is the case with research and some auxiliary operations. Within each subcategory, revenues and expenses can be classified according to whether they are unrestricted or must be

[2] Excess revenues could have also been expressed as a percentage of total revenues. We opted to divide excess revenues by total expenses because they were more stable across years. We reran the analyses that follow with this alternative definition and found that the results were fairly robust to this change.

[3] More details on the revenue and expense categories used in the IPEDS Finance Survey can be found in the Appendix. Readers who are interested in more discussions of revenue and expense subcategories are referred to Weisbrod, Ballou and Asch (2008) and Serna and Weiler (2016).

used for particular activities (restricted). It should also be noted that private nonprofit institutions may receive federal support through appropriations and grants and contracts.[4]

<B>Explanatory Variables

We identified a series of explanatory variables that theory suggests may be related to the percentage excess revenues generated by a private college or university. The variables were placed into four 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 aspects of an institution's mission may be more likely to generate excess revenues than others. The variables we used in this category include the Carnegie classification level of each institution in the year 2000 (three groups based on research intensity and highest degree offered), and whether the institution was a historically-black college or university. An additional variable that we used in this category was for the percentage of students who were undergraduates. If institutions receive more net financial benefits from undergraduate students than graduate students, then we would expect to find a positive relationship between this variable and the percent of excess revenues. We also considered the size of the institution as represented by enrollments and squared enrollments. If there are economies and diseconomies of scale in higher education, then costs per unit of output would be lower for mid-size institutions and their excess revenues may be higher.

The second group of variables were intended to capture 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 have the ability to generate more excess revenues. The competition-related variables that we included were the percentage of applicants

[4] Private institutions using FASB have the choice as to whether to include Pell Grant revenues with federal nonoperating revenue or to treat them as pass through revenues.

who were accepted, and the percentage of admitted students who enrolled at the institution ("yield"). Institutions with lower acceptance rates and/or higher yield rates are more selective, and may be more likely to admit and enroll students who can pay full price, thus increasing excess revenues. Similarly, we created a variable for the 75th percentile of the ACT score of incoming students as a measure of the academic credentials of students and hence market power. For those private institutions that reported a majority of students taking the SAT instead of the ACT, we converted their 75th percentile scores to their ACT equivalents. We also used a variable to indicate whether an institution did not report ACT or SAT scores, as is the case for some private institutions that were "test optional" for applicants.

We created eight dummy variables for the geographic region where the institution is located according to the Bureau of Economic Analysis (BEA). It is possible that geographic region may matter for our study because higher education markets are often regional in nature and thus colleges that are located in certain locations (such as New England where there are many public and private institutions within close proximity of each other) face greater competition for students and resources than others and thus have lower excess revenue levels. The geographic variables may also capture variations across regions in the ability of students to pay for college that relate to institutional profitability and the cost of providing educational services.

The third group of explanatory variables represents finance-related measures that may arguably affect the profitability of a college or university. Because excess revenues by definition depend on both revenues and expenses, factors that relate to each may in turn be connected to profitability. We disaggregated total revenues into the following five subcategories: net tuition, appropriations, grants, gifts, and other revenues. An institution's relative reliance on tuition

revenue can be crucial for private institutions that are heavily dependent on this source to fund their mission, and therefore less reliant on pass-through revenues. We also used a variable for the tuition discount rate, which captures the percentage of gross tuition revenue that is reduced by the institution in the form of institutional grants or scholarships. It is predicted that institutions with larger tuition discount rates may have lower levels of excess revenues.

With regard to expenses, we divided total expenses into the following seven subcategories: instruction, research, public service, academic support, student services, administration, and other expenses. Because instruction is a core activity of private four-year institutions, larger values for this variable may suggest that the institution has less flexibility to cut costs in times of financial peril. Likewise, there has been concern among some higher education observers and policy makers that rising costs in higher education are due to either rising administrative expenses and/or rising amenities and services for students. At the same time, institutions that spend more on student services may be better able to attract and retain students and thus increase net revenues.

<B>Methods

We now describe the different statistical models that we estimated in this study. We began with cross-sectional models for each of the years in our sample. The model for 2016, for example, is abbreviated as follows:

$$(\pi/C)_{it} = \alpha + \beta X_{it} + \varepsilon_{it}, \quad t = 2016 \qquad (1)$$

where $(\pi/C)_{it}$ denotes excess revenue as a proportion of total expenses for institution i in 2016, X_{it} is a set of fixed and time-varying explanatory variables described earlier, and ε_{it} is the error term of the regression equation. The cross-sectional models enabled us to determine whether excess revenues were larger or smaller at certain types of institutions, and observe how the

relationships of these factors with excess revenues changed in this particular year. We used robust standard errors to take into account possible heteroscedasticity and provide more conservative results.

Next, we created a panel dataset of institutions for the years 2004 through 2016 (omitting 2008 and 2009) and applied fixed effects to these data. The fixed effects model included separate intercepts for each institution (α_i) and year (θ_t), as in:

$$(\pi/C)_{it} = \alpha_i + \theta_t + \beta M_{it} + \gamma \mathrm{X} R_{it} + \delta XC_{it} + \varepsilon_{it}, \quad t\text{=2004 to 2007, 2010 to 2016} \qquad (2)$$

where M = subset of mission and market factors that vary over time, XR = revenue factors, and XC = expense factors. As in the cross-sectional models, we also used robust standard errors. The fixed effects estimator has the advantage of being able to remove the bias on the time-varying regressors in the model due to unobservable institutional factors that are correlated with the fixed institutional factors, and allow us to interpret the remaining effects as within-institution changes of factors on excess revenues. We also estimated equation (2) separately by Carnegie classification of institution to determine whether the excess revenue process differed by institution type. For each model, we conducted an F-test to determine whether the fixed effects estimator was preferable to pooled OLS, and used the Sargan-Hansen Chi-square test to examine whether a fixed effects model was better than a random effects model for the data at hand.

<A>Results

We begin with Figure 1, which shows the trend in per-student revenues and expenses for the years in our study. All of the figures are reported in constant (2016) dollars. Overall, the average per-student revenues at private four-year nonprofit institutions exceeded the average expenses by about 16% per year, with excess revenues tending to be larger in years prior to the recession of 2008-09. However, if comparable revenue figures could be obtained for these two

years,[5] they would likely reveal that average per-student revenues in these years were less than the average per-student expenses. The bars in Figure 1 also reveal that per-student revenues exhibited more year-to-year variation than did per-student expenses. Accordingly, annual variations in excess revenues were more a result of changes in revenue than expenses.

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

In Table 1, we present descriptive statistics for the variables in our study for the year 2015. There were 813 private four-year nonprofit institutions in the sample in this particular year. Their average excess revenues in this particular year was 5.6%; however, the large standard deviation shows that there was significant variation in excess revenues across the institutions in our data. The variations in excess revenue are further illustrated in Figure 2. It can be seen that although the distribution appears to be close to a normal distribution, the tails of the distribution are larger than expected with a normal distribution which illustrates that there are a small number of institutions with very high or very low excess returns in this particular year.

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

---------- Insert Figure 2 Here ----------

Table 2 shows the results from the cross-sectional regression models for selected years over the period from 2004 to 2016. The goal of the cross-sectional models was to show how excess revenues were associated with different institutional characteristics (fixed and variable), and how these relationships compared across time. In all of the years we considered the excess revenue percentages were highest for mid-sized institutions, which is consistent with the notion of economies and diseconomies of scale. Curiously, the relationship between excess returns and measures of student ability and selectivity varied in both sign and significance levels across the

[5] As we explained in the Data section, data from 2007-08 and 2008-09 were not included because they were not comparable to other years due to a change in financial reporting requirements.

years in our study. For example, excess revenues were higher for institutions with higher 75th percentile ACT scores in years 2004, 2006, and 2014, but lower in 2016.

Turning to the finance-related variables, the results showed that institutions that relied more heavily on net tuition to fund their operations tended to have lower excess returns. In 2016, for example, for every one percentage point increase in the share of total revenue from net tuition excess revenues are predicted to be 0.53% smaller, holding other factors in the model constant. Likewise, the practice of tuition discounting appears to come at the expense of excess revenues in that private institutions with higher tuition discount rates had lower excess returns. On the expense side, we found that institutions that devote more of their expenses to instruction, student services, or academic support have higher levels of excess revenues.

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

As noted in the Data and Methods section, by construction the fixed effects models can only examine the relationships between excess revenues and within-institution changes in independent variables that are time-varying in nature because fixed characteristics such as Carnegie classification of institutions are subsumed in the institutional fixed effects. Before estimating the fixed effects models, in Table 3 we show how the means for selected time-varying variables in our model changed between 2004 and 2016. For revenues, the data show that both the reliance on net tuition and the tuition discount rates increased steadily over this period. Interestingly, both the average acceptance rate and the yield rate have fallen since 2004, which could reflect a general increase in the size of the college-bound population and an increase in the number of applications submitted by students. Although the average of the 75th percentile of ACT scores has seen little change from 2004 to 2016, in recent years there has been a substantial

rise in the number of private four-year nonprofit institutions that no longer report ACT or SAT scores for students.

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

Finally, in Table 4 we used the fixed effects model to examine how selected factors affected the within-institution variation in percent excess revenues for the years 2004 to 2016. The inclusion of dummy variables for each institution allowed us to focus on how excess revenues within each institution varied as the control variables changed, after removing the net effect of all observable and unobservable fixed effects for institutions. The first model presents results for the pooled sample, whereas columns 2 through 4 show the results when the model was estimated separately by Carnegie classification of institution. The F-test in the last row shows that the set of institution dummy variables were significantly different from zero, meaning that the fixed effects estimator was preferred to the pooled OLS model without institution fixed effects. We used the Sargan-Hansen test to compare the results from the fixed effects and random effects models. Based on these results, we rejected the null hypothesis that there is no correlation between the error term and the control variables in the model, and thus determined that the fixed effects estimator was preferable to the random effects model.[6]

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

The results showed that there was a quadratic relationship between changes in the size of an institution and its level of excess revenues for non-Research institutions. Although yield rates were found to be negatively related to excess returns, the effect is fairly small with the coefficient in the first column suggesting that a one percentage point increase in yield rate was associated with less than a $1/10^{th}$ of one percentage point decline in excess revenues. For the

[6] The Sargan-Hansen test statistic was used in place of the standard Hausman test due to the clustering of standard errors in our models.

financial measures, the results were consistent with what we noted in the cross-sectional models and were sizable for several categories. The results in the first column for the revenue measures revealed that for each one percentage point increase in reliance on net tuition, it led to a 1.6 percentage point decline in excess revenues. Likewise, increases in tuition discount rates at private colleges resulted in reductions in excess revenues. Greater reliance on grant funding was also negatively associated with excess revenues, particularly for research-oriented institutions. For expenses, we found that as institutions allocated greater shares of spending for instruction or student services, it resulted in higher excess revenues. The coefficient for percent expenses for instruction, for example, show that a one percentage point increase in spending for instruction led to about two-thirds of one percent increase in excess revenues. Finally, there was no connection observed between within-institution changes in spending for administration and their excess revenues.

With regard to institution type, we found that the results were fairly robust across institution type in our data. The only exceptions to this were that institution size was not a significant factor for Research institutions, and greater reliance on gift revenue had a negative association with excess revenues for Research institutions, a positive association for Master's institutions, and no effect for Bachelor's institutions.

<A>Summary and Discussion

Higher education finance remains an enduring topic of interest in higher education. In this study, we focused on one particular finance issue; namely, the level and determinants of excess revenues generated by private four-year nonprofit colleges and universities. Through our analyses, several interesting findings emerged. First, we documented that it is common for private colleges and universities in the nonprofit sector to earn revenues that exceed their

expenses. Across most years in our sample, private four-year nonprofit averaged double-digit excess returns. And within each year, the majority of these institutions had revenues that exceeded their expenses. Variations over time in excess revenues appear to be driven more by variations in revenues than expenses, which we found to be more stable year-to-year.

A second finding of our study was that certain types of private institutions earned higher excess returns than other institutions. Percentage excess returns were lowest for institutions that focused the most on research, those with relatively high tuition discount rates, and those that relied more heavily on net tuition to help fund their operations. This finding should be of particular concern to many private liberal arts institutions that are struggling to attract and retain a sufficient number of students to fund their operations. Interestingly, most of the measures of market competition such as the average ACT scores, acceptance rates of students and geographic location were not strongly associated with excess revenues. The only exception was for yield rates; as institutions saw improvements in their yield rates their excess revenues went down. Finally, excess revenues tended to be larger for institutions that allocated more of their total spending towards instruction and student services.

There are several limitations to our study relating to data that should be mentioned. The IPEDS database is restricted in the amount of data collected and reported for institutions, and as a result we could not go back further than 2004 for our analyses. It would be interesting to observe whether and how our key findings changed in earlier time periods such as the 1990s. Issues with the financial reporting rules used by public institutions likewise forced us to limit the analysis to private nonprofit institutions, even though public institution may also earn more revenues than they spend in a given year. In particular, some public institutions did not report revenues and expenses for operations such as fundraising and athletics that are organized as

private 501(c)(3) entities. Even within the data collected for private nonprofit institutions, the IPEDS revenue and expense categories may not be consistent across institutions and over time as we found with regard to the financial data for private nonprofit institutions in 2008 and 2009. If better financial data were available for these two years, it would be interesting to determine what happened to excess revenues during the recession, and whether the relationships between institutional characteristics and excess revenues were maintained during this period.

Limitations notwithstanding, our study provides some valuable insights into the rarely-studied phenomenon of excess revenues for a large segment of the higher education industry. In addition to documenting these returns and noting how they are associated with institutional characteristics, the descriptive data showing that many private nonprofit institutions earn positive and substantial excess revenues certainly raise questions about the public support for these institutions. Is it therefore appropriate for these institutions to enjoy the same nonprofit status – and the accompanying financial benefits from the federal government -- as public institutions? As better data become available on for-profit entities, it would be interesting to compare their profitability with nonprofit institutions. The study may also be useful for policy in identifying private institutions that may be most at risk for not being able to generate enough revenues to cover their expenses. The set of private nonprofit institutions is fairly diverse, ranging from well-endowed and financially secure research institutions to small, tuition dependent and teaching-oriented liberal arts colleges. Our hope is that this study provides some information on how they are financed and the role that specific characteristics play in their financing.

References

Anheier, Helmut. 2014. *Nonprofit organizations: Theory, management, policy*. New York: Routledge.

Berman, Margo. 2006. *Productivity in public and nonprofit organizations*. New York: Routledge.

Bok, Derek. 2009. *Universities in the marketplace: The commercialization of higher education*. Princeton, NJ: Princeton University Press.

Bowen, Howard. 1980. *The costs of higher education*. San Francisco: Jossey-Bass Publishers.

Brady, Diane. 2000. When nonprofits go after profits. *Business Week* 26(3687): 173-178.

Breneman, David. 1994. *Liberal arts colleges: Thriving, surviving, or endangered*? Washington, DC: The Brookings Institute.

Brown, Jeffrey, and Caroline Hoxby, (Eds.). 2015. *How the financial crisis and Great Recession affected higher education*. Chicago, IL: The University of Chicago Press.

Bryson, John. 2018. *Strategic planning for public and nonprofit organizations: A guide to strengthening and sustaining organizational achievement*, 5th edition. Hoboken, NJ: John Wiley & Sons.

Calabrese, Thad. 2012. The accumulation of nonprofit profits: A dynamic analysis. *Nonprofit and Voluntary Sector Quarterly* 41(2): 300-324.

Chang, Cyril, and Howard Tuckman. 1990. Why do nonprofit managers accumulate surpluses, and how much do they accumulate? *Nonprofit Management and Leadership* 1(2): 117-135.

Christensen, Clayton, and Henry Eyring. 2011. *The innovative university: Changing the DNA of higher education from the inside out*. John Wiley & Sons.

Cohn, Elchanan, Sherrie Rhine, and Maria Santos. 1989. Institutions of higher education as multi-product firms: Economies of scale and scope. *The Review of Economics and Statistics* 71(2): 284-290.

Fried, Vance. 2011. Federal higher education policy and the profitable nonprofits. *Cato Institute Policy Analysis*, 15 June.

Froelich, Karen. 1999. Diversification of revenue strategies: Evolving resource dependence in nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly* 28(3): 246-268.

Garvin, David. 1980. *The economics of university behavior*. New York: Academic Press.

Gose, Ben. 1999. Surge in continuing education brings profits for universities. *Chronicle of Higher Education* 45(24): A51-A52.

Hansmann, Henry. 1980. The role of nonprofit enterprise. *The Yale Law Journal* 89(5): 835-901.

Holtmann, A. 1983. A theory of non-profit firms. *Economica* 50(200): 439-449.

James, Estelle. 1983. How nonprofits grow: A model. *Journal of Policy Analysis and Management* 2(3): 350-365.

Maier, Florentine, Michael Meyer, and Martin Steinbereithner. 2016. Nonprofit organizations becoming business-like: A systematic review. *Nonprofit and Voluntary Sector Quarterly* 45(1): 64-86.

Martin, Robert. 2002. Tuition discounting: Theory and evidence. *Economics of Education Review* 21(2): 125-136.

Migue, Jean-Luc, Gerard Belanger, and William Niskanen. 1974. Toward a general theory of managerial discretion. *Public Choice* 17(1): 27-47.

National Center for Education Statistics (2018). *Digest of Education Statistics 2018*. Washington, DC: National Center for Education Statistics.

Newhouse, Joseph. 1970. Toward a theory of non-profit institutions: An economic model of a hospital. *The American Economic Review* 60(1): 64-74.

Paulsen, Michael. 2001. Economic perspectives on rising college tuition: A theoretical and empirical exploration. In *The finance of higher education: Theory, research, policy & practice*, edited by Michael Paulsen and John Smart, pp. 193-263. New York: Agathon Press.

Pfeffer, Jeffrey, and Gerald Salancik. 1978. *The external control of organizations*. New York, NY: Harper and Row.

Priest, Doug, William Becker, Donald Hossler, and Edward St. John (Eds.). 2002. *Incentive-based budgeting systems in public universities*. Northampton, MA: Edward Elgar.

Rose-Ackerman, Susan. 1996. Altruism, nonprofits, and economic theory. *Journal of Economic Literature* 34(2): 701-728.

Serna, Gabriel, and Spencer Weiler. 2016. *Higher education, fiscal administration, and budgeting: An applied approach*. New York: Rowman & Littlefield.

Slaughter, Sheila, and Gary Rhoades. 2004. *Academic capitalism and the new economy: Markets, state, and higher education*. Baltimore, MD: JHU Press.

Steinberg, Richard, and Bradford Gray. 1993. The role of nonprofit enterprise in 1993: Hansmann revisited. *Nonprofit and Voluntary Sector Quarterly* 22(4): 297-316.

Steinberg, Richard. 2003. Economic theories of nonprofit organizations. In *The study of nonprofit enterprise: Theories and approaches*, edited by Helmut Anheier and Avner Ben-Nur, pp. 277-309. New York: Kluwer Academic Publishers.

Teece, David. 1982. Towards an economic theory of the multiproduct firm. *Journal of Economic Behavior and Organization* 3(1): 39-63.

Topaloglu, Omer, Robert McDonald, and Shelby Hunt. 2018. The theoretical foundations of nonprofit competition: A resource-advantage theory approach. *Journal of Nonprofit & Public Sector Marketing* 30(3): 229-250.

Toutkoushian, Robert. 2003. Weathering the storm: Generating revenues for higher education during a recession. In *Maximizing revenue for higher education,* edited by F. King Alexander and Ronald Ehrenberg, pp. 27-40. *New Directions for Institutional Research,* no. 119. San Francisco: Jossey-Bass.

Toutkoushian, Robert, and Jason Lee. 2018. Revisiting economies of scale and scope in higher education. In *Higher education: Handbook of theory and research, volume XXXIII*, edited by Michael Paulsen, pp. 371-416. The Netherlands: Springer.

Toutkoushian, Robert, and Michael Paulsen. 2016. *Economics of higher education: Background, concepts, and applications*. The Netherlands: Springer.

Wallis, Joseph, and Brian Dollery. 2005. Leadership and economic theories of nonprofit organizations. *Review of Policy Research* 22(4): 483-499.

Washburn, Jennifer. 2008. *University, Inc.: The corporate corruption of higher education*. New York: Basic Books.

Weisbrod, Berton. 1975. Toward a theory of the voluntary nonprofit sector in a three-sector economy. In *Altruism, morality, and economic theory*, edited by Edmund Phelps, pp. 171-196. New York: Russell Sage Foundation.

Weisbrod, Berton. 1989. Rewarding performance that is hard to measure: the private nonprofit sector. *Science* 244(4904): 541-546.

Weisbrod, Berton. 2009. *The nonprofit economy*. Cambridge, MA: Harvard University Press.

Weisbrod, Berton, Jeffrey Ballou, and Evelyn Asch. 2008. *Mission and money: Understanding the university*. Cambridge, MA: Cambridge University Press.

Whalen, Edward. 1991. *Responsibility center budgeting: An approach to decentralized management for institutions of higher education*. Bloomington, IN: Indiana University Press.

Winston, Gordon. 1999. Subsidies, hierarchy and peers: The awkward economics of higher education. *The Journal of Economic Perspectives* 13(1): 13-36.

Figure 1: Per-Student Revenues and Expenses for All Private Four-Year Nonprofit Institutions, 2004-07 and 2010-16

Source: Digest of Education Statistics 2017, Tables 333.40 and 334.30. Average revenue and expense figures are reported in constant (2015-16) dollars. Data from 2007-08 and 2008-09 were not included because they were not comparable to other years due to a change in financial reporting requirements.

Table 1: Descriptive Statistics for Private Four-Year Nonprofit Institutions – 2015

Variable	Mean	Standard Deviation
Profit as Pct Expense	5.57	14.84
Pct Revenue: Net Tuition	56.07	18.16
Pct Revenue: Appropriations	0.29	2.94
Pct Revenue: Grants	3.78	5.77
Pct Revenue: Gifts	13.36	10.09
Pct Revenue: Other	26.49	13.10
Tuition Discount Rate	37.35	13.88
Pct Expense: Instruction	35.71	7.92
Pct Expense: Administration	19.42	6.28
Pct Expense: Student Services	16.62	6.48
Pct Expense: Research	1.60	4.52
Pct Expense: Public Service	0.84	2.25
Pct Expense: Academic Support	8.61	4.44
Pct Expense: Other	17.19	9.02
ACT 75th Pct	25.87	3.36
No SAT or ACT Score	0.20	0.40
Acceptance Rate	62.91	19.78
Yield Rate	28.99	15.76
Pct Undergrads	78.86	18.97
Enrollments (100s)	44.25	57.15
Squared Enrollments	5220.76	20091.16
Carnegie: Research	0.10	0.30
Carnegie: Masters	0.36	0.48
Carnegie: Bachelors	0.51	0.50
Historically-Black College or University	0.04	0.19
New England	0.10	0.30
Mid East	0.21	0.41
Great Lakes	0.17	0.37
Plains	0.12	0.32
Southeast	0.24	0.43
Southwest	0.05	0.22
Rocky Mountains	0.01	0.12
Far West	0.09	0.29
N	813	

Notes: Data are for private four-year nonprofit institutions and were obtained from IPEDS for the 2014-15 year. Sample is restricted to institutions with 200 or more students and non-missing data on the variables in the study. Variable definitions are provided in the Appendix.

Figure 2: Distribution of Percent Excess Revenues for Four-Year Private Nonprofit Institutions – 2015

Notes: Percent excess revenue was defined as the difference between total revenue and total expense divided by total expense. Data are for private four-year nonprofit institutions and were obtained from IPEDS for the 2014-15 year. Sample is restricted to institutions with 200 or more students and non-missing data on the variables in the study.

Table 2: Cross-Sectional Regression Models -- Selected Years

			Year:		
Variable	**2004**	**2006**	**2010**	**2014**	**2016**
Enrollments (100s)	0.144**	0.123**	0.115**	0.113**	0.158***
	(0.048)	(0.041)	(0.037)	(0.039)	(0.030)
Squared Enrollments	-0.000***	-0.000***	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACT 75th Pct	1.270***	0.729*	0.286	1.060**	-1.204***
	(0.364)	(0.367)	(0.308)	(0.369)	(0.263)
Acceptance Rate	-0.180***	-0.228***	-0.099*	-0.138**	0.149***
	(0.049)	(0.046)	(0.046)	(0.049)	(0.037)
Yield Rate	0.081	0.040	-0.074	0.164*	-0.114*
	(0.062)	(0.064)	(0.055)	(0.072)	(0.049)
Pct Undergrads	0.049	0.080*	0.076*	0.180***	0.062
	(0.042)	(0.037)	(0.036)	(0.047)	(0.037)
Pct Revenue: Net Tuition	-1.002***	-0.889***	-0.581***	-1.243***	-0.518***
	(0.125)	(0.119)	(0.088)	(0.122)	(0.093)
Tuition Discount Rate	-0.253*	-0.235*	-0.296***	-0.177	-0.563***
	(0.117)	(0.108)	(0.088)	(0.112)	(0.072)
Pct Revenue: Appropriations	-0.965***	-1.006***	-0.427***	-0.969***	-0.197*
	(0.184)	(0.209)	(0.113)	(0.214)	(0.088)
Pct Revenue: Grants	-0.907***	-1.053***	-0.479***	-1.358***	-0.256
	(0.186)	(0.247)	(0.128)	(0.209)	(0.144)
Pct Revenue: Gifts	0.096	-0.064	0.327	-0.687**	0.027
	(0.225)	(0.144)	(0.205)	(0.217)	(0.100)
Pct Expense: Instruction	0.736***	0.680***	0.493***	0.884***	0.173
	(0.116)	(0.119)	(0.115)	(0.124)	(0.125)
Pct Expense: Administration	0.292	0.082	0.124	0.786**	0.127
	(0.149)	(0.125)	(0.127)	(0.248)	(0.132)

			Year:		
Variable	**2004**	**2006**	**2010**	**2014**	**2016**
Pct Expense: Student Services	0.567***	0.404**	0.084	0.488**	0.271
	(0.168)	(0.155)	(0.130)	(0.157)	(0.147)
Pct Expense: Academic Support	0.784***	0.893***	0.633***	1.124***	-0.174
	(0.203)	(0.200)	(0.184)	(0.213)	(0.133)
R-Squared	0.502	0.505	0.341	0.565	0.396
Sample Size	779	777	799	812	809

Notes: Dependent variable is excess revenue as a percentage of expenses. Robust standard errors are in parentheses. Models also include variables for geographic region, HBCU status, Carnegie classification of institution in 2000, whether ACT score reported, percent expenses for research and percent expenses for public service. Reference category for percent revenues is "other revenues" and reference category for percent expenses is "other expenses". * p<.05, ** p<.01, *** p<.001.

Table 3: Means of Time-Varying Factors for Private Four-Year Nonprofit Institutions by Year, 2004-2007, 2010-2016

		Revenue Breakdown:					Other Key Variables:				
Year	% Excess Revenue	% Net Tuition	% Appr	% Grants	% Gifts	% Other	Tuition Discount	% No ACT	% Admit	% Yield	ACT 75
2004	21.6%	48.4%	0.4%	5.2%	12.9%	33.2%	29.7%	6.1%	68.3%	39.7%	26.2
2005	16.4%	50.4%	0.4%	5.1%	13.5%	30.6%	30.1%	4.6%	66.9%	39.3%	26.2
2006	20.9%	49.3%	0.4%	4.7%	13.7%	32.0%	30.6%	3.9%	66.5%	38.3%	26.3
2007	33.8%	46.6%	0.3%	4.2%	13.1%	35.8%	30.9%	5.6%	64.9%	38.0%	26.1
2010	15.0%	53.2%	0.3%	4.9%	10.6%	31.0%	33.7%	8.3%	63.3%	34.4%	26.1
2011	28.2%	49.9%	0.3%	4.5%	10.1%	35.3%	34.7%	8.3%	62.7%	33.0%	26.1
2012	-0.1%	59.8%	0.4%	4.8%	13.1%	21.9%	35.1%	9.8%	61.9%	31.5%	26.0
2013	17.9%	52.0%	0.3%	4.0%	10.6%	33.0%	36.2%	10.2%	61.4%	30.5%	26.0
2014	22.8%	50.7%	0.3%	3.5%	10.9%	34.5%	36.3%	11.2%	62.4%	29.6%	26.0
2015	5.6%	56.1%	0.3%	3.8%	13.4%	26.5%	37.4%	19.7%	62.9%	29.0%	25.9
2016	-3.5%	61.3%	0.3%	4.0%	15.3%	19.1%	38.1%	21.5%	62.9%	28.0%	25.7
Total	**16.1%**	**52.6%**	**0.3%**	**4.4%**	**12.5%**	**30.2%**	**33.9%**	**10.0%**	**64.0%**	**33.7%**	**26.0**

Notes: Data are for private four-year nonprofit institutions and were obtained from IPEDS for the years 2003-04 to 2006-07 and 2009-10 to 2015-16.

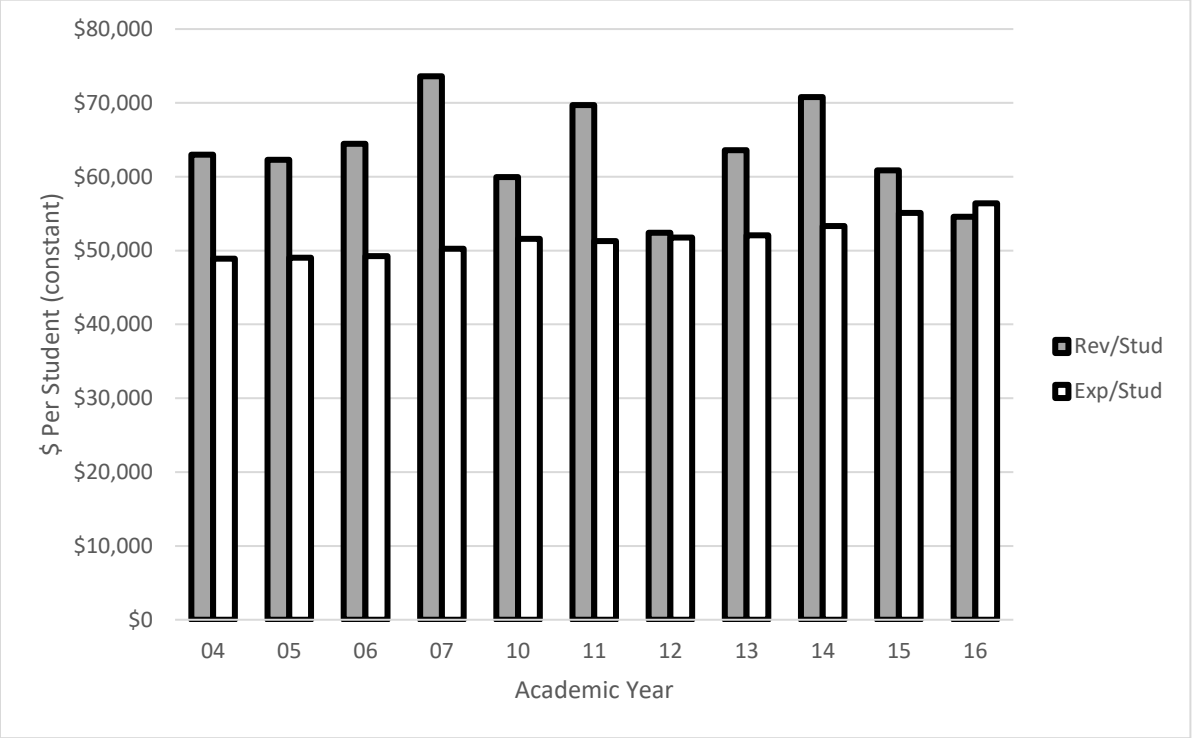
Table 4: Panel Data Regression Models

	←---------- Type of Institution ----------→			
Variable	**All**	**Research**	**Masters**	**Bachelors**
Enrollments (100s)	0.246***	-0.050	0.273***	0.538***
	(0.064)	(0.100)	(0.063)	(0.144)
Squared Enrollments	-0.001***	-0.000	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
ACT 75th Pct	-0.334	0.055	-0.367	-0.119
	(0.259)	(0.598)	(0.255)	(0.238)
No ACT Score	-1.338	6.361	-0.817	-0.551
	(1.030)	(4.240)	(1.267)	(1.071)
Acceptance Rate	-0.022	-0.133	-0.004	-0.035
	(0.025)	(0.067)	(0.019)	(0.026)
Yield Rate	-0.073**	-0.326**	-0.041	-0.098**
	(0.025)	(0.119)	(0.024)	(0.035)
Pct Undergrads	0.007	0.352	-0.033	-0.061
	(0.057)	(0.208)	(0.061)	(0.087)
Pct Revenue: Net Tuition	-1.611***	-1.458***	-1.302***	-1.639***
	(0.181)	(0.182)	(0.136)	(0.258)
Tuition Discount Rate	-0.681***	-0.751*	-0.421***	-0.595***
	(0.146)	(0.321)	(0.097)	(0.129)
Pct Revenue: Appropriations	-0.295	-0.349	-0.714*	-0.883
	(0.359)	(0.221)	(0.333)	(0.669)
Pct Revenue: Grants	-1.503***	-4.963***	-0.675***	-1.320***
	(0.243)	(0.749)	(0.168)	(0.292)
Pct Revenue: Gifts	0.199	-0.979***	0.461***	0.071
	(0.196)	(0.276)	(0.126)	(0.111)
Pct Expense: Instruction	0.693***	0.625*	0.726***	0.509***
	(0.120)	(0.258)	(0.132)	(0.140)
Pct Expense: Administration	-0.109	0.676	0.293*	-0.072
	(0.207)	(0.359)	(0.134)	(0.127)

	←---------- Type of Institution ----------→			
Variable	**All**	**Research**	**Masters**	**Bachelors**
Pct Expense: Student Services	0.576**	1.521*	0.221	0.467***
	(0.202)	(0.711)	(0.150)	(0.138)
Pct Expense: Research	1.202***	3.180***	0.333	0.747
	(0.280)	(0.583)	(0.201)	(0.550)
Pct Expense: Public Service	-0.004	0.351	0.061	-0.268
	(0.458)	(0.711)	(0.353)	(0.689)
Pct Expense: Academic Support	0.379	-0.033	0.425**	0.329
	(0.214)	(0.337)	(0.154)	(0.231)
Constant	93.751***	94.043**	62.601***	100.459***
	(14.291)	(28.399)	(15.605)	(17.473)
Sample Size	8732	906	3164	4469
R-Squared	0.62	0.85	0.73	0.74
Fixed Effects vs. Pooled (F-Test)	11.16***	12.48***	11.47***	8.20***
Fixed vs. Random Effects (χ^2)	198.90***	77.00***	441.33***	126.79***

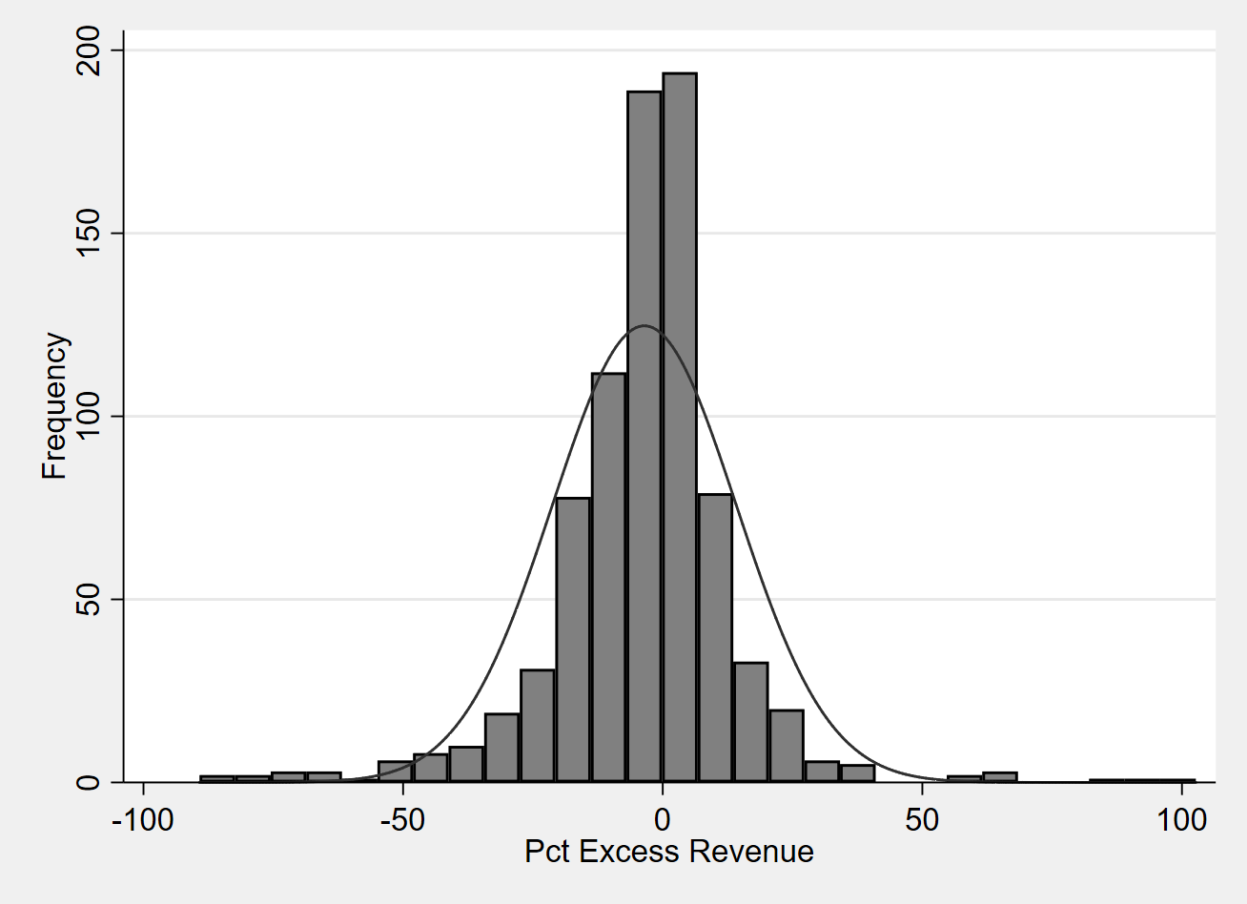
Notes: Data were obtained from IPEDS for the years 2003-04 to 2006-07, 2009-10 to 2015-16 for private four-year, nonprofit institutions. Dependent variable is excess revenue as a percentage of expenses. Robust standard errors are shown in parentheses. Reference category for revenues is "other revenues". Reference category for expenses is "other expenses". Data from 2007-08 and 2008-09 were not included because they were not comparable to other years due to a change in financial reporting requirements. * p<.05, ** p<.01, *** p<.001.

Figure 1: Per-Student Revenues and Expenses for All Private Four-Year Nonprofit Institutions, 2004-07 and 2010-16



Source: Digest of Education Statistics 2017, Tables 333.40 and 334.30. Average revenue and expense figures are reported in constant (2015-16) dollars. Data from 2007-08 and 2008-09 were not included because they were not comparable to other years due to a change in financial reporting requirements.

Figure 2: Distribution of Percent Excess Revenues for Four-Year Private Nonprofit Institutions – 2015



Notes: Percent excess revenue was defined as the difference between total revenue and total expense divided by total expense. Data are for private four-year nonprofit institutions and were obtained from IPEDS for the 2014-15 year. Sample is restricted to institutions with 200 or more students and non-missing data on the variables in the study.

Appendix

A1: Breakdown of Revenues and Expenses in IPEDS for Private Nonprofit Institutions (FASB)

Total Revenues (B01): Sum of	**Total Expenses (B02): Sum of**
Net Tuition and Fees (D01)	Instruction (E01)
Appropriations: Federal (D02)	Research (E02)
Appropriations: State (D03)	Public Service (E03)
Appropriations: Local (D04)	Academic Support (E04)
Grants and Contracts: Federal (D05)	Student Services (E05)
Grants and Contracts: State (D06)	Institutional Support (E06)
Grants and Contracts: Local (D07)	Auxiliary Enterprises (E07)
Private Gifts, Grants and Contracts (D08)	Net Grant Aid to Students (E08)
Contributions from Affiliated Entities (D09)	Hospital Services (E09)
Investment Return (D10)	Independent Operations (E10)
Sales and Services: Educational Activities (D11)	Other Expenses (E11 = B02 – sum(E01 to E10)
Sales and Services: Auxiliary Enterprises (D12)	
Hospital Revenue (D13)	
Independent Operations (D14)	
Other Revenue (D15 = B01 – sum(D01 to D14))	

Notes: Complete instructions and definitions of the revenue and expense categories used in the IPEDS Finance Survey can be found at: https://surveys.nces.ed.gov/IPEDS/VisInstructions.aspx?survey=5&id=30067. Numbers in parentheses denote the line and section number of entries for the IPEDS Finance Surveys for private nonprofit institutions using the Financial Accounting Standards Board (FASB) rules.

A2: Variable Definitions

Variable	Definition
Pct Excess Revenue	Difference between total revenues and total expenses divided by total expenses. Excludes institutions with zero or negative reported total revenues or total expenses.
Enrollments (100s)	12-month unduplicated headcount for all students, in 100s. Excludes institutions reporting fewer than 200 students or more than 80,000 students.
Carnegie: Research	1 if listed as a "Research: Extensive" of "Research: Intensive" institution by the 2000 Carnegie Commission classification scheme (category 15 or 16), else 0
Carnegie: Masters	1 if listed as a "Masters" institution by the 2000 Carnegie Commission classification scheme (categories 21 and 22), else 0
Carnegie: Bachelors	1 if listed as a "Bachelors: Liberal Arts" or "Bachelor: General" institution by the 2000 Carnegie Commission classification scheme (category 31, 32, or 33), else 0
HBCU	1 if listed as a historically black college or university, else 0
New England	Bureau of Economic Analysis region 1. Includes CT, MA, ME, NH, RI, VT
Mideast	Bureau of Economic Analysis region 2. Includes DC, DE, MD, NJ, NY, PA
Great Lakes	Bureau of Economic Analysis region 3. Includes IL, IN, MI, OH, WI
Plains	Bureau of Economic Analysis region 4. Includes IA, KS, MN, MO, ND, NE, SD
Southeast	Bureau of Economic Analysis region 5. Includes AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV
Southwest	Bureau of Economic Analysis region 6. Includes AZ, NM, OK, TX
Rocky Mountains	Bureau of Economic Analysis region 7. Includes CO, ID, MT, UT
Far West	Bureau of Economic Analysis region 8. Includes AK, CA, HI, NV, OR, WA
ACT 75th Percentile	75th percentile of ACT composite scores of new students (freshmen). ACT composite scores were used when the majority of students reported ACT scores or SAT scores were not reported. When the majority of students reported SAT scores or ACT scores were not reported, the ACT composite score was approximated by summing the 75th percentile SAT scores for math and verbal and then converted to ACT equivalents using the 2009 concordance table (http://www.act.org/content/dam/act/unsecured/documents/ ACTCollegeBoardJointStatement.pdf)
No ACT Score	1 if institution did not require or report SAT or ACT scores for new students, else 0. Value of 25 was substituted for ACT 75th percentile for these institutions.
Pct Admit	Percentage of first-time, degree/certificate seeking applicants who were admitted to the institution

Variable	Definition
Pct Yield	Percentage of admitted students who enrolled at the institution
Pct Undergrads	Percentage of 12-month unduplicated headcount of students who were undergraduates. Excludes institutions with no undergraduate students.
Pct Revenue: Net Tuition	Revenue from net tuition and fees (D01) divided by total revenues (B01)
Pct Revenue: Appropriations	Revenue from federal, state, and local appropriations (D02 + D03 + D04) divided by total revenues (B01)
Pct Revenue: Grants	Revenue from federal, state, and local grants and contracts (D05 + D06 + D07) divided by total revenues (B01)
Pct Revenue: Gifts	Revenue from private gifts, grants and contracts (D08) divided by total revenues (B01)
Pct Revenue: Other	Revenue from all other sources (D09 through D15) divided by total revenues (B01)
Pct Tuition Discount	Allowances (scholarships) applied to tuition and fees (C08) divided by gross tuition and fee revenues (C08 + D01)
Pct Expenses: Instruction	Expenses for instruction (E01) divided by total expenses (B02)
Pct Expenses: Research	Expenses for research (E02) divided by total expenses (B02)
Pct Expenses: Public Service	Expenses for public service (E03) divided by total expenses (B02)
Pct Expenses: Academic Support	Expenses for academic support (E04) divided by total expenses (B02)
Pct Expenses: Student Services	Expenses for student services (E05) divided by total expenses (B02)
Pct Expenses: Administration	Expenses for institutional support (E06) divided by total expenses (B02)
Pct Expenses: Other	Expenses for all other uses (E07 through E11) divided by total expenses (B02)
Year *t* (e.g., *t*=2004)	1 if academic year = Fall *t*-1 to spring *t*. For example, 2004 = year Fall 2003 to Spring 2004

Notes: All data items were obtained from IPEDS Data Center (https://nces.ed.gov/ipeds/use-the-data). The sample universe was private four-year nonprofit degree-granting institutions in the U.S.