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The Myth of State Disinvestment in Higher Education

by Andrew Gillen
Senior Policy Analyst

Key Points

- There has been no long-term trend of state disinvestment in higher education.
- State funding for higher education is volatile but has been largely stable for almost four decades.
- Public colleges have never had more revenues than they do right now.

Executive Summary

Everyone knows that states have been cutting funding for higher education. This state disinvestment is the starting point for much of the conventional wisdom regarding higher education as well, as it feeds directly into the notion that colleges are starved for funding and that tuition rises to make up for cuts in state funding.

But it turns out the conventional wisdom is a myth.

New data from the State Higher Education Executive Officers Association's (SHEEO) annual *State Higher Education Finance* (SHEF) report provides a long term look at state funding and shows that:

- There is no long-term trend of disinvestment in state funding per student.
- State funding is volatile, but within a narrow range.
- Colleges have never had more total funding than they do today, thanks in large part to sustained tuition hikes since 1980.
- There is no detection of the (weak) relationship between state funding cuts and increases in tuition in the SHEF data.

Introduction

The level of state funding is a primary concern for many in the higher education community because it is one of the primary revenue sources for public colleges. The conventional wisdom holds that there has been a decades-long trend of states cutting funding—often called state disinvestment. Research reports with titles such as "State Disinvestment in Higher Education Has Led to an Explosion of Student-Loan Debt" and "Unkept Promises: State Cuts to Higher Education Threaten Access and Equity" paint a dire picture (Baylor; Mitchell et al.). News and opinion pieces routinely include phrases such as "the effects of a decades-long decline in state funding" and "state fiscal investment in higher education has been in retreat in the states since about 1980" (Knox; Mortenson). The *Chronicle of Higher Education* even has a webtool titled "25 Years of Declining State Support for Public Colleges" (*Chronicle of Higher Education*).

There is no doubt that there have been cuts to state funding, sometimes large cuts. For example, during the Great Recession, state funding fell by over $2,000 per student. But what is often not acknowledged is that large cuts like these have historically been temporary as funding is increased as the economy recovers. For example, since reaching a low in 2012, state funding has increased by almost $1,400 per student. A severely distorted picture of state funding is created when cuts receive disproportionate attention and increases are ignored.

Fortunately, new data from the State Higher Education Executive Officers Association's (SHEEO) annual *State Higher Education Finance* (SHEF) report allows for an examination of long term trends in state funding.

continued

The SHEF data is one of the few datasets able to examine many of these issues. It goes further back in time than many other datasets, beginning in 1980. It also focuses on the amount of funding available for teaching by subtracting out funds for other purposes such as campus construction, research, and medical schools.[1] These operating expenses account for 78.4 percent of university spending (SHEEO 2019a, 13). The main disadvantage of the SHEF data is that it tracks revenues rather than expenditures. Most of the time these two will track each other closely, but occasionally there are discrepancies. A good example is the most recent data for Missouri, where "roughly $35 million (or 3.8 percent of appropriations) were not released until the last day of fiscal 2018, and institutions were never able to access those funds" (SHEEO 2019a, 34).

Before diving into these findings, a few quick notes to improve readability. One, all dollar figures have been adjusted for inflation using the CPI-U and are presented in 2018 dollars.[2] Two, all values are per full-time equivalent (FTE) student. Three, references to a year represent that fiscal year. Four, I am using the term "state funding" and variations thereof to represent what SHEEO calls "educational appropriations," defined as "state and local support available for public higher education operating expenses, defined to exclude spending for research, agricultural, and medical education," and "tuition revenue" and variations thereof to represent what SHEEO calls "net tuition revenue" defined as "gross amount of tuition and fees, less state and institutional financial aid, tuition waivers or discounts, and medical student tuition and fees"(SHEEO 2019b, 11-12).[3] Five, the SHEF data and this analysis focus on public higher education institutions only.

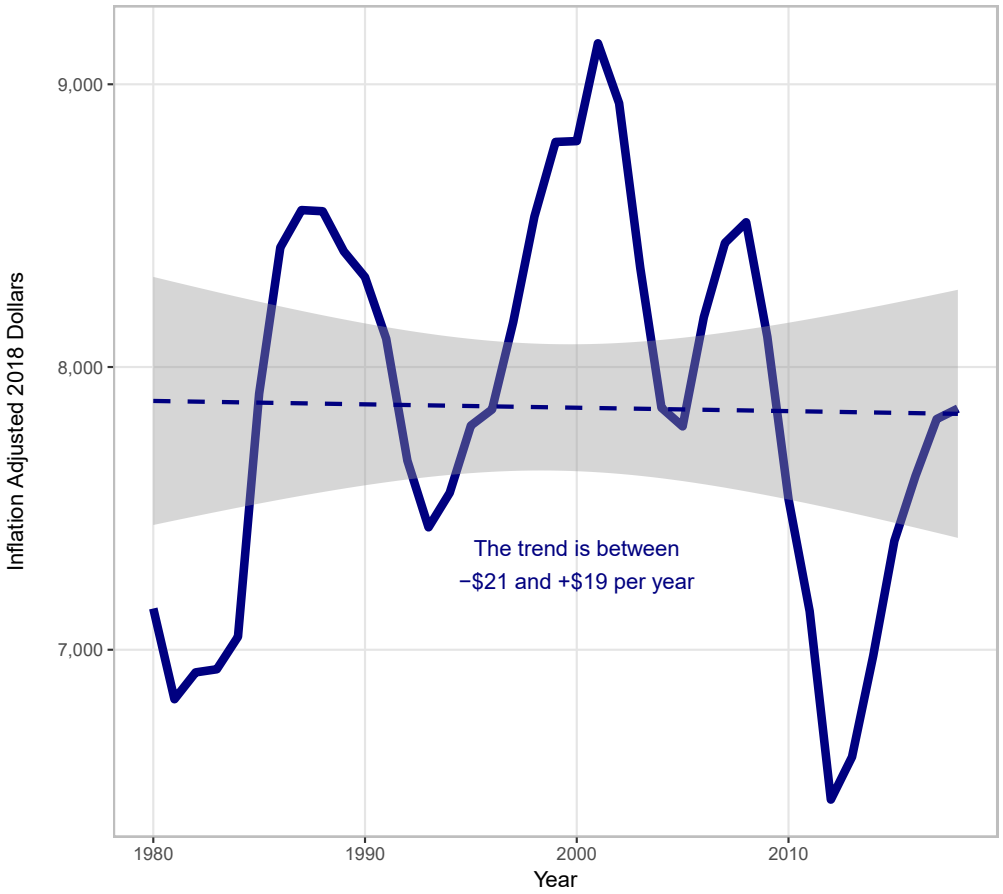
There Is No Long-Term Trend of Disinvestment in State Funding per Student

The conventional wisdom holds that there is a long-term trend of disinvestment in higher education as state funding has been relentlessly cut. It is difficult to overstate how thoroughly this notion permeates conversations about higher education.

However, there is no convincing evidence of a long-term trend of state disinvestment in the data. Utilizing the entire time period for which there is data, 1980 to 2018, **Figure 1** shows state funding per student over time. Between 1980 and 2018, state funding per student varied from a low of $6,470 to a high of $9,145, with many ups and downs over the years.

One could cite some time periods to argue for a trend of disinvestment—from 2001 to 2018, state funding per student declined by $1,292. But one could also cite some time periods to argue for a trend of increasing state investment—from 1980 to 2018, state funding

Figure 1. Higher education state funding per student



Note: Figures adjusted for inflation using the CPI-U. "State funding" corresponds to SHEEO's "educational appropriations."

Source: Texas Public Policy Foundation and SHEEO

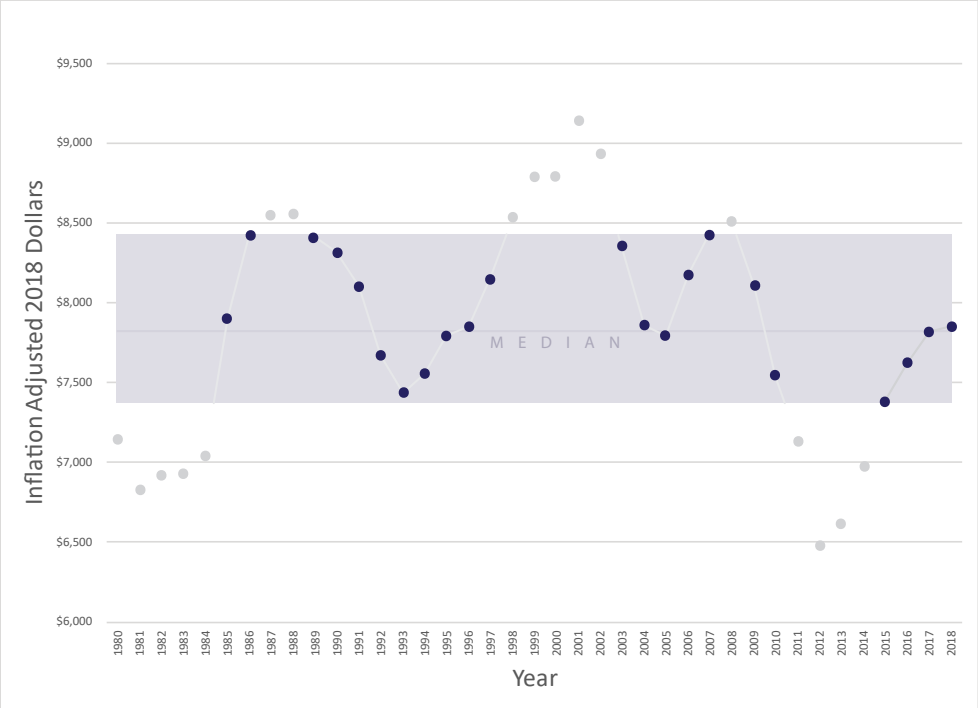
1 Since not all colleges have medical schools, and those that do are not uniformly distributed across the country, separating out non-medical school spending makes comparisons between schools and states more reliable and informative.

2 Note that SHEEO's publications generally adjust for ***costs*** with the Higher Education Cost Adjustment (HECA) rather than inflation, but they provide the data adjusted for ***inflation*** online.

3 Net tuition revenue is different from the net tuition that students pay. For example, suppose a student is awarded a Pell grant. The grant will reduce the net tuition that a student pays but will not reduce net tuition revenue since the college receives the same amount of money, just with the Pell portion coming from the federal government rather than the student.

per student increased by $707. With so many ups and downs over the years, any conclusion is usually reversed by moving the starting or ending date just a few years. To avoid overgeneralizing from non-representative (and easily cherry-picked) beginning and end points, we should worry less about year to year comparisons and focus instead on whether there is a general trend, which would show up as a general slope in the state funding line. If there has been disinvestment, then there should be a downward slope in state funding over time. But **Figure 1** does not appear to have much of a slope at all. Instead, state funding appears to be quite cyclical, falling during recessions and then climbing during recoveries.

Figure 2. Distribution of per-student state funding for higher education



Note: Figures adjusted for inflation using the CPI-U. "State funding" corresponds to SHEEO's "educational appropriations."

Source: Texas Public Policy Foundation and SHEEO

The lack of any meaningful trend is confirmed by regression analysis. The regression coefficient on the year variable indicates the typical change in state funding each year. If there is a trend of states disinvesting in higher education, then we should expect the coefficient to be a large negative number that is statistically significant. However, when you run this regression on the historical data, the coefficient is -1.199, indicating that states tend to disinvest in higher education at the rate of $1.20 per student per year (this regression line is included in **Figure 1**). However, the standard error is 9.8 (p value = 0.9), rendering even this tiny disinvestment trend non-statistically significant. In other words, we cannot statistically determine if there is any trend in state funding over the past 38 years, and if so whether it indicates disinvestment or increases in investment (the 95 percent confidence interval is -$21 to +$19 per student per year).

Even taking a disinvestment trend of $1.20 per student per year as our best estimate, such a trivial sum belies the disproportionate attention given to the state disinvestment story, as cyclical swings dwarf any underlying trend. For instance, state funding has fallen by an average of $1,506 per student during the last three recessions. To match a fall in funding of that magnitude at the presumed rate of state disinvestment would take 1,256 years. Clearly, cuts to funding during recessions dwarf the minuscule and possibly nonexistent trend of disinvestment.

The bottom line from the regression analysis is that, rather than getting the large negative and statistically significant finding we would expect if there was a trend of state disinvestment, we get a trivially negative and non-statistically significant result.

The distribution of state funding by year is another piece of evidence showing the lack of a trend in state funding. **Figure 2** replaces the line with dots for each year, and then superimposes a boxplot showing the distribution of state funding over the years, where the outline of the box shows the 25th and 75th percentiles. The line within the box is the median value of state funding per student ($7,853) meaning that in half the years state funding was higher, and in half the years funding was lower. If states have been disinvesting in higher education for years, then current funding levels should be among the lowest on record. Yet state funding per student in 2018 was $7,853, the median value. If there is a long-term trend of states disinvesting in higher education, then how is the current funding level in the exact middle of the historical range?

State Funding Is Volatile but Within a Narrow Range

The cyclical nature of state funding apparent in **Figures 1** and **2** conceals another under-noticed fact, which is that outside of cyclical swings, state funding has been remarkably consistent for 38 years, deviating only temporarily from

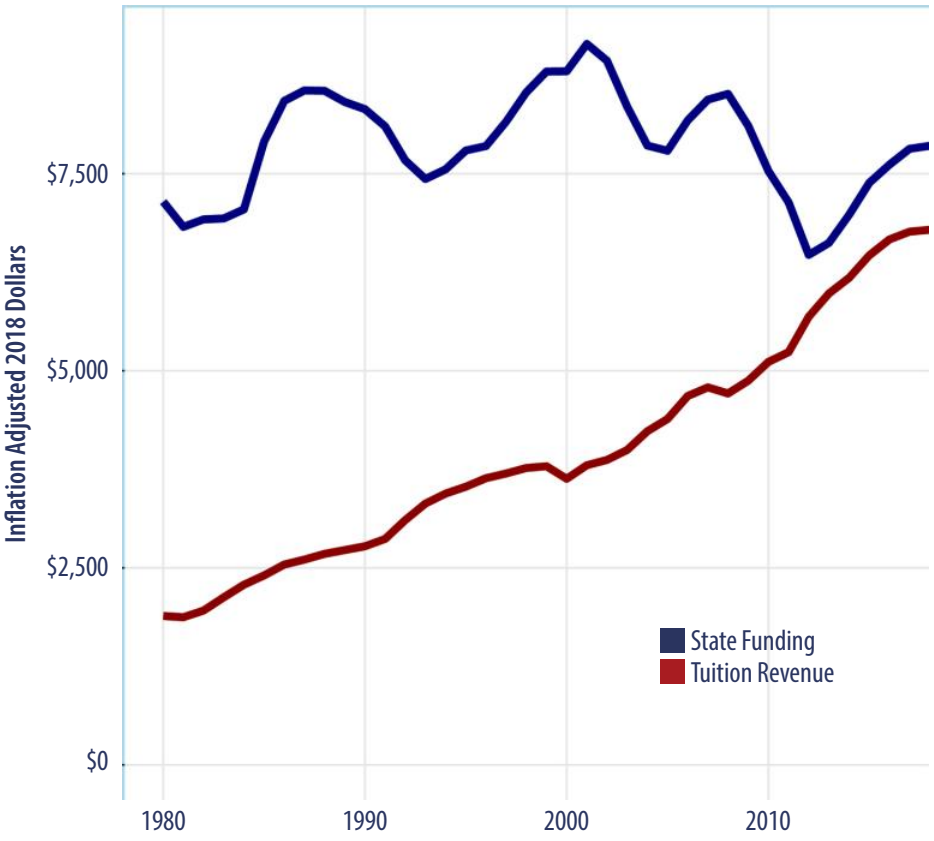
a fairly narrow range.[4] **Figure 2** shows that half of all years' funding levels fell between $7,409 and $8,416.

Indeed, state funding per student rarely deviates by more than $1,000 per student from the median value ($7,853)—over the past 38 years, only two years have been $1,000 or more above the median, and only three years have been $1,000 or more below the median, all of which reverted toward the median within two years. While the swings in state funding during a recession can certainly be large—state funding fell by over $2,000 per student from 2008 to 2012—we should not lose sight of the fact that state funding has been remarkably consistent for almost four decades now (though statistical tests yield inconclusive evidence on whether the trend line is completely flat).[5]

Colleges Have Never Had More Total Funding

State funding is a large component of college funding, but it is not the only one. Tuition revenue is the other major source of funding. **Figure 3** adds a line showing tuition revenue per student over time to **Figure 1**. Tuition revenue per student has increased consistently over time, rising from $1,889 in 1980 to $6,788 in 2018.

Figure 3. Higher education revenue per student by source



Note: Figures adjusted for inflation using the CPI-U. "State funding" corresponds to SHEEO's "educational appropriations."

Source: Texas Public Policy Foundation and SHEEO

The upward trend in tuition revenue over time is confirmed by statistical tests. Repeating the earlier regression analysis with tuition revenue instead of state funding yields a coefficient of 125 that is statistically significant (a standard error of 4.14 and a p value of < 0.01). In other words, there is a sizable and statistically significant trend of higher tuition revenue, at a rate of between $116 and $133 per student per year.

The combination of no trend in state funding and consistent increases in tuition revenue creates a generally rising trend in total revenues over time, as shown in **Figure 4**. An upward trend in total revenue is unmistakable, albeit with cyclical swings due to volatile state funding. The year 2018 had the highest total revenue in history, at $14,641 per student, $5,606 higher than in 1980, and even $1,413 higher than the pre-recession peak in 2007. In other words, universities have more than recovered from the latest recession. In fact, universities have never had higher total operating revenues than they do now.

No Detection of the (Weak) Relationship Between State Funding Cuts and Increases in Tuition

Related to the belief of a long-term trend of state disinvestment is the idea that disinvestment explains why tuition has been climbing. The SHEF data is routinely cited as providing proof that tuition rises because of cuts to state funding.

But these claims overstate the relationship between changes in tuition and changes in state funding. As we have already seen, there is no long-term trend in state funding in the SHEF data, while there is evidence of consistently rising tuition revenue. This should immediately give pause to the notion that cuts in state funding play a dominant role in explaining tuition increases. While it is true that tuition revenue rises when states cut funding, tuition revenue rises when states *increase* funding as well. It is generally difficult to claim that consistent increases in one variable (tuition

4 Recall that state funding here refers to operating support—funding for campus construction, research, and medical schools has been subtracted out.

5 A Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test indicates level stationarity (KPSS = 0.154, lag = 3, p-value > 0.1), but an Augmented Dickey–Fuller (ADF) test does not rule out a unit root (DF = -3.1233, lag =3, p-value = 0.13).

revenue) are caused by a variable that regularly swings up and down (state funding).

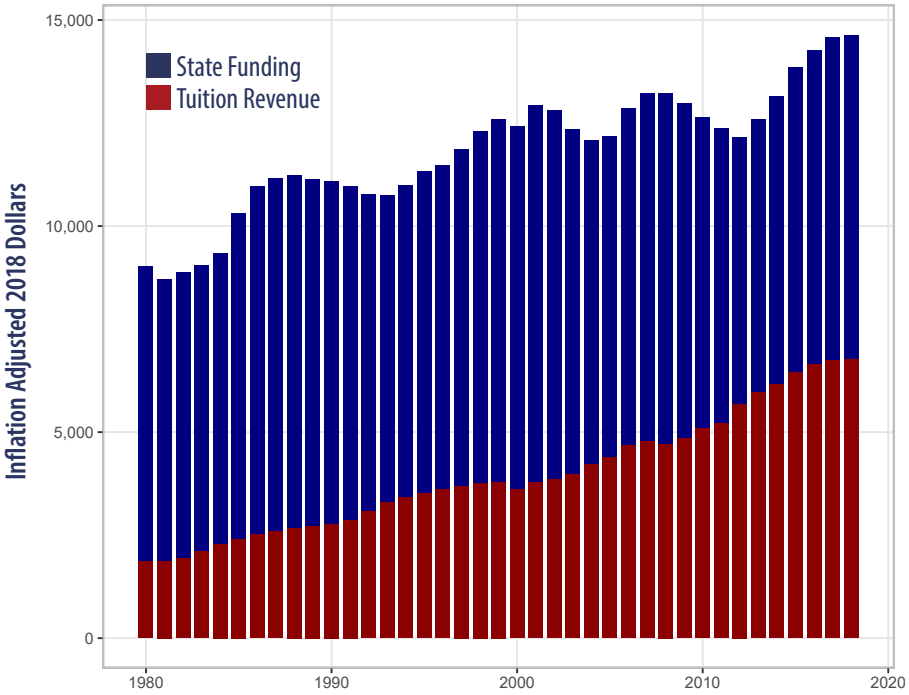
Moreover, the numbers just do not add up. How could a (non-statistically significant) decline in state funding of $1.20 per student per year explain a (statistically significant) increase in tuition revenue of $125 per student per year?

However, investigating the relationship between changes in state funding and changes in tuition is one of the areas where the SHEF data is not the best data available because it is so aggregated at the state and national level. A previous study of mine (Gillen 2015) uses university level data instead, controls for various other variables such as changes in faculty salaries and college funded financial aid, and allows for tuition to respond over five years. That study finds a weak relationship between changes in tuition and changes in state funding (total state funding, not just operating revenue). For example, for four-year public colleges, tuition increases by $0.06 for every $1 cut in state funding and the relationship is statistically significant. Over five-years, the relationship strengthens to around $0.19. This is a quite weak relationship and is far from the $1 for $1 impact assumed by the conventional wisdom.

But this weak relationship is not detectable in the SHEF data. **Figure 5** plots the change in state funding and the change in tuition revenue for each year. For example, the 2012 toward the upper left of the chart indicates that between 2011 and 2012, state funding fell by $666 per student, and tuition revenue increased by $448 per student.

If tuition rises because of cuts to state funding, then each year should fall along the red line representing a $1 increase in tuition revenue per

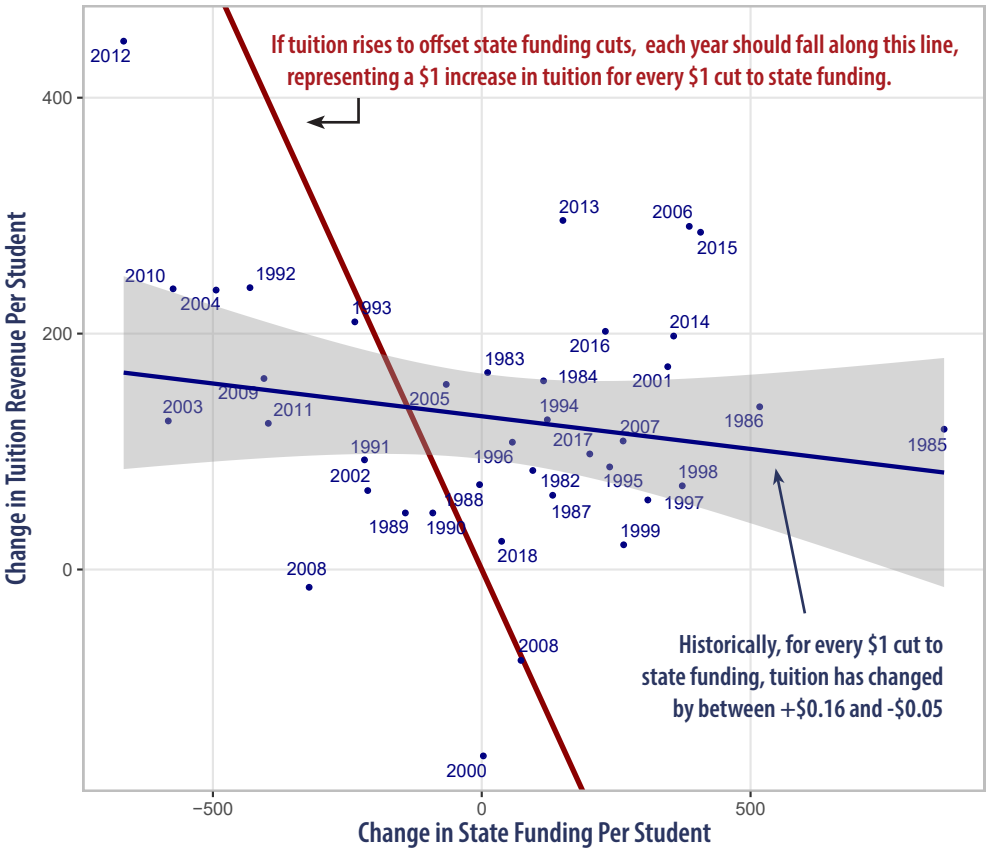
Figure 4. Higher education revenues per student



Note: Figures adjusted for inflation using the CPI-U. "State funding" corresponds to SHEEO's "educational appropriations."

Source: Texas Public Policy Foundation and SHEEO

Figure 5. Changes in higher education funding by source



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Source: Texas Public Policy Foundation and SHEEO

student for each $1 cut in state funding per student. The occasional year is close to the line (e.g., 2008, where state funding increased by $73 per student and tuition revenue decreased by $77). But in general, the data does not fall along the line.

Regression analysis confirms the lack of a $1 for -$1 relationship in the SHEF data, as historically, tuition revenue has tended to increase by a non-statistically significant $0.056 per student for every $1 cut to state funding per student (standard error = 0.05, p value = 0.3). Moreover, the regression results include a statistically significant value of $130 for the intercept (standard error = 17.8, p value < 0.01). This indicates that even if there was no change in state funding, we would still expect to see tuition revenue rise between $94 and $166 per student.

What this means is that while data at the institutional level do provide evidence that changes in state funding have a weak relationship with changes in tuition, the SHEF data is too aggregated at the state and national levels to detect the relationship.

Conclusions

The latest SHEF data clearly shows that the conventional wisdom regarding state funding of higher education needs an overhaul on several points. In particular:

- There has not been any convincing upward or downward trend in state funding of higher education over the past 38 years (the typically yearly change in state funding is between -$21 and +$19 per student per year).
- Any given year's value is determined more by cyclical factors (the state of the economy) rather than any underlying trend.
- Outside of recessions, state funding has typically been between $7,400 and $8,400 per student per year for 38 years.
- Steady increases in tuition revenue ($116 to $133 per student per year) combined with flat state funding (-$21 to +$19 per student per year) yield an upward trend in total revenues.
- Colleges have never had higher total operating revenue than they do right now ($14,600 per student).
- Depending on the data used, there is only a weak or non-existent relationship between cuts to state funding and increases in tuition. The SHEF data do not detect a relationship.

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ABOUT THE AUTHOR

Andrew Gillen is a senior policy analyst in the Texas Public Policy Foundation's Center for Innovation in Education and an adjunct professor of economics at Johns Hopkins University.

Prior to joining TPPF, Andrew spent 10 years at nonprofit and philanthropic organizations researching and trying to improve higher education, including as a program officer for the Charles Koch Foundation and in research roles for American Institutes for Research, Education Sector, the American Council of Trustees and Alumni, and the Center for College Affordability and Productivity. He also served on the U.S. Department of Education's Advisory Committee on Student Financial Assistance.

Andrew earned a BBA (business) degree from Ohio University and a Ph.D in economics from Florida State University.

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