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POLICY BRIEF

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Bouncebacks in Higher Education Funding:
Patterns in Length of Time to Recovery Following Cuts in State Appropriations

By William R. Doyle and Jennifer A. Delaney[1]

Key Points

Findings

1. The duration of recoveries has increased in each decade from 1979 to 2007.
2. States with higher tuition and a centralized governing board are likely to face longer recovery times.

Recommendations

Institutional leaders should consider

1. Responding to cuts with new modes of operation
2. Recognizing that tuition increases could stall the recovery process
3. Focusing discussions with state leaders on the volatility of state funding and budget expectations over multiple years

About the Authors

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Summary

State appropriations for higher education are highly cyclical, with downturns in funding during difficult financial times followed by increases in funding when state finances improve. This policy brief shares recent research about whether the duration of recoveries from cuts in appropriations for higher education has changed over time and which characteristics of states are associated with shorter or longer durations for recovery.[2] We investigate national trends and provide detailed descriptions for five states: California, Florida, Illinois, New York, and Wisconsin. We find that the duration of recoveries has increased in each decade from 1979 to 2007. We also find that states with higher tuition and a centralized governing board are likely to face longer recovery times.

> ...most states are experiencing financial crises, and many public higher education institutions are facing cuts in their state funding.

Introduction

This policy brief comes on the heels of an 18-month recession, the longest since World War II, according to the National Bureau of Economic Research.[3] It lasted from December 2007 to June 2009 and has been described as the worst economic downturn since the Great Depression.[4] As a result, most states are experiencing financial crises, and many public higher education institutions are facing cuts in their state funding.[5] This has prompted many to ask how long it will take for colleges and universities to regain pre-cut levels of state support. Our research turns to the past to understand the factors that influence the length of recovery time across states.

This policy brief discusses our recent research on state funding for higher education. First, it provides a description of how funding levels for higher education recover following cuts. Second, it provides empirical evidence of factors that predict length of time for recovery. The following questions are addressed:

- What is the general trend for inflation-adjusted state appropriations for higher education?
- Has the length of recovery time been stable, or has it changed over time?
- What factors affect the rate at which states return to pre-cut levels of funding for higher education?

State funding for higher education often seems to be chaotic and unpredictable. Yet, if there are clear patterns in state funding, policymakers and campus leaders may be better able to weather the storm. The results of our research can help campus leaders plan during trying economic conditions.[6]

Discussion of Findings

We are not interested in levels of funding in this work but rather the volatility of state funding for higher education and, specifically, how long it takes to recover following a cut in state spending. The focus of most previous studies of state funding for higher education has been on nominal levels of appropriations, and sometimes on changes in appropriations over time. To our knowledge, there have been only a few studies that specifically address the recovery rate of institutions and state systems.[7]

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In order to conduct our analysis, we compiled a dataset for 47 states. Due to their highly anomalous state revenue structures, we removed Alaska and Hawaii from the dataset. Because Nebraska has non-partisan state-level elections, we were unable to collect data on the partisan nature of the state legislature and therefore omitted that state from the analysis as well. Our longitudinal data extends from 1979 to 2007. All of our financial data has been adjusted for inflation.

We define state funding for higher education as per-young person, inflation-adjusted funding at the state level. To construct this measure, we used data on state tax appropriations for higher education from the *Grapevine* survey conducted by the Center for the Study of Education Policy at Illinois State University.[8] This data covers most of the funds that are spent on higher education by states in any year.

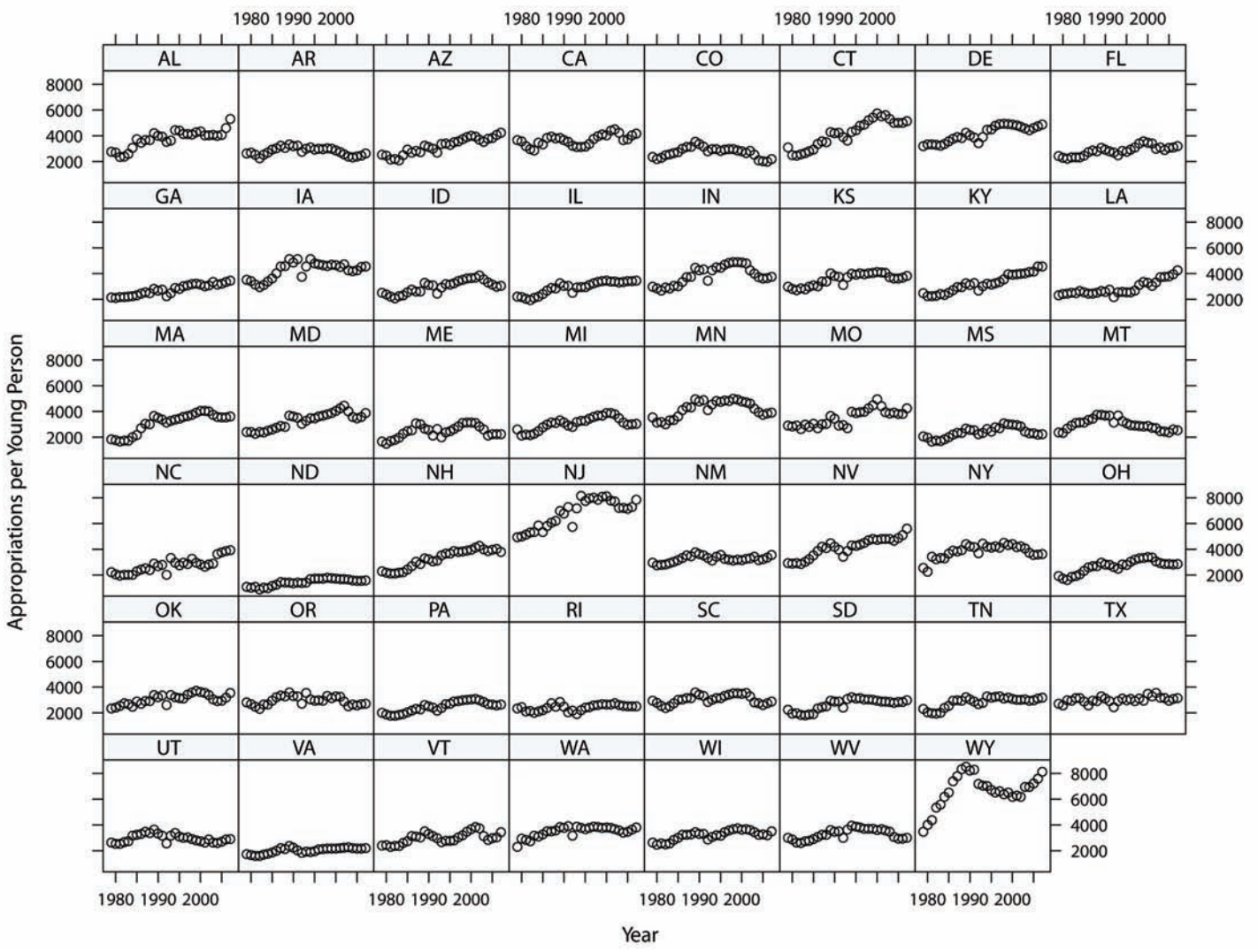
We divided this figure by the number of young persons (20- to 24-year-olds) in the state, so state funding is defined relative to the appropriate target population. Our use of a per-young person funding measure is intended to reflect the shifts in state funding that may be occurring as a result of changes in the traditional college-aged population.

What is the General Trend for Inflation-Adjusted State Appropriations for Higher Education?

Figure 1 shows inflation-adjusted change in appropriations for each of the 47 states for the years 1979 to 2007. Because the figure shows change in appropriations, a straight line would indicate very little volatility in state funding for higher education.

Figure 1

Change in Per-Young Person State Appropriations for Higher Education in 47 States, 1979-2007

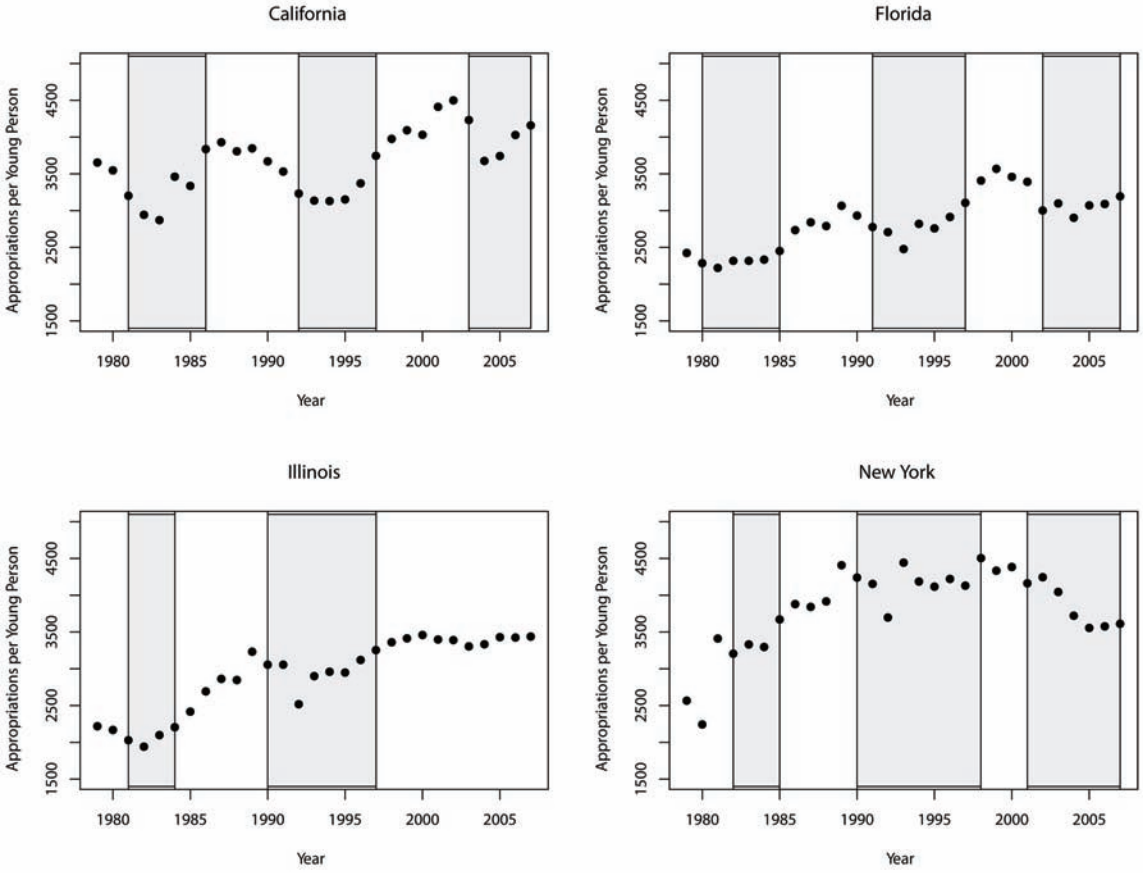


However, as the figure shows, many states have been through repeated cycles of cuts and recoveries with the magnitude of the changes in funding varying tremendously by state.

What is a cut in state funding for higher education?

We define a cut in per-young person appropriations as a drop in per-young person, inflation-adjusted funding that exceeds 5% of the previous year's funding. We use this as a baseline to ensure that small fluctuations are not interpreted as cuts, and this threshold captures both moderate and large cuts. States that reduced per-young person, inflation-adjusted spending by more than 5% in one year are classified as having cut higher education. Higher education funding is regarded as having been restored when a state appropriates funds at the pre-cut level; this is the event of focus for this study.

Figure 2
Timing of Entry into and Exit from Periods of Cuts for California, Florida, Illinois, and New York



Note: This graphic shows time trends in appropriations for four states, along with the timing of both cuts and recoveries. Shaded areas denote the years following a cut in state funding.

How do we know how long it takes to recover from a cut?

We are primarily interested in *how long* it takes a state to return to pre-cut levels of funding. Until recently, states always returned funding levels to where they had been prior to cutting budgets for colleges and universities. However, states varied considerably in the amount of time it took to restore budgets after large cuts. For each state in the dataset, we measured the number of years between a 5% or more cut in funding and the point at which state funding returned to its previous level.

Examples of recovery patterns for five states

...states varied considerably in the amount of time it took to restore budgets after a large cut.

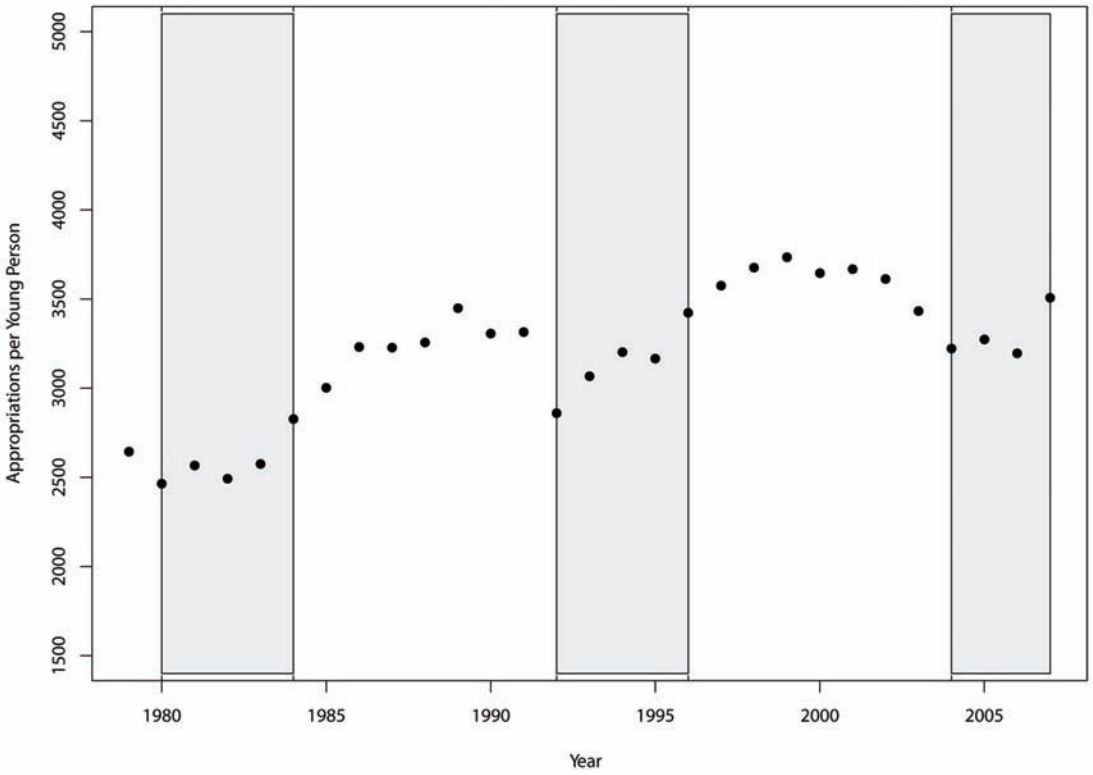
Figure 2 (see page 4) shows the pattern of cuts for four states: California, Florida, Illinois, and New York. California suffered a 14% cut in per-young person funding between 1980 and 1981. Institutions in California dealt with this cut (the gray area in the graphic) until 1986, when funding recovered to levels at or above what they were in 1980 in inflation-adjusted dollars. California cut higher education funding by more than 5% three times: between 1981 and 1986, between 1992 and 1997, and from 2003 on. Funding levels in California have not yet recovered from the 2003 cut, so the last cut extends beyond the time period of the data we collected.

Figure 2 also shows a similar pattern for Florida. Florida had three periods in which higher education had been cut on a per-young person, inflation-adjusted basis: between 1980 and 1985, between 1991 and 1997, and between 2002 and 2007.

Illinois only twice cut higher education funding by more than 5%: first, in 1981, with recovery in 1984, and second in 1991, with recovery in 1997. Funding for higher education in Illinois did not again decline by more than 5% before 2007, although recent news reports indicate that the state may have had cuts in subsequent years that are too recent for us to capture in this analysis.

Funding for higher education in New York declined between 1981 and 1982, not to recover again until 1985. The state again cut spending for higher education by more than 5% in 1990 and did not receive similarly high levels of appropriations until 1998. Finally, the state higher education system saw a cut in 2001, and appropriations have not returned to that level since. This last cut extends beyond the time period of the data we collected, so we did not observe a recovery from this final cut in our analysis.

Figure 3
Timing of Entry into and Exit from Periods of Cuts in Wisconsin



Note: This graphic shows time trends in appropriations for Wisconsin, along with the timing of both cuts and recoveries. Shaded areas denote the years following a cut in state funding.

Figure 3 shows patterns in state funding for higher education in Wisconsin. According to our data, funding for higher education in Wisconsin entered a downturn in 1980 and returned to previous levels in 1984. The next downturn occurred in 1992 and recovered in 1996. Funding for higher education began a decline between 2002 and 2003, but the size of the cuts did not exceed our 5% threshold until 2004. In 2007, state funding recovered sufficiently to again count as recovery, although recent cuts, which extend beyond the time period of our analysis, have certainly resulted in lower levels of appropriations.

We conducted a similar analysis in all 47 states by documenting time periods during which each state suffered more than a 5% cut and calculating the number of years until state appropriations returned to pre-cut levels.

Has the Length of Recovery Time Been Stable, or Has it Changed Over Time?

To model recovery from recessions in states, we use a set of techniques from event history analysis and use a proportional hazards model that allows for a repeated risk framework to capture multiple recoveries for individual states within the dataset.[9]

Figure 4
Kaplan-Meier Curve for All States in Data Set, 1979-2007

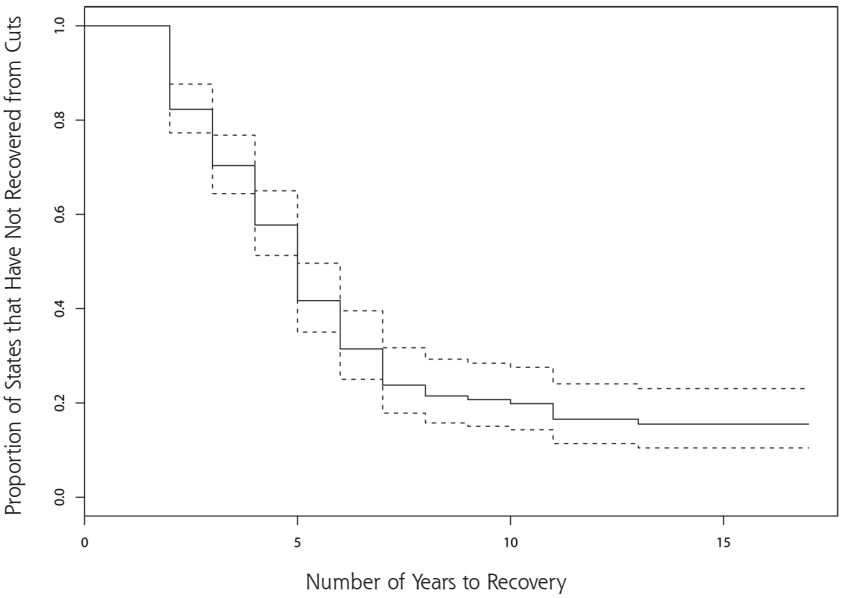
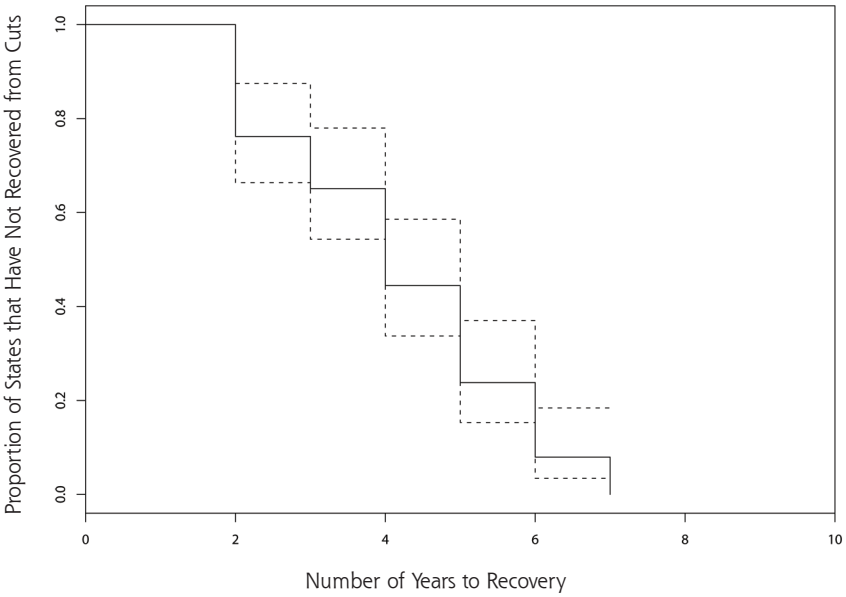


Figure 5
Kaplan-Meier Curve for All States in Data Set, 1980s



We began our analysis by calculating and plotting Kaplan-Meier estimates of the survival curve for both the entire sample and for each of three decades: the 1980s, 1990s, and 2000s.[10] The Kaplan-Meier curve for the entire time frame is shown in Figure 4. As the figure shows, many states in the dataset are likely to recover from cuts within five years. Time periods of 15 years or longer for recovery are quite uncommon in the dataset. However, our suspicion that this pattern has changed over time led us to look at these survival curves separately for each decade.

Figure 5 shows the Kaplan-Meier curve for the time period 1979 to 1989 (the 1980s). During this time period, all states had recovered from cuts within seven years. In fact, during the 1980s, 76% of states that experienced more than a 5% cut in appropriations for higher education had recovered within five years. During the 1980s, while cuts for higher education did occur, most states restored these cuts, often within about five years of their occurrence.

This pattern changed in the 1990s, as shown in Figure 6 (see page 8). During this decade, time to recovery lengthened; in fact, many states did not restore cuts before the decade was over. For states that had more than a 5% cut, 42% had not been restored within five years, and nearly 22% still had not been restored by the end of the decade, compared with 23% and 0%, respectively, in the decade before.

This same pattern of longer intervals between cuts and restoration was repeated during the first eight years of the 2000s (the years for which data were available). As Figure 7 shows, recovery from cuts within five years became much less common, with fewer than 40% recovering from cuts within five years and an additional 25% showing no sign of having recovered from previous cuts by the last year of our dataset.

This work confirms what many analysts have long suspected: although cuts in state appropriations for higher education are often followed by increases in funding,[11] in every decade since the 1980s, it has taken longer for funding to recover from previous cuts. In the 1980s, these increases followed rather quickly; most states returned to pre-cut levels within about five years. However, in the 1990s and 2000s, this time period lengthened considerably.

The most recent recession generated cuts in state appropriations for higher education. Although what happens to this funding will bear itself out over the next several years, it appears quite likely that, for a majority of states, it will take longer than 10 years to regain the levels last seen in 2007-2008, if they recover at all. Time to recovery lengthened for all 47 states, meaning it is more likely that a state will *take longer to recover* from a cut and more likely that a state will *never recover* from a cut.

Figure 6
Kaplan-Meier Curve for All States in Data Set, 1990s

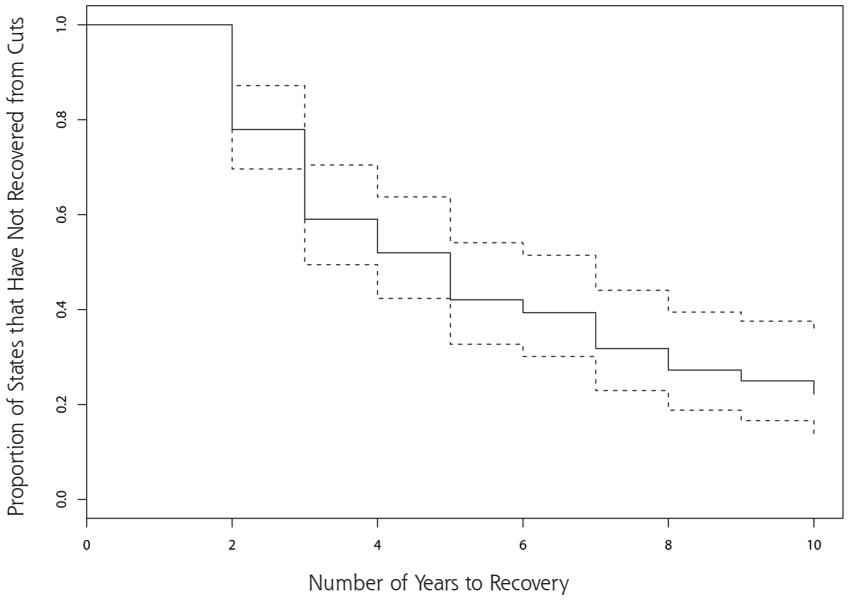


Figure 7
Kaplan-Meier Curve for All States in Data Set, 2000s

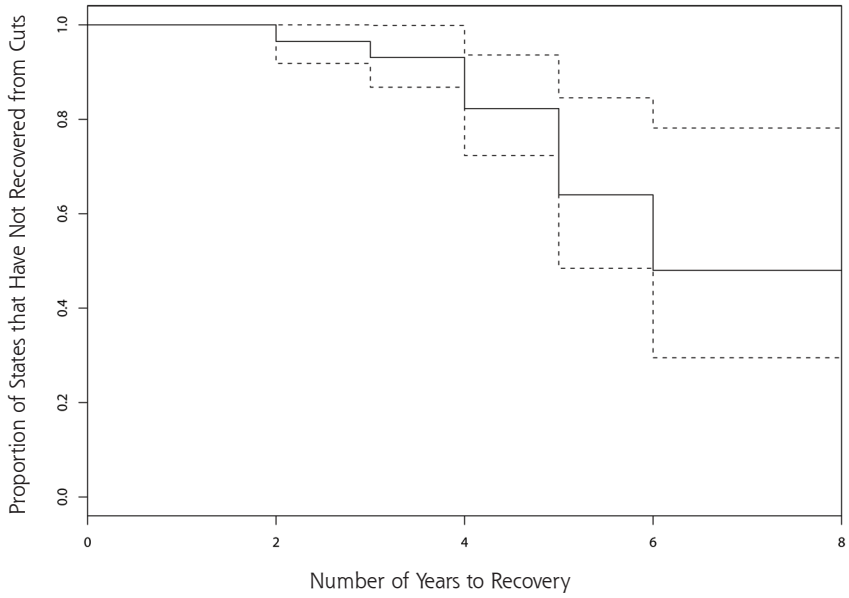
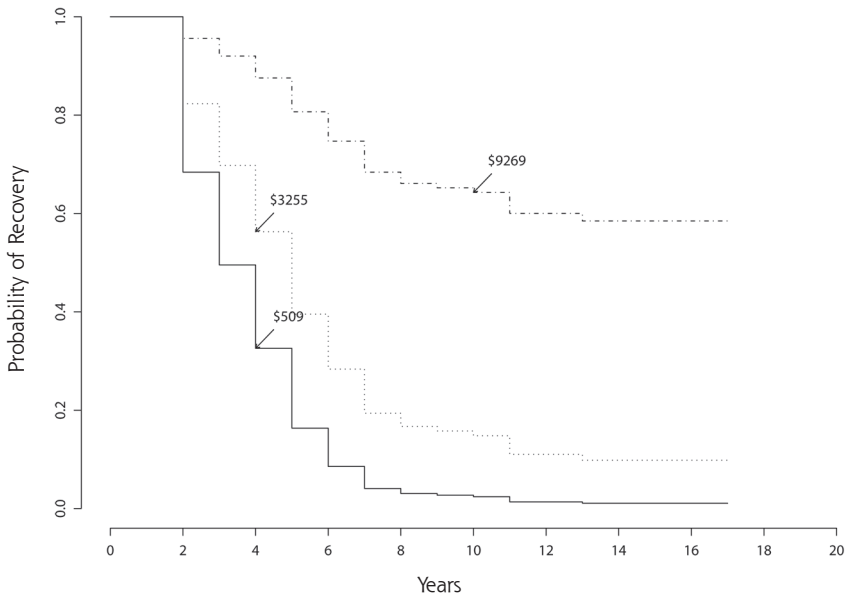


Figure 8
Predicted Impact of Tuition on Recovery from Cuts



Note: This graphic shows the predicted impact of changes in tuition on the time to recovery from a previous cut in appropriations.

What is not known currently is if funding for higher education reached a high watermark in the 2000s. It could be that we will not see funding at that level again for quite some time.

What Factors Affect the Rate at Which States Return to Pre-Cut Levels of Funding for Higher Education?

In addition to modeling the pattern of recovery by each state, we explored how five different types of factors predict the length of time to recovery. These factors measure the political structure, economic conditions, higher education system characteristics, population, and regional location of each state.

States with higher tuition are less likely to recover quickly from cuts than states with lower tuition. Figure 8 shows a simulation of this finding for tuition levels at roughly $500, $3,000, and $9,000. This finding speaks directly to one of the most common ways in which higher education leaders respond to state cuts in higher education funding: lacking other resources, they increase tuition.

Beyond the direct effect of pricing many students out of higher education, our work also indicates that tuition hikes may have the indirect effect of convincing state policymakers that higher education funding need not be restored. It would seem reasonable that state policymakers, observing that tuition increases essentially made up for state cuts, would see no need to restore appropriations to their previous levels.

Consistent with many previous studies, we also find that it makes a difference whether or not a state has a centralized governing board for higher education. In the case of this study, states with centralized governing boards are less likely to recover quickly from recessions. Figure 9 (see page 10) shows a simulation of this result by comparing states with centralized governing boards to states with all other types of governance structures. This indicates that centralized governing arrangements may be more responsive to state priorities in maintaining budget cuts. We do not find strong or consistent relationships with the other measures tested.

Policy Recommendations

It is important for campus leaders to know about the length of time needed to recover from a cut and the factors that can be used to predict recovery from a cut. By knowing how long they have before they can expect their state funding to rebound, institutional leaders should be better able to make contingency plans.

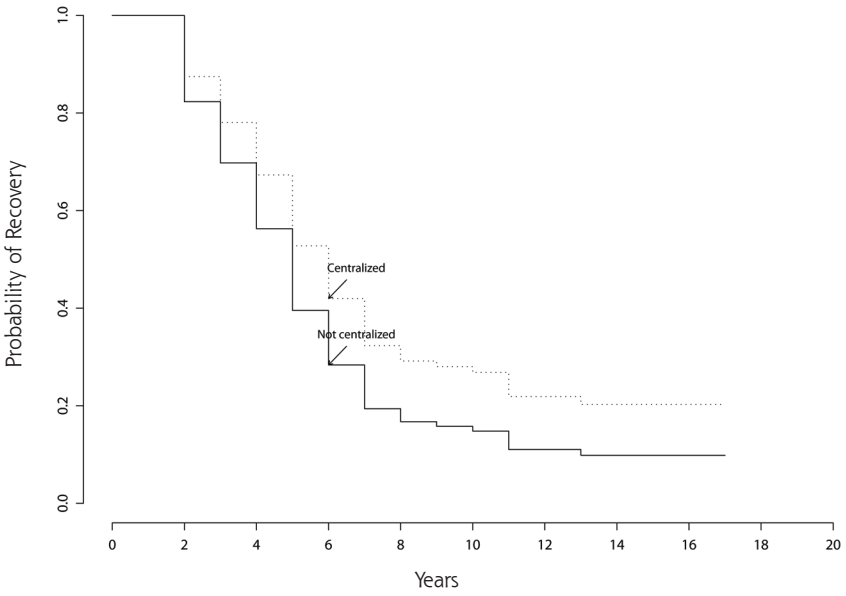
They might also be better able to use resources in both good and bad economic times to plan to fill the hole left by a drop in state funding. If institutions earmark state funds for specific purposes (e.g., classroom instruction), then institutional leaders will better know the type of resources needed to fill the gap created by a cut in state funding.

We do not intend to imply that higher education should always recover from cuts, or that we know the optimal level of spending for higher education in the states. Other scholars and policymakers are researching these issues, such as Jane Wellman's work with the Delta Cost Project and Patrick Kelly's and Dennis Jones' work on productivity in higher education.[12] We commend their work and hope that someday conversations about cuts and recovery from cuts can be coupled with reflections about adequate levels of funding for higher education.

Our work points to the possibility that if the length of time to recovery continues to increase, cuts may become permanent, and productivity increases will become necessary in order to maintain access. If it takes a decade or longer for institutions to recover following a cut, then it might not be wise to think of the change in revenue as a cut but rather as a new way of operating.

Our work strongly suggests that institutional leaders can no longer simply wait out budget cuts until state funding is restored. Such an attitude will be detrimental to institutions operating in this new environment. Today, there is no promise that state money is ever coming back, so short-term solutions are often insufficient.

Figure 9
Predicted Impact of Centralized Governance on Recovery from Cuts



Note: This graphic shows the predicted impact of having a centralized governing board on the time to recovery from a previous cut in appropriations.

The short-term fix of increasing tuition can exact a long-term cost in terms of the length of time to recovery for state funding.

In addition, institutional leaders need to be careful when considering tuition increases in response to cuts in state funding. Our findings indicate that increasing tuition following a cut could stall the recovery process.

If state lawmakers see that institutions are able to turn to students and families as an alternative revenue source, then their incentive to restore funding for higher education is weakened. The short-term fix of increasing tuition can exact a long-term cost in terms of the length of time to recovery for state funding.

We recommend that institutional and state leaders explicitly discuss not only the level of funding for state appropriations for higher education in one year but also the volatility of state funding and budget expectations over multiple years. These types of conversations require trust on both sides so that institutions have some assurance that states will follow through on multi-year funding promises and states have some assurance that institutions will follow through on providing the educational opportunities needed within the state.

Although we understand this is a tall order, it is vital to work to reconcile the different time frames of state leaders (who operate with annual or biennial budget cycles) and institutional leaders (who often are concerned with preserving institutions into perpetuity) in order to help all parties better manage and cope with volatile budgeting environments for higher education.

Notes

[1] We would like to thank Courtney Sanders for her research assistance on this project. Alex Gorbunov generously shared several data elements from his dissertation research. We are also grateful to Justin Ronca for initial advice on study design. The authors bear sole responsibility for the content of this paper.

[2] This policy brief is based on a previous paper: William R. Doyle and Jennifer A. Delaney, "Recovery from Cuts: How Long Does it Take for State Spending for Higher Education to Return to Previous Levels?" (working paper presented at the 2010 American Educational Research Association Annual Meeting, Denver, CO, May 3, 2010). Available at http://www.vanderbilt.edu/lpo/doyle/

[3] National Bureau of Economic Research Public Information Office, "US Business Cycle Expansions and Contractions," National Bureau of Economic Research, http://www.nber.org/cycles.html (accessed May 24, 2011).

[4] Bob Willis, "U.S. Recession Worst since Great Depression, Revised Data Show," *Bloomberg*, August 1, 2009, http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aNivTjr852TI (accessed December 7, 2010).

[5] Sara Hebel, "In Many States, Public Higher Education is Hitting a Point of 'Peril,'" *The Chronicle of Higher Education*, http://chronicle.com/article/In-Many-States-Public-High/64620/ (accessed March 14, 2010).

[6] Larger questions, such as whether there is an optimal level of funding for higher education or if higher education should be returned to pre-cut funding levels, are acknowledged in this work but are beyond the scope of this study.

[7] One of the few works to directly study the effect of recessions on higher education spending is Brad R. Humphreys, "Do Business Cycles Affect State Appropriations to Higher Education?" *Southern Economic Journal* 67, no. 2 (2000): 398-413. Using data from 1969-1994, Humphreys shows that income has a positive and significant effect on appropriations to higher education. Humphreys also finds that during recessionary periods, higher education is likely to be cut more than other budget categories.

[8] Center for the Study of Education Policy, Illinois State University, Grapevine, http://www.grapevine.ilstu.edu/

[9] More information about this methodological technique and our use of it in this work, can be found in William R. Doyle and Jennifer A. Delaney, "Recovery from Cuts: How Long Does it Take for State Spending for Higher Education to Return to Previous Levels?" Available at http://www.vanderbilt.edu/lpo/doyle/

[10] In Figures 4-7, the Kaplan-Meier curve drops to the proportion of states that have not yet recovered from cuts at each time point. For example, in Figure 4, in the first five years, just over 40% of the states had not yet recovered from cuts. A Kaplan-Meier curve that drops to 0 indicates that all states have recovered from cuts. Solid lines represent the estimated curve; dotted lines represent the confidence interval for the curve (i.e., the range in which the curve likely falls).

[11] Harold A. Hovey, *State Spending for Higher Education in the Next Decade: The Battle to Sustain Current Support* (San Jose, CA: National Center for Public Policy and Higher Education, 1999).

[12] Jane V. Wellman, "Spending More, Getting Less," *Change: The Magazine of Higher Learning* 40, no. 6 (2008): 18–25.

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