AN ANALYSIS OF THE PRIVATIZATION OF PUBLIC AAU INSTITUTIONS AND THEIR CHANGING RESOURCE ACQUISITION BEFORE AND AFTER THE GREAT RECESSION

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This work is dedicated to my mother, Reyna Patricia. Thank you for your endless love and support and for always encouraging me to reach for the stars.

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AN ANALYSIS OF THE PRIVATIZATION OF PUBLIC AAU INSTITUTIONS AND THEIR CHANGING RESOURCE ACQUISITION BEFORE AND AFTER THE GREAT RECESSION

Public institutions have historically adapted to their changing external environment in order to try to best serve their students and achieve their goals. Part of this adaption included dealing with decreasing state support. While state funding has shown increasing patterns of support to higher education after a recession, the Great Recession proved different. As a result, public institutions have become increasingly privatized with increasing proportions of their revenue coming from students and declining proportions coming from the state.

The purpose of this study was to examine the changing state appropriations and tuition revenue that public AAU institutions received before and after the start of the Great Recession in order to better understand whether they received a changing amount of total revenue per student and simultaneously became more heavily funded by students. This study used IPEDS variables and all data was collected between 2003-04 and 2011-12 to create the three main variables used to answer six research questions. The three main variables included: gross-tuition revenue per FTE, net-tuition revenue per FTE, and state appropriations revenue per FTE. All data was analyzed through descriptive statistics.

The results of this study showed that on average public AAU institutions received increasing amounts of total revenue per FTE between 2003-04 and 2011-12 in terms of tuition revenue and state appropriations per FTE combined. Many of these institutions also became increasingly privatized during this time as there were increases in the proportion of the total revenue that came from tuition revenue per FTE.

The findings from this study also showed that while all institutions became increasingly privatized after the start of the Great Recession, an increasing number of institutions began operating with decreasing levels of total revenue per FTE. Others received an increasing amount of total revenue as a result of increases in tuition revenue per FTE. Regardless, this study showed that students have continued to bear increasing proportions of the cost of higher education. It also provided a new perspective on the amount of revenue that these institutions believed they needed in order to continue to provide quality education to their students.

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Chapter I

Introduction to the Study

The primary sources of revenue for public institutions of higher education (IHEs) include state appropriations along with tuition and fees. While funding from state appropriations has been cyclical in the past, the overall trend between 2000 and 2010 is downward (Kirshstein & Hurlburt, 2012, p. 3). The deepening economic problems that occurred during the most recent recession, or the Great Recession, are a reflection of state spending cuts along with declining state tax revenues. As a result, cuts in state support to public IHEs made these institutions increasingly dependent on tuition revenue and therefore the students that they enroll. For the purposes of this study, privatization is defined as an increasing proportion of institutional revenue coming from students and declining proportions coming from the state. This is of concern for public institutions since they no longer expect state support to return to previous levels of funding. Furthermore, students have reacted to the increasing tuition prices with growing resistance which has been accompanied by questions on the quality and outputs of higher education.

Public Association of American Universities (AAU) constitute a group of leading public research universities that provide high quality research and instruction ("AAU Membership," 2013). As public institutions, they must be skilled in both the arts of education and research and also responsive to the public's needs (Newman, 1987). This group of institutions was affected by the Great Recession and they continue to work to respond to the changing economic environment in order to provide quality education to their students. Due to this, many university leaders have had to rely on privatization initiatives in order to replace lost state funds and continue to acquire sufficient revenue. This means that these institutions have had to question

their expenses, efficiency, outputs, and how much revenue they need in order to achieve their goals and remain competitive. Therefore, these institutions have had to question their own tuition prices as they began to rely more heavily on tuition as a form of revenue.

The beginning sections of this chapter give background information on privatization along with aspects of the external environment that affected public institutions' budgets. This information will then form the foundation from which the topic for this study emerges. Finally, the last sections of this chapter will provide the purpose along with the specific research questions of this study.

Privatization and the Great Recession

Views of public higher education as a public good used to be reflected in the low tuition prices that were charged to students and in the larger proportions of state support that subsidized student costs (AASCU Task Force on Making Public Higher Education a State Priority, 2013, p. 21; Dennison, 2003, p. 11). This view reached a high point in the late 1960s "only to be challenged steadily since then and gradually supplanted by another compact" (Cohen & Kallison Jr., 2010, p. 39). At this time, the view of public higher education as a public good began to be questioned which then started the discussion on whether higher education was instead a private good.

Concurrently, before the start of the Great Recession, every decade since the 1970s opened with a recession in the United States (Breneman, 2002) where each recession had "different causes, effects, and ramifications" (2002, para. 3). The recessions not only affected the nation's economy, but also directly affected state finances. Furthermore, within state budgets higher education is the most discretionary item (Heller, 2006a; Hovey, 1999a) making it one of the most vulnerable areas to state budget cuts (Zumeta, 2004). This means that state funding for

higher education shows patterns of increases during strong fiscal periods, and declines during periods of recession (The National Governor's Association and NASBO, 2011). In general, higher education finance trends were influenced by both the economic patterns of the United States (Heck, Lam, & Thomas, 2012, p. 2) and the resulting fiscal situation of states (Delaney & Doyle, 2011; Hovey, 1999b; Zumeta & Kinne, 2011).

More recently, the United States experienced the worst economic times since the Great Depression during the Great Recession (Elsby, Hobijn, & Sahin, 2010; Willis, 2009; Zumeta, 2010). The Great Recession officially occurred between December 2007 and June 2009 and is characterized by the weakening of the labor market and stubbornly high unemployment rates that were also long in duration (Farber, 2011). In general, individuals experienced steeper declines in personal income, and the recession's severe impact on state revenue (NCSL Fiscal Affairs Program, 2010) ended up being more severe than in previous recessions when comparing the declining sales tax collections (Dadayan, 2012). Consequently, many states faced revenue and budget shortfalls which continued even as they were working to come out of the recession in 2010 (NCSL Fiscal Affairs Program, 2010; Zumeta, 2010). The state and federal responses to the recession and the weak recovery resulted in necessary budget cuts (Zumeta, 2010) which included state cuts to higher education (Oliff, Palacios, Johnson, & Leachman, 2013b, p. 3).

For public IHEs, tuition revenue grew rapidly as a percentage of total educational revenue during periods where state appropriations per student declined (SHEEO, 2009). This supports observations describing institutions' replacement of lost state funding by generating increases in other sources of revenue, which included student tuition revenue (Boatman & L'Orange, 2006; Heller, 2006a; Johnstone, 2005, 2006; Paulsen & Smart, 2001; SHEEO, 2012; Wellman, Desrochers, & Lenihan, 2008; Zumeta, 2009). Over time as students started paying

higher proportions of the cost of education, the view of higher education as a public good began to change to that of a private good. Higher education as a public good was replaced with the idea that individuals were the primary beneficiaries of higher education and therefore should pay for the majority of the costs (Hossler, 2006, p. 111; Johnstone, 2006, p. 7). Moreover, increasing numbers of policy makers believed that the balance of benefits shifted from "society as a whole to the individuals receiving the education" (Goldstein, 2005b, p. 31) further justifying education as a private good.

For public institutions, the substitution of revenue coming from students for revenue coming from state governments is also known as "privatization" (Heller & Geiger, 2011). Institutions' privatization efforts are a result of state budget problems along with "policymakers' willingness to shift the cost of higher education from taxpayers to students" (Ehrenberg, 2005, p. 7). Privatization efforts are also said to have pushed institutions to take on the characteristics of private organizations which includes viewing the student as a consumer and education as a product. Privatization has come to symbolize "a new way of looking at public institutions and at the role of the state in managing affairs of its citizens" (Rizvi, 2006, p. 67).

Some argue for the positive effects of privatization. This includes how it can lead to cost-effective delivery of public services where "the power of private property rights, market forces, and competition brings out the best in public sector employees" (Rizvi, 2006, p. 68). In these efforts institutions take on an attention to image and also consider competitor institutions, "market niches", pricing and the enhancement of net earned revenue along with aggressive marketing (Johnstone, 1999, para. 1). Privatization is also suggested as including an increased collaboration with private businesses in ways that include outsourcing or contracting out services. In general, St. John (2006, p. 259) noticed that institutions began adapting by

becoming more fiscally proactive and learning new forms of responsibility in the marketplace. In general, "when public institutions are thrust into market environments, they become much more organizationally agile and innovative, with greater commitment to reform" (Rizvi, 2006, p. 68).

Furthermore, those in support of privatization believe that it pushes institutions to be more responsive to the needs of their students, calls for additional accountability and higher education standards (Johnstone, 2006), and also forces public institutions to become more efficient with their resources (Ehrenberg, 2005, p. 7). Sontheimer (2001) further suggests that when considering quality or financial sustainability, private education is a good alternative to public higher education. This is stated as being due to the lack of a strong philosophical or economic argument for the public sector to be the provider of higher education. This stems from the "inefficiencies that derive from tying subsidies to specific providers" (p. 102) where allowing individuals to subsidize the provider of their choice can result in utility gains "rather than requiring the individual to restrict his/her choice to a particular subset of institutions in order to gain the subsidy" (p. 102). Sontheimer also states that private education removes institutions from the incremental budget process of the public sector. As state support to higher education is not consistent since states are required to have a balanced budget, the removal of institutions from this process also removes the unpredictability of this funding source.

Within the idea of privatization, cost sharing is used by Johnstone (2004, p. 404) as a way to specifically describe the shift in costs from the government to students. Johnstone (2006, p. 5) states three rationales for cost sharing. The first includes the need for non-governmental revenue which stems from the increasing demand for higher education as it provides both public and private goods. Second, cost sharing was justified as a "notion of equity" where those that benefit

should pay. Lastly, cost sharing places higher education as a highly demanded commodity that can then benefit from the virtues of the market.

Conversely, Slaughter and Rhoades (Rhoades & Slaughter, 2006) provide a critique of the market system that arises from privatization efforts. In their idea of academic capitalism, they describe a replacement of the idea of education as a public good with a capitalist image of higher education institutions. They state that with academic capitalism there is an increased commercialization of institutions where there are external and internal pressures to "take advantages of the new opportunities created by the neo-liberal state" (Rhoades & Slaughter, 2005, p. 486). Rhoades and Slaughter further describe that the benefits of a neo-liberal state are "acquired unevenly by various groups" which include the upper middle class and the rich. They claim that since "higher education is simultaneously a welfare function of the state and a contributor to economic growth, the policy process often plays out in ironic, contradictory and perhaps unintended ways" (p. 488).

Along these lines, Johnstone (2006, p. 37) warns that the effects of increasing tuition and fees is felt primarily by lower and middle-income students who then may be forced to do the following: become part-time students; seek employment or an increasing amount of employment in addition to taking courses; only choose to attend an institution that is within range of their parent's home to cut down on some living expenses; or decide against higher education altogether in response to a perception of the "financial unattainability of higher education" (p. 38).

Rizvi (2006) also cautions that theories supporting privatization make claims about efficiency and productivity that might conflict with other equally important goals. He states that "public agencies like universities have multiple and complex goals, yet these theories focus only

on a narrow range of goals, making it difficult, if not impossible, to measure the justificatory claims that are made by their proponents" (p. 71). Unlike commercial businesses, it is difficult to measure higher education performance with single measurements of effectiveness. Furthermore, "since no one can really object to efficiency and profitability, the neoliberal emphasis on these principles appear as self-evident and hence highly persuasive. Yet it is only when they are juxtaposed with other equally worthy service-related goals that they become contestable" (pg. 71). While efficiency can be a way to cut down on costs at most commercial businesses, efficiency in higher education may also reduce the quality of education provided to students.

In general, escalating demands on higher education, economic constraints, the academy's resistance to change along with an instability in state political leadership helped to create a strained relationship between higher education institutions and state governments (McGuinness, 2005). Regardless, the increasing complexity of modern societies and economies supported the expansion of higher education as it began requiring a more trained workforce (Altbach, 2005, p. 21).

Problem Statement

Institutions' revenue patterns over time show that they increased their tuition prices in order to keep up with the decreases in state funding (Boatman & L'Orange, 2006; Heller, 2006a; Johnstone, 2005, 2006; Paulsen & Smart, 2001; SHEEO, 2012; Wellman et al., 2008; Zumeta, 2009) which then shifted the financing of higher education from the state to the students (Geiger, 2000; Heller, 2006a; Johnstone, 2006; Oliff, Palacios, Johnson, & Leachman, 2013a; Quinterno, 2012). "Privatization" is a term that resulted from this shift and by 2006 or before the Great Recession, it was clear to Priest, St. John and Boon (2006, p. 7) that there was no longer a

question of whether public higher education would become privatized, but that it was still yet to be seen how well the government, universities, and the public would adapt to the changes.

Part of institutions' motivation to privatize was due to the view of higher education as "the most important institution in the complex process of knowledge creation and distribution" (Altbach, 2005, p. 15). Institutions looked to replace lost state revenue in order to be able to continue to provide quality education to their students. Winston (1999, p. 16) cites James (1990) who suggests that if colleges and universities have a single-valued objective function, it is something like "prestige maximization".

In 1978 Pfeffer and Salancik (Pfeffer & Salancik, 1978) described resource dependency theory to help explain how organizations are dependent on resources from external sources of revenue and will fight to acquire the resources needed to survive and function**.** Along with this, in 1980 Howard Bowen's (1980) "revenue theory of costs" described institutions' efforts to raise all of the money they could and also spend all of the revenue that they earned in order to pursue their goals of prestige and excellence. These theories help to explain not only institutions' efforts to replace lost revenue, but also the organizational behavior influencing institutions' privatization efforts.

Public IHE's adaption to their changing external environment was needed since by 2008, of the top 15 public research universities, all but two received less than 25% of their financial support from state appropriations (Lyall, 2011). Lyall describes that of these 15, the University of Michigan, University of Virginia and Penn State received less than 10 percent of their budget from state appropriations. While state funding historically increased after a recession, the Great Recession proved different and institutions began to accept the idea of the new normal or the idea that state funding was not going to increase to previous levels of support. Institutions saw

that state disinvestment in higher education was not just a temporary reaction to the Great Recession, but a more permanent shift that began years ago (Quinterno, 2012, p. 12).

Students and the general public reacted to privatization by increasing their scrutiny on institutions' increasing tuition levels. Public officials and educational leaders began questioning who pays for, who benefits from, and who *should* pay for higher education (Breneman & Finney, 2001). These questions were also reflected in more recent articles such as Johnstone's "*Financing Higher Education*: *Who should pay?"*(2005). In this article Johnstone questioned "how, if at all, can costs - especially to the taxpayer and the student – be lowered without damage to academic quality or to principles of access and participation?" (p. 370). Johnstone also later brought up the question of "what is the proper level of tuition?" (Johnstone, 2006, p. 14). He described that while the answer that individuals may want includes a specific monetary amount or a percentage of instructional costs, "the question of "a proper tuition" cannot be given any kind of useful answer apart from a context of other policies and contextual circumstances" (p. 14).

Johnstone's questions reflect not only the effects of the changing economic environment on higher education but also the increased questioning on the shift in the cost of higher education from the state to students. These types of questions also prompted not only external but internal questions on institutions' resource management strategies. As state budgets for higher education became reduced, institutions were forced to question the amount of tuition revenue they needed in order to continue to provide quality education to their students. Institutions worked to come up with new strategies to provide quality education within their available budgets, and at the same time it was predicted as unlikely that the new strategies would substantially reduce students' costs of higher education (St. John, 2006, p. 265). In general, as institutions considered

how much revenue they needed to replace lost state revenue they were also considering how much total revenue they needed to go towards their instructional mission.

As a result, institutions had to consider the long-term changes in states' base budgets, the increasing competition for state funds, and the political processes that pushed the business models operating most public universities in the US to become unsustainable (Lyall, 2011, p. 1). Ikenberry (2009) also called on institutions to consider whether privatization was "simply a shorthand description of the diminished will and capacity of state government, or does the concept suggest a broader, deeper transformation in the culture of public research universities and the society in which they function?" (p. 5). In general universities were "implored to restructure the way in which they make decisions and to reimagine the manner in which they are funded, relate to their clients, and manage their resources" (Rizvi, 2006, p. 65).

At the same time, not all institutions have the same ability to replace lost revenue. Public AAU institutions are one type of institution that can attain additional revenue by increasing their enrollment, tuition prices, and also increase their non-resident enrollment where these students generally pay even higher tuition rates than in-state students. Public AAU institutions are considered prestigious with high reputations and as a result demand for these institutions has been inelastic. That is, the student demand for these institutions was not affected by the increasing tuition prices. Other less prestigious institutions, however, may not have the ability to replace lost state revenue through the same means as public AAU institutions. This is mainly due to their reliance on tuition revenue from in-state students who are more price sensitive to increasing tuition prices.

While various studies have analyzed the increasing tuition prices to students (Baum & Ma, 2011; Goldstein, 2005a; Kirshstein & Hurlburt, 2012; National Center for Education

Statistics, 2012c; Wellman et al., 2008) along with the decreasing state appropriations (Grapevine, 2013; SHEEO, 2012; The National Governor's Association and NASBO, 2011) an analysis looking at the changing total of state appropriations revenue and tuition revenue that public AAU institutions received per student over time is missing. This would show the changing amount of total revenue that this type of institution had to go towards their instructional mission over time. Along with this, it is currently not known whether public AAU institutions received increasing amounts of total revenue per student in terms of state appropriations and tuition revenue, and whether this a result of increasing the proportion of revenue received from students.

Purpose of the Study

The primary sources of revenue that support public AAU institutions' instructional mission include state appropriations and tuition revenue. This study will examine whether there was an increase in the total of tuition and state appropriation revenue that these institutions received per student. Within this total, this study will also analyze the changing proportions of revenue that these institutions received from the state and from students. The data collected will reflect tuition and state appropriations before and after the start of the Great Recession. Also, for the purposes of this study, both net- and gross- tuition will be examined. The total of state appropriations and *gross*-tuition revenue per student represents the total amount of funding that institutions originally had to go towards their academic mission and institutional financial aid. On the other hand, the total of state appropriations and *net*-tuition revenue per student represents the amount of funding that ended up supporting their academic mission.

As a result of this analysis, this study will attempt to understand whether institutions adjusted their tuition prices as a way to only replace lost state appropriations, or if institutions

increased their tuition income in order to have an increasing amount of total revenue. Therefore, this analysis will attempt to show whether an increase in total revenue was primarily due to an increase in students' contribution towards the cost of education.

Research Questions

This study only includes public AAU institutions. All data was collected through the Integrated Postsecondary Educational Database System (IPEDS) between fiscal years 2003-04 and 2011-12 or the latest year that data is available in order to gather information before, during, and after the Great Recession occurred.

Six research questions will guide this study. The first two research questions will determine whether public AAU institutions received increasing amounts of tuition and state appropriation revenue combined, per student, after the Great Recession:

Research Question 1: What is the change in total revenue acquired per FTE student in terms of state support and *gross*-tuition revenue combined?

Research Question 2: What is the change in total revenue acquired per FTE student in terms of state support and *net*-tuition revenue combined?

Research questions three and four will help to show whether public AAU institutions became increasingly funded by tuition revenue than by state appropriations after the Great Recession:

Research Question 3: When considering the total revenue per FTE student found in the first research question, what is the change in the proportion of the total that came from *gross*-tuition per FTE?

Research Question 4: When considering the total revenue per FTE student found in the second research question, what is the change in the proportion of the total that came from *net*-tuition per FTE?

Research questions five and six will look to understand whether the institutions received a changing amount of total revenue and simultaneously became more heavily funded by students:

Research Question 5: If there was a change in the total revenue per FTE as found in Research Question 1, was there also an increase in the change of the proportion of *gross*-tuition revenue per FTE that made up the total?

Research Question 6: If there was a change in the total revenue per FTE as found in Research Question 2, was there also an increase in the change of the proportion of *net*-tuition revenue per FTE that made up the total?

Summary

Evaluating the changes in state appropriations and tuition revenue received by public AAU institutions provides a new perspective on the amount of revenue that these institutions believed they needed in order to not only continue to provide quality education to their students but also achieve their mission and goals. An analysis specifically targeting this group of institutions is not currently available, which means that this perspective will allow for further examination on the relationship between the state and public AAU institutions. It will also contribute to the body of literature attempting to describe the effects of privatization on public institutions. In the second chapter of this study I will present a review of the literature that will form a framework for this study. In the third chapter I will provide the proposed design and methodology of this research study. The fourth chapter will describe the analysis of the data collected, and the fifth chapter will discuss the implications and conclusions of the findings.

Definition of Key Terms

Cost of Higher Education. Institution's expenditures associated with providing higher education to students. This includes costs such as instruction, salaries for faculty and staff, and those associated with facilities used to provide education to students.

FTE. Full-time equivalent student. This is "a single value providing a meaningful combination of full time and part time students" (National Center for Education Statistics, 2013). IPEDS data products calculate the fall student full-time equivalent (headcount) of the institution's part-time enrollment by multiplying the part-time headcount by a factor. This number is then added to the full-time enrollment headcount to obtain an FTE for all students enrolled in the fall.

Gross-Tuition Revenue. "All revenues from tuition and fees before discounts" (Kirshstein & Hurlburt, 2012, p. 4).

Institutional aid. "Scholarships and fellowships granted and funded by the institution and/or individual departments within the institution, (i.e., instruction, research, public service) that may contribute indirectly to the enhancement of these programs" (IPEDS, 2009).

Net-Tuition Revenue. "The revenue from tuition and fees (including grant and loan aid used by students to pay tuition); institutional student aid that is applied to tuition and fees is excluded" (Kirshstein & Hurlburt, 2012, p. 6).

Price of Higher Education. The dollar amount that a student pays to attend an institution of higher education.

Privatization. "The process of transforming low-tuition institutions that are largely dependent on state funding to provide mass enrollment opportunities at low prices into

institutions dependent on tuition revenue and other earned income as central sources of operating revenue" (Priest et al., 2006, p. 2)

Public Good. In the field of education, referring to higher education as a "public good" means that it "yields broad economic and social returns on state and taxpayer investment" (AASCU Task Force on Making Public Higher Education a State Priority, 2013) or that the public are the primary beneficiaries from individuals attending higher education. However, the field of economics defines public goods as having two distinct aspects: nonexcludability and nonrivalrous consumption (Cowen, 2008). Based on this definition, education is not a pure public good since it is possible to exclude non-payers from attending higher education.

Public Institutions of Higher Education. An educational institution whose programs and activities are operated by publicly elected or appointed school officials and which is supported primarily by public funds. (National Center for Education Statistics, 2013).

*Recession. "*A recession is a period between a peak and a trough, and an expansion is a period between a trough and a peak. During a recession, a significant decline in economic activity spreads across the economy and can last from a few months to more than a year" (NBER, 2013, para. 1).

State Appropriations. "Revenue received by an institution through acts of a legislative body, except grants and contracts. These funds are for meeting current operating expenses and not for specific projects or programs" (National Center for Education Statistics, 2013).

Tuition. "The amount of money charged to students for instructional services" (National Center for Education Statistics, 2013)**.**

Tuition Discounts. "The extent to which institutions use tuition paid by some students to discount the tuition paid by others" (Kirshstein & Hurlburt, 2012, p. 4).

Tuition Revenue. Revenue that institutions receive from students in the form of tuition in exchange for instructional services.

Chapter II

Review of Related Literature

The purpose of this study is to better understand the privatization efforts of public AAU institutions by examining the changing proportions of revenue coming from tuition and state appropriations. This study will also simultaneously look at whether there was a change in the total of tuition and state appropriations revenue that public AAU institutions received per student. Therefore, the following review of literature covers topics related to four-year public institutions of higher education and their changing resource acquisition as they looked for ways to financially adjust to their changing external environment. This includes topics such as the declining state support for higher education, increasing tuition prices, and the "new normal" or the discussion that recognizes how institutions are now part of an environment where state support is not expected to return to previous levels.

Furthermore, since this study is based on using resource dependency theory as a lens for analysis of public IHEs, the first section of this chapter gives background information on resource dependency theory and describes how organizations are dependent on their external environment for resources. The second section of this chapter reviews the Great Recession and the effects that it has had on public IHEs. The third and fourth sections of this chapter describe the changes in state appropriations and tuition revenue supporting public IHEs. The fifth section reviews the transformation in the view of higher education as a public good to that of a private good. Finally, the last section covers public IHEs' efforts to adjust and adapt to their changing external environment in the new normal.

Theoretical Background: Resource Dependency Theory

Resource dependency theory (RDT) first emerged through Pfeffer and Salancik in 1978 through a book titled *The External Control of Organizations: A Resource Dependence Perspective*. This perspective arose from what the authors considered as a lack of questioning of the acquisition of resources for organizations along with the lack of any focus on organizations' environment. This volume, therefore, is stated as focusing on the discussion of the link between organizations and their environment along with the idea that organizations work to manage to survive (p. 2).

Resource dependency theory "seeks to explain organizational and inter-organizational behavior in terms of those critical resources which an organization must have in order to survive and function" (Johnson, 1995, p. 1). Furthermore, the key to survival is stated by Pfeffer and Salancik (1978) as the ability to acquire and maintain resources. This is described as difficult since organizations are not self-contained but in turn are dependent on the other organizations that make up their environment. Organizations ultimately are "linked to environments by federations, associations, customer-supplier relationships, competitive relationships, and a social-legal apparatus defining and controlling the nature and limits of these relationships" (p. 2).

Pfeffer and Salancik state four key concepts that helped them to develop the perspective for this theory: organizational effectiveness and efficiency; the organizational environment; organizational constraints and boundaries; and the role of management. The first key concept, organizational effectiveness and efficiency, is described as means for survival and success and is defined as an "external standard of how well an organization is meeting the demands of the various groups and organizations that are concerned with its activities" (1978, p. 11). It represents the usefulness of an action and of the resources that an organization is using.

Organizational efficiency, however, is an internal standard of performance where "efficiency is measured by the ratio of resources utilized to output produced" (p. 11). Organizations have external and internal goals that they try to meet in order to remain successful which means that measuring organizational effectiveness and efficiency allows them to attempt to quantify their success.

The second concept, the organizational environment, is described as containing "every event in the world which has any effect on the activities or outcomes of the organization" (p. 12). It also contains the aspect of interdependence where organizations are dependent on others for their survival. Interdependence helps to define the relationships between organizations in an environment and can ultimately help to define whether an organization can achieve its desired outcomes (p. 41). This is further described as a consequence of the open-systems nature of organizations and acknowledges that organizations are dependent on aspects of their environment for resources.

Organizational constraints and boundaries is the third concept and is described as helping to understand the organizational environment. The authors state that almost all behavior is constrained, and the social control of organizations determines the extent to which an organization chooses to respond to certain demands over others. The authors state that "an organization's attempts to satisfy the demands of a given group are a function of its dependence on that group relative to other groups and the extent to which the demands of one group conflict with the demands of another" (p. 45). Furthermore, Pfeffer and Salancik describe three factors that help to measure the degree of dependence on another organization. The first is the extent to which the resource is needed by the organization for survival. The second is the extent to which the organization has control over the resource allocation and the degree of autonomy that they

have over the uses of the resource. Third is the availability of that resource by multiple or a relatively few organizations such as a monopoly. These are important to consider since the degree of dependence results in an organization having power over another since there is asymmetry in the exchange relationship (p. 53).

Finally, the role of management is the last concept used to help describe the foundation of resource dependency theory. Managers are described as helping to influence the actions of others which is a way to help determine or manipulate their own environment (p. 18). Managers also have the responsibility of recognizing the social context of their constraints and deciding how much they are going to adjust to these pressures. This is described as difficult to do since it "requires skill to perceive and register accurately one's social context and to adjust organizational activities accordingly" (p. 19). This process of interpretation is important not only because "measurement affects behavior, but that what gets measured focuses activity and behavior" (p. 76). Also, the social context that is confronting the organization is difficult to alter which makes the role of management one that needs to be sensitive to the relationship between the organization and the environment (p. 19). This is an important point since "many organizational troubles stem from inaccurate perceptions of external demands or from patterns of dependence on the environment" (p. 20).

Management of dependence. There are three main strategies offered by Pfeffer and Salancik to which "organizations attempt to restructure the conditions of interdependence with its environment" (p. 113). The first is described as working to attain more predictable resources by attempting to control the exchanges. This means that the organization is looking to gain awareness about the demands placed on them. Second, the organization may choose to alter their own interdependence. This can be done by either adapting to the environment, or acting on

the environment in order to change it. Kotler's (1967) "marketing concept" is used to describe organizations that change to fit the environment. This is where "the firm assesses the needs of the marketplace, and then adapts its product and production process to fill some of these needs" (p. 106). Lastly, the third strategy describes organizations attempt to gain autonomy by reducing their reliance on other organizations for resources. Johnson (1995) determines that these three strategies help to "suggest that organizational leaders seek ways to mitigate the disruptive effects of external dependence" (p. 7) which then highlights how organizations are driven by a need to adapt.

In general, organizations are attempting to maximize their organizational autonomy by managing their external constraints and dependencies (Johnson, 1995). Organizations not only fight to attain the necessary resources in order to be successful, but also "attempt to manage the constraints and uncertainty that result from the need to acquire resources from the environment" (Pfeffer & Salancik, 1978, p. xxiv). This makes organizations along with the people in them inter-dependent with other organizations (Johnson, 1995) and further forces organizations to transact with elements of the environment (Pfeffer & Salancik, 1978, p. 43). Survival is therefore based on their internal adjustments and coping methods to external pressures.

Moreover, Slaughter and Leslie (1997) describe resource dependency theory as suggesting that organizations seek new resources when they are deprived of critical revenues and that "internal behaviors of organizational members are understood clearly only by reference to the actions of external agents" (Slaughter & Leslie, 1997, p. 68). In all, this theory helps to frame the "relationship between the actions and behavior of an organization and its environment" (Johnson, 1995, p. 16), and suggests that organizational behavior is only understood when the external environment is also taken into consideration.

As public IHE's main sources of revenue come from state appropriations and tuition, they are dependent on their external environment for resources. Goldstein (2005b) explains how an institution's budget is tied to general economic and political influences, which means that these influences need to be taken into consideration since they can affect the amount of revenue that is available to an institution. Goldstein further states that "unless an institution's budget can withstand the pressures created by external forces, its survival may be in jeopardy" (2005b, p. 13). Therefore, this interdependence helps to define the relationship that institutions have with the environment, and in turn can help to explain the resulting behavior of the institutions.

The Great Recession

A recession is defined by the National Bureau of Economic Research (NBER) as a "significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales" (Business Cycle Dating Committee, NBER, 2003). Within this definition there are many indicators that are evaluated in order to decide whether a recession is occurring. In general, a recession is a contraction or a "period of declining economic activity" (Nordhaus, 2002) and the NBER is the organization that ultimately defines whether or not the economy is going through a recession.

Every decade since the 1970s has opened with a recession (Breneman, 2002) where each recession that the United States has experienced has had "different causes, effects, and ramifications" (2002, para. 3). Also, the degree to which states are affected by recessions is tied to "state-level changes in the economy (which often differ from national trends), the different ways in which economic changes affect each state's tax system, and legislated changes" (Dadayan & Boyd, 2013, p. 11). The Great Recession, however, which began in December 2007

and ended in June 2009, put the states through the "most severe fiscal crisis since the Great Depression" (McNichol, Oliff, & Johnson, 2012, p. 1; Willis, 2009; Zumeta & Kinne, 2011) since it had extreme effects on state revenues (NCSL Fiscal Affairs Program, 2010).

A report written by the National Governor's Association and the National Association of State Budget Officers (2009) described the severity of the Great Recession by stating that "more than half of the states decreased their general fund expenditures in fiscal 2009, and over two-thirds of states enacted fiscal 2010 budgets with general fund spending lower than the previous year" (2009, p. vii). Along with this, their report described that there was a 5.4 percent decrease in state general fund expenditures in fiscal year 2010 where before this the only other time that the general fund declined was in 1983 by 0.7 percent. Moreover, in 2008 and 2009 states had five straight quarters of decline in tax revenues (Dadayan & Boyd, 2013). In all, during the Great Recession the states experienced the largest collapse in state revenues on record (McNichol et al., 2012).

Even though the recession officially ended in 2009, the states did not begin to show signs of recovery until 2011. McNichol et al (2012) continue to describe that by fiscal year 2012, 42 of the states had closed or were working to close $103 billion in shortfalls which came on top of the gaps that the states faced in fiscal years 2009 through 2011. They explain that "these gaps are all the more daunting because states' options for addressing them are fewer and more difficult than in recent years" (2011, para. 4). So even with the beginning signs of recovery in 2011, by 2012 the effects of the recession continued to negatively affect states. This was also reflected in how the "demand for goods and services (actual GDP) was about $985 billion or 5.9 percent less than what the economy was capable of supplying" (Center on Budget and Policy Priorities, 2013, para. 4). Furthermore, The Center on Budget and Policy Priorities continues to

describe that by January 2012, unemployment was at 3.2 million which was 2.3 percent lower when compared to the beginning of the recession. This meant that the job loss during the Great Recession was much larger than what was experienced in other recessions.

The Recovery Act was a way for Congress to help respond to the economic crisis by providing funds with the goal of preserving and creating jobs along with helping to spur economic activity (U.S. Government, n.d.). McNichol et al also show that these funds helped to raise GDP and lower unemployment when compared to predictions as to how these rates would have been without the Recovery Act. Funding was provided during fiscal years 2009, 2010 and 2011 and largely expired at the end of fiscal year 2011.

While this federal funding helped to mitigate the effects of the recession, "its expiration in the last year had a catastrophic effect, making 2012 the worst year since the downturn began for cuts in funding for services" (McNichol, 2012, para. 1). Even though there were gains in state revenue over the past three years, by the third quarter of 2012, total tax revenues collected (in inflation adjusted terms) by the states was 4.4 percent lower than what was collected in the same quarter in 2008 (Dadayan & Boyd, 2013).

By fiscal year 2013, the states are expected to experience smaller total shortfalls than what was experienced the past few years (Oliff, Mai, & Palacios, 2012). However, while conditions are expected to improve in fiscal year 2013, in 2012 thirty-one states were still working on a total of $55 billion in shortfalls (2012, para. 6). These shortfalls were the result of the previous year's budget gaps, and were "still very large by historical standards, especially four years after the recession ended" (2012, para. 17). In order to deal with the shortfalls, the states took various measures which included tax increases, cuts in public services, and reductions in employee compensation (Dadayan & Boyd, 2013). Unfortunately, these cuts were especially

difficult for some individuals since "recessions generate new spending demands as more people become eligible for safety net programs like Medicaid and Temporary Assistance to Needy Families" (Pattison & Eckl, 2010, p. 6).

State Financing of Higher Education

State financial support of higher education institutions began with public allocations to private, largely church-chartered institutions (Heller, 2006b). Harvard, Yale and William and Mary were the first American colleges and were initially financially supported by their colonies (Geiger, R. L., 2005). Later, support to higher education also included using general tax revenues. It was not, however, until after the Civil War that the federal government took more of an interest in the national social and economic development (St. John & Wooden, 2006). This interest is reflected in the passage of the Morrill Land-Grant Act of 1862 where the federal government provided land grants to states where they could in turn sell the land for the creation or expansion of public universities (Heller, 2006a). This resulted in the creation of the first real "public" institutions where by the end of the nineteenth century, public institutions were primarily funded through revenues from land grants, state appropriations, and general fund tax revenues.

Before World War II, "states were largely responsible for public subsidies to public higher education in the form of low tuition" (Goldstein, 2005b, p. 31). For many decades, state support for higher education was reliable which allowed administrators to create predictable budgets with regards to their anticipated state funding. By the 1980s, however, there was increasing volatility with regards to state funding which also increased dramatically in the 1990s (Doyle & Delaney, 2009). State funding continued a pattern of increasing support to higher

education, but the "recession that started in 2008 reduced state revenue and ended the growth in state and local support that was achieved between 2004 and 2008" (SHEEO, 2011).

While articles and reports have described the changing patterns in state support in terms of different categories of institutions such as public four-year institutions or public research institutions, there are no studies that specifically describe the funding patterns of state support to public AAU institutions. The 34 public AAU institutions form a smaller and more specific subset within not only public institutions but also within public, four-year research institutions. Therefore, the following section refers to public institutions of higher education and also public research institutions in order to give a description of the changing levels of state support allocated to these institutions.

State funding level patterns. Patterns of state support for public higher education show that appropriations increased until 2008, reached a peak in this year and then proceeded to decline (Grapevine, 2013; SHEEO, 2012; The National Governor's Association and NASBO, 2011). Specifically, a report written by the State Higher Education Executive Officers (SHEEO, 2012) describes (in inflation adjusted terms) that state appropriations along with local government support was at $31.4 billion in 1986, $47.8 billion in 1996, and $88.8 billion by 2008. This decreased to $88 billion in 2009 and declined to $87.5 billion in 2011. As the recession hit in 2008, state support towards higher education began to decline ending the pattern of increases towards higher education.

With regards to public four-year institutions, the amount of state appropriations allocated was at $46 billion in 2005-06 (in 2011-12 dollars), $53 billion in 2007-08, and after this year began decreasing in which it reached $49 billion by 2010-11 (National Center for Education Statistics, 2012a, p. 401). This is an 8.1 percent decrease over three years. Moreover, NCES

continues to report that between 2005-06 and 2010-11, state revenue per full-time equivalent student decreased from $9,102 per student to $7,970. This is a $1,132 or 12.4 percent decrease per student. Furthermore, state support to public four year institutions constituted 23 percent of IHE's total revenues in 2005-06. This is described as decreasing to 19 percent by 2010-11.

In all, by 2010 public funding per full-time equivalent (FTE) student reached a decade low (Desrochers & Kirshstein, 2012) and "for the first time, public research and masters institutions generated more revenue from net tuition than from state and local appropriations" (2012, p. 1). Furthermore, SHEEO (2011) describes in inflation-adjusted terms that state support "continued to decrease between 2010 and 2011" (2012, p. 7) and these figures exclude appropriations for research, agricultural extension, and medical education. Between 2007 and 2012 eleven states cut their funding by more than one third per student, and two states cut their higher education spending per student in half (Oliff et al., 2013a). Moreover, the decrease in dollars per FTE is stated as being driven by an increase in enrollment levels between 2009 and 2011.

A report written in 2011 states that the average amount of state funding allocated to higher education as a percentage of a state's total budget was on average 10.6 percent between 1996 and 2011 (Pattison & Eckl, 2010, p. 4). This value is stated as peaking at 11.4 percent in FY1999-00 which was the height of the dot com boom, and fell to a low of 10 percent in 2009-10 during a recessionary period. Recently, ARRA federal funds helped to support higher education and were considered emergency funding to the states. In 2009, $39.5 million was provided to support public elementary, secondary, and higher education (U.S. Department of Education, 2009) and the total amount of funding provided to higher education between 2008-09 and 2010-11 was $9.7 billion (Quinterno, 2012).

All of these figures show that funding for higher education is heavily influenced by the states' fiscal situation (Delaney & Doyle, 2011; Hovey, 1999b; Zumeta & Kinne, 2011). This can also be seen in patterns that show how individual state support to higher education "varied along with states' economic circumstances" (Zumeta, 2009, p. 6) where states increased their funding to IHEs during good fiscal periods, and cut this funding significantly during recessionary periods (The National Governor's Association and NASBO, 2011). Furthermore, the NGA cites Hal Hovey in saying that states use higher education as a "balance wheel" during economic downturn since "states cut higher education funding in bad fiscal times (allowing significant tuition increases to make up for the reductions) but then dramatically increase higher education spending when state revenues rebound" (p. 5).

Competition for funds. Higher education is the largest broadly discretionary item in the state general fund budget (Heller, 2006a; Hovey, 1999a), making it one of the most vulnerable to budget cuts (Zumeta, 2004). Institutions have had to increasingly compete with other services (Callan, 2002, p. 9; Cohen & Kallison Jr., 2010; Goldstein, 2005a; Hossler, Lund, Ramin, Westfall, & Irish, 1997; Weerts & Ronca, 2006; Wellman et al., 2008; Zumeta, 2004, p. 83) which includes areas such as K-12 education, welfare, Medicaid, corrections, infrastructure, and security. Part of this is due to the perception that higher education is able to absorb budget cuts since they can reduce their spending levels in areas such as limiting the number of courses offered or reducing their class size. Also, institutions are able to increase or maintain spending by shifting the proportion of the costs to students through increasing tuition income (Doyle & Delaney, 2009, p. 62; Hovey, 1999a; Zumeta, 2009).

The decline in state support to higher education was a result of increased pressures on state tax revenues to fund Medicaid, elementary and secondary education and the criminal justice

system (Ehrenberg, 2005, p. 1). Looking to the near future, a report written by Oliff et al (2012) describes how states will continue to have an increasing obligation to education and health care due to increasing demand for services. This statement is based on the estimate that there would be an additional 540,000 K-12 students and 2.5 million additional public higher education students expected to enroll in 2012-13 when compared to 2007-08. Further, 4.8 million more people were "projected to be eligible for subsidized health insurance through Medicaid in 2012 than were enrolled in 2008" (2012, para. 3). However, what has resulted is that "the stronger the competition for resources in a state, the smaller the share allocated to any one societal service" (Goldstein, 2005a, p. 33). For public IHEs, this means that they will need to consider the increasing number of students applying to higher education and at the same time factor in the fact that they may not receive an increase state support in order to deal with the costs associated with the increased enrollment.

Tuition Revenue

Tuition rates have increased over time (Baum & Ma, 2011; Goldstein, 2005a; Kirshstein & Hurlburt, 2012; National Center for Education Statistics, 2012c; Wellman et al., 2008). Toutkoushian (2001, p. 12) cites Halstead (1998) as blaming the increasing tuition prices to four main factors: (1) increased student responsibility to pay for their education, (2) inflation in the prices of goods and services needed to produce educational outcomes, (3) an increase in the resources employed per student, and (4) growth in student aid programs. The National Center for Education Statistics (2011) stated that at public four-year institutions, in-state tuition and fee rates charged to students were $1,860 in 1980-81 (in constant 2009-10 dollars). This increased by $2,324 (142%) between 1980-81 and 1990-91, increased again by $3,830 (97%) between 1990-91 and 2000-01, and further increased by $6,729 (91%) to $14,090 between 2000-01 and

2010-11. Toutkoushian (2001) stated that by 2001 it was not only clear that tuition was increasing, but that the price of attending public institutions as a percentage of family income also was increasing.

Like tuition, enrollment in public institutions of higher education has increased over the years (Callan, 2002; Desrochers & Wellman, 2011; Heller, 2006a; Johnstone, 2005; Wellman et al., 2008) and has also shown more recent patterns of increases (Baum & Ma, 2011; Heller, 2006a; Jenny & Arbak, 2004; SHEEO, 2009, 2012; Toutkoushian, 2001). NCES (2012b) reported that at public four-year institutions total undergraduate fall enrollment was 3.4 million in 1970 which increased by 689,091 (20%) by 1980. This further increased by 598,758 (15%) between 1980 and 1990, and by 129,140 (3%) between 1990 and 2000. The decade with the largest increase in enrollment was between 2000 and 2010 where enrollment increased by 1.64 million (34%) to 6.5 million. Also, predictions for future enrollment in higher education include a 12 percent increase in full-time enrollment between 2010 and 2021 (Hussar & Bailey, 2013).

Within this increased demand is also an increase in the diversity of the student population in the enrollment numbers of Latino/a, Black and Asian student groups (Desrochers & Wellman, 2011; Quinterno, 2012; Wellman et al., 2008). What is now apparent are the "tremendous shifts in the racial landscape particularly in terms of student body composition" (Altbach, Chang, & Lomotey, 2005, p. 515). Furthermore, patterns show that there is increasing enrollment demand in higher education during recessions (SHEEO, 2012; State Higher Education Executive Officers, 2012) where these increases have "been accentuated by the growing economic importance of postsecondary education" (SHEEO, 2012, p. 8). The Great Recession proved no different, and future demand for higher education is expected to continue (Tuby, 2011) and increase (Quinterno, 2012) over the long-term.

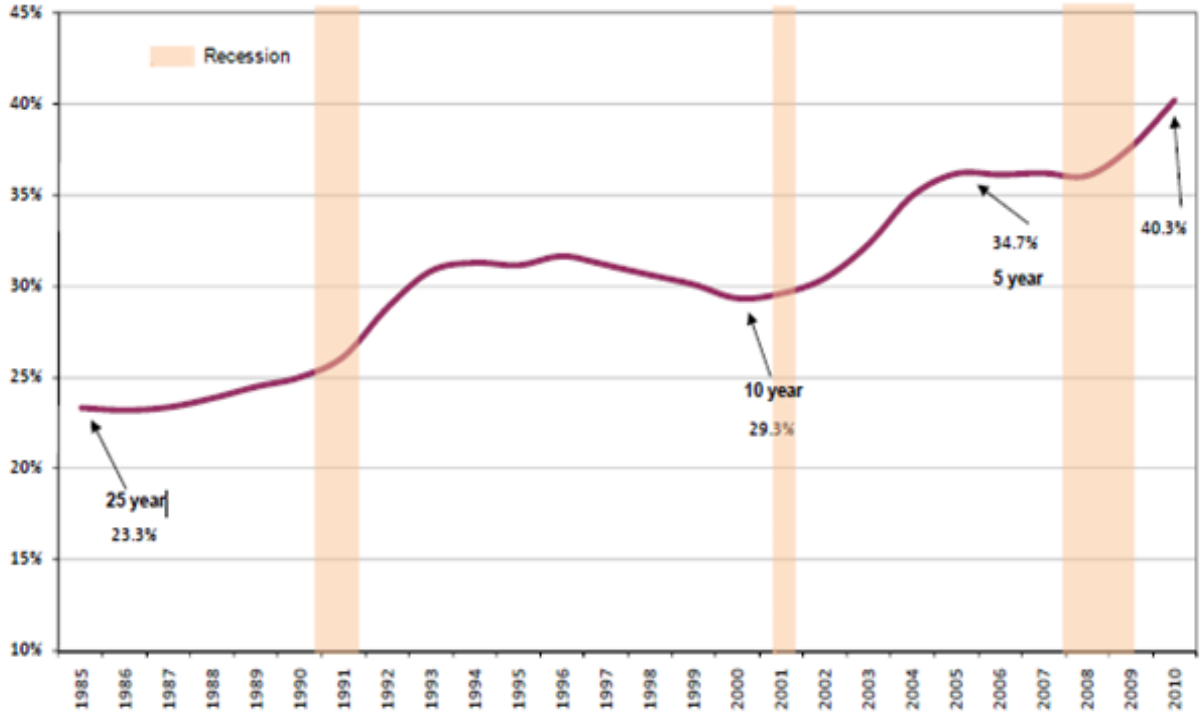
Tuition as a form of revenue. Public IHEs have various sources of revenue which include tuition, state appropriations, grants, contracts, and revenue from auxiliaries such as bookstores and dormitories. Many of these sources, however, are earmarked for non-academic purposes (Desrochers & Kirshstein, 2012). The sources of revenue that can go directly towards instruction usually include tuition and state support. This being said, the increase in enrollment significantly increased the revenue available to support higher education (SHEEO, 2009, p. 10). This is because with the increasing number of students enrolling, there subsequently was an increase in the net tuition revenue received by institutions (SHEEO, 2012). As a result, total net tuition revenue (in constant 2011 dollars) at public institutions was $17.4B in 1986, $30.6B in 2001, $41.6B in 2006 and reached $56.3B by 2011 (SHEEO, 2012). These increasing amounts reflect both increasing enrollment levels and tuition prices in higher education.

The SHEEO (2012, p. 21) report further described the percentage of an institution's educational revenue that is made up of net tuition revenue. Net tuition excludes any aid allocated to students and therefore reflects revenue that is available to an institution to support instruction (excluding medical students). As reflected in Table 1.1 below, the report stated that net tuition accounted for about 23 percent of an institution's educational revenue in 1986, which was directly after the recession of 1981-82. Net tuition revenue remained around this level for the rest of the 1980s. The report further stated that after the recession of 1990-91, net tuition grew to 31 percent and remained at this level throughout the 1990s, then increased again to 35 percent in the three years following the recession of 2001. Finally, the percentage of education revenue made up of net tuition increased to a high of more than 40 percent in the years following the recession of 2008. This reflects how "the rate of growth in net tuition revenue has been particularly steep during periods when state and local support have fallen short of inflation and

enrollment growth, typically during and immediately following economic recessions" (2012, p. 19).

Table 1.1

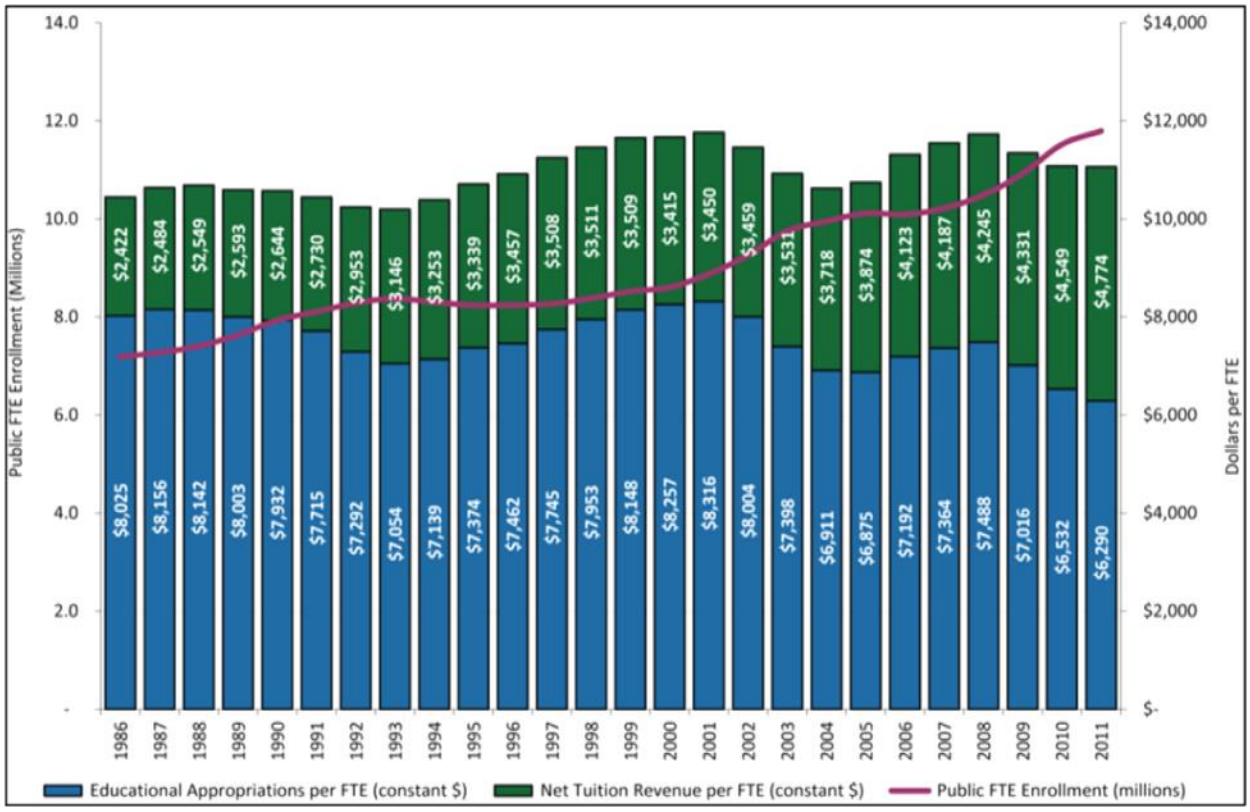
Net Tuition as a percent of public higher education total educational revenue, U.S., Fiscal 1985-2010.
Source: SHEEO, 2012



In summary, institutions increased their tuition prices in order to keep up with the decreases in state funding (Boatman & L'Orange, 2006; Heller, 2006a; Johnstone, 2005, 2006; Paulsen & Smart, 2001; SHEEO, 2012; Wellman et al., 2008; Zumeta, 2009) which then shifted the financing of higher education from the state to the students (Geiger, 2000; Heller, 2006a; Johnstone, 2006; Oliff et al., 2013a; Quinterno, 2012). This is reflected in Table 1.2 below that shows how with the increase in FTE enrollment between 1986 and 2011, revenue in the form of state support per FTE decreased as net tuition revenue per FTE increased.

Table 1.2

Public FTE Enrollment and Educational Appropriations per FTE, U.S. Fiscal 1986 – 2011
Source: SHEEO, 2012



Net-tuition revenue. Net-tuition revenue is equal to tuition revenue less any institutional aid that is provided to students. Institutional aid is primarily used to promote access for underserved populations and also for the use of enrollment management through tuition discounting (Heller, 2006b, p. 23). In general, the "emphasis on access to higher education required that these institutions evolve and adapt to meet the needs of all students" (AASCU Task Force of Making Public Higher Education a State Priority, 2013, p. 7). Even so, the amount of institutional financial aid given to students has a direct impact on net tuition revenue. For example, increasing the number of enrolled low-income students in order to fulfill goals of access usually requires need-based financial aid, reducing an institution's net revenue. Along with this, merit-based financial aid can be used to help institutions increase the academic profile

of their students. At a time when SAT scores can help to describe the quality of an institution, merit aid can help an institution to achieve their desired academic level of their students. This does, however, come as an expense to the institution in the form of financial aid.

Furthermore, offering financial aid to students is a form of revenue management for institutions especially in the current tight financial environment (Hillman, 2012, p. 264). Therefore, there is a complicated relationship between tuition, enrollment, and the composition of the student body in terms of quality, diversity, and financial aid (Breneman, 1994). This is because institutions are using financial aid "so that aided students not only enhance institutional prestige but they can also enhance institutional revenue goals" (Hillman, 2012, p. 264). Due to this, enrollment management tries to ensure coordination between recruitment and admissions goals along with the use of financial aid as a means to not only satisfy enrollment goals, but also "participate in and inform the campus dialogue of the role and impact of financial aid on the institution's mission and academic goals" (Kalsbeek & Hossler, 2008, p. 3).

Setting tuition prices. As institutions ask themselves "what is the proper tuition?" they not only have to take into consideration their external environment, but also look internally to their current operations and financial situation. It is also important that they try to understand the elasticity of student demand along with their institution's market position. Therefore, they consider not only the economic environment but also evaluate student enrollment patterns "in the context of the recent economic crisis – so that they can make decisions about the number of students to admit, the allocation of campus-based financial aid, the institution's budget, and the campus's course offerings" (Dadashova et al., 2011, p. 9). Goldstein (2005a) states that factors involved in the decision making to set tuition include: tuition at peer institutions, other revenues

such as state appropriations, student financial aid needs, tradition or philosophy of the institution, and the general economic conditions.

Furthermore, Goldstein also states that "tuition levels are determined by the amount of revenue needed to balance the budget within the constraints of the institutional philosophy and market position" (p. 38). Therefore, institutions are also interested in controlling the characteristics of their incoming freshman class as a way to adjust the amount of incoming revenue. As nonresident domestic and international students typically have higher tuition rates than resident students, current trends in enrollment management now show increasing numbers of nonresident students in order to deal with the decrease in state appropriations and to help bring in additional revenue. At the same time, states expect a commitment from public institutions to enroll a certain amount of resident students, which means that they will still be committed to enrolling a larger proportion of resident students than nonresident students.

Higher Education as a Public or a Private Good

It is generally accepted that in the field of education referring to higher education as a "public good" describes that it "yields broad economic and social returns on state and taxpayer investment" (AASCU Task Force on Making Public Higher Education a State Priority, 2013). Dill (2005, p. 5) similarly described that the public good in higher education refers to the idea that graduates provide human capital in areas such as contributions to the economy, greater civic participation, and increased social cohesion. However, the economic approach to defining "public goods" describes public goods as having two distinct aspects: non-excludability and non-rivalrous consumption (Cowen, 2008). Based on this definition provided by the Library of Economics and Liberty, education is not a pure public good since it is possible to exclude non-payers from attending higher education. For the purposes of this study, the discussion of higher

education as a public good reflects the idea that society is the primary beneficiary, and as a result education described as a private good reflects the idea that individuals themselves are the primary beneficiaries.

Higher education was traditionally defined as a public good (Ehrenberg, 2005, p. 4). Altbach states that "the unwritten pact between society and higher education that provided expanding resources in return for greater access for students as well as research and service to society has broken down, with significant implications for both higher education and society" (2005, p. 15). The idea of higher education as a public good used to be reflected in the absorption of the majority of the costs by states and was eventually replaced with the idea that individuals are the primary beneficiaries of higher education and therefore should pay for the majority of the costs (Hossler, 2006, p. 111; Johnstone, 2006, p. 7). Dennison (2003) describes this as a reversal in the rationale for public higher education where the "new argument rationalizes the reality of inadequate state revenues to satisfy all needs" (2003, p. 12).

Those that see higher education as a private good believe that individuals are the primary beneficiaries of higher education since it provides them with the opportunity for upward mobility and personal development (Tandberg & Griffith, 2013). To individuals, higher education provides not only preparation for public life, but also a means to better themselves and the necessary tools to solve public problems (Meyer, 2006). Furthermore, education can decrease prejudice in individuals, enhance their knowledge of world affairs and increase their social status (Porter, 2002). Higher education also allows individuals to develop personal and professional identities which can result in changes in values and attitudes (Myyry, Juujärvi, & Pesso, 2013).

Others recognize higher education as a public good since it primarily benefits society in that "businesses and the larger economy prosper from access to skilled workers" (Quinterno,

2012, p. 4). Wellman et al. (2008) state that a "well-educated citizenry, which is essential to democracy, leads to an educated workforce that drives economic growth" (2008, p. 9) which then results in an improvement to the economic health of the state (Tandberg & Griffith, 2013; Weerts & Ronca, 2006). This is because higher education provides benefits to the whole community in the form of attracting employers who pay competitive wages to their employees, who then can buy goods and services from others in the community which then benefits the area's economy (Oliff et al., 2013a, p. 16). Furthermore, higher education is "demanded by the increasing complexity of governance, and the political and civic conviction that social problems are to be analyzed and solved – not just in traditional ways, but also with new solutions emanating from increasing knowledge and training" (Johnstone, 2006, p. 34). In all, benefits to society resulting from increasing the number of graduates from higher education include increased productivity, reduced crime, and increased consumption which end up positively affecting the economic and social status of the country.

Even as the view of higher education has changed to a private good, Johnstone (2006, p. 50) claims that there needs to continued support of public revenue to higher education. This means that institutions need to respond to external demands in order to continue receiving financial support from both the state and students. In response to this situation, a report written by AASCU (2013) calls for the "creation of a new compact between state government and public higher education in order to fully leverage the capacity of public colleges and universities to strengthen the economic security of our states and nation" (2013, p. 15). The compact includes a description of next steps for institutions, the state, and policy makers that will help to bridge the divide in perceptions about higher education. They state that the "focus and balance of agreed upon outcomes should vary by institution and be firmly rooted in the particular needs of

each state, consistent with national goals, and in accord with the fundamental greater societal purposes of higher education in a democracy" (2013, p. 21).

Changing demands. The demands placed on public IHEs have changed as the costs of higher education shifted from the state to the student and the view of higher education simultaneously changed to that of a private good. IHEs place pressures on themselves to consider the demands of students, faculty, staff, as well as the state's governor, legislature, taxpayers and potential students. Essentially, higher education officials are tightrope walkers existing at the boundary between IHEs and these constituencies (Chaffee, 1989, p. 3). The concerns of some stakeholders include higher education's competitiveness in the global economy, declining levels of degree attainment and also declining levels of higher-level literacy on both domestic and international assessments (Ewell, 2007, p. 13). In all public institutions have pressure to respond to the "increasing societal requirement that colleges and universities must become more responsive to national economic needs and new governmental demands for increased performance" (Alexander, 2000, p. 411).

Demands on public IHEs include to become more efficient and effective (Birnbaum, 2001), to manage their costs in order to maintain or increase access and quality (Massy, 1996), and to also become more accountable and productive with their use of publicly generated resources (Alexander, 2000; Clark & d' Ambrosio, 2006). This means that IHEs have pressures to increase revenue, reduce expenses, improve quality, and enhance reputation (Davis, 2003) all at the same time. Therefore, institutions are not only looking for financial stability, but also ways to satisfy their institutional goals by continuing to provide quality education and social mobility to their students along with helping to improve state and local economies. These

demands are thought of as pushing institutions so that they can be engines for social mobility and therefore help transform the current economic situation.

The various demands, however, are also asking institutions to restructure the way they make decisions, reimagine how they are funded, relate to clients and manage their resources (Rizvi, 2006). As institutions look into how to respond to these demands, they are carefully considering their budget since it underlies quality, access and efficiency (Johnstone, 2005). Zumeta (2004) furthers this idea by acknowledging the challenge that institutions have in trying to maintain quality while dealing with their budget. He also states that considering the quality of education that is provided to students is important when making budget decisions since "knowledge and the ability to use it are essential to both individual success and the economic prospects of states and the nation" (2004, p. 90).

Adaption to the "New Normal"

The "new normal" describes the reality that the current and future economic environment for IHEs includes one with steady or declining state appropriations. It also implies that institutions will need to learn to operate with their current levels of state appropriations since this amount is not expected to increase to previous levels. This situation is considered a "new" normal since institutions over the past 25 years were able to recover from previous recessions by regaining any lost state support. While patterns of recovery were in place during 2006 through 2008 or right before the Great Recession started, by 2009 or right after the recession ended, state support per student had not yet returned to levels reached right before the recession of 2001 (SHEEO, 2009, p. 14). The recovery from the recession that started in March 2001 was cut short by the onset of the Great Recession (The National Governor's Association and NASBO, 2011).

Therefore, the current inability for states to return to their pattern of increasing funding to higher education after times of financial stress (Pattison & Eckl, 2010, p. 8) means that public universities can expect state support to continue to stagnate or even decline (Bogaty & Nelson, 2013, para. 6). The pattern of state disinvestment in higher education "is not a temporary consequence of the Great Recession but rather a sustained, decades-long shift that has transformed the nature of higher education" (Quinterno, 2012, p. 12). The National Governor's Association (2011) describes this shift as one that includes slower than anticipated state spending on higher education than in past decades, a decline in the priority that states place on funding higher education, and an environment where "state higher education support might be permanently and unalterably different from the past" (p. 1). As a result, institutions have questioned the sustainability of their short and long-range forecasts (Tuby, 2011, p. 3).

When looking forward at states' economic situations, some notice that while state economies are beginning to improve, the current rate of recovery is still "too slow to return to full health any time soon" (Oliff et al., 2013a, p. 18). Moreover, K-12 education, health care, infrastructure, and public safety account for more than 80 percent of state and local government funding where the rest is allocated towards environmental protection, the court system and other areas that are difficult to cut (Oliff et al., 2013a). This means that there is only a small and declining portion of the state budget available for higher education. SHEEO also describes that "the depth and breadth of the 2008 recession and the challenges of financing health care and retirement costs for an aging population leave little room for hope that trend can easily be reversed" (2012, p. 12). Public IHEs are therefore forced to plan and budget within these constraints.

The inability for institutions to recover state support is coupled with the issue of a history of increasing tuition prices charged to students**.** Therefore, the new normal not only includes concerns from the perspective of IHEs, but also student concerns about the increasing tuition levels. Goodman (2009) describes how the industry's largest long-term risk lies in potentially reaching a "tipping point in a long trend line of rising net tuition revenue"(Goodman, 2009, p. 13). Further described is how the trend of increasing tuition has not been disrupted by previous recessions but that the Great Recession could prove different. Reasons for this include that tuition and room and board charges are at their highest levels, where there now could be "psychological barriers to hiking tuition still further" (Goodman, 2009, p. 13). Along with this, Moody's (2011) describes how the increasing price sensitivity to tuition rates forces institutions to consider the potential "price ceiling" when setting tuition rates. This price sensitivity is in part due to a prolonged period of depressed family income and household net worth (Bogaty & Nelson, 2013).

Callan (2002) views recessions as testing the nation's values and priorities along with forcing states and colleges to choose what they want to protect. This being said, states now face the question of how to meet the growing needs of its people and communities (SHEEO, 2009) since they are responsible for providing public higher education to the citizens in this country (Callan, 2002, p. 2). The decreasing state support to public higher education during the Great Recession placed the relationship between states and public IHEs at a turning point where the policy choices that they make in the next few years will determine the effects they have on access for students of low- and moderate-income backgrounds (Quinterno, 2012, p. 3). As institutions are looking for ways to adapt and survive, they are also a part of what Howard (2010) describes as a balancing act in a hurricane since institutions are "juggling the short and long

terms, the needs of the underserved and fiscal constraints, all while trying to rally our stakeholders to give us the support needed to make changes" (2010, para. 27).

Financial troubles or worries appear in different forms even among the most established institutions, and even during times of financial calm (Neumann, 1995). Part of resource dependency theory describes an organization's constant thoughts and worries about their own survival where their "existence is constantly in question, and their survival is viewed as problematic" (Pfeffer & Salancik, 1978, p. 2). In the recent past, declining state support for higher education pushed institutions to look for other sources of revenue which included increasing tuition rates for students (Hossler, 2006). This allowed institutions to have sufficient revenue to continue to provide the same quality education to their students. The reality for institutions during this new normal, however, is that the additional revenue incurred from the increasing tuition rates did not fully cover the cuts in state appropriations (Oliff et al., 2013a). Therefore, institutions have had to deal with "constrained spending to make up for lost state funding, often in ways that reduce the quality and availability of their academic offerings" (2013a, p. 8).

As a result, institutions have had two financial choices: increase revenues or cut costs. Since institutions can be limited in their efforts to gain outside sources of revenue that can go towards instruction, many have looked into reducing some of their costs. This included budget cuts, layoffs, salary freezes, capital spending slowdowns, and other initiatives (Goodman, 2009). It also included increased class sizes, reduced library services, the hiring of adjunct professors, and the removal of courses altogether.

However, all of these budget cuts can have direct effects on students which implies that institutions have had to be careful that their budget cuts do not change the type of education that

their students are receiving. For example, increasing the number of students in a classroom can allow an institution to graduate more students without having to hire additional professors. Institutions can also hire non-tenure track faculty at lower rates than tenure track faculty. What needs to be considered, however, is that increased spending on non-tenure track faculty can change the educational experience of students (Clark & d' Ambrosio, 2006, p. 4). Also, while the larger classroom size can make institutions look more efficient, it may also negatively hurt students' educational experience. In all, as recessions force institutions to look at their efficiency in productivity or cost per FTE, they are also questioning the quality of education that they want to preserve (Johnstone, 2005; Zumeta, 2004).

A possible solution to the current economic situation includes reversing the trends of cutting state support for higher education along with reversing the trend of increasing tuition prices. Heller (2006b) describes that while more money is not likely to be devoted to higher education, if it were it would not be able to solve any problems if it is not wisely targeted. Regardless, state support for higher education is not something that institutions have control over. Therefore, in order to try to evaluate areas that they do have control over, institutions are not only more closely watching the national and state economy but have also re-evaluated areas such as their tuition pricing strategies (Goodman, 2009) and are looking at "college spending patterns, revenue viability, and the relation between spending and tuition increases" (Wellman et al., 2008).

Moreover, while there are many statistics that generalize higher education institutions in the United States in terms of numbers and figures, "individual states face dissimilar situations because of expected differences in the budget increases needed to maintain current services" (Hovey, 1999b, p. 15). Some of the factors affecting the individual state situations are described

by Hovey as the projected increases in higher education enrollments along with the workload factors driving other spending. Furthermore, a state's combination of policy choices along with their individual environmental conditions "provides the context within which higher education funding occurs" (State Higher Education Executive Officers, 2012, p. 10). This means that it is important for all public IHEs to monitor the fiscal situation of the state that they are located in and not just consider the larger economic trends of the nation.

Finally, the NGA and NASBO (2011) describe that "even though states are experiencing an improvement over one of the worst time periods in state fiscal conditions since the Great Depression, fiscal 2012 will still present states with difficult choices as they manage their budgets" (2011, p. vii). In general, higher education has entered a new era of higher education finance (Desrochers & Kirshstein, 2012) where it is expected that institutions find ways to increase productivity, absorb budget cuts, and increase degree production without compromising quality (SHEEO, 2012; State Higher Education Executive Officers, 2012). Therefore, adaption to this new era is necessary in order for institutions to be able to continue to meet their goals.

Chapter Summary

Public institutions have historically adapted to their changing external environment in order to try to best serve their students and achieve their goals. As stated throughout this review, institutions' adaption included adjusting to reduced state support, changing enrollment patterns and multiple demands. While other parts of the environment exist that affect institutions, those mentioned in this review were chosen as major influences and necessary background information in order to help give context to the research questions for this study. Chapter III will expand on the research questions and also present the methodology in which they will be studied.

Chapter III

Research Design and Methodology

Introduction

As described through resource dependency theory, organizations are dependent on their external environment for resources and they will fight for resources in order to ensure their survival. Over the years, as students began paying increasing proportions of the cost of education and states decreased their funding to institutions, the view of higher education as a public good began to change to that of a private good. "Privatization" is a term that resulted from this shift, and is justified through the many benefits that individuals gain from attending higher education. At the same time, states continue to put pressure on institutions to help drive economic growth by providing a well-educated citizenry which helps to benefit society as a whole. While discussion continues on whether higher education is a public or private good, the decreasing state support to higher education has forced institutions to question the amount of revenue they need from students in order to continue to meet the needs of both individuals and the state.

Overview of the Study

The purpose of this study is to examine whether there was an increase in the total of tuition and state appropriation revenue that public AAU institutions received per student. Within this total, this study will also analyze the changing proportions of revenue that these institutions received from the state and from students. All data was collected between 2003-04 and 2011-12 in order to gather information before, during, and after the Great Recession occurred. Also, for the purposes of this study, both net- and gross- tuition will be examined. The total of state appropriations and *gross*-tuition revenue per student represents the total amount of funding that

institutions originally had to go towards their academic mission and institutional financial aid. On the other hand, the total of state appropriations and *net*-tuition revenue per student represents the amount of funding that ended up supporting their academic mission.

Research Questions

The following ranges of years were used to analyze all research questions in this study: 2003-04 through 2007-08, and 2007-08 through 2011-12. As the Great Recession officially began in December 2007, the analysis of the change in the data between these date ranges allowed for the analysis of data in the four years leading up to the Great Recession, and the four years after the Great Recession started.

The first two research questions determined whether public AAU institutions received increasing amounts of tuition and state appropriation revenue combined, per student, before and after the Great Recession:

> Research Question 1 (R1): What is the change in total revenue acquired per FTE student in terms of state support and *gross*-tuition revenue combined?
>
> Research Question 2 (R2): What is the change in total revenue acquired per FTE student in terms of state support and *net*-tuition revenue combined?

Research questions three and four helped show whether public AAU institutions became increasingly funded by tuition revenue than by state appropriations before and after the Great Recession:

> Research Question 3 (R3): When considering the total revenue per FTE student found in the first research question, what is the change in the proportion of the total that came from *gross*-tuition?

Research Question 4 (R4): When considering the total revenue per FTE student found in the second research question, what is the change in the proportion of the total that came from *net*-tuition?

Research questions five and six looked to understand whether the institutions received a changing amount of total revenue and simultaneously became more heavily funded by students:

Research Question 5 (R5): If there was a change in the total revenue per FTE as found in Research Question 1, was there also an increase in the change of the proportion of *gross*-tuition revenue per FTE that made up the total?

Research Question 6 (R6): If there was a change in the total revenue per FTE as found in Research Question 2, was there also an increase in the change of the proportion of *net*-tuition revenue per FTE that made up the total?

Population

The population for this study included the 34 public Association of American Universities (AAU) institutions. As described on the AAU website (Association of American Universities, 2002) there are a total of 62 public and private four-year AAU institutions in the United States and Canada. In order to become members, the institutions have to provide high quality undergraduate, graduate and professional education and the institution needs to be recognized for their excellence in their research and education programs. An institution can only become an AAU institution through invitation. Table 3.1 shows a list of all public AAU institutions.

Table 3.1

Public AAU Institutions.

Georgia Institute of Technology	University of California, Berkeley
Indiana University	University of California, Davis
Iowa State University	University of California, Irvine
Michigan State University	University of California, Los Angeles
Purdue University	University of California, San Diego
Rutgers, The State University of New Jersey	University of California, Santa Barbara
Stony Brook University-State University of New York	University of Colorado Boulder
Texas A&M University	University of Florida
Ohio State University	University of Illinois at Urbana- Champaign
Pennsylvania State University	University of Maryland at College Park
The University of Arizona	University of Michigan
The University of Iowa	University of Minnesota, Twin Cities
The University of Kansas	University of Missouri, Columbia
The University of North Carolina at Chapel Hill	University of Oregon
The University of Texas at Austin	University of Pittsburgh
The University of Wisconsin-Madison	University of Virginia
University at Buffalo, The State University of New York	University of Washington

As previously stated, data for this study was collected between the fiscal years of 2003-04 and 2011-12 in order to gather information before and after the start of the Great Recession. The National Center for Education Statistic's (NCES) Integrated Postsecondary Educational Data System (IPEDS) was used in order to gather all data between this timeframe. Fiscal year 2003-04 was chosen because this is the earliest year that the 12-month full-time equivalent variable was available. Fiscal year 2011-12 was chosen since this is the fiscal year in which the most current data is available for all of the variables used in this study. Provisional release data and final release data are available in IPEDS and the final release data were used. IPEDS defines final release data as including "revisions to the provisional release data that have been made by institutions during the subsequent data collection year. The final release data can be used when the most up to date data are required; however, these data may not match tables from the *First Look* reports based on preliminary and provisional data" (NCES, 2013).

Furthermore, this database was chosen since it is currently mandatory for any institution that participates in a federal student financial aid program to report to IPEDS. This data system contains surveys that are conducted annually by NCES in which they gather information on institutional characteristics, institutional prices, student enrollment, student financial aid, along with institutions' finances.

Variables

Each of the 34 public AAU institutions was analyzed by using a combination of the following three variables: Gross-tuition per FTE, net-tuition per FTE and state appropriations per FTE where both undergraduate and graduate students were considered in these three variables. Various IPEDS variables were used in order to create these variables. All definitions for IPEDS variables were compiled from the IPEDS Glossary (IPEDS, 2009) or from the definitions given when selecting the variables in the IPEDS Data Center (NCES, 2013). While all variables used in this study are defined in the following section of this chapter, a table listing the variables and their definitions can also be found in Appendix A.

The first variable for this study is gross-tuition revenue. In order to create this variable by using IPEDS variables, Table 3.2 below shows the equation that was used:

Table 3.2

IPEDS Variables Used to Calculate Gross-Tuition Revenue

Study Variable 1		**IPEDS Variable 1**		**IPEDS Variable 2**
Gross-tuition revenue	=	Tuition and fees, after deducting discounts and allowances	+	Discounts and allowances applied to tuition and fees

First, the IPEDS variable of "tuition and fees, after deducting discounts and allowances" is defined as all revenue from tuition and fees that is assessed against students, which is net of

refunds, discounts and allowances. It also excludes charges for room, board, and other services for auxiliary enterprises. The second IPEDS variable, "discounts and allowances applied to tuition and fees" are the reductions to the amount charged for tuition and fees by the application of scholarships and fellowships. IPEDS further defines scholarships and fellowships as including grants, stipends, tuition and fee waivers, and prizes awarded to students by the institutions, including Pell grants. This does not include loans to students, work-study, or awards granted to parents based on their faculty or staff status. Adding the two IPEDS variables together reflects the total revenue that institutions received from students for tuition and fees.

The second variable used in this study is net-tuition revenue. In order to create this variable by using IPEDS variables, the variable of "Tuition and fees after deducting discounts and allowances" was used as net-tuition revenue. As described above, this variable was used as part of the calculation for gross-tuition revenue. Furthermore, the IPEDS variable of "state appropriations" was used in order to calculate state appropriations revenue. This is defined by IPEDS as funding received by the institution through acts of a state legislative body, except grants and contracts and capital appropriations. This funding is for operating expenses and not for specific projects or programs. These funds do not include any American Recovery and Reinvestment Act (ARRA) funding that the institutions may have received between 2009 and 2012.

Finally, an increase in revenue attained by institutions may not necessarily be due to increasing tuition prices, but instead increasing enrollment. Therefore, in order to adjust for changes in enrollment, each of the three variables for this study was divided by a 12-month full-time equivalent (FTE) variable that also came from IPEDS. This variable is defined by IPEDS as being calculated by summing the institutions' undergraduate FTE, graduate FTE and first-

professional students. Undergraduate and graduate student FTE is estimated by looking at 12-month instructional activity. One FTE is counted over a 12 month period. A full-time student is defined as a student enrolled in 30 or more semester credits a year, or 45 or more quarter credits a year, or 900 or more contact hours a year. Therefore, the full-time equivalent headcount of an institution's part-time enrollment is estimated by multiplying the part-time headcount by a specific factor that is based on whether the student is an undergraduate, professional or graduate student. This is then added to the full-time enrollment headcount to obtain the FTE for all students enrolled over the year. All FTE numbers in this study contain undergraduate, graduate and professional students. As all revenue numbers in this study refer to funding received in order to support both undergraduates and graduate students, this study used an FTE number that includes this same population.

In summary, the resulting variables for this study are gross-tuition per FTE, net-tuition per FTE, and state appropriations per FTE. The Consumer Price Index (CPI) was used on all data in order to adjust for inflation. The CPI is "a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services" (U.S. Bureau of Labor Statistics, n.d.-b). This adjustment then allowed for the comparison of the data in this study. All values in this study were converted to 2011-12 dollars through the use of the following Consumer Price Index table: All Urban Consumers, U.S. All items, 1982 – 84=100-CUUR0000SA0 (U.S. Bureau of Labor Statistics, n.d.-a). As the values in this study represent values known at the end of a fiscal year, or values as of June 30, the June CPI index was used in the calculations in order to adjust the data for inflation. For example, as fiscal year 2006-07 ends on June 30, 2007, the index value for June 2007 was compared to the index value for June 2012

as part of the calculation used to adjust for inflation. See Appendix B for the values that were used to adjust for inflation.

Data analysis

The first two research questions in this study examined the change in the total revenue received by institutions with regards to tuition and state appropriations. The remaining research questions then examined the changing proportions in the two variables that make up the total revenue found in the first two research questions. The following section describes how the research questions in this study were analyzed.

R1 and R2: The first two research questions looked at whether public AAU institutions received increasing amounts of tuition and state appropriation revenue combined, per student, before and after the start of the Great Recession. The research questions are as follows:

- Research question 1 (R1): What is the change in total revenue acquired per FTE student in terms of state support and *gross*-tuition revenue combined?
- Research question 2 (R2): What is the change in total revenue acquired per FTE student in terms of state support and *net*-tuition revenue combined?

In order to gather data that would answer R1, the IPEDS variables that are used to calculate gross-tuition revenue per FTE were added to the state appropriations per FTE variable. Similarly, for R2, net-tuition revenue per FTE replaced gross-tuition revenue per FTE and was then added to state appropriations per FTE. Table 3.3 shows the equations for both research questions:

Table 3.3

Calculations for Research Question 1 and Research Question 2

Research Question 1 (R1)	=	Gross-tuition revenue per FTE	+	State appropriation revenue per FTE
Research Question 2 (R2)	=	Net-tuition revenue per FTE	+	State appropriation revenue per FTE

To analyze R1, the four-year percent change between 2003-04 and 2007-08, and also 2007-08 through 2011-12 was calculated for each institution. As the Great Recession officially started in December 2007, the four year intervals show the change in rates before the recession occurred, and also the four-year change after it began. Then, for these time intervals, the percent change for all 34 institutions was compared to each other through the following descriptive statistics:

- Frequency distribution
- Central tendency to show the mean, median and mode of the distribution.
- Standard deviation in order to provide a more accurate estimate of the dispersion.

All of this data provided statistics that could answer the first research question which asks about the change in total revenue acquired per FTE. The same process and analysis occurred for data collected from R2.

The data collected to analyze the results from R1 and R2 helped to examine whether institutions received increasing amounts of tuition and state appropriations revenue combined, per student, before and after the start of the Great Recession. This type of analysis for R1 showed the change in the per student amount of total tuition and state funding that institutions received to go towards their academic mission over time. Along with this, the analysis for R2

showed the per student change in the total amount of revenue that institutions were able to put towards their academic mission after allocating institutional aid to students.

R3 and R4. Research questions three and four examine whether public AAU institutions became increasingly funded by tuition revenue than by state appropriations before and after the start of the Great Recession. The research questions are as follows:

- Research question 3 (R3): When considering the total revenue per FTE student found in the first research question, what is the change in the proportion of the total that came from *gross*-tuition, and the change in the proportion of the total that came from state appropriations
- Research question 4 (R4): When considering the total revenue per FTE student found in the second research question, what is the change in the proportion of the total that came from *net*-tuition, and the change in the proportion of the total that came from state appropriations?

As state appropriations per FTE and tuition revenue per FTE are the only two variables that make up the totals in these research questions, an increase in the proportion of one variable indicates that an institution received an equally decreasing proportion of revenue from the other variable. In other words, if the proportion of tuition per FTE increased by 3% in one year, the proportion of state appropriations per FTE decreased by 3% in the same year. This means that by calculating the changing proportions of tuition revenue also indirectly reflects the changing proportion of state appropriations that makes up the total revenue. Therefore, in order to examine whether institutions became increasingly funded by tuition revenue, the analysis for the associated research questions will only consider the change in the proportion of tuition revenue per FTE.

In order to answer R3, the IPEDS variables that were used to calculate gross-tuition revenue per FTE were divided by the total revenue per FTE as calculated in the first research question (R1) in order to calculate the percent of the total that came from this variable. Again, total revenue for R1 is equal to the total of gross-tuition per FTE and state appropriations per FTE. Similarly, to answer R4, the IPEDS variables used to calculate net-tuition revenue per FTE were divided by the total revenue found in the second research question (R2) in order to calculate the percent of the total that came from net-tuition revenue per FTE. For R2, total revenue is equal to the total of net-tuition revenue per FTE and state appropriations per FTE.

In order to analyze the changing proportion of tuition per FTE that made up the totals as defined in R1 and R2, four-year rates of percent change were calculated for each institution. That is, the rate of percent change was calculated for 2003-04 to 2007-08 and also 2007-08 to 2011-12. In order to analyze this data the absolute change in proportion of gross-tuition revenue per FTE was calculated along with the relative change. While the relative change reflects the percent increase which is based on each individual institution's proportion of gross-tuition revenue, the absolute change is what is focused on in this study. This is because the absolute change represents the change in the proportion of the total that is made up by tuition which is what is asked by the research questions.

Also, as the absolute proportion of tuition-revenue per FTE changes, there is an equal absolute change in the proportion of state appropriations per FTE that occurs in the opposite direction. The relative percent change in tuition per FTE will be included in tables only as a means to show that while some institutions may show the same absolute percent change, they could have different relative percent changes if they had different proportions of gross-tuition revenue per FTE to begin with.

To analyze the resulting data, the absolute rates of percent change for all 34 institutions were compared to each other through the use of descriptive statistics as was done with the first two research questions. This included looking at the frequency distribution and the central tendency to show the mean, median and mode of the distribution. Along with this, the range and standard deviation was calculated in order to give additional description to the distribution.

The actual dollar change in gross-tuition per FTE along with state appropriations per FTE was also included. This was used as a way to help explain the change in the tuition as a percentage of total revenue. This was done for gross- and net-tuition revenue per FTE separately. Table 3.4 shows an example of a hypothetical working data table to show the four-year percent change in the proportions of revenue that came from gross-tuition revenue per FTE.

Table 3.4

Example of Working Data Table: Rate of Change in the Proportion of Gross-Tuition Revenue per FTE

	4-Year Change			
Institution	Change in Total Revenue per FTE	Abs Chg in Proportion of Total Rev Coming from Gross-Tuition Revenue per FTE	Change in Gross-Tuition per FTE	Change in State Appr per FTE
Institution 1	X %	X %	$ X	$ X
Institution 2				
Institution 3				
…				
Institution X				

R5 and R6. This data gathered from R3 and R4 showed whether tuition revenue became an increasing proportion of the total revenue received by institutions as defined in this study. What these proportions do not indicate, however, is whether the total revenue increased or decreased. They reflect whether students and the state were providing equal shares of the total, or if one was

contributing more than the other. As a result, research questions five and six question whether institutions received a change in total revenue as found in R1 and R2, and simultaneously received increasing proportions of revenue from tuition. The research questions are as follows:

- Research Question 5 (R5): If there was a change in the total revenue per FTE as found in Research Question 1, was there also an increase in the change of the proportion of *gross*-tuition revenue per FTE that made up the total?
- Research Question 6 (R6): If there was a change in the total revenue per FTE as found in Research Question 2, was there also an increase in the change of the proportion of *net*-tuition revenue per FTE that made up the total?

One possible outcome could be that an institution's total revenue per FTE stayed constant and there was an increase in the proportion of tuition revenue per FTE. Again, for the purpose of this study total revenue is defined as the sum of state appropriations and tuition revenue per FTE. This would indicate that an institution received the same amount of total revenue as the previous year, but they increased tuition revenue just enough to replace lost state appropriations. A second example of a situation could be that the change for an institution's total revenue per FTE increased while there also was an increase in the proportion of revenue that came from tuition revenue per FTE. This then would indicate that the increase in the total revenue that the institution received per FTE was due to receiving additional tuition revenue from students. A third possible situation is that an institution's total revenue per FTE decreased while there also was an increase in the proportion of revenue that came from tuition revenue per FTE. This would indicate that while there was a decrease in the total amount of revenue received by the institution, they continued to receive an increasing amount of tuition revenue. The decrease in

state appropriations per FTE was then greater than the increase in tuition revenue which means that the increase in tuition did not fully replace the lost state appropriations revenue.

In order to examine these situations in R5 and R6, the change in the total revenue that institutions received per FTE was considered along with the absolute change in the proportion of revenue that came from tuition per FTE. Once the data was sorted by the change in total revenue per FTE, the data could be divided into those institutions that had an increase in the total revenue that they received per FTE, those institutions that had no change in the amount of revenue received per FTE, and those institutions that had a decreases in the amount of revenue received per FTE.

Once these different segments in the change in total revenue were identified, frequency distribution, central tendency and standard deviation were again used in each of these segments in order to describe the four-year percent change in total revenue per FTE along with the change in the proportion of total revenue per FTE that came from tuition revenue. The actual dollar changes in tuition per FTE and state appropriations per FTE will also be used in order to help explain these changes. This analysis will be done separately for gross- and net-tuition revenue per FTE and will show the four-year change that occurred between 2003-04 and 2007-08 along with the four-year change between 2007-08 and 2011-12. Table 3.5 below shows an example of a hypothetical working data table.

Table 3.5

Example of Working Data Table for Institutions for R5

	4-Year Change			
Institution	Change in Total Revenue per FTE	Abs Chg in Proportion of Total Rev Coming from Gross-Tuition Revenue per FTE	Change in Gross-Tuition per FTE	Change in State Appr per FTE
Institution 1	X%	X%	$X	$X
Institution 2				
Institution 3				
…				
Institution X				

Summary. The first two research questions helped to evaluate whether institutions received increasing total revenue per FTE which in this study is defined as including tuition and state appropriations revenue. Total revenue was calculated separately for gross- and net-tuition revenue per FTE and it reflected whether institutions received increasing amounts of funding to go towards their academic mission. It also reflected the changing amount of institutional aid that institutions provided to students and the resulting amount of revenue that they were then able to put towards the academic mission of the institution.

The third and fourth research questions looked to answer whether public AAU institutions became increasingly funded by tuition revenue than by state appropriations before and after the start of the Great Recession. The variables used to calculate the total revenue per FTE in the first two research questions were used in order to evaluate the changing proportions of the total that came from tuition revenue per FTE. For the fifth and sixth research questions, these changing proportions of tuition revenue were compared to the changing total revenue per FTE. This analysis revealed whether institutions increased tuition revenue as a way to achieve an increasing amount of total revenue.

Limitations

The data used in this study relied completely on the data entries that institutions made into the IPEDS database. This meant that there could be inconsistencies in the way that institutions interpreted the definitions of the variables, or even errors based on incorrect imputation. Furthermore, as state appropriations and tuition revenue continue to make up the primary sources of operating revenue for institutions, these were the only two sources of revenue that were considered in this study. This meant that this study did not consider any other sources of revenue such as gifts that could potentially go towards the academic mission of institutions if specified by the donor.

This study also included not only undergraduate and graduate students, but also professional students. While certain courses taken by undergraduate or graduate students are likely to be replicated in variations across institutions, the professional programs may be very different. While it could have been helpful to look at just undergraduate students, IPEDS does not contain a variable that shows what portion of the state appropriations went to support the different enrollment levels.

Summary

The research design and procedure used to answer the research questions in this study were outlined in this chapter. This study examined the 34 public AAU institutions between fiscal years 2003-04 and 2011-12 in order to gather information before and after the start of the Great Recession. The IPEDS Data Center database provided the variables that were used in order to create the three main variables used in this study: gross-tuition per FTE, net-tuition per FTE, and state appropriations per FTE.

The purpose of this study was to examine the changing state appropriations and tuition revenue that public AAU institutions received before and after the start of the Great Recession in order to better understand whether they received a changing amount of total revenue per student and simultaneously became more heavily funded by students. This was achieved through the analysis of the data obtained from six research questions where all data was analyzed through descriptive statistics.

Chapter IV

Findings

The purpose of this study was to examine the changing state appropriations and tuition revenue that public AAU institutions received per student before and after the Great Recession. This study also looked at the change in the proportion of the total that came from gross- and net-tuition revenue. As a result, there was an examination of whether the institutions that received an increasing amount of total revenue also simultaneously received an increasing proportion of revenue from students. This then showed whether institutions increased tuition revenue to a level meant to only replace lost state appropriations revenue or to both cover lost state appropriations and provide additional revenue to the institution.

There were three main variables used in this study: gross-tuition revenue per FTE, net-tuition revenue per FTE, and state appropriations revenue per FTE. Different combinations of these variables were used in order to answer six research questions. All variables for this study were formed by using data gathered from the IPEDS database between 2003-04 and 2011-12. The Consumer Price Index was also applied to convert all numbers to 2011-12 dollars in order to be able to compare all financial numbers. Descriptive analysis was used to analyze the data and answer the research questions. This included looking at the four-year change in the data between 2003-04 and 2007-08 and also between 2007-08 and 2011-12.

The first two research questions in this study questioned whether public AAU institutions received increasing amounts of tuition and state appropriation revenue combined, per student, between 2003-04 and 2007-08, and between 2007-08 and 2011-12. The first research question addressed whether there was an increase in total revenue acquired per FTE in terms of state

support and *gross*-tuition revenue combined, while the second question asked the same question but in terms of state support and *net*-tuition revenue per FTE combined.

The third and fourth research questions looked to better understand whether the institutions became increasingly funded by tuition revenue than by state appropriations between 2003-04 and 2007-08 and also between 2007-08 and 2011-12. The third research question addressed the change in the proportion of the revenue that came from *gross*-tuition revenue per FTE while the fourth question addressed the same question in terms of *net*-tuition revenue per FTE. Lastly, the fifth and sixth research questions looked at the change in total revenue received by the institutions and also simultaneously looked at the change in the proportion of either gross-tuition or net-tuition per FTE that made up the total revenue per FTE. This allowed for the examination of whether an increase in total revenue was due to increasing proportions of tuition revenue.

The first section in this chapter will address the modifications made to the data which included adjustments for inflation along with removing institutions that did not report data in IPEDS. Next, the changes in total revenue in terms of state appropriations and tuition revenue are discussed. Enrollment patterns are then examined since all financial data gathered for this study was adjusted for changes in enrollment. The rest of the chapter then presents and describes the data collected for the six research questions.

Adjustments for Comparability

All variables in this study were converted to 2011-12 dollars by using the U.S. City Average table for All Urban Consumers database that is provided by the U.S. Bureau of Labor Statistics. In order to convert the data, the index numbers from the end of each fiscal year, or June indexes, were compared to the index from June 2012. The percent increases in the indexes'

were used to adjust the data to 2011-12 dollars. Appendix B shows the index numbers and the values that were used in order to adjust the data in this study.

Missing IPEDS Data. All calculations for the six research questions were dependent on the availability of data from IPEDS. There was missing data for some institutions which meant that the total revenue as described in R1 and R2 could not be calculated. This also then meant that these institutions could not be used in the rest of the research questions since data from R1 and R2 was used to answer the rest of the research questions. The following describes the data that was missing for specific IPEDS variables:

- IPEDS variable for "Tuition and fees after deducting discounts and allowances": Not available for Pennsylvania State University – Main Campus or University of Pittsburgh – Pittsburgh Campus between 2003-04 and 2011-12.
- IPEDS variable for State Appropriations: Not available for the University of Colorado at Boulder between 2005-06 and 2011-12.
- IPEDS 12 month FTE: Not available for Pennsylvania State University and the University of Colorado during 2003-04 and 2011-12.

Along with this, financial data was not available for Rutgers University at New Brunswick in 2003-04. Therefore, the following institutions were excluded from this study:

- Pennsylvania State University – Main Campus
- Rutgers University – New Brunswick
- University of Pittsburgh – Pittsburgh Campus
- University of Colorado Boulder.

Total State Appropriations and Tuition Revenue

The combined amount of state appropriations and tuition revenue supporting public AAU institutions increased between 2003-04 and 2011-12. This data was used in all of the research questions after dividing by FTE enrollment. Table 4.01 on the next page shows that for those institutions included in this study, total state appropriations revenue decreased as tuition revenue increased. It only includes those institutions included in this study. Total state appropriations received by these institutions was $11.3 billion in 2003-04 and this increased by 5% to $11.9 billion by 2007-08. By 2011-12 total state appropriations decreased by 24% from 2007-08 to $8.9 billion.

In terms of total gross-tuition revenue, public AAU institutions received a total of $9.8 billion in 2003-04 and this increased by 20% to $11.7 billion by 2007-08. The individual institutions received on average a 20% increase in gross-tuition revenue during this time. By 2011-12, total gross-tuition revenue increased by 40% from 2007-08 to reach $16.4 billion. This is also an increase of 68% from 2003-04. Total net-tuition revenue showed similar patterns of increases since it increased by 19% from $8.1 billion in 2003-04 to $9.6 billion by 2007-08. Total net-tuition revenue then increased by 38% to reach $13.2 billion by 2011-12. This is also a 63% increase from 2003-04.

Comparing gross- and net-tuition revenue shows that gross-tuition revenue increased at a higher rate when compared to total net-tuition revenue. This is due to an increase in the discounts and allowances that were going towards gross-tuition and fees revenue. Discounts and allowances made up 17% of gross-tuition revenue in 2003-04 which increased slightly to 18% in 2007-08, and reached 20% by 2011-12. An increase in the amount of revenue that goes towards

discounts and allowances can enhance access to an institution, but also decreases the amount of revenue that an institution can put towards their instructional mission.

Table 4.01

Total Tuition and State Appropriations Revenue Received by Public AAU Institutions

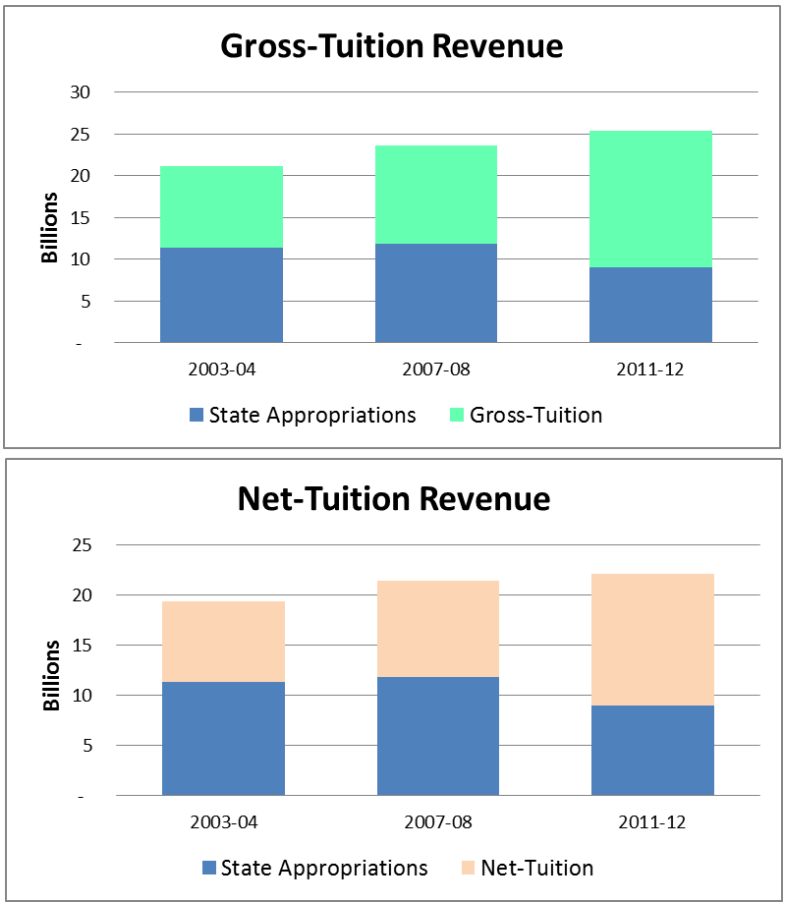
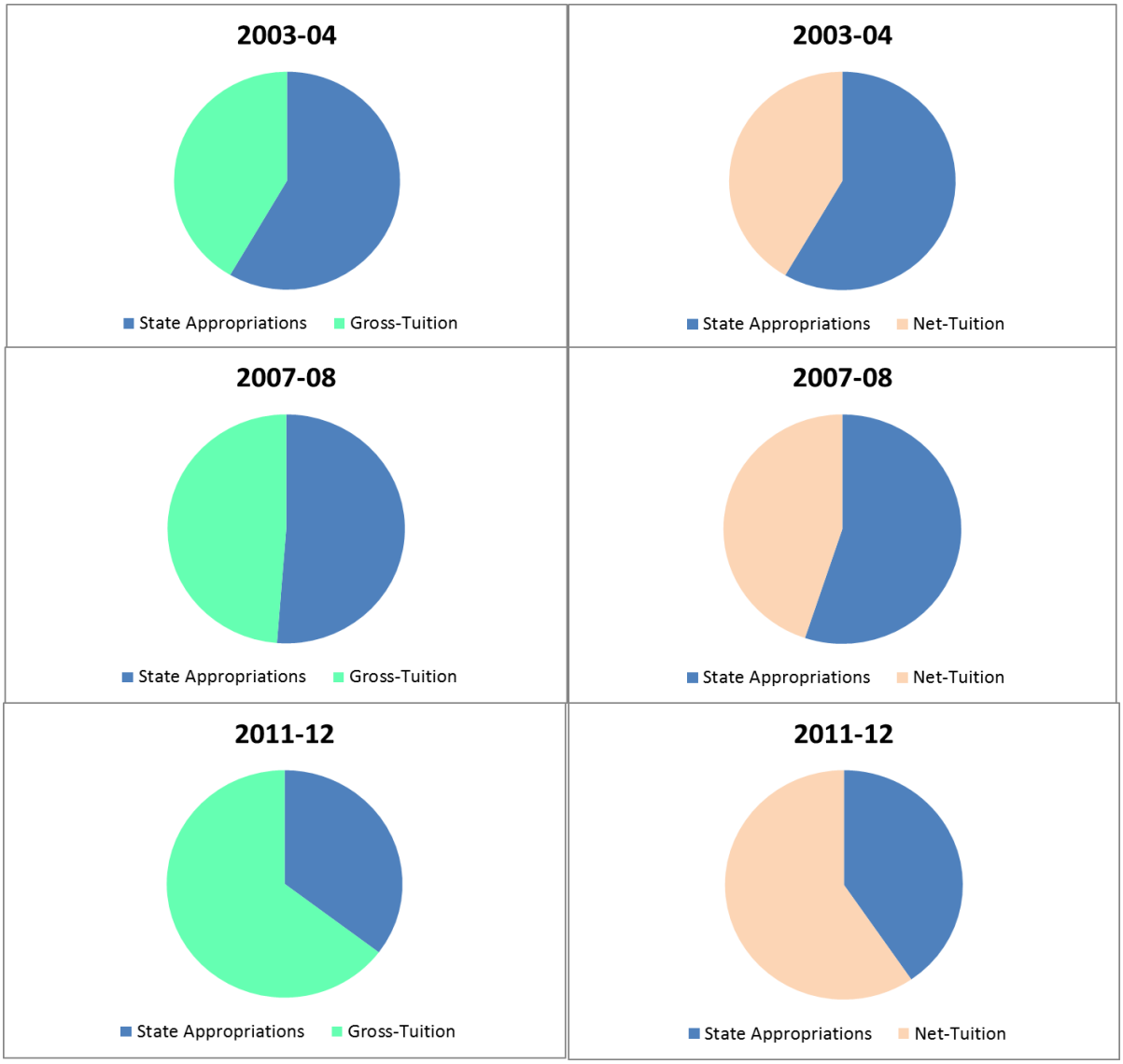


Table 4.02 below further shows the change in the proportion of the total revenue that was made up by these two sources of revenue. Again this table only includes those institutions included in this study. In 2003-04, gross-tuition revenue on average provided 46% of the proportion of total revenue. This increased to 50% by 2007-08, and ended up at 65% by 2011-12. In terms of net-tuition revenue, in 2003-04 net-tuition revenue made up 42% of total revenue. This increased to 45% by 2007-08 and further increased to 60% by 2011-12.

Table 4.02

Proportions of State Appropriations and Tuition Revenue Supporting Public AAU Institutions



Enrollment Patterns. An increase in revenue received by institutions may not necessarily be due to increasing tuition prices but instead increasing enrollment. Therefore, in order to adjust revenue for changes in enrollment, each of the three variables used in this study were divided by a 12-month full-time equivalent (FTE) variable that came from IPEDS.

Appendix C shows the 12- month FTE enrollment for the public AAU institutions included in this study. As previously described, not all institutions had financial data reported in IPEDS and were therefore removed from the table. Average FTE enrollment in public AAU institutions included in this study was 32,443 in 2003-04, 33,849 in 2007-08 and 36,011 in 2011-12. Table 4.03 below shows the percent change in enrollment at these institutions between these years.

Table 4.03

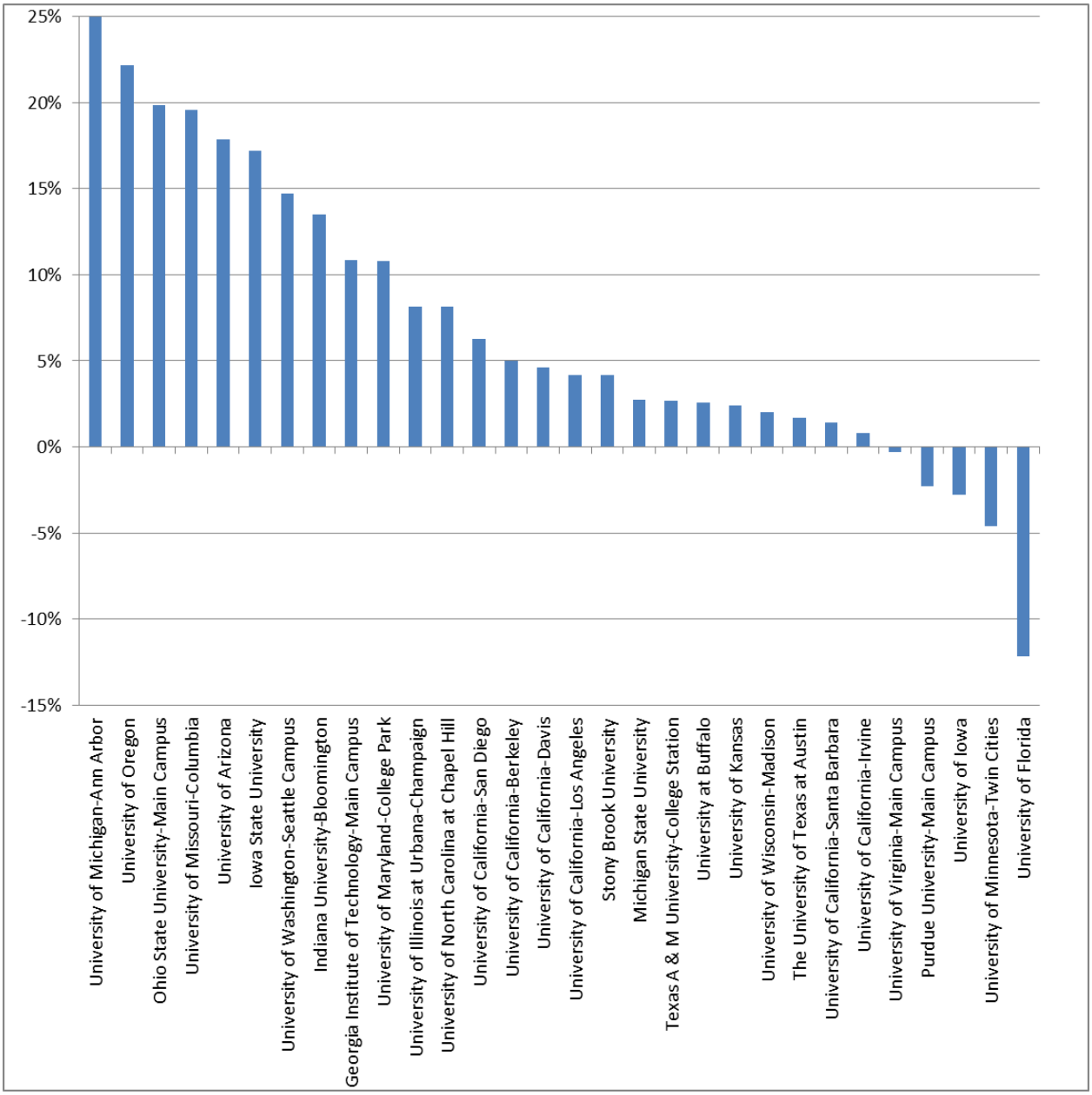
Percent Change in 12-Month FTE Enrollment for Public AAU Institutions

	2003-04 to 2007-08		2007-08 to 2011-12	
% Change	Count	Relative Frequency	Count	Relative Frequency
-20% to -10%	1	3%	1	3%
-10% to 0%	5	17%	4	13%
1% to 10%	21	70%	15	50%
11% to 20%	3	10%	8	27%
21% to 30%	0	0%	2	7%
Greater than 30%	0	0%	0	0%
Total	30		30	

This table shows that between 2003-04 and 2007-08 the majority of the institutions (70%) had increases in FTE enrollment between 1 and 10 percent. Between 2007-08 and 2011-15 institutions (50%) had increases between 1 and 10 percent and there was an increasing number of institutions with increases in enrollment between 11 and 20 percent. See Table 4.04 for the change in enrollment between 2007-08 and 2011-12 by institution.

Table 4.04

12-Month FTE, Percent Change by Institution, 2007-08 to 2011-12



The next section of this chapter will review the data collected for the six research questions. For each research question, the examination of the change in the data between 2003-04 and 2007-08 is presented, which is followed by the examination of the change between 2007-

08 and 2011-12. A summary of the major findings are then provided that includes a comparison of the changes that occurred between 2003-04 and 2007-08 to those found between 2007-08 and 2011-12.

Research Questions 1 and 2

The first two research questions of this study examined whether public AAU institutions received increasing amounts of tuition and state appropriation revenue combined, per student, before and after the Great Recession occurred. In order to do this, the four-year change in the data was examined between 2003-04 and 2007-08 and also between 2007-08 and 2011-12. The following research questions were asked in order to investigate the change in total revenue:

- Research Question 1 (R1): What is the change in total revenue acquired per FTE student in terms of state support and *gross*-tuition revenue combined?
- Research Question 2 (R2): What is the change in total revenue acquired per FTE student in terms of state support and *net*-tuition revenue combined?

Research Question 1. IPEDS does not contain a variable that calculates an institution's gross-tuition revenue which is needed in order to answer the first research question. Therefore, in order to create this variable the IPEDS variable of "tuition and fees after deducting discounts and allowances" was added to the IPEDS variable of "discounts and allowances applied to tuition and fees". Adding the two IPEDS variables together reflects the total revenue that institutions received from students for tuition and fees. This variable was then added to the state appropriations IPEDS variable, and divided by the 12-month FTE enrollment in order to calculate total revenue per FTE.

2003-04 to 2007-08. Average gross-tuition and state appropriations revenue per FTE was $21,732 in 2003-04 (skewness = 0.29, *SE*=0.45, *Mdn* = $20,536) and this increased to $23,361

by 2007-08 (skewness = 0.63, *SE* = 0.45, *Mdn* = $22,251). Table 4.05 on the next page shows the change in total revenue per FTE between 2003-04 and 2007-08 by institution. For all institutions there was an average increase of $1,630 (8%) per FTE (*SD* = $2,044). However, the change in total tuition per FTE was non-normally distributed with a skewness of 1.34 (*SE* = 0.45) and a median increase of $1,040 (5%) per FTE. There was also an $8,057 (57%) range where the University of Kansas had the largest increase in total revenue per FTE at $7,367 which was a 54% increase. The University of California – Irvine had the largest decrease in total revenue per FTE at a $690 (3.5%).

Table 4.05

R1: Change in Total Revenue per FTE between 2003-04 and 2007-08

Institution	4-Yr Change (Amount)	4-Yr Change (%)
University of Kansas	$ 7,367	54%
University of Arizona	6,603	34%
The University of Texas at Austin	2,944	19%
University of North Carolina at Chapel Hill	5,046	18%
Georgia Institute of Technology-Main Campus	3,490	17%
University of Minnesota-Twin Cities	3,523	14%
University of Virginia-Main Campus	2,606	13%
University at Buffalo - SUNY	2,679	12%
University of Michigan-Ann Arbor	3,450	11%
University of Washington-Seattle Campus	1,889	10%
Indiana University-Bloomington	1,914	10%
Iowa State University	1,609	8%
Texas A & M University-College Station	1,339	7%
University of Oregon	811	6%
University of Maryland-College Park	1,398	6%
University of California-Santa Barbara	912	5%
Stony Brook University	1,168	4%
University of California-Davis	721	3%
University of California-Los Angeles	659	2%
University of Wisconsin-Madison	304	1%
University of Illinois at Urbana-Champaign	218	1%
Purdue University-Main Campus	199	1%
Ohio State University-Main Campus	30	0%
University of Florida	(46)	0%
Michigan State University	(111)	0%
University of Missouri-Columbia	(192)	-1%
University of Iowa	(256)	-1%
University of California-Berkeley	(374)	-1%
University of California-San Diego	(324)	-1%
University of California-Irvine	(690)	-4%
Pennsylvania State University-Main Campus	*	
Rutgers University-New Brunswick	*	
University of Colorado Boulder	*	
University of Pittsburgh-Pittsburgh Campus	*	

**Data for all four years was not reported for these institutions in IPEDS*

Table 4.05 also shows that 20 of the 30 institutions (66%) had increases in total revenue per FTE between one and 20 percent. Three institutions (10%) showed no change in total revenue per FTE, and five institutions (17%) had decreases that were between one and 10 percent. The final two institutions had increases in total revenue per FTE that were greater than 30 percent.

2007-08 to 2011-12. Table 4.06 on the next page shows the change in total revenue per FTE between 2007-08 and 2011-12 by institution. This represents the change that occurred after the Great Recession began in 2007. Average total gross-tuition and state appropriations revenue per FTE was $23,361 in 2007-08 (skewness = 0.63, *SE* = 0.45, *Mdn* = $22,251) and this increased to $23,571 by 2011-12 (skewness = 0.49, *SE* = 0.45, *Mdn* = $23,196). The average increase in total revenue per FTE over these four years was $210 (2%) per FTE (*SD* = 2,104). The change in total tuition per FTE was normally distributed with a skewness of 0.1 (*SE* = 0.45) and there was a median increase of $72 (0.3%) per FTE. There also was a $9,137 (37%) range in the data where the University of California – Irvine had the largest increase of $4,513 per FTE which is a 24% increase over these four years. On the other hand, the University of Michigan – Ann Arbor had the greatest decrease at $4,624 per FTE which was a 14% decrease in gross-tuition revenue per FTE.

Table 4.06

R1: Change in Total Revenue per FTE between 2007-08 and 2011-12

Institution	4-Yr Change (Amount)	4-Yr Change (%)
University of California-Irvine	$ 4,513	24%
University of Oregon	3,073	21%
Purdue University-Main Campus	3,972	20%
University of Illinois at Urbana-Champaign	2,747	14%
University of California-San Diego	3,183	14%
University of Florida	1,944	10%
University of Virginia-Main Campus	2,166	9%
University of Washington-Seattle Campus	1,473	7%
University of Minnesota-Twin Cities	1,399	5%
Indiana University-Bloomington	1,079	5%
The University of Texas at Austin	694	4%
University of California-Santa Barbara	660	3%
Texas A & M University-College Station	522	3%
University of Wisconsin-Madison	229	1%
University of California-Davis	89	0%
University of Iowa	54	0%
Michigan State University	25	0%
University of California-Berkeley	23	0%
University of California-Los Angeles	(332)	-1%
University of Maryland-College Park	(775)	-3%
University of Kansas	(835)	-4%
University of North Carolina at Chapel Hill	(1,634)	-5%
Georgia Institute of Technology-Main Campus	(1,304)	-6%
University at Buffalo - SUNY	(1,957)	-8%
Stony Brook University	(2,231)	-8%
University of Arizona	(2,159)	-8%
Ohio State University-Main Campus	(1,797)	-9%
University of Missouri-Columbia	(1,893)	-9%
Iowa State University	(1,996)	-9%
University of Michigan-Ann Arbor	(4,624)	-14%
Pennsylvania State University-Main Campus	*	
Rutgers University-New Brunswick	*	
University of Colorado Boulder	*	
University of Pittsburgh-Pittsburgh Campus	*	

**Not included in this study*

Table 4.06 also shows that 11 institutions (37%) had decreases in total revenue per FTE that were between one and 10 percent. There were also 12 institutions that showed increases in total revenue per FTE between one and 20 percent. Two institutions showed the largest increases and these were between 21% and 25%. Finally, one institution had a decrease in total revenue per FTE that was greater than 10%.

Summary of R1. Table 4.07 below shows the different ranges of the change in total revenue per FTE and compares the changes that occurred between 2003-04 and 2007-08 with the changes between 2007-08 and 2011-12.

Table 4.07

R1: Summary of Four-year Percent Change in Total Revenue per FTE

	2003-04 to 2007-08		2007-08 to 2011-12	
Range in % Change	Number of Institutions	Percent	Number of Institutions	Percent
Less than -10%	0	0%	1	3%
-10% to -1%	5	17%	11	37%
0%	3	10%	4	13%
1% to 10%	13	43%	9	30%
11% to 20%	7	23%	3	10%
21% to 30%	0	0%	2	7%
31% to 40%	1	3%	0	0%
Greater than 40%	1	3%	0	0%
Total	30		30	

The following describes a summary of these changes along with a summary of the major findings from R1:

1. The average total revenue per FTE increased between 2003-04 and 2011-12. The average total revenue per FTE increased from $21,732 in 2003-04 to $23,361 in 2007-08, and from here increased slightly to $23,571 per FTE by 2011-12. See Appendix D for figures showing total tuition per FTE by individual institution.

2. Between 2003-04 and 2007-08, 22 of the 30 institutions increased their total revenue and the average increase was $2,311 (12%) per FTE (*SD* = $1,982). Between 2007-08 and 2011-12 there was a decrease in the number of institutions that showed increases in total revenue. Between these years, 14 institutions increased their total revenue per FTE and the average increase was $1,975 (10%) per FTE (*SD* = $1,349).
3. Between 2003-04 and 2007-08, five institutions (17%) decreased their total revenue per FTE. They showed a 2% or $367 average decrease in total revenue per FTE (*SD* = $193). This increased to 12 institutions (40%) between 2007-08 to 2011-12 and these institutions had a 7% average decrease of $1,795 per FTE (*SD* = $1,078).
4. Between 2003-04 and 2007-08, three institutions (10%) showed no change in total revenue per FTE. This increased slightly to four institutions (13%) between 2007-08 and 2011-12.

Research Question 2. For the second research question, the IPEDS variable of "Tuition and fees after deducting discounts and allowances" was used as net-tuition revenue. This variable was added to the state appropriations IPEDS variable and then divided by 12-month FTE enrollment in order to calculate total revenue per FTE.

2003-04 to 2007-08. Average net-tuition and state appropriations revenue per FTE was $19,995 in 2003-04 (skewness = 0.31, *SE* = 0.45, *Mdn* = $18,536) and this increased to $21,296 by 2007-08 (skewness = 0.55, *SE* = 0.45, *Mdn* = $20,262). Table 4.08 below presents the four-year change in total revenue per FTE between 2003-04 and 2007-08 and is organized by descending four-year percent change. It shows that on average, there was a $1,301 (7%) increase in total revenue per FTE (*SD* = 1,918). However, the change in total tuition per FTE was non-normally distributed with a skewness of 1.32 (*SE* = 0.45) and there was a median increase of

$678 (5%) per FTE. There was also an $8,149 range in the four-year change of where the University of Kansas had the largest percent increase at 54% ($7,156) per FTE and the University of California-Irvine had the largest percent decrease of 4% ($722) per FTE.

Table 4.08

R2: Change in Total Revenue per FTE between 2003-04 and 2007-08

Institution	4-Yr Change (Amount)	4-Yr Change (%)
University of Kansas	7,156	54%
University of Arizona	5,267	30%
University of North Carolina at Chapel Hill	4,388	17%
Georgia Institute of Technology-Main Campus	3,041	16%
The University of Texas at Austin	2,159	15%
University of Minnesota-Twin Cities	3,132	14%
University at Buffalo-SUNY	2,895	14%
University of Virginia-Main Campus	2,210	12%
University of Michigan-Ann Arbor	2,558	10%
University of Washington-Seattle Campus	1,547	9%
Indiana University-Bloomington	1,522	8%
Iowa State University	1,412	8%
University of Maryland-College Park	1,658	8%
Stony Brook University	1,582	6%
University of Oregon	752	6%
University of California-Santa Barbara	604	3%
Texas A & M University-College Station	511	3%
University of Iowa	151	1%
University of California-Davis	167	1%
University of Wisconsin-Madison	124	1%
Purdue University-Main Campus	17	0%
University of California-Los Angeles	(39)	0%
Ohio State University-Main Campus	(31)	0%
Michigan State University	(151)	-1%
University of Missouri-Columbia	(238)	-1%
University of California-San Diego	(386)	-2%
University of Illinois at Urbana-Champaign	(617)	-4%
University of Florida	(637)	-4%
University of California-Berkeley	(993)	-4%
University of California-Irvine	(722)	-4%
Pennsylvania State University-Main Campus	*	
Rutgers University-New Brunswick	*	
University of Colorado Boulder	*	
University of Pittsburgh-Pittsburgh Campus	*	

**Data for all four years was not reported for these institutions in IPEDS*

Table 4.08 shows that the majority of the institutions had increases in total revenue per FTE. Twenty institutions (67%) had increases where 12 of these had increases between one and 10 percent. Three institutions showed no change in total revenue per FTE, and seven institutions (23%) had decreases between 1 and 10 percent.

2007-08 to 2011-12. Average net-tuition and state appropriations revenue per FTE was $21,296 in 2007-08 (skewness = 0.55, *SE* = 0.45, *Mdn* = $20,262) and this decreased to $20,655 by 2011-12 (skewness = 0.41, *SE* = 0.45, *Mdn* = 20,413). Table 4.09 shows the four-year change in total revenue per FTE between 2007-08 and 2011-12 by institution. On average, there was a $641 (2%) decrease in total revenue per FTE (*SD* = 1,962) along with a skewness of 0.16 (*SE* = 0.45, *Mdn* = $626). There was an $8,625 range in the four-year change of where Purdue University had the largest increase at $3,642 per FTE (20%) and the University of Michigan had the largest decrease of $4,982 per FTE (17%).

This table also shows that the majority of the institutions had decreases in total revenue per FTE. Fourteen institutions (47%) had decreases between one and 10 percent and an additional five institutions (17%) showed decreases greater than 10 percent. The remaining 11 institutions (37%) had increases in total revenue per FTE between one and 20 percent. No institutions showed no change in total revenue per FTE.

Table 4.09

R2: Change in Total Revenue per FTE between 2007-08 and 2011-12

Institution	4-Yr Change (Amount)	4-Yr Change (%)
Purdue University-Main Campus	3,642	20%
University of California-Irvine	3,279	19%
University of Illinois at Urbana-Champaign	1,944	11%
University of Oregon	1,562	11%
University of Florida	1,261	8%
University of Virginia-Main Campus	1,502	7%
University of California-San Diego	740	4%
University of Washington-Seattle Campus	253	1%
The University of Texas at Austin	165	1%
Indiana University-Bloomington	193	1%
University of California-Santa Barbara	98	1%
Texas A & M University-College Station	(106)	-1%
University of Minnesota-Twin Cities	(419)	-2%
University of Iowa	(543)	-2%
University of Wisconsin-Madison	(562)	-3%
University of California-Berkeley	(796)	-3%
Michigan State University	(689)	-3%
University of Maryland-College Park	(984)	-4%
University of Kansas	(1,044)	-5%
University of North Carolina at Chapel Hill	(2,019)	-7%
University of California-Davis	(1,840)	-7%
Georgia Institute of Technology-Main Campus	(1,644)	-7%
University at Buffalo-SUNY	(2,031)	-8%
Stony Brook University	(2,584)	-10%
Ohio State University-Main Campus	(1,794)	-10%
University of California-Los Angeles	(3,049)	-11%
University of Missouri-Columbia	(2,255)	-12%
Iowa State University	(2,792)	-14%
University of Arizona	(3,746)	-16%
University of Michigan-Ann Arbor	(4,982)	-17%
Pennsylvania State University-Main Campus	*	
Rutgers University-New Brunswick	*	
University of Colorado Boulder	*	
University of Pittsburgh-Pittsburgh Campus	*	

**Not included in this study*

***Summary of R2*.** Table 4.10 below shows the different ranges in the change in total revenue per FTE and compares the changes that occurred between 2003-04 and 2007-08 with the changes between 2007-08 and 2011-12.

Table 4.10

R2: Summary of Four-year Percent Change in Total Revenue per FTE

	2003-04 to 2007-08		2007-08 to 2011-12	
Range in % Change	Number of Institutions	Percent	Number of Institutions	Percent
Less than -10%	0	0%	5	17%
-10% to -1%	7	23%	14	47%
0%	3	10%	0	0%
1% to 10%	12	40%	7	23%
11% to 20%	6	20%	4	13%
21% to 30%	1	3%	0	0%
31% to 40%	0	0%	0	0%
Greater than 40%	1	3%	0	0%
Total	30		30	

The following lists a summary of these changes along with a summary of the major findings from R2:

1. The average total of net-tuition per FTE and state appropriations per FTE increased from $19,995 in 2003-04 to $21,296 in 2007-08, and then decreased to $20,655 by 2011-12. See Appendix E for figures showing total tuition per FTE by individual institution.
2. Between 2003-04 and 2007-08, 20 of the 30 institutions (67%) showed increases in total revenue per FTE which decreased to 11 institutions (37%) between 2007-08 to 2011-12. The average increase for these institutions over the first four years was 12% or $2,142 per FTE. During the next four years, the average increase was 8% or $1,331 per FTE.

3. Three institutions (10%) showed no change in total revenue per FTE between 2003-04 and 2008-08. This was reduced to zero institutions between 2007-08 and 2011-12.
4. Between 2003-04 and 2007-08, seven institutions (23%) had a decrease in total revenue per FTE and the average decrease was 3% or $535 per FTE. The number of institutions with decreasing total revenue increased to 19 institutions (63%) between 2007-08 to 2011-12. These institutions had an 8% average decrease or $1,783 decrease per FTE.

Research Questions 3 and 4

Research questions three and four examined whether public AAU institutions became increasingly funded by tuition revenue than by state appropriations before and after the start of the Great Recession:

Research Question 3 (R3): When considering the total revenue per FTE student found in the first research question, what is the change in the proportion of the total that came from *gross*-tuition per FTE?

Research Question 4 (R4): When considering the total revenue per FTE student found in the second research question, what is the change in the proportion of the total that came from *net*-tuition per FTE?

Research Question 3. In order to calculate the proportion of total revenue that came from gross-tuition revenue, gross-tuition revenue per FTE was divided by the total revenue per FTE variable that was calculated in the first research question. In order to analyze this data the absolute change in proportion of gross-tuition revenue per FTE was calculated along with the relative change. While the relative change reflects the percent increase which is based on each individual institution's proportion of gross-tuition revenue, the absolute change is what is

discussed in the sections to follow. This is because the absolute change represents the change in the proportion of the total that is made up by tuition which is what is asked by the research questions. Also, as the absolute proportion of tuition-revenue per FTE changes, there is an equal absolute change in the proportion of state appropriations per FTE that occurs in the opposite direction. The same applies for Research Question 4 that discusses the change in the proportion of net-tuition revenue per FTE. The relative percent change in tuition per FTE is included in tables only as a means to show that while some institutions may show the same absolute percent change, they could have different relative percent changes if they had different proportions of gross-tuition revenue per FTE.

2003-04 to 2007-08. The average proportion of gross-tuition per FTE that made up total revenue per FTE increased from 46% in 2003-04 to 50% by 2007-08. The proportions of gross-tuition revenue per FTE by institution can be seen in Appendix F. This reflects a 3% average absolute percent increase (*SD* = 4%) in the proportion of gross-tuition revenue per FTE (skewness = -0.04, *SE* = 0.45, *Mdn* = 3%). There was a 21% range in the absolute percent change where the University of Illinois at Urbana Champaign had the largest increase at 14%, and the University at Buffalo, SUNY had the largest decrease at 7%. Table 4.11 on the next page shows the change in gross-tuition per FTE as a percentage of total revenue per FTE by institution.

Table 4.11

R3: Change in Gross-Tuition Revenue per FTE as a Percentage of Total Revenue per FTE between 2003-04 and 2007-08

	4-Year Change			
Institution	Absolute Change	Relative Change	Change in Gross-Tuition per FTE	Change in State Appr per FTE
University of Illinois at Urbana-Champaign	14%	27%	$ 2,760	(2,542)
University of California-San Diego	8%	19%	1,603	(1,926)
Texas A & M University-College Station	7%	19%	1,972	(633)
Michigan State University	7%	13%	1,500	(1,610)
Ohio State University-Main Campus	6%	11%	1,281	(1,251)
Indiana University-Bloomington	6%	10%	2,579	(665)
Purdue University-Main Campus	6%	11%	1,273	(1,075)
University of California-Irvine	6%	13%	788	(1,478)
The University of Texas at Austin	6%	11%	2,651	293
University of California-Santa Barbara	5%	13%	1,448	(537)
University of California-Berkeley	5%	13%	1,298	(1,673)
University of California-Davis	5%	14%	1,560	(839)
University of California-Los Angeles	4%	12%	1,591	(932)
University of Michigan-Ann Arbor	3%	5%	3,473	(23)
University of Wisconsin-Madison	3%	7%	759	(455)
University of Washington-Seattle Campus	3%	5%	1,609	280
University of Missouri-Columbia	2%	5%	404	(596)
University of Florida	2%	8%	425	(471)
University of Arizona	2%	5%	3,193	3,411
Georgia Institute of Technology-Main Campus	2%	5%	1,662	1,828
University of Minnesota-Twin Cities	1%	3%	1,934	1,589
University of Iowa	1%	3%	190	(446)
University of North Carolina at Chapel Hill	1%	2%	1,892	3,154
Iowa State University	1%	1%	857	752
University of Maryland-College Park	0%	1%	798	600
University of Virginia-Main Campus	-1%	-2%	1,564	1,041
University of Oregon	-2%	-2%	332	479
Stony Brook University	-2%	-9%	(376)	1,544
University of Kansas	-4%	-8%	2,805	4,562
University at Buffalo-SUNY	-7%	-20%	(829)	3,509
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Data for all four years was not reported for these institutions in IPEDS*

In order to summarize this data, Table 4.12 below shows that there was one institution that had an absolute increase in the proportion of gross-tuition revenue over 10 percent. The majority of the institutions, or 23 of them (77%) had an increase between 1% and 10% and an average absolute percent increase of 4%. For these institutions, the average increase in the proportion of gross-tuition per FTE was $1,563 and there was also an average decrease in state appropriations per FTE of $144. For the six institutions that showed a decrease or no change in the proportion of gross-tuition per FTE, there was a 3% average absolute decrease, a $716 average increase in gross-tuition per FTE, and a $1,956 average increase in state appropriations per FTE.

Table 4.12

R3: Average Change per FTE between 2003-04 and 2007-08.

Absolute Change in Proportion of Gross-Tuition Revenue per FTE	Number of Inst.	Absolute Change	Relative Change	Gross-Tuition per FTE	State Appr per FTE
-10% to 0%	6	-3%	-7%	$ 716	$ 1,956
1% to 10%	23	4%	9%	$ 1,563	$ (144)
11% to 20%	1	14%	27%	$ 2,760	$ (2,542)
Greater than 20%	0				

2007-08 to 2011-12. The proportion of gross-tuition per FTE that made up total revenue per FTE increased from 50% in 2007-08 to 64% by 2011-12. This reflects an average absolute percent increase of 14% (*SD* = 7%, skewness = 0.38, *SE* = 0.45, *Mdn* = 13%). There was also an absolute range of 24% where the University of California at Berkeley had the largest percent increase at 27% and the University of Maryland – College Park had the smallest change at a 4% increase. See Table 4.13 on the next page for a list of the change in gross-tuition per FTE by institution.

Table 4.13

Change in Gross-Tuition Revenue per FTE as a Percentage of Total Revenue per FTE between 2007-08 and 2011-12

	4-Year Change			
Institution	Absolute Change	Relative Change	Change in Gross-Tuition per FTE	Change in State Appr per FTE
University of California-Berkeley	27%	59%	$ 7,546	$ (7,523)
University of California-Los Angeles	26%	63%	7,698	(8,030)
University of Arizona	25%	58%	4,969	(7,128)
University of California-Santa Barbara	24%	50%	5,157	(4,497)
University of California-Davis	23%	57%	6,204	(6,115)
University of Washington-Seattle Campus	22%	40%	5,952	(4,479)
University of California-San Diego	21%	43%	6,784	(3,601)
University of Iowa	20%	43%	4,810	(4,756)
Georgia Institute of Technology-Main Campus	20%	54%	3,947	(5,250)
University of Oregon	19%	27%	5,479	(2,406)
Michigan State University	18%	31%	4,061	(4,036)
University of California-Irvine	17%	34%	6,178	(1,665)
Iowa State University	15%	33%	2,084	(4,079)
University of Florida	15%	46%	3,668	(1,724)
University of Minnesota-Twin Cities	14%	31%	4,787	(3,388)
University of Missouri-Columbia	12%	23%	1,364	(3,257)
University of North Carolina at Chapel Hill	11%	33%	2,946	(4,580)
Stony Brook University	10%	43%	2,181	(4,411)
University of Michigan-Ann Arbor	10%	13%	(478)	(4,146)
University of Virginia-Main Campus	9%	14%	3,908	(1,742)
University of Illinois at Urbana-Champaign	9%	14%	3,809	(1,062)
Texas A & M University-College Station	9%	20%	2,107	(1,584)
University at Buffalo-SUNY	9%	32%	1,580	(3,536)
University of Wisconsin-Madison	9%	19%	1,975	(1,746)
Indiana University-Bloomington	8%	12%	2,632	(1,553)
Ohio State University-Main Campus	8%	13%	380	(2,177)
The University of Texas at Austin	8%	13%	1,914	(1,220)
University of Kansas	7%	15%	969	(1,804)
Purdue University-Main Campus	7%	11%	4,010	(38)
University of Maryland-College Park	4%	7%	494	(1,269)
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Not included in this study*

In order to summarize this data, Table 4.14 below shows that there were seven institutions that had an absolute increase in the proportion of gross-tuition revenue over 20%. These institutions had a 24% average absolute change which reflected a $6,330 average increase in gross tuition per FTE along with a $5,910 average decrease in state appropriations per FTE. There were also 10 institutions that had an increase in the proportion of gross-tuition per FTE that was between 11% and 20%. Their average absolute change was 16%, which included a $3,932 per FTE increase in gross-tuition per FTE and a $3,515 per FTE decrease in state appropriations per FTE. Finally, 13 institutions had an increase between 1% and 10%. For these institutions, there was an 8% average absolute change in the proportion of gross-tuition per FTE which reflected a $1,960 average increase in gross-tuition per FTE and a $2,022 average decrease in state appropriations per FTE.

Table 4.14

R3: Average Change per FTE between 2007-08 and 2011-12.

Absolute Change in Proportion of Gross-Tuition Revenue per FTE	Number of Inst.	Absolute Change	Relative Change	Gross-Tuition per FTE	State Appr per FTE
-10% to 0%	0				
1% to 10%	13	8%	17%	$ 1,960	$ (2,022)
11% to 20%	10	16%	35%	$ 3,932	$ (3,514)
Greater than 20%	7	24%	53%	$ 6,330	$ (5,910)
	30				

Summary of R3. As shown in previous tables, Table 4.15 below shows the different ranges in the change in the proportion of gross-tuition revenue per FTE and compares the changes that occurred between 2003-04 and 2007-08 with the changes between 2007-08 and 2011-12.

Table 4.15

R3: Summary of Percent Change in Gross-Tuition Revenue per FTE as a Percentage of Total Revenue per FTE

Absolute Change in Proportion of Gross-Tuition Revenue per	2003-04 to 2007-08 Institutions	Chg	2007-08 to 2011-12 Institutions	Chg
-10% to 0%	6 (20%)	-3%	0	
1% to 10%	23 (77%)	4%	13(43%)	8%
11% to 20%	1 (3%)	14%	10(33%)	16%
Greater than 20%	0		7(23%)	24%
	30		30	

The following lists a summary of these changes along with the major findings from R3:

1. The average proportion of the total revenue per FTE that was made up of gross-tuition per FTE increased between 2003-04 and 2011-12. The average proportion was 46% in 2003-04 and this increased to 50% in 2007-08, and further increased to 64% by 2011-12. The data showing the proportions for each individual institution can be found in Appendix F.
2. Between 2003-04 and 2007-08, institutions on average increased the absolute proportion of total revenue coming from gross-tuition revenue per FTE by 3 percentage points. This absolute proportion of tuition revenue increased by 14 percentage points between 2007-08 and 2011-12.
3. Between 2003-04 and 2007-08, 24 institutions (80%) had absolute increases in the proportion of total revenue coming from gross-tuition revenue per FTE. Between 2007-08 and 2011-12 all 30 institutions had increases in the absolute proportion of gross-tuition revenue per FTE.

4. Between 2003-04 and 2007-08, six institutions (20%) had either no change or a decrease in the proportion of total revenue coming from gross-tuition revenue per FTE. This is compared to zero institutions in 2007-08 to 2011-12.

What should be noted is that while this research question asked for *changes* in the proportions of gross-tuition revenue per FTE, there were variations by institution in the actual proportions of state support or tuition revenue that made up total revenue per FTE. For example, while the University of Oregon showed a 2% absolute decrease in gross-tuition revenue per FTE over the first four years of this study, in 2003-04 72% of their total revenue per FTE was comprised of gross-tuition revenue per FTE which is much higher than the average proportion of 46%. By 2011-12, their gross-tuition revenue per FTE increased to 89% of total revenue per FTE. This again is higher than the 64% average. State appropriations were not a major contributor to total revenue for this institution. In general, while there was an absolute decrease in gross-tuition revenue per FTE over the first four years of this study, the above average proportion of gross-tuition revenue that the institution had in 2003-04 resulted in an above average proportion in 2007-08 regardless of the decrease. The proportions of gross-tuition revenue per FTE by institution can be seen in Appendix F.

Research Question 4. Net-tuition revenue per FTE was divided by the total revenue per FTE variable that was calculated in the second research question in order to calculate net-tuition revenue per FTE as a percentage of total revenue per FTE.

2003-04 to 2007-08. The average proportion of net-tuition per FTE that made up total revenue per FTE increased from 42% in 2003-04 to 45% by 2007-08. This reflects a 3% average absolute increase (*SD* = 4%, range -6% to 13%, skewness = 0.15, *SE* = 0.45, *Mdn* = 3%) in the proportion of net-tuition revenue per FTE. The University of Illinois at Urbana Champaign had

the largest absolute increase at 13%, and the University at Buffalo-SUNY had the largest decrease at 6%. Table 4.16 on the next page shows the change in net-tuition per FTE as a percentage of total revenue per FTE by institution.

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Table 4.16

R4: Change in Net-Tuition per FTE as a Percentage of Total Revenue per FTE between 2003-04 and 2007-08.

	4-Year Change			
Institution	Absolute Change	Relative Change	Change in Net-Tuition per FTE	Change in State Appr per FTE
University of Illinois at Urbana-Champaign	13%	28%	$ 1,925	$ (2,542)
University of California-San Diego	8%	25%	1,540	(1,926)
Michigan State University	7%	15%	1,459	(1,610)
Ohio State University-Main Campus	7%	13%	1,219	(1,251)
Indiana University-Bloomington	6%	10%	2,187	(665)
University of California-Irvine	6%	15%	756	(1,478)
Purdue University-Main Campus	6%	11%	1,091	(1,075)
Texas A & M University-College Station	5%	14%	1,144	(633)
The University of Texas at Austin	5%	10%	1,866	293
University of California-Santa Barbara	5%	12%	1,141	(537)
University of California-Berkeley	4%	12%	679	(1,673)
University of California-Davis	4%	13%	1,006	(839)
University of Michigan-Ann Arbor	3%	5%	2,581	(23)
University of California-Los Angeles	3%	11%	893	(932)
University of Wisconsin-Madison	3%	6%	579	(455)
University of Missouri-Columbia	3%	6%	358	(596)
University of Washington-Seattle Campus	3%	5%	1,267	280
University of Iowa	2%	6%	597	(446)
University of Maryland-College Park	1%	3%	1,058	600
University of Minnesota-Twin Cities	1%	3%	1,543	1,589
Georgia Institute of Technology-Main Campus	1%	3%	1,213	1,828
Iowa State University	1%	2%	660	752
University of Arizona	0%	1%	1,856	3,411
University of North Carolina at Chapel Hill	0%	0%	1,233	3,154
University of Florida	0%	-1%	(166)	(471)
Stony Brook University	-1%	-5%	38	1,544
University of Virginia-Main Campus	-1%	-2%	1,169	1,041
University of Oregon	-2%	-3%	273	479
University of Kansas	-4%	-9%	2,594	4,562
University at Buffalo-SUNY	-6%	-21%	(614)	3,509
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Data for all four years was not reported for these institutions in IPEDS*

Table 4.17 below summarizes this data and shows that there was one institution that had an absolute increase in the proportion of net-tuition revenue over 10%. The majority of the institutions, or 21 of them (70%) had an increase between 1% and 10% and an average absolute percent increase of 4%. For these institutions, the average increase in the proportion of net-tuition per FTE was $1,183 and there was also an average decrease in state appropriations per FTE of $419. For the eight institutions that showed an absolute decrease or no change in the proportion of net-tuition per FTE, there was a 2% average absolute decrease, a $798 average increase in net-tuition per FTE, and a $2,154 average increase in state appropriations per FTE.

Table 4.17

R4: Average Change per FTE between 2003-04 and 2007-08

Absolute Change in Proportion of Net-Tuition Revenue per FTE	Number of Inst.	Absolute Change	Relative Change	Net-Tuition per FTE	State Appr per FTE
-10% to 0%	8	-2%	-5%	$ 798	$ 2,154
1% to 10%	21	4%	10%	$ 1,183	$ (419)
11% to 20%	1	13%	28%	$ 1,925	$ (2,542)
Greater than 20%	0				

2007-08 and 2011-12. The proportion of net-tuition per FTE that made up total revenue per FTE increased from 45% in 2007-08 to 59% by 2011-12. This reflects an average absolute increase of 14% (*SD* = 7%, range 3% to 30%, skewness = 0.47, *SE* = 0.45, *Mdn* = 12%) in the change in proportion of net-tuition revenue. The University of California – Berkeley had the largest absolute increase at 30% and the University of Maryland – College Park had the smallest change at a 3% increase. See table 4.18 on the next page for this data by institution.

Table 4.18

R4: Change in Net-Tuition per FTE as a Percentage of Total Revenue per FTE between 2007-08 and 2011-12.

	4-Year Change			
Institution	Absolute Change	Relative Change	Change in Net-Tuition per FTE	Change in State Appr per FTE
University of California-Berkeley	30%	77%	$ 6,727	$ (7,523)
University of California-Santa Barbara	25%	55%	4,595	(4,497)
University of California-Los Angeles	25%	73%	4,981	(8,030)
University of Arizona	25%	72%	3,381	(7,128)
University of Washington-Seattle Campus	23%	44%	4,732	(4,479)
University of California-Davis	21%	62%	4,275	(6,115)
University of Iowa	21%	50%	4,212	(4,756)
Georgia Institute of Technology-Main Campus	20%	62%	3,607	(5,250)
University of California-San Diego	19%	46%	4,341	(3,601)
University of Oregon	19%	27%	3,968	(2,406)
Michigan State University	18%	34%	3,347	(4,036)
University of California-Irvine	17%	38%	4,944	(1,665)
University of Florida	15%	68%	2,985	(1,724)
Iowa State University	14%	36%	1,287	(4,079)
University of Missouri-Columbia	13%	28%	1,002	(3,257)
University of Minnesota-Twin Cities	12%	30%	2,969	(3,388)
University of North Carolina at Chapel Hill	11%	38%	2,560	(4,580)
University of Virginia-Main Campus	10%	16%	3,244	(1,742)
University of Michigan-Ann Arbor	10%	15%	(836)	(4,146)
University of Illinois at Urbana-Champaign	10%	16%	3,005	(1,062)
Stony Brook University	9%	50%	1,828	(4,411)
University at Buffalo-SUNY	9%	38%	1,505	(3,536)
Ohio State University-Main Campus	8%	15%	383	(2,177)
Texas A & M University-College Station	8%	20%	1,478	(1,584)
Indiana University-Bloomington	8%	12%	1,747	(1,553)
The University of Texas at Austin	8%	15%	1,384	(1,220)
University of Wisconsin-Madison	7%	16%	1,184	(1,746)
Purdue University-Main Campus	7%	12%	3,681	(38)
University of Kansas	6%	14%	760	(1,804)
University of Maryland-College Park	3%	7%	285	(1,269)
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Not included in this study*

Table 4.19 below provides a summary of this data and shows that there were seven institutions that had an absolute increase in the proportion of net-tuition revenue over 20%. These institutions had a 24% average absolute increase which reflected a $4,700 average increase in net-tuition per FTE along with a $6,075 average decrease in state appropriations per FTE. There were also 10 institutions that had an increase in the proportion of net-tuition per FTE that was between 11% and 20%. Their average absolute increase was 16%, which included a $3,101 per FTE average increase in net-tuition per FTE and a $3,399 per FTE average decrease in state appropriations per FTE. Finally, 13 institutions had an increase between 1% and 10%. For these institutions, there was an 8% average absolute increase in the proportion of net-tuition per FTE which reflected a $1,511 average increase in net-tuition per FTE and a $2,022 average decrease in state appropriations per FTE.

Table 4.19

R4: Average Change per FTE between 2007-08 and 2011-12.

Absolute Change in Proportion of Net-Tuition Revenue per FTE	Number of Inst.	Absolute Change	Relative Change	Net-Tuition per FTE	State Appr per FTE
-10% to 0%	0				
1% to 10%	13	8%	19%	$ 1,511	$ (2,022)
11% to 20%	10	16%	41%	$ 3,101	$ (3,399)
Greater than 20%	7	24%	62%	$ 4,700	$ (6,075)
	30				

Summary of R4. Table 4.20 below compares the ranges of change in the proportion of net-tuition revenue per FTE between 2003-04 and 2007-08 and between 2007-08 and 2011-12.

Table 4.20

R4: Summary of Percent Change in Net-Tuition Revenue per FTE as a Percentage of Total Revenue per FTE

Absolute Change in Proportion of Net-Tuition Revenue per FTE	2003-04 to 2007-08 No. of Institutions	2003-04 to 2007-08 Avg Absolute Chg	2007-08 to 2011-12 No. of Institutions	2007-08 to 2011-12 Avg Absolute Chg
-10% to 0%	8(27%)	-2%	0	
1% to 10%	21(70%)	4%	13(43%)	8%
11% to 20%	1(3%)	13%	10(33%)	16%
Greater than 20%	0		7(23%)	24%
	30		30	

The following lists a summary of the changes along with the major findings from R4.

1. The average proportion of the total that was made up of net-tuition per FTE increased between 2003-04 and 2011-12. In 2003-04, the average proportion was 42% and this increased to 45% by 2007-08, and further increased to 59% by 2011-12. The data showing the proportions for each individual institution can be found in Appendix G.
2. Between 2003-04 and 2007-08, institutions on average increased the absolute proportion of total revenue coming from net-tuition revenue by 3%. The same average absolute proportion increased by 14% between 2007-08 and 2011-12.
3. Between 2003-04 and 2007-08, 22 institutions (73%) had absolute increases in the proportion of total revenue coming from net-tuition revenue per FTE between one and 20 percent. There were no institutions with increases above 20%. Between 2007-08 and 2011-12, 23 institutions (77%) had increases between one and 20 percent. Another seven institutions (23%) had absolute increases between 21 and 30 percent.

4. Between 2003-04 and 2007-08 eight institutions (27%) had either no change or a decrease in the absolute proportion of total revenue coming from net-tuition revenue per FTE. This is compared to zero institutions in 2007-08 to 2011-12.

Research Questions 5 and 6

Research questions five and six examined whether the institutions received a changing amount of total revenue and simultaneously became increasingly funded by students:

Research Question 5 (R5): If there was a change in the total revenue per FTE as found in Research Question 1, was there also an increase in the change of the proportion of *gross*-tuition revenue per FTE that made up the total?

Research Question 6 (R6): If there was a change in the total revenue per FTE as found in Research Question 2, was there also an increase in the change of the proportion of *net*-tuition revenue per FTE that made up the total?

Research Question 5. In order to answer the fifth research question, the institutional data found from the first research question was sorted according to the following categories: Increase in total revenue, no change in total revenue, and decrease in total revenue. These data reflected the four-year change in total revenue with respect to gross-tuition revenue per FTE and state appropriations revenue per FTE. This was then compared to each institution's four-year absolute change in the proportion of the total revenue that was made up of gross-tuition per FTE. Also included in the analysis is the actual change in gross-tuition and state appropriations revenue per FTE. This data helped to explain which variable influenced the change in total revenue and also the change in the proportion of gross-tuition per FTE.

2003-04 to 2007-08. As found in R1, the change in total revenue for all 30 institutions during these four years was non-normally distributed with a 5% ($1,040) median increase in total

revenue per FTE (range -4% to 54%) and the proportion of revenue coming from gross-tuition revenue increased on average by 3% (*SD* = 4%, range -7% to 14%). This reflects an average increase in gross-tuition per FTE of $1,433 (15%) along with a $450 (-3.5%) median decrease in state appropriations per FTE (*M* = $196, 2%). The four-year change in state appropriations was non-normally distributed with a skewness of 0.91 (*SE = 0.45).*

See Table 4.21 for a comparison of this data by institution. This table shows that some of the institutions had increases in total revenue per FTE along with decreases in the proportion of total revenue that was made up of gross-tuition revenue. For some of the institutions this meant that there was a decreasing proportion of the total coming from gross-tuition revenue since the gross-tuition revenue per FTE did not increase enough to maintain the same proportion. For example, the University of Virginia showed a 13% increase in total revenue per FTE along with a 1% decrease in the absolute proportion of gross-tuition per FTE. There were increases in both gross-tuition per FTE and state appropriations per FTE which contributed to the increase in total revenue per FTE. However, the increase in gross-tuition per FTE was not sufficient to maintain the same proportion of total revenue per FTE, which then resulted in a decrease in the proportion.

Another example includes institutions that showed an increasing amount of total revenue per FTE and decreasing proportions of gross-tuition per FTE as a result of decreasing gross-tuition revenue per FTE and increasing state appropriations per FTE. For example, the University at Buffalo-SUNY had a 12% increase in total revenue per FTE along with a 7% absolute decrease in the proportion of revenue coming from gross-tuition revenue per FTE. This reflected an $829 decrease in gross-tuition revenue per FTE along with a $3,509 increase in state

appropriations per FTE. Therefore, in this case the increase in state appropriations contributed to the increase in total revenue per FTE.

Table 4.21

R5: Four-Year Change per FTE by Institution

Institution	2003-04 to 2007-08 Change in Total Revenue per FTE	Abs Chg in Proportion of Gross-Tuition Revenue per FTE	Change in Gross-Tuition per FTE	Change in State Appr per FTE
University of Kansas	54%	-4%	$ 2,805	$ 4,562
University of Arizona	34%	2%	3,193	3,411
The University of Texas at Austin	19%	6%	2,651	293
University of North Carolina at Chapel Hill	18%	1%	1,892	3,154
Georgia Institute of Technology-Main Campus	17%	2%	1,662	1,828
University of Minnesota-Twin Cities	14%	1%	1,934	1,589
University of Virginia-Main Campus	13%	-1%	1,564	1,041
University at Buffalo-SUNY	12%	-7%	(829)	3,509
University of Michigan-Ann Arbor	11%	3%	3,473	(23)
University of Washington-Seattle Campus	10%	3%	1,609	280
Indiana University-Bloomington	10%	6%	2,579	(665)
Iowa State University	8%	1%	857	752
Texas A & M University-College Station	7%	7%	1,972	(633)
University of Oregon	6%	-2%	332	479
University of Maryland-College Park	6%	0%	798	600
University of California-Santa Barbara	5%	5%	1,448	(537)
Stony Brook University	4%	-2%	(376)	1,544
University of California-Davis	3%	5%	1,560	(839)
University of California-Los Angeles	2%	4%	1,591	(932)
University of Wisconsin-Madison	1%	3%	759	(455)
University of Illinois at Urbana-Champaign	1%	14%	2,760	(2,542)
Purdue University-Main Campus	1%	6%	1,273	(1,075)
Ohio State University-Main Campus	0%	6%	1,281	(1,251)
University of Florida	0%	2%	425	(471)
Michigan State University	0%	7%	1,500	(1,610)
University of Missouri-Columbia	-1%	2%	404	(596)
University of Iowa	-1%	1%	190	(446)
University of California-Berkeley	-1%	5%	1,298	(1,673)
University of California-San Diego	-1%	8%	1,603	(1,926)
University of California-Irvine	-4%	6%	788	(1,478)
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Data for all four years was not reported for these institutions in IPEDS*

Table 4.22 below breaks up the data from R5 into ranges of change in total revenue per FTE. This table shows that those institutions that showed a decrease in total revenue per FTE showed an average absolute increase in the proportion of gross-tuition per FTE. This is a reflection of an average increase in gross-tuition per FTE that was less than the average decrease in state appropriations per FTE. For those institutions that showed no change or an increase in total revenue per FTE up to 10 percent, they also showed an average absolute increase in the proportion of gross-tuition per FTE. This reflected average increases in gross-tuition per FTE and decreases in state-appropriations per FTE. Therefore, on average, the marginal increases in total revenue per FTE were due to increasing proportions of revenue coming from gross-tuition revenue per FTE.

Those institutions that had increases in total revenue between 11 and 20 percent received an average absolute increase in the proportion of revenue coming from gross-tuition revenue per FTE. The increase in total revenue was due to average increases in gross-tuition per FTE that were larger than the average increases in state appropriations per FTE. However, those institutions that showed an average increase in total revenue above 20 percent had an average absolute decrease in the proportion of gross-tuition per FTE. This resulted from increases in gross-tuition per FTE that were not as large as the increases in state appropriations per FTE.

Table 4.22

R5: Average Change per FTE between 2003-04 and 2007-08

Change in Total Revenue per FTE	Number of Institutions	Avg Change in Total Revenue per FTE	Avg. Absolute Chg in Proportion of Gross-Tuition Revenue per FTE	Avg Change in Gross-Tuition per FTE	Average Change in State Appr per FTE
-1% to -5%	5 (17%)	-2%	4%	$ 856	$ (1,224)
No Change	3 (10%)	0%	5%	1,068	(1,111)
1% to 10%	13 (43%)	5%	4%	1,320	(309)
11% to 20%	7 (23%)	15%	1%	1,764	1,627
Greater than 20%	2 (7%)	44%	-1%	2,999	3,986

2007-08 to 2011-12. Between 2007-08 and 2011-12 total revenue for all institutions increased on average by 2% or $210 per FTE (*SD* = 10%, range -14% to 24%) and the average absolute proportion of revenue coming from gross-tuition revenue increased by 14% (*SD* = 7%, range 4% to 27%). This reflects a $3,637 (34%) average increase in gross-tuition revenue per FTE and a $3,427 (29%) average decrease in state funding per FTE. Table 4.23 on the next page shows a comparison of this data by institution.

Table 4.23

R5: Four-Year Change per FTE by Institution

Institution	2007-08 to 2011-12 Change in Total Revenue per FTE	Abs Chg in Proportion of Total Rev Coming from Gross-Tuition Revenue per FTE	Change in Gross-Tuition per FTE	Change in State Appr per FTE
University of California-Irvine	24%	17%	$ 6,178	$ (1,665)
University of Oregon	21%	19%	5,479	(2,406)
Purdue University-Main Campus	20%	7%	4,010	(38)
University of Illinois at Urbana-Champaign	14%	9%	3,809	(1,062)
University of California-San Diego	14%	21%	6,784	(3,601)
University of Florida	10%	15%	3,668	(1,724)
University of Virginia-Main Campus	9%	9%	3,908	(1,742)
University of Washington-Seattle Campus	7%	22%	5,952	(4,479)
University of Minnesota-Twin Cities	5%	14%	4,787	(3,388)
Indiana University-Bloomington	5%	8%	2,632	(1,553)
The University of Texas at Austin	4%	8%	1,914	(1,220)
University of California-Santa Barbara	3%	24%	5,157	(4,497)
Texas A & M University-College Station	3%	9%	2,107	(1,584)
University of Wisconsin-Madison	1%	9%	1,975	(1,746)
University of California-Davis	0%	23%	6,204	(6,115)
University of Iowa	0%	20%	4,810	(4,756)
Michigan State University	0%	18%	4,061	(4,036)
University of California-Berkeley	0%	27%	7,546	(7,523)
University of California-Los Angeles	-1%	26%	7,698	(8,030)
University of Maryland-College Park	-3%	4%	494	(1,269)
University of Kansas	-4%	7%	969	(1,804)
University of North Carolina at Chapel Hill	-5%	11%	2,946	(4,580)
Georgia Institute of Technology-Main Campus	-6%	20%	3,947	(5,250)
University at Buffalo-SUNY	-8%	9%	1,580	(3,536)
Stony Brook University	-8%	10%	2,181	(4,411)
University of Arizona	-8%	25%	4,969	(7,128)
Ohio State University-Main Campus	-9%	8%	380	(2,177)
University of Missouri-Columbia	-9%	12%	1,364	(3,257)
Iowa State University	-9%	15%	2,084	(4,079)
University of Michigan-Ann Arbor	-14%	10%	(478)	(4,146)
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Not included in this study*

Table 4.24 below breaks up the data from R5 into ranges in the change of total revenue per FTE. This table shows that all institutions had absolute increases in the proportion of gross-tuition revenue per FTE. Therefore, the marginal increases in total revenue were due to average increases in gross-tuition revenue per FTE that were larger than the average decreases in state appropriations per FTE.

Table 4.24

R5: Average Change per FTE between 2007-08 and 2011-12

Change in Total Revenue per FTE	Number of Institutions	Avg Change in Total Revenue per FTE	Avg. Absolute Chg in Proportion of Gross-Tuition Revenue per FTE	Avg Change in Gross-Tuition per FTE	Average Change in State Appr per FTE
Less than 0%	12 (40%)	-7%	13%	$ 2,344	$ (4,139)
No Change	4 (13%)	0%	22%	5,655	(5,607)
1% to 10%	9 (30%)	5%	13%	3,567	(2,437)
11% to 20%	3 (10%)	16%	12%	4,868	(1,567)
Greater than 20%	2 (7%)	23%	18%	5,829	(2,035)

Summary of R5. The following lists a summary of the major findings for R5 by comparing the change in data between 2003-04 and 2007-08 to the change between 2007-08 and 2011-12:

1. Between 2003-04 and 2007-08, there was a 5% median increase in total revenue per FTE along with a 3% average absolute increase in the proportion of gross-tuition per FTE. Between 2007-08 and 2011-12 there was a 2% average increase in total revenue per FTE along with a 14% absolute increase in the average proportion of gross-tuition revenue per FTE. During these four years there was a smaller increase in total revenue per FTE along with a larger absolute average increase in the proportion of gross-tuition per FTE when compared to the change over the first four years in this study.

2. Between 2003-04 and 2007-08, 22 institutions (73%) had increases in total revenue per FTE along with a 2% average absolute increase in the proportion of gross-tuition revenue per FTE. Between 2007-08 and 2011-12, 14 institutions (47%) had an increase in total revenue per FTE along with a 14% average absolute increase in the proportion of gross-tuition revenue per FTE. During these four years, a decreasing number of institutions increased total revenue per FTE when compared to the first four years of this study, but they also had a higher average absolute increase in the proportion of gross-tuition revenue per FTE.
3. Between 2003-04 and 2007-08, the five institutions that showed a decrease in total revenue had a 4% average absolute increase in the proportion of gross-tuition revenue per FTE. In comparison, between 2007-08 and 2011-12, 12 institutions had a decrease in total revenue along with a 13% average absolute increase in the proportion of gross-tuition revenue per FTE.
4. Between 2003-04 and 2007-08, three institutions showed no change in total revenue per FTE and had a 5% average absolute increase in the proportion of gross-tuition revenue per FTE. Between 2007-08 and 2011-12 there were four institutions that had no change in total revenue per FTE and they also had a 22% average absolute increase in the proportion of gross-tuition revenue per FTE.

Research Question 6. In order to answer the sixth research question, the total of net-tuition per FTE and state appropriations per FTE as found in the second research question was sorted according to the following categories: Increase in total revenue, no change in total revenue, and decrease in total revenue. This was then compared to each institution's four-year change in the proportion of the total revenue that was made up of net-tuition per FTE.

2003-04 to 2007-08. As found in R2, the change in total revenue between 2003-04 and 2007-08 was non-normally distributed with a $678 (5%) median increase in total revenue per FTE (skewness = 1.32, *SE* = 0.45, *M* = $1,301 (7%), range -$993% to $7,156). During these four years there was a 3% average absolute increase in the proportion of revenue coming from net-tuition revenue per FTE (*SD* = 4%, range -6% to 13%). There also was a $1,105 (13%) average increase in net-tuition per FTE and a $450 (3.5%) median decrease in state appropriations revenue per FTE. State appropriations were non-normally distributed during these years with a skewness of 0.91 (*SE* = 0.45, *M* = $196, 2%). See Table 4.25 on the next page for this information by individual institution.

Table 4.25

R6: Four-Year Change per FTE by Institution

	2003-04 to 2007-08			
Institution	Change in Total Revenue per FTE	Abs Chg in Proportion of Total Revenue Coming from Net-Tuition per FTE	Change in Net-Tuition per FTE	Change in State Appr per FTE
University of Kansas	54%	-4%	$ 2,594	$ 4,562
University of Arizona	30%	0%	1,856	3,411
University of North Carolina at Chapel Hill	17%	0%	1,233	3,154
Georgia Institute of Technology-Main Campus	16%	1%	1,213	1,828
The University of Texas at Austin	15%	5%	1,866	293
University of Minnesota-Twin Cities	14%	1%	1,543	1,589
University at Buffalo-SUNY	14%	-6%	(614)	3,509
University of Virginia-Main Campus	12%	-1%	1,169	1,041
University of Michigan-Ann Arbor	10%	3%	2,581	(23)
University of Washington-Seattle Campus	9%	3%	1,267	280
Indiana University-Bloomington	8%	6%	2,187	(665)
Iowa State University	8%	1%	660	752
University of Maryland-College Park	8%	1%	1,058	600
Stony Brook University	6%	-1%	38	1,544
University of Oregon	6%	-2%	273	479
University of California-Santa Barbara	3%	5%	1,141	(537)
Texas A & M University-College Station	3%	5%	1,144	(633)
University of Iowa	1%	2%	597	(446)
University of California-Davis	1%	4%	1,006	(839)
University of Wisconsin-Madison	1%	3%	579	(455)
Purdue University-Main Campus	0%	6%	1,091	(1,075)
University of California-Los Angeles	0%	3%	893	(932)
Ohio State University-Main Campus	0%	7%	1,219	(1,251)
Michigan State University	-1%	7%	1,459	(1,610)
University of Missouri-Columbia	-1%	3%	358	(596)
University of California-San Diego	-2%	8%	1,540	(1,926)
University of Illinois at Urbana-Champaign	-4%	13%	1,925	(2,542)
University of Florida	-4%	0%	(166)	(471)
University of California-Berkeley	-4%	4%	679	(1,673)
University of California-Irvine	-4%	6%	756	(1,478)
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Not included in this study*

Table 4.26 below breaks up the data from R6 into ranges of change in total revenue per FTE. This table shows that only the two institutions that had an increase in total revenue per

FTE greater than 20 percent showed an absolute average decrease in the proportion of net-tuition revenue per FTE. This was due to an average increase in net-tuition revenue per FTE and an even larger increase in state appropriations per FTE. The institutions that had an increase in total revenue between 11 and 20 percent had no change in the average absolute proportion of net-tuition per FTE. The other institutions that showed increases in total revenue per FTE between one and 10 percent had average absolute increases in the proportion of net-tuition per FTE. This reflected on average an increase in net-tuition revenue per FTE that was greater than the average increase in state appropriations revenue per FTE.

Furthermore, three institutions showed no change in total revenue per FTE along with an average absolute increase in net-tuition revenue per FTE. For these institutions the increase in net-tuition per FTE replaced the decrease in state appropriations per FTE. Finally, those institutions that showed a decrease in total revenue per FTE also had an absolute increase in the proportion of net-tuition revenue per FTE. This was due to increases in net-tuition per FTE that did not completely cover the decreases in state appropriations per FTE.

Table 4.26

R6: Average Change per FTE between 2003-04 and 2007-08

Change in Total Revenue per FTE	Number of Institutions	Avg Change in Total Revenue	Avg. Absolute Chg in Proportion of Net-Tuition Revenue per FTE	Avg Change in Net-Tuition per FTE	Average Change in State Appr per FTE
-1% to -5%	7 (23%)	-3%	6%	936	(1,471)
No Change	3 (10%)	0%	5%	1,068	(1,086)
1% to 10%	12 (40%)	5%	3%	1,044	5
11% to 20%	6 (20%)	15%	0%	1,068	1,902
Greater than 20%	2 (7%)	42%	-2%	2,225	3,986

2007-08 to 2011-12. Between 2007-08 and 2011-12 total revenue per FTE decreased on average by 2% (*SD* = 9%, range -17% to 20%, *Mdn* = -3%). At the same time, the absolute change in the proportion of net-tuition revenue per FTE increased on average by 14% (*SD* = 7%,

range 3% to 30%, *Mdn* = 12%). Net-tuition revenue per FTE increased on average by $2,785 (33%) and state appropriations per FTE decreased on average by $3,427 (29%). A list this data by institution can be found in Table 4.27.

Table 4.27

R6: Four-Year Change per FTE by Institution

	2007-08 to 2011-12			
Institution	Change in Total Revenue per FTE	Abs Chg in Proportion of Total Revenue Coming from Net-Tuition per FTE	Change in Net-Tuition per FTE	Change in State Appr per FTE
Purdue University-Main Campus	20%	7%	3,681	(38)
University of California-Irvine	19%	17%	4,944	(1,665)
University of Illinois at Urbana-Champaign	11%	10%	3,005	(1,062)
University of Oregon	11%	19%	3,968	(2,406)
University of Florida	8%	15%	2,985	(1,724)
University of Virginia-Main Campus	7%	10%	3,244	(1,742)
University of California-San Diego	4%	19%	4,341	(3,601)
University of Washington-Seattle Campus	1%	23%	4,732	(4,479)
The University of Texas at Austin	1%	8%	1,384	(1,220)
Indiana University-Bloomington	1%	8%	1,747	(1,553)
University of California-Santa Barbara	1%	25%	4,595	(4,497)
Texas A & M University-College Station	-1%	8%	1,478	(1,584)
University of Minnesota-Twin Cities	-2%	12%	2,969	(3,388)
University of Iowa	-2%	21%	4,212	(4,756)
University of Wisconsin-Madison	-3%	7%	1,184	(1,746)
University of California-Berkeley	-3%	30%	6,727	(7,523)
Michigan State University	-3%	18%	3,347	(4,036)
University of Maryland-College Park	-4%	3%	285	(1,269)
University of Kansas	-5%	6%	760	(1,804)
University of North Carolina at Chapel Hill	-7%	11%	2,560	(4,580)
University of California-Davis	-7%	21%	4,275	(6,115)
Georgia Institute of Technology-Main Campus	-7%	20%	3,607	(5,250)
University at Buffalo-SUNY	-8%	9%	1,505	(3,536)
Stony Brook University	-10%	9%	1,828	(4,411)
Ohio State University-Main Campus	-10%	8%	383	(2,177)
University of California-Los Angeles	-11%	25%	4,981	(8,030)
University of Missouri-Columbia	-12%	13%	1,002	(3,257)
Iowa State University	-14%	14%	1,287	(4,079)
University of Arizona	-16%	25%	3,381	(7,128)
University of Michigan-Ann Arbor	-17%	10%	(836)	(4,146)
Pennsylvania State University-Main Campus	*			
Rutgers University-New Brunswick	*			
University of Colorado Boulder	*			
University of Pittsburgh-Pittsburgh Campus	*			

**Not included in this study*

Table 4.28 below breaks up the data from R6 into ranges of change in total revenue per FTE. This table shows that those institutions that had an increase in total revenue per FTE between one

and 20 percent showed an absolute average increase in the proportion of net-tuition revenue per FTE. Therefore, the marginal increases in the proportion of net-tuition were due to average increases in net-tuition revenue per FTE that were larger than the average decreases in state appropriations per FTE. The rest of the institutions showed decreases in total revenue per FTE. These institutions also had an absolute average increase in the proportion of net-tuition revenue per FTE. This reflected an average increase in net-tuition revenue per FTE that did not fully replace the decrease in state appropriations per FTE.

Table 4.28

R6: Average Change per FTE between 2007-08 and 2011-12

Change in Total Revenue per FTE	Number of Institutions	Avg Change in Total Revenue	Avg. Absolute Chg in Proportion of Net-Tuition Revenue per FTE	Avg Change in Net-Tuition per FTE	Average Change in State Appr per FTE
Less than 0%	19 (63%)	-8%	14%	$ 2,365	$ (4,148)
No Change	0				
1% to 10%	7 (23%)	3%	16%	3,290	(2,688)
11% to 20%	4 (13%)	15%	13%	3,900	(1,293)
Greater than 20%	0				

Summary of R6: The following lists a summary of the major findings for R6 by comparing the change in data between 2003-04 and 2007-08 to the change between 2007-08 and 2011-12:

1. Between 2003-04 and 2007-08, there was a 5% median increase in total revenue per FTE, along with a 3% average absolute increase in the proportion of net-tuition revenue per FTE. Between 2007-08 and 2011-12, there was a 2% average decrease in total revenue per FTE and a 14% average absolute increase in the proportion of net-tuition revenue per FTE. As a result, during these four years there was no longer an average increase in total revenue per FTE and there also was a larger increase in

the proportion of the total that was coming from net-tuition revenue per FTE when compared to the change between 2003-04 and 2007-08.

2. Between 2003-04 and 2007-08, the 20 institutions (67%) that had increases in total revenue had a 1% average absolute increase in the proportion of net-tuition revenue per FTE. Between 2007-08 and 2011-12, the 11 institutions (37%) that had increases in total revenue per FTE had a 15% average absolute increase in the proportion of net-tuition revenue per FTE that made up total revenue per FTE.
3. Between 2003-04 and 2007-08, the seven institutions (23%) that showed a decrease in total revenue per FTE had a 6% average absolute increase in the proportion of net-tuition revenue per FTE. In comparison, between 2007-08 and 2011-12, 19 institutions (63%) had a decrease in total revenue along with a 14% average absolute increase in the proportion of net-tuition revenue per FTE.
4. Between 2003-04 and 2007-08, three institutions (10%) showed no change in total revenue per FTE and had a 5% average absolute increase the proportion of net-tuition revenue per FTE. Between 2007-08 and 2011-12, there were no institutions showed no change in total revenue per FTE.

Summary

This chapter presented the findings associated with this study's six research questions. The first research question revealed that total tuition with regards to gross-tuition revenue per FTE and state appropriations per FTE increased on average between 2003-04 and 2007-08 and increased at a smaller rate between 2007-08 and 2011-12. The second research question replaced gross-tuition per FTE for net-tuition revenue per FTE and showed that while total

revenue increased on average between 2003-04 and 2007-08, it ended up decreasing on average between 2007-08 and 2011-12.

Analysis for the third research question showed that gross-tuition revenue per FTE as a percentage of total revenue per FTE had an absolute average increase of 3% between 2003-04 and 2011-12 and also an absolute average increase of 14% between 2007-08 and 2011-12. The fourth research question replaced gross-tuition revenue per FTE for net-tuition revenue per FTE. It showed the same average increases in the proportion of net-tuition revenue per FTE as was revealed in the third research question.

The fifth and sixth research questions used the data found in the previous research questions in order to compare changing total revenue to the changing proportion of the total revenue that came from tuition revenue. The analysis for these research questions showed that between 2003-04 and 2007-08, the majority of the institutions increased their total revenue per FTE and also on average received increases in the proportion of the total from tuition revenue per FTE. Between 2007-08 and 2011-12 the data showed that while there were less institutions that showed increasing total revenue, and a greater number of institutions that had decreasing amounts of total revenue per FTE, all institutions were becoming increasingly privatized. In the next chapter I will analyze and interpret the data from this study in order to provide the implications and conclusions along with any suggestions for future research.

Chapter V

Interpretation and Implications

Introduction

Various studies have analyzed the increasing tuition prices to students (Baum & Ma, 2011; Goldstein, 2005a; Kirshstein & Hurlburt, 2012; National Center for Education Statistics, 2012c; Wellman et al., 2008) along with the decreasing state appropriations (Grapevine, 2013; SHEEO, 2012; The National Governor's Association and NASBO, 2011). What is currently missing is an analysis looking to understand public AAU institutions' changing total revenue in terms of tuition and state appropriations, along with the privatization trends of these institutions. In this study, privatization is defined as an increasing proportion of institutional revenue coming from students and declining proportions from state appropriations. As a result, this study presented six research questions in order to better understand not only the changing proportion of total revenue that came from tuition revenue but also whether an increase in total revenue was a result of institutions' privatization efforts. For the purpose of this study total revenue was defined as the total of tuition and state appropriation revenue.

This type of evaluation provides a new perspective that not only contributes to the discussion of privatization and patterns of changing resource acquisition before and after the Great Recession, but it also provides a new perspective on the amount of revenue that these institutions believed they needed in order to continue to provide quality education to their students. Not only did institutions adjust and learn to operate with changing financial support from the state, but it can be expected that they will need to continue to align their goals and expectations with their changing external environment. The next sections of this study will

review (1) background information, (2) summary of methods and findings, (3) conclusions, (4) limitations, and (5) recommendations for future research.

Background

Pfeffer and Salancik's "resource dependency theory" emerged from what the authors considered a lack of questioning of organizations' acquisition of resources along with the lack of any focus on organizations' environment. Therefore, resource dependency theory "seeks to explain organizational and inter-organizational behavior in terms of those critical resources which an organization must have in order to survive and function" (Johnson, 1995, p. 1). The theory argues that organizations are not self-contained, are dependent on other organizations and as a result are linked to their external environment. Organizations not only fight to attain the necessary resources in order to be successful, but also "attempt to manage the constraints and uncertainty that result from the need to acquire resources from the environment" (Pfeffer & Salancik, 1978, p. xxiv). Organizations are working to survive and function through internal adjustments to external pressures.

The Great Recession occurred between December 2007 and June 2009 and greatly impacted state budgets through the largest collapse in state revenues on record (McNichol et al., 2012). Higher education is the most discretionary item in state budgets (Heller, 2006a; Hovey, 1999a) making it one of the most vulnerable areas to state budget cuts (Zumeta, 2004). This means that state funding for higher education shows patterns of increases during strong fiscal periods, and declines during periods of recession (The National Governor's Association and NASBO, 2011). Patterns of state support for public higher education also show that appropriations increased until 2008, reached a peak in this year and then proceeded to decline (Grapevine, 2013; SHEEO, 2012; The National Governor's Association and NASBO, 2011). As

a result institutions have been dealing with decreasing state support since 2008. In general, funding for higher education is heavily influenced by the states' fiscal situation (Delaney & Doyle, 2011; Hovey, 1999b; Zumeta & Kinne, 2011).

The inability for institutions to recover state support is coupled with the issue of a history of increasing tuition prices charged to students**.** As a reaction to decreasing state funding, institutions increased their tuition rates to students (Boatman & L'Orange, 2006; Heller, 2006a; Johnstone, 2005, 2006; Paulsen & Smart, 2001; SHEEO, 2012; Wellman et al., 2008; Zumeta, 2009) which then shifted the financing of higher education from the state to the students (Geiger, 2000; Heller, 2006a; Johnstone, 2006; Oliff et al., 2013a; Quinterno, 2012). By 2010 public funding per full-time equivalent (FTE) student reached a decade low (Desrochers & Kirshstein, 2012) and "for the first time, public research and masters institutions generated more revenue from net tuition than from state and local appropriations" (2012, p. 1). In other words, institutions started becoming privatized.

The "new normal" describes the current acknowledgement that state appropriations to higher education are not expected to increase to previous levels of support. As a result, the new normal not only includes concerns from the perspective of IHEs, but also concerns from students about the increasing tuition levels. Goodman (2009) describes how the industry's largest long-term risk lies in potentially reaching a "tipping point in a long trend line of rising net tuition revenue" (Goodman, 2009, p. 13). Moody's (2011) also describes how the increasing price sensitivity to tuition rates forces institutions to consider the potential "price ceiling" when setting tuition rates. At the same time, there has also been an increase in enrollment in higher education (Baum & Ma, 2011; Heller, 2006a; Jenny & Arbak, 2004; SHEEO, 2009, 2012; Toutkoushian, 2001) where patterns show that there is increasing enrollment demand in higher education during

recessions (SHEEO, 2012; State Higher Education Executive Officers, 2012). The privatization of higher education is not only a budgetary concern for institutions but also a concern for students as it is now affecting the amount of debt that they have to incur in order to attend higher education.

Summary of Methods & Findings

This study used IPEDS variables to create the three main variables used to answer six research questions. The three main variables included: gross-tuition revenue per FTE, net-tuition revenue per FTE, and state appropriations revenue per FTE. All variables in this study were converted to 2011-12 dollars by using the U.S. City Average table for All Urban Consumers database that is provided by the U.S. Bureau of Labor Statistics.

The population for this study included the 34 public Association of American Universities (AAU) institutions. The calculations for the six research questions were dependent on the availability of data from IPEDS and what was revealed was that not all variables were available for each institution. As a result, four institutions out of the 34 were excluded for the analysis looking at the change in data between 2003-04 and 2011-12. The details of the results from the six research questions can be found in chapter four. However, the following describes a summary of the major findings associated with the research questions.

Total Revenue per FTE

The first two research questions in this study examined public AAU institutions' changing total resource acquisition per student in terms of tuition revenue per FTE and state appropriations per FTE. The two research questions were:

> Research Question 1 (R1): What is the change in total revenue acquired per FTE student in terms of state support and *gross*-tuition revenue combined?

Research Question 2 (R2): What is the change in total revenue acquired per FTE student in terms of state support and *net*-tuition revenue combined?

Between 2003-04 and 2007-08, 22 institutions in the first research question and 20 institutions in the second research question showed an increase in the amount of total revenue that they received per FTE. Furthermore, of these institutions, there was a 12% average increase in total revenue per FTE for both research questions. Public AAU institutions, on average, were acquiring additional total revenue during the timeframe leading up to the Great Recession.

Between 2007-08 and 2011-12, however, the number of institutions increasing total revenue in R1 dropped from 22 institutions to 14 institutions and these had an average increase in total revenue per FTE of 10%. At the same time, the number of institutions that decreased their total revenue per FTE in R1 increased from five to 12 institutions and these institutions showed an average decrease in total revenue per FTE of 7%. A similar pattern occurred in R2 where the number of institutions increasing total revenue dropped from 20 institutions to 11 and the number of institutions decreasing total revenue per FTE increased from seven to 19 institutions. The average decrease in total revenue per FTE for these institutions was 8%. See Table 5.1 below for a summary table of this data.

The data from these two research questions showed that the majority of the institutions increased their total revenue per FTE in the four years prior to the Great Recession. There was also an increasing number of institutions that acquired less total revenue per FTE in the four years after the Great Recession began.

Table 5.1

Results for R1 and R2

	2003-04 to 2007-08		2007-08 to 2011-12	
Change in Total Revenue per FTE	Number of Institutions	Average Change	Number of Institutions	Average Change
Increase (R1)	22 (73%)	12%	14 (47%)	10%
Decrease (R1)	5 (17%)	-2%	12(40%)	-7%
No Change (R1)	3 (10%)		4 (13%)	
Increase (R2)	20 (67%)	12%	11 (37%)	8%
Decrease (R2)	7 (23%)	-3%	19 (63%)	-8%
No Change (R2)	3 (10%)		0 (0%)	

Changes in Privatization

The findings from this study allowed for the evaluation on whether public AAU institutions became increasingly privatized before and after the start of the Great Recession. In this study privatization is referred to as the increasing proportion of institutional revenue coming from students and declining proportions from state governments as described by Heller and Geiger (2011). R3 and R4 specifically looked at the shifting proportions of tuition revenue per FTE as a percentage of total revenue per FTE which was then used as a metric to evaluate changes in privatization. The research questions were:

> Research Question 3 (R3): When considering the total revenue per FTE student found in the first research question, what is the change in the proportion of the total that came from *gross*-tuition?
>
> Research Question 4 (R4): When considering the total revenue per FTE student found in the second research question, what is the change in the proportion of the total that came from *net*-tuition?

In terms of the absolute percent changes, the results from these two research questions showed that between 2003-04 and 2007-08 the majority of the institutions increased the proportion of tuition revenue per FTE that made up total revenue per FTE. Twenty-four institutions in R3 and 22 institutions in R4 had a 4% average percentage point increase in the proportion of tuition revenue per FTE. It should be noted that at the same time, there were five institutions in both research questions that showed a decreasing proportion of tuition revenue per FTE. These results showed that during these four years, the majority of the institutions showed an increase in privatization. See Table 5.2 below.

Table 5.2

Change in Tuition Revenue per FTE as a Percentage of Total Revenue per FTE

	2003-04 to 2007-08		2007-08 to 2011-12	
Change in Proportion	Number of Institutions	Avg. Absolute Chg in Prop. of Tuition Rev.	Number of Institutions	Avg. Absolute Chg in Prop. of Tuition Rev.
Increase (R3)	24 (80%)	4%	30 (100%)	14%
Decrease (R3)	5 (17%)	-3%	0	
No Change (R3)	1 (3%)	0%	0	
Increase (R4)	22 (73%)	4%	30 (100%)	14%
Decrease (R4)	5 (17%)	-3%	0	
No Change (R4)	3 (10%)	0%	0	

Between 2007-08 and 2011-12, all institutions showed an increase in the proportion of tuition revenue per FTE in R3 and R4, and the average absolute increase was 14%. This would suggest that on average public AAU institutions became increasingly privatized during this time period at a higher rate when compared to the change between 2003-04 and 2007-08. The increases in the proportions reflect that on a per FTE basis institutions received an increasing proportion of their revenue from students.

Even so, there were different levels of privatization among the institutions. Between the first four years of this study the majority of the institutions in R3 and R4 had absolute percent increases in the proportions of tuition revenue per FTE that were between 1 and 10%. This included 23 institutions in R3 and 21 institutions in R4. However, between 2007-08 and 2011-12 the number of institutions that had increases in the proportion of revenue per FTE shifted where those that showed absolute percent increases between 1% and 10% decreased, and the number of institution that showed increases between 11% and above increased.

Tables 5.3 and 5.4 below show that while institutions became increasingly privatized between 2007-08 and 2011-12, there were also different levels of privatization that were split between the absolute percent ranges of 1-10%, 11-20% and 20-30%. Furthermore, between the last four years of this study there were no longer any institutions that showed decreases in proportions of tuition revenue.

Table 5.3

Research Question 3: Ranges of Privatization

Absolute Change in Proportion of Gross-Tuition Revenue per FTE	2003-04 to 2007-08		2007-08 to 2011-12	
	No of Institutions	Avg Absolute Chg	No of Institutions	Avg Absolute Chg
-10% to 0%	6 (20%)	-3%	0	
1% to 10%	23 (77%)	4%	13(43%)	8%
11% to 20%	1 (3%)	14%	10(33%)	16%
Greater than 20%	0		7(23%)	24%
	30		30	

Table 5.4

Research Question 4: Ranges in Privatization

Absolute Change in Proportion of Net-Tuition Revenue per FTE	2003-04 to 2007-08 No. of Institutions	2003-04 to 2007-08 Avg Absolute Chg	2007-08 to 2011-12 No. of Institutions	2007-08 to 2011-12 Avg Absolute Chg
-10% to 0%	8(27%)	-2%	0	
1% to 10%	21(70%)	4%	13(43%)	8%
11% to 20%	1(3%)	13%	10(33%)	16%
Greater than 20%	0		7(23%)	24%
	30		30	

Total Revenue and Privatization

Putting together the results from the first two research questions with R3 and R4 also considered whether the increased proportion of revenue coming from tuition was in effort to replace lost state funding or increase the total revenue per FTE. Therefore, R5 and R6 compared the data from the first four research questions by examining the changing total revenue per FTE along with the changing proportion of tuition per FTE that made up total revenue per FTE. The following lists R5 and R6:

Research Question 5 (R5): If there was a change in the total revenue per FTE as found in Research Question 1, was there also an increase in the change of the proportion of *gross*-tuition revenue per FTE that made up the total?

Research Question 6 (R6): If there was a change in the total revenue per FTE as found in Research Question 2, was there also an increase in the change of the proportion of *net*-tuition revenue per FTE that made up the total?

For both of these research questions, the institutions that showed an increase in total revenue per FTE between 2003-04 and 2007-08 also had an average absolute increase in the proportion of revenue coming from gross-tuition revenue. This reflected average increases in

both tuition rates per FTE and state appropriations per FTE. Therefore, for some of these institutions the increasing proportion of tuition revenue was a result of increasing tuition revenue per FTE at a higher rate than the increase in state appropriations per FTE. Other institutions increased tuition revenue per FTE at rates that surpassed the lost state funding per FTE.

In comparison, for those institutions that showed increases in total revenue per FTE between 2007-08 and 2011-12, all institutions experienced decreases in state appropriations per FTE. There were also larger increases in the tuition revenue per FTE along with larger decreases in state appropriations per FTE when compared to the first four years in this study. Again these institutions were receiving additional amounts of total revenue per FTE as a result of increasing tuition revenue per FTE at rates that surpassed lost state funding per FTE. These institutions were receiving additional marginal revenue as a result of their privatization efforts.

The data from these research questions also showed that there were a greater number of institutions with decreases in total revenue per FTE between 2007-08 and 2011-12 when compared to the results between 2003-04 and 2007-08. These institutions were receiving increasing amounts of tuition revenue per FTE that did not completely replace the lost state appropriations per FTE and in turn they were increasing their proportion of total revenue coming from tuition revenue. See table 5.5 for a summary of the results of R5 and R6.

Table 5.5

Results for R5 and R6

	2003-04 to 2007-08		2007-08 to 2011-12	
Change in Total Revenue per FTE	Number of Institutions	Avg. Change in Proportion of Tuition Rev.	Number of Institutions	Avg. Change in Proportion of Tuition Rev.
Increase (R5)	22 (73%)	2%	14 (47%)	14%
Decrease (R5)	5 (17%)	4%	12(40%)	13%
No Change (R5)	3 (10%)	5%	4 (13%)	22%
Increase (R6)	20 (67%)	1%	11 (37%)	15%
Decrease (R6)	7 (23%)	6%	19 (63%)	14%
No Change (R6)	3 (10%)	5%	0 (0%)	

For the institutions that showed no change in the total revenue per FTE, Table 5.5 also shows that the institutions in R5 became increasingly privatized between 2007-08 and 2011-12 in order to replace lost state revenue per student and keep their total revenue per FTE steady. In other words, since there were larger decreases in state funding per FTE during these years when compared to the first four years in this study, the institutions on average had to implement larger increases in tuition revenue per FTE to match the decreasing state funding and in turn end up with a similar amount of total revenue per FTE. No institutions in R6 showed no change in total revenue per FTE between 2007-08 and 2011-12.

Conclusions & Implications

The purpose of this study was to better understand the changing total revenue per FTE that public AAU institutions received before and after the Great Recession along with the changing proportion of revenue that came from tuition revenue per FTE. While this is not the first study that looked to better understand the privatization of public institutions, the findings from this study can help to provide specific information with regards to the privatization of public AAU institutions, along with a better understanding of these institutions' adjustments in

their resource acquisition before and after the start of the Great Recession. This study provided a new perspective on the amount of revenue that these institutions believed they needed in order to continue to provide quality education to their students.

As described in resource dependency theory, organizations react to their shifting external resources in order to try to continue to survive and achieve their goals. The ability for public AAU institutions to increase tuition rates over the timeframe of this study reflects their inelastic demand which comes as a result of their prestigious reputation. However, students are becoming more sensitive to the increasing tuition prices and the amount of debt that they need to acquire in order to attend higher education. Questions of a "tipping point" are being asked where Moody's (2011) warned of a potential "price ceiling" when setting tuition rates due to students' increasing price sensitivity to tuition rates. While the demand at public AAU institutions is not expected to decrease, it is also not certain if continuing the pattern of increases to tuition rates will affect not only access to these institutions but also students' preference for attending these institutions. These warnings imply that students may not be willing to continue to pay increasing tuition rates, and if this is coupled with steady enrollment, institutions may not experience the same rate of increasing total revenue that was seen with some institutions in this study.

The results from this study also bring up the question on whether privatization is "simply a shorthand description of the diminished will and capacity of state government, or does the concept suggest a broader, deeper transformation in the culture of public research universities and the society in which they function?" (Ikenberry, 2009, p. 5). As all but one institution increased their tuition prices per FTE as a reaction to state funding cuts per student between 2007-08 and 2011-12, does this reflect a uniform consensus on how institutions should be funded, or does this bring up the question on whether it is time for states to reassess their

commitment and support to higher education? While the increasing enrollment levels in public AAU institutions suggest students' acceptance of the privatization of public AAU institutions through 2011-12, the more current student demands for affordable education will continue to put into question the declining state support and the increasing tuition prices of these institutions.

Furthermore, it is expected that public AAU institutions provide high quality research and instruction. Between 2007-08 and 2011-12, all institutions experienced decreasing state support per FTE and as a result institutions increased tuition revenue per FTE. This reflected the amount of revenue that these institutions believed they needed in order to continue to achieve their mission and goals. The results from this study show that some institutions needed increasing amounts of total revenue per FTE, while others began operating with decreasing levels of total revenue per FTE.

What these numbers do not tell is whether the increasing total revenue per FTE was needed as a result of increasing cost pressures. It also is not known whether those that received decreasing total revenue per FTE implemented budget cuts and as a result ended up dealing with constrained resources that could potentially affect their education quality. Conversely, it is also not known whether the decreasing total revenue reflected the ability for these institutions to continue to provide quality education while operating with less total revenue per student.

Even so, public AAU institutions continue to consider the demands from students, the state, faculty, taxpayers and other constituents regardless of their changing financial pressures. They are expected to uphold their social responsibility to not only provide quality education, but also maintain or increase access and remain accountable for their use of publicly generated funds. In general, these institutions will continue to experience demands to be engines for social

mobility regardless of their changing available resources. In this way public AAU institutions continue to contribute to the public good.

At the same time some claim that education is a private good with the justification that individuals receive the benefits of education and therefore should pay for increasing shares of the cost of education. As the changing financial climate helped to push views of higher education from a public to a private good St. John (2006) questioned "if government shifts responsibility for funding higher education from taxpayers to students and lenders, then who has responsibility for the public good?" (p. 247). As the institutions in this study became increasingly privatized, did states continue to expect these public institutions to adhere to their societal responsibilities of educating the students in their state? Do states continue to place importance on protecting higher education as a public good and in turn maintain access and affordability?

As a result this can raise questions on the current mission of public AAU institutions. In order to become eligible and invited to become an AAU institution they need to be able to provide both high quality education and research. As resources become constrained, will institutions need to prioritize what they want to focus on in order remain committed to their academic mission? Moreover, should public AAU institutions continue to subsidize their research efforts with tuition and state appropriations? Or should they consider shifting their funding over to their academic mission and possibly risk losing their AAU status?

These questions should be of concern to both institutions and the state since "unless an institution's budget can withstand the pressures created by external forces, its survival may be in jeopardy" (Goldstein, 2005b, p. 13). While external forces have had greater effects on less prestigious institutions, public AAU institutions' quality and prestige could potentially be diminished if they do not continue to withstand the pressures of external forces. The warnings of

a tipping point with regards to the increasing tuition prices suggests that with any future state cuts, institutions may not be able to react by continuing to increase tuition rates as they did in this study. For example, if in this new normal state support remains steady along with enrollment, and institutions are not able to increase their tuition revenue, institutions will then be forced to look internally at potential cost reductions if they have not done so already. This could include salary freezes, increased class sizes, greater efficiencies in administrative units, or the restructuring of course offerings altogether. In general it is expected that these institutions will continue to analyze their use of available resources all while considering the quality of education that they want to provide to their students. This means that additional responsibility falls on institutional leaders to ensure their institution's continued success and survival.

In conclusion, public AAU institutions will continue to react to their changing external environment in order to serve their students. At the same time, the state has historically played an essential part in these institutions' survival through financial support. The state also continues to hold an interest in the societal good that is provided through higher education. Therefore, the data provided in this study can help to inform discussions between the two entities on how to best support higher education. As the data in this study showed decreases in state support per FTE and increasing privatization, the conversations between the two need to ask each other the questions previously asked by Breneman and Finney (2001) of who pays for, who benefits from, and who *should* be responsible for paying for higher education. This type of questioning will continue to define whether resources for funding higher education should come from the state or the student, and as a result also define the type of access that students should have to these institutions.

Limitations

It is important to understand the findings from the research questions within the context of the limitations of this study. The data used in this study relied completely on the data entries that institutions made into the IPEDS database. This means that there could be inconsistencies in the way that institutions interpreted the definitions of the variables, or even errors based on incorrect imputation. Furthermore, as state appropriations and tuition revenue continue to make up the primary sources of operating revenue for institutions, these were the only two sources of revenue that were considered in this study. This meant that this study did not consider any other sources of revenue such as gifts that could also potentially go towards the academic mission if specified by the donor.

This study also included not only undergraduate and graduate students, but also professional students. Similar courses taken by undergraduate or graduate students are likely to be replicated across institutions but the professional programs may vary by institution. While it could have been helpful to isolate the financial data in this study by the type of student, IPEDS does not contain a variable that shows the portion of the state appropriations that went towards supporting the different student enrollment levels.

Furthermore, each institution in this study has a unique relationship with the state that it resides in. Each state has a unique higher education system where there could be variations in tuition policies, financial aid policies, and enrollment guidelines. While it is generally true that institutions can control their tuition prices and do not have control over state appropriations, there may be agreements between the state and an institution that defines state funding levels for a period of time. For example, the state may agree to a certain level of funding and in return institutions could be committed to charging specific tuition rates to students. Institutions might

also have performance measures tied to their state appropriations. While these agreements do not affect the results of this study, it is important to understand that each institution's economic situation is unique and there are individual relationships between each state and each institution.

Recommendations for Future Research

The privatization of public institutions will continue to be a topic of interest especially since state funding to higher education is not expected to return to previous levels of support. This means that students may continue to bear increasing or steady proportions of the cost of higher education. This study added to the existing literature on the privatization of higher education by specifically examining the resource acquisition behavior of public AAU institutions. By doing this the results from this study helped to better understand the changing amounts of total revenue received by these institutions along with the changing proportions of tuition revenue that made up this total. The following describes considerations for future policy and research that formed as a result of this study.

First, since finance underlies the three overarching themes of quality, access and efficiency in higher education (Johnstone, 2005, p. 4), financial choices made by public AAU institutions will ultimately reflect the values and goals of these institutions. Therefore, defining whether funding for higher education should come from the state or students will then influence institutions' behavior and ultimately their goals. Policymakers, political leaders, educators and the public need to discuss the reality of the current and future economic environment and in turn decide how public higher education should be supported. Callan (2002) described that recessions force organizations to choose what they want to protect, and that is exactly the discussion that needs to occur. The following questions can help guide this discussion:

1. What role should public AAU institutions play in society?

2. Can institutions provide quality education at a lower cost?
3. What proportion of the costs of higher education should be covered by the state and the students? What tuition levels are appropriate for students?

These are broad and fundamental questions, and there may not be one right answer for all institutions. The answers to the first question will help to define whether public AAU institutions should continue to have a public mission. This includes questioning whether there should be a commitment by these institutions to provide access and affordable education to students along with a commitment to the community and state through public service. Along with this, should these institutions also continue to have a commitment to the students who reside in the state? The answers to these questions could significantly change the mission of public AAU institutions.

The second question reflects pressures to improve the higher education system in terms of increasing productivity and reducing costs. Institutions can look internally at their operations for any areas where they can cut costs, find efficiencies, and in turn potentially provide education in a more cost effective manner. At the same time, they are also pressured to make these changes without sacrificing the quality of their education. Is there a business model that would allow institutions to become more efficient and also continue to accomplish their mission and goals? This would imply that they might learn to operate with steady or decreasing amounts of resources from the state and students. At the same time this question also forces institutions to evaluate their costs and communicate whether they can find any costs savings or whether the reality is that they are already facing additional cost pressures outside of any budget cuts and efficiencies that they may implement.

Finally, the last question looks to understand the appropriate amount of funding that should come from the state and the resulting amount of funding that should come from students. Not only does this imply taking into consideration the answers from the previous questions, it also needs to consider the price sensitivity that students have to increasing tuition rates along with the increasing amounts of debt that students need to acquire in order to attend higher education. Institutions and the state need to discuss the purpose of public AAU institutions, the current cost of providing quality higher education to students, and the resulting appropriate amounts of funding that should come from the state and students in order to allow these institutions to accomplish their defined mission and goals.

Furthermore, the original definitions of public education in terms of the importance of student access, affordability, and commitment to the community and the state has not disappeared. Implied in this definition is a commitment to higher education by the state. However, new relationships between the states and the institutions have formed with the changing financial climate. The answers to the three questions listed above contribute to the continuous discussion of defining the public education provided by these institutions as either a public or private good. This can then help refer back to the original question of whether the state or the students should be the primary providers of the resources that go towards the cost of higher education.

At the same time, at what level of privatization does an institution no longer need to be accountable to the state? If the states decide that they are no longer responsible for funding higher education and in turn are no longer accountable for the public good, how could this in turn affect these institutions' public mission? While the results of this study can help to inform this discussion, further studies are needed in order to understand the states' opinions with regards to

their role in supporting the public good through higher education, the resulting amount of funding they think they should have to provide, and the level of accountability that they would like to expect from higher education.

Along with this, while this study showed changing state appropriations per FTE alongside changing tuition rates per FTE, it did not completely discuss why tuition rates changed. Part of this explanation includes understanding the cost pressures that the institutions were facing as they made budgetary decisions. When setting tuition prices institutions consider the amount of revenue needed in order to cover their expenditures. As a result, while increasing revenues at some institutions may reflect additional spending such as the hiring or retention of prestigious and expensive faculty members, many may have been facing unavoidable increasing cost pressures such as increasing medical or retirement benefits costs. As Bowen's (1980) revenue theory of costs describes that institutions' raise all of the revenue they can in order to spend all of the revenue they earn, a study that also looks at the cost of providing education per student could help to show the relationship between revenues and costs with regards to institutions' instructional mission. Even so, this can prove difficult as institutions may argue that the costs associated with providing education at one institution may not be easily comparable with the costs at another institution. Regardless, this would help to show the changing costs associated with providing higher education, and the resulting revenue needed to cover these costs.

Finally, public AAU institutions have historically adapted to their changing external environment in order to try to best serve their students and achieve their mission and goals. The results from this study showed that the brand and prestige associated with these institutions allowed their demand to stay intact even as they raised tuition rates. Looking forward, the

external economic environment will continue to change and in turn challenge these institutions. As a result it will be important to continue to study and analyze the changing privatization efforts of these institutions as they have direct effects on student access to higher education. Future studies on the privatization of these institutions will provide valuable data that can contribute to the discussion that continues to define the role that public AAU institutions are to play in society.

References

AASCU Task Force on Making Public Higher Education a State Priority. (2013). *Creating a new compact between states and public higher education*. Washington, D.C.: American Association of State Colleges and Universities.

AAU Membership. (2013). Retrieved from http://www.aau.edu/about/default.aspx?id=4020

Alexander, F. K. (2000). The Changing Face of Accountability: Monitoring and Assessing Institutional Performance in Higher Education. *The Journal of Higher Education, 71*(4), 411–431.

Altbach, P. (2005). Patterns in higher education development. In P. Altbach, R. O. Berdahl, & P. J. Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges* (pp. 15–37). Baltimore, Maryland: The Johns Hopkins University Press.

Altbach, P., Chang, M. J., & Lomotey, K. (2005). Race in higher education: Making meaning of an elusive moving target. In P. Altbach, R. O. Berdahl, & P. J. Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges* (pp. 517 – 536). Baltimore, Maryland: The Johns Hopkins University Press.

Association of American Universities. (2002, January 1). AAU Members. Retrieved from http://www.aau.edu/about/default.aspx?id=4020&linkidentifier=id&itemid=4020

Baum, S., & Ma, J. (2011). *Trends in College Pricing 2011*. CollegeBoard.

Boatman, A., & L'Orange, H. (2006). *State tuition, fees, and financial assistance policies for public colleges and universities, 2005-06* (p. 56). Boulder, CO: State Higher Education Executive Officers.

Bogaty, E., & Nelson, J. C. (2013, January 16). Moody's: 2013 outlook for entire US Higher Education sector changed to negative. Moody's Investors Service.

Bowen, H. (1980). *The costs of higher education: How much colleges and universities spend per student and how much should they spend?*. San Francisco: Jossey-Bass.

Breneman, D. W. (1994). Enrollment, tuition, and financial aid. In *Liberal arts colleges: Thriving, surviving, or endangered?* (pp. 36–65). Washington D.C.: The Brookings Institution.

Breneman, D. W. (2002). For colleges, this is not just another recession. *The Chronicle Review*.

Breneman, D. W., & Finney, J. E. (2001). Higher education finance in the 1990s. In J. L. Yeager, G. M. Nelson, E. A. Potter, J. C. Weidman, & T. G. Zullo (Eds.), *ASHE Reader on Finance in Higher Education* (pp. 161–178). Boston, MA: Pearson Custom Publishing.

Business Cycle Dating Committee, NBER. (2003, October 21). The NBER's Recession Dating Procedure. Retrieved November 19, 2009, from http://www.nber.org/cycles/recessions.html

Callan, P. M. (2002). *Coping with recession: Public policy, economic downturns and higher education* (No. R-02-2). National Center for Public Policy and Higher Education.

Center on Budget and Policy Priorities. (2013, February 28). Chart Book: The Legacy of the Great Recession.

Chaffee, E. E. (1989). Strategy and effecitveness in systems of higher education. In *Higher education: Handbook of theory and research* (pp. 1–30). New York: Agathon Press.

Clark, R. L., & d' Ambrosio, M. (Eds.). (2006). *The new balancing act in the business of higher education*. Edward Elgar Publishing. Retrieved from http://books.google.com/books?id=3nCE76nRTOMC&lpg=PP1&pg=PP1

Cohen, P., & Kallison Jr., J. M. (2010). A new compact for higher education: Funding and autonomy for reform and accountability. *Innovative Higher Education*, (35), 37–49.

Cowen, T. (2008). The concise encyclopedia of economics: Public goods. Retrieved April 12, 2014, from http://www.econlib.org/library/Enc/PublicGoods.html

Dadashova, A., Hossler, D., Shapiro, D., Chen, J., Martin, S., Zerquera, D., & Ziskin, M. (2011). *National postsecondary enrollment trends: Before, during, and after the great recession*. National Student Clearinghouse Research Center and Project on Academic Success, Indiana Unviersity.

Dadayan, L. (2012). *Tax revenues continue to grow in early 2012* (No. 88). Albany, New York: University at Albany Nelson A. Rockefeller Institute of Government.

Dadayan, L., & Boyd, D. J. (2013). *State tax revenues continue slow rebound* (No. State Revenue Report). Rockefeller Institute.

Davis, J. S. (2003). *Unintended consequences of tuition discounting* (No. 1). Lumina Foundation for Education.

Delaney, J. A., & Doyle, W. R. (2011). State spending on higher education: Testing the balance wheel over time. *Journal of Education Finance*, *36*(4).

Dennison, G. (2003). Privatization: An unheralded trend in public higher education. *Innovative Higher Education*, *28*(1), 7–20. doi:10.1023/A:1025459400911

Desrochers, D. M., & Kirshstein, R. J. (2012). *College spending in a turbulent decade: Findings from the Delta Cost Project*. Delta Cost Project at American Institutes for Research.

Desrochers, D. M., & Wellman, J. V. (2011). *Trends in college spending 1999-2009: Where does the money come from? Where does it go? What does it buy?*. Washington D.C.: Delta Cost Project.

Dill, D. D. (2005, April). The public good, the public interest, and public higher education.

Doyle, W. R., & Delaney, J. A. (2009). Higher education funding: The new normal. *Change*, *41*(4), 60–62. doi:Article

Ehrenberg, R. G. (2005). The perfect storm and the privatization of public higher education. Retrieved from http://digitalcommons.ilr.cornell.edu/workingpapers/59/

Elsby, M., Hobijn, B., & Sahin, A. (2010). The labor market in the Great Recession. *NBER Working Paper No 15979*.

Ewell, P. T. (2007). Assessment and accountability in America today: Background and context. *New Directions for Institutional Research: Assessment Supplement*, 7–17.

Farber, H. S. (2011). Job loss in the Great Recession: Historical perspective from the displaced workers survey, 1984 - 2010, *17040*. Retrieved from http://www.nber.org/papers/w17040

Geiger, R. L. (2000). *Politics, markets, and university costs: Financing universities in the current era*. Paper presented at the Center for Studies in Higher Education.

Geiger, R. L., R. L. (2005). The ten generations of American higher education. In P. Altbach, R. O. Berdahl, & P. J. Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges* (pp. 38–70). Baltimore, Maryland: The Johns Hopkins University Press.

Goldstein, L. (2005a). *College & University Budgeting*. Washington, D.C.: NACUBO.

Goldstein, L. (2005b). The economic and political environment. In *College and University Budgeting* (Third.). Washington D.C.: NACUBO.

Goodman, R. (2009). Thriving through recession: Higher education in a down economy. *New England Journal of Higher Education, 23*(5), 13–14.

Grapevine. (2013). *State fiscal support for higher education, by state, fiscal years 2007-08, 2010-11, 2011-12, and 2012-13*. Grapevine.

Heck, R. H., Lam, W. S., & Thomas, S. L. (2012). State political culture, higher education spending indicators and undergraduate graduation outcomes. *Education Policy*, (1-37).

Heller, D. E. (2006a). State support of higher education: Past, present, and future. In D. M. Priest & E. P. St. John (Eds.), *Privatization and Public Universities* (pp. 11–37). Bloomington, IN: Indiana University Press.

Heller, D. E. (2006b). State support of higher education: Past, present, and future. In D. M. Priest & E. P. St. John (Eds.), *Privatization and public universities*. Bloomington & Indianapolis: Indiana University Press.

Heller, D. E., & Geiger, R. L. (2011). *Financial trends in higher education: The United States*. Pennsylvania State University: Center for the Study of Higher Education.

Hillman, N. W. (2012). Tuition discounting for revenue management. *Research in Higher Education*, *53*(3), 263–281. doi:10.1007/s11162-011-9233-4

Hossler. (2006). Students and families as revenue: The impact on institutional behaviors. In D. M. Priest (Ed.), *Privatization and public universities*. Bloomington & Indianapolis.

Hossler, D., Lund, J. P., Ramin, J., Westfall, S., & Irish, S. (1997). State funding for higher education: The Sisyphean task. *The Journal of Higher Education*, *68*(2), 160–190.

Hovey, H. A. (1999a). *State spending for higher education in the next decade: The battle to sustain current support* (p. 79). National Center for Public Policy and Higher Education.

Hovey, H. A. (1999b). *State spending for higher education in the next decade: The battle to sustain current support* (No. NCR-99-3). San Jose, CA: State Policy Research, Inc.

Howard, M. (2010, June). AASCU President Muriel Howard's address to the Coalition of State University Aid Administrators. AASCU. Retrieved from http://www.aascu.org/map/PSSNRDetails.aspx?id=495

Hussar, W. J., & Bailey, T. M. (2013). *Projections of Education Statistics to 2021: Fortieth Edition*. Washington, D.C.: National Center for Education Statistics.

Ikenberry, S. O. (2009). Privatizing the public research university. In *Privatizing the Public University*. Baltimore, MD: Johns Hopkins University Press.

IPEDS. (2009, December). Glossary. Retrieved from http://nces.ed.gov/ipeds/glossary/?charindex=G

James, E. (1990). Decision processes and priorities in higher education. *The Economics of American Universities*, 77–106.

Jenny, N. W., & Arbak, E. (2004, March). Challenges for financing public higher education. *The Rockefeller Institute State Fiscal News*, *4*(2).

Johnson, B. L. (1995). *Resource dependence theory: A political economy model of organizations*. Department of Educational Administration, College of Education: University of Utah.

Johnstone, B. D. (1999). Privatization in and of higher education in the US. Retrieved from http://gse.buffalo.edu/fas/Johnston/privatization.html

Johnstone, B. D. (2004). The economics and politics of cost sharing in higher education: Comparative perspectives. *Economics of Education Review*, *23*, 403–410.

Johnstone, B. D. (2005). Financing higher education: Who should pay? In Altbach, Berdahl, & Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges*. NJ: The Johns Hopkins University Press.

Johnstone, B. D. (2006). *Financing higher education: Cost-sharing in international perspective*. (P. Altbach, Ed.) (Vol. 3). Sense Publishers.

Kalsbeek, D., & Hossler, D. (2008). Enrollment management and financial aid: Setting the context for dialogue. *College and University*, *83*(4), 3–9.

Kirshstein, R. J., & Hurlburt, S. (2012). *Revenues: Where does the money come from?*. Washington, D.C.: Delta Cost Project at American Institutes for Research.

Lyall, K. (2011). *Seeking sustainable public universities*. Center for Studies in Higher Education, University of California, Berkeley.

McGuinness, A. C. (2005). The states and higher education. In Altbach, Berdahl, & Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges*. NJ: The Johns Hopkins University Press.

McNichol, E. (2012, April). Out of balance: Cuts in services have been states' primary response to budget gaps, harming the nation's economy. Retrieved March 6, 2013, from http://www.cbpp.org/research/index.cfm?fa=topic&id=120

McNichol, E., Oliff, P., & Johnson, N. (2011, June). States Continue to Feel Recession's Impact. Retrieved August 22, 2011, from http://www.cbpp.org/cms/?fa=view&id=711

McNichol, E., Oliff, P., & Johnson, N. (2012, June 27). States continue to feel recession's impact — Center on Budget and Policy Priorities. Retrieved August 22, 2011, from http://www.cbpp.org/cms/index.cfm?fa=view&id=711

Meyer, K. A. (2006). Privatizing public higher education: Beliefs that fuel the conversation. *Society for College and University Planning*.

Myyry, L., Juujärvi, S., & Pesso, K. (2013). Change in values and moral reasoning during higher education. *European Journal of Developmental Psychology, 10*(2), 269–284. doi:10.1080/17405629.2012.757217

National Center for Education Statistics. (2011). Average undergraduate tuition and fees and room and board rates charged for full-time students in degree-granting institutions, by level and control of institution: 1964-65 through 2010-11. Retrieved May 10, 2013, from http://nces.ed.gov/programs/digest/d11/tables/dt11_349.asp

National Center for Education Statistics. (2012a). Table 401. Revenues of public degree-granting institutions, by source of revenue and level of institution: Selected years, 2005-06 through 2010-11. Retrieved from http://nces.ed.gov/programs/digest/d12/tables/dt12_401.asp

National Center for Education Statistics. (2012b). Total undergraduate fall enrollment in degree-granting institutions, by attendance status, sex of student, and control and level of institution: Selected years, 1970 through 2011. Retrieved from http://nces.ed.gov/programs/digest/d12/tables/dt12_214.asp

National Center for Education Statistics. (2012c). Tuition costs of colleges and universities. Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=76

National Center for Education Statistics. (2013). IPEDS Glossary. Retrieved September 23, 2013, from https://surveys.nces.ed.gov/ipeds/VisGlossary.aspx

National Governor's Association and the National Association of State Budget Officers. (2009). *Fiscal survey of the states: December 2009*. Washington D.C.: National Governor's Association and the National Association of State Budget Officers. Retrieved from http://www.nasbo.org/Publications/PDFs/fsfall2009.pdf

NBER. (2013, October). Statement of the NBER business cycle dating committee on the determination of the dates of turning points in the U.S. Economy. Retrieved from http://www.nber.org/cycles/general_statement.html

NCES. (2013). IPEDS Data Center. Retrieved from http://nces.ed.gov/ipeds/datacenter/Default.aspx

NCSL Fiscal Affairs Program. (2010). *State funding for higher education in FY 2009 and FY 2010*. National Conference of State Legislatures.

Neumann, A. (1995). The social construction of resource stress. In *Organization and governance in higher education: An ASHE reader* (Vol. Fifth). Pearson Custom Publishing.

Newman, F. (1987). Choosing Quality. In F. Newman (Ed.), *Choosing quality*. Denver, CO: Education Commission of the States.

Nordhaus, W. D. (2002). The recent recession, the current recovery, and stock prices. *Brookings Papers on Economic Activity*, *2002*(1), 199–220.

Oliff, P., Mai, C., & Palacios, V. (2012, June). States Continue to Feel Recession's Impact. Retrieved March 5, 2013, from http://www.cbpp.org/cms/index.cfm?fa=view&id=711

Oliff, P., Palacios, V., Johnson, I., & Leachman, M. (2013a). *Recent deep state higher education cuts may harm students and the economy for years to come*. Washington, D.C.: Center on Budget and Policy Priorities.

Oliff, P., Palacios, V., Johnson, I., & Leachman, M. (2013b, March 19). Recent deep state higher education cuts may harm students and the economy for years to come. Retrieved from http://www.cbpp.org/cms/index.cfm?fa=view&id=3927#_ftn23

Pattison, S. D., & Eckl, C. (2010). *A new funding paradigm for higher education*. National Association of State Budget Officers and the National Conference of State Legislatures.

Retrieved from http://www.nasbo.org/LinkClick.aspx?fileticket=MEqFX1WtTPY%3d&tabid=38

Paulsen, M. B., & Smart, J. C. (Eds.). (2001). *Trends in revenues and expenditures for public and private higher education*. New York: Agathon Press.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Stanford, CA: Stanford University Press.

Porter, K. (2002, January). The Value of a College Degree. ERIC Clearinghouse on Higher Education. Retrieved from http://www.ericdigests.org/2003-3/value.htm

Priest, D. M., St. John, E., & Boon, R. (2006). Introduction. In *Privatization and public universities*. Bloomington, IN: Indiana University Press.

Quinterno, J. (2012). *The great cost shift: How higher education cuts undermine the future middle class*. New York, NY: Demos.

Rhoades, G., & Slaughter, S. (2005). Markets in higher education. In Altbach, Berdahl, & Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, Political, and Economic Challenges*. NJ: The Johns Hopkins University Press.

Rhoades, G., & Slaughter, S. (2006). Academic capitalism and the new economy: Privatization as shifting the target of public subsidy in higher education. In R. A. Rhoads & C. A. Torres (Eds.), *The university, state, and market: The political economy of globalization in the Americas*. Stanford University Press.

Rizvi, F. (2006). The ideology of privatization in higher education: A global perspective. In *Privatization and Public Universities*. Bloomington, IN: Indiana University Press.

SHEEO. (2009). *State higher education finance FY 2008* (p. 76). Boulder, CO: State Higher Education Executive Officers.

SHEEO. (2011). *State higher education finance: FY2010*. Boulder, CO: State Higher Education Executive Officers.

SHEEO. (2012). *State higher education finance FY 2011*. Boulder, CO: State Higher Education Executive Officers.

Sontheimer, K. C. (2001). Privatizing higher education. In J. L. Yeager, G. M. Nelson, E. A. Potter, J. C. Weidman, & T. G. Zullo (Eds.), *ASHE Reader on Finance in Higher Education* (pp. 101–110). Boston, MA: Pearson Custom Publishing.

State Higher Education Executive Officers. (2012). *State higher education finance: FY 2012*. SHEEO.

St. John, E. P. (2006). Privatization and the public interest. In *Privatization and public universities* (pp. 247–266). Bloomington, IN: Indiana University Press.

St. John, E. P., & Wooden, O. S. (2006). Privatization and federal funding for higher education. In D. M. Priest & E. P. St. John (Eds.), *Privatization and public universities*. Bloomington & Indianapolis: Indiana University Press.

Tandberg, D., & Griffith, C. (2013). State support of higher education: Data, measures, findings, and directions for future research. *Higher Education: Handbook of Theory and Research*, *28*.

The National Governor's Association and NASBO. (2011). *The fiscal survey of states: An update of the state fiscal conditions, Spring 2011*. Washington D.C.: The National Governors Association and The National Association of State Budget Officers.

Toutkoushian, R. (2001). Trends in revenues and expenditures for public and private higher education. In M. B. Paulsen & J. C. Smart (Eds.), *The finance of higher education: Theory, research, policy, and practice*. New York: Agathon Press.

Tuby, K. S. (2011). *2011 outlook for U.S. higher education* (No. 129939). New York, NY: Moody's.

U.S. Bureau of Labor Statistics. (n.d.-a). Consumer Price Index - All Urban Consumers: U.S. City Average 1982 – 84=100-CUUR0000SA0. Retrieved from http://data.bls.gov/cgi-bin/surveymost?cu

U.S. Bureau of Labor Statistics. (n.d.-b). Consumer Price Index Frequently Asked Questions (FAQs). Retrieved from http://www.bls.gov/cpi/cpifaq.htm#Question_1

U.S. Department of Education. (2009). *U.S. Department of Education American Recovery and Reinvestment Act Report: Summary of programs and state-by-state data*. Department of Education.

U.S. Government. (n.d.). The Recovery Act. Retrieved March 5, 2013, from http://www.recovery.gov/About/Pages/The_Act.aspx

Weerts, D. J., & Ronca, J. M. (2006). Examining differences in state support for higher education: A comparative study of state appropriations for research I universities. *Journal of Higher Education, 77*(6), 935–967. doi:Article

Wellman, J. V., Desrochers, D. M., & Lenihan, C. M. (2008). *The growing imbalance: Recent trends in U.S. postsecondary education finance*. Delta Cost Project.

Willis, B. (2009, August). U.S. Recession Worst Since Great Depression, Revised Data Show. Retrieved March 8, 2013, from http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aNivTjr852TI

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

Zumeta, W. (2004). State higher education financing: Demand imperatives meet structural, cyclical, and political constraints. In *Public funding of higher education: Changing context and new rationales* (pp. 79–107). Baltimore: The Johns Hopkins University Press.

Zumeta, W. (2009). State support of higher education: The roller coaster plunges downward yet again. *Journal of Collective Bargaining in the Academy, 1*.

Zumeta, W. (2010). *The Great Recession: Implications for higher education*. Washington D.C.: The NEA 2010 Almanac of Higher Education.

Zumeta, W., & Kinne, A. (2011). *The recession is not over for higher education* (NEA 2011 Almanac of Higher Education). The National Education Association.

APPENDIX A

Research Question	IPEDS Variable	Location in IPEDS Database	IPEDS Definition	Dates Available
R1, R2, R3, R4, R5, R6	Tuition and fees, after deducting discounts and allowances	Finance/Public institutions GASB/Revenues and other additions	Tuition and fees are revenues from all tuition and fees assessed against students (net of refunds and discounts & allowances) for educational purposes. If tuition or fees are remitted to the state as an offset to the state appropriation, the total of such tuition or fees should be deducted from the total state appropriation and added to the total for tuition and fees. If an all-inclusive charge is made for tuition, board, room, and other services, a reasonable distribution is made between revenues for tuition and fees and revenues for auxiliary enterprises. Tuition and fees excludes charges for room,board, and other services rendered by auxiliary enterprises.	2001-02 to 2011-12
R1, R3, R5	Discounts and allowances applied to tuition and fees	Finance/Public institutions GASB/Scholarships and fellowships	**Discounts and allowances** applied to tuition and fees are reductions to the amount charged for tuition and fees by the application of scholarships and fellowships. This amount is equal to the amount of scholarships applied to tuition and fees.	2001-02 to 2011-12
R1, R2, R3, R4, R5, R6	State appropriations	Finance/Public institutions GASB/Revenues and other additions	State appropriations are amounts received by the institution through acts of a state legislative body, except grants and contracts and capital appropriations. Funds reported in this category are for meeting current operating expenses, not for specific projects or programs.	2001-02 to 2011-12
R1, R2, R3, R4, R5, R6	12-Month Full-Time Equivalent Enrollment	Frequently used/12-month enrollment	The full-time-equivalent (FTE) enrollment used in this report is the sum of the institutions' FTE undergraduate enrollment and FTE graduate enrollment (as calculated from or reported on the 2011-12 12-month Enrollment component) plus the estimated FTE of first-professional students. Undergraduate and graduate FTE are estimated using 12-month instructional activity (credit and/or contact hours). First-professional FTE is estimated by calculating the ratio of full-time to part-time first-professional students from the Fall 2008 counts and applying this ratio to the 2011-12 12-month unduplicated headcount of first-professional students. The estimated number of full-time students is added to one-third of the estimated number of part-time students.	2003-04 to 2011-12

APPENDIX B

Adjusting for Inflation

	Data Index		Comparison Index			
Fiscal Year	Index Date Used	Index	June 2012 Index	Difference in Index (#)	Difference in Index (%)	Value to Multiply Data By
2003-04	June 2004	189.7	229.478	39.778	20.97%	1.21
2004-05	June 2005	194.5	229.478	34.978	17.98%	1.18
2005-06	June 2006	202.9	229.478	26.578	13.10%	1.13
2006-07	June 2007	208.352	229.478	21.126	10.14%	1.10
2007-08	June 2008	218.815	229.478	10.663	4.87%	1.05
2008-09	June 2009	215.693	229.478	13.785	6.39%	1.06
2009-10	June 2010	217.965	229.478	11.513	5.28%	1.05
2010-11	June 2011	225.722	229.478	3.756	1.66%	1.02

Source:
U.S. Bureau of Labor Statistics
Table: All Urban Consumers, U.S. All items, 1982 – 64=100-CUUR0000SA0
http://data.bls.gov/cgi-bin/surveymost?cu

APPENDIX C

12-Month Full-Time Equivalent Enrollment in Public AAU Institutions

Institution	2003-04	2007-08	2011-12
Georgia Institute of Technology-Main Campus	19,360	19,478	21,593
Indiana University-Bloomington	37,075	37,277	42,314
Iowa State University	25,136	23,823	27,918
Michigan State University	36,805	42,097	43,259
Ohio State University-Main Campus	53,274	57,779	69,248
Pennsylvania State University-Main Campus	*	*	*
Purdue University-Main Campus	39,201	41,268	40,313
Rutgers University-New Brunswick	*	*	*
Stony Brook University	20,124	22,014	22,930
Texas A & M University-College Station	40,486	43,770	44,937
The University of Texas at Austin	48,457	45,482	46,261
University at Buffalo-SUNY	25,218	26,711	27,404
University of Arizona	35,228	31,208	36,777
University of California-Berkeley	33,988	36,701	38,537
University of California-Davis	29,223	30,253	31,646
University of California-Irvine	25,491	28,832	29,061
University of California-Los Angeles	37,955	38,864	40,491
University of California-San Diego	25,289	28,532	30,326
University of California-Santa Barbara	21,672	22,512	22,831
University of Colorado Boulder	*	*	*
University of Florida	50,236	54,498	47,877
University of Illinois at Urbana-Champaign	42,173	45,062	48,738
University of Iowa	25,728	27,739	26,962
University of Kansas	23,277	25,144	25,742
University of Maryland-College Park	30,336	32,441	35,946
University of Michigan-Ann Arbor	38,113	37,499	46,931
University of Minnesota-Twin Cities	45,616	45,362	43,279
University of Missouri-Columbia	23,081	25,096	30,013
University of North Carolina at Chapel Hill	24,722	26,172	28,300
University of Oregon	19,871	19,681	24,042
University of Pittsburgh-Pittsburgh Campus	*	*	*
University of Virginia-Main Campus	22,615	24,183	24,116
University of Washington-Seattle Campus	38,136	39,412	45,210
University of Wisconsin-Madison	35,394	36,582	37,314

Source: IPEDS

*Not included in this study

APPENDIX D

Total Gross-Tuition Revenue and State Appropriations Revenue per FTE

Institution	2003-04	2007-08	2011-12
Georgia Institute of Technology-Main Campus	20,040	23,531	22,227
Indiana University-Bloomington	19,964	21,878	22,957
Iowa State University	20,416	22,025	20,029
Michigan State University	22,857	22,747	22,772
Ohio State University-Main Campus	20,328	20,358	18,561
Pennsylvania State University-Main Campus	*	*	*
Purdue University-Main Campus	19,509	19,708	23,679
Rutgers University-New Brunswick	*	*	*
Stony Brook University	27,740	28,907	26,677
Texas A & M University-College Station	19,200	20,538	21,061
The University of Texas at Austin	15,566	18,510	19,204
University at Buffalo - SUNY	23,165	25,845	23,888
University of Arizona	19,342	25,945	23,786
University of California-Berkeley	28,039	27,665	27,688
University of California-Davis	26,558	27,279	27,368
University of California-Irvine	19,611	18,921	23,434
University of California-Los Angeles	29,970	30,629	30,297
University of California-San Diego	22,801	22,478	25,661
University of California-Santa Barbara	18,470	19,381	20,041
University of Colorado Boulder	*	*	*
University of Florida	18,779	18,733	20,677
University of Illinois at Urbana-Champaign	18,961	19,179	21,926
University of Iowa	24,109	23,852	23,906
University of Kansas	13,655	21,022	20,187
University of Maryland-College Park	23,802	25,200	24,425
University of Michigan-Ann Arbor	30,459	33,909	29,285
University of Minnesota-Twin Cities	24,696	28,219	29,617
University of Missouri-Columbia	21,488	21,295	19,403
University of North Carolina at Chapel Hill	27,778	32,824	31,191
University of Oregon	13,623	14,434	17,508
University of Pittsburgh-Pittsburgh Campus	*	*	*
University of Virginia-Main Campus	20,655	23,261	25,427
University of Washington-Seattle Campus	19,482	21,372	22,845
University of Wisconsin-Madison	20,885	21,189	21,418

Source: IPEDS

*Not included in this study

APPENDIX E

Total Net-Tuition Revenue and State Appropriations Revenue per FTE

Institution	2003-04	2007-08	2011-12
Georgia Institute of Technology-Main Campus	19,050	22,091	20,447
Indiana University-Bloomington	18,362	19,884	20,077
Iowa State University	18,386	19,799	17,007
Michigan State University	21,220	21,069	20,380
Ohio State University-Main Campus	18,541	18,510	16,716
Pennsylvania State University-Main Campus	*	*	*
Purdue University-Main Campus	18,263	18,280	21,922
Rutgers University-New Brunswick	*	*	*
Stony Brook University	25,586	27,168	24,584
Texas A & M University-College Station	18,370	18,881	18,774
The University of Texas at Austin	14,095	16,254	16,419
University at Buffalo-SUNY	21,440	24,335	22,304
University of Arizona	17,468	22,735	18,989
University of California-Berkeley	25,467	24,473	23,678
University of California-Davis	24,815	24,982	23,142
University of California-Irvine	18,003	17,281	20,561
University of California-Los Angeles	27,492	27,452	24,403
University of California-San Diego	20,578	20,192	20,932
University of California-Santa Barbara	17,728	18,332	18,430
University of Colorado Boulder	*	*	*
University of Florida	17,096	16,459	17,720
University of Illinois at Urbana-Champaign	17,531	16,914	18,857
University of Iowa	21,726	21,878	21,334
University of Kansas	13,176	20,332	19,288
University of Maryland-College Park	21,884	23,542	22,559
University of Michigan-Ann Arbor	26,609	29,167	24,185
University of Minnesota-Twin Cities	22,729	25,861	25,442
University of Missouri-Columbia	18,530	18,292	16,037
University of North Carolina at Chapel Hill	26,149	30,536	28,517
University of Oregon	13,045	13,797	15,359
University of Pittsburgh-Pittsburgh Campus	*	*	*
University of Virginia-Main Campus	18,352	20,562	22,064
University of Washington-Seattle Campus	18,098	19,645	19,898
University of Wisconsin-Madison	20,067	20,191	19,629

Source: IPEDS

*Not included in this study

APPENDIX F

Gross-Tuition Revenue per FTE as a Percent of Total Revenue per FTE

Institution	2003-04	2007-08	2011-12
Georgia Institute of Technology-Main Campus	35%	37%	57%
Indiana University-Bloomington	64%	70%	78%
Iowa State University	44%	45%	60%
Michigan State University	51%	58%	76%
Ohio State University-Main Campus	54%	61%	68%
Pennsylvania State University-Main Campus	*	*	*
Purdue University-Main Campus	56%	62%	68%
Rutgers University-New Brunswick	*	*	*
Stony Brook University	26%	24%	34%
Texas A & M University-College Station	38%	45%	54%
The University of Texas at Austin	54%	60%	67%
University at Buffalo-SUNY	34%	28%	36%
University of Arizona	40%	42%	67%
University of California-Berkeley	41%	46%	73%
University of California-Davis	35%	40%	62%
University of California-Irvine	44%	50%	66%
University of California-Los Angeles	36%	41%	67%
University of California-San Diego	40%	48%	68%
University of California-Santa Barbara	42%	48%	72%
University of Colorado Boulder	*	*	*
University of Florida	30%	32%	47%
University of Illinois at Urbana-Champaign	51%	64%	74%
University of Iowa	45%	46%	66%
University of Kansas	50%	46%	53%
University of Maryland-College Park	49%	49%	53%
University of Michigan-Ann Arbor	68%	71%	80%
University of Minnesota-Twin Cities	45%	46%	60%
University of Missouri-Columbia	51%	53%	65%
University of North Carolina at Chapel Hill	33%	34%	45%
University of Oregon	72%	70%	89%
University of Pittsburgh-Pittsburgh Campus	*	*	*
University of Virginia-Main Campus	70%	69%	79%
University of Washington-Seattle Campus	54%	56%	79%
University of Wisconsin-Madison	44%	47%	56%

Source: IPEDS

*Not included in this study

APPENDIX G

Net-Tuition Revenue per FTE as a Percent of Total Revenue per FTE

Institution	2003-04	2007-08	2011-12
Georgia Institute of Technology-Main Campus	32%	33%	53%
Indiana University-Bloomington	61%	67%	75%
Iowa State University	38%	39%	53%
Michigan State University	47%	54%	73%
Ohio State University-Main Campus	50%	57%	65%
Pennsylvania State University-Main Campus	*	*	*
Purdue University-Main Campus	53%	59%	66%
Rutgers University-New Brunswick	*	*	*
Stony Brook University	20%	19%	28%
Texas A & M University-College Station	35%	40%	49%
The University of Texas at Austin	49%	54%	62%
University at Buffalo-SUNY	29%	23%	32%
University of Arizona	34%	34%	59%
University of California-Berkeley	34%	39%	68%
University of California-Davis	30%	34%	55%
University of California-Irvine	39%	45%	62%
University of California-Los Angeles	31%	34%	59%
University of California-San Diego	34%	42%	61%
University of California-Santa Barbara	40%	45%	70%
University of Colorado Boulder	*	*	*
University of Florida	23%	23%	38%
University of Illinois at Urbana-Champaign	46%	60%	69%
University of Iowa	39%	41%	62%
University of Kansas	48%	44%	50%
University of Maryland-College Park	44%	46%	49%
University of Michigan-Ann Arbor	63%	66%	76%
University of Minnesota-Twin Cities	40%	41%	53%
University of Missouri-Columbia	43%	45%	58%
University of North Carolina at Chapel Hill	29%	29%	40%
University of Oregon	71%	69%	88%
University of Pittsburgh-Pittsburgh Campus	*	*	*
University of Virginia-Main Campus	66%	65%	75%
University of Washington-Seattle Campus	50%	53%	76%
University of Wisconsin-Madison	42%	44%	52%

Source: IPEDS

*Not included in this study

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EDUCATION

Indiana University - Bloomington, Doctor of Philosophy, Educational Leadership and Policy Studies, March 2015.

- Emphasis in Higher Education with a minor in Higher Education Finance.
- Dissertation: An analysis of the privatization of public AAU institutions and their changing resource acquisition before and after the Great Recession.

University of Michigan, Master of Arts, Education Studies, June 2007.

University of Michigan, Bachelors of Science in Engineering, Industrial and Operations Engineering, August, 2005.

PROFESSIONAL EXPERIENCES

UCLA Office of Academic Planning & Budget

- Strategic Planning Analyst, July 2012 – Present

Indiana University – Bloomington, Office of the Vice President & CFO

- Financial Analyst Manager/Fiscal Officer: August 2010 – June 2012
- Graduate Assistant: May 2008 – August 2010

Indiana University – Bloomington, School of Education

- Co-Instructor
- Doctoral level course - C670: Financing Higher Education
- Jan – May 2012; Sept – Dec 2009

Indiana University – Purdue University Indianapolis (IUPUI), Planning & Institutional Improvement

- Graduate Assistant: Dec 2007 – May 2008