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Do Factors Associated with Increases in Higher Education Costs Affect Average Net Price at Four-Year Public and Private Not-for-Profit Institutions?

Marie Elaine Gioiosa
megioiosa2015@gmail.com

DO FACTORS ASSOCIATED WITH INCREASES IN HIGHER EDUCATION COSTS AFFECT AVERAGE NET PRICE AT FOUR-YEAR PUBLIC AND PRIVATE NOT-FOR-PROFIT INSTITUTIONS?

Marie Elaine Gioiosa

Dissertation Committee
Robert Kelchen, PhD, Mentor
Rong Chen, PhD, Committee Member
Joseph Stetar, PhD, Committee Member

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DISSERTATION COMMITTEE
(please sign and date beside your name)

Mentor:
Dr. Robert Kelchen Robert J Kelchen 10/17/16

Committee Member:
Dr. Rong Chen 10/12/2016

Committee Member:
Dr. Joseph Stetar 10/12/16

The mentor and any other committee members who wish to review revisions will sign and date this document only when revisions have been completed. Please return this form to the Office of Graduate Studies, where it will be placed in the candidate's file and submit a copy with your final dissertation to be bound as page number two.

ABSTRACT

College costs have risen, and students and their families are questioning whether or not students can afford to attend. Factors such as instructional inefficiencies, administrative expenses, and federal financial aid have been associated with the rise in higher education costs at four-year public and four-year private not-for-profit institutions. In addition, reductions in state appropriations have been associated with an increase of tuition at four-year public institutions. But do these factors have a relationship with average net price? The findings of this study note that there is a relationship between average net price and these factors.

Key words: average net price, instructional inefficiencies, administrative expenses, federal financial aid, state appropriations, four-year public institutions, four-year private not-for-profit institutions

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IN DEDICATION

To my parents

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Although you are no longer here, I know that you are watching from above. You are my guardian angels and I could not have done this without you. The love and guidance you have provided throughout the time I had you here were unimaginable. Thank you for the work ethic you instilled in me and for always letting me know that there is nothing I cannot do.

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1

Introduction

Higher education tuition and fees have escalated, making affordability a point of contention. Over the past five years alone, tuitions and fees have risen for private four-year, public four-year, and public two-year institutions by 11%, 13%, and 14%, respectively (Ma, Baum, Pender, & Bell, 2015). Over the past twenty years, the numbers have been even more substantial. After inflation, four-year public in-state net tuition and fees increased by 62% to $3,730 while four-year not-for-profit institutions' net tuition and fees increased by almost 23% to $13,820 (trends.collegeboard.org, n.d.a). In the same timeframe, the median salary increased only 2% to $53,657 (trends.collegeboard.org, n.d.a). In addition, state funding has decreased by 20 to 30% at all types of public institutions compared to 2008 (Desrochers & Hurlburt, 2016, 2014; Heller, 2013b; Mitchel & Leachman, 2015). Given the rise in tuition and fees and the decrease in student state and local funding per student, students and their families have been absorbing more of the cost of higher education, with 68.8% of the 2014 graduating class borrowing money for their educations (trends.collegeboard.org, n.d.a).

Background of the Problem

The sticker price, also known as the cost of attendance, of higher education is defined as the school's published tuition, room and board costs, books, supplies, and loan fees (studentaid.ed.gov, n.d.c), whereas net price is the amount that a first-time, full-time undergraduate student pays to attend a particular institution after grant or scholarship aid is subtracted from the published cost of attendance (nces.ed.gov, n.d.b). Net price varies from

person to person and college to college (bigfuture.collegeboard.org, n.d.). The average net price for a four-year in-state student, in 2015 dollars, increased by 38% from 1995 to 2015—that is, from $2,880 to $3,980 (trends.collegeboard.org, n.d.a). For the same timeframe, in 2015 dollars, four-year private not-for-profit tuitions increased by 32% to $14,890 (trends.collegeboard.org, n.d.a).

Although there is a cost associated with obtaining a bachelor's degree, and even though that cost has increased over time, there are many benefits. One example is a person's earning power after obtaining a bachelor's degree. The median earnings of person working full-time who holds a bachelor's degree was $56,550 in 2011, whereas a high school graduate makes $35,300 (Baum, Ma, & Payea, 2013) and those who have a graduate degree earn even more (Oreopoulos, & Petronijevic, 2013). As a result of these increased earnings, college-educated adults have higher chances of moving up the socio-economic ladder (Baum et al., 2013) and paying more than six times the amount in taxes than those who do not receive a college degree (Trostel, 2010). Baum, et al. (2013) found that college educated adults are more likely to receive health insurance and pension benefits from their employers. In addition, they lead healthier lifestyles, thereby reducing healthcare costs. These data illustrate the impact of a bachelor's degree on an individual and on society as a whole. Even so, Gallup polls have shown that students and their families are concerned about whether or not they can afford to pay for college (pdkpoll2015.pdkint.org, 2015).

In light of rising out-of-pocket expenses for higher education to students and their families, I have pinpointed four factors in the literature that have been blamed for this increase: lack of efficiency on the instructional side of higher education (Archibald & Feldman, 2008a; Bowen, 2012; Eckles, 2010; Immerwahr, Johnson, & Gasbarra, 2009; Martin & Hill, 2013,

2014); increases in administrative spending (Bain & Co., 2009; Greene, Kisida & Mills, 2010; Hedrick, Wassell & Henson, 2009; Vanderbilt University, 2015; Vedder, 2007); decreases in state appropriations per student FTE at public institutions (Hiltonsmith, 2015; Koshal & Koshal, 2000; Raisanen & Birkeland, 2015); and increases in federal financial aid at colleges and universities (Bennett, 1987; Epple, Romano, Sarpca & Sieg, 2013; Gillen, 2012; Gordon & Hedlund, 2016; Lau, 2014).

The first factor I discussed had to do with the intricacies involved in higher education institutions' attempts to become efficient within the academic and instructional arena (Baumol, 1996; Bowen, 2012). Inefficiencies affect net price. That is, if costs go up due to inefficiencies, the net price for a student will also increase because the increase needs to be covered by revenues for a balanced budget. Some, if not all, of these funds will be obtained through the increase in net prices of schools to students and their families.

Research suggests that colleges/programs have various levels of efficiency—suggesting that instructional expenditures might vary across colleges with similar outcomes (Eckles, 2010; Kao & Hung, 2008; Tauer, Fried & Fry, 2007), thus affecting net price. Higher education institutions employ highly specialized faculty and, as such, have difficulty trying to employ those individuals in other areas (Heller, 2013a). Although there is good intention behind trying to improve efficiencies, administrators have articulated concern about the pushback from faculty that would be received if the suggestions were implemented (Immerwahr et al., 2009), and some argue this is rightfully so (Calcagno et al., 2009; Chapman & Ludlow, 2010; Cuseo, 2007). But is it just efficiencies that need to be reviewed to keep higher education costs in check?

Some authors would say that it is not the inefficiencies of higher education but the increase in administrative spending that have caused part of the increase in higher education costs (Curtis & Thornton, 2014; Desrochers & Kirshstein, 2014; Jacob, McCall & Stange, 2013; Vedder, 2007). For the same reasons that instructional inefficiencies affect net price, so do increases in administrative expenses, with the result being more out-of-pocket dollars for students and their families.

Administrative growth, which includes academic support expenses, student service expenses, and institutional support expenses, has exceeded growth in instructional expenses (Greene et al., 2010; Hedrick et al., 2009). However, few studies define the specific type of administrative expense. In addition, administrative expenses across institutions are different, suggesting that administrative expenditures fluctuate across colleges, with similar outcomes affecting net price. For example, is it the government mandates to which every school is required to comply or is it the growth driven demand or academic specialization that vary among entities? Or maybe it is a combination of these factors, which can differ by institution? If it is one of these or all of these, the end result will lead to an increase in net price if dollars are not found elsewhere to cover the increase in these costs.

One study that tried to identify the exact type of expense that has caused the increase in administrative expenses was prepared at Vanderbilt University (2015). Details in the study explained that Vanderbilt University spent approximately $146 million for the year 2013 to cover government mandates, which was 11% of their budget and equal to $11,000 per student (Marcus, 2015; Moran, 2015; Vanderbilt University, 2015). Of that amount, $117 million was related to research and $14 million was related to higher education regulations, including

accreditation, with an additional $14 million related to general regulation compliance (Moran, 2015). These numbers were considered substantial and caused further investigation.

A follow-up study that included thirteen institutions was completed. It found that federal regulation compliance accounted for between 3 and 11% of the institution's budget, with the smaller schools hit the hardest (Vanderbilt University, 2015), which identified how economies of scale at institutions matter. Administrative costs at smaller schools can impact average net price significantly because there are fewer students to cover the expenses, potentially resulting in a higher administrative expense per student. Whereas the larger schools may have larger total administrative expenses, their administrative cost per student FTE is not as significant. This study identified the increase in spending on governmental mandates and the percentage of the schools' annual budgets that it encompasses. However, it does not show the increase in the spending's effect on net price.

Academic specialization has also been identified in the literature as another cause for the increase in administrative expenses (Morphew & Baker, 2004). This is different from government mandates because government mandates are required by law, whereas academic specialization is the school's choice in their vision of what it takes to achieve the goal of academic specialization. As schools have been trying to become more research intensive, their administrative expenses have increased (Iglesias, 2014). There is also more paperwork involved when applying for and maintaining grant funding. As such, personnel are required to support the research initiatives. However, not every school is interested in becoming more research intensive, so all schools will not have these expenses compared to a school that would. Again, this study suggests that more money is being spent in academic specializations. However, it

does not take it to the next level and provide the impact on net price, which would then affect out-of-pocket dollars for the student and their families.

In addition to inefficiencies and increased administrative spending, state funding per student FTE hit a decade low in 2011 (Desrocher & Hurlburt, 2014) and is still well below the pre-recession per student amount (Mitchel & Leachman, 2015). Thus, it has also been considered a cost-driving factor when looking at the increases in the prices of higher education. Instead of the state investing in higher education, there has been an increase in spending for K-12, the prison population, and social services (Desrocher & Hurlburt, 2014). This has caused more out-of-pocket dollars for students and their families.

The decrease in per student state funding can be explained by the balance wheel theory (Hovey, 1999), which notes when state finances are weak, funding in higher education is weak. The reverse holds true: that is, when state finances are strong, higher education funding increases. The balance wheel theory (Hovey, 1999) is supported by the findings of Koshal and Koshal (2000) and Raisanen and Birkeland (2015). Both studies found that tuition revenue was higher when state appropriations decreased, which resulted in shifting the cost of higher education to the student and family. One study attributes 78% of the increase in tuition to the decrease in state funding (Hiltonsmith, 2015). However, this study was based upon estimates, not regression analysis.

Federal financial aid is the last cost driving factor that I covered; it addresses the increase in the costs of higher education. Financial aid is supposed to lower the out-of-pocket expenses to students and their family. In addition, there is research that has shown that with the help of financial aid, students are more likely to select schools other than their in-state options and that

recent high school graduates are more likely to enroll in college (Abraham & Clark, 2006). Financial aid helps to allow students and their families to access money to fund college. If the financial aid funds were not available, they might not be able to find them elsewhere and might not be able to finance college as a result. But are higher education institutions capturing financial aid, thereby increasing the cost of higher education to students and their families?

There are different types of financial aid—for example, Pell grants, student loans, and tax credits. Depending upon the financial aid type, as well as school type, there have been a variety of studies done to determine whether or not the financial aid was captured by the institution in the form of increased tuition. That is, since the institution was aware of the increased financial aid to the student, the institution would react to it by increasing tuition (Bennett, 1987). There are research studies that support the Bennett Hypothesis, but there are also those that do not find evidence that higher education institutions capture financial aid dollars, thereby increasing the cost of higher education to students and their families.

The most recent studies affirm the Bennett hypothesis (Lau, 2014; Lucca, Nadauld & Shen, 2015). Lucca, et al. (2015) determined that schools increased tuition as a result of increased Pell grants, subsidized loans, and unsubsidized loans were 55%, 65%, and 30%, respectively. One study found that the increase in financial aid only affects certain types of tuitions, such as four-year out-of-state tuitions at a four-year state school (Singell & Stone, 2007). Yet there are other studies that note that although financial aid did not increase tuition, it did increase out-of-pocket expenses to students and their families. For example, Long's (2004b) study determined that although the increase in financial aid did not affect tuition, it did cause an increase in room and board costs (Long, 2004b). The net effect would increase net price for a student and their family.

Gillen (2012) notes that the Bennett Hypothesis is usually viewed as an all or nothing approach. That is, financial aid as a whole either impacts tuition or it does not. However, Gillen (2012) noted that all financial aid is not created equal and should not be studied in that fashion. For example, federal student loan effects on tuition (or, in my case, net price) should be studied separately from Pell grant effects. To further extrapolate Gillen's (2012) concept, I believe that the cause for the increase in net price should not be pinpointed to one factor alone. For example, net price has increased only as a result of increased in financial aid or only because of the decrease in state appropriations. I believe that all four factors discussed above should be taken into account in one study to determine the effect on the outlay to the student and their family. As such, I have included all four cost driving factors in my study.

Statement of the Problem

The literature studies either one factor or another when analyzing the high cost of higher education. None include all four cost drivers. For example, there are studies that take into account administrative expenses but do not include state appropriations or financial aid. Also, studies associated with administrative expenses and instructional efficiencies identify increasing costs and allude to the fact that since costs are increasing net price to the student and their families are increasing; however, studies connecting cost driving factors to net price do not exist. The studies that analyze state appropriation and federal financial aid discuss the increase in tuition to the student and their families; however, the studies do not account for the effect on net price. My dissertation includes variables that addresses each of the four cost driving factors found in the literature that are associated with the increase in higher education costs and it studies their relationship with net price.

In addition, some of the studies I have reviewed include outdated data. For example, Hedrick, et al. (2009) analyzed the growth of instructional and administrative expenses in higher education using data from the 1980s and 1990s to determine if there was a great disparity between the two. I performed a panel regression analysis on the most recent years' data available on IPEDS, which includes the years 2008/2009 through 2013/2014.

In addition, the studies conducted do not take a systemic approach—that is, they do not focus on all four-year public and not-for-profit private institutions. The studies that exist include only one part of the population. For example, spending per FTE was analyzed by Greene, et al. (2010) on 198 public and private research institutions. Another example includes the financial statement analysis done (Bain & Co., 2009) at the University of North Carolina at Chapel Hill (only one institution). Neither of these studies include all institutions, with the issue of increasing administrative expenses. My dissertation includes all four-year public and private non-profit higher education institutions.

Research Questions

At four-year public institutions, do instructional inefficiencies, administrative expenses, state appropriations, and federal financial aid have a relationship with average net price while controlling for average endowment assets per student FTE, selectivity, the percentage and number of undergraduate students, institutional grant aid, the percentage of in-state students, primary tuition-setting authority, and the political affiliation of the governor and legislature for each state?

At four-year private not-for-profit institutions, do instructional inefficiencies, administrative expenses, and federal financial aid have a relationship with average net price while controlling average endowment assets per student FTE, selectivity, institutional grant aid, and the percentage and number of undergraduate students?

These questions are answered in chapter IV. The next chapter, Chapter II, provides an in-depth review of the literature, categorized by each of the four cost driving factors.

Chapter II

Statement of the Problem Examined

This literature review examines four possible factors associated with the increase in higher education costs: instructional inefficiencies, increases in administrative costs, decreases in state appropriations, and increases in financial aid. Instructional inefficiencies and administrative costs increases affect net price indirectly through increasing costs, whereas decreases in state appropriations affect tuition and increases in financial aid affect net price directly. Ultimately, all four factors affect the out-of-pocket expenses to students and their families, but the current research does not determine the effect magnitude of the factors on net price, which is what I have covered in my dissertation. After the research is reviewed, I will conclude with a summary and describe the research I performed.

Introduction

The sticker price—also known as the cost of attendance—of higher education is defined as the school's published tuition, room and board, books, and supplies plus loan fees (studentaid.ed.gov, n.d.b). The net price of going to college is identified as the sticker price less any grants and scholarships—that is, the amount that the family pays for school, which may include loans, income, and savings (nces.ed.gov, n.d.c). Whether looking at the sticker or net price of higher education, something worth noting is that the price of higher education has increased substantially. From 1995 to 2015, the average net price for a four-year in-state student, in 2015 dollars, increased from by 38%, from $2,880 to $3,980 (trends.collegeboard.org, n.d.a). For the same timeframe, in 2015 dollars, four-year private not-for-profit institutions increased by 32% to $14,890 (trends.collegeboard.org, n.d.a). Even so, higher education is

becoming ever more imperative to acquiring improved employment (Baum et al., 2013); however, this increase in tuition affects the affordability of college (Delaney & Doyle, 2011; Delaney, 2011, 2014), which is reducing the number of students that are graduating without student loan debt (Akers, 2015; Meyers, 2008; Staley & Trinkle, 2011). Although there are many benefits to earning a bachelor's degree, as discussed in Chapter 1, such as moving up the socio-economic ladder and earning more, the mindset of needing a four-year college degree is being challenged in the Gallup polls (pdkpoll2015.pdkint.org, 2015) given its cost.

To illustrate, from 1978 to 2014, tuition expenses have increased by 1225% while the increases in medical expenses and the consumer price index are 634% and 279%, respectively (Jamrisko & Kolet, 2014). During this same timeframe, the minimum wage increased by 274% going from $2.65 to $7.25 (dol.gov, n.d.), whereas the average worker's salary increased 632% from 1969 to 2010 (Purcell, 2010). Higher education seems to be becoming less affordable. In addition to the fact that wages have not kept up with the increase in higher education costs, there has been an increase in the percentage of young US households with educational debt, which has grown from 14% to 38% since 1989 (Akers & Chingos, 2014).

There are varied reasons noted in the literature identifying the cause for the increases in higher education costs. One notion alludes to the academic inefficiencies in the higher education industry, which take place in the instructional piece of higher education. Two theorists, Baumol (1996) and Bowen (2012), and their theories are included. I have discussed some ways noted in the literature to potentially improve efficiencies, such as increasing the number of students in a classroom or utilizing adjunct professors. The studies included in my dissertation use a Data Envelopment Model to measure the inefficiencies through the use of inputs and outputs. In these studies, those schools or programs considered efficient are used as a model for inefficient

departments to follow. The instructional inefficiencies relate to the instructional expenses in the department's operational budget and their costs will eventually be passed along to the student and their family, with more out-of-pocket dollars being spent on higher education through the school's net price. An academic department can become more efficient by looking at the number of students in a class or the professor's course load.

Administrative expenses are discussed next; they have the same pass-through effect on out-of-pocket expenses to the student and their family as instructional inefficiencies. Increases in administrative expenses are the part of the organizational structure that includes the non-instructional day-to-day operational aspects of higher education. Desrochers and Kirshstein (2014) analyzed data noting that professional position growth has outpaced enrollment growth. Administrative positions have more than doubled in the past twenty-five years (Desrochers & Kirshstein, 2014). This growth includes non-instructional student services, such as business analysts, human resources, athletic staff, admissions, and counselors (Belkin & Thurm, 2012). From the 1975/1976 academic year to 2011, full-time non-faculty professionals have increased 369%, whereas full-time tenured faculty, for this same timeframe, increased only 23% (Curtis & Thornton, 2014). In 1975, there was one administrator to every 84 students. By the year 2005, there was one administrator for every 68 students (Ginsberg, 2011).

As part of the literature review of administrative expenses, studies were reviewed that identify specific reasons for the increases. For example, an increase in administrative expenses might be due to an increase in support services for the various types of students attending, such as adult learners, or expenses associated with complying with government mandates. When administrative expenses become excessive, they are considered administrative bloat (Greene et al., 2010; Hedrick et al., 2009). These expenses vary across college and institution type

(Desrochers & Hurlburt, 2016; Desrochers & Kirshstein, 2014) and have an impact on net price to the student.

Another cause that has been pinpointed for the increase in higher education costs is the decrease in state appropriations. State investment per student FTE in higher education has decreased (Desrocher & Hurlburt, 2014; Mitchell & Leachman, 2015;). During this same timeframe, states have experienced an increase in spending for K-12, the prison population, and social services (Desrochers & Hurlburt, 2014). Hovey (1999) explains this phenomenon with the balance wheel theory, which notes that when state finances are weak, higher education receives less money. The studies included have shown an inverse relationship between state appropriations and tuition. As a result of the reductions, the financial burden on higher education is being cast onto students and their families. There are not any studies that examine the impact of state appropriations on net price.

The last cause for the increase in higher education expenses discussed in this dissertation is the increase in financial aid. Financial aid is supposed to offset the cost of college because it is money allotted to the student to pay for higher education. There are some theorists who believe that when there are more dollars available to fund college, institutions will respond to the increase in available dollars by increasing tuition (Bennett, 1987). If Bennett's hypothesis (1987) is correct, financial aid is not offsetting the cost to students and their families as it should. If a school is capturing federal student loans grants, there will be an increase in out-of-pocket expenditures to students and their families. Some studies note that schools are capturing part of the increase in financial aid in the form of tuition. There are other studies that find the financial aid being captured in the form of increased room and board expenditures. The capturing of

financial aid, whether in the form of tuition or room and board, leads to an increase in net price to the student and their families because it increases their out-of-pocket expenses.

One study found that federal student loan programs accounted for 102% of the net tuition increase from 1987 to 2010 (Gordon & Hedlund, 2016). Lucca, et al.'s (2015) study's findings were highly significant and in support of the Bennett Hypothesis. They found that the pass-through effect of Pell grants, subsidized loans, and unsubsidized loans were 55%, 65%, and 30%, respectively. The study determined that subsidized loans had the highest pass-through effect at relatively expensive, mostly private institutions with relatively high income students and average selectivity, as measured by admittance rates.

There are not any studies in the literature that include one or all of these factors and their relationship with net price, which is why I have selected net price as my dependent variable. Inefficiencies and administrative expenses need to be "covered" by revenue in order to provide a balanced budget. State appropriations and increases in financial aid affect net price indirectly through an increase in tuition. All of these factors have the potential to affect the out-of-pocket expenses to a student and their family: that is, net price. I would think that it is a culmination of these variables that have caused increases in net price. My study has significance because researchers suggest that students and families focus on net price when evaluating affordability (Monaghan & Goldrick-Rab, 2016).

As noted in Table 1, the out-of-pocket net price, in 2011 inflation-adjusted dollars, increased from the 1999/2000 academic year to the 2011/2012 academic year for public four-year institutions overall by 21%. Each income quartile increased as well by 11%, 5%, 26%, and 26% for the lowest 25%, lower middle 25%, the upper middle 25%, and highest 25% income

brackets, respectively, at four-year public institutions (nces.ed.gov, 2015; nces.ed.gov, n.d.e). For four-year private not-for-profit institutions, the overall increase, in 2011 inflation-adjusted dollars, from the 1999/2000 academic year to the 2011/2012 academic year was 16%. For the lower middle 25% income bracket, there was a decrease in net price of 2% with an increase in the lowest 25%, upper middle 25%, and highest 25% by 19%, 17%, and 15%, respectively. Since there has been an increase in net price for most income brackets at four-year public and four-year not-for-profit private institutions, I would like to find out which one or combination of the four cost driving factors impacts average net price overall and by income level at four-year public and private not-for-profit institutions.

Review of the Literature

Instructional Inefficiencies. When I refer to inefficiencies in higher education, I am talking about the instructional aspect of higher education. As a result of these inefficiencies, there is a possibility that net price to students and their families will increase. I plan on determining whether or not there is a relationship between instructional inefficiencies and average net price.

Archibald and Feldman (2008a) noted that higher education is similar to a service company that utilizes a highly educated labor force that receives substantial benefits. As a result, it is considered difficult to become efficient (Baumol, 1996; Bowen, 2012), and this why instructional inefficiencies are to blame for the increase in higher education costs. Generally, the way to contain expenses would be to focus on improved productivity and efficiency (Archibald & Feldman, 2008a; Immerwahr et al., 2009). However, when addressing efficiency in higher education, concerns about quality in teaching and learning arise (Archibald & Feldman, 2008a; Immerwahr et al., 2009). In addition, in other industries, technology is usually associated with

streamlining processes and improving efficiency; this is not the case in higher education, where technology is used enhance instruction, not to improve its efficiency (Bowen, 2012).

Two theorists who have tried to explain the difficulties of improving efficiencies in the service industry were Baumol (1996) and Bowen (2012). They explore the topic of cost disease, when an industry's costs increase at a rate greater than that of inflation. Baumol (1996) notes that it is difficult to become more productive in higher education. For example, a professor who teaches Russian will not be able to teach Spanish. Another of Baumol's (1996) concerns was that if a professor were to become more efficient by having more students or teaching less, the students would be "shortchanged." It is likely Baumol's cost disease theory has driven up the cost per FTE of higher education (Archibald & Feldman, 2008a; Martin & Hill, 2013, 2014).

The issue of efficiency for full-time faculty is considered an area to be improved upon. However, it has been noted that analyzing faculty productivity is complex (Porter & Umbach, 2001) because it is difficult to measure the inputs and outputs of faculty (Bowen, 2012). Items that would be considered important to include when determining efficiency, such as student time and quality, might be difficult to capture (Bowen, 2012). Inasmuch as a professor has teaching responsibilities, a professor also has other duties that relate to research and service. Some of the research tasks include grant writing, scholarly research, and presentations at national conferences. Some service related duties include mentoring and advising students and writing letters of recommendations. But is their time being used efficiently?

Past studies have not been able to determine if instructors are utilizing their time efficiently (Meyer, 1998). However, there is literature that incorporates faculty inefficiencies as part of the analysis when addressing the efficiencies of colleges and departments. One such

study was performed by Eckles (2010) to determine the efficiency of 93 private not-for-profit liberal arts colleges in the United States. Eckles (2010) analyzed the practices of highly efficient liberal arts colleges as compared to the practices of relatively inefficient colleges. Data Envelopment Analysis, which is considered the best approach to use (Archibald & Feldman, 2008b), measured efficiencies by analyzing inputs and outputs to create a model of efficiencies to which the inefficiently are compared (Coelli, Prasada Rao, O'Donnell, & Battese, 2005; Ji & Lee, 2010; Wei, 2001). For the Eckles (2010) study, there were four input variables: two that related to student characteristics (SAT scores and percentage of students that were in the top 10% of their high school class) and two that related to institutional characteristics (percentage of full-time faculty and cost per undergraduate student). Those that ranked as the top 18 institutions were considered efficient. The remaining were considered relatively inefficient. The output variable was the six-year undergraduate rate. The findings noted that the inefficient college spent on average $7,357.22 more per undergraduate than necessary. When looking to improve a school's efficiency, one might look at full-time faculty percentage. For example, St. Michael's College and Lawrence College had comparable graduation rates, 80% and 79%, respectively (Eckles, 2010). However, Lawrence College spent $20,000 more per student FTE (Eckles, 2010). The study suggested that full-time faculty costs may be an area in which to improve efficiency, with St. Michael's full-time faculty at 89% and Lawrence's at 93% (Eckles, 2010). This study identified expenses related to inefficiencies with a possible area in which efficiencies can be employed: possible decreases in full-time faculty expense. The fact that Lawrence spent $20,000 more per student identifies how much Lawrence can improve by getting down to St. Michael's cost per FTE, which would possibly help to decrease the net price without affecting graduation rates (Eckles, 2010).

A similar analysis was done by Kao and Hung (2008). They performed a Data Envelopment Analysis on the 41 departments at National Cheng Kung University in Taiwan to evaluate departmental efficiencies (Kao & Hung, 2008). The inputs utilized were personnel, operating expenses, and floor area. The outputs that were measured were the achievement of teachers and their research and grant dollars. The purpose of this study, in light of governmental funding diminishing, was to identify inefficient departments so that they can be improved upon accordingly (Kao & Hung, 2008). For example, in this study, the Liberal Arts department was considered inefficient. As a result, improvement can be made by either increasing the outputs or decreasing the inputs (Kao & Hung, 2008). For the Liberal Arts department, it might be difficult to obtain more grant dollars (an output); however, the department may be able to improve in the teaching performance area (a different output) (Kao & Hung, 2008).

Tauer, et al. (2007) also addressed the efficiencies of academic departments and the need for improvement given the reduction of governmental funding and the acute awareness of the increase of college tuition. They conducted their study at the College of Agricultural and Life Sciences at Cornell University and found that some departments were considered the correct mix of outputs and, thereby, considered efficient. They also found that some departments were considered technically efficient but not creating the correct amount of each specific output (Tauer et al., 2007). They further found departments that were considered inefficient and not aligned with the mission of the college and needed to be addressed by administration (Tauer et al., 2007).

The essence of improving efficiencies is to make sure that costs can be contained. If costs cannot be contained, revenue must be increased to cover the expenses in order for the business to continue to operate. These revenues may come in the form of dollars obtained from

students and their families via net price. Being aware that there is an industry-wide need to contain costs, Immerwahr, et al. (2009) interviewed presidents, chief financial officers, and focus groups that included faculty. What they determined during the interviews with the chief financial officers was that schools would be interested in increasing the class size and teaching loads in an effort to become more efficient, thereby saving dollars. However, trying to become efficient cannot be done without caution and pushback, especially from the faculty's standpoint, since they are concerned about declining quality as a result of possible changes (Immerwahr et al., 2009).

The second item that could be introduced to improve efficiency would be to increase in the number of students in classes (Immerwahr et al., 2009). For example, if a particular class has a cap at 25, the new class cap might be 30. So, if it was known that 300 seats were required for a particular class, 10 sections would be required instead of the original 12. For the teacher, there would be an increase in the number of tests, projects, and assignments to be created and marked. This extra workload could infringe on the amount of time that needs to be spent on other contractual requirements, such as research, administrative functions, and college committees.

The Cuseo (2007), Chapman and Ludlow (2010), Jacoby (2006), and Calcagno, et al. (2008) all support the concern about the pushback that Immerwahr, et al. (2009) talked about. For example, the research points to large class sizes having a negative impact on student learning and impact (Chapman & Ludlow, 2010; Cuseo, 2007; Jacoby, 2006), where neither student nor instructor variables were able to negate the impact of class size (Chapman & Ludlow, 2010). Another example was illustrated by Calcagno, et al. (2008) when they found that there was an inverse relationship between part-time faculty and graduation rates and that the use of adjunct faculty negatively impacted student achievement. This study found that although utilizing more

part-time faculty members may have had a positive effect on the college's bottom line, it had a negative effect on graduation rates.

Inasmuch as there are studies that found a negative impact from the use of adjuncts, there are studies that found a positive impact from using adjuncts as well. One study found that adjuncts often had a small positive effect on enrollment patterns (Bettinger & Long, 2010). In addition, another study found that students learn relatively more from non-tenure track professors in their introductory courses at research institutions (Figlio, Schapiro and Soter, 2013). It was also interesting to find that regardless of the student outcomes of adjunct professors, tenured and full-time faculty were not strongly valued by parents and students (Staley & Trinkle, 2011).

Administrative Expenses. Administrative expenses are considered expenses that are not directly related to instruction and include costs related to academic support services, student services, and institutional support expenses. The definitions of these different types of expenses relate to the area in which they serve. Academic support services include those expenses that support the primary mission of the institution, including its instruction and research. Student service expenses are those expenses related to admissions, registration, and activities that contribute to the student's emotional and physical well-being, such as cultural events, student organizations, and intramural sports programs (nces.ed.gov, n.d.b). Institutional support services include those related to the day-to-day operations of the institution, such as legal and fiscal operations. These administrative expenses, as a whole, are factors that have come under investigation as a result of the increase in higher education costs. It is also to be noted that there are various types of administrative expenses, each of which can impact expenses to the point of driving up net price.

Hazel (2012) conducted a qualitative study that was designed to determine the role of administrative personnel in the context of the changing research university environment. Whereas some schools are trying to address increasing administrative expenses, Hazel (2012) acknowledged the increases in her dissertation. Her analysis concluded that administrative positions are considered the "operational backbone" of the university, necessary to respond to the new technologies, government mandates, and accountability warranted at a university. Administrative personnel support the major research institution by creating and maintaining financial systems, classrooms, and laboratory facilities (Hazel, 2012). Hazel (2012) notes that administration is important, but to what degree? How large should administration be and how much money should be spent on it without affecting net price and causing more outlays than necessary for students and their families?

Vedder (2007) attributed the increases to higher education institutions' focus on turning away from undergraduate instruction to spending more money on things such as research and administration, thereby increasing administrative costs. Another cause for the increase which is noted in the literature is that administrative expenses are needed due to new demands in the industry, such as trying to keep enrollment steady (Heller, 2013a, 2013b). Whatever the cause, administrative expenses became more scrutinized when the economic recession of 2008 hit (Kiley, 2011). After the recession, investments at private institutions started to recover; however, public colleges and universities continued to see reduced state and local funding per student as compared to pre-recession amounts (Desrochers & Hurlburt, 2016; Kiley, 2011). As such, public and private institutions continued to investigate administrative expenses as a possible area for cost savings.

In an effort to address the idea of administrative bloat, Hedrick, et al. (2009) analyzed the growth of instructional and administrative expenses in higher education using data from the 1980s and 1990s to determine if there was a great disparity between the two. They determined that although there was a greater increase in administrative expenses per student in the 1990s, it was not of the epidemic proportions noted in the media (Hedrick et al., 2009). Their study, even though it was published in 2009, used outdated information.

Greene, et al.'s (2010) study used more updated information. They obtained and compared spending information per student FTE from IPEDS for the years 1993 and 2007 for 198 leading research institutions (Greene et al., 2010). The findings illustrated that for both years, the administrative expenses per student FTE were greater than the instructional expense per student FTE (Greene et al., 2010). The disparity grew from 1993 to 2007 (Greene et al., 2010). The analysis noted that there was a reduction in clerical expense per student FTE from 1993 to 2007; however, it was not enough to offset the increase in administrative expense per student FTE (Greene et al., 2010). This study ended right before the recession of 2008 began. It identified that there was a greater disparity between administrative expenses per student FTE and instructional expenses per FTE, which supports Vedder's (2007) notion that schools have turned away from instruction and have focused more on research and administrative functions. But is this the cause for the overall increase in net price for both four-year public and private not-for-profit institutions, as seen in Table 1?

Another area, student services expense, has contributed to the increase in administrative expenses. Between 2002 and 2012, wages for student services per student full time equivalent were the fastest growing salary expense (Desrochers & Kirshstein, 2014). As noted earlier, student services include activities that provide for the students' emotional well-being

(nces.ed.gov, n.d.b). One example of providing services in order to support students' well-being are those services offered to support diversity. Diversity includes many things. It accounts for students with disabilities, veteran students, adult students, people in recovery, and students of different races and ethnic backgrounds.

Schools support the different types of students that attend. Therefore, student service departments arise, and/or grow, which results in increased administrative staffing and expenditures (Belkin & Thurm, 2012). According to Berrett's (2011) interview with Carl Moses, Provost and Dean of Faculty and Professor of Earth and Environmental Sciences at Susquehanna University, as the students' needs become more diverse, a dean of students, a conduct office, a housing coordinator, and a chaplain are no longer sufficient. There are more services necessary and regulatory burdens are increasing; as such, the school must respond (Mirzadeh, 2015).

The regulatory burdens that Mirzadeh (2015) refers to are federal mandates, which include the Family Educational Rights & Privacy Act (FERPA), Title IX, and the Americans with Disabilities Act. All of these have to do with student rights. The Clery Act deals with campus security and the student's right to know about crime on and around campus (clerycenter.org, n.d.). FERPA protects the privacy of student information. Title IX shields the student from discrimination as it pertains to gender. Title IX requires that a coordinator be designated by each school (New, 2015). The Higher Education Americans with Disabilities Act (ADA) encompasses equal opportunities for those with disabilities. These mandates need to be maintained by higher education institutions, and, as such, administrative expenses are growing.

One recent analysis completed on the cost associated with government mandates was done at Vanderbilt University. The study noted that, in order to comply with government

mandates, Vanderbilt University spent approximately $146 million for the year 2013, which was 11% of their budget (Marcus, 2015; Moran, 2015). Of this total, $117 million was related to research and $14 million was related to higher education regulations, including accreditation, with an additional $14 related to general regulation compliance (Moran, 2015). These numbers were considered substantial and caused further investigation.

There was a follow-up study that reviewed the administrative costs of thirteen colleges and universities, including Vanderbilt University. The study noted that expenses associated with federal regulation compliance accounted for anywhere between 3 and 11% of the institution's budget, with the smaller schools being hit the hardest (Vanderbilt University, 2015). The study noted that the nation's colleges and universities spend $27 billion per annum trying to comply with federal regulations (Vanderbilt University, 2015). Approximately 41% of this $27 billion was spent on federal compliance related specifically to colleges and universities, with 38% and 21% spent on research activities and federal compliance not specifically related to colleges or universities (Vanderbilt University, 2015).

Growth-driven demands are considered another cause for the increase in administrative costs. This encompasses having an elaborate information technology structure, enhancing student services, and more extensive fundraising and lobbying expenses (Ginsberg, 2011). Selecting one of these growth driven demands and adding student services illustrates how administrative personnel are added. Schools have pressure to grow, to offer more programs, to offer more courses within programs, to better prepare students for the workforce, to ensure social justice, and to offer new public services (Johnstone, 2003).

To expand on this type of demand-driven growth, institutions need to stay competitive technologically so they can attract and keep students. Having technology incorporated into daily student learning costs money for the hardware, software, and upkeep. Institutions now provide faculty and students with laptops that include software and Internet connectivity. Some students might even need a specialty software, such as SPSS, that has a costly licensing fee associated with it. The hardware and software need support, which includes manpower as well a wireless network that would need maintenance. These would all be included in the administrative budget and increase the number of employees and costs. From 2003 to 2103, academic support services, which includes information technology, has increased by an average of 3% or more across most types of 4 year colleges and universities (Desrochers & Hurlburt, 2016).

Academic specialization is considered another cause for the increase in administrative expenses. Morphew and Baker (2004) analyzed the administrative expenses of research institutions and found that as academic specialization increases administrative expenses increase. They determined that there is an increase in non-academic expenses for those schools trying to become a more research-intensive school and no such increases for academic-related services. Iglesias (2014) found that this holds true for schools trying to increase their prestige and obtain more notoriety.

Industrywide, schools are trying to become cost effective to contain the rise in administrative costs. This shows that there is a systemic issue. However, areas of savings might be very different for a large public research institution than for a small private college. For example, The University of North Carolina at Chapel Hill, a public research institution, had consultants analyze their financial statements to find areas of potential savings (Bain & Company, 2009). It was determined that the university had a complex, decentralized

organizational structure with redundant administrative activities (Bain & Company, 2009). Areas identified for cost savings were departments, such as the procurement services division, which could be streamlined using new software to assist with the purchasing process (Bain & Company, 2009).

In an effort to reduce administrative costs, the University of Wisconsin Colleges, a large, public institution, reviewed their organizational structure, which consisted of 13 two-year colleges with a leader at each of the 13 campuses (Fain, 2105b). As a result of their analysis, they proposed combining the 13 campuses into 4 regions and creating leaders for each of the 4 regions. If they succeed in the re-organization, they will reduce the number of administrators and administrative expenses by $5 million (Fain, 2015b).

Reasons for increases in administrative expenses might not be as easy to identify when an administrator at a four-year public institution is trying to do so. For example, the president of the University of Minnesota, Eric Kaler, tried to reduce expenses; however, he could not because he did not know where the money was being spent (Belkin & Thurm, 2012). After further investigation, Mr. Kaler determined that millions of dollars were being spent on the planning of a residential community twenty miles from campus (Belkin & Thurm, 2012). What he also concluded was that, since 2006, more than $10 million was spent on this project, which had a director making more than $171,000 per annum, and that the project was decades from completion. Mr. Kale has committed to reducing administrative costs by $90 million between the years 2014 and 2019 in an effort to reinvest the dollars saved into the school's core teaching, research, and public engagement mission (discover.umn.edu, 2013). Similar to the University of North Carolina Chapel Hill, the University of Minnesota hired Huron Consulting Firm to review the finance, procurement, human resources, and information technology departments in an effort

to streamline operational process flows in an effort to capture administrative costs savings. The initiative has resulted in $32 million in savings in the first two years of implementation (discover.umn.edu, 2013).

For the small private colleges, the issue is larger because they have fixed administrative and overhead costs that must be spread across a smaller number of students (Desrochers & Kirshstein, 2014; Stratford, 2015), which creates a high administrative cost per student. Even so, Belmont Abbey College, a small private Catholic liberal arts school with 1,700 undergraduates, reacted to high administrative costs by shrinking them by $1 million and refocusing their fundraising efforts on student learning and success (Belmontabbeycollege.edu, n.d.).

The literature acknowledges the increase in administrative expenses in higher education. Administrative expenses is a catch-all term for a lot of different types of expenses from diversity services to government mandates. But why is the money being spent? Is it positively impacting student achievement? Is it money well-spent? Some researchers argue that this is in fact the case. Resource allocation has a positive and significant relationship with graduation rates; however, there is not enough detail to determine exactly which expenses have greater impact (Gansemer-Topf and Schuh, 2006; Ryan, 2004).

State Appropriations. States allocate monies to public higher education institutions for the purpose of providing financial support to students (Cheslock & Hughes, 2011; Delaney, 2014). It can come in the form of direct payment to college or financial aid to students, and it pertains to public institutions only. These amounts have not kept pace with the increasing costs of higher education (Cheslock & Hughes, 2011; Delaney, 2014) **S**tate and local spending per student on higher education reached a decade-long low in 2011 at public 4-year colleges and universities (Delaney, 2014; Desrochers & Hurlburt, 2014). In 2014, the average state

appropriation for a student was $6,552, which was a 5-year percentage decrease of 13.3% (State Higher Education Executive Officers Association, 2014).

The decrease in funding has occurred because states are being asked to underwrite other programs, such as those services associated with the increased prison population, K-12 enrollments, and individuals needing social services (Meyer, 1998). One reason that this reallocation occurs is because the requirements for spending on K-12 and healthcare often grow at a rate faster than a state's revenue growth (nasbo.org, 2015). The reduction in state funding is also due to states' debt loads increasing (Staley & Trinkle, 2011).

The decrease in these state funded financial resources not only affects the affordability of college they have also been tied to the increase in tuition (Delaney, 2011, 2014; Delaney & Doyle, 2011), thereby shifting more of the financial responsibility of paying for higher education to students and their families (Delaney, 2014; Desrochers & Hurlburt, 2014), with tuition accounting for 25% of school revenue (United States Government Accountability Office, 2014). In 2011, students paid between 50 and 60% of the cost of their education, which is an 18 to 22 percentage point increase from 2001 (Desrochers & Hurlburt, 2014).

The funding of higher education by a state's government can be explained by the balance wheel theory (Hovey, 1999). That is, when state finances are strong, appropriations for higher education rise disproportionately to those of other state expenditures (Hovey, 1999). The same holds true when there is an economic decline; that is, when state funding for higher education declines disproportionately as compared to other state expenditures (Hovey, 1999). For example, state agencies must have a balanced budget (nasbo.org, 2015). As such, when other programs have an increase in expenses, such as Medicaid, which was 25.8% of total state

spending for fiscal year 2014 (nasbo.org, 2015), the allotment for higher education becomes smaller (Fain, 2015a; Hovey, 1999; Tandberg, 2010). There is only a certain amount of money to be spent. When one program's expenses grow, the other programs get less allocated to them.

Hovey (1999) provides three reasons for this balance wheel theory phenomenon: higher education has separate budgets from other state agencies; higher education is perceived to be more fiscally flexible as compared to other state budgets; and, higher education is seen as having more spending flexibility than other state agencies. Since higher education can obtain revenue from sources other than the government (for example by raising tuition) during bad economic times, higher education is one of the first spending categories to be cut (Delaney, 2014;

Whereas it may seem logical for the government to decrease funding during bad economic times because the revenues can be obtained elsewhere, in bad economic times, the money is not available elsewhere, either. That is, when the economy is bad, jobs are lost, overtime decreases, salaries are cut, and charitable donations decrease.

Raisanen and Birkeland (2015) used a panel data set of 450 four-year public universities from 1999-2012. They found that state policy-makers responded to an increase in tuition by decreasing future appropriation levels. For every $1 increase in tuition, policymakers decreased state appropriations by $0.45 per student. They also found that whenever tuition was increased for a reason other than a decrease in state appropriations, policymakers responded with a future reduction in state appropriations.

Koshal and Koshal (2000) used a simultaneous model equation to explain the relationship between state appropriations and tuition and determined there is an interdependence between the

two. They studied data from the 47 US continental states (excluding Nebraska) and determined that there is an inverse relationship between state appropriations and tuition. They found that when a state's appropriations are higher by $100 per FTE, the tuition per FTE is $40 lower. They also noted there is a two-way interaction. That is, if tuition per FTE is higher by $10, the state appropriation is lower by $1.80 per FTE.

Hiltonsmith (2015) noted that 78% of the increase in tuition can be attributed to the decrease in state funding. Hiltonsmith (2015) asserted that since education and its related expenses are funded by tuition and state monies, and since there was a decrease in such funding, it has caused the increase in the portion that is tuition for which the student is responsible. Hiltonsmith's (2015) study has limitations because it is based upon estimates and not regression analysis.

The statistics clearly point to the decrease in state funding which has resulted in more out-of-pocket expenses for students and their families. But does the decrease in state spending on higher education impact students in ways other than students' and their families' pocketbooks? Zhang's (2006, 2008) research showed that for each $1,000 increase in state funding, there was about a 1% increase in graduation rates in four-year public institutions while holding other factors constant (Zhang, 2006). The study showed it was the same for all research/doctoral, masters, and bachelors programs (Zhang, 2006). So, with the increase of state funding, there is an increase in graduation rates that may imply the states should reconsider the decrease in funding higher education.

Federal Student Aid. In an effort to make school affordable and to expand the number of people going to college, policymakers have initiated different types of financial aid programs.

Financial aid is defined as "any grant or scholarship, loan, or paid employment offered to help a student meet his/her college expenses" (nysfaaa.org, n.d.). By definition, there are many different types of financial aid. For example, there are grant dollars available to fund schools, which do not have to be repaid (studentaid.ed.gov, n.d.a). Grant dollars reduce the net price of higher education to students and their families. There are also work study programs in which students have a part-time job at the school they attend. Another form of financial aid is student loans, which are dollars available that must be repaid. These financial aid programs make money available so that students can attend school. They were created to expand the number of students that attend college. However, are they the cause for the increase in out-of-pocket expenses to students?

Some literature says yes. One such theory is the Bennett hypothesis (1987), which is that federal financial aid dollars will be captured by the institution and increase the cost of tuition (Stainburn, 2013). If the Bennett hypothesis (1987) is true, net price will increase as well. If the grant aid is captured, it will negate the financial aid in the form of a higher net price. If federal student loans are captured, this has an even bigger impact. Student loans are to be repaid. If the net price is increasing, more money will have to be borrowed and students will have to repay more money and more interest. However, financial aid was supposed to expand the number of students attending college, not increase tuition (Bennett, 1987). There have been a fair amount of studies done on this topic, but they provide different variations of the results. The older studies show that there was no empirical data to prove that tuition increases as a result of an increase in aid at public universities (Singell & Stone, 2007, 2003). Although there was no increase in public universities tuition as a result of the increase in financial aid, it was determined that private and out-of-state public university tuitions have increased on a pro rata basis with the

increase in Pell grants (Singell & Stone, 2007). The newer studies show that in fact there is an increase in costs of higher education because of the increase in aid (Lucca, et al., 2015; Lau, 2014). The literature that has tested the Bennett Hypothesis is discussed below.

Gordon and Hedlund (2016) developed a model that tested the Bennett Hypothesis. They studied data from 1987 to 2010 for public and not-for-profit institutions to create one hypothetical not-for-profit college that faced a balanced budget constraint in order to determine the cause of the increase in net tuition, which increased 78% for that timeframe. The results of their research confirmed Bennett's Hypothesis by attributing 106% of the increase in average net tuition to the increase in federal student loan programs. Net tuition is not the same as net price; however, the implications are the same: that is, more out-of-pocket expenses to the student and the family.

Another recent study that supports the Bennett Hypothesis was performed by Lucca, et al. (2015). An unbalanced panel of 790 institutions were studied over the 11 years between the 2000/2001 and 2011/2012 academic years to determine the causal effects of unsubsidized and subsidized student loans and Pell grants on sticker price. Their findings were highly significant and in support of the Bennett Hypothesis. They found that the pass-through effect of Pell grants, subsidized loans, and unsubsidized loans were 55%, 65%, and 30%, respectively. The study determined that subsidized loans had the highest pass-through effect at relatively low expensive, mostly at private institutions with relatively high income students and average selectivity, as measured by their admittance rates. Sticker price is not the same as net price; however, I would infer that this could impact net price as well.

Lau (2014), whose study supports the Bennett Hypothesis, measured how federal financial aid affects tuition at community colleges and for-profit institutions (marginal effect). It was noted that community colleges captured 37 cents of every $1 of grant aid and 25 cents of every $1 of student loans (Lau, 2014). For for-profit institutions, the amounts were greater. They captured 57 cents of every $1 of grant aid and 51 cents of every $1 of student loans (Lau, 2014). Grants are being captured at a higher rate due to students' aversion to attending a school where loans are more helpful to them (Lau, 2014). It was also noted that the school is aware of such behavior and will not increase tuition as a result of increased student loans (Lau, 2014).

Heller (2013a, 2013b) analyzed the research literature that attempted to validate the Bennett Hypothesis. Heller (2013a, 2013b) noted that the original inference of the Bennett Hypothesis refers to how federal subsidized student loans increase tuition prices, not financial aid as a whole. Heller (2013a, 2013b) also mentioned that the studies already performed on validating the Bennett Hypothesis have had major limitations. That is, the studies are not able to isolate the different types of financial aid and their impact on tuition prices (Heller, 2013a, 2013b; Gillen, 2012). Heller's (2013, 2013b) overall analysis concludes that there is little evidence of the Bennett Hypothesis. Heller (2013a, 2013b) notes that the cause of tuition increases are complex and include many variables, such as competitors' pricing and the estimation of enrollment demand, not just the increase in financial aid.

Gillen (2012) noted that the Bennett Hypothesis is usually viewed as an all or nothing approach; that is, financial aid either impacts tuition or it does not. However, Gillen (2012) noted that all financial aid is not created equal and should not be studied in that fashion. An empirical study should separate types of financial aid to find the true impact of the Bennett Hypothesis (Gillen, 2012). Pell grants are much less likely to be captured by colleges than

unsubsidized loans because they are awarded to low-income students and if Pell grant dollars were captured it would price the low-income students out of college; as a result, these should be studied separately (Gillen, 2012). In addition, tuition caps and price discrimination should be accounted for because they weaken the predicted relationship between financial aid and tuition (Gillen, 2012).

Rizzo and Ehrenberg (2004) studied the impact of financial aid on tuition for residents and non-residents of the state in which the school is located. The results of their study showed that there was no increase in tuition for the in-state residents when financial aid increased in the form of Pell grants, subsidized loans, and state need-based grant aid (Rizzo & Ehrenberg, 2004). The same held true for out-of-state tuition.

Long's study (2004b) reviewed the impact of Georgia's Hope Scholarship on tuition and fees, room and board, and institutional aid. Long (2004b) determined that four-year colleges in Georgia, especially private institutions, did respond to the Georgia Hope Scholarship. While all did not respond with an increase in tuition per se, it did increase expenses to students. The adjustment might have been in the form of increased room and board, which was the case for public institutions in Georgia, or a decrease in institutional aid, which was the case for private institutions in Georgia (Long, 2004b). Again, more out-of-pocket expenses to attend college for the student and their family was the result.

In addition to the types of financial aid and their impact on tuition, as mentioned above, financial aid also comes in the form of federal income tax credits. Whereas tax credits are said to help middle-income taxpayers, a refundable tax credit changes that perspective. Now, tax credits can also help lower income families due to the fact that even if there is no tax liability, a

refund would be available. But do the federal income tax credits drive up the cost of higher education?

Published tuition and fees increased to $3,700, which was a 37% increase for that same timeframe (Payea, Baum & Kurose, 2013). Published tuition and fees have increased by $1,000 more than total grants and tax benefits per student (Payea et al., 2013). College pricing increased more than the grants and tax benefits did. It is unknown if this was an intentional increase by the school responding to increased aid. The tax credits and grants are in place to make school more accessible and affordable. Even though tuition went up, it may have increased regardless of aid and tax policy (Long, 2008).

Turner (2012) found that the intended cost reductions of tax-based federal student aid are substantially counteracted by reductions in institutional grant aid at four-year institutions. This differential causes students to take out student loans (Turner, 2012). Based upon this information, tax credits do not make universities more affordable for students, so these tax credits are ineffective. The financial benefits are recognized by the student loan companies, not the student, because students are taking out loans to counter the effect of the reduced institutional aid (Turner, 2012). Tax credits were included as part of the literature review because they are considered federal financial aid. However, they will not be included in my dissertation due to data limitations.

It is difficult to isolate a school's response to traditional financial aid and federal income tax aid (Long, 2008). College price increases have been attributable to a reduction in state appropriations, an increase in expenses such as, salary, benefits, and technology, and an increase

in financial aid to students (Long, 2008). Other variables should also be taken into consideration. However, that information would be difficult to capture in the available data.

The research reviewed has shown mixed results. As noted by the national Center for Education Statistics (n.d.e), net price has increased by 11% overall and, as a result, there was an increase in out-of-pocket expenses to fund higher education. The policies enacted have good intentions, but is Bennett correct? The later research indicates that he is, and this is okay to a degree, since research also shows that students get some of the benefits (colleges do pass through some of the aid), and this affects enrollment (Heller, 2013a, 2013b). So, although schools are capturing some of the financial aid, they are not capturing all of it, and the students and their families are benefitting somewhat. However, the schools should not be capturing any of it so that the student can attend school at the lowest price possible.

Chapter III

Data and Instrumentation

My dissertation is quantitative in nature. I used four sources to obtain the information: the Integrated Postsecondary Education Data System (IPEDS), the State Tuition, Fees, and Financial Assistance Policies for Public Colleges and Universities reports for 2005/2006 and 2010/2011, and the National Conference of State Legislatures and the National Governors' Association websites.

IPEDS is considered the primary source of information for American colleges and universities, and it is administered by the National Center for Education Statistics (NCES), which is the main federal entity for collecting and analyzing the data (nces.ed.gov, n.d.a). This organization fulfills the congressional mandate to collect and analyze the statistics on American higher education institutions (nces.ed.gov, n.d.a). All of my variables, with the exception of a state's tuition-setting policy and legislative and political partisan controls, were obtained from IPEDS. Each state's tuition-setting policy, which is a control variable in my study, was found in the State Tuition, Fees, and Financial Assistance Policies for Public Colleges and Universities report, which is published by The State Higher Education Executive Officers. The study provides information on the policies and procedures that affect decision-making with respect to public institutions' tuition (Carlson, 2013). The National Conference of State Legislature website was used to obtain the partisan composition of state legislatures. This website has .pdf files that contain each state's legislative controls. The National Governors' Association (NGA) website was used to identify each state's political partisan control, which is another control factor in my study. The NGA website lists each state's current and former governors with their associated political parties.

Variables. The literature has discussed four large drivers that affect higher education costs. However, the literature has not studied this information systemically in one study where all four cost drivers are included, nor has it studied the relationship between these large cost drivers and net price. Each of the four cost drivers have associated variables, which are the independent variables in my study. In addition to these independent variables, there is my dependent variable: average net price. There are certain control variables, based upon the literature, that may affect my outcomes. Each of these variables are described below.

Instructional Inefficiencies. Instruction expenses per student FTE, which includes both undergraduates and graduates, was utilized to measure instructional inefficiencies. Instruction expenses include general academic instruction, occupational and vocational instruction, community education, preparatory and adult basic education, and regular, special, and extension sessions.

Administrative Expenses. As described in chapter two, administrative expenses include many types of expenses. They are considered expenses that are not directly related to instruction and they include costs related to academic support services, student services, and institutional support. Academic support services include those expenses that support the primary mission of the institution. Student service expenses are those expenses related to admissions and registration and activities that contribute to the student's emotional and physical well-being, such as cultural events, student organizations, and intramural sports programs (nces.ed.gov, n.d.d). Institutional support services include those related to the day-to-day operations of the institution, such as legal and fiscal operations.

Administrative expenses, for the sake of my study, do not include auxiliary expenses, which is sometimes blamed for the increase in higher education costs (Eaton & Habinek, 2013). Auxiliary expenses are those expenses that provide a service to the student and they include items such as dormitories and student athletic facilities (surveys.nces.ed.gov, n.d.b). As noted in Greene, et al.'s (2010) study, auxiliary expenses are grouped with operations and plant maintenance and hospital expenses and are considered "other expenses," not administrative ones. My study was consistent with Greene, et al.'s (2010) grouping and did not include auxiliary expenses in the administrative expenses category.

State Appropriations. State appropriations refers to dollars provided by the state. To measure this category, revenues from state appropriations per FTE were used for the four-year public institutions. This variable does not impact four-year not-for-profits, so it was not included in the analysis for four-year not-for-profit private institutions.

Financial Aid. The studies that tested the Bennett Hypothesis have included Pell grants and federal student loans, and I did the same. The average amount of Pell grants received by full-time first-time undergraduates and the average amount of federal student loan aid received by full-time first-time undergraduates were utilized as the variables associated with the financial aid factor listed in my dissertation. Full-time first-time undergraduate information was utilized because this is the information available from IPEDS. The average amount of Pell grants received by full-time first-time undergraduates was multiplied by the percentage of students receiving Pell grants to obtain the dollar amount of Pell revenue per student to match the Bennett Hypothesis literature.

Average Net Price. Average net price for full-time, first-time degree/certificate-seeking undergraduates is calculated by subtracting the average amount of federal, state, local government, institutional grant, and scholarship aid from the total cost of attendance (nces.ed.gov, n.d.b). For public institutions, this represents the net price for in-state students. In addition to studying the overall average net price for four-year public and private not-for-profit institutions, I also included the average net price per income strata, which is the average net price for students who received Title IV federal student aid, such as federal grants and federal loans. There are five different income levels: less than $30,001 (level one), $30,001 to $48,000 (level two), $48,001 to $75,000 (level three), $75,001 to $110,000 (level four), and over $110,000 (level five). I assessed the relationship between the related independent variables associated with each of the four cost drivers, overall average net price, and average net price by income strata.

Control variables. I controlled for four items in my model for both four-year public and private not-for-profit institutions: average endowment assets per student FTE, selectivity, and the percentage and number of undergraduate students. For both four-year public and private not-for-profit institutions, I controlled for changes in other revenue sources utilizing average endowment assets per student FTE. I considered utilizing revenues from private gifts, grants, and contracts per FTE and revenues from investment return per FTE; however, the information was unavailable on IPEDS for the entire timeframe covered in my study for four-year public institutions. To validate the substitution, I ran a correlation between endowment assets per student FTE and revenues from investment return per FTE for the four years available for public institutions before adjusting for outliers. For three of the four years (academic years 2013, 2011, and 2010) there was a strong positive relationship between endowment assets per FTE and revenues from investment return per FTE, where the correlation coefficient equaled .74, .71 and,

.75, respectively. For the fourth year (academic year 2012), there was a moderate positive relationship between the two, with the correlation coefficient r equaling .47. I also ran a correlation between endowment assets per student FTE and revenues from private gifts, grants, and contracts. This resulted in a strong positive relationship between the two variables for all four years. The correlation coefficient r equaled .61, .64, .64, and .63 for 2013 through 2010, respectively. I ran the same correlations for four-year not-for-profit private institutions. For revenues from private gifts, grants, and contracts/contributions from affiliated entities per FTE, there was a strong positive relationship with endowment assets per FTE for five of the six years of data. The correlation coefficient r ranged from .63 and .67 for 2013 through 2009. For fiscal year 2008, there was a moderate positive relationship, with a correlation coefficient r of .49. For three years of data, revenues from investment return per FTE had an almost perfect positive relationship with endowment assets per student FTE, where the correlation coefficient r equaled .98, .97 and .97 for years 2013, 2011, and 2010. For 2012 and 2008, there was a positive moderate correlation between the two variables, where the correlation coefficient r equaled .57 and .44, respectively. For fiscal year 2009, there was a strong negative relationship between the two, with a correlation coefficient of -.83 that was driven by the recession, where there was a major economic downturn in the United States. These results are indicative of the fact that since the variables are moderately to almost perfectly correlated, the endowment assets per student FTE is a good substitution for the private gifts and grants income and the investment income per student FTE.

In addition to controlling for average endowment assets per student FTE, I controlled for selectivity because Lucca, et al. (2015), whose study supported the Bennett Hypothesis, noted variation among their results based upon selectivity. I have done this by utilizing the percentage

of students admitted to the institution for each year in my study. Since FTEs included both undergraduate and graduate students, I controlled for the percent of students that are undergraduates. In addition, I controlled for the total number of undergraduate FTEs to address the issue of economies of scale that was identified in the literature (Desrochers & Kirshstein, 2014; Vanderbilt, 2015).

There are certain variables that may affect in-state average net prices at four-year public institutions and, as a result, I controlled for them in my study. The literature notes that there is an inverse relationship between the number of nonresidents and the average net price of attendance. That is, as the number of out-of-state students increase, the average net price for students across all income brackets decreases (Kelchen, 2016), which was true even though net price for public institutions relates to in-state students only. I controlled for this issue using the percentage of in-state students variable, which accounts for the percentage of those students who live in the same state as the school.

The literature also notes that tuition is more likely to increase when individual institutions have tuition-setting authority (Kim & Ko, 2015). As a result, I controlled for those schools that have primary tuition-setting authority. Lastly, the political control of a state's legislature affects higher education funding (McLendon, Hearn & Mokher, 2009); as such, in my study, this was controlled for four-year public institutions by controlling for both the political affiliation of the governor of each state and the legislature.

To obtain the tuition-setting policy per state, I went to the State Tuition, Fees, and Financial Assistance Policies for Public Colleges and Universities literature published by the State Higher Education Executive Officers. These surveys include a host of topics related to a

state's policy as it relates to tuition-setting in higher education institutions. The two most recent surveys were published in 2011 and 2013. However, there was not much variation between the two reports as they related to an individual institution having primary tuition-setting policy. However, there was variation between the 2010/2011 publication and the one prior, which was the 2005/2006 survey. Out of the fourteen states that responded in 2005/2006 that the individual institutions had primary tuition-setting authority, five changed. This provided enough of a variance to affect the panel regression analysis and, as such, was controlled for. The 2010/2011 report information was tied to the 2010/2011 academic years, and later. The 2005/2006 report information was tied to the 2009/2010 academic years and prior. All those institutions listed within the state that responded as having the individual institutions as the primary authority for establishing tuition were listed as such. All other institutions were considered as having primary authority for establishing tuition as something other than the individual institution.

The controlling political party at the governor and the state legislative level is said to have an effect on state funding of higher education institutions (McLendon, Hearn & Mokher, 2009), which means the amount of state appropriations received by four-year public institutions may be affected as a result of the political affiliation of the governor in office and which party has state legislative control. As a result, I controlled for these two variables. The controlling state legislative variables had three possibilities: Democratic, Republican, and split. Each school was assigned a legislative affiliation based upon the year and the corresponding legislative control for the state in which the school resides. The governor's political affiliations, whether Democratic control or Republican control, was determined by the political party of the governor of each state. This information was obtained for each state for each year in this study from the National Governors' Association website (nga.org, n.d.a; nga.org, n.d.b). Since Washington, DC

does not have a governor, the institutions located in Washington, DC were not included in this study.

Analysis

I performed a panel regression to determine the relationship between average net price for four-year public and not-for-profit private institutions and the cost drivers (four for public and three for private not-for-profit) associated with increases in higher education costs. The amounts were adjusted for inflation using the Bureau of Labor Statistics' Consumer Price Index and the regression was calculated in 2014 dollars.

Similar to the budget process in organizations, which takes into account the review of past expenses to create the next year's budget (Larkin & DiTommaso, 2015), tuition is set with the review of the previous year's financial information. Therefore, the average net price variables were lagged by one year. For example, 2007/2008 expense information was used to set the 2008/2009 academic year's net price so my panel data regression analysis was calculated for the relationship between the 2007/2008 expenses as it relates to the 2008/2009 average net price. The average net price data for the purpose of my study included the academic years 2009 through 2014, whereas the remaining variables included the data for academic years 2008 through 2013.

Population and Sampling Frame

Section 490 of the Higher Education Amendments of 1992 requires higher education institutions to supply information with regard to the school's enrollment, program completion, graduation rates, faculty and staff, the school's finances, institutional pricing, and student

financial aid (Ginder, Kelly-Reid, & Mann, 2015) to the NCES. Any institution that receives federal financial aid via Title IV is required to comply (surveys.nces.ed.gov, n.d.). Title IV institutions are those with written agreements with the Secretary of Education that allow them to receive funding via the Title IV federal student financial aid program (nces.ed.gov, n.d.c).

For the purpose of this study, I selected those institutions on IPEDS that are four-year public and not-for-profit private institutions (public = 725; private = 1,695). I then selected those institutions with a Carnegie Classification of 15 through 22, which includes research universities, doctoral/research universities, master's colleges and universities, and baccalaureate colleges for all six years (remaining public = 540; private = 914). Those schools that were removed had Carnegie Classifications (CC) of 0 (not classified) through 14 (associate's private for-profit four-year primarily associate's) and 23 (baccalaureate/associate's colleges) through 33 (tribal colleges). Also included in the ranges that were removed were theological seminaries (CC24), medical schools (CC25), and schools of engineering (CC27). All schools that have multiple campuses that did not have data for each campus were removed to ensure the data was consistent with those institutions that were included in my study (remaining public = 500; private = 873) (Jaquette & Parra, 2014). In addition, graduate schools were removed (remaining public = 498; private = 866). Legislative control is a control factor for the public institutions in my study. The legislature of Nebraska is not comparable to the other 49 states in the United States because its legislature is unique in that it is unicameral; that is, it has a single-house system (nebraskalegislature.gov, n.d.). Therefore, all public institutions in Nebraska were excluded from my four-year public institution population (remaining public = 491). Political affiliation is a control factor for the public institutions in my study. The University of Guam and the University of the Virgin Islands are located in United States territories and are listed as four-year

public institutions on IPEDs; however, their political systems were different from those of the United States, so they were removed from the population (public = 489). In addition, the United States Air Force Academy, United States Coast Guard Academy, the United States Merchant Marine Academy, the United States Military Academy, and the United States Naval Academy were excluded from the population because, although they are public institutions, they do not operate in the same fashion that the rest of the public institutions do (public = 484); that is, there is no tuition at these institutions in exchange for years of service in the military upon graduation.

Descriptive Statistics

Four-year public institutions. The first variables for which I provided descriptive statistics were for the dependent variables with pre-imputation data: average net price and average net price per income strata for the academic years 2009 through fiscal year 2014 for four-year public institutions. The mean for the average net price overall was $12,382. The mean for the lowest income level, which is those students whose families earn less than $30,001, had the lowest average net price in the panel data of $9,467. This number incrementally increased as income level increased. The second income level ($30,001 to $48,000) had an average net price of $11,051 with the three income levels of $48,001 to $75,000; $75,001 to $110,000; and over $110,000, having an average net price of $14,401, $16,878, and $17,626, respectively.

The average Pell grant and federal student loans received by full-time first-time undergraduates, which were the independent variables related to my financial aid factor, were $1,618 and $5,484, respectively. The instructional inefficiency factor, which was instructional expense, had a mean of $8,513. Those independent variables related to the administrative expense factor, which are academic support, student services and institutional support services,

had a mean of $2,211, $1,704, and $2,525, respectively. State appropriations, which is its own factor, had a mean of $6,977. The mean for the control variables of institutional grant aid, endowment assets per student FTE, the percentage of students admitted, and the percentage of in-state students equaled $4,160, $8,898, 67%, and 83%, respectively. The mean for the last of the control variables for four-year public institutions was 10,879 and 84%, which represents the number of undergraduate students and the percentage of undergraduate students, respectively. Political control and tuition-setting policy were categorical data having a possible value of 0 or 1. For the political control factor, Democratic equaled 0 and Republican equaled 1. For tuition-setting policy, the institution was assigned a value of 0 if it had primary tuition setting authority and 1 if it did not. Legislature control – Democrat was categorical data and assigned where democrat equaled 1 and not-Democratic, which in this case, was either Republican or split, equaled 0. Legislature control – Republican was also categorical data, and assigned so that Republican equaled 1 and not a republican, which was either D or split, equaled 0.

Four-year not-for-profit private institutions. The first variables for which I provided descriptive statistics were the dependent variables with pre-imputation data: average net price overall, which had a mean of $22,262. The average net price per income strata was $17,039 for those students whose family income was less than $30,000. The average net price increased as the income levels of the students and their families increased. For income levels two, three, four, and five, average net price was $18,054, $20,918, $24,054, and $27,922, respectively.

Pell grant and federal student loans had a mean of $1,473 and $6,113, respectively, whereas the instructional expenses per student FTE equaled $11,026. The last of my

independent variables, which related to my administrative expense factor, included academic support services, student support services, and institutional support service expenses that had a mean of $2,855, $4,140, and $5,631, respectively. The remaining descriptive statistics refer to my control variables. The mean and median of average endowments per student FTE were $66,511 and $18,874, respectively. The mean for percentage of students admitted was 63%. The last two control variables for four year not-for-profit institutions had a mean of 81%,for the percentage of undergraduates enrolled, and 2,686, which was the mean for the number of undergraduates enrolled.

Research Design

The subjects of this study were four-year public and private not-for-profit institutions from the academic years 2008/2009 through 2013/2014 and their average net price. The associated data, which were average net price and the average net price per income level, were downloaded for the academic years 2008/2009 through 2013/2014. As noted, there was a one-year lag in data for the independent variables, so the following variables were obtained for the academic years 2007/2008 through 2012/2013: average amount of Pell grants received by full-time first-time undergraduates; average amount of federal student loan aid received by full-time first-time undergraduates; average state appropriations per FTE (four-year public institutions only); academic support expenses per FTE; student service expenses per FTE; institutional support expenses per FTE; instruction expenses per FTE, percent of students admitted, percent of in-state students (four-year public institutions only), undergraduate enrollment, total student enrollment (which was used to calculate undergraduate percentage of students), percentage of full-time, first-time degree/certificate-seeking undergraduate students who received Pell grants, average endowment assets per FTE, and average institutional grant aid per FTE. I calculated the

percent of undergraduates by dividing the number of undergraduates enrolled by the total number of students enrolled. For four-year public institutions only, tuition-setting policy and legislative and political partisan control were assigned to each school.

After the data were downloaded and compiled, they were reviewed for completeness utilizing the missing value analysis available in IBM SPSS version 23. For four-year public institutions, my data's missing variables ranged from the lowest of 0% for the number of undergraduates and percentage of undergraduates enrolled, governor's and legislature's political affiliation, and tuition setting authority to the highest amount of missing data, which was 199 cases and equaled 6.9% for the percentage of students admitted variable. The listwise case diagnostic noted that 2,508 cases out of a possible 2,904 cases were complete. For longitudinal data, often the last value was used to replace the missing value (Waal, Pannekoek, & Scholtus, 2011). I used the linear interpolation feature in SPSS, which replaces missing values using the last valid value before the missing value and the first valid value after the missing values are used for the interpolation (ibm.com, n.d.). If the first or last case in the series has a missing value, the missing value is left blank (ibm.com, n.d.). For four-year public institutions, after the linear interpolation was completed, the number of listwise cases equaled 2,892 out of a possible 2,904 cases. This accounted for 99.6% of the cases included. The only variable on any missing data after the linear interpolation was the percentage of students admitted to an institution, which consisted of 12 cases and accounted for .4% of the population. The missing data analysis was completed for four-year private not-for-profit institutions as well. This resulted in the lowest number of missing cases, which equaled 1 for academic support service expenses, and the two highest were average net price for the income level 5 variable, with 6.4% of the data missing and the percentage of students admitted variable missing in 6.8% of the cases. The listwise case

diagnostic noted there were 4,571 out of a possible 5,192 cases available. I then used linear interpolation to fill in the missing values for the four-year private not-for-profit institutions. After the linear interpolation was complete, N = 5192 for four-year private not-for-profit institutions.

I ran a multiple linear regression model with my dependent (average net price and average net price per income level) and independent variables (instructional expenses per student FTE, academic support expenses, institutional support expenses, student service expenses, state appropriations (public only), average amount of federal student loans and average amount of Pell grants per student FTE) while including all those variables for which I am controlling: percentage of students admitted, in-state percentage of students (public only), number of undergraduate students, percentage of undergraduate students, institutional grants and endowment assets per student FTE, political control of the legislature (public only), tuition-setting policy (public only), and partisan control (public only) to identify outliers via the casewise diagnostics report. Since the outliers can possibly affect the outcome of my study, I ran the panel data regression with and without those cases that were identified.

The data is considered to have institution (within) and fixed effects (between years) variations. For four-year public institutions, a panel regression analysis was performed solving for the equation

$$ANP_{it} = \beta_o + \text{Instructional Inefficiencies}_{it}\beta_{I,\,t-1} + \text{Administrative Expenses}_{it}\beta_{AE,\,t-1} + \text{State Appropriations}_{it}\beta_{GF,\,t-1} + \text{Federal Financial Aid}_{it}\beta_{FA,\,t-1} + \mu_{it} + \varepsilon_{it} \quad \text{where}$$

ANP_{it} equals average net price per income level for i (institution) for t (academic year);

β_o equals beta;

Instructional Inefficiencies$_{it}\beta_I$ equals instruction expense per fte for i (institution) for t – 1 (academic year - 1) times $\beta_{Inefficiencies}$;

Administrative Expenses$_{it}\beta_{AE}$ equals academic support, student services, and institutional support expenses per FTE for i (institution) for t -1 (academic year -1) times $\beta_{Administrative\ Expenses}$;

State Appropriations$_{it}\beta_{GF}$ equals average state appropriations for i (institution) for t – 1 (academic year -1) times $\beta_{State\ Appropriations}$;

Federal Financial Aid$_{it}\beta_{FFA}$ equals average Pell grant and federal loan aid for for i (institution) for t – 1 (academic year -1) times $\beta_{Federal\ Financial\ Aid}$;

μ_{it} equals the between entities error for i (institution) for t (academic year);

and,

ε_{it} equals the within entities error for i (institution) for t (academic year).

For four-year, not-for-profit private institutions, a panel regression analysis was performed solving for the equation

$$ANP_{it} = \beta_o + \text{Instructional Inefficiencies}_{it}\beta_{I,t-1} + \text{Administrative Expenses}_{it}\beta_{AE,\,t-1} + \text{Federal Financial Aid}_{it}\beta_{FA,t-1} + \mu_{it\ it} + \varepsilon_{it}$$ where

ANP_{it} equals average net price per income level for i (institution) for t (academic year);

β_o equals beta;

Instructional Inefficiencies$_{it}\beta_I$ equals instruction expense per fte for i (institution) for t -1 (academic year -1) times $\beta_{Inefficiencies}$;

Administrative Expenses$_{it}\beta_{AE}$ equals academic support, student services, and institutional support expenses per FTE for i (institution) for t -1 (academic year -1) times $\beta_{\text{Administrative Expenses}}$;

Federal Financial Aid$_{it}\beta_{FFA}$ equals average Pell grants and federal loan aid for for i (institution) for t -1 (academic year -1) times $\beta_{\text{Federal Financial Aid}}$;

μ_{it} equals the between entities error for i (institution) for t (academic year);

and,

ε_{it} equals the within entities error for i (institution) for t (academic year).

Limitations of the Study

My study is trying to identify whether or not there is a significant relationship between the average net price of four-year public and not-for-profit private institutions and any or all of the four cost drivers of higher education noted in the literature. Average net price is calculated in a different fashion than average net price by income level. The former includes undergraduates who received grant aid or scholarship aid from federal, state, or local government or the institution, whereas average net price per income level includes only those undergraduates that received Title IV federal student aid. As a result, the interpretation of the relationships between the dependent variables (average net price and average net price per income level) and the independent variables are not identical.

Another limitation of the study was that average net price was calculated per undergraduate FTE, whereas the cost drivers, such as instructional expense, were calculated per

student FTE, which includes undergraduates and graduates. The way I address this limitation is by controlling for the percentage of undergraduates per institution.

That being said, the source of most of my data is IPEDS and, as a result, it is limited to the data available on IPEDS for four-year public and not-for-profit private institutions and is based upon using IPEDS survey respondents and only upon the information they supplied. This is a potential issue because the information is supplied by different individuals and may be interpreted and grouped differently as a result. The data for my dissertation were limited to the 2009 through 2014 academic years for average net price and the 2008 through 2013 academic years for all other variables, and, as such, that is the only data included in my study. This study was completed utilizing the data as input by the end users of the IPEDS data; as a result, the data utilized was only as accurate as the data that was input into the system. Three pieces of information were obtained from sources other than IPEDS and is only as accurate as the data listed in the State Tuition, Fees, and Financial Assistance Policies for the Public Colleges and Universities literature published by the State Higher Education Executive Officers and on the National Conference of State Legislatures and National Governors' Association websites.

Chapter IV

Analysis and Results

This chapter contains two sections. The first includes the results from the panel data regression analysis that I completed, which relates to my first research question about four-year public institutions. The second includes the panel data regression analysis results related to my second research question, which relates to four-year not-for-profit private institutions.

Research Question #1

At four-year public institutions, do instructional inefficiencies, administrative expenses, state appropriations and federal financial aid have a relationship with average net price while controlling for average endowment asset per student FTE, selectivity, institutional grant aid, the percentage and number of undergraduate students, the percentage of in-state students, primary tuition-setting authority, and the political affiliation of the governor and the legislature? (See results in Tables 2 through 9)

Instructional Inefficiencies. When looking at the results of my panel data regression analysis, I was surprised to find an inverse significant ($p < .05$) relationship between overall average net price and instructional expenses, where for every $1 increase in instructional expenses, the average net price decreased by almost 7 cents (see Table 2 for results) while controlling for average endowment assets per student FTE, selectivity, institutional grant aid, the percentage and number of undergraduate students, the percentage of in-state students, primary tuition-setting authority, and the political affiliation of the governor and the legislature. Baumol (1996) noted that it is difficult to become more productive in higher education given its higher educated workforce. However, with respect to overall average net price, it does not appear that

instructional expenses would be an area in which inefficiencies need to be addressed. However, when looking at average net price at income levels four and five, there are different findings. Instructional expenses had a significant positive relationship ($p < .05$, $p < .001$, respectively) with average net price for income levels four and five (that is, where students and their families' average net income was from $75,001 to $110,000) and over $110,000, respectively. At income level four, for every $1 increase in instructional expenses, there was an increase in average net price of almost 8 cents. For income level five, for every $1 increase in instructional expenses, the increase in average net price was approximately 14 cents. Since there is a positive significant relationship only at higher income levels, the increases more likely had to do with students' and their families' at the higher incomes willingness to pay the higher average net price that may come with a lower student-to-faculty ratios and not instructional inefficiencies, or if high-income families are asked to foot the bill regardless of efficiency or quality of teaching.

When I ran my panel regression analysis as it related to instructional inefficiencies, the number of undergraduate students (overall and income levels four and five) and the legislative control (overall and for all income levels) were two covariates that had a significant ($p < .001$ for all) relationship with average net price. When the number of undergraduate students increased by 1, overall average net price increased almost 8 cents. This is contrary to the idea of economies of scale that notes when the number of students increase, the expenses are spread over a higher number of units and therefore should decrease. This can also be caused by a diseconomies of scales, where efficiency is difficult to achieve because of a lack of proper management and coordination of resources (Baumol, 2012). The literature notes that when Republicans are in control of the legislature, state appropriations are decreased (McLendon, Hearn, & Mokher, 2009) which, I would have thought, has an impact on net price by reducing it.

However, when state appropriations were making a rebound in 2013, the intent was for tuition to stay flat (not be reduced) and to produce more graduates (Kelderman, 2013). My results found that, as compared to those states that had Republican legislative control, those states that did not had a higher average net price for overall average net price and income levels one and two, where average net price increased by $262, $438, and $320, respectively. Also, as compared to those schools that had Democratic legislative control, those schools that did not had a lower average net price. The amount ranged from a low of $336 at income level five to a high of $967 at income level three. I further validated these results by finding the 2014 average net price of those schools that had a Democratic legislative control versus those that did not and found that those that did have Democratic legislative control had a higher average net price by approximately $200. For the same timeframe, the 2014 average net price for those schools that had Republican legislative control versus those that did not have a Republican legislative control was approximately $700 lower.

Administrative Expenses. Overall, my findings do not support the idea of administrative bloat; however, when looking at the panel data regression analysis results for income levels four and five, academic support services and student support services expenses combined suggested that it might. Administrative expenses had a positive significant relationship with average net price at income levels four and five with respect to academic support services ($p < .05$ for both income levels) and student support services expenses per student FTE ($p < .05$ for income level four and $p < .01$ for income level five) (See Table 3 for results). For income level four, for every $1 increase in academic support services and student support services expenses, average net price increased by just about 10 cents and 32 cents, respectively. For every $1 increase in combined expenses (that is, academic support services plus student support services expense), there is an

increase in average net price for income level four of 42 cents. At income level five, the increases were even higher, with average net price rising about 11 and 50 cents for each dollar increase in academic support services and student support services expenses, respectively, with the combined amount being an increase in average net price of 61 cents for every $1 combined (academic support services and student support services expenses) increase. For it to be considered administrative bloat, it would more likely impact average net price for all income levels as well as overall average net price. However, it is possible that it is administrative bloat with the lower income level students (who received more grants and financial aid) being shielded from their implications and those students with higher income levels absorbing the costs in their average net price. The increases may also be caused by students at the higher income levels being willing to pay for or maybe even demanding the additional services associated with these expenses.

When the outliers were removed, for income level two, there was a negative significant ($p < .05$) relationship; that is, for every $1 increase in student support services, there was a decrease of average net price of approximately 49 cents. Student support services expenses, which relate to those activities that add to a student's well-being and instruction outside the normal classroom setting (such as remediation) may be more necessary for those students at a lower income level (ncsl.org, n.d.). It appears that the decrease in average net price for income levels two and three (β = -.492 and -.321, respectively; total = -.813) are being funded by the average net price at income levels four and five (β= .321 and -.504, respectively; total = .825).

State Appropriations. The results for state appropriations were expected; that is, they had an inverse relationship with average net price (Koshal & Koshal, 2000). At four of the five income levels (that is, for income levels one, two and five, $p < .05$ for all), for every $1 increase in state

appropriations, the average net price decreased by almost 7, 6, and 8 cents, respectively. There was a larger reduction in average net price for income level four ($p < .01$), with average net price reduced by approximately 12 cents for every $1 increase in state appropriations. These results are expected because, when state appropriations increase, it is expected that average net price will decrease. However, my initial thought would be that the reduction in average net price would be higher; because state appropriations are allotted to higher education, it does not mean that the money will be allocated to tuition reduction (Kelderman, 2013). The dollars may be allocated towards unfunded liabilities, such as pensions (Kiley, 2013). My findings are consistent with the study by Koshal and Koshal (2000) finding that when a state's appropriations increased by $100 per FTE, tuition decreased by $40. However, Koshal and Koshal's (2000) study determined the effect on tuition, whereas my study looked at average net price, which takes into consideration the average amount of federal, state, local government, and institutional grant and scholarship aid.

Federal Financial Aid. Overall, my findings do not support the Bennett hypothesis (1987). For federal student loans, only income level four had a significant relationship with average net price where for every $1 increase in federal student loans, there was an increase of average net price of 15 cents. This is consistent with the Bennett Hypothesis (1987) that schools are capturing federal student loans, thereby increasing the cost of higher education to students and their families, but since it is at only one income level it is more likely to be a result of students at income level four being willing to take out student loans in order to pay for their higher average net price, whereas income level three may receive more grants, thereby diminishing the need for student loans, and income level five may be able to afford the cost without taking out student loans.

For Pell grants, my results do not support the Bennett hypothesis (1987) either since there was an inverse significant relationship with average net price. Pell grant monies were being captured; however, it was not to increase the cost to the student. The average Pell grant per student FTE had an inverse significant relationship ($p < .05$, $p < .05$, $P < .001$, respectively) with overall average net price at income levels two and three (see Table 4 for results). For overall average net price, for every $1 increase in Pell grants dollars per student FTE, there was a decrease in average net price of 25 cents. At income levels two and three, the increase in $1 of Pell grant monies resulted in a decrease in average net price of almost 22 cents and 53 cents, respectively. This is consistent with the purpose of Pell grants, which is to reduce the overall price of higher education to the student and their family. However, if it was truly in compliance with the purpose of the Pell grant, there would be more likely a one-to-one ratio with average net price and not just a portion of the dollar being captured to reduce average net price. My findings are consistent with the Pell grant's purpose and with Gillen's (2012) notion that Pell grants are much less likely to be captured by colleges to increase tuition because they are awarded to low-income students and doing so would price the low-income students out of college.

Research Question #2

At four-year private not-for-profit institutions, do instructional inefficiencies, administrative expenses, and federal financial aid have a relationship with average net price while controlling for average endowment assets per student FTE, selectivity, institutional grant aid, and the percentage and number of undergraduate students? See the results in Tables 10 through 15.

Instructional Expenses. For four-year private not-for-profit institutions, my findings do not indicate positive significant relationships between average net price and instructional expenses, which would allude to a lack of support of Baumol's (2012) theory; at least, if there are inefficiencies, they are not being passed on to the student in the form of an increased average net price. The only significant relationships found were at the two lowest income levels, and the relationships were inverse. Instructional expenses had an inverse significant ($p < .01$, $p < .001$, respectively) relationship with average net price at income levels one and two (see Table 10 for results). That is, for every $1 increase in instructional expenses, there was a decrease in average net price of about 5 and 6 cents for those students and their families whose incomes were below $30,000 and from $30,001 to $48,000, respectively. This was occurring even though endowment assets were controlled for. At each of these income levels, for every $1 increase in average endowment assets, there is a decrease in average net price by almost 1 cent. Colleges have guidelines as to how much can be drawn from their endowment assets, which is usually about 5% (Phung, n.d.), with a portion of that possibly spent to reduce average net price, making my findings feasible. It may also be occurring because the institution may be obtaining grant money that would reduce instructional expenditures for serving an underserved, lower income population. Another cause may be the percentage of undergraduates enrolled in the institution. For example, when there was a one percentage point increase in the percentage of undergraduate students, there was a decrease in average net price of almost $30.42. So, when there was an increase in the percentage of undergraduates as compared to having more graduate students, there was a decrease in average net price, which is supportive of the economies of scale concept that as the number of students increase, the expense is straddled over a higher number of

undergraduate individuals, thereby reducing the cost per student (Desrochers & Kirshstein, 2014; Vanderbilt, 2015).

Administrative Expenses. Typically, when there is an increase in expenses, there is the assumption that the price of that item will rise. However, my findings do not indicate that for the two lowest income levels. For average net price at income levels one and two (see Table 11 for results), there was an inverse significant ($p < .05$ for both) relationship, where for every $1 increase in academic support service expenses, there was a decrease in average net price of about 28 and 33 cents for income levels one and two, respectively. Academic support service expenses relate to the retention of students, which may be more necessary for those students at lower income levels, given that only 10% and 13%, respectively, of students in the two lowest income quartiles have attained a bachelor's degree by age 24 as compared to the highest quartile, which had a 52% bachelor's degree rate (pellinstitute.org, 2016). My findings suggest that private institutions are investing in academic support services for those students in the income levels that need it and are at least partially offsetting the costs by increasing the average net price for those students in income level five, where for every $1 increase in academic support services there was about a 17 cent increase in average net price. Since only income level five has a positive ($p < .01$) significant relationship, administrative bloat does not seem to be the cause, which is consistent with Hedrick, et al.'s (2009) findings. For it to be considered administrative bloat, it would more likely impact average net price for all income levels as well as overall average net price. However, in addition to the increase for income level five possibly fronting for the lower income levels, increases at the higher income levels may be caused by students' and their families' willingness to pay for or maybe even demand the additional services associated with these expenses.

When outliers were removed in the administrative expenses panel data regression analysis, institutional support service expenses had a significant ($p < .05$) relationship with overall average net price; with every $1 increase in institutional support service expenses, there was an increase in average net price of 10 cents (see table 14 for results). In addition, student support service expenses had a significant ($p < .05$ for both) relationship with average net price at income levels two and four, where for every $1 increase in student support service expenses, average net price increased by about 15 and 13 cents, respectively. These findings are not consistent with administrative bloat, or at least with students not paying for the administrative bloat through a higher average net price.

Federal Financial Aid. When looking at the relationship between overall average net price and federal financial aid, my findings do not support the Bennett (1987) hypothesis. However, when looking at average net price per income level and federal student loans, my study suggests that the Bennett (1987) hypothesis is correct, with three of the five income levels having a significant relationship between federal student loans and average net price. The significant ($p < .05$ for all three income levels) relationship with federal student loans was positive at income level one, three, and four, where for every $1 increase in federal student loans, there is an increase of about 13, 10, and 11 cents at income levels one, three and four, respectively (see Table 12 for results). This finding is in support of the Bennett Hypothesis (1987), which suggests that tuition increases are a result of the availability of monies to fund higher education through student loans. However, it may also relate to a students' willingness to borrow money to attend a private institution, which has higher net tuition and fees than a public institution (trends.collegeboard.org, n.d.a).

My findings as they relate to the Pell grant dollars (which, for my study, is the dollar amount of Pell revenue per student FTE, which better matches the Bennett Hypothesis) do not support the Bennett (1987) hypothesis. There was a negative significant ($p < .05$, $p < .001$, $p < .001$, $p < .001$, respectively) relationship at income levels two, three, four, and five, where with every $1 increase in Pell grant money, there was a decrease in average net price of about 52, 76, 89 cents and $1.28 for income levels two, three, four, and five, respectively (see Table 12 for results). These findings are similar to the findings in four-year public institutions that also have a negative relationship between Pell grant dollars and average net price, with overall average net price and average net price at income levels two and three having a significant relationship ($p < .05$, $p < .05$, and $p < .001$, respectively). However, at four-year private not-for-profit institutions at the higher income levels, the coefficient greater than one may indicate that the institutions are trying to spread Pell grant dollars across the board so that those students at the higher income levels with a possible higher average net price do not, in fact, have a higher average net price. So, where there is a higher concentration of Pell grant revenues per student, there is a lower average net price, which is contrary to the Bennett Hypothesis that federal financial aid is increasing tuition. Knowing that students with higher incomes pay a larger portion of the sticker price, institutions may ensure that its Pell grant dollars are applied to tuition to reduce the average net price for students and their families. However, if in fact all of the Pell grant dollars were captured, the coefficient would be closer to $1. Also, institutions cannot always pass through Pell increases for net price because there is a cap on them. In addition, it is possible that other variables that affect Pell grants were not controlled for in my study.

Summary

My study attempted to determine whether or not there was a relationship between average net price and major cost drivers (four for four-year public institutions and three for four-year private not-for-profit institutions) that have been blamed for the increases in higher education costs. I have determined that there is a relationship between these cost drivers and average net price.

For four-year public institutions, overall net price had a significant relationship with two of the four costs drivers (federal financial aid and instructional inefficiencies) when the outliers were included and three (federal financial aid, instructional inefficiencies, and administrative expenses) when the outliers were excluded. However, the results were not in support of the literature. For example, there was a significant relationship with Pell grants, but it was an inverse relationship, which means that for every $1 increase in Pell grants there was a decrease in average net price, which is not in support of the Bennett Hypothesis, which maintains that institutions are capturing federal financial aid via increases in tuition. Another example is the inverse relationship between instructional expenses and average net price, which does not support the concept of instructional inefficiencies (Baumol, 2012). However, when the relationship was studied at the income level, there is possible support from some of the literature. For example, federal student loans were being captured (Bennett, 1987) at income level four with and without outliers. But this may be due to students at a specific income level being willing to obtain student loans in order to attend a private institution, possibly not supporting the Bennett (1987) hypothesis at all. In addition, the legislative control of the state in which the institution resided had a significant relationship with average net price overall at all income levels for each factor tested.

For four-year private institutions, overall average net price had a significant relationship with administrative expenses as they related to institutional support services expenses only (outliers excluded). However, when looking at the average net price by income level and its relationship with cost drivers, there were, in fact, significant relationships in each category. For example, federal student loans were captured at three income levels (one, three, and four) with outliers, and at four income levels (one through four) without outliers, which supports the Bennett (1987) hypothesis. Another example is how there is a significant relationship between instructional expenses and average net price; however, this does not support the literature (Baumol, 2012) noting that higher education costs are increasing because of instructional inefficiencies because the relationship is inverse. Two covariates that had significant relationships with average net price regardless of the factor tested and student income level were the number of undergraduates and the percentage of undergraduates, with the number of undergraduates having a positive significant relationship with average net price and the percentage of undergraduates having a negative significant relationship with average net price.

There was consistency in the data at four-year public and not-for-profit private institutions. For example, at both four-year public and not-for-profit institutions, whether or not there was a significant relationship or not, when outliers were included, the relationship between average net price by income level and Pell grants was inverse. The same held true for the data with the outliers excluded. Another example related to the relationship between instructional expenses and average net price by income level. Instructional expenses' relationship with average net price by income level was inverse at the lower income levels (two and three for public and one, two, and three for private). Differences between the two types of institutions were at the federal student loan level. Four year public institutions had a significant ($p < .01$)

relationship with average net price at income level four only, whereas four year private not-for-profit institutions had a significant ($p < .05$ for all three income levels) relationship with average net price at income levels one, three, and four, when outliers were included. A plausible reason may be that students are willing to take out student loans to go to a private institution, which is supported by the fact that at four-year private not-for-profit institutions almost 59% of students take out loans with an average loan amount of $9,100 as compared to those students attending four-year public institutions where 46% of students take out loans with an average amount of $6,100 (nces.ed.gov, 2011). There is another difference related to administrative expenses. Four-year private not-for-profit private institutions had an inverse significant ($p < .05$ for both income levels) relationship at income levels one and two, whereas four-year public institutions did have inverse relationships between academic support services and average net price at income levels one and two, but they were not significant.

Chapter V

Conclusion

The purpose of this study was to determine whether or not the average net price of four-year public and not-for-profit private institutions had a significant relationship with the cost drivers that are noted in the literature for the increase in higher education costs: that is, instructional inefficiencies, administrative expenses, federal financial aid, and state appropriations (four-year public institutions only). This is the first study to include all four of these drivers in one study and also the first to study the impact of these drivers on average net price. Other studies have looked at one of these indicators and their effects on an outcome (for example, the effect on graduation rates or on tuition), but not all and not based on average net price. Below is a summary of my study's results as they relate to each of the four cost drivers.

Summary of Results

Instructional Inefficiencies. Archibald and Feldman (2008a) noted that higher education is an industry that hires a highly specialized task force which, in turn, can affect an institution's capacity to become efficient (Baumol, 1996; Bowen, 2012). For example, a professor that teaches Russian will not be able to teach Spanish. This lack of transferability of manpower creates difficulty for an institution when it may be trying to become efficient as it relates to instructional expenses. As such, instructional expenses are noted as one of the four cost drivers associated with the increase in higher education costs. As a result of the literature, I would have thought that overall average net price would have had a positive significant relationship with instructional expenses, but this was not the case. In fact, my findings showed an inverse significant ($p < .05$) relationship between instructional expenses and overall average net price at four-year public institution; that is, with every $1 increase in instructional expenses, there was a

decrease in average net price of approximately 7 cents. However, when looking at instructional expenses per income level at four-year public institutions, the findings were more in line with what was expected, with a positive significant ($p < .05$, $p < .001$, respectively) relationship at average income levels four and five, meaning that when there was a $1 increase in instructional expenses, there was an increase in average net price for those students and their families who make from $75,001 to $110,000 (level four) and over $110,000 (level five). However, an explanation of the increases more likely has to do with students' and their families' at the higher incomes willingness to pay the higher average net price if that may come with a lower student-to-faculty ratio and not instructional inefficiencies, or that high-income families are asked to foot the bill, as noted by the increased average net price paid per income level (trends.collegeboard.org, n.d.b; trends.collegeboard.org, n.d.c) regardless of the efficiency or quality of teaching. When looking at the relationship between average net price and instructional expenses for four-year private not-for-profit institutions, my study noted that there was an inverse significant ($p < .01$, $p < .001$, respectively) relationship between average net price when students and their families earned less than $30,001 (level one) and from $30,001 to $48,000 (level two). These findings do not support Baumol's (2012) cost disease theory.

Administrative Expenses. The literature pointed to increases in administrative expenses as another cost driver associated with the increase in higher education expenses (Greene et al., 2010; Hedrick et al., 2009). At four-year public institutions, when academic support services and student support services expenses were combined for income levels four and five, there seemed to be credibility to the literature. At income level four, with every $1 increase in academic support and student support services combined, there was an increase in average net price of approximately 42 cents. At income level five, average net price increased by

approximately 61 cents. However, this is not occurring at each income level, so it is possible that there is a partial cost shifting occurring, with the higher income level students shielding the lower income students from the additional administrative expenses, which would, in turn, increase their average net price. For four-year not-for-profit institutions, there was a positive significant ($p < .01$) relationship with academic support services expenses; with every $1 increase in academic support services expense, there was an increase in average net price of approximately 17 cents for those students at income level five. For income levels one and two, there was an inverse significant ($p < .05$) relationship with academic support services, where for every $1 increase in academic support services expenses, there was a decrease in average net price of approximately 28 and 33 cents for income levels one and two, respectively. These findings support the idea of a partial cost transfer from the lower income students to the higher income students, where there was about a 17 cent increase in average net price. Since only income level five has a positive ($p < .01$) significant relationship, administrative bloat does not seem to be the cause, which is consistent with Hedrick, et al.'s (2009) findings.

State Appropriations. The reduction in state appropriations, which only affects public institutions, is another one of the factors noted in the literature and indicated as a cause for the rise in higher education costs. As a result of the decrease in state appropriations per student, state governments are investing less in higher education and, with that, there are more out-of-pocket expenses in financing a college degree to the students and their families (Delaney, 2014; Desrochers & Hurlburt, 2014). In all instances of a significant ($p < .05$ for overall average net price and average net price at income level two and $p < .001$ for average net price at income level three) relationship with state appropriations, it was negative, meaning that with every $1 increase of state appropriations there was a decrease in average net price ranging from 6 cents (income

level two) to 12 cents (income level four). My initial thought was that the reduction to average net price would have been higher; but, after further research, it was noted that just because state appropriations are allotted to higher education does not mean that the money will be allocated to tuition reduction (Kelderman, 2013). These state appropriation dollars may be allocated towards unfunded liabilities, such as pensions (Kiley, 2013). The literature notes that when state appropriations increase, there is a decrease in tuition (Koshal & Koshal, 2000; Raisanen & Birkeland, 2015). My findings are similar: there is a reduction, which range from 6 cents ($p > .05$) for income level two to 12 cents ($p > .01$) for income level four, but this relate to average net price and not as much to magnitude.

Federal Financial Aid. The Bennett Hypothesis (1987) noted that federal financial aid is captured by institutions in the form of increasing tuition. There have been studies that have found that the money is being captured in some sort of increase in expense to the students and their families, whether or not it is in the form of tuition (Gordon and Hedlund, 2016; Lau, 2014; Long, 2004b; Lucca et al., 2015). For four-year public institutions, there was a positive significant ($p < .01$) relationship between average net price at income level four and federal student loans: with every $1 increase in federal student loans, there was an increase in average net price. These findings support the Bennett Hypothesis (1987) and the current literature. On the other hand, there were negative significant relationships (p varied) between average net price and Pell grant dollars. These findings do not support the Bennett Hypothesis (1987) because average net price actually decreased. The data for four-year private not-for-profit institutions had similar findings to the public institutions in that the significant relationships between average net price and federal student loans were positive and the significant relationships between average net price and Pell grant dollars were negative.

Implications of the Study

My intent for this study was to determine if any of the cost drivers associated with the increase in higher education costs have a relationship with average net price, keeping in mind the importance of attaining a four-year college degree (Baum, et al., 2013; Trostel, 2010). My study had significance because researchers suggest that students and families focus on net price when evaluating affordability (Monaghan & Goldrick-Rab, 2016). That being said, my results have found that there are significant relationships in each of the cost-driving factors as they relate to average net price which, thereby, has a significant relationship with the out-of-pocket expenses that students and their families outlay in order to obtain four-year college degrees. Interestingly, the changes in these out-of-pocket expenses were not always an increase. The significance of my study is that it will allow those who refer to it to hone in on areas that could decrease average net price in an effort to have a four-year college degree more affordable; that is, at a lower average net price.

Instructional Inefficiencies. Instructional expenses had a positive significant ($p < .05$, $p < .001$) relationship at four-year public institutions for income levels four and five, respectively. Hopefully, those institutions will utilize this study as a stepping stone and determine the reason this is happening with the intent of decreasing average net price for students and their families while not compromising the quality of instruction.

Administrative Expenses. An increase in administrative expenses has been one factor identified as one of the causes for the increase in higher education expenses (Bain & Co., 2009; Vanderbilt University, 2015; Vedder, 2007). Some institutions within the higher education industry have acknowledged the increases in administrative expenses and made an effort to reduce

administrative costs (Belmontabbeycollege.edu, n.d; discover.umn.edu, 2013). Based upon the results of my study, higher education institutions should continue that endeavor and focus on those line items categorized as academic support services and student support service expenses. Going forward, policymakers who create the IPEDS survey might want to incorporate ways to further delineate these categories in order to capture more details in an effort to pinpoint the exact types of expenses that may be causing the increases.

State Appropriations. State appropriations had a negative significant (*p* varied) relationship with average net price, indicating that when $1 of state appropriations increases, average net price decreases. In times of economic difficulty, states decrease their funding in higher education (Hovey, 1999). This policy should be re-evaluated given the economic benefits to the individual earning the degree and to society as a whole (Baum, et al., 2013; Trostel, 2010), and when policy does allow for more higher education funding, it should go towards decreasing the average net price for students. A possible policy could be one that requires a certain portion of state appropriations being allotted to the reduction of average net price to the student and their families. Another option could be, regardless of state economic difficulties, that higher education funding be allotted towards the reduction of out-of-pocket expenses to the student.

Federal Financial Aid. Based upon my study, it appears that higher education institutions may be capturing federal student loans dollars with the increases in average net price ranging from 10 to 15 cents for every $1 increase in federal student loans. However, the average net price may be higher as a result of students' willingness to take out student loans to attend a school that has a higher average net price. When schools are creating their budgets and setting tuitions and average net prices, they should take this into consideration. Federal policy may also want to take

into consideration the amount of loans being offered or available to the student, noting that this may be driving up the average net price.

Suggestions for Future Research

My study looked at four-year public and private not-for-profit institutions in Carnegie Classifications 15 to 22, which included research universities with high (CC16) and very high research activity (CC15), doctor/research universities (CC17), master's colleges and universities with smaller (CC20), medium (CC19) and larger (CC18) programs, and baccalaureate colleges in arts and sciences (CC21) and diverse fields (CC22). Now that my study, which included a wide array of Carnegie Classifications under the umbrella of four-year institutions, has been completed, future research could create a subset of the population by Carnegie Classification and run the panel data regression analysis to determine if the results vary from my findings. It would be interesting to view the results for all cost drivers studied.

Another possible way to analyze the data might be to look at each school by geographic region. Different cities have different cost of living adjustments (money.cnn.com, n.d.). This may or may not impact the costs of higher education. For example, does an assistant professor in New York make the same as an assistant professor in Texas? Are the state appropriations of a lower cost of living in a geographic region the same as the state appropriations of a school in a higher cost of living geographic region? Should they be? Do certain geographic regions, due to higher cost of living, capture federal student loans and not others? Along those same lines, my study could be repeated while controlling for local economic circumstances, such as the state median income or unemployment rate.

Another suggestion for further research might be to sort the schools by size because economies of scale do matter (Desrochers & Kirshstein, 2014; Stratford, 2015; Vanderbilt University, 2015). It might be beneficial to look at the relationship between average net price and the cost drivers to see if there is a disparity, depending on the school size. I controlled for the number and percentage of undergraduate students, which takes economies of scale into account, but it would be interesting to delineate any possible variation further.

Conclusion

This study has confirmed my notion that there were significant relationships with average net price (overall and at varied income levels) and each of the cost drivers associated with the increase in higher education expenses. Even though my findings did not necessarily coincide with the literature, it was determined that there was a significant positive relationship; this should be evaluated by higher education institutions in an effort to contain the average net price for students and their families and to make college more affordable.

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Appendix

Table 1. Out-of-Pocket Net Price Change from 1999/2000 Academic Year to the 2011/2012 Academic Year

	Out-of-Pocket Net Price		Percentage Change
	1999/2000	2011/2012	
Public Four-Year Institutions			
Overall	$ 9,780	$ 11,800	21%
Lowest 25%	$ 6,400	$ 7,100	11%
Lower Middle 25%	$ 9,470	$ 9,900	5%
Upper Middle 25%	$ 11,040	$ 13,900	26%
Highest 25%	$ 13,360	$ 16,800	26%
Private Four-Year Not-for-Profit Institutions			
Overall	$ 15,670	$ 18,100	16%
Lowest 25%	$ 9,250	$ 11,000	19%
Lower Middle 25%	$ 13,150	$ 12,900	-2%
Upper Middle 25%	$ 15,560	$ 18,200	17%
Highest 25%	$ 23,140	$ 26,600	15%

Source: National Center for Educational Statistics; Amounts are inflation adjusted to 2011 dollars; percentage change calculated by me

Table 2. *Average Net Price Regression Results Four-Year Public Institution - Instructional Inefficiencies*

	β coef.	Significance	β coef.	Signficance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
Instructional Inefficiencies												
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Instructional Expenses	-0.065	*	0.010		-0.013		-0.078		0.077	*	0.141	***
	(0.0302)		(.0327)		(.0306)		(.0510)		(.0368)		(.0379)	
Endowment Assets	0.01		-0.003		-0.002		0.002		0.002		0.008	
	(.0067)		(.0060)		(.0051)		(.0055)		(.0039)		(.0048)	
% of Students Admitted	5.788		2.036		0.469		6.825		-6.528		1.826	
	(4.7207)		(3.8280)		(3.88863)		(6.3578)		(5.4795)		(4.5117)	
# of Undergraduates	0.081	***	-0.027		-0.009		0.037		0.076	***	0.094	***
	(.0218)		(.0163)		(.0162)		(.0264)		(.0191)		(.0246)	
% of Undergraduates	-2.533		-15.765		-22.561		-21.748		-2.043		-2.955	
	(20.4087)		(13.0151)		(12.7593)		(25.1.45)		(14.9377)		(15.7499)	
Institutional Grant Aid	0.017		0.081	*	0.051		0.091		0.143	***	0.102	
	(.0447)		(.0397)		(.0392)		(.0566)		(.04106)		(.0695)	
% of Instate Students	-4.191		-0.118		-2.812		-2.518		-4.427		-3.546	
	(5.5120)		(5.9766)		(4.1959)		(6.9986)		(4.6039)		(4.3669)	
Political Control	55.137		-50.704		-7.133		-178.023		-137.622		-146.228	
	(125.2541)		(92.1504)		(96.1873)		(167.4698)		(86.3641)		(90.8617)	
Tuition Setting Authority	248.274		327.726	*	68.134		405.603		196.544		347.883	
	(159.4176)		(159.6652)		(160.5122)		(287.5843)		(173.1179)		(186.2623)	
Legislative Control - Democrat	-513.176	***	-503.707	***	-487.057	***	-967.157	***	-408.338	***	-336.434	***
	(143.6850)		(108.1175)		(97.6112)		(201.9623)		(89.2267)		(87.9231)	
Legislative Control - Republican	261.924	*	438.015	**	320.155	**	-182.117		75.951		4.291	
	(133.8581)		(134.8123)		(109.4342)		(209.6081)		(110.7767)		(106.7215)	
Sample Size	2,892		2,892		2,892		2,892		2,892		2,892	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 3. *Average Net Price Regression Results Four-Year Public Institutions - Administrative Expenses*

	β coef.	Significance	β coef.	Signfficance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
Administrative Expenses												
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Academic Support Services	0.058		-0.025		-0.050		0.078		0.102	*	0.105	*
	(.0321)		(.0364)		(.0359)		(.0936)		(.0399)		(.0421)	
Student Support Services	-0.18		-0.053		-0.130		-0.325		0.321	*	0.504	**
	(.1912)		(.1381)		(.1330)		(.2462)		(.1490)		(.1755)	
Institutional Support Services	-0.127		0.111		0.106		-0.132		-0.162		-0.002	
	(.1269)		(.0841)		(.0829)		(.1658)		(.1204)		(.1049)	
Endowment Assets	0.01		-0.003		-0.002		0.002		0.004		0.009	
	(.0066)		(.0060)		(.0050)		(.0052)		(.0041)		(.0056)	
% of Students Admitted	6.742		2.371		1.221		6.731		-7.054		1.483	
	(4.8798)		(3.9049)		(3.9796)		(6.3594)		(5.3614)		(4.4876)	
# of Undergraduates	0.079	**	-0.024		-0.008		0.024		0.08	***	0.111	***
	(.0228)		(.0163)		(.0160)		(.0260)		(.0197)		(.0249)	
% of Undergraduates	13.275		-16.517		-21.158		-12.874		-11.729		-18.44	
	(21.6680)		(12.9834)		(12.8903)		(23.9978)		(14.3670)		(15.2202)	
Institutional Grant Aid	-0.002		0.083	*	0.055		0.094		0.142	***	0.098	
	(.0448)		(.0406)		(.0398)		(.0571)		(.0406)		(.0669)	
% of Instate Students	-3.55		0.298		-2.725		-2.136		-4.317		-3.566	
	(5.5626)		(6.1022)		(4.2710)		(7.0009)		(4.6724)		(4.4192)	
Political Control	58.649		-56.124		-5.1		-158.815		-141.374		-172.325	
	(129.8272)		(92.9232)		(97.5407)		(169.0528)		(84.8873)		(90.1424)	
Tuition Setting Authority	256.399		365.802	*	105.16		418.725		175.499		326.717	
	(159.6774)		(160.4471)		(161.6880)		(283.9205)		(172.0582)		(181.8541)	
Legislative Control - Democrat	-521.227	***	-513.933	***	-498.983	***	-959.974	***	-396.551	***	-348.894	***
	(146.8267)		(110.2682)		(99.4540)		(203.1640)		(87.9449)		(88.4364)	
Legislative Control - Republican	319.973	*	417.292	**	301.574	**	-170.049		83.093		19.942	
	(137.6363)		(138.4212)		(110.9975)		(211.6720)		(110.8697)		(105.7322)	
Sample Size	2,892		2,892		2,892		2,892		2,892		2,892	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 4. *Average Net Price Regression Results Four-Year Public Institutions Federal - Financial Aid*

	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
Federal Financial Aid												
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Federal Student Loans	-0.017		-0.021		-0.054		0.049		0.15	**	0.038	
	(.0419)		(.0554)		(.0507)		(.0499)		(.0510)		(.0578)	
Pell Grants	-0.254	*	-0.062		-0.216	*	-0.529	***	-0.181		-0.131	
	(.1222)		(.1196)		(.0986)		(.1051)		(.1005)		(.1152)	
Endowment Assets	0.009		-0.003		-0.005		-0.003		0.004		0.012	*
	(.0046)		(.0060)		(.0051)		(.0043)		(.0042)		(.0058)	
% of Students Admitted	3.96		1.998		0.476		3.864		-6.808		1.468	
	(4.4831)		(3.8355)		(3.8856)		(4.3543)		(5.3154)		(4.4387)	
# of Undergraduates	0.049	**	-0.027		-0.012		0.022		0.08	***	0.102	***
	(.0184)		(.0161)		(.0158)		(.0166)		(.0191)		(.0248)	
% of Undergraduates	-18.489		-17.025		-22.101		-20.858		-8.472		-16.709	
	(16.3535)		(12.8438)		(12.5878)		(13.5444)		(14.0752)		(15.6286)	
Institutional Grant Aid	0.056		0.083	*	0.059		0.091	*	0.148	***	0.113	
	(.0422)		(.0404)		(.0394)		(.0402)		(.0411)		(.0689)	
% of Instate Students	-3.744		0.111		-1.905		-0.238		-4.178		-3.287	
	(4.7400)		(5.9391)		(4.1108)		(4.5506)		(4.5307)		(4.3707)	
Political Control	16.682		-54.341		-13.541		-144.602		-144.853		-112.069	
	(112.6971)		(92.3569)		(97.0992)		(91.6920)		(85.9755)		(91.3956)	
Tuition Setting Authority	241.625		340.449	*	80.183		124.768		208.752		347.887	
	(164.5959)		(160.0244)		(161.7935)		(200.0647)		(171.9794)		(187.4552)	
Legislative Control - Democrat	-466.667	**	-506.798	***	-509.777	***	-620.696	***	-399.678	***	-320.121	***
	(140.2301)		(109.8077)		(98.7246)		(103.9431)		(92.2350)		(91.0232)	
Legislative Control - Republican	112.092		430.308	**	321.049	**	63.949		78.46		-14.824	
	(146.4722)		(135.3234)		(108.8300)		(126.9868)		(112.9863)		(108.9313)	
Sample Size	2,892		2,892		2,892		2,892		2,892		2,892	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 5. *Average Net Price Regression Results Four-Year Public Institutions – State Appropriations*

	β coef.	Signfiic ance	β coef.	Signifi cance	β coef.	Signific ance	β coef.	Signifi cance	β coef.	Signifi cance	β coef.	Signific ance
State Appropriations												
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
State Appropriations	-0.029		-0.068	*	-0.064	*	0.042		-0.123	**	-0.076	*
	(.0389)		(.0307)		(.0269)		(.0504)		(.0375)		(.0310)	
Endowment Assets	0.01		-0.002		-0.002		0.001		0.007		0.014	*
	(.0063)		(.0061)		(.0049)		(.0054)		(.0045)		(.0063)	
% of Students Admitted	5.301		1.636		0.097		7.089		-7.158		1.774	
	(4.8917)		(3.8450)		(3.8798)		(6.3527)		(5.3363)		(4.5801)	
# of Undergraduates	0.079	***	-0.029		-0.012		0.035		0.075	***	0.096	***
	(.0218)		(.0158)		(.0156)		(.0262)		(.0195)		(.0248)	
% of Undergraduates	2.908		-21.436		-25.637	*	-13.266		-12.93		-24.528	
	(21.2771)		(12.9728)		(12.9040)		(24.8960)		(15.3968)		(16.0317)	
Institutional Grant Aid	0.007		0.08		0.047		0.079		0.14	**	0.091	
	(.0452)		(.0396)		(.0392)		(.0573)		(.0438)		(.0758)	
% of Instate Students	-4.299		-0.229		-3.093		-2.444		-5.244		-3.984	
	(5.7600)		(6.0977)		(4.2362)		(6.9805)		(4.5683)		(4.5048)	
Political Control	82.651		-38.689		6.487		-145.049		-128.082		-49.43	
	(127.7862)		(91.6202)		(94.9412)		(171.1473)		(91.1991)		(95.9287)	
Tuition Setting Authority	254.412		318.959	*	48.476		439.892		184.555		340.946	
	(157.3033)		(158.2379)		(158.5130)		(288.0274)		(181.5078)		(196.5427)	
Legislative Control - Democrat	-546.203	***	-514.736	***	-483.04	***	-1000.44	***	-452.002	***	-349.6	***
	(142.7320)		(109.4523)		(98.1939)		(205.4464)		(95.9582)		(93.5828)	
Legislative Control - Republican	278.088	*	417.982	**	309.966	**	-150.776		23.317		-45.667	
	(133.1978)		(136.4570)		(109.2293)		(211.0643)		(116.6984)		(113.7433)	
Sample Size	2,892		2,892		2,892		2,892		2,892		2,892	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 6. *Average Net Price Regression Results Four-Year Public Institutions without Outliers – Instructional Inefficiencies*

	β coef.	Significance	β coef.	Signfiicance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
Instructional Inefficiencies												
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Instructional Expenses	-0.065	*	0.006		-0.066		-0.081		0.077	*	0.141	***
	(0.0310)		(.0342)		(.0600)		(.0465)		(.0368)		(.0379)	
Endowment Assets	0.009		-0.007		0.003		0.001		0.002		0.008	
	(.0068)		(.0045)		(.0049)		(.0055)		(.0039)		(.0048)	
% of Students Admitted	5.386		2.223		11.47		6.564		-6.528		1.826	
	(4.7525)		(4.1677)		(6.7470)		(6.5080)		(5.4795)		(4.5117)	
# of Undergraduates	0.086	***	-0.024		-0.027		0.04		0.076	***	0.094	***
	(.0220)		(.0164)		(.0217)		(.0270)		(.0191)		(.0246)	
% of Undergraduates	-1.535		-16.395		-54.447	*	-20.917		-2.043		-2.955	
	(20.8166)		(12.7240)		(22.9635)		(25.1440)		(14.9377)		(15.7499)	
Institutional Grant Aid	0.014		0.104	**	0.108		0.073		0.143	***	0.102	
	(.0460)		(.0391)		(.0660)		(.0565)		(.0410)		(.0695)	
% of Instate Students	-4.635		-0.19		-0.452		-1.167		-4.427		-3.546	
	(5.8369)		(6.1667)		(6.4260)		(7.2276)		(4.6039)		(4.3669)	
Political Control	120.845		-66.866		-74.402		-223.35		-137.622		-146.228	
	(127.5780)		(92.7419)		(229.4045)		(176.0324)		(86.3641)		(90.8617)	
Tuition Setting Authority	190.903		343.559	*	469.519		304.905		196.544		347.883	
	(163.6185)		(157.9443)		(285.8858)		(288.8440)		(173.1179)		(186.2623)	
Legislative Control - Democrat	-543.054	***	-567.058	***	-640.835	**	-1015.24	***	-408.338	***	-336.434	***
	(144.2022)		(109.9054)		(216.3756)		(208.3300)		(89.2267)		(87.9231)	
Legislative Control - Republican	207.759		432.332	**	-193.074		-153.691		75.951		4.291	
	(137.1034)		(137.2639)		(211.2512)		(210.6325)		(110.7767)		(106.7215)	
Sample Size	2,877		2,873		2,877		2,872		2,875		2,873	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 7. *Average Net Price Regression Results Four-Year Public Institutions without Outliers – Administrative Expenses*

	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Administrative Expenses												
Academic Support Services	0.066	*	-0.003		-0.044		0.087		0.102	*	0.105	*
	(.0314)		(.0339)		(.0768)		(.0919)		(.0399)		(.0421)	
Student Support Services	-0.221		-0.078		-0.492	*	-0.321		0.321	*	0.504	**
	(.1828)		(.1407)		(.2333)		(.2577)		(.1490)		(.1775)	
Institutional Support Services	-0.152		0.081		0.054		-0.128		-0.162		-0.002	
	(.1275)		(.0872)		(.1679)		(.1707)		(.1204)		(.1049)	
Endowment Assets	0.009		-0.007		0.003		0.001		0.004		0.009	
	(.0065)		(.0045)		(.0049)		(.0052)		(.0041)		(.0056)	
% of Students Admitted	5.702		2.462		11.708		6.595		-7.054		1.483	
	(4.7788)		(4.2398)		(6.7525)		(6.5027)		(5.3614)		(4.4876)	
# of Undergraduates	0.077	***	-0.022		-0.036		0.026		0.08	***	0.111	***
	(.0220)		(.0164)		(.0212)		(.0266)		(.0197)		(.0249)	
% of Undergraduates	9.419		-15.973		-46.031	*	-11.878		-11.729		-18.44	
	(21.4080)		(12.5364)		(23.1628)		(24.0513)		(14.3670)		(15.2202)	
Institutional Grant Aid	0.009		0.107	**	0.113		0.075		0.142	***	0.098	
	(.0446)		(.0401)		(.0657)		(.0572)		(.0406)		(.0669)	
% of Instate Students	-4.063		0.199		-0.768		-0.742		-4.317		-3.566	
	(5.7374)		(6.2877)		(6.4628)		(7.2131)		(4.6724)		(4.4192)	
Political Control	120.413		-70.24		-5.935		-199.536		-141.374		-172.325	
	(125.9259)		(93.1169)		(228.4656)		(175.9995)		(84.8873)		(90.1424)	
Tuition Setting Authority	192.589		378.343	*	470.599		314.607		175.499		326.217	
	(160.1014)		(158.5688)		(285.8843)		(286.0223)		(172.0582)		(181.8541)	
Legislative Control - Democrat	-534.942	***	-575.577	***	-587.898	**	-1013.346	***	-396.551	***	-348.894	***
	(144.9172)		(111.8129)		(211.4817)		(208.4540)		(87.9449)		(88.4364)	
Legislative Control - Republican	253.297		415.989	**	-205.761		-136.504		83.093		19.942	
	(139.0414)		(140.8789)		(214.6270)		(212.4045)		(110.8697)		(105.7322)	
Sample Size	2,877		2,873		2,877		2,872		2,875		2,873	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 8. *Average Net Price Regression Results Four-Year Public Institutions without Outliers- Financial Aid*

	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Federal Financial Aid												
Federal Student Loans	-0.002		-0.001		-0.064		0.088		0.15	**	0.038	
	(.0440)		(.0565)		(.0608)		(.0566)		(.0510)		(.0578)	
Pell Grants	-0.341	**	-0.04		-0.257	*	-0.562	***	-0.181		-0.131	
	(.1276)		(.1196)		(.1274)		(.1115)		(.1005)		(.1152)	
Endowment Assets	0.007		-0.007		-0.002		-0.004		0.004		0.012	*
	(.0052)		(.0045)		(.0047)		(.0043)		(.0042)		(.0058)	
% of Students Admitted	4.252		2.202		7.793		5.191		-6.808		1.468	
	(4.5593)		(4.1826)		(5.4764)		(4.8076)		(5.3154)		(4.4387)	
# of Undergraduates	0.058	**	-0.024		-0.023		0.022		0.08	***	0.102	***
	(.0200)		(.0162)		(.0169)		(.0169)		(.0191)		(.0248)	
% of Undergraduates	-13.442		-17.218		-34.488	*	-19.398		-8.472		-16.709	
	(17.2794)		(12.3618)		(15.1750)		(14.0846)		(14.0752)		(15.6286)	
Institutional Grant Aid	0.046		0.106	**	0.09		0.09	*	0.148	***	0.113	
	(.0437)		(.0397)		(.0539)		(.0431)		(.0411)		(.0689)	
% of Instate Students	-3.784		-0.015		-0.48		1.414		-4.178		-3.287	
	(4.7848)		(6.1280)		(5.2977)		(5.3930)		(4.5307)		(4.3707)	
Political Control	92.73		-70.034		-65.025		-190.309		-144.853		-112.069	
	(121.3282)		(92.8253)		(147.1214)		(100.3943)		(85.9755)		(91.3956)	
Tuition Setting Authority	203.505		351.371	*	297.652		100.785		208.752		347.887	
	(175.8956)		(158.4527)		(209.3457)		(218.5274)		(171.9794)		(187.4552)	
Legislative Control - Democrat	-537.805	***	-568.34	***	-582.797	***	-698.161	***	-399.678	***	-320.121	***
	(146.0898)		(111.4499)		(144.4285)		(118.1651)		(92.2350)		(91.0232)	
Legislative Control - Republican	20.928		425.117	**	37.519		26.581		78.46		-14.824	
	(152.4298)		(138.0571)		(148.8453)		(138.7127)		(112.9863)		(108.9313)	
Sample Size	2,877		2,873		2,877		2,872		2,875		2,873	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 9. *Average Net Price Regression Results Four-Year Public Institutions without Outliers– State Appropriations*

	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
State Appropriations												
State Appropriations	-0.034		-0.074	*	-0.006		0.039		-0.123	**	-0.076	*
	(0.0397)		(0.0303)		(0.0493)		(0.0524)		(0.0375)		(0.0310)	
Endowment Assets	0.009		-0.006		0.002		0.000		0.007		0.014	
	(.0063)		(.0044)		(.0050)		(.0054)		(.0045)		(.0063)	
% of Students Admitted	4.81		1.869		11.234		6.939		-7.158		1.774	
	(4.9190)		(4.2146)		(6.8467)		(6.5253)		(5.3363)		(4.5801)	
# of Undergraduates	0.083	***	-0.026		-0.031		0.039		0.075	***	0.096	***
	(.0219)		(.0159)		(.0208)		(.0268)		(.0195)		(.0248)	
% of Undergraduates	3.472		-22.386		-48.548	*	-11.3		-12.93		-24.528	
	(21.5898)		(12.4978)		(23.0582)		(25.0444)		(15.3968)		(16.0317)	
Institutional Grant Aid	0.003		0.103	**	0.1		0.059		0.14	**	0.091	
	(.0462)		(.0393)		(.0663)		(.0571)		(.0438)		(.0758)	
% of Instate Students	-4.767		-0.22		-0.146		-1.048		-5.244		-3.984	
	(6.0470)		(6.3428)		(6.5380)		(7.1773)		(4.5683)		(4.5048)	
Political Control	150.376		-52.825		-56.961		-187.13		-128.082		-49.43	
	(128.5105)		(92.5643)		(229.0331)		(175.9675)		(91.1991)		(95.9287)	
Tuition Setting Authority	194.475		336.838	*	481.819		322.933		184.555		340.946	
	(160.4315)		(156.7811)		(286.2586)		(289.1917)		(181.5078)		(196.5427)	
Legislative Control - Democrat	-568.063	***	-578.149	***	-695.528	**	-1052.88	***	-452.002	***	-349.6	***
	(142.3717)		(111.8407)		(211.6579)		(210.6852)		(95.9582)		(93.5828)	
Legislative Control - Republican	229.508		408.378	**	-137.043		-117.998		23.317		-45.667	
	(135.3064)		(139.9904)		(207.8154)		(210.4905)		(116.6984)		(113.7433)	
Sample Size	2,877		2,873		2,877		2,872		2,875		2,873	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 10. *Average Net Price Regression Results Four-Year Private Not-for-Profit Institutions– Instructional Inefficiencies*

	β coef.	Significance	β coef.	Significance	β coef.	Signiicance	β coef.	Significance	β coef.	Significance	β coef.	Significance
Instructional Inefficien	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Instructional Expenses	0.003		-0.045	**	-0.062	***	-0.003		0.003		0.058	
	(0.0165)		(.0148)		(.0160)		(.0137)		(.0133)		(.0488)	
Endowment Assets	-0.001		-0.008	***	-0.006	***	-0.006	***	-0.002		0.002	
	(.0008)		(.0018)		(.0009)		(.0012)		(.0009)		(.0018)	
% of Students Admitted	-6.821		-6.24		14.719	*	10.386		-0.636		-15.842	**
	(3.6093)		(5.7898)		(6.2266)		(5.3168)		(4.9682)		(5.8702)	
# of Undergraduates	0.185		0.178	**	0.177	*	0.163	*	0.173	*	0.265	*
	(.1060)		(.0666)		(.0741)		(.0817)		(.0853)		(.1135)	
% of Undergraduates	-4.853		-30.422	***	-30.759	***	-32.216	***	-33.979	***	-32.286	**
	(9.9338)		(8.1050)		(7.8892)		(7.6935)		(7.9804)		(9.6584)	
Institutional Grant Aid	0.166		0.002		0.024		-0.004		0.052	*	0.234	***
	(.0202)		(.0244)		(.0277)		(.0220)		(.0223)		(.0271)	
Sample Size	5,192		5,192		5,192		5,192		5,192		5,192	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 11. *Average Net Price Regression Results Four-Year Private Not-for-Profit Institutions– Administrative Expenses*

	β coef.	Significance	β coef.	Significance	β coef.	Signiicance	β coef.	Significance	β coef.	Significance	β coef.	Significance
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Administrative Expenses												
Academic Support Services	0.082		-0.282	*	-0.329	*	-0.137		-0.064		0.171	**
	(.0569)		(.1405)		(.1478)		(.0838)		(.0781)		(.0602)	
Student Support Services	0.025		0.133		0.086		0.024		0.053		0.075	
	(.0828)		(.0852)		(.0890)		(.0733)		(.0694)		(.0754)	
Institutional Support Services	0.06		-0.002		0.009		0.008		-0.032		0.012	
	(.0444)		(.0639)		(.0681)		(.0519)		(.0398)		(.0537)	
Endowment Assets	-0.002		-0.007	**	-0.005	***	-0.005	***	-0.001		0.001	
	(.0009)		(.0021)		(.0011)		(.0012)		(.0009)		(.0016)	
% of Students Admitted	-6.395		4.226		13.04		9.505		-1.341		-14.916	**
	(3.6741)		(5.7807)		(6.7015)		(5.2973)		(4.9988)		(5.7381)	
# of Undergraduates	0.184		0.201	**	0.194	*	0.173	*	0.18	*	0.27	*
	(.1046)		(.0698)		(.0788)		(.0842)		(.0881)		(.1156)	
% of Undergraduates	-3.619		-36.453	***	-34.583	***	-35.298	***	-36.318	***	-34.491	***
	(10.7028)		(9.1433)		(9.4117)		(8.3854)		(8.6788)		(9.6301)	
Institutional Grant Aid	0.168		0.001		0.026		0.002		0.054	*	0.231	***
	(.0207)		(.0257)		(.0307)		(.0228)		(.0232)		(.0225)	
Sample Size	5,192		5,192		5,192		5,192		5,192		5,192	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 12. *Average Net Price Regression Results Four-Year Private Not-for-Profit Institutions– Financial Aid*

	β coef.	Significance	β coef.	Significance	β coef.	Signiicance	β coef.	Significance	β coef.	Significance	β coef.	Significance
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Federal Financial Aid												
Federal Student Loans	-0.079		0.127	*	0.039		0.099	*	0.111	*	0.07	
	(0426)		(.0505)		(.0506)		(.0485)		(.0462)		(.0472)	
Pell Grants	0.021		-0.199		-0.518	***	-0.757	***	-0.894	***	-1.284	***
	(.1142)		(.1248)		(.1286)		(.1055)		(.1120)		(.1239)	
Endowment Assets	-0.001		-0.008	***	-0.008	***	-0.006	***	-0.002	**	0.002	
	(.0008)		(.0018)		(.0010)		(.0011)		(.0008)		(.0016)	
% of Students Admitted	-7.123		7.075		16.346	*	10.953	*	-0.117		-16.583	**
	(3.6299)		(5.9434)		(6.4483)		(5.3805)		(5.0344)		(5.9382)	
# of Undergraduates	0.185		0.168	**	0.158	*	0.158	*	0.172	*	0.276	*
	(.1047)		(.0641)		(.0686)		(.0767)		(.0796)		(.1074)	
% of Undergraduates	-4.415		-26.663	**	-24.795	**	-28.886	***	-30.532	***	-29.998	**
	(10.2090)		(7.9118)		(7.7770)		(7.4839)		(7.6237)		(8.6845)	
Institutional Grant Aid	0.184		-0.026		-0.002		-0.011		0.055	**	0.276	***
	(.0207)		(.0244)		(.0270)		(.0218)		(.0213)		(.0214)	
Sample Size	5,192		5,192		5,192		5,192		5,192		5,192	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 13. *Average Net Price Regression Results Four-Year Private Not-for-Profit Institutions without Outliers – Instructional Inefficiencies*

	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
Instructional Ineffic:	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Instructional Expenses	0.018		-0.041	**	-0.049	**	0.001		0.018		0.059	
	(0.0234)		(.0151)		(.0158)		(.0117)		(.0192)		(.0475)	
Endowment Assets	-0.002	*	-0.008	***	-0.007	***	-0.008	***	-0.004	***	0.002	
	(.0011)		(.0018)		(.0010)		(.0010)		(.0010)		(.0019)	
% of Students Admitted	-6.491		10.899		12.255	*	7.053		0.987		-14.717	**
	(4.3613)		(5.1657)		(5.1669)		(5.0033)		(4.4506)		(5.6439)	
# of Undergraduates	0.228	*	0.221	**	0.219	**	0.212	*	0.225	*	0.306	*
	(.1106)		(.0695)		(.0784)		(.0852)		(.0925)		(.1228)	
% of Undergraduates	-4.794		-29.886	***	-31.069	***	-30.737	***	-32.587	***	-31.582	**
	(10.9556)		(7.7588)		(7.5775)		(7.3637)		(7.6325)		(9.4766)	
Institutional Grant Aid	0.218	***	0.007		0.007		0.013		0.069	***	0.235	***
	(.0247)		(.0218)		(.0208)		(.0193)		(.0196)		(.0263)	
Sample Size	5,159		5,135		5,133		5,138		5,130		5,145	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 14. *Average Net Price Regression Results Four-Year Private Not-for-Profit Institutions without Outliers – Administrative Expenses*

	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Administrative Expenses												
Academic Support Services	0.072		-0.215		-0.190		-0.081		-0.014		0.154	**
	(.0603)		(.1266)		(.1296)		(.0746)		(.0759)		(.0592)	
Student Support Services	0.093		0.152		0.147	*	0.110		0.126	*	0.047	
	(.0870)		(.0799)		(.0702)		(.0632)		(.0620)		(.0719)	
Institutional Support Services	0.100	*	-0.025		-0.046		-0.005		-0.021		0.074	
	(.0493)		(.0505)		(.0452)		(.0447)		(.0391)		(.0432)	
Endowment Assets	-0.004	**	-0.007	**	-0.007	***	-0.008	***	-0.004	***	0.001	
	(.0012)		(.0021)		(.0013)		(.0011)		(.0011)		(.0017)	
% of Students Admitted	-6.115		9.757		11.568	*	6.64		0.73		-13.552	*
	(4.3463)		(5.1222)		(5.2261)		(4.9909)		(4.4363)		(5.5039)	
# of Undergraduates	0.24	*	0.24	**	0.232	**	0.229	*	0.241	*	0.314	*
	(.1126)		(.0728)		(.0808)		(.0883)		(.0963)		(.1261)	
% of Undergraduates	-7.917		-35.65	***	-35.813	***	-35.634	***	-37.502	***	-33.738	***
	(11.2771)		(8.6155)		(8.4483)		(7.8497)		(8.0880)		(9.2925)	
Institutional Grant Aid	0.207	***	0.001		-0.002		0.01		0.067	**	0.232	***
	(.0238)		(.0232)		(.0234)		(.0203)		(.0200)		(.0215)	
Sample Size	5,159		5,135		5,133		5,138		5,130		5,145	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$

Table 15. *Average Net Price Regression Results Four-Year Private Not-for-Profit Institutions without Outliers- Financial Aid*

	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance	β coef.	Significance
	Overall		Income Level One		Income Level Two		Income Level Three		Income Level Four		Income Level Five	
Federal Financial Aid												
Federal Student Loans	-0.068		0.161	***	0.109	**	0.125	**	0.114	**	0.064	
	(.0535)		(.0452)		(.0416)		(.0427)		(.0395)		(.0465)	
Pell Grants	0.027		-0.136		-0.484	***	-0.776	***	-1.001	***	-1.32	
	(.1375)		(.1059)		(.0951)		(.0979)		(.1018)		(.1234)	
Endowment Assets	-0.002	*	-0.008	***	-0.009	***	-0.008	***	-0.005	***	0.002	
	(.0010)		(.0018)		(.0011)		(.0009)		(.0009)		(.0017)	
% of Students Admitted	-6.817		11.528	*	13.803	*	7.858		1.404		-15.058	
	(4.2849)		(5.3317)		(5.3681)		(5.0469)		(4.4668)		(5.7082)	
# of Undergraduates	0.231	*	0.213	**	0.205	**	0.208	**	0.224	**	0.32	
	(.1116)		(.0663)		(.0718)		(.0785)		(.0851)		(.1159)	
% of Undergraduates	-6.057		-26.454	***	-25.854	***	-27.731	***	-29.915	***	-29.277	
	(10.8044)		(7.5614)		(7.4197)		(7.1398)		(7.1243)		(8.4674)	
Institutional Grant Aid	0.226	***	-0.019		-0.017		0.008		0.079	***	0.279	
	(.0237)		(.0224)		(.0208)		(.0194)		(.0184)		(.0208)	
Sample Size	5,159		5,135		5,133		5,138		5,130		5,145	

Source: Integrated Postsecondary Education Data System (IPEDS)

Standard error is in parenthesis.

* for $p < 0.05$, ** for $p < 0.01$, *** for $p < 0.001$