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A Quantitative Study of Enrollment Change during the Great Recession at Non-selective Small Private Colleges and Universities

Timothy J. Meyer

University of St. Thomas, timothymeyer1981@gmail.com

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A Quantitative Study of Enrollment Change during the Great Recession at Non-selective
Small Private Colleges and Universities

A DISSERTATION SUBMITTED TO THE FACULTY OF THE SCHOOL OF EDUCATION
OF THE UNIVERSITY OF ST. THOMAS ST. PAUL, MINNESOTA

by

Timothy Meyer

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR
OF EDUCATION



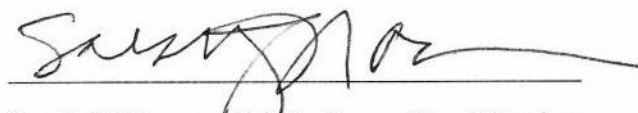
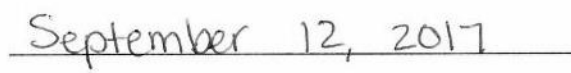
August 2017

UNIVERSITY OF ST. THOMAS, MINNESOTA

A Quantitative Study of Enrollment Change during the Great Recession at Non-selective Small
Private Colleges and Universities

We certify that we have read this dissertation and approved it as adequate in scope and quality. We have found that it is complete and satisfactory in all respects, and that any and all revisions required by the final examining committee have been made.

Dissertation Committee


Karen L. Westberg, Ph.D., Committee Chair
Thomas L. Fish, Ed.D., Committee Member
Sarah J. Noonan, Ed.D., Committee Member
Final Approval Date

ABSTRACT

The purpose of this quantitative study was to examine factors related to enrollment in higher education during the 2008-2009 economic downturn. The study focused on small private colleges and universities without historic prestige, schools that are non-selective and dependent on enrollment tuition. When viewing student enrollment through a consumer viewpoint, attendance at these institutions fits the definition of luxury goods, which are highly susceptible to income changes like those associated with a recession. Hedonic modeling was used on 38 colleges and universities throughout the Midwest. Descriptive statistics revealed that average enrollment at these institutions actually rose during the recession. Institutions with specific business programs outperformed those without. Additionally, there was a positive correlation between graduation rate and enrollment. There was a negative correlation between acceptance rate and enrollment. The presence of nursing programs had no correlations with enrollment. The economic theory of oligopoly was utilized to interpret behavior between schools. Bolman and Deal's Political Frame theory was used to interpret decision-making at like institutions during times of change. The study revealed a tradeoff between long-run enrollment success and short-run enrollment success. Additionally, the study revealed that student enrollment at such institutions was not viewed as a luxury good. The study concludes with recommendations regarding institutional changes for maintaining or increasing enrollment, especially during economic downturns.

Keywords: College Choice, Access to Education, Private College, Enrollment Performance

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Shortly after I finished my Master's degree in 2006, I realized my formal education would not be complete until I had two important letters preceding my name. There are literally dozens of colleagues, family members, and classmates I could thank, but that would fill up another 100 pages.

My parents are the first two specific people I would like to thank. Their persistent positive attitude was incredibly helpful during some of the low points of my post-baccalaureate education. While their care as parents was nice, their support as educational mentors was invaluable. Three informal classroom observations with my dad have been better professional development than ten years' worth of conferences, meetings, and teaching symposiums.

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The last person I would like to thank is my wife. Most acknowledgment pages thank spouses for their understanding and shared commitment to the specific goal of finishing a dissertation. While Erin did this, her biggest contribution to my completion was her intellect. I asked her to be many things during my doctoral education. Her duties as wife and mother were heightened during my absences, but more vital to my education was her ability to substitute for my cohort when I needed someone to air out ideas. She toughed out conversations about Marx

and Foucault as if we were discussing Oprah's book club. She managed to navigate my mercurial personality with love every step of the way for which I am truly thankful.

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CHAPTER 1. INTRODUCTION

From the day I first enrolled in doctoral courses until the conclusion of this study, the impetus for completion has become more pure in nature. At first, continuing my education lacked purpose because at the baccalaureate level, formal mastery and training in my discipline (Economics) beyond the Master's level was not necessary. In fact, teaching undergraduate level economics courses did more for me as an economist than any of my seven years of formal training. In addition to not needing more training as an economist, the coursework was not possible without quitting my full time job. The real reason I wanted to complete a terminal degree was because completion was a nearly universal requirement for any career advancement. Fortunately, the part-time nature of the program and the extended time I took to complete my dissertation has revealed a greater purpose for completing a doctoral degree.

The concentration (Collateral Component) of my doctoral coursework is higher education leadership and administration. This program and concentration fits as well as any other competing program. This "fit" could be described as a relationship of convenience. The core courses, cohort experience, and research process have developed this relationship into something much deeper. Whether it is understanding the history of political power and the oppressed, how good leaders stumble, the source and structure of power, or understanding conceptual frameworks, the inquiry in the core courses has greatly influenced how I approach research. Ultimately, this has caused more motivation to succeed in my present-day job and in future career aspirations.

Currently, I am starting my second year of employment as an Associate Professor of Practice at a large state institution where there is a large emphasis on research. Prior to this, I held teaching positions at two smaller universities and a community college for ten years. My

current position addresses the secondary nature of undergraduate education as part of the mission of land grant institutions, especially those with faculty under pressure to publish. Broadly, this position heightens my awareness of the overall importance of quality undergraduate education. Personally, the lack of emphasis on teaching at my university has forced me to reflect on the value of my own private education. This thought experiment, the core education of the program, my interest in economics, and ultimately a thorough review of literature completed the necessary force to allow me to complete the study.

As an undergraduate student, I was fortunate that my primary education was excellent, as was my familial support. Although it is impossible to tell, I believe I would have been successful at most institutions of higher education. Still, I am always thankful for my decision to attend a small private institution, despite the higher cost. I believe the small class size and teaching-focused faculty changed my experience from the status quo to something much greater. Hardly a day goes by that I am not able to see how my undergraduate education has made me a better person. I also understand how my experience has a direct impact on family, and my students as well. Communicating the importance of education, whether to my first grader or a 21 year old in my class, is a daily learning objective.

One outcome of my undergraduate training is the way I view life from the standpoint of an economist. Specifically, I am intrigued by decisions people make when it comes to scarce resources. How people utilize their time and money is fascinating to me. From that viewpoint, the motivation of this study is to understand why students would choose to attend college at an institution like those in this study when a lower cost option is available during an economic downturn.

As an economist who believes in free markets, I trust market outcomes are indicative of the highest and best use of scarce economic resources. These resources, generalized into the categories land, labor, capital, and entrepreneurial skill, are all used in the delivery of undergraduate higher education. In general, economists believe that if a firm fails, those resources shall be used elsewhere for a better cause. When markets are efficient, welfare for society is maximized. This does not mean there are not winners and losers. “Dutch Disease,” is an economic concept of uncertain origin that describes the secondary effects of positive primary economic scenarios (Corden, 1984). The general case of Dutch Disease points out the negative effect on countries after the discovery of a valuable resource such as natural gas or oil. Corden (1984) summarized much of this literature, and expanded, pointing out that many other factions of an economy could be adversely affected. The case of higher education dynamics during a recession is not a direct parallel to Dutch Disease. However, it does provide a premise to examine the secondary effects of a market disturbance, especially one as large as the Great Recession.

Believing in market efficiency is a leap of faith. The assumptions of a perfectly competitive and, therefore efficient market, are as follows: many buyers and sellers, perfect information, identical product, free entry and exit, and no trade secrets (McEachern, 2011). Economists have developed models when these assumptions are broken. In the case of higher education, Oligopolistic Competition fits the market for higher education as the assumptions of many sellers and identical products are broken (Friedman, 1983). Non-economic literature supports other deviations from the classical assumptions of perfect competition. Clearly, students choosing to attend college during high school do not have perfect competition

(Simonshon, 2010). Other research on college choice indicates that the economy is playing a larger role in college choice (Long, 2004).

As mentioned previously, I attended a small private university as an undergrad. I also attended a public research institution with over 30,000 students to earn my master's degree. From there, I taught at my alma mater, followed by a community college, and then a much smaller public institution trying to gain a higher research profile and now my current position at a large, public research university. The experience I have as a student and educator gives me a special perspective on the role of undergraduate education. I am a cheerleader of small colleges, but above that, I am an economist. If a college or university is to fail due to the efficiencies of free markets, I want it to be because the outcome is pure and true. I do not want it to be because stakeholders at those institutions were without the information needed to make necessary conditions to survive and thrive.

Statement of the Problem

The broad problem this study addresses is access to education. In a 2015 State of the Union Address, President Obama focused on providing economic prosperity. His first suggestion was raising the minimum wage, but what was really provocative was his plan to “upgrade” the skills of future workers through free community college (Obama, 2015). Clearly education is a direct path to economic prosperity (Hout, 2012). If small private colleges and universities are spending money on non-academic features to attract students, financially needy students may not view these institutions as viable options. Access to education is not as simple as an opportunity for enrollment, it includes geographic access, economic access, programmatic access, and preparatory access (Windham, Perkins, & Rogers, 2001). If students experience hurdles to any type of access, enrollment patterns could be affected at several levels of higher

education. The displacement of students due to cost could have negative implications for other students. If these implications have merit, future leaders could use this study's results as a resource for decision-making.

More specifically, this study addresses The Great Recession of the past decade and the corresponding shift in overall consumer behavior as it pertains to higher education. Words like "austerity" have become mainstream, as has the popularity of conservative personal financial strategies. During the recession, consumers were seeking value in individual purchases instead of features, luxury, or non-essential qualities (Bohlen, Carlotti, & Mihas, 2010; Flatters & Willmott, 2009). Despite this shift in consumer behavior, the cost of attending private colleges and universities continues to rise. This study aims to establish a framework for researching how high-priced producers of higher education (relative to publicly-funded competitors) can survive a recession and shift in consumer preferences.

Purpose

The purpose of this study is to explore factors that explain enrollment and retention at small private colleges and universities throughout the Upper Midwest during the Great Recession that occurred in 2008. This information could be useful for understanding how institutions can insulate themselves from extreme fluctuations in the business cycle. The existence of these schools is part of the larger issue of access to higher education in general, which also provides purpose.

I believe several stakeholders could benefit from this study. The first group is relevant institutions. The evaluation of private college and university decisions within the framework of an oligopolistic industry could change decision-making, specifically pertaining to large non-academic expenditures. In other words, decision-makers could have a more explicit

understanding of the internal and external forces driving enrollment decisions. These changes could lead to better institutional financial health, lower tuition costs, and thriving enrollment. The student body is a stakeholder as well. Small private schools offer unique qualities that enhance learning outcomes. If hurdles to access to these institutions are eliminated, many students could see positive outcomes that would not be associated with other avenues of higher education. The following question guides the study:

- What fixed institutional factors influenced relatively high-priced private colleges to survive and thrive through the Great Recession?

Procedures/Organization

The organization of this study and the procedures used are that of a traditional five chapter, quantitative dissertation. My personal and professional background previously discussed provide the motivation for the study. Chapter Two contains review of literature supporting a rationale for the research. Chapter Three includes a description of how data were collected, analyzed, and communicated. Chapter Four presents the results of the study. As an economist, I am used to overly technical quantitative studies that are only understood by the researchers and perhaps only a handful of other experts in the area. For this reason, I have tried to utilize the most straightforward quantitative methods possible. The model used to analyze the research question was a hedonic model utilizing an ordinary least squares regression. Both statistically significant and insignificant results provide insight into the proposed research question. Chapter Five utilizes economic theory and leadership theory to interpret the results in a richer fashion.

Conceptual Framework

The purpose of reviewing established literature in the next chapter is to provide support for my preconceived beliefs, review how the topic has evolved, and finally provide a space for where this new study can add to the existing body of literature.

Indeed, the educational outcomes I experienced as a student were not unique. Many students experience positive outcomes at small private colleges. Despite these positive outcomes, small private institutions are moving away from a liberal arts tradition to a focus on applied programs (Jaquette, 2013). The reason for this shift is clear, except for the most prestigious institutions, maintaining enrollment is key to survival (O'Connell & Perkins, 2003). The way these institutions compete fits the way firms and organizations in for-profit industries behave (Jacob, McCall & Stange, 2013). Therefore, the underlying economic theory of firm and organizational behavior provide a framework for analysis.

On the other hand, the finance and economics of institutions of higher education is unique (Paul, 2005). To begin, the choice students face when picking a college or university is very complex (Chapman, 1981). Three areas of the literature review narrowed the focus of the study. These areas are college choice, the theory of luxury goods, and the effect of a recession on firms selling luxury goods during a recession. The Great Recession was a once in a lifetime economic downturn, and the shift in consumer attitudes was real and pronounced (Flatters & Willmott, 2009), but the dynamics of the recession were not limited to the demand side. From the viewpoint of colleges and universities (the supply side), the constant pursuit of prestige and how this pursuit affects stakeholders is relevant. My study aims to address both.

Definition of Key Terms

Game Theory: The study of strategic behavior (Friedman, 1983).

Hedonic Model: A multiple regression model utilizing characteristics of a heterogeneous product to explain variation in product price (Studenmund, 2001).

Luxury Good: A good or service highly responsive to change in consumer income (Besley, 1989).

Oligopoly: A market in which there are only a few firms and all firms are interdependent (Friedman, 1983).

Product Differentiation: Changing a product in such a way that consumers can discern differences between competing products (Friedman, 1983).

CHAPTER 2. REVIEW OF LITERATURE

The goal of this study is to explore factors that explain enrollment and retention at small private colleges and universities throughout the Upper Midwest during the Great Recession. The small private colleges of interest for this study are what have been commonly referred to as “liberal arts schools,” typically with small residential campuses. To understand the competitive environment of small, private institutions, it is important to understand issues related to prestige and inclusivity. This literature review is divided into these nine sections: small private college or university education; the finance and economics of higher education; economic theory; prestige; inclusivity and access; the Great Recession; luxury goods; college choice; and marketing. Following the topical literature review is a conclusion revealing the emerging themes and trends to support this study.

Small Private College or University Education

One of the foundations of this study is that education in a small setting has some advantages over the educational experience provided by larger public universities, community colleges, or online programs. In a modern, but not contemporary essay, McPherson and Schapiro (1999) recounted President James A. Garfield’s version of an ideal education. President Garfield believed the best setting for college and/or learning would be himself at one end of the log and the president and professor of his alma mater at the other end for the purpose of emphasizing the importance of low student/faculty ratio and the importance of teaching at a university. The essay concluded with a rationale for the continuation of the liberal arts educational tradition, noting, “The residential liberal arts college, at its best, remains almost a unique embodiment of a certain ideal of educational excellence” (p. 73). While the article focused on liberal arts, it is also clear that mission, size, and faculty are key components of their

educational Shangri-La. The authors asserted that if the definition of a liberal arts school is strictly adhered to, the number of true liberal arts colleges is very low as many are focusing on more applied and professional programs. This is not a negative outcome as it is clearly displayed there are many pseudo-liberal arts institutions that can offer the same benefits to students through the focus on one main quality: faculty-student interaction (McPherson & Schapiro, 1999).

From a similar standpoint, Williams College trustee Paul Neely wrote about contemporary threats to liberal arts colleges (1999). Neely, a newspaper publisher by trade, makes compelling statements about the competition soon to challenge liberal arts colleges. For example, the University of Arkansas, once thought to be a lower-tier school, is now a legitimate threat to smaller, more highly academically regarded institutions. Juxtaposing the University of Arkansas is Williams College, which has a sterling reputation and national prominence. Neely used Arkansas as an example of emerging competition to Williams, but noted other public universities, community colleges, and online universities as potential threats to the upper crust, elite private colleges (1999). Neely's article is not necessarily a pessimistic view of liberal arts education. Instead, it is a practical evaluation of the changing world of higher education. Neely's anecdotal observations from the boardroom about competition illustrate almost all the current issues faced specifically by liberal arts colleges, most of which can be applied to any small private institution.

While searching for, and reviewing the literature related to the topic of this study, it became clear the imprecise use of terminology would become problematic. Taylor and Morphew (2010) noted, "Small, 4-year private colleges are commonly referred to as 'liberal arts colleges' in the United States. Many times, however, this label is applied inappropriately" (p. 484). Breneman defined liberal arts schools as those that met the following criteria: grant greater

than 40% of their degrees in traditional liberal arts fields, have less than 2500 students, are largely residential, and have a student body of traditional age (1994). Even with a specific definition, the goals and purposes of a liberal arts college can be applied to schools that are technically not liberal arts colleges (Taylor & Morphew, 2010). Neely wrote, “At many of the hundreds of schools that call themselves liberal arts colleges, the term represents nostalgia more than curriculum” (1999, p. 36). To avoid confusion, this study will categorize schools by size and campus type. While the academic profiles of these schools can vary, this study aims to evaluate traditional baccalaureate schools with face-to-face delivery and some type of on-campus housing.

Carnegie classifies schools by degree type and size as sub-classifications. By size, two categories are relevant, VS4 and S4, indicating fewer than 1000 students (VS4) and under 3000 students (S4). Also of relevance is the type of campus. Carnegie has classifications for the residential makeup of the institution. The only schools excluded from consideration in this study are those with fewer than 25% of students living on campus. This information is provided by the newer, more sophisticated Carnegie system and database. It should be noted the colleges and universities in this study are private and not explicitly funded by the state in which the college or university resides. For example, the university branches that make up the University of Wisconsin system would largely be included if not prohibited by their public funding.

On the topic of selectivity and rankings Ehrenberg, a researcher at the Cornell Higher Education Research Institute, pointed out that selectivity and rankings are becoming increasingly complex (2005). In addition to the complexities of the *US News and World Report (USNWR)* rankings, Ehrenberg pointed out it is possible and likely that institutions are able to easily manipulate their *USNWR* ranking, specifically with respect to selectivity (2005). One way an

institution can enhance selectivity is by rejecting qualified applicants if it is unlikely the applicant would enroll if accepted (Ehrenberg, 2005). This practice has no rationale other than enhancing ranking, and actually causes other negative distortions (Ehrenberg, 2005). Barron's Profile of American Colleges, a former standard in college ranking guides, uses only four broad levels to rank selectivity, based only on entrance exam scores (Ehrenberg, 2005). While the simplicity of this approach could be useful, Ehrenberg pointed out that no ranking within strata is defined (2005). Multiple authors use the *USNWR* guide as an official ranking, and it appears it has become the preeminent ranking guideline in general. Ehrenberg warned this is only because the *USNWR* rankings look scientific because of the use of a very complex formula; in actuality the ranking is not as unbiased or "academic" as it would appear (2005).

Selectivity appears to be a sub-issue of how the market for college enrollment has recently changed. It would seem logical that a population growing faster than the number of colleges would increase selectivity, and anecdotes support this logic, but Stanford Economist Hoxby turned this idea on its head. She argued that if all other things remained the same, this logic would be correct, however, something did change, and that is student mobility. She asserted that the old model of going to a college or university near one's hometown is simply out of date. Students understand the benefits of finding the school that suits them best, and colleges and universities understand their effective monopoly is no more. When this is combined with lower costs of travel (both implicit and explicit) and the availability of information, the number of institutions of higher education a student will consider increases (Hoxby, 2009). Perhaps the most notable outcome of mobility, according to Hoxby, is that selectivity overall is decreasing. Only the top ten percent of higher educational institutions have experienced an increase in selectivity over the past 50 years. Mobility is the main reason for this change because colleges

and universities can no longer operate what is in effect a regional monopoly. If students do not gain entry to their regional college of choice, they are able and willing to attend elsewhere. This decrease in selectivity for all but the top tier institutions of higher education is one symptom of the emerging dichotomy in selectivity amongst institutions of higher education in the United States: schools are either selective, or they are not (Hoxby, 2009).

Small private college and university outcomes. In a study on the effects of a liberal education, Seifert, Pascarella, Goodman, Salisbury, and Blaich used the definition of a liberal arts institution previously used by The Center of Inquiry in the Liberal Arts for their research (2010). The definition is divided into three parts: (a) the pursuit of intellectual knowledge and critical thinking, (b) an interrelated learning environment where everything institutionally related connects, and (c) a focus on student-faculty learning relationships (as cited in Seifert et al., 2010). This definition, although similar to the previous definitions of a liberal arts institution, has a greater focus on mission.

Jaquette (2013) related the mission and/or changing mission of colleges and universities to the enrollment economy, stating that mission drift is in response to the demands of students, parents of students, and employers, all looking for definitive and immediate measureable results from higher education. Finally, the definition of college versus university shows up in the previously mentioned literature on college rankings (Hoxby, 2009).

What is similar in all of the literature about private liberal arts education is size and student engagement. Certainly there is wiggle room in the definition of what is or is not a liberal arts institution. However, there is little ambiguity with regards to the size of a university. Whether the educational focus is liberal arts or more applied, a lower faculty/student ratio

indicates an emphasis on student learning giving impetus to research and explore schools such as those in this study.

The Finance and Economics of Higher Education

Because this study takes aim at an issue from an economic standpoint, it is important to discern the difference between the terms economics and finance as they relate to the topic. In discussing finance, I am referring to the hard facts about the business of higher education, which include the cost of attendance, tuition rates, trends, and other factual information. Economics refers to a discussion of higher education within the context of economic theory and competition.

Finance

One always-present issue is with the rising cost of college. Nearly every article I reviewed indicates that the cost of college attendance is advancing at an extraordinary rate. Often superlatives are used to describe this trend, but beyond this dramatization, authors agree on little. For example, some authors seem to provide support for both sides of the argument about the true expense of college; at the very least their statements are not one-sided. Karikari and Dezhbakhsh, (2013) stated that public college tuition has increased at a faster rate in percentage terms (3.5% vs. 5.1%) than private tuition from 1995-2004. Later in the same article it is revealed the absolute change in tuition is still considerably greater at private colleges and universities, approximately \$7,000 vs. \$4,000 at public universities. Continuing this inconsistency, Slaper and Foston (2013) wrote an article titled, “Onward and Upward with the Cost of College,” but then cited a Wall Street Journal Article (as cited in Slaper and Foston, 2013) revealing the increase in tuition in 2013-2014 to be the smallest in 12 years. This is certainly not an expected statement given the title. Although the discussion about price is confusing, it is for good reason and an example of how even the smallest details confuse the

topic. For example, Foston (2013) explained the semantic difference between the words “cost” and “price.” This example is subtle, but the message is clear: prices and costs are going up, and beyond that assertion, little else is obvious (Foston, 2013).

In a study driven by economic theory, Buss, Parker and Rivenburg (2004) attempted to model enrollment demand at small institutions of higher education. Their model is very straightforward. The researchers hypothesize that price, discount rate, price of substitutes, income, and prestige would be strong predictors of enrollment. The authors split students into two groups, those with and without financial aid. While there were some minor differences between the two groups, the overall takeaway from the study was that tuition was by far the number one driver of enrollment (2004). This work is also relevant to the model of this study, which will be explained in detail later.

The literature about the high cost of education reveals the reasons for tuition differentials between publicly funded and privately funded institutions of higher education. At public universities, the increase in tuition is due to decreases in state support, which is then simply backfilled through reducing expenditure per student and raising tuition (Martindale, 2015). Private universities, on the other hand, have been forced to increase tuition because of increases in expenditure per student, mainly in the form of non-academic programs. This includes things like housing, food, facilities, varsity sports, and many other services (Ehrenberg, 2012).

The outlook for future tuition costs consistently indicates the upward trend will continue, but the reasons vary. Recently, Wight Martindale Jr., an adjunct professor at Villanova and former finance editor of *Business Week*, asserted that tuition is expensive and will stay expensive (2015). Martindale noted four reasons why the cost of attending college will remain high: (a) there are a limited number of institutions, (b) colleges and universities are getting fancier, (c) the

experience is fun, and (d) there is an increased attraction from students abroad (2015). While Martindale's demand-side analysis looked forward, Foston (2013) looked back and concluded that internal and external cost (supply) drivers are to blame for rising costs. There is no evidence in either article, however, that the causes are mutually exclusive. This would indicate there is no reason that both supply and demand drivers could not assert influence simultaneously. There is a substantial amount of literature using supply-side factors to explain the increase in the price and cost of higher education. Conversely, there is far less literature and discussion trying to reveal demand-side reasons for rising prices and costs (Jacob, McCall, & Stange, 2013).

Economics

The financial state of higher education sets the stage for the economics of higher education. As Paul (2005) pointed out, the university "is also a complex business with a range of intertwined functions and responsibilities that come together to create educational products and services" (p. 107). While most universities are not-for-profit unlike traditional economic firms, the production of services and need to maintain financial health warrants an economic explanation of behavior. Like for-profit firms, a main goal of a not-for-profit is continued existence, which obviously depends on the pursuit of positive financial and economic outcomes.

The analysis of firm behavior is central to microeconomics. The formal definition of microeconomics, "the branch of economics that analyzes the market behavior of individual consumers and firms in an attempt to understand the decision-making process of firms and households," (Pindyck & Rubinfeld, 2011, p. 4) sets up a discussion of how both producers (colleges and universities) and consumers (prospective students) make decisions regarding higher education. Before considering these decisions from either perspective it is important to understand how complex the economic analysis is for two distinct reasons. First, the consumers

(students) are an input in production of the service. Second, the college choice/enrollment decision lacks information on both ends. Fortunately, there is research to explain the unique consumer input scenario at colleges and universities.

Economics at prestigious institutions. O’Connell and Perkins (2003) explained the economics at private liberal arts colleges, asserting that competition for students means two different things depending on prestige and enrollment status. Colleges and universities that have prestige and the name recognition and endowments that come along with it typically set tuition prices strategically low. This low price ensures a shortage and, therefore, the ability to select only the best students. In this case, the shortage refers to admission. These colleges and universities have more applicants than their capacity; therefore, there are consistently more people willing to pay for admission than possible. These high-achieving students then act as inputs, effectively teaching the very classes they are enrolled. O’Connell and Perkins (2003) noted this creates a feedback loop: good students teach other, which saves costs. The students graduate, become successful, and give money back to their alma mater, thus giving the institution the continued ability to keep tuition below the market price and furthering the ability to select the best students.

This does not mean prestigious colleges and universities are giving away their product, tuition prices at these institutions are only “low” in the economic sense as the price charged is not as high as they could charge and still maintain full-enrollment. One side effect of below-market pricing is that due to increased mobility (Hoxby, 2009), the “low” price selective colleges charge actually becomes more expensive to lower-income families when compared to their income (Dezhabkhsh & Karikari, 2010). It would not be hard to imagine that schools like

Harvard and Yale could charge double or triple their current price and still fill up seats. A “low” price is clearly relative.

Economics at non-prestigious institutions. Competition for students at colleges and universities without high levels of prestige does not maintain the complex input/output scenario as described at prestigious institutions. Instead these colleges and universities rely on student enrollment and tuition as a main source of revenue and not as an input in the production of education (O’Connell & Perkins, 2003). O’Connell and Perkins compared the situation of prestigious institutions with the tough situation faced by institutions without prestige. Colleges and universities without prestige seek prestige, but the only way to do so is by spending money on academics (2003). Unfortunately, their short-run goals are to make ends meet, which predicates attracting students by whatever means necessary. These strategies typically do not include spending money on academics, the only way to gain prestige (O’Connell & Perkins, 2003). While O’Connell and Perkins specifically cited a feedback loop for prestigious institutions, it seems as though a similar but negative pattern emerges for colleges and universities without prestige. If this is the case, the difference between institutions of higher education with prestige and those without would become even greater.

As my review of the literature on the finance, education, or competition of higher education has evolved, it has become increasingly clear how complex the topic is. The literature is thin on one issue, a demand-side analysis of consumer preferences and subsequently one of institutional behavior (Jacob, McCall, & Stange, 2013). In an article addressing how consumption patterns of college students have changed over time, Jacob, McCall and Stange legitimized the headlines of popular periodicals noting the changing role of consumptive luxuries in student choice and enrollment (2013). In other words, college is becoming more like a

country club than what most of us remember. For the purpose of this study, two quotes from the Jacob, McCall, and Stange (2013) stand out: “Less selective (but expensive) schools, by comparison, have a greater incentive to focus on consumptive amenities” (p. 4) and, “In fact, our estimates suggest that relatively few students actually place a positive value on instructional spending” (p. 26). On the other hand, Jacob, McCall and Stange asserted that spending on academics will result in the increased enrollment of high-achieving students; however, they noted this will most likely inhibit the institution’s ability to attract other students (2013). These quotes support the educational purpose for my study; non-selective schools are choosing short run enrollment success due to students’ demand for consumptive luxuries over long run success and better educational outcomes.

Product differentiation. Competition for students also relies on whether or not colleges and universities can actually differentiate themselves. The premise of a monopolistically competitive or oligopolistic industry, which most closely resembles the industry of higher education, is that individual firms are able to set themselves apart from other competitors. This study looks at one specific market, small institutions of higher education, within the much larger overall industry of higher education. Neely (1999) pointed out the likelihood that pressure from exogenous forces could actually be commodifying higher education. Brint, Riddle, Turk-Bicakci, and Levy (2005) discussed curricular changes at all institutions of higher education, noting the shift seems to be away from a liberal arts focus to one of practical training. Students at non-prestigious colleges and universities are driven by career-oriented goals, making the need for a high-priced liberal education less attractive (Brint et al., 2005). Neely (1999) feared that students enrolled at prestigious colleges and universities for their undergraduate education will pursue graduate degrees at higher rates at large research universities, turning small private

colleges and universities into high-priced prep schools that will become extinct exactly as passenger trains did in the mid-20th century. Again, Neely was not negative about the effectiveness of private colleges and universities, he simply was speculating a potentially negative outcome.

This does not mean that colleges and universities do not or cannot differentiate themselves. Two areas where institutions of higher education can differentiate themselves are size and quality of education. Koshal and Koshal (2000) studied whether colleges and universities experience economies of scale and/or scope and how a quality variable could be utilized. Their study began with the example of Swarthmore College and Williams College juxtaposed against Hannibal-Lagrange College as a premise for identifying a quality variable (2000). While economists may be guilty of assuming too much, Koshal and Koshal's assumption is backed by specific research. There is specific evidence that the overall quality of education can be both improved, and that the improvement can be quantified (2000). Koshal and Koshal collected data on 295 of the 500 liberal arts colleges in the United States (2000, p. 212). Their main assertions were that institutions smaller than 2343 students could benefit from growing (2000, p. 219). The other main finding pertinent to this research is that while economies of scope exist by offering graduate education, research is not cost-effective at small institutions of higher education (Koshal & Koshal, 2000)

Other literature discusses how colleges differentiate themselves in different and more tangible ways. Arizona State University (ASU), one of the largest public institutions in the country, seems to understand the fruitless pursuit of becoming the next Ivy League or Berkeley-quality institution. ASU is utilizing other strategies to augment their internal and external success (Crow, 2010). Crow, the President of ASU at the time, wrote about delivering authentic

educational experiences while still maintaining the inclusivity that allowed ASU to have unprecedented enrollment success (2010). While size may affect how institutions of higher education achieve goals and outcomes, the goals and outcomes do not seem to differ between large, small, public, private, selective, or non-selective institutions. Crow stated that ASU is a giant public university, yet it aimed to deliver the same outcomes as small, private institutions.

The words of ASU's president about ASU obviously show some bias, but are echoed elsewhere. There is an argument that once an institution is inclusive, meaning it has the ability to accept and place all applicants, the value of a college degree decreases (Covaleskie, 2014), or that universal access is little more than trade school (Trow, 2007). While this paints a negative view on the economic and/or monetary aspirations of college goers, it does suggest that once all have economic gains, the truest gain of education can be redeveloped, much in the way Crow (2010) envisioned the mission/vision of Arizona State University. Even if a college degree loses economic value because the supply is too great, the non-monetary outcomes of higher education will be numerous and in line with the traditional learning outcomes associated with higher education.

Most of the articles reviewed for this study examine liberal arts education, private education, and small residential education as well as provide evidence to support positive outcomes. Seifert, Pascarella, Goodman, Salisbury, and Blaich (2010) compared the outcomes of small liberal arts colleges and universities against Chickering and Gamson's (1987) seven principles of good practice in undergraduate education. Of the seven principles, small liberal arts colleges and universities had an advantage over larger institutions in the following categories: good teaching, high quality interactions with faculty, academic challenge, and high expectations (Seifert et al., 2010). Interestingly, Seifert et al. also discovered similar positive outcomes at

community colleges. The community college outcome initially looks like evidence against the worth of a higher priced educational experience. However, the researchers make it clear the positive outcomes are for different reasons. Community colleges offer better outcomes than large research institutions because of higher levels of structure and support for lower-achieving students while small liberal arts colleges and universities provide positive outcomes for all levels of students (Seifert et al., 2010). The researchers identify funding as the main variable to explain differences in advising experiences and the outcomes between community colleges, small private institutions, and large public institutions of higher education. Schudde and Rab (2014) also believe that community colleges are effective at academic advising, but lack the monetary base necessary to counsel students in non-academic areas.

Economies of scale. For colleges and universities without high levels of prestige, competition not only comes from other similar institutions, but from online institutions as well (Burrell, 2008). Whether competing against online programs or each other, bottom tier private colleges are in competition for enrollment (O'Connell & Perkins, 2003). The most pragmatic purpose behind attracting more students for these institutions is economies of scale, the idea that increasing output (in this case enrollment) lowers the per-unit cost of production. Minimum efficient scale is the size of production that minimizes per unit cost. According to the research of O'Connell & Perkins (2003), the minimum enrollment for small liberal arts colleges and universities is somewhere between 1500 and 2000 students. Koshal and Koshal (2000) identified 2,343 students as the ideal number of undergraduates for taking advantage of the cost savings associated with adding students.

It is clear that small private colleges not at capacity, or below the 1500-2343 student cost minimizing standard (Koshal & Koshal, 2000; O'Connell & Perkins, 2003), are interested in

increasing enrollment to take advantage of economies of scale. The literature tells two stories about how this is achieved. The pragmatic approach, advertising outcomes, may actually have an adverse effect on future reputation. Ehrenberg (2012) described the information asymmetry between buyer and seller in this scenario. For marginal students the asymmetry is that they do not understand why they should attend any specific college. To increase enrollment, colleges and universities diversify and tout more applied programs. On the non-academic side they promote student service expenditures, or other non-academic programming to increase student interest (Ehrenberg, 2012).

By focusing on enrolling marginal students by way of non-academic recruiting, these colleges risk long run success. “Reducing the cost of college will involve gut-wrenching anger-inducing trade-offs” (Foston, 2013, p. 8). These tradeoffs could be short-term enrollment success versus the overall long-run health and viability of the institution (Foston, 2013; Jacob, McCall, & Stange, 2013). While current competition for students is fierce, the long run growth model includes raising the reputation of the college or university, which can be done by investing in academics and is only successful if high-quality students enroll (O’Connell & Perkins, 2003). Enrolling marginal students does not fit the long run growth encouraged by any of these researchers.

Market price and discount. The biggest difference between a perfectly competitive market and higher education is the assumption of price-taking behavior, which O’Connell and Perkins (2003) suggested is the market for higher education. This difference is apparent when analyzing the financial trends in higher education. While tuition has gone up, so too has the discount rate (Ehrenberg, 2005), which also increases the ability to discriminate students’ willingness to pay. By doing this, institutions are able to charge a unique price to each

individual student. The colleges and universities offering a high discount rate (Ehrenberg, 2005) match those O’Connell and Perkins (2003) described as having a lack of prestige. Simply put, the institutions without prestige and, therefore, financially dependent on enrollment, are likely to be the ones heavily discounting tuition as Ehrenberg (2005) described. Institutions of higher education competing for students as revenue drivers and not as production inputs will individually lower prices to put bodies in seats and beds. From an economic standpoint, price discrimination and discounting allows non-prestigious colleges and universities to maximize revenue, a response to a surplus of product, which reinforces the non-selective and non-prestigious nature of the institution.

The ability to set a price below equilibrium and to not discount tuition to attract students allows selective institutions to be just that—selective (O’Connell & Perkins, 2003). This selectivity can be viewed as a result of two prices: the price selective colleges pay for the input of student production and the price the student pays for education (Winston & Zimmerman, 2004). Colleges and universities that have the ability to fill classrooms with only high-quality students can use this as a cost saving measure. Winston and Zimmerman (2004) said that is why nationally recognizable institutions of higher education, such as Harvard, are able to get away with graduate teaching assistants teaching large classes as the main instructors. In general, the students can teach themselves.

Peer effects. Winston and Zimmerman used the phenomenon of peer effects in a production economics framework to explain that the effect is strong, extensive, and applicable in many settings/scenarios (2004). Most importantly, these effects can explain why certain markets in higher education appear to be out of equilibrium. Using high-quality students as a cost saving measure begets the ability to enhance financial stability in the future. If the reputation of a

higher education institution can only be built through its students (O'Connell & Perkins, 2003), good students are an input in the production of positive education outcomes (Winston & Zimmerman, 2004), and positive education outcomes result in students making more money (Martindale, 2015), these students can give more to the very universities that made them who they are (Winston & Zimmerman, 2004). This is the very reason why less selective colleges and universities desire to gain the prestige that selective institutions possess.

Prestige

Much of the literature regarding the competition among colleges and universities refers to prestige as something that is measureable and real; however, the specific prestige each researcher focuses is without explicit definition. Therefore, this section is devoted to giving an overview of prestige from multiple viewpoints from the overall university to the faculty and staff, and finally the students. Finally, this section provides a definition of prestige as it is used for the remainder of the study.

One way to interpret prestige would be by ranking of traditional outside publications. Volkwein and Sweitzer (2006) conducted a study to test the validity of the *USNWR* prestige rankings. They examined the correlation between the selectivity rankings in the *USNWR* and four other common college guidebooks. The correlation between the ratings of other guidebooks; Barron's, Peterson's, Fiske, and the Princeton Review, range from .69 to .83, indicating a substantial amount of agreement between the four other less-known rating entities.

Although the guidebooks tend to agree on prestige, the researchers aimed to explain what characteristics of colleges and universities contribute to prestige. The model Volkwein and Sweitzer finalize in pursuit of explaining variations in prestige had an adjusted R squared of .88. While this cannot be directly compared to the correlation coefficient between the guidebooks, the

model seems to have more explanatory power than the guidebooks. The model, a blocked set-wise regression, explains prestige using entering SAT, professor salary, faculty productivity, student-faculty ratio, age of institution, total enrollment, and percent of full time faculty as significant variables. While all seven variables were statistically significant, the top three variables have considerably larger effect sizes than the rest, these were SAT, professor salary, and total enrollment (2006).

As noted previously, the topic of prestige is complex. What is not complex is the nearly universal pursuit of prestige by all types of institutions of higher education. Toma (2009) conducted a qualitative study of 38 institutions in the Atlanta area to study prestige at all types of institutions of higher education in the United States to see how the pursuit of prestige varied at institutions with varying levels of academic notoriety. Along with his campus observations, he interviewed 10 upper level administrators at four universities representing four different types of institutions. The four types of institutions, community colleges, liberal arts colleges, comprehensive colleges, and large state research universities, all seek to enhance the image and function of the university, typically striving to be associated with the group of schools seen as one level superior. The conclusion from the study is that all four types of institutions of higher education are trying to achieve objectives in the same way, typically, by attracting better students and faculty and making campus improvements (Toma, 2009). While other authors (Chabotar, 2010; Ehreneberg, 2012; O'Connell & Perkins, 2003; Slaper & Foston, 2013) viewed increasing costs as a bad thing, Toma viewed this race to the top as something positive. He ignored rising costs and instead focused on the positive enhancements all institutions make to try to achieve the prestige of the next level (2009).

In a study about the effect of prestige-seeking behavior from the perspective of graduate education at mid-level doctoral granting institutions, Gardner (2010) found the pursuit of prestige to have both positive and negative attributes. As Toma (2009) pointed out, the pursuit of higher levels of prestige increased both the quality of the students and faculty. From the faculty perspective, increases in funding were obvious positive outcomes of prestige-seeking behavior. Conversely, the negative side effects of prestige-seeking behavior were the increasing stratification and negative cultural aspects of graduate education, such as competitive behavior and high rates of turnover (Gardner, 2010).

Finally, in the most appropriate setting related to the topic for this study, O'Meara and Bloomgarden (2011) conducted a case study to interpret faculty impact of prestige-seeking at a high quality liberal arts college which was striving to become nationally elite. In this setting the results were clear. While there were a few comments about the benefits younger faculty may enjoy, the consensus was that the teaching mission of the university would be harmed at the expense of an increased focus on new faculty scholarship and research needed to elevate the profile of the college or university (O'Meara & Bloomgarden, 2011).

Student applications. From students' perspectives, prestige is about the value of education. For some, prestige comes from simply completing a degree, for example, a degree from an Ivy League school. From the standpoint of gaining admittance to selective institutions, the trends in higher education create some interesting secondary outcomes. Prestigious colleges and universities are not expanding in capacity, but applicants are, meaning that fewer and fewer students are admitted into their first-choice institutions (Bound, Hershbein, & Long, 2009). Bound et al. outlined the trickle-down effect that this increasing selectivity creates by explaining how students prepare to compete for college admission (2009). Within an economic framework,

the competition between buyer and seller oftentimes relates to the information to which each side is privy. *USNWR* seems to level this playing field according to Bound et al. (2009), who pointed out that this heightened transparency incentivizes students to game the admissions process by focusing on test scores (AP/ACT/SAT) and other activities. They conclude the end result is students who have memorized factual content but are not prepared to obtain a true education. Although not specifically stated, the tenor of Bound et al.'s work is that of negativity. The researchers opine the process of the admissions game has taken away from the true purpose of higher education even for those students with the highest level of pre-college achievement (Bound et al., 2009).

The takeaway from the literature is quite evident; prestige matters. However, a definition of prestige is hard to come by. In some cases, like Volkwein and Sweitzer (2006), prestige, selectivity and reputation are used synonymously. For others like O'Meara and Bloomgarden (2011), prestige can manifest itself in other areas such as research. Even early researchers confuse these terms as evidenced by Trusheim and Course's (1981) assertion that "A man's occupational status depends greatly on having attended college (Jenchks et al., 1979), but apparently not very much on the social prestige or selectivity of the college he attends" (p. 296). Because this study focuses on enrollment trends for institutions financially dependent on tuition dollars, the adopted definition of prestige shall be, "the ability to turn away qualified applicants."

Inclusivity and Access

Community colleges provide an easy access point to higher education. Most have few or no admissions standards and the cost of attendance is explicitly low. In general, having an open door policy is shown to have overall positive results for both individuals and society at large (Everett, 2015). While this does create nearly universal access (Trow, 2007), it also can create a

negative signal to employers. While a two-year degree is better than no degree, it sometimes suggests an inferior education (Schudde & Goldrick-Rab, 2014). On the other hand, a two-year degree can be used as a springboard to a four-year degree or vocational training that has both economic and non-economic gains (Schudde & Rab, 2014).

Prestige is not something that is binary in nature, even the most inclusive colleges and universities, such as community colleges, offer some level of prestige. Sociological researchers Schudde and Goldrick-Rab (2014) examined stratification of higher education with a specific emphasis on community colleges, through which the United States has emerged as a world leader in access to higher education (Trow, 2005). Schudde and Goldrick-Rab concluded community colleges enhance access, but create more stratification and income/social inequality depending on the student or the situation (2014).

The contemporary discussion of the role of the community college is a good starting place to reflect on the history of access to education in the United States. The following section includes a history of access, followed by the history of government intervention and the implied belief that access to higher education is part of the American dream, especially since the end of World War II.

Historical access. The assumptions of this study seem to be in line with the assumptions about higher education made in the past. The primary assumption of research on education is that going to college is universally a good thing. The research on the benefits of higher education highlight the benefits to the individual, or the benefits to society. Other than the explicit opportunity cost of going to college (foregone wages), little harm is ever discussed. That being said, the benefits of education have not always been as widely accepted, especially when reviewing the history of higher education from the beginning.

According to Longstaff (2014), going as far back as Socrates/Plato/Aristotle, the benefits, purpose, and right to education exhibit a cyclical pattern. The earliest universities had no physical location and were available to all. The only prerequisite to attendance was a desire to learn and understand. Only when the infrastructure of brick and mortar necessitated charging fees did higher education become increasingly exclusive. Longstaff pointed out the cycle would be inclusivity followed by exclusivity (2014). Examples of this trend include correspondence courses in the 19th century (inclusive), low rates of attendance and graduation in the 20th century (exclusive), and finally the inclusive development of massive open online courses in the 21st century (Longstaff, 2014).

The exclusivity of college has not always correlated with the economic value of education. Labaree (as cited in Covalleskie, 2014) pointed this out by noting that obtaining a degree was a signal of educational attainment and not a signal of economic worth in the past. Education beyond a basic level was indeed for the upper crust, but the reasons to attend college historically have not been economic. More simply, until modern times, college attendees would have economic success waiting in adulthood despite their level of educational attainment (Labaree, 1999, as cited in Covalleskie, 2014).

After the GI bill and then the Higher Education act of 1965, the trend that a college education was a right changed to a view of it becoming a cultural belief (Burrell, 1967, as cited in Bound & Turner, 2002). In either case, the goal of educating the workforce was achieved. The secondary effect of this legislation was the cultural belief that having access and choice to post-secondary education was a right. Since then, obtaining a college degree is increasingly seen as a necessity (Covalleskie, 2014). While this puts pressure on students to attend college despite what may be their true aspirations, this belief does point to an increasing level of access and

inclusivity; whether permanent or as part of the inclusivity/exclusivity cycle. This assumption, belief, and necessity were the main foci of President Obama's 2015 State of the Union Address, in which he promoted the idea of free community college education for all. While the issues surrounding this plan (namely funding) could be argued at length, the motive and rationale for the plan are pure. Rhetoric such as this is surely in response to the economic event marking the beginning of President Obama's tenure.

The Great Recession

The economic downturn of 2007-2009, commonly referred to as "The Great Recession," was an economic event similar to ten other economic downturns since 1948 (National Bureau of Economic Research, 2010). The negative portion of the business cycle typifies all recessions. What makes a recession different from a normal downturn is the length and severity of the contraction. Of the ten recessions since the Great Depression, it is commonly asserted that this recession was the worst (De Nardi, French, & Benson, 2012). Research done prior to the recession (2004) by Buss et al. indicated macroeconomic indicators had little or no impact on enrollment demand at liberal arts colleges. Although the research was done just prior to the recession of 2007-2009, the severity of the Great Recession begs to expand on this research. Buss et al. conclude net cost is the main factor of determining enrollment (2004). From an economic standpoint, this is simply a parallel of the Law of Demand. Following a discussion of the Law of Demand is typically an explanation of determinants of demand, or demand drivers. One main demand driver is income, which follows a direct relationship with demand. In other words, when income rises, the entire demand curve for most goods increases.

Gross Domestic Product (GDP) is the main statistic used to determine the status of the macro economy and, specifically, if a recession exists. The primary interpretation of GDP is

production within a country during a specific amount of time, usually a year. This interpretation is presented with the expenditure approach to GDP measurement which explains how adding up purchases can calculate GDP. Following this explanation is another measurement approach to GDP: income. Instead of adding up purchases made by economic entities, all income is added as the market price of all goods and services represents the income paid to all producers along the supply chain. By using this interpretation, GDP can be used to measure the economic well-being of an entire country by explaining how household income falls during a recession. Since the recession of 2007-2009 was the most severe since the Great Depression, it is worth questioning whether or not this large decrease in household income had a negative impact on demand for college, regardless of type.

Immediately following the recession, researchers in many fields published articles seeking to understand the implications of the recession for specific industries. Zumeta, a Professor of Public Affairs and expert on higher education finance, published a comprehensive article on the impact of the recession and higher education shortly after the conclusion of the recession. Zumeta (2011) focused on state finance and notes public funding of higher education was cut in a similar manner to the recession of 2002-2004. Beyond commentary about possible federal student aid funding changes, Zumeta's article did not mention private education.

At a broader level, Flatters and Willmott (2009) identified how a typical consumer will change following an economic downturn, specifically, a deep recession, drawing parallels from the Great Depression or Japan's lost decade. From 1995-2005, the boom prior to the recession, real household income grew by 1/3 and because of this increase, consumers demanded the following: premium products, products ethically produced, high technology, and extreme experience-seeking through travel or other services (Flatters & Willmott, 2009). From this

understanding of the consumer prior to the recession, Flatters and Willmott identified eight trends the new consumer will follow after a recession, several of which have a direct impact on higher education.

The most pervasive of these trends, because it shows up in the other trends as well, is a demand for simplicity. Flatters and Willmott highlighted several specific products, such as basic Apple (the computer company) products that flourished post-recession and typify these new simple products and markets as those likely to succeed going forward (2009). Later research (Bohlen, Carlottie, and Mihas, 2010) supported this trend, concluding that consumers are no longer interested in non-meaningful features and want meaningful content in all purchases. At an even higher level, Scruggs and Benegal's (2012) assertion that people no longer care about the environment because of the recession could be explained by their new demand for simplicity.

The trends described by Flatters and Willmott are divided into trends that will increase and those that will decrease, although it is evident they move in opposite directions on the same spectrum. For example, the demand for simplicity is juxtaposed by the decline of ethical consumerism and green consumerism. The demand for simplicity is a broad trend, while the decline of green and ethical consumerism explains specific markets (Flatters and Willmott, 2009). Put another way, green or ethically sourced products are just examples of the bells and whistles that Bohlen et al. (2010) said consumers no longer value.

The final two positive trends Flatters and Willmott identified are both highly correlated with the demand for simplicity. These trends are the popularity of discretionary thrift, also known as austerity, and the rise of the mercurial consumer (2009). Because of the highly publicized nature of the recession, affluent consumers are affected. That is, even though the recession had little explicit personal impact on many of these households, their fiscal mindset

was altered towards risk aversion (Perriman, Ramsaran-Fowdar, and Baguantet, 2010). These newly fiscally conservative consumers will now proudly shop at thrift stores and be reluctant to switch back to premium items (Bohlen et al., 2010).

Perriman et al. (2010) explained that the four Ps of marketing (price, product, promotion, and place) fail to work with the new consumer following a recession. As described by Flatters and Willmott (2009), the mercurial consumer seems to be the best way to describe the reasons why Perriman et al. (2010) think firms face a tough road. The term mercurial, as used by Flatters and Willmott (2009), is understood as synonym for volatile or unpredictable. A specific example Perriman et al. pointed out is the lack of allegiance consumers hold for any specific brand, and that they are now happy to hop around from brand to brand (2010). This lack of loyalty would seem to have a direct relationship to colleges and universities, which may count on the allegiance of alumni to persuade their own children to attend their alma mater.

Diminished output and increased unemployment are highly correlated. This correlation is so strong, they are seen as given assumptions in economic theory. During the recession, the resulting unemployment was much more severe for workers with little education. According to Hout (2012), the unemployment rate of college graduates, aged 35-54 (2.8%) was less than half that of the same age group with high school diplomas (6%). Clearly, economic success and educational attainment have strong basic correlations. This strong relationship could be inferred as impetus for increases in higher education enrollment.

Luxury Goods

To determine how an economic downturn affects small colleges and universities, the type of service the education delivered at these institutions is important. From a theoretical economic standpoint, a luxury good is one that is highly responsive to a change in income, making it

vulnerable to changes in overall economic conditions. Steak is a standard example of a luxury good. In the general case, income elasticity is a measurement used to determine a luxury good. This measurement is defined as the change in consumption divided by the change in income (Besley, 1989; De Wolff, 1941). A specific case may be my consumption of steak. If I received a raise of 5% and increased my steak consumption by more than 5%, steak would be a luxury good. This is juxtaposed by a necessity (or normal) good, which is positively related to income, but less so (Besley, 1989), and inferior goods, which are inversely related to income. Even as far back as 1941, it was understood that defining goods was contextual, and only simple at aggregate levels (DeWolff, 1941). The issue with specifically defining a luxury good is that the label is not universally applicable. While steak is a luxury good to me (or most people) for that matter, it is not a luxury good to people with extreme incomes and wealth. It is doubtful Bill Gates or Warren Buffet celebrate financial success with a trip to the grocery store to buy t-bones.

Instead of viewing the status of goods based on the goods alone, it is necessary to view the good through the lens of the consumer. Matsuyama (2002) established this framework deftly. Matsuyama extensively gave credit to Katona (1964) to establish that as products age and/or develop they become cheaper and obtainable to more and more people. Katona (1964) said, “The drudgery of seeking subsistence has been supplanted for millions of people, not by abundance and indulgence, but rather by a new concept of what are necessities and needs” (p. 6 as cited in Matsuyama, 2002). Matsuyama himself said this even more succinctly, “Third, the very notion of necessities and luxuries is a relative one,” and, “As a household’s income goes up, a consumer good changes from a luxury to an amenity, and finally, to a necessity” (p. 1036).

The literature relating to the rising cost of college (Buss, Parker & Rivenburg, 2003; Ehrenberg, 2012; Karikari & Dezhbakhsh, 2013; Martindale, 2015) combined with the contextual

view of income elasticity would certainly imply that small private education is a luxury good. Vickers and Renand's three conceptual dimensions of the marketing of luxury goods (2003) would reinforce this conclusion. To some extent, private education is functionally different than cheaper alternatives, provides an enhanced experience, and provides a non-tangible symbolic difference; the specific three categories Vickers and Renand defined as the dimensions of luxury (2003). However, the literature establishes that the consumer is fickle, so no definition (luxury or otherwise) can or should be established without empirical evidence. This will be an ongoing question, regardless of results.

College Choice

On the topic of college choice, there is certainly no shortage of research. In the comically titled article *Weather to Go to College*, Simonsohn (2010) concluded that students visiting a college or university on a cloudy day are actually more likely to attend that specific institution. Simonsohn's economic justification for the result is an economic concept called projection bias (2009). Projection bias is the consistent mistake of either under or overvaluing the future utility of a good (Simonsohn, 2010). Simonsohn's results seem illogical, but the article appears to be accurate and thoroughly vetted. This serves as my justification to include only a brief section on college choice. A review of the choice literature reveals two things. The first is how the business of college has changed in a relatively short period of time. The second is that although many factors relating to college choice have changed, many appear to stay the same from one generation to the next and that the possibility for future research on the topic of college choice is endless. The following section elaborates on these two points.

College choice researcher and economist Chapman stated, "Within this increasingly intense competition for students, many colleges have persisted in the belief that they can affect

students' choice of college merely by modifying their institutional descriptions or the targeting of their recruiting" (1981, p. 490). While 1981 is 36 years ago, this quote illustrates the simplicity of college recruiting little more than one generation ago. Still, the model Chapman developed holds true in many ways. Where students go to college depends on the students themselves and four external categories: student characteristics, external influences, fixed college characteristics, and college marketing (1981). It is hard to imagine any of these categories are no longer influential in college choice. Even Chapman's assertion that friends are a main driver of the enrollment decision (1981) still makes sense in contemporary times.

Around the same time, an economic model for college choice was developed. This model, developed by Jackson, was unique for two reasons. The first reason why the model was unique was the evaluation of student choice as a three-stage process and not a singular point in time (Jackson, 1982). Second, the model was derived for economic purposes. The implications of the research, as indicated by the author, are that public programs and funding must be considered with college choice in mind (Jackson, 1982)

Since Chapman's (1981) and Jackson's (1982) seminal work, the college choice model has been extensively refined and researched. Jackson's 3-phase model has been elaborated, and overall modeling has become far more sophisticated. Cabrera and LaNasa (2000) cited a model developed in 1989 by researchers Hossler, Braxton and Coopersmith dividing the time between the 7th and 12th grade into three different phases. Together with Chapman's work, these works make it clear the distinct qualities of a college or university are fixed in the short term. This does not mean the different qualities of an institution are not important in college choice; they are simply not flexible. How the college and student gain information about these qualities appears to be key (Cabrera & LaNasa, 2000; Chapman, 1981).

Advances in college choice modeling have continued to shed light on the decision. Long (2004) developed a conditional logistic model to explain how college choice has changed over a time period of 30 years. The power of big data becomes evident in Long's research as she is able to identify attributes of each college or university associated with the college choice decision. In the model, each institution is represented by a vector of qualities, as is the student. The end result is powerful: "an individual will compare his options, including attending college, entering the labor force, or not working at all, and choose the alternative that maximizes his lifetime utility subject to his budget constraint." (Long, 2004, p. 279.) Long's (2004) article is helpful in understanding college choice, but it is more helpful with regards to econometric modeling. The conditional logistic model and outcomes of Long's study legitimize what is common sense: students choose college based on qualities such as tuition, programs, distance, and instructional support and how he or she believes this will augment the future (2004).

In some ways it seems as though college choice was not changing from 1981 to 2004, it was becoming more complex and perhaps thorough. Many researchers (Cabrera & La Nasa, 2000; Hemelt & Marcotte, 2011; Long, 2004) introduced much more sophisticated and new perspectives on college choice. For example, Long (2004) showed cost is no longer as strong of a predictor of overall college attendance as it was in 1972. However, cost is still vitally important when considering cost differentials between schools and how students choose between different cost alternatives (Long, 2004). Kim (2004) stated that financial aid is still important when predicting college selection; however, it encourages college attendance for whites and Asians, but has little/no influence on African-Americans or Latinos. These two examples show how the factors (cost and financial aid) are still relevant, but the research is more specific, in this case, showing how financial aid does not encourage access for all races equally as opposed to the

overall impact of financial aid. In all of the literature, price, cost, and financial aid are significant but the research is more specific. In general, though, Long (2004) stated it best: “This relationship may suggest that college decisions have become more closely linked to developments in the economy” (p. 293).

Marketing

This literature review has sections on Economics and Finance; continuing with this business trend is a section on Marketing. This section title is partly inspired because of the search results when using the term marketing instead of selling or recruiting. These are all ways to describe the manner in which institutions try to persuade students to apply and ultimately enroll. Because the purpose of this study is to explain enrollment and retention during the Great Recession, this research is vital. University of Bath researchers, Naidoo, Shankar, and Veer (2011) provided an entry point into this literature.

Naidoo, Shankar and Veer (2011) viewed higher education from a consumer standpoint. Their article reaffirmed the other business-like sections of this literature review, but adds several key points. The first is that the way education is marketed or communicated to students must change, as students are no longer “academic disciples with homogenous needs and wants” (p. 1156). While it seems as though Naidoo et al. concluded that the consumer culture will change the way education is delivered, they also warned that overreaction could lead to negative outcomes in scholarship and research (2011). This seems in line with the previous work done on prestige. While institutions of higher education need to fill seats, they also need to stay true to academic mission and vision of higher education.

The “fixed effects” of Chapman’s (1981) model are really those of interest when it comes to marketing. If these things cannot be changed in the short run, but are actually factors leading

to the college choice decision (Chapman, 1981), how they are advertised or communicated is crucial. Take, for example, a business degree. During an economic boom, entrepreneurship may be highlighted, but during a recession, applied skills may be championed. This leads the literature review to the topic of communication. The literature provides an entertaining flashback to my own college choice experience which included recruiting phone calls and print literature delivered in the mail. Clearly times have changed. It would be easy to jump straight into the use of social media in recruiting, but that would necessitate glossing over an even bigger recruiting development: the internet.

Online information and recruiting. Bill Gates said, “The Internet will help achieve ‘friction free capitalism’ by putting buyer and seller in direct contact and providing more information to both about each other” (as cited in Maurer and Liu, 2007). While Mr. Gates’ view of the internet is perhaps biased, he does offer insight into the potential the internet holds to help solve market inefficiencies and information asymmetry (Maurer & Liu, 2007). Maurer and Liu’s (2007) article is not about recruiting college students, it is about how businesses utilized websites to recruit potential employees. Their findings are that e-recruiting is simply marketing and that websites are often too complex for job seekers. The remedies for these issues are streamlined websites that understand the job seeker and that can integrate information (Maurer & Liu, 2007). This parallels nicely with the conclusion of a Noel-Levitz study that indicates the potential of social media for recruiting purposes but reinforces the importance of the institution’s main webpage (as cited in Reuben, 2008).

This does not mean that social media has no place in recruiting students to colleges and universities. Reuben explained how different types of social media can be used in conjunction with traditional college marketing (2008). Some platforms like YouTube and Flickr seem best

suited to replace old mailers, while other platforms like Facebook, Twitter, and blogging offer unique communication potential (Reuben, 2008). What all of these communication techniques have in common is flexibility and the ability to change or offer new information quickly.

Because the “fixed effects” (Chapman, 1981) are fixed in the short run, the ability to shape and change communication strategies in the short run may be an important factor to consider when regarding the success of the colleges and universities in this study.

The literature quickly reveals a study of small private colleges and universities is anything but simple. The typical liberal arts college is no longer easy to define. College choice is even more complex, as are the finance and economics of higher education during a recession. However, it is clear these institutions play an important role in access to education, and their continued existence is positive. The following section presents theory to help make sense of the previous literature, and the study to follow.

Theoretical Literature

Two theories help provide a framework or “lens” through which I can view my quantitative results. The economic theory I have chosen is Oligopoly Theory, as originally presented by French mathematician/philosopher Augustin Cournot and elaborated by James Friedman. The definition of oligopoly is a market in which there are only a few firms and all firms are interdependent (Friedman, 1983). This economic theory will support the quantitative aspect of my survey, but will also aid in providing a theoretical lens for analysis. This theory will frame the place of organizations within a larger system as well as help identify the economic actions and decision-making of individual colleges and universities. The second theory I have chosen is Bolman and Deal’s Political Frame (2011). This theory will emphasize the analytical component of research. I have chosen this secondary theory to strengthen and complement the

quantitative/economic Oligopoly Theory. Where Oligopoly Theory is thin, Political Frame theory will reinforce conclusions from a political science/human behavior standpoint.

Oligopoly Theory

Cournot competition or Cournot duopoly is the first and most popular of all oligopoly models (Friedman, 1983). The concept of a specific type of competition, the precursor to traditional oligopoly, appears in Cournot's 1838 work, *Researches into the Mathematical Principles of the Theory of Wealth*. Although this is the seminal work on oligopoly, I instead use Friedman's 1983 *Oligopoly Theory* for two main reasons. First and most obvious, it is more applicable due to its publication in English, during a time when economic theory is more established; in 1838, Macroeconomics did not exist. The second reason is less obvious. Economics is a relatively new field, as evidenced by the lack of Modern Macroeconomic study prior to the Great Depression (Dimand, 1995). Therefore, the supporting work has become more complete, applicable, and understood in contemporary scenarios as all of economics has advanced during this time (Friedman, 1983). Friedman himself supported the use of his own theory when he pointed out the shortcomings of the Cournot model: "As for realism, the very restrictive circumstances that the market be single-period is surely grossly unrealistic, and it is definitely important to the conduct of firms in the economy that they interact with one another for long stretches of time" (1983, p. 33).

The study of oligopoly theory is traditionally associated with microeconomics. Specifically, microeconomics is the study of individual decision-making units within the context of various market settings (Pindyck & Rubinfeld, 2011). These market settings range from the highly competitive perfect competition to almost no competition in Pure Monopoly (McEachern, 2011). Perfectly competitive markets are those in which there are many sellers, many buyers,

homogenous goods, no barriers to entry, and very little producer profit beyond a normal amount. Pure monopoly is the opposite: a market where there is one seller, binding barriers to entry, and a large amount of producer profit (McEachern, 2011). The other two market models fall in between the extremes, monopolistic competition and oligopoly (McEachern, 2011). My research utilizes the market structure of oligopoly as it best represents the market of private higher education. An oligopolistic market is one in which there are a few firms (few to be defined later), barriers to entry, the possibility of differentiated products, firm interdependence, and ambiguous profit potential (McEachern, 2011).

The crux of studying oligopoly, according to Friedman, is the ability to understand, evaluate, and predict the strategy of other players in the market (1983). Unlike perfect competition and monopoly, where a basic profit maximization problem is the extent of basic lessons, the study of oligopoly reveals the study of strategic behavior, also known as game theory (Friedman, 1983). The study of game theory is simple. There are players, rules, and outcomes. The most important feature of the rules and outcomes are that the actions of one player influence the outcomes for all other players (Davis, 1983; Von Neuman & Morgenstern, 1947).

The word “few” has a specific meaning, “not many but more than one” (Merriam-Webster, 2004), which is not that specific. Friedman noted this ambiguity, wondering, “Where is the line to be drawn between oligopoly and competition? At what number do we draw the line between few and many?” (1983, p. 8). In some cases, “few” is quantitatively defined, either by a simple number (Friedman, 1983) or a more advanced metric such as a Hirschman-Herfindahl index (Rhoades, 1993). In a typically quantitative field, the best signal of few firms over many is that strategic interdependence is a main concern (Friedman, 1983).

In the case of my study, the argument over the designation “few” is not without at least some consideration. My designations about the population of institutions for my study are those that fit my definition of a non-selective small private college in the Upper Midwest. The colleges and universities include those from the Iowa Intercollegiate Athletic Conference, Minnesota Intercollegiate Athletic Conference, Midwest Conference, and Great Plains Athletic Conference.

Without question, athletics was one quality of each college or university to consider. However, this non-academic function of the institution is not the main focus of the study. The inclusion of athletic conferences of institutions of higher education has more to do with the idea that colleges and universities within geographically similar locations will compete for students in the same way oligopolistic firms compete for customers and revenue. It is simply good luck that most of the colleges and universities in the area are similar in size and mission. Although institutions of higher education at opposite geographic ends of each conference (or state) may not be direct competitors, they are part of competing conferences.

Geographic competition. The “extent of the market” is a geographical limitation between competitors, defining who is and who is not in the market (Carlton & Perloff, 1994). It is important to understand the product or service must be clearly defined (Carlton & Perloff, 1994). For example, Harvard and MIT are likely competitors, and it is likely Stanford could be included as well. Even though they are in close proximity, community colleges in Boston would not be participants in this market, narrowly defined as ultra-selective private liberal arts colleges. My study considers the market consisting of private colleges and universities in Minnesota, Iowa, and Wisconsin, Illinois, South Dakota, and Nebraska, all of which have similar profiles.

The theoretical backbone underlying the importance of understanding the significance of “few” is what happens when there are more than a few firms. In competitive theory, the presence of many sellers dictates the market is not affected by the addition or subtraction of a firm (Pindyck & Rubinfeld, 2011). More plainly, each firm is small relative to the overall market, their production is insignificant (Pindyck & Rubinfeld, 2011). For a market to have many sellers there must be no barriers to entry. It follows then, that if a profitable market situation arises, firms enter the market. In the case of private colleges and universities in the upper Midwest, this is not the case. The reason for the lack of great fluctuation in the number of institutions is because of barriers to entry. The barrier to entry in the case of higher education is scale (Pindyck & Rubinfeld, 2011), not to mention accrediting agencies and other “overhead.” For a firm to enter into the market, the fixed costs are prohibitive.

Making the assumption the market resembles oligopoly dictates the competitors and their unique qualities be known. Providentially, Friedman’s treatment of oligopoly helps understand which firms to include in a group. He does this by defining product differentiation. If consumers can identify the producer’s unique product, the product has been differentiated (Friedman, 1983). It is important to note this does not mean the products/services cannot be very similar. Friedman’s example is apple size; in which larger or sweeter apples are measures of differentiation (1983). More so, actual differences need not be present for differentiation to apply, only consumers’ opinion of difference (Friedman, 1983).

Hotelling (1929) provided the primary modeling of product differentiation (as cited in Friedman, 1983). Hotelling’s spatial model is unique by the way it ignores actual differentiation and assumes homogenous products (1929). In this model, Hotelling used a line representing a town with two motels. Consumers will give preference to whichever hotel is closest (1929). The

flexibility of this model is that the definition of “closeness” can become flexible with elaboration. Salop (1979) changed Hotelling’s line segment town to a circle. This change refined the equilibrium, but also allows differentiation (distance) to be interpreted as qualities other than location. One example could be soda with Coca-Cola being the least sweet, Royal Crown in the middle and Pepsi differentiating by being the sweetest. Using the strictest interpretation of “identical” or “homogenous” could prove all goods differentiated (Friedman, 1983). This will be important to consider when understanding the level of competition between specific colleges and universities in the study.

Advertising is one generic way firms can choose to differentiate. This added expenditure has one goal: to increase product demand (Friedman, 1983). The idea of advertising will parallel other types of differentiation in the institutions of this study. Advertising does not add tangible value to the product; therefore, it is not illogical to conclude there is too much advertising (Friedman, 1983). Friedman, however, pointed out there are two types of advertising within an oligopolistic framework: cooperative and predatory (1983). If advertising for one college or university raises general awareness of institution, it is cooperative and could be beneficial for other institutions. If the purpose of the advertisement is to poach students from competitors, it only increases cost, thereby lowering profit and raising the price to the end-user (Friedman, 1983)

Types of oligopoly. Generally, Cournot’s oligopoly is the starting point for most textbook treatments of oligopoly. In most textbooks, the second and third presentations are almost always the Stackelberg leader/follower model and the Bertrand price competition model. Each of these models possesses the same issues as Cournot duopoly (Friedman, 1983), but may provide helpful insight as they apply to specific market situations. The Bertrand model refines

the Cournot model by setting forth assumptions and changing the decision-making variable from output to price (Pindyck & Rubinfeld, 2011). The Bertrand Model is an “oligopoly model in which firms produce a homogeneous good, each firm treats the price of its competitors as fixed, and all firms decide simultaneously what price to charge” (Pindyck & Rubinfeld, 2011, p. 456). The equilibrium outcome of this model is proven mathematically like the Cournot Model, but makes more intuitive sense; firms continually lower price (and thereby capturing market share) until economic profit is eliminated (Pindyck & Rubinfeld, 2011). This does not mean the firms run each other out of business, zero economic profit implies an industry standard level of profit, but no more than enough profit to stay in business.

Largely self-explanatory by name, the Stackelberg leader/follower model assumes one firm in any given industry is a leader; whereby other firms wait until the leader has made a price/output decision before making similar decisions (Friedman, 1983). Common sense may indicate the follower firms would have an advantage; however, this is not the case (Pindyck & Rubinfeld, 2011). Because the assumption that goods are identical and demand is given and modeled by a linear demand function, moving first proves advantageous (Pindyck & Rubinfeld, 2011). In any oligopoly model, demand is not questioned, so moving first gives a firm the ability to capture a large segment of the market; despite more information, lower market share dictates following firms will have less profit (Pindyck & Rubinfeld, 2011).

Between the Cournot, Stackelberg, and Bertrand models there is no consensus regarding accuracy or superiority because each of these models has similar shortcomings (Friedman, 1983). This does not mean the three models are equal; some market settings fit better than others (Pindyck & Rubinfeld, 2011). For the study of this purpose, qualities of each model are used in spirit to help understand the market for private higher education in the upper Midwest. Further

study of the proposed regions to consider could result in different models for each conference and/or a model overall.

Game theory. As alluded to earlier, the interdependence of firms in an oligopolistic market provides the impetus for a different kind of competition, one that can be explained by the study of game theory. A “game” in the setting of an oligopolistic market is a setting in which there are two or more players, each with the same goal (usually to maximize profit), where actions of each player affect the other, with individual outcomes determined by the decisions of all players (Friedman, 1983).

Assuming players are not cooperative results in an equilibrium (outcome) that is not optimal for the players overall. Nash’s 1951 work on game theory equilibrium was the first to make this case. The Nash equilibrium is not necessarily new from an economic standpoint; its power is setting the Cournot model into the Game Theory Model (Friedman, 1983). In the context of oligopolistic markets, the Nash equilibrium occurs when players have no incentive to change strategy (1951). A market setting is not a zero sum game, therefore, the noncooperation assumption is key. If players, or institutions of higher education in this case, could cooperate, outcomes could be better for all players. In the case of competing private colleges and universities, competition could take the form of price leadership, but is more likely to take place through product differentiation. As the literature study reveals, many institutions of higher education seeking to gain enrollment do so through non-academic spending, which could potentially cut into each college or university’s profit.

Political Frame

The non-economic theory I have chosen as a theoretical framework is Bolman and Deal’s (2011) Political Frame theory. The Political Frame is one of four “frames” Bolman and Deal

used to help better understand the complexity of organizations. The other three frames (Structural, Human Resource, and Symbolic) all offer some help understanding organizations of higher education, but the political frame is highly relevant with regards to the topic of my study.

There are four specific reasons why I have chosen the Political Frame theory to complement my economic theory. The first is the technical process of the theories presented in *Reframing Organizations: Artistry, Choice, and Leadership*. In fact, early in the book the authors offered a specific interpretation of “framing” (Bolman & Deal) as a way to interpret complex organizations. Bolman and Deal are professional framers, which in and of itself provides a way for other researchers (such as myself) to use theory as a lens or framework in a similar spirit.

Although it may seem negative, all four frames conceptualized by Bolman and Deal seek to explain why bad things happen in good organizations (2011). This pattern holds through each of the four theories and is entirely applicable to the purpose of my study. Succinctly, my literature review establishes the need for successful institutions of higher education by explaining that there is a lack of access either by lack of choice, or by dearth of seats. While Bolman and Deal’s theories generally focused on negative outcomes, they used these to develop strategies for success. These strategies for success are dependent on understanding the pitfalls explained earlier in the book. The Political Frame is especially pertinent to understand how decision-making at successful institutions differs from their unsuccessful counterparts. Because the purpose of this study is to provide research to be used by decision-makers, this frame is relevant.

Throughout the book and specifically within each of the “frames,” Bolman and Deal (2011) used different examples to highlight the specific “frame” of topic. In the chapter explaining the political frame, the authors used the Challenger and Columbia Space Shuttle

disasters as managerial examples. To see if an organization and its failures could be explained using the political frame, Bolman and Deal (2011) offered five political assumptions to establish fit. They are:

1. Organizations are coalitions of assorted individuals and interest groups.
2. Coalition members have enduring differences in values, beliefs, information, interest, and perceptions of reality.
3. Most important decisions involve allocating scarce resources—who gets what.
4. Scarce resources and enduring differences put conflict at the center of day-to-day dynamics and make power the most important asset.
5. Goals and decisions emerge from bargaining and negotiation among competing stakeholders jockeying for their own interests. (pp. 194-195)

In my opinion, these assumptions all fit the decision-making at institutions of higher education. Just as Bolman and Deal have done with regards to the fit of NASAs decision making (2011), I will evaluate the management of colleges to these five political frame assumptions.

Political Assumption #1: College campuses are obviously composed of many different individuals and groups. The groups, which all are composed of individuals, are often nested within each other. Faculty members of one department are a group, which could be a subset of a larger academic group such as a “school” or “college.” Each of those larger groups is probably a component of a much bigger group, like academics. Similar analysis could be done for co-curricular individuals and groups, support staff, and administration.

Political Assumption #2: Bolman and Deal used taxpayers, NASA, engineers and astronauts to highlight this assumption (2011). From this analysis, it is clear that the differences each group exhibits do not have to be part of a conflict; the differences mainly illustrate what is

most important to each different group. This is true for higher education as well. The vice president of academics and the vice president of finance, for example, most certainly have different ideas of what is most important. The janitor, president, and soccer coach all may (and likely do) have differing opinions as well.

Political Assumption #3: Perhaps the easiest way to illustrate this assumption is competition scholarship funding. If new academic scholarships are offered, then perhaps athletic scholarships must be cut. This assumption could easily be met by evaluating the general budget of any institution. The groups highlighted in Assumption #2 understand there may be tradeoffs when virtually any entity within the organization gains or loses funding.

Political Assumption #4: This is the most complex of the four frames, but I believe it means those with power will settle differences. Bolman and Deal differentiated between formal and informal authority and the dynamic complexities of power in and of itself (2011). While the President/Provost/Chancellor of the University may have the most power, power centers can certainly be seen at every other level. This dispersion of both formal and informal power at a college or university clearly fits the assumption outlined by the authors.

Political Assumption #5: Because of the interdependence and shared goals of different groups at the university, this assumption, that goals and decisions emerge from internal competition, is true as well. At every institution I have ever worked, “political capital” was relevant terminology. While this seems to be a negative view of an organization, I do not believe this is the case. Only because different groups share some goals is this type of bargaining and decision-making possible. As Bolman and Deal explained, understanding this dynamic is important to avoid common organizational pitfalls (2011).

The final reason to utilize Political Frame theory is one word: interdependence. Bolman and Deal (2011) explained, “The political frame does not blame politics on individual characteristics such as selfishness, myopia, or incompetence. Instead, it proposes that interdependence, divergent interest, scarcity, and power relations inevitably spawn political activity” (p. 194). Just as colleges and universities within a conference or region are interdependent, so too are different factions of a university. This common theme of interdependence dovetails nicely with the other theoretical framework of oligopoly theory.

Conclusions

Creswell (2013) stated the purpose of the literature review by asserting, “It provides a framework for establishing the importance of the study as well as a benchmark for comparing the results with other findings.” (p. 28). This literature review has accomplished the first part of this quote, revealing the following conclusions:

- Traditional “liberal arts” colleges are fewer in number. The reason the number of liberal arts colleges has declined is due to the explicit definition of “liberal arts” and the introduction of applied programs at colleges previously defined as liberal arts-focused. Despite these curricular changes the small campus setting and focus on student engagement still provides positive educational outcomes different than more affordable options. For these reasons the existence of these colleges and universities is important within the context of access to education.
- Higher education has a few unique qualities within the context of economics, finance and competition. Nonetheless, institutions are highly competitive and must behave in a way that ensures financial stability.

- Even though private education typifies a luxury good, the existence of such institutions has ramifications with regards to access at other types of higher education, which are clearly not luxuries. This idea highlights that access to education is a uniform concern.
- The Great Recession was the most negative economic event since the Great Depression and its influence was felt nation-wide, including on institutions of higher education and potential students.
- Marketing is the informational link between college characteristics and college choice. If college characteristics cannot change in the short run, dynamic marketing may be able to insulate enrollment from negative responses to exogenous forces.

These conclusions point to one very specific gap in the literature: how students view relatively high-priced, non-prestigious private education during a recession. The research question of this study, “What fixed institutional factors influenced relatively high-priced private colleges to survive and thrive through the Great Recession?” aims to fill this gap by quantifying what overall “fixed” features of colleges and universities is correlated with enrollment change pre and post-recession by means of traditional quantitative analysis as described in the next chapter.

CHAPTER 3. METHODOLOGY

The purpose of this chapter is to provide a rationale for the methodology I have chosen as well as an explanation of the model used to analyze the study's question. I will provide a brief explanation of the study's research design followed by research questions, sample and selection, explanation of variables, data analysis, and finally the limitations of the study. The general purpose of this study was to explain enrollment and retention during the Great Recession at non-selective private colleges and universities. During a recession, consumers often choose value over features and amenities (Bohlen et al., 2010; Flatters & Willmott, 2009), potentially making private education vulnerable to negative enrollment trends. To inspect this general idea the study was designed to give a quantitative interpretation of the effect that differences between like institutions had on enrollment change during the economic time frame defined as the Great Recession.

Research Design

The purpose of this descriptive research study is to understand why institutions with similar core characteristics, such as size and mission, had various levels of enrollment success during the Great Recession. The study was designed to explain both endogenous and exogenous factors correlated with enrollment change. The specific model chosen to fulfill this goal is a hedonic regression whereby enrollment change before and after the Great Recession serves as the dependent variable, otherwise known as the criterion variable.

Quantitative analysis. The general framework of analysis is a quantitative study. This does not mean that characteristics of schools only traditionally described numerically are included. As Creswell (2014) pointed out, quantitative analysis and qualitative analysis are rigidly different. Instead, Creswell stated that quantitative analysis should be used "as an

approach for testing objective theories by examining the relationship among variables” (2014, p. 4). The literature review for this study established several ideas for which quantitative analysis is an appropriate tool. First, the literature established small private schools are a valuable component of higher education. Within this area of higher education, it is established that consumers (students) are demanding more job-specific training, non-selective schools are dependent on tuition revenue, and finally the literature revealed consumers focus on value over consumptive amenities during a time of poor economic performance. These conclusions are directly linked to the topics asked by the research question of the study.

Research Question

The literature review for this study helped refine the question guiding this study, which was: What fixed institutional factors influenced relatively high-priced private colleges to survive and thrive through the Great Recession?

Sample

The sample for this study consists of the institutions within several athletic conferences in the Upper-Midwest. The purpose for utilizing athletic conferences for selection had almost nothing to do with athletics, but was used instead for grouping of schools. Two of the conferences, The Minnesota Intercollegiate Athletic Conference and the Iowa Intercollegiate Athletic Conference, are NCAA Division III conferences. The NCAA Division III philosophy statement is:

Colleges and universities in Division III place the highest priority on the overall quality of the educational experience and on the successful completion of all students' academic programs. They seek to establish and maintain an environment in which a student-athlete's athletics activities are conducted as an integral part of the student-athlete's

education experience, and an environment that values cultural diversity and gender equity among their student-athletes and athletics staff. (Division III Philosophy Statement)

This supports the assertion that Division III schools are not just about athletics, but are also about academics. The fact that these schools all participate in athletics helps to narrow the focus of the study. Because all institutions in this study participate in collegiate athletics, (whereby a minimum number of sports must be offered), the institutions selected for the study will have similar demographics relating to the makeup of the student body. These institutions all have traditional college-age students with an active residential campus environment.

Furthermore, the selection of schools in similar states and athletic conferences will help to control for differences in the culture of students. The study aims to unpack reasons why certain institutions were more successful than others. If the decision-makers themselves (students) come from a more uniform background, the results could be more meaningful. With a limited number of schools, the number of control variables needed to be carefully examined, supporting even more the reason to include like schools within the same athletic conference.

The schools selected for this study included non-selective small private colleges and universities located in the Upper-Midwest, which means that schools near either coast or those with national name recognition were not included. I was particularly interested in schools in Iowa, Minnesota, and Nebraska similar to those with which I have experience, both as a student and a faculty member. The terminology “non-selective” was used to establish that the schools of focus were largely supported by tuition revenue and did not have an extensive waiting list, no matter the macroeconomic environment. This does not preclude schools in the geographic area of interest that have academic admissions standards; school with different levels of selectivity

were included as long as the schools were not so prestigious that they became impervious to any economic downturn.

The descriptor “small” was meant to refer to schools of a certain size, likely defined by basic Carnegie classifications. My original focus was on schools with enrollments of fewer than 5000 students, and the sites selected meet this guideline, save one, The University of St. Thomas (UST). UST was kept in the data set because there simply was no reason to exclude them other than enrollment and the knowledge that the dependent variable would measure percentage changes in enrollment. The term “Upper-Midwest” could include any of the following: Minnesota, Wisconsin, Michigan, South Dakota, and North Dakota. Given that the largest conference, The Minnesota Intercollegiate Athletic Conference (MIAC), is the center of this geographic area, I refer to the sites as from the Upper Midwest.

Athletic conferences. The Minnesota Intercollegiate Athletic Conference was formed in 1920, and currently supports 22 sports, equally divided between men and women (The MIAC Story). The conference was established in 1920 and there are currently 13 member schools. All 13 schools are in Minnesota, while six of them are located in the Minneapolis-St. Paul metropolitan area. Three of the schools (College of Saint Benedict, St. Catherine University, and Saint John’s University) are gender-specific schools. All 13 are privately funded. St. Mary’s University is the smallest institution with just over 1,000 undergraduate students, the University of St. Thomas is the largest, with over 6,000 students. While this range is large, the remaining 11 schools fall within a much narrower range. In addition to the aforementioned schools, the conference includes Augsburg College, Bethel University, Carleton College, Concordia College, Gustavus Adolphus College, Hamline University, Macalester College, and St. Olaf College.

Similar to the Minnesota Intercollegiate Athletic Conference is the conference located just south, The Iowa Intercollegiate Athletic Conference (IIAC). This conference has many similar qualities to the MIAC, with a few exceptions. To begin, Iowa has no metropolitan area similar to the Twin Cities (although Des Moines and Cedar Rapids provide a “city” atmosphere), there is one school outside of Iowa (Nebraska Wesleyan), and the enrollments are much smaller, with seven of the nine schools having enrollments between 1000 and 2000 students. More important are the similarities. The IIAC supports the same sports, and has a similar mission.

IIAC Mission statement is:

The institutions of the Iowa Intercollegiate Athletic Conference (IIAC) strive to exemplify the NCAA Division III philosophy by:

- Creating learning experiences on each campus that support intellectual, spiritual, emotional and physical growth and well-being of all students.
- Enabling student athletes to learn from competitive opportunities while developing individual athletic gifts and talents to support personal and academic achievement and aspirations.
- Sustaining a competitive athletic culture representing the best of Division III in an atmosphere that brings excitement, joy, and appreciation of sport and competition to student athletes, the campus community, and spectators alike. (Mission and Vision)

MIAC Mission Statement is:

The Minnesota Intercollegiate Athletic Conference strives to guide, govern and support fair and equitable athletic competition and promote student-athlete well-being among its members. The Conference recognizes and celebrates the important contribution

competitive athletics can make to the quality of an education experienced in a context in which the academic program is paramount. (The MIAC Story)

While the mission statements of the two conferences are not formatted the same way, they both emphasize the place of athletics within an institution as a method of achieving positive educational outcomes for students. This happens to be the main tenant of the NCAA Division III mission and vision which clearly prioritizes academics above athletics.

The discussion of mission is inserted here because of the inclusion of a non-NCAA athletic conference in the data set, the Great Plains Athletic Conference (GPAC). The GPAC is a conference which includes member schools which are part of the National Association of Intercollegiate Athletics (NAIA). Instead of a mission statement, the NAIA has Five Core Values, which are outlined on the Association's webpage and are as follows (Five Core Values),

1. Integrity: Know and do what is right
2. Respect: Treating others the way you want to be treated
3. Responsibility: Embrace opportunities to contribute
4. Sportsmanship: Bring your best to all competition
5. Servant Leadership: Serve the common good

Certainly it would be possible to dissect the differences between the NCAA, the NAIA, the IIAC, MIAC, and GPAC, but it is easy to see that they are certainly compatible with each other. It is clear that the national associations and regional athletic conferences associated with the schools in this study have at the core of their missions the betterment of the student-athlete; specifically, with regards to their growth outside the field of play.

The Great Plains Athletic Conference includes schools from Iowa, Nebraska, and South Dakota. In addition to being regional competitors to the schools in the MIAC and IIAC, the

schools are of similar size, are all private, and offer similar academic programs. Even more telling of the similarities to the MIAC and IIAC are the former names of the conference, The Nebraska Intercollegiate Athletic Conference from 1969-1992, followed by the Nebraska-Iowa Athletic Conference from 1992-2000. Current member schools include Briar Cliff University, College of St. Mary (women only), Concordia University, Dakota Wesleyan University, Doane University, Dordt College, Hastings College, Midland University, Morningside College, Mount Marty College, and Northwestern College.

Finally, four additional schools were added to the data set because of their recent participation in the conferences of the study. Cornell College, Upper Iowa University, and William Penn University left the Iowa Conference in 2012, 2003, and 2001. The University of Sioux Falls was a Great Plains Athletic Conference member until 2011. With the addition of these four schools, the total number of institutions in the sample is 37.

Data Collection

The types of data collected for this study included information about several institutional factors, such as enrollment data, number of academic programs, number of student loads, etc. The data were collected from several sources. The source for institutional level data was the *Integrated Postsecondary Education Data System (IPEDS)*, which is a part of the National Center for Education Statistics (NCES). Data related to specific qualities of nursing programs were collected through the American Association of Colleges of Nursing. State and metropolitan area unemployment data were collected through reports from the Bureau of Labor Statistics. Data relating to business degree offerings were collected through The Association to Advance Collegiate Schools of Business (AACSB International). Finally, data were collected from the individual schools' own websites.

The data set used most extensively in this study is the National Center for Education Statistics *Integrated Post-Secondary Data System (IPEDS)*. This system provides a comprehensive measure for educational statistics at the national-level (Voigt, Long, Huelsman, & Engle, 2014). According to Voigt et al. (2014), the data center was created in 1992 for the purpose of understanding the state of different types of higher education institutions at the national level. Although not explicitly stated, it is almost mandatory for schools to report to IPEDS to maintain Title IV eligibility (Voigt et al., 2014). This is confirmed by the observation that all schools from the three conferences of interest provide data for the IPEDS database.

The other data sources utilized were found at the websites, collegeatlas.org and aacsb.edu. Collegeatlas.org is a service that provides information to prospective students. From the “about us” link on their webpage, a mission-like phrase appears: “For nearly a decade we’ve been helping aspiring students and education minded professionals make better, more informed choices by providing them with relevant, reliable and up-to-date information about college and higher education opportunities.” The website continues to express how the data and information provided is bias free, unlike that of the other sources, such as the individual schools’ websites. This website was used to determine what type of programs were offered by each school. Likewise, AACSB.edu, the website of AACSB International (Association to Advance Collegiate Schools of Business), was used as a source for information regarding whether a business program was accredited. Finally, the American Association of Colleges of Nursing was used to collect information regarding nursing programs.

Where possible, the websites of each school were used to collect additional data about each institution. An example would be the nature of the nursing program offered at each school. As the literature review revealed, education at many traditional liberal arts universities is seeing

a shift to more applied programs. This information was first sought at the school's own website. If any information was ambiguous, a secondary source was used to corroborate.

The Bureau of Labor Statistics "data tools" feature was used to collect unemployment and income data for states and metropolitan areas. The Mission of the Bureau of Labor Statistics is as follows:

The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor is the principal Federal agency responsible for measuring labor market activity, working conditions, and price changes in the economy. Its mission is to collect, analyze, and disseminate essential economic information to support public and private decision-making. As an independent statistical agency, BLS serves its diverse user communities by providing products and services that are objective, timely, accurate, and relevant. (About BLS)

This mission statement ensures the economic data collected is the most accurate and accountable information available on such topics.

Dependent variable. The dependent variable of interest in this study was student enrollment. For schools without the luxury of very large endowments and donors, tuition is the main revenue driver (Ehrenberg, 2012). The main goal of the study was to explain enrollment change. To do so, full-time equivalent (FTE) fall enrollment from the Fall of 2006 (just prior to the recession) and 2011 (just after the conclusion of the recession) was collected. This full-time measure (FTE) reflected a number adjusting part-time enrollees into the full-time equivalent. Throughout the data analysis process, I transformed this variable several times to most accurately reflect the change in enrollment. The final model calculates the percentage change in enrollment by taking 2011 first-time full-time enrollees minus the same enrollment measure in 2006 and dividing it by 2006 enrollment. The basic rationale for this transformation was that an

enrollment change of five students for an institution with 1000 students would be understood as a larger increase than an enrollment change of five students for an institution with 2000 students.

Independent variables. The number of explanatory variables might be theoretically unlimited; however, given the limited number of data points for an appropriate N:p ratio and the desire to maintain a parsimonious model, the following independent variables were included in the model. The first group of variables were collected from the NCES IPEDS data center. The second group of variables were collected either through the school's own website, or a third party website. The final number of independent variables selected for the analysis was four.

The variables were selected carefully. Location may seem to be the least obvious of those chosen for the final model, but this variable was chosen because it is the one feature a school is least likely to change. Because of this, the effect of a recession on enrollment could be valuable for future planning. The expense variables were chosen to identify any differences in institutional decisions regarding how revenue dollars are returned to students in the form of academic and non-academic services and support. Although price and discount were not included in the model, student loans were included. I felt student loans would represent the closest proxy to the explicit financial burden the student must bear. In addition, the newly budget conscious consumer may react differently to dependence on loans than other financial concerns.

The percent of students admitted variable was included as a way to control for the dependence on tuition that a school may have. As the literature showed, schools with high levels of prestige may not have issues during a recession as they are able to maintain enrollment due to the high demand for their specific product. For this same reason endowment assets were included in the analyses as well.

The presence of a business school or a nursing school was chosen as a variable because of the liberal-arts focus of most of the schools in the data set. Although this study was never about liberal arts schools specifically, the overlap was great. This, combined with new demand for applied programs, led me to include these two professional programs as variables within the model.

The following variables were collected from the IPEDs data center. The description of each variable was procured from the actual IPEDS database.

- Average amount of student loans awarded to full-time, first-time degree/certificate-seeking undergraduate students

Loans to students - Any monies that must be repaid to the lending institution for which the student is the designated borrower. Includes all Title IV subsidized and unsubsidized loans and all institutionally- and privately-sponsored loans. Does not include PLUS and other loans made directly to parents.

- Percent Admitted-Total

If number of total applicants (APPLCN) > 0

then Percent admitted total (DVIC01) = number of admissions-total(ADMSSN) divided by the total applicants(APPCLN)

Ratios are converted to percentages and rounded to the nearest whole number.

- 6 Year Graduation Rate

6-year graduation rate of the subcohort of full-time, first-time students seeking a bachelor's or equivalent degree - 2007 Bachelors subcohort (4-year institutions)

This rate is calculated as the total number of students completing a bachelor

degree or equivalent within 6-years (150% of normal time) divided by the revised bachelor subcohort minus any allowable exclusions.

- **Instruction Expense Per FTE**

Instruction expenses (F1C011) divided by 12-month FTE enrollment (FTE12MN)

Instruction - A functional expense category that includes expenses of the colleges, schools, departments, and other instructional divisions of the institution and expenses for departmental research and public service that are not separately budgeted. Includes general academic instruction, occupational and vocational instruction, community education, preparatory and adult basic education, and regular, special, and extension sessions. Also includes expenses for both credit and non-credit activities. Excludes expenses for academic administration where the primary function is administration (e.g., academic deans). Information technology expenses related to instructional activities if the institution separately budgets and expenses information technology resources are included (otherwise these expenses are included in academic support). FASB institutions include actual or allocated costs for operation and maintenance of plant, interest, and depreciation. GASB institutions do not include operation and maintenance of plant or interest, but may, as an option, distribute depreciation expense.

- **Student Services Expense per FTE**

Student service expenses (F1E051) divided by 12-month FTE enrollment (FTE12MN)

Student services (expenses) - A functional expense category that includes expenses for admissions, registrar activities, and activities whose primary purpose is to contribute to students emotional and physical well - being and to their intellectual, cultural, and social development outside the context of the formal instructional program. Examples include student activities, cultural events, student newspapers, intramural athletics, student organizations, supplemental instruction outside the normal administration, and student records. Intercollegiate athletics and student health services may also be included except when operated as self - supporting auxiliary enterprises. Also may include information technology expenses related to student service activities if the institution separately budgets and expenses information technology resources (otherwise these expenses are included in institutional support.) FASB institutions include actual or allocated costs for operation and maintenance of plant, interest, and depreciation. GASB institutions do not include operation and maintenance of plant or interest but may, as an option, distribute depreciation expense.

- **Endowment Assets**

Endowment assets (year-end) per FTE enrollment for public and private not-for-profit institutions using FASB standards is derived as follows:

Endowment assets (year-end) (F2H02) divided by 12-month FTE enrollment (FTE12MN)

Endowment assets are gross investments of endowment funds, term endowment funds, and funds functioning as endowment for the institution and any of its

foundations and other affiliated organizations. Endowment funds are funds whose principal is nonexpendable (true endowment) and that are intended to be invested to provide earnings for institutional use. Term endowment funds are funds which the donor has stipulated that the principal may be expended after a stated period or on the occurrence of a certain event. Funds functioning as endowment (quasi-endowment funds) are established by the governing board to function like an endowment fund but which may be totally expended at any time at the discretion of the governing board. These funds represent non-mandatory transfers from the current fund rather than a direct addition to the endowment fund, as occurs for the true endowment categories.

- Degree of Urbanization

Locale codes identify the geographic status of a school on an urban continuum ranging from “large city” to “rural.” They are based on a school’s physical address. The urban-centric locale codes introduced in this file are assigned through a methodology developed by the U.S. Census Bureau’s Population Division in 2005. The urban-centric locale codes apply current geographic concepts to the original NCES locale codes used on IPEDS files through 2004.

11 = City: Large: Territory inside an urbanized area and inside a principal city with population of 250,000 or more.

12 = City: Midsize: Territory inside an urbanized area and inside a principal city with population less than 250,000 and greater than or equal to 100,000.

13 = City: Small: Territory inside an urbanized area and inside a principal city with population less than 100,000.

21 = Suburb: Large: Territory outside a principal city and inside an urbanized area with population of 250,000 or more.

22 = Suburb: Midsize: Territory outside a principal city and inside an urbanized area with population less than 250,000 and greater than or equal to 100,000.

23 = Suburb: Small: Territory outside a principal city and inside an urbanized area with population less than 100,000.

31 = Town: Fringe: Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area.

32 = Town: Distant: Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area.

33 = Town: Remote: Territory inside an urban cluster that is more than 35 miles of an urbanized area.

41 - Rural: Fringe: Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster.

42 = Rural: Distant: Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster.

43 = Rural: Remote: Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster.

Of the variables collected through the IPEDs data, only “degree of urbanization” was transformed. Because the inclusion of all 12 categories would necessitate the use of 11 categorical variables, the categories were condensed. Categories 11, 12, 21, and 22 were combined to form the “city” category. The other categories were then defined as the default category.

In general, the IPEDS data were incredibly valuable. However, they reflect some level of compromise. For example, the variables “Instruction Spending per FTE” and “Student Services Spending per FTE” are not what is commonly referred to as a deep parameter. Instead, it is a comprehensive measure of spending on multiple categories. A parallel use of comprehensive variables would be the concept of a vector of variables, whereby a number of variables are combined in a like category. This is necessary, particularly when there are a large number of possible explanatory (independent) variables, and a limited data set. On the other hand, these comprehensive IPEDs variables utilize a specific unit of measurement, dollars, that is easy and useful to interpret.

The economic variables of interest relate to unemployment and income, the two main determinants of a recession. The variable “unemployment rate” was found using the Bureau of Labor Statistics. The unemployment rate is defined as the number of people actively seeking work divided by the labor force. The specific definition of being unemployed is anyone who “does not have a job, have actively looked for work in the prior 4 weeks, and are currently available for work” (Labor Statistics from the Current Population Survey). Where available, the unemployment rate for the city in which the institution is located was used. When this was not available, the closest regional measurement was utilized. The “income” variable was calculated in much the same way. Per capita income was the specific statistic used.

The final two variables included in the model were the presence of a school of business or a nursing school. These two categorical variables function in the same way. An institution was recorded a “1” for either category if the specific program was present at the institution. Only four-year degrees were counted. These data were fairly straightforward for nursing, for business programs, the data collection was much more complicated.

If an institution had a nursing program, it was accredited, and the presence of the program was easily corroborated. If an institution had a business program, this was not the case. The first place I researched was the International AACSB website, the premier accrediting body for collegiate schools of business. However, when searching for programs this way, only one school was found to have current AACSB accredited status. Because I knew many more schools had business programs, I went to the institutions’ websites. For a school to be counted (a “1”) for the business categorical variable, they needed to have a stand-alone unit dedicated to business. This would include a school, division, or department. Once I utilized this framework, the division became much clear. The only area of ambiguity was those schools with economics as a major but no business department. These schools were not counted as having a business program.

Data Analysis

The section explains the data analyses procedures utilized to address the general research questions of interest. As a reminder, the question stated previously was:

- What fixed institutional factors influenced relatively high-priced private colleges to survive and thrive through the Great Recession?

Ordinary Least Squares was the technique used to develop models addressing the research question. Because the data set was small, no specialized software or programming was required. The model was estimated by Microsoft Excel's regression tool which is available as an add-in in the 2013 version of the software. Statistical significance was established by comparing the reported p-value to an alpha level of .05. However, it should be noted that confidence intervals and traditional hypothesis testing could be interpreted as well.

The specific statistical procedure used to analyze data was multiple linear regression, the main tool of econometricians. Studenmund defined econometrics as "economic measurement," (2001, p. 4), while Schmidt (2005, p. 5) stated, "Econometrics is the study of the application of statistical methods to economic problems." It is incorrect to assume or believe econometrics is used as a method of establishing causality (Schmidt, 2005). Studenmund stated, "Regression analysis is a statistical technique that attempts to 'explain' movements in one variable, the dependent variable, as a function of movements in a set of other variables, called the independent (or explanatory) variables, through the quantification of a single equation (2001, p. 7). This quote does not necessarily dissuade researchers from claiming causality; however, when Studenmund stated, "a regression result, no matter how statistically significant, cannot prove causality," (2001, p. 8), it is abundantly clear econometrics and regression analysis are specifically about explaining relationships and not causality.

An ordinary least squares (OLS) regression results in a model $Y = B_0 + B_1X_1$, whereby X is a dependent variable and Y is the dependent variable. The example used by Studenmund (2001) is as follows:

Y_i = the weight (in pounds) of the i th customer

X_i = the height (in inches above 5 feet) of the i th customer

E_i = the value of the stochastic error term for the i th customer

When OLS is utilized, the resulting estimate of the relationship between variables is one that minimizes the sum of the squared residuals. In statistics this is often called a “line of best fit” that fits a line to the data, minimizing the square of the difference between the data and the line fit to the data. In Studenmund’s example, his estimates that $B_0=103.40$ and $B_1=6.38$ can be interpreted as follows: a person exactly five feet tall will weigh 103.40 pounds. For every inch taller, the person is expected to be 6.38 pounds heavier. The “true” model being estimated would include an error term, or the unobservable variation within the data. The estimated regression does not include an estimate of the error term because by nature, it is unobservable.

While this example is simplistic, it does provide a framework for relational analysis versus causation. A simple way to unpack this difference would be to say taller people are heavier than shorter people. Being an inch taller does not cause weight gain. The assumption that no other differences in observations in this case is unrealistic. Age, sex, food intake, exercise are but a few of the observable independent variables not included in the model. Regression analysis has a tool to add these to the model.

Multiple linear regression takes this simple model and adds more independent variables. These estimated regression coefficients explain the effect of a one unit change in the independent variable on the dependent variable, holding all other variables constant. Or, each individual explanatory variable can be interpreted as its own linear relationship with the dependent (criterion) variable (Studenmund, 2001, p. 42). This technique is more powerful than utilizing multiple simple linear regression. Multiple linear regression allows the researcher to pinpoint correlation between variables and to exclude the masking effect of correlated independent variables.

An example to illustrate this would be the relationship between drinking and lifetime earnings. Multiple authors (Barrett, 2002; Hamilton and Hamilton) found a positive correlation between drinking and earnings. While the models (and interpretation) of the results in each of these studies differs, they all find a similar relationship. Here, an avoidance of any causal interpretation is important. If drinking habits and income were the only available data, the relationship between the two could be overstated because of an omitted variable. In this case, the omitted variable could be a social indicator. Those workers with aggressive career aspirations or social skills are likely to drink more, and they are likely to earn more money. By omitting social indicators, drinking habits may mistakenly be given too much explanatory regard. For this reason, it is important to design models with any obvious omitted variables (Schmidt, 2005, Studenmund, 2001).

Hedonic modelling. The specific quantitative model I used in this study is a hedonic model. A hedonic model utilizes the characteristics (likely independent variables) of a product to explain an outcome such as selling price. One of the first hedonic models was used in 1939 to explain pricing variation in automobile markets, where the added price of features and differences in actual selling price would be compared (Court, 1939, as cited in Sirmans, Macpherson & Zietz, 2005). Since these early models, hedonic pricing models have been most popular in the field of real estate (Linneman, 1980). However, a trend to utilize this type of modeling is emerging elsewhere.

According to Martinez-Garmendia, in a 2010 article for the *Journal of Business Research*,

The value of HPM (hedonic price modeling) is that it can decompose the price paid for a heterogeneous good into separate components related to the product characteristics. For example, it can break down how much of the price paid for a car is a construct of the values placed on its manufacturer, number of doors, and color. (p. 690)

Or, as Sirmans, Macpherson and Zietz (2005) concluded,

The usefulness of hedonic modeling is to price these individual features by using multiple regression analysis on a polled sample of many dwellings. As these authors point out, using this model assumes that consumers derive utility (and therefore value) from various housing characteristics and that the value of this utility can be priced. (p. 4)

The parallel characteristics for the institutions in this study include institutional features that could be described as one of Chapman's (1981) "fixed effects." Like other economic models the hedonic pricing model takes the general form (Sirmans, Macpherson, & Zeitz, 2005; Frew & Jud, 2009),

Price= (Physical characteristics, other factors)

In a similar manner, the general model I use is of the same form. However, I have replaced price with pre-post recession enrollment change as my dependent variable.

2011-2007 Enrollment= f(Fixed Effects, Economic Variables)

Of note is the exclusion of price. The removal of tuition and fees along with discount was a thoughtful process based on acceptance of the efficient market hypothesis. Timmerman and Granger (2004), economists at the University of San Diego, stated the efficient market hypothesis makes forecasting in financial markets impossible, as the price encompasses all available and timely information. The application to my study is that price, discount, and net price are all the natural evolution of competitive behavior at each school. That is, schools with

higher prices likely deliver more to students. As for discounting, this too follows the assumption the pricing strategies utilized by schools represents best practices used throughout the institution's history. Instead, the study focuses on institutional qualities as well as the proportion of budget spent on different features of each school. In addition, all schools included in the study are all expensive relative to competition at community colleges and public institutions.

Enrollment change. The general dependent variable for this model, enrollment, could be represented by many different variables. For example, enrollment could include both part time or full-time students. It could also include distance learning, graduate enrollment, or both. For example, my enrollment at the University of St. Thomas could count as an FTE (full-time equivalent) for portions of my doctoral program. However, my enrollment as part of a distance cohort also predicated a different tuition rate and subsequently a different revenue source for the University. Sorting through the multitude of variable choices given by the IPEDS data center reveals that because of institutional differences, defining a standard dependent variable would be more of a challenge than I anticipated.

Upon reflecting on the purpose of the study, the model's dependent variable became clear. The literature revealed the continued existence of private colleges and universities was part of the overall access to education problem. While access is an issue pertinent to all levels of education, the specific access of emphasis for this study is access to traditional baccalaureate undergraduate education. This certainly points to collecting and interpreting the actual change in the physical undergraduate enrollment. Again, this number seems relatively straightforward, until part-time and distance education is considered. While it is conceivable to adjust different types of enrollment data, I decided to use the same variable for each institution instead of trying

to achieve equivalence by creating a new variable. The data available with this in mind was total full-time, first-time undergraduate enrollment.

The positive benefits of using this enrollment data is that it avoids confusion between new first year student enrollment and transfer student enrollment change. In other words, it eliminates the potential for unobservable qualities that effect retention, and subsequently, enrollment. It also eliminates the possibility of graduate enrollment skewing the results. Per extensive conversations with research specialists at the NCES, this variable most closely approximates on campus enrollment trends and changes.

Limitations/Ethical Considerations

The limitations of this study are largely related to data selection. The selection of schools from three athletic conferences only limits the sample size. Early in the process of collecting data I strongly considered adding more schools. While this urge was strong, I chose to pursue a more modest model with the original proposed data.

Throughout the research process I was concerned with any inappropriate methodology with regards to data, model development, and analysis. In short, I have strived to conduct research as responsibly as possible. Therefore, when models returned insignificant/little results, I became concerned with continuing model development.

However, my goals and intentions for this study have been clear from the beginning. Even when stating my research question, I avoided using directional hypothesis testing, or making any assumptions about results. Finally, as I previously stated, I have no personal motivation to conduct a study with any desired outcomes. My only “bias” when it comes to the research is in line with the outcome of the literature review, that the continued existence of these schools is an integral part of the access to higher education issue. Frankly, my motivation is only

to provide, analyze, and interpret the information made available by the collected data. This required additional models as presented. Other data limitations could be attributed to the interpretation of the variables. For example, student services spending per student encompasses spending on a number of non-academic related activities. One dollar spent on the varsity football team could not be discerned from one dollar spent on the drama club. Finally, the model cannot be generalized to schools outside of the geographic area sampled.

With methods, variables, and a sample, I was able to perform several statistical analyses. The following section describes the development of these models and an interpretation of the results. These results are combined with theory and practice in subsequent section.

CHAPTER 4. RESULTS

After the discussion of the selection of multiple linear regression as the methodology of this study, chapter four continues the explanation of the research process. In this chapter I examine the classical assumptions of multiple linear regression as applied in this study. I then display and explain the descriptive statistics of the raw data. From there, I outline the model selection process. Finally, I report the final model and results. As a reminder, the research question guiding the study is:

- What fixed institutional factors influenced relatively high-priced private colleges to survive and thrive through the Great Recession?

The software utilized for this study was Microsoft Excel. Specifically, the data analysis add-in was used within Excel 2013. As previously stated multiple linear regression, specifically a hedonic model, was utilized for explaining differences in the dependent variable in the model.

This specific software package is one of, if not the most, basic multiple linear regression tools available. I determined Excel was suitable for a number of reasons. First, the sample size was small, so the amount of computing power necessary was minimal. Second, Excel is a commonly utilized program and could be understood and used by many. Finally, the goal of this project was not to display my skill in quantitative modeling; instead it was to explore enrollment patterns in a specific context. Thus, more advanced software was not needed. Finally, other software packages have algorithms and features used to pick the “best” model and to diagnose any violations of the assumptions of multiple linear regression. In lieu of this software function, I examine each of the classical assumptions critically.

Assumptions for Multiple Regression

Studenmund (2000, p. 85) outlined The Classical assumptions as follows:

- i. The regression model is linear in coefficients, is correctly specified, and has an additive error term.
- ii. The error term has a zero population mean.
- iii. All explanatory variables are uncorrelated with the error term
- iv. Observations of the error term are uncorrelated with each other (no serial correlation).
- v. The error term has a constant variance (no heteroscedasticity).
- vi. No explanatory variable is a perfect linear function of any other explanatory variable(s) (no perfect multicollinearity).
- vii. The error term is normally distributed (this assumption is optional but usually is invoked).

The first assumption of linear regression is that the relationship between the independent variables and the dependent variable is linear. By “linear” it is assumed the relationship between the variables does not change over the range of observations. That is, the effect size is constant. This assumption may seem difficult to overcome, as many of the relationships in science, nature, and otherwise are not linear. However, given the narrow range of the observations in the data, and the ability to transform variables to reflect a linear relationship render this assumption valid in the case of this study. Two methods were used to further satisfy the assumption. First, theory does not indicate a non-linear relationship; second, scatter plots comparing each individual independent variable to the dependent variable were analyzed. No non-linear patterns are present.

Assumption II does not require the same level of analysis as the first assumption. The reason this assumption is quickly passed over is because a violation of the assumption would

only result if the model suppressed the constant term. Suppressing the constant term forces the model through the origin. Doing this would bias the error term over the entire range of the analysis. The inclusion of the error term allows the model freedom to start at any point. The estimated starting point, the intercept, can be interpreted as the value of the dependent variable if the value of all independent variables were zero. Studenmund (2000) stated, “In essence, the constant term equals the fixed portion of Y that cannot be explained by the independent variables, whereas the error term represents the stochastic portion of the unexplained value of Y” (pp. 86-87). Therefore, the inclusion of a constant term allows the error term and the unexplained variation to be independent of each other.

Like assumption II, classical assumption IV is easily satisfied. This model is not time-series data whereby serial (or auto) correlation would be a concern. The reason time-series data often violates assumption IV is because one year influences the next. If, for instance, this model used enrollment data over several years in a row, trends from one year to the next could systematically trend one direction or the other. Classical assumption VI is met as a violation of the assumption would not allow Excel to calculate OLS estimates if there were perfect multicollinearity. One example of perfect multicollinearity would be the relationship between height and weight. If a model’s dependent variable were weight, as measured in pounds, height in inches could be an independent variable. If the researcher added height in yards, perfect multicollinearity would be present because there is a perfect relationship between the independent variables. If perfect multicollinearity were to occur in this manner, Excel would alert the researcher to this issue in a not-so-subtle way; the OLS calculation simply will not work. Finally, classical assumption VII is often overlooked. In fact, other sources (Schmidt, 2005; Assumptions of Linear Regression), do not include the assumption in the traditional set.

Assumptions III and V are also satisfied, but require more analysis. The main cause for a violation of assumption III is omitted variable bias. To some extent, all models will violate this assumption. This is because it is impossible to quantify a model without leaving something out; likely many variables have miniscule relationships with the dependent variable that are either obscure, unobservable, or impossible to measure. Instead, the severity of the problem can be determined by assessing the results of the model. Omitted variables may not have a huge impact on the accuracy and reliability of the model if the omitted variables are not correlated with the rest of the independent variables (Schmidt, 2005), therefore giving researchers relief that the omission of fringe variables will not nullify their work. However, if the omitted variable is strongly correlated with a variable included in the model, the bias of the variable will show up in the effect size of the included variable (Schmidt, 2005). Another way to think of this would be that the omission of variables empowers those included in the model. This would result in bias (either positive or negative), or perhaps statistical significance where there is none. Unfortunately, the only process to detect omitted variables is unexpected outcomes and then reassess the model. With no illogical statistical or practical significance in the model, I am comfortable the model has not omitted the type of variables that would greatly bias those included in the model.

A violation of assumption V would include the presence of heteroscedasticity. If a model contains heteroscedasticity, there will be a relationship between the dependent variable and the variance of the error term. One symptom of heteroscedasticity would be an error term that “fans” or increases in variability as the dependent variable becomes larger. This violation still allows the regression to be unbiased, but it is no longer the “best” as determined by the accuracy

of the model. If a model has heteroscedasticity, it will be better at analyzing the relationship between variables at low levels than high levels, or the other way around.

In economics, heteroscedasticity is often an issue when income is an independent variable. If, for instance, income were the independent variable and transportation expenditure were the dependent variable, heteroscedasticity would be likely. The positive relationship between income and expenditure would be consistent over the range of observations, but the residuals would increase in variability as income increased. If a person has a low income, the variability in expenditure on transportation is limited by the fact their budget is limited. As income rises, so too does variability simply because it can; a multi-millionaire could spend an inordinate amount on expensive vehicles, or not, they simply have choice. In this case, the effect of income on transportation expenditure would not be systematically biased, the issue would be accuracy. Given the presence of heteroscedasticity, OLS has a more difficult time quantifying a statistically significant result. Fortunately, when results are present, researchers do not have to worry about bias.

The most basic way to test for heteroscedasticity is to analyze the residuals. The residual term in regression analysis is the difference between what the model estimates and the actual value. This is subtly different from the error term. Since the error term cannot be observed (by nature, it is unobservable) and the residual can be calculated, the residuals are used. The residuals in this study do not have any systematic error. As seen below, the residuals do not appear to become larger or smaller over any range.

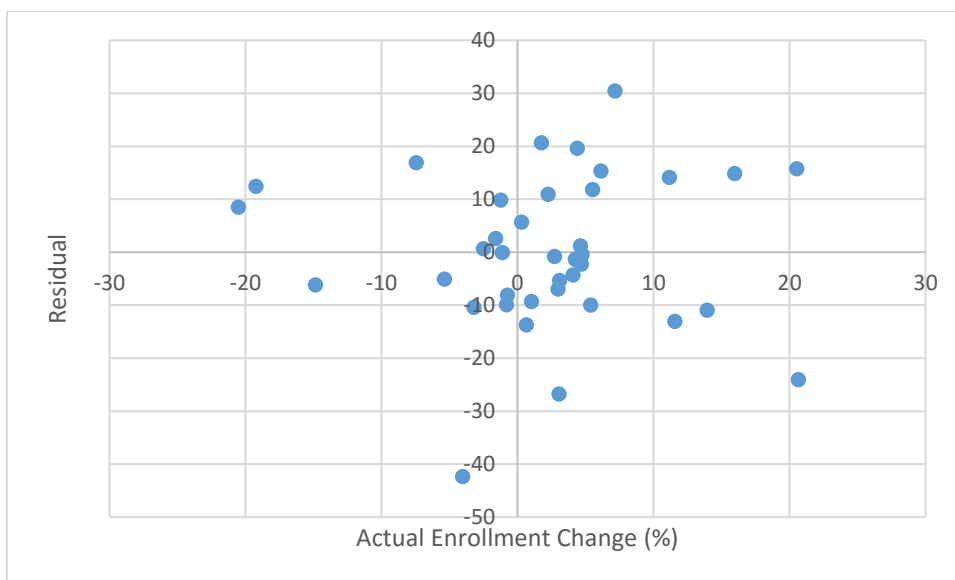


Figure 4.1. Residual Analysis

Finally, a violation of classical assumption VI would be a specification error. Baseball statistics would be one place where this could happen. For instance, if a researcher was explaining the variation in player salary by use of statistics, perfect multicollinearity could ensue. If at bats, plate appearances, walks, hits, hit by pitch, batting average, slugging percentage, and on base percentage were specified as independent variables, an error would result. This is because batting average is calculated by taking hits divided by at bats. More subtly, on base percentage takes success divided by plate appearances. Baseball statistics are fun, but a learning curve exists; few people would know that an at bat and a plate appearance are not the same statistic. A homerun is an example of a baseball event that has many underlying statistical qualities. A homerun first counts as a plate appearance and an at bat. It also counts as a hit, but because the hitter scores, it counts as a run; but wait, there's more! Because the hitter was responsible for driving in the run, it counts as an "RBI," or run batted in. In addition, the batter accounts for four total bases, which adds to slugging percentage. Clearly, the potential for

overlap and redundancy is enormous. In education, statistics an example of redundancy could be including a student's ACT and SAT scores as independent variables, which could limit the power of each. Perfect multicollinearity could ensue if some statistic or rating index were used that was the result of combining variables already in the model. Model specification errors are not limited to perfect multicollinearity. It could also refer to omitted variables or an incorrect functional form.

In the case of this study's data, no perfect multicollinearity exists; if it did, Excel would report an error. This does not preclude the study from an issue with multicollinearity. Perfect multicollinearity is easy to fix: just remove the redundant variable. It is less easy to remedy when the correlation between independent variables is less obvious. Imperfect multicollinearity is a bigger issue. Variance inflation factors can be calculated (Studenmund, 2000) to test for excessive multicollinearity. Variance inflation factors are nothing more than a reinterpretation of correlation matrices. As seen below, an examination of correlation matrices of all independent variables resulted in no cause for concern.

Table 1

Correlation Matrix

	<i>BS</i>	<i>AR</i>	<i>Nurse</i>	<i>Grad %</i>	<i>Avg SL</i>	<i>Unem %</i>	<i>Endowment</i>	<i>City</i>	<i>Instruction Exp</i>	<i>SS Exp</i>
Business School	1.00									
Admissions Rate	0.70	1.0								
		0.2								
Nursing Graduation Rate	0.04	4	1.00							
	-	0.0								
	0.38	0	-0.10	1.00						
		-								
Average Student Loan		0.0		-	1.0					
	0.16	4	0.08	0.28	0					
		-								
Unemployment Rate	-	0.4			0.2					
	0.25	7	-0.23	0.02	8	1.00				
		-			-					
	-	0.6			0.2					
Endowment	0.70	2	-0.30	0.59	7	0.35	1.00			
		-			-					
	-	0.0			0.0			1.0		
City	0.16	8	-0.01	0.05	3	0.11	0.10	0		
		-			-					
Instruction exp/student	-	0.4			0.2			0.1		
	0.65	4	-0.13	0.80	5	0.25	0.83	0	1.00	
		-			-			-		
Student service exp/student	-	0.4			0.2			0.1		
	0.67	6	0.02	0.45	3	-0.04	0.61	0	0.64	1.00

Note. BS is business school, AR is admissions rate, etc...

Sample Size/Population

The institutions in this study were chosen purposefully. During some point in the research process all of the schools that fit the criteria of the study were observed. The IPEDs database facilitates a multitude of filters to select a list of schools. Different filters result in

hundreds of schools. Despite the high number of possible filters, the resulting list of schools were too unlike. In other words, using schools with too much variability (quantitative or qualitative) would result in an inability to model anything. Instead I chose to include the schools affiliated with the regional/state athletic conferences listed above, which numbered 38. McClave and Sincich (2000) called this a “representative sample,” one that results in observations that fit a desired set of qualities. By limiting the number of schools and, therefore, needing fewer control variables, meaningful statistical results are more likely.

Descriptive Statistics

The dependent variable, the percentage change in first time, full-time undergraduate enrollment between 2006 and 2011, had a mean of 2.1%. In other words, the average incoming freshman class at the institutions included in this study increased by 2.1%. When conducting regression analyses, the dependent variable must have variability present for the independent variables to explain. In the case of enrollment change there is plenty. The minimum enrollment change was -46%, while the maximum was 37%. The standard deviation was 16.7%. To explain the variation in enrollment change, variation in the independent variables must be present as well.

As a frame of reference, Table 1 indicates actual enrollment data. These data indicate the number of first time, full-time enrollees. These students have not attended college elsewhere, and are full-time students. This is the closest variable to the informal “incoming freshman class” available. Note that this does not include transfer students. Given the average enrollment increase of 2.1%, it is no surprise the average incoming class grew by 6.4 students. In addition, the minimum, maximum, and standard deviation did not change in any meaningful way between the chosen years. It should be noted that while the range of observations is great, this is due to

the inclusion of one school in the sample, The University of St. Thomas, which has undergraduate enrollments larger than the rest of the sample. UST was included in the sample because it fit all other qualities and attributes of institutions in the study. The standard deviation combined with the mean give a clearer picture of the variability within the sample.

Table 2

First Time, Full-Time Enrollment Statistics Across Sampled Institutions

School Year	Mean	Minimum	Maximum	Standard Deviation	Coefficient of variation
2006-2007	390.40	100.00	1299.00	217.60	0.56
2011-2012	396.80	88.00	1324.00	223.00	0.56

A total of ten independent variables were selected for the analyses, which included three categorical variables. One of the categorical variables used in the analyses was “business school” in which 34 colleges/institutions had business schools or departments, and four schools had no business offerings. A similar variable, nursing, resulted in a more even split: 21 schools had nursing programs, while 17 did not. It should be noted two institutions (Upper Iowa and William Penn) had R.N. to B.S.N programs and one school (Wartburg) had a joint 2+2 or 3+1 program where the actual nursing degree would be earned elsewhere. These programs did not qualify as nursing programs for the school as defined by this study. The last categorical variable, city, included 11 institutions set in or around large population centers and 27 in more rural locations.

These ten variables are the result of the comprehensive literature review, whereby it was determined traditional small private colleges and universities face specific challenges with regards to the Great Recession. It should be noted again this study is not concerned with the

performance of liberal arts schools per se; instead it is focused on the performance of small, private Colleges and Universities. The literature revealed some unique qualities of higher education about economics and finance; however, it also revealed these institutions behave in the same profit-seeking manner described by economic theory. The literature review also determined what factors were the main drivers of college choice, and subsequently, enrollment. These conclusions, along with the development of a hedonic model, drove the development, and subsequent selection of the ten independent variables listed.

As a reminder, the county unemployment rate is the official unemployment rate for the county the main campus resides. The 2005-2006 Endowment is the average value of the institutions private endowment. The variable, “graduation rate” is the percent of undergraduate enrollees who graduate within 6 years. Instruction Expense per student is the annual budget related to instruction divided by number of students. Likewise, Student Service expense per student is the total amount spent on student services (including athletics) divided by number of students. Finally, “percent admitted” is the admissions rate; it should be noted not all students admitted attend. The following table illustrates the arithmetic mean, the minimum and maximum observation, the standard deviation, and the coefficient of variation among each of the remaining independent variables.

Table 3

Descriptive Statistics of Independent Variables

Variable	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation
2009 County Unemployment %	6.43	4.10	9.30	1.41	0.22
2005-2006 Endowment	7622266 6	4256000	54003915 1	121517697	1.59
Average Student Loan	6095.53	2871.00	11097.00	2023.28	0.33
Graduation Rate	60.61	21.00	93.00	15.83	0.26
Instruction Expense per Student	7388.97	2258.00	19808.00	3400.58	0.46
Percent Admitted	75.21	32.00	95.00	13.53	0.18
Student Service Expense per Student	3243.13	1355.00	7288.00	1245.72	0.38

N=38

The coefficient of variation was included to give an apples-to-apples comparison of the variation of the variables. Even though the variable “Percent Admitted” has a large range, its coefficient of variation is the smallest, meaning it has the least variability of the independent variables. It is followed by the County Unemployment rate, the Graduation rate, Average Student Loans, Student Service Expense per Student, Instruction Expense per student, and finally Endowment.

Model Development and Results

As a reminder, the general purpose of the study is to analyze what happens to enrollment patterns at a specific type of higher education institution during an economic downturn. Specifically, I am interested in what institutional factors influenced gains or losses in enrollment at relatively high-priced private colleges during and following the Great Recession. From a student choice perspective, I am interested in whether or not students focus more on essential

academic features of a college than services, amenities or extras during economic downturns. While I am a supporter of education at these institutions, the research shows their continued existence in the larger frame of higher education is important for a multitude of reasons. With my motivations transparent, I will present several models and the process behind deciding on a final model, the model that represents the truest relationship between the independent variables (the specific qualities and features of each institution), and the dependent variable, enrollment change.

Regression model estimation. The purpose of utilizing an ordinary least squares regression model is to estimate the effect independent variables have on one single dependent variable. This “true” regression model is one that would encompass all independent variables related to the change in enrollment of first time, full time undergraduate students from the beginning to the end of the Great Recession. Because the number of variables affecting enrollment is nearly infinite, a parsimonious model is a logical choice. While no regression equation estimate is perfect or without uncertainty, pursuing one to practically analyze the research question of this study is the purpose of producing model estimates.

First model. The first model includes all ten independent variables. The dependent variable being estimated was the enrollment change from the beginning of the recession to the end. These data were transformed from the number of students to a percent. As seen in Table 4, the results were mixed.

Table 4 *Regression Statistics, Comprehensive Model (all variables included)*

R Square	0.32
Adjusted R Square	0.07
Standard Error	16.33
Observations	38

Table 5

Analysis of Variance, Comprehensive Model (all variables included)

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	10	3381.57	338.16	1.27	0.30
Residual	27	7195.79	266.51		
Total	37	10577.35			

Presenting information about each of the ten independent variables would be redundant as the overall model is not significant. The F statistic (1.27) and the corresponding p value of .29 presented in Table 5 provide support for this assertion. At first glance, this outcome is disappointing, showing little ability to explain variation in enrollment. However, further analysis reveals potential—namely, the R Squared value. R squared, as defined as the regression sum of squares divided by the total sum of squares is a ratio with potential values between 0 and 1. A value of .32 indicates the model explains .32, or 32% of the total variation of the dependent variable. The difference between the R Squared value and the adjusted R squared value indicates potential.

The biggest problem using R squared as a measure of model fit is that it must increase whenever the researcher adds an independent variable, regardless of appropriateness of the variable (Studenmund, 2001). What is not evident is whether or not the inclusion of the variable added more to the explanatory power of the model than was offset by the loss of a degree of freedom (Studenmund, 2001). In response to this question, adjusted R squared can be used. As stated as function of R squared, adjusted R squared is equal to $1 - (1 - R^2) * [(n - 1) / (n - k - 1)]$, whereby adjusted R squared only increases if the increase in R squared more than offsets the $(n - 1) / (n - k - 1)$ term, which will cause adjusted R squared to decrease as k (the number of variables) increases.

In model number one, the adjusted R squared is far smaller than the R squared. This, combined with the limited number of data points, indicates some of the variables included in the first model are redundant or irrelevant, both of which would result in the scenario previously described. From this, variable selection followed a parsimonious procedure dictated by student choice literature. Also supporting this model selection process is the limited number of data points.

Spending-combined, graduation rate removed. The development of a second model eliminated variables without a direct theoretical relationship to college choice and/or the recession. In this model business school and nursing school presence were included to address the trend away from liberal education to applied in response to student (consumer) demand. The admissions rate was included as a proxy for prestige. The average endowment from 2005-2006 was included to illustrate past financial performance of the institution, and perhaps another indicator of prestige. The economic variables included the unemployment rate of the county where each school was located, the average amount of student loan debt, and finally the amount of money schools spent on each student by adding instructional plus student services expense per student for a total of eight independent variables. Tables 6 and 7 illustrate the overall model performance.

Making choices to eliminate variables, especially without using an algorithm, was very difficult. To go from ten to eight variables, instruction expense per student and student services expense per student were combined into one variable. My rationale for this went beyond the fact that the degrees of freedom would improve. I experimented with several iterations of this variable, assuming that it must hold some explanatory power, but no matter how I transformed the two variables, neither were significant. Still, I felt that what student got back from their

tuition dollars could have an impact on enrollment, so I combined the variables, interpreted simply as “spending per student.” Removing graduation rate was much harder, but when faced with a limited data set, ten variables is too many, and this seemed like the best choice.

Table 6

Regression Statistics, spending combined-graduation rate removed

R Square	0.32
Adjusted R Square	0.13
Standard Error	15.76
Observations	38

Table 7

Analysis of Variance, Spending combined-graduation rate removed

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	8	3373.37	421.67	1.70	0.14
Residual	29	7203.99	248.41		
Total	37	10577.35			

The results of the second model indicate the hypothesized issues of the first model were indeed present. As seen in Table 6 the overall R Squared of the model declines but the adjusted R squared rises. In addition, the overall model’s statistical significance improves as seen in Table 7. While it is still not significant at the $\alpha=.05$ level, it moves in the right direction. As before, reporting on individual significance is superfluous. However, in this new model, two independent variables have become statistically significant, business school and admissions rate. Table 8 presents this information.

Table 8

Second Model Independent Variable Effect Sizes and Statistical Significance

	<i>Coefficients</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	13.42	0.41	0.68
Business School	35.80	2.39	0.02
Nursing	-2.96	0.50	0.62
Spending Per Student	0.00	0.61	0.55
Admissions Rate	-1.02	2.51	0.02
6 Year Graduation Rate	0.36	1.01	0.32
Average Student Loan	0.00	-0.35	0.73
Unemployment Rate	1.86	0.83	0.41
Endowment	0.00	1.63	0.11

Final model selection. The independent variables chosen for the final model were supported by both theory and previous analyses. The variables not included in the model were left out because they displayed little practical significance (effect sizes near zero) and no statistical significance. For example, the qualitative variable “nursing” had a p value of .61 and an effect size of -2.9%. The results for average student loans were even more insignificant, with a p value of .725591 and an effect size of .0005. Even when this effect size is multiplied by 1000, to illustrate the change of \$1000 in average student loans, the effect is only one-half of one percent change in the dependent variables. Although these variables were removed from the model, the removal itself is relevant to the study and will be discussed in chapter 5.

The remaining variables included in the final model include the presence of a business school, the admissions rate, endowment assets in 2005-2006, and the 6-year graduation rate. As a reminder, the presence of a business school went beyond accreditation. The IPEDS database did not have a specific way to determine if a college or university had a business school or not. To determine the presence of a business school I first evaluated the Association to Advance

Collegiate Schools of Business' (AACSB) list of accredited schools, and found only one school, The University of St. Thomas. I would not feel comfortable making generalizations about AACSB accreditation, but I am certain that after examining the list of schools with accreditation, they are typically much larger than those in this study. Having been employed at two institutions involved with AACSB accreditation in the past, this is no surprise. The process of attaining and maintaining accreditation is lengthy and expensive.

Therefore, I went to each school's website to determine if the school had a business school. My criteria were as follows: First, the school had to offer traditional business majors. These included management, finance, marketing, and accounting. Second, the business school had to be a stand-alone entity. This could be a school, college, or department. The determination of presence of business school was obvious using these criteria. Further reinforcing the divide between institutions with and without business schools was the way economics was presented. For example, Carleton College does not have a business school, but does have an economics major. This major is clearly marketed as a social science degree within a liberal education, and not an applied business major.

The presence of a nursing program was similar. While there was less ambiguity with regards to the actual presence of a nursing school, the existence of 2+2 and 3+1 programs made this determination a bit trickier. My criteria for determining if a school had a nursing program had only one criteria: accreditation. The American Association of Colleges of Nursing provided a list of accredited schools. I cross-checked this list with each of the school's websites to corroborate the results. I then went one-step further, checking the other schools' websites to make sure they did not have a non-accredited program. Three schools had partial programs. Upper Iowa University and William Penn both have RN-BSN programs while Wartburg College

has a 2+2 and 3+1 program with Allen College. I did not indicate these schools having nursing programs. Wartburg's is not stand alone, and the other two programs are in no way useful to incoming freshman, the dependent variable of the study.

The other variable collection and measurement were more straightforward. These data were collected using the IPEDs database. Spending per student was calculated by taking instruction expense and student services expense per FTE and adding them together. The admissions rate was the number of students accepted divided by the total number of applicants. Average Student Loan was the mean dollar amount of student loans incoming freshman took on for the year. This did not include parental loans. The 2009 unemployment rate was obtained through the Bureau of Labor Statistics. This rate is the unemployment rate for the county where the institution is located. The 6-year graduation rate was calculated by what percentage of incoming first time, full-time students graduate with a bachelor's degree within 6 years of initial enrollment. Finally, the 2005-2006 endowment is the average of the endowment asset value between the beginning and end of the 2005-2006 school year.

Table 9

Final Model Regression Statistics

R Square	0.29
Adjusted R Square	0.20
Standard Error	15.08
Observations	38

Table 10

Final Model Analysis of Variance

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	3072.23	768.06	3.38	0.020
Residual	33	7505.12	227.43		
Total	37	10577.35			

Table 11

Final Model Independent Variables

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	31.43	18.92	1.66	0.11
Business School	37.24	13.25	2.81	0.0083
Admissions Rate	-1.17	0.34	-3.46	0.0015
Graduation rate	0.495	0.26	1.93	0.062
2005-06 endowment	-5.76E-08	4.13E-08	-1.39	0.17

The coefficients listed in Table 11 are raw beta coefficients. These coefficients indicate the effect a one-unit change of the independent variable would have on the dependent variable, holding all other variables constant. In this case, institutions with a business school had a 37% higher change in first time, full time enrollment than those schools without. A one percent increase in the admissions rate would correspond to -1.17% change in first time, full time enrollment. A 1 % increase in the 6 year graduation rate would have a .49% increase in first time, full time enrollment. Finally, a \$1 increase in endowment assets would have a .000000005% decrease in enrollment change.

This model displays overall significance, statistical significance, and practical significance. Table 9 shows a further decrease in R squared (from .32 to .29) which is more than offset by the adjusted R squared value increasing from .13 to .20. The model's p value indicated

in Table 10 of .0201 indicates there is only a 2.0% chance the model's significance is due to spurious relationships. Business School and Percent Admitted are individually significant. The 6-Year graduation rate would be significant at the $\alpha=.10$ level. Finally, 2005-2006 endowment is not significant at the $\alpha=.05$ or $\alpha=.10$ levels.

Conclusions

The purpose of this study was to uncover and interpret institutional factors leading to enrollment change and private colleges and universities. The results were mixed. Upon conclusion of the study, the ten independent variables initially chosen fall into one of three categories: statistically and practically insignificant, statistically insignificant, and statistically (and practically) significant.

The process of developing a final model included making observations and providing theoretical backing for inclusion or removal from the model. The fact that there were only 38 schools in the data set predicated that only the most important variables be included in the model. This small sample size only allowed for the inclusion of seven or eight independent variables. The following will explain the process of eliminating the first three independent variables, reducing the number of variables for consideration from ten to seven.

The first three variables dropped from the model were county unemployment rate, average student loan, and campus location, or "city." During a recession, it would seem as though average student loan and unemployment rate would be two of the most important variables to include, but upon a further examination of the data set, they were not. As a reminder "city" was a categorical variable that divided the data set between the schools located in or near cities, and those in rural locations. There were seven schools in the Minneapolis/St. Paul metro area and one in each of Cedar Rapids, IA; Omaha, NE; Lincoln, NE; and Sioux Falls, SD. The

other two variables, county unemployment rate and average student loan, are precisely the variable the name implies.

The effect sizes of the three dropped variables were not practically close to zero, although they were not large compared to the other variables. For an effect to be practically insignificant, the relationship between independent and dependent variable would be near zero. In the case of this study, the effect size of unemployment was 1.86. This would mean that a one percent increase in unemployment would be correlated with 1.86% change in enrollment pre- and post-recession, our dependent variable. However, the associated p value was .47. “Student loan” had a similar result. The effect size of student loan was -.00049. At first glance, this seems incredibly small, but when multiplied by \$1000 it would correspond to a .49% change in enrollment, other things equal. Arguably, this is a similar effect to the unemployment variable, however with a p value of .75, the interpretation of the effect is inappropriate. Last, and least, is city. As a categorical variable, its effect size denotes a one-time difference between the group denoted by the variable and rest of the data points. This effect is .89, or a .89% difference in pre and post-recession enrollment between Institutions located in a city and those not. However, a p value of .88 renders this result completely unreliable, and likely due to chance.

Comparing a p value to a set standard (such as .05) to make conclusions about statistical significance is the tradition of quantitative researchers. If a variable has a corresponding p value $< .05$, the conclusion would be to accept the alternative hypothesis. That is, the evidence provides support of a numerical relationship. However, the opposite is not true. As a statistician, I am very careful to avoid making statements like “city and enrollment change have no correlation.” This would imply the data provides proof. Simply, the data set does not provide statistical evidence there is a relationship, but provides no evidence there is not. Keeping in

mind a relationship may exist in truth; I will instead explain the lack of significant results and provide rationale for the exclusion of the variable from the model.

County unemployment rate may be the easiest to explain its expulsion. While the economic performance of a region (as measured by unemployment) certainly influence the success of businesses in the area, it could easily be argued a college or university's enrollment is insulated from nearby fluctuations in the unemployment rate. There are two fundamental reasons to support this assertion. The first is that most high school students choose to leave the immediate area where they attended primary school. The second is that unemployment in the upper Midwest was relatively low compared to the rest of the country, and there was little variation within the sample set.

The removal of the "city" categorical variable is supported by the same rationale. At no place in the college choice literature did campus location seem to be a driving force behind enrollment decisions. One hypothesis during a recession would be that city campuses would have an advantage as there would be more jobs for students. Conversely, it could be argued that since these institutions are all located in places where the economy was less effected, the placement of campus would have no differing effect on the dependent variable whether the economy was in a recession or an economic expansion.

The removal of the average student loan variable was one for which I struggled. For many students the debt with which they leave a college or university is the true explicit cost of attendance. Whereby institutional discounting, scholarships, grants, or parental contribution subsidized the rest of the cost of attendance. With nearly all of this information available, I felt as though average student loan was the best economic indicator to use. Utilizing student loan also allowed me to eliminate cost of attendance from consideration. This was an important

decision as “price” is a moving target when it comes to institutions of higher education. For example, comparing an institution that requires on-campus living to one that does not is a very difficult problem. I went through many iterations of cost of attendance variables, but most of them were contrived or difficult to understand, hence my conclusion that average student loan would be the best personal economic indicator.

The data simply did not support my hypothesis. Throughout the process of conducting this research I was frequently disappointed with the results. The IPEDs database allowed me nearly endless data. Unfortunately, the process of understanding enrollment changes became more like understanding changes in the stock market; there are simply too many variables to control. Despite a long and frustrating process, two key takeaways emerged. The first is the corroboration of the prestige literature. Within this targeted sample, admission rate plays a huge role in maintaining positive enrollment, even when none of the institutions is nationally prestigious. The second is perhaps unique to this research, and provides a compelling reason to continue research on the topic. This takeaway relates to the ongoing emphasis on applied programs at traditionally liberal-arts focused schools. The literature generally focuses on overall trends, but does not focus on specific programs. This research supports the theory by showing a 37% difference in enrollment change between schools with business schools and those without. The bigger story, in my opinion, is that the difference between schools with nursing programs and those without was both practically and statistically insignificant.

The research question of this study was, “What fixed institutional factors influenced relatively high-priced private colleges to survive and thrive through the Great Recession?”

Strictly answering this question by the support of data, the presence of a business school had a positive impact on enrollment and the admissions rate had a negative relationship with

enrollment, which were both in line with the previous literature. The graduation rate was almost significant with a p value of .062, indicating a strong likelihood of a positive relationship with enrollment. Finally, the presence of a nursing program, unlike a business program, had no measureable relationship with enrollment. Although the data set limited the statistical power of the study, the results provide ample opportunity to make assertions relating to the leadership, economics, and general state of relatively high-priced private colleges and universities.

CHAPTER 5. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

My personal college experience was partly the impetus for this study and not because it was an overwhelmingly positive experience. In hindsight, my strategy and subsequent choice of college was with many faults. My advisement at college was poor, and I had trouble transitioning from the safe harbors of home to the uncharted territory of semi-adulthood while away for the first time. Despite these issues, my development as a critical thinker was profound and was a direct result of my attendance at a school directly comparable with those in this data set, a small private university with an explicit focus on student engagement. I cannot say what my adult outcomes would have been had I pursued a different (and likely less costly) path. Indeed, my own history is likely viewed through rose-colored lenses, but the positive academic outcomes of attending college are supported by research (Seifert et al., 2010), as well as the long-standing belief that this type of education is the pinnacle of higher education pedagogy (McPherson & Schapiro, 1999). Despite personal missteps and poor decisions, both the liberal and applied aspect of my undergraduate training remain something that positively augments my life on a daily basis.

In addition to the personal rationale for studying factors influencing success at small private universities is a broader, academic rationale. While the study was not motivated by curiosity in the access to education, it clearly became influenced in this area, especially during a recession. At the access level, the existence of available seats matters as long as community colleges and low priced public universities are full. California was a microcosm of this phenomena; if students forego private education for public, the availability of inclusive education could be constrained. My college experience is an example of the choice component of the access issue. There is some chance I would not have graduated, or perhaps attended,

college without the option of an institution with an explicit “hands on” approach to undergraduate education.

After completing this study my feelings about the continued existence of all types of higher education is more pronounced. The remainder of this chapter will include a summary of the study and results followed by conclusions and implications of the results. Finally, the chapter ends with limitations and recommendations for additional research on the topic.

Summary of the Study

In general, the study was guided by the desire to understand how a disturbance like the Great Recession would affect institutions of higher education. Small private institutions in the Midwest, where the actual effect of the recession was not as pronounced as other geographic areas, was of particular interest. Specifically, the question guiding the study was:

- What fixed institutional factors influence enrollment gains or losses at relatively high-priced private colleges during and following the Great Recession?

The significance of the study is that the results could provide a rationale for administrators when faced with choices pertaining to spending, recruitment, and enrollment strategies. Specifically, the results could be the basis for allocating resources towards academic spending at the sake of superfluous student service expenditures. In general, these types of decisions will typify the management strategy of focusing on long-term success over short run, “window dressing.”

The data utilized for the study included quantitative measures of 38 schools in the upper Midwest. The dependent variable was the change in first time, full-time undergraduate enrollment between 2006 and 2011. These data, collected from the National Center for Educational statistics, can be interpreted as incoming freshman class. The independent variables

included measures related to Chapman's (1981) "fixed effects," as well as metrics explaining the difference between schools with and without prestige. The final model included whether the institution had a business school, the admissions rate, the graduation rate, and the endowment of the university just prior to the recession. Admittedly, this model was underwhelming from a quantitative results standpoint. Because the data set was limited to 38 schools, the number of independent variables was limited, thereby the lack of statistical significance is not surprising. While the affirmative results provide evidence for discussion and conclusion, so too do the "non-results."

Conclusions from the Study

In retrospect, I believed the type of education examined in this study typified that of a luxury good. From an economic standpoint, a luxury good is one that is highly responsive to changes in consumer income. Ergo, during a period of falling incomes (a recession), it would be assumed consumption of such luxury goods would fall. After collecting data, this assumption was clearly false. For the 38 schools in the data set, the incoming freshman class actually rose by 2.1%. Overall undergraduate attendance rose nationwide from 17.8 million students to 21 million students.

Educational statistics relating to enrollment and the demographics of institutions are abundant, so there is quantitative support for many positions, perhaps even ideas at odds, for example, the changing costs and benefits of college attendance. What cannot be argued is that college attendance overall greatly increased during the recession. Two conclusions can be drawn from these results. First, although the cost of college is increasing, the opportunity cost of attendance falls during a recession. This is because although tuition increases, the value of working in lieu of full time college decreases. The main consequence of an economic slowdown

is fewer jobs and lower wages. The “opportunity” cost of not working is diminished; so although the explicit cost of college may be rising, the implicit cost is actually falling more. Second, the assumption that relatively high-priced private education is a luxury good overall is false.

The literature on the rising cost of college (Buss, Parker & Rivenburg, 2003; Ehrenburg, 2012; Karikari & Dezhbaksh, 2013; Martindale, 2015; Slaper, 2015) is generally focused on the explicit, out-of-pocket cost of college attendance. Other literature (Abel & Deitz, 2014) explains the economic concept of opportunity cost in the context of college attendance during a recession. Increasing attendance during a period of falling incomes seems like a paradox, until the implicit cost of college is included with tuition to reveal the total economic cost of attendance. Explicitly, Abel and Deitz defined the opportunity cost of college “is equivalent to the wages that could have been earned by working instead of going to college” (p. 4). Additionally, Abel and Deitz (2014) pointed out the opportunity cost of college is actually much greater than the explicit cost, resulting in a surprising fact that the overall cost of college attendance actually held steady and then declined from 2010-2013 (p. 5).

Explaining the specific outcome of enrollment increases at the institutions included in this study can be explained in two ways. First, the institutions in the study are not seen by those served as a luxury good. As a reminder, a luxury good is one that is highly correlated with changes in income. Because income falls during a recession, so too would consumption of luxury goods. From a quantitative standpoint, attendance at these institutions does not constitute a luxury goods as defined by Besley (1989), or earlier by De Wolff (1941). However, this is not useful from a strategic management standpoint. Matsuyama’s (2002) framework would indicate the subject matter is a luxury good because it fits the descriptors of a luxury good. However,

Matsuyama pointed out, “very notion of necessities and luxuries is a relative one” (2002, p. 1036). The institutions in this study certainly look like luxury goods, but the fact that enrollment increased over a time when the economy suffered proves otherwise.

The explanation as to why attendance at relatively high priced private colleges and universities in the upper Midwest is not viewed as a luxury good can be partly explained by the second reason, enrollment did not fall during the Great Recession. The recession in large part was not something that affected the areas where most of the institutions in the study are located. Data collected, but ultimately not used, in the final model included the unemployment rate of the county where each school was located. The average unemployment of these counties was 6.4%, far below the prevailing national rate of or above 9% for much of the recession. In conclusion, the rising attendance at colleges and universities in the upper Midwest is the result of the lowering overall cost of attendance, or by the fact that the recession largely avoided the region of interest.

If it is true that the recession largely avoided the area of interest, it would be a mistake to infer the dynamics at institutions of higher education in the area remained unchanged. Even though jobs and income remained largely unchanged in Iowa, Minnesota, South Dakota, and Nebraska, there is evidence that consumer trends change regardless of economic fortunes. Several studies (Bohlen et al., 2010; Flatters & Willmott, 2009; Scruggs & Benegal, 2012) support the belief that consumers change their mindset during an economic event. The implications for the institutions in this study are that despite positive enrollment trends, the rationale for attendance may change.

At the broadest level, viewing this conclusion through the lens of an oligopolistic market and the influence of game theory gives another insight into how a good so closely aligned with

the attributes of a luxury good actually does not show the actual market dynamic in real life. College, public or private, is offering more amenities than ever before. When the first school offers a climbing wall or frozen yogurt machine, it is a luxury. When they all have them, it is normal. Much like other goods once seen as “luxury,” private education may have become a status quo choice for consumers in the area covered by the schools in this study.

Game theory helps explain this transition to a luxury status quo. Friedman (1983) showed that the general framework for game theory includes a reaction function and a payoff function. The market this framework explains can have multiple firms (schools in this case) and unique payoff functions for each firm (p. 214). The key insight oligopoly and game theory gives with respect to the increasing amount of paradoxical non-academic spending is that the firms have no choice.

Another way to explain this interdependence is a comparison to the light pickup truck market. Several years ago (2010), Ford introduced a built-in tailgate step on their F-150 model of pickup truck. General Motors responded with ads that characterized Ford buyers as “weak” if the owner could not get into the bed of the truck without the aid of a step. Not surprisingly, when General Motors redesigned their similar sized pickup trucks for the 2014 model year, they included a built-in step. Without Ford’s differentiation, General Motors would not have the step. This same concept could apply to the institutions in this study. Decisions at each institution are dependent on those at other institutions. Offering a new major, building projects, or augmenting on-campus amenities could have as much to do with the offerings of those items at competing institutions as the needs and of the institutions mulling the decision.

Having a rock climbing wall is certainly not a necessity and the gains to the educational experience are likely minimal, much like the bumper step is not a vital component to a pickup

truck. From there it seems as though it is a slippery slope. Most would not argue that air conditioning in either the dorm or the pickup truck are unnecessary luxuries; however, it was not so long ago that it was not available in either scenario. Ehreneberg (2012) said college is getting expensive because of all of these amenities, and Martindale (2015) pointed out these amenities are fun and help draw students to college. Still, academic spending (O'Connell & Perkins, 2003) is the way to enrollment success and administrators will need to understand the tradeoffs associated with academic and non-academic spending (Foston, 2013).

Prestige Matters. Although the quantitative results of the study were not overly robust, several key takeaways emerged. The first is that prestige does matter, even within the context of a geographically limited sample. As presented in the final model, the admissions rate was significant at the $\alpha=.01$ level, and practically showed importance with an unadjusted beta coefficient of -.94.

Instead of using more subjective rankings, I used the admissions rate for each institution as a proxy for prestige. The rate presented in the study included the number of admitted applicants divided by the number of total applicants. As I mentioned earlier, I view this number as a proxy for prestige, as such a topic is very difficult to measure.

The literature review indicated that economics at prestigious versus non-prestigious institutions was quite different (O'Connell & Perkins, 2003; Hoxby, 2009). The difference between the two is stark and seems to be almost dichotomous between the “haves” and “have-nots.” O'Connell and Perkins described the positive and negative feedback loops these two types of institutions experience. For those with prestige, success begets success; for those without prestige, short-term recruiting strategies often hinder long run growth by not focusing on academic spending and beget the constant need for enrollment management (2003).

My use of an admissions rate is an attempt to provide some gradient to the measure instead of asserting a school either has or has not prestige. The admissions rate for an institution is reflective of three things. These three things reflect the immediate, intermediate, and long-term health of the institution. The first is the financial health of the institution. If a school is under capacity, specifically if it is under the optimal enrollment to minimize cost per student (Koshal & Koshal, 2000), a higher admissions rate may ensue, especially if the institution does not have a strong financial foundation. Institutions with immediate financial need are likely to admit more students than those without immediate need.

The second interpretation of the admissions rate is the popularity of the institution. If many students apply to attend, the institution is likely popular. Given there are distinct physical limitations constraining the number of admitted students, a low admission rate could be interpreted by understanding the denominator of the equation as the number of people desiring admittance.

Finally, the third interpretation of the admissions rate is academic standards. This interpretation focuses on the numerator of the measure. If an institution has exceedingly high standards, the number of admitted students could be somewhat independent of the capacity of the institution. If indeed the number of admitted students is below capacity, the institution's financial health is likely strong. The ability to focus on academic standards is due to long run success and evidence of high levels of prestige.

The results of the study indicated that for each 1% increase in the admissions rate, an institution (other things being equal) would have a pre-post freshman enrollment change of -.94%. Framed another way, a 5% difference in admissions rates would correspond to a -4.7% change in pre-post recession freshman enrollment. The corresponding p value of this measure

was .0041, indicating a .4% chance that the outcome was by chance. Given the extraordinary amount of literature exclaiming the importance of prestige, I am inclined to believe the results of the study are not by chance. Even though none of the 38 schools in this study have the national name recognition and prestige of Ivy League schools, prestige is still an important predictor of enrollment success during a recession.

Theoretically, oligopoly/game theory does not clarify the importance of admissions standards, prestige, and the pursuit of prestige as well as Bolman and Deal's Political Frame Theory (2011). As mentioned previously, the admissions rate can be viewed through the lens of in three time frames, short, medium, and long run. Decision-makers at non-selective colleges and universities like those in this study may be inclined to recruit through non-academic avenues at the expense of long run growth (Jacob, McCall, & Stange, 2013). When viewed through the political frame, it becomes evident why these decision makers may make decisions that do not promote long-term growth. Assumption four, that those with power will settle differences, sheds light on topic (Bolman & Deal, 2011).

Assumption four asserts those with power will be the ones to settle differences. Perhaps the difference again would be budget related, but the struggle could be between athletics, personnel, and faculty. Again, this struggle could be framed as the struggle between long run objectives (faculty) and short run enrollment success (athletics). Ultimately, the persuasion of either side may be moot; instead the victor may be the side by which the objectives most closely line up to those of the actual decision maker.

The other assumptions Bolman and Deal outlined in the political frame reinforce how important it is for members of an institution to understand and agree on the importance of an institutional mission. It seems as though conflict between parties is pitting "right vs. wrong," or

‘good vs. evil,’ which could not be further from the truth. Whether the science laboratory is not receiving an upgrade because of athletics, counseling services, better food, or any other number of non-academic pursuits is not relevant. Without short run success, there is no long run; the performance each faction of the institution can and will influence other factions. While assumption number four pits different groups against each other, continued existence must be an explicit and shared goal.

Business programs matter. The single biggest determinant of success over the recession was the presence of a business school. The final model indicated a beta coefficient of 37.24 with a p value of .0083, making it both significantly and practically significant. This type of variable is a categorical variable. Within the model, a data point either fits the characteristic and is assigned a “1,” or does not fit and is assigned a “0.” The schools with a business school have this variable in the regression, while those without, do not.

The interpretation of this result is that institutions with a business school had an incoming freshman class change of 37.24% over the recession period compared to those that did not, other things held constant. This outcome was so large it influenced me to look at the raw data to make sure there was no mistake. Four schools in the data set did not have a defined school of business. They were Carleton College, The College of St. Mary, Macalester College, and St. Olaf College. Carleton, Macalester, and St. Olaf have strong liberal arts missions. In fact, all three mission statements include the phrase “Liberal Arts” as a focal point. The College of St. Mary has a four-part mission that could embody the spirit of a liberal arts tradition.

To be clear, the fact these four schools did not have a business school does not mean they lost enrollment, instead it simply means they did not have the positive influence of having a business school over the addressed time period. Carleton actually gained 3% while The College

of St. Mary lost 12%, Macalester lost 4.5%, and St. Olaf was down 6.8%. Clearly those are not favorable enrollment outcomes, but they are not catastrophic. The reason they did not simply lose 35% enrollment compared to the group with a business school (the average enrollment gain less 37%), is because there are other factors that are correlated with enrollment success, some measureable (admissions/prestige), while others are not. These schools were able to offset their lack of business school with other positive influences.

Non-significant professional programs. The shifting focus of small private colleges from an explicit focus on liberal arts to application (Jacquette, 2013) is no surprise given the results discussed in the last chapter. It would follow, then, that a similar result would hold for institutions with nursing programs. It did not. In fact, from a statistical standpoint, the results were disappointing. The second model I reported in this study indicated a beta coefficient of -2.96 and a p value of .62. The 3 percent effect size indicates a practically significant number, but since “nursing” is a categorical variable, the difference between institutions with nursing programs and those without may only be a few students. Even if the effect size were larger, the p value of .62 makes any inference unreliable.

After some thought, this result is not as truly unexpected as it first seemed. I believe there are several reasons why the presence of different types of applied programs have different effects on enrollment, and the reasons are related to the fundamental differences of the programs. While nursing and business are both applied, a career in nursing is more explicitly defined than a career in business. While there are different types of nurses, they all have the common component of providing health care to human patients. Business programs are much more diverse. Finance, marketing, economics, management, and entrepreneurship are all business degrees, but are very different in both curriculum and application.

Business programs fit the demands of consumers that Jaquette (2013) discussed, while nursing does not. If a student is attending a relatively high priced private college, the presence of a recession may influence the student to choose a major that pays off either by the number of available jobs, or by the amount he or she will be compensated post-graduation. Nursing, on the other hand, seems like something people decide to do regardless of the state of the economy.

Non-significant, but included variables. Two other variables appear in the final model, the institution's graduation rate just prior to the recession, and the endowment assets of the institution just prior to the recession. It is a misnomer that statistically insignificant results should be excluded from the model. These two variables each provide a good example of why this is true.

The graduation rate provides potential students with information regarding his/her chance at successful degree completion, the ability to obtain a job, and ultimately paying off loans. Its inclusion in the model follows the same rationale as the inclusion of applied programs. The effect of graduation rate is .495, an expected number. Schools with higher graduation rates tended to have enrollment success over the period defined by the recession. Unfortunately, the p value of the graduation rate is .062, just outside the pre-study level, $\alpha=.05$. In this case, the variable is almost significant. Given the meager amount of data, I chose to include the variable.

Endowment, on the other hand, had a p value of .17, which is simply too far away from .05 to say it is almost significant. However, when endowment is taken out of the model, the admissions rate becomes insignificant. Both endowment and admissions rate could be interpreted as measures of prestige. When endowment is not included in the model, omitted variable bias ensues (Studenmund, 2001). In plain English, ordinary least squares becomes confused; the correlation between an institution's endowment and the admissions rate cancels out

the statistical significance of either. For this reason I left endowment in the model. Like the graduation rate, it is possible it could be significant given a larger data set.

Research Question Revisited

The research question for this study were general and not in the hypothesis testing format often seen in quantitative research. As such, the conclusions drawn above fit within the framework of each question instead of emphatically answering the questions with statistical authority. The institutional factors attributing to enrollment success include the presence of a business school, prestige (as measured by the admissions rate), and the graduation rate (at the $\alpha=.10$ level). The presence of a nursing program and the school's endowment did not appear to be statistically significant.

Recommendations/Things to Ponder

In the final section of this chapter I outline my recommendations. I have included “things to ponder” in the heading because I feel the conclusions provide managers and decision makers at small private institutions things to consider as opposed to directives. Like econometricians, I am hesitant to assert causal relationships.

When I started my undergraduate degree, I shared a small 1950s era dorm room. My roommate and I had a 25 inch TV and a big stereo. At some point during those four years I became acquainted with a finance professor who oftentimes compared our lives in college to living in a country club. I was put off by his characterization of our lives at college. Shortly after graduation did I realize his assertion was accurate. By the time I was a senior in college I lived in suite-style accommodations where each unit had a common living area, three bedrooms, and three bathrooms for six students to share. In addition, we all enjoyed meal plans that

allowed us to eat as much as we wanted and were often able to request specific food. Perhaps the biggest luxury I enjoyed was the conveyor belt that magically took away dirty dishes.

I did not choose to attend one college over another because of fancy food or housekeeping. In truth, those were things that evolved while I was there and eventually just took for granted. I think my attitude towards those items is similar to many students' attitudes. Even though the institution provides something that is inherently luxurious, it does not mean the consumer responds to the good as predicted. Just because a good or service is truly luxurious in purpose and function does not mean customers respond in practice as an economist would predict they would to a luxury good.

This assertion is important for managers to consider. Imagine the decision to either fund a biology lab or to make a food service enhancement. The person in charge of making a budget decision in this framework might be inclined to serve what he or she thinks the customer wants in lieu of what the student, and possibly the institution, needs. From the perspective of the decision-maker, the final determination may be made out of the pursuit of self-preservation. Like corporate CEOs, university presidents, provosts, deans, and others may lean towards short run success. Likely, the loudest noise will be attended first.

I have no grand illusions that managers and decision makers will suddenly start to make decisions with the long run health of the institution in mind at all times. I think it would be almost impossible for a leader to make decisions knowing the decision may have adverse personal consequences. Instead, the results of this study, specifically that enrollment grew during a recession and the assertion that attendance at these institutions is not seen as a luxury good is crucial to understanding budget tradeoffs.

Take the food service/biology lab decision. Students have, and will always complain about the food; it is something they understand. What they may not understand is the importance of functional and modern lab equipment. From the decision-maker's standpoint, better food may bring more students through the door; but only if they care. It is unlikely students not yet attending care about food; they have not been indoctrinated to complain. If a consumptive amenity is not seen as a luxury, its inclusion is unlikely to have an impact on enrollment. The lab equipment is quite the opposite. It is disappointing, but as an educator, we all need to understand the fruits of our labor may not be seen firsthand; it is after graduation when students realize the benefits of education.

These benefits are not without some recognition. Successful students are likely to reward the institutions that helped develop their success by monetary gifts, networking, or other contributions. While a better dessert bar is appreciated, the biology lab is likely what causes an alumnus to give back to the school. Whether giving back is in the form of money, creating a professional network, or promoting legacy attendance, the payoff is real.

Again, I cannot explain how leaders make decisions with short run goals ahead of long run goals. My recommendation on this topic is to consider the value of the tradeoff. If long run success and prestige is only promoted through academic spending, then the cost of short run nonacademic spending is known and real. If this cost is to occur, the decision-maker must be certain the short run program will have benefits to outweigh the cost of long run growth. Indeed, the long run will never happen if short run success is not consistent.

Making unpopular decisions in good times. During these positive enrollment periods, it is crucial for managers to identify the opportunity to sacrifice more short run success for long term, permanent growth. Perhaps the single most cited research in this study is Chapman (1981),

who set the baseline for how students chose between colleges. The “fixed effects” are the things that matter which should be focused on during positive economic time periods. These qualities and attributes of a school are only fixed in the short run. Buildings, programs, and even the mission and vision of institutions can be changed over time, but only when the institution can afford to do so.

One of the most important implications of this study is that institutions like those in this study must focus on prestige, or more accurately, the qualities that beget prestige. The stakeholders at these institutions must have the mission and vision of academic prestige ingrained into the daily fabric of their existence. It is imperative there be an institutional force that overcomes the politics and power-broking responsible for undermining the success of private colleges and universities.

Evaluating short-run tradeoffs. While it would be nice to consider decision-making in positive economic situations, the truth is that administrators’ decisions are more closely scrutinized when times are tough. This study did not focus on the actual “game” played by administrators in oligopolistic settings; instead, it only asserted the interdependence of the schools. Understanding this game will be different for each setting. What is important for administrators to consider is that when scarce resources are allocated towards non-academic spending for the desired outcome of immediate enrollment growth, they must be effective. While the benefit of these strategies is unknown at implementation, the cost is explicit and is substantial; these tradeoffs cannot come without reward.

I often ask students, “Why did you decide to attend this university?” Many times the answer is, “It just felt right.” Not revealed by this answer is what motivated the student’s campus visit. Chapman’s (1981) work reveals exogenous reasons for school choice, school

administrators must determine which investments lead to getting students on campus, and those that simply make students happy after they have already decided to attend.

Limitations and Future Research

The results of this study provide future research opportunities for myself or others. Throughout the research process I avoided “rabbit holes,” which were distractions from my primary research focus. These things could be the result of the days’ events, what I had been reading in non-academic settings, or talk around the water cooler. These topics had to be avoided for the purpose of completing the study; which does not mitigate the importance of these topics. These topics include quantitative modeling and extending the economic comparison of the behavior between higher education institutions and profit-seeking firms.

Better modeling involves addressing the generalizability of the study. The first area of generalizability I would like to address is to see how the model performs over the same set of schools but during a different period. The focus of the study was to examine performance throughout a recession. I would like to see if the same factors hold during periods of economic growth. The research question I would explore is whether or not rising incomes allowed students to make college and major choices without the pressure of gaining applied knowledge that is immediately transferred. The answer to this question would be interesting to proponents of the liberal arts curriculum at many of these schools. It would be interesting to see if the effect of a business school would still hold, and if so, to what extent.

The second area of generalizability I would address would be utilizing the model over the same time period with a different group of institutions. This could include larger schools, public schools, but most importantly, it would look at schools in different geographic regions. The economy is incredibly complex and intertwined, but the effect of a nation-wide recession are not

evenly felt. The overall result of non-results could be different if the model were applied to schools located in a geographic area that was explicitly harmed by the recession. This could include areas such as Florida, Arizona, and California, all which experienced much higher unemployment levels over the analyzed time period.

The assumption made in the previous paragraph was that the model could only serve one geographic area. This assumption was born out of necessity. During my research, I was concerned a quantitative model would not produce any results if differences among the data set were too great. If I were to be able to make any positive contribution on the subject, I needed to control for as many variables as possible. When schools became too unlike, I feared I would be unable to control the multitude of variables that could influence enrollment. Because of this, the number of institutions in the data set was limited, which then limited the quantitative power of the study. Expanding the data set would allow the use of more independent variables.

The other reason my data set and subsequent model were constrained was more personal. My own experience and knowledge as a researcher was a limiting factor. Additionally, I sought to conduct the research process in an ethically responsible way, which often made me concerned about data mining or exploring different models when I did not have an explicit reason to do so. Whether by additional training or the help of a more experienced researcher, I aim to reinforce the quantitative component of this study.

Within my skill set, I could refine and enhance the model to serve a different purpose. The general objective of the study was to explore factors contributing or detracting from enrollment over the Great Recession. Given the surprising difference between the effect of business schools versus nursing programs, I would like to explore the effect different applied programs had on enrollment over the same time period. The first applied program I would

evaluate would be K-12 teaching programs. After that I would explore pre-med and pre-law. I would even be interested in exploring the effect of B.A.S offerings whereby students completed bachelor's degrees after being given 300-400 level credit for career experience.

Finally, the results of the study could be augmented by adding a qualitative component. An easy place to begin would be to interview leaders at the institutions of the study or students who attended during the time period to gain greater insight into the decision to change recruiting methods or the rationale for attendance. A qualitative component could also be added to examine the nature of competition between schools. The theoretical framework of oligopoly assumed the competition amongst schools was non-cooperative and that enrollment gained by one institution could be enrollment lost by another. The study also neglected to address how the actions of other institutions influenced decisions. Asking these leaders these questions could corroborate quantitative results, yield new results, and generally enrich the topic.

Final Conclusion

In conclusion, I feel the study was successful, despite a lack of statistical significance. The results allowed a specific measurement and interpretation of the correlation between prestige (as measured by admissions rate) and business school presence. These results, along with other non-significant results allowed me to conclude that not all applied programs have the same correlation with enrollment during an economic downturn and provide leaders of such institutions a reference for future similar scenarios.

Appendix A

Data

Institution Name	Enrollment Change(%)	Business School (1=Yes)	Nursing (1=Yes)	Admission Rate	Graduation rate (%)	Endowment (\$)
Augsburg College	-3.99	1	0	77	52	26689014
Bethel University	8.60	1	1	86	70	19956180
Briar Cliff University	-8.85	1	1	71	49	8457888
						11458527
Buena Vista University	-23.68	1	0	79	60	7
						54003915
Carleton College	2.98	0	0	32	93	1
Central College	-0.24	1	0	80	68	65903134
Coe College	30.80	1	1	68	71	55921620
College of Saint Benedict	-2.22	1	1	84	80	29981845
College of Saint Mary	-12.00	0	1	57	49	6272015
Concordia University- Nebraska	4.30	1	0	78	63	21353935
Concordia University- Saint Paul	-1.50	1	0	65	41	17513190
Cornell College	36.29	1	0	62	66	63017888
Dakota Wesleyan University	-8.24	1	1	75	37	18612700
Doane University-Arts & Sciences	17.34	1	0	79	70	75411638
Dordt College	9.50	1	1	90	60	20067671
Gustavus Adolphus College	5.84	1	1	79	67	86937690
Hamline University	21.46	1	0	76	61	59168761
Hastings College	22.43	1	1	81	63	58564064
Iowa Wesleyan University	-3.39	1	1	50	21	9537141
Loras College	-10.42	1	0	89	64	24022904
Luther College	2.45	1	1	81	75	82423162
						51574300
Macalester College	-4.59	0	0	39	85	0
Midland University	-1.85	1	1	85	61	21011667
Morningside College	13.21	1	1	75	42	28922325
Mount Marty College	-46.38	1	1	83	47	14123900
Nebraska Wesleyan University	-13.04	1	1	84	70	35391776

Northwestern College	-10.74	1	1	84	64	35294082 11404919
Saint Johns University	-1.19	1	1	89	82	5
Saint Mary's University of Minnesota	2.91	1	0	78	61	31126291
Simpson College	-13.59	1	0	88	69	63857079
St Catherine University	5.95	1	1	81	57	37457357 22565790
St Olaf College	-6.81	0	1	65	85	0
University of Dubuque	24.01	1	1	73	43	37511341
University of Sioux Falls	-21.03	1	1	95	49	13967751 27131600
University of St Thomas	1.92	1	0	83	74	0
Upper Iowa University	25.29	1	0	67	47	5568335
Wartburg College	0.99	1	0	85	64	36770438
William Penn University	37.62	1	0	65	23	4256000

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