THE EDUCATION PREMIUM: AN ANALYSIS OF THE COSTS AND BENEFITS ASSOCIATED WITH PRIVATE AND PUBLIC HIGHER EDUCATION

by

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INTRODUCTION

Due to the importance of education, questioning and examining the quality of education at all levels, from primary education to tertiary education, should always remain a relevant topic in the budget-making process at the federal, state and local level. Although funding decisions for education and higher education in particular are decided beyond the control of most individuals, prospective students seeking a degree in higher education hold the ultimate choice of where they would like to attain their degree. While this decision may be somewhat based on the financial cost, quality is certainly becoming another critical component in the personal education decision-making process as seen in recent enrollment trends. While there are multiple factors that influence the decision of a prospective student when choosing between private and public institutions for a higher education degree, there is no single factor that all students unanimously use as a deciding factor between comparable institutions (Mehboob, Muhammad Shah & Bhutto, 2012). For example, if the cost of tuition were the only necessary component in choosing where to attain a degree, students would be content with attending school with less expensive options, such as online universities or at a community college. One way to analyze enrollment trends on a quantitative basis is through enrollment trends in private institutions versus public institutions. As private institutions are generally smaller than their public counterparts, they typically have more means to improve the quality of the infrastructure, faculty and overall educational experience, but it comes at a significant cost relative to the cost of a similar degree at a comparable public institution.

Before exploring some of the components that differentiate private and public institutions, it is important to first address the importance of education in both developing

and developed societies. One of the critical components of macroeconomic growth models defined by many economists includes growth in human capital (Barro, 1992). Human capital includes expenditures on education, training and medical care (Becker, 2008). Becker's writings emphasize the importance of higher education as an investment in human capital. Human capital can also be viewed as the "value of the productive capacity of its workers" (Neagu, 2012). Through this understanding of human capital, it is clear how higher levels of human capital can serve as a driver for an economy through its direct effect on innovation and productivity, as well as economic output per capita. Studies conducted by Richard Barro (1992) indicate that "countries that start with a higher level of educational attainment grow faster for a given level of initial per capita Gross Domestic Product" (213). Studies also show that "countries with higher cognitive skill grow faster, are more open and spend more on education" (Basu & Bhattarai, 2012), which indicates that there is correlation between the quality of an education system, the overall level of human capital in a society and ultimate economic growth of a country as a result. In a study that analyzed growth for 20 Organization for Economic Cooperation and Development (OECD) countries from 1975-2005, the results indicated that investments in health care and education, components of human capital, contributed to the economic growth of the member countries (Tatoğlu, 2012). Through these studies and theories, it is clear that economic growth is preceded by investment in human capital, especially through investment in education.

Given the relative importance of human capital in the development and growth of an economy, the quality of education in society and the prevalence of higher education among its citizens should serve as relevant indicators for potential economic growth. Due

to the societal importance of human capital, students attend both private and public higher institutions in order to increase their human capital, and as a result of the educational process, students inadvertently increase the human capital of their classmates (O'Connell & Perkins, 2003). Through this process, institutions that provide students with higher quality educational experiences will produce graduates with higher levels of human capital. With this understanding of the importance of education in any society, it is clear that in order for a society to sustain growth that the quality of education must improve, rather than diminish, over time.

In the United States, and in most developed economies, there is a high correlation between income and education levels. From an individual's perspective, going to college not only rewards the individual with a newfound knowledge in a variety of subjects, but it also enables the individual the means to achieve a higher income level beyond graduation versus someone who holds a high school diploma. The correlation between income and the level of education achieved is a relationship that is well known throughout society (Sylwester, 2003), and as a result, demand for attaining a college degree tends to remain high. One way to analyze the demand for higher education is through enrollment trends. In general, enrollment trends in the United States have been steadily growing over the last decade. Between 2000 and 2010, enrollment in higher education increased 37 percent, from 15.3 million to 21.0 million students enrolled (Department of Education, 2012). In addition to getting a degree, it is also important that the student graduate with a quality education so that he or she will be able to compete with peers who have graduated from other institutions.

As with most consumer goods, quality and price tend to be correlated. This trend

can be analyzed beyond consumer goods and can be generally applied to higher education. One of the primary reasons some prospective students are unable to attend private institutions is due to the cost of the private degree versus the public degree. While cost has historically limited many students from enrolling in private institutions, the gap in enrollment rates has been closing in recent years as private institution enrollment rates have grown faster than enrollment rates at public institutions. The closing of this gap potentially indicates that prospective students are increasingly finding more value in a private degree versus a public degree, despite the higher cost for a privatized educational experience. Data from the National Center for Education Statistics (NCES, 2012) shows that total enrollment for higher education increased from 14.37 million students in 1996 to 21.56 million students in 2012, an increase of 50.03%. Over this same period, enrollment in public institutions increased from 11.12 million students to 15.53 million students, an increase of 39.66%. Additionally, enrollment in private institutions increased from 3.25 million students to 6.03 million students in 2012, an increase of 85.54%. Although enrollment trends tend to not be affected by short-run economic conditions, such as temporary increases in consumer sentiment, they tend to be affected by long-run economic conditions (Polzin, 1984). From this theory, it is logical to assume that as the economy improves, prospective students will be more willing to consider the value of a degree instead of considering the costs required to attain the degree.

Although enrollment in general has grown over the last sixteen years, private enrollment has far outgrown enrollment in public institutions. Interestingly, there is limited research regarding enrollment trends in private higher education and economic growth, but a recent study from the *European Journal of Education* that analyzed

institutions from around the world found that economic development does not necessarily lead to increased enrollment at private institutions (Reisz & Stock, 2012). Though increased enrollment at private institutions may not be indicative of immediate economic growth, it may be indicative of an inefficient public system. As a result of this study, and due to the staggering increase of enrollment in private institutions, it is of particular relevance to explore the reasons why enrollment growth at the private level is outpacing enrollment growth at the public level, despite being less than half as expensive as tuition at many private institutions.

The purpose of this thesis is to explore the premium that private institutions charge students relative to public institutions and to analyze whether or not paying the premium for private education is worth the extra cost. In addition to exploring the premium, this thesis will also analyze reasons why enrollment is growing at a faster rate at private institutions when compared to public institutions. Through analyzing key macroeconomic indicators and trends in higher education, this thesis will explore the differences between the two categories of higher education and will also draw conclusions as to how these trends will develop into the future. To avoid drawing generalized conclusions for trends on a national level, this thesis will be limited to an analysis of trends and developments in Texas. The primary goal of this thesis is to explore the composition of the higher education premium between private and public institutions through a detailed case study and net present value (NPV) analysis of one private and public institution in Texas. An examination of the present value of the costs to attend college and of the relevant qualitative factors will be used to determine if the cost of a private higher educational experience is worth the initial explicit and implicit costs to the

prospective student.

RESEARCH QUESTION

While analyzing the current trends within higher education, especially with growing enrollment rates at private institutions relative to public institutions, one may wonder why the enrollment rates are rising in the first place, and if private education is worth the premium that students pay relative to public education of similar quality. Because an increasing amount of students are choosing to pay additional tuition costs to attend private institutions, there must be some measure of intrinsic value within these institutions that cannot be identified by looking solely at the cost to attend the institution. In order to fully analyze this question in detail, one needs to analyze the value drivers and both tangible and intangible benefits for private and public institutions. Due to limited access to data, this thesis will analyze two schools within Texas, one private and one public. Although the conclusion reached within this thesis will be based upon two schools in Texas, the analysis and framework will also be based on national trends within higher education. Through the analysis within this thesis, the conclusion can be representative of trends at the micro level in Texas that may provide areas for further research regarding larger macro trends within higher education.

In the United States today, there is a developing problem within the higher education system. Whether one wants to analyze the mounting levels of debt that students are resorting to in order to finance their education or the dramatic budget cuts for schools at the federal and state level for tertiary education, it is evident that there are issues that remain to be solved within the higher education system. Though no single piece of legislation of funding from the federal level will solve all of the issues regarding higher

education, students are now facing an interesting trade-off when deciding where to attend college: is paying a premium for private education worth the cost above a degree in the same concentration at a public university? While some decisions can be decided on a purely cost basis, the long-term effects of an education necessitate the consideration of other quantitative and qualitative factors that go beyond the cost of attending a college or university. As an eighteen or nineteen year old high school student, choosing where to attend college is one of the more difficult choices that will be made up to that point in an individual's life. While some students may have a clear path to their intended college, others face a series of tradeoffs that need to be analyzed among the list of colleges they wish to attend. The tradeoffs to be analyzed should go beyond cost and take qualitative factors into consideration. Though the quantitative and qualitative factors are not the same for every prospective student, the measures focused on in this thesis include: benefits and individual resources on campus, career opportunities for specific majors, student-to-faculty ratios, number of classes offered, number of majors offered, cost of tuition (including housing and other miscellaneous expenses incurred on campus), class size, average amount of aid granted to incoming students, graduation rate and the public perception of the university as measured by third-parties.

Though young adults ranging from their late teens to early twenties are generally those enrolled and graduating from higher education institutions, the quality of their education affects the entire society. Education drives innovation, allows students to develop unique skills and provides students with an avenue to reach a professional career. Each year the Organization for Economic Cooperation and Development's (OECD) publishes a report entitled, "Education at a Glance," that describes the current status of

education in the OECD member countries. In the 2012 report, statistics show that the United States lagged behind Canada, Israel, Japan and Russia in terms of the percentage of citizens between the ages of 25 to 64 who have a higher education degree. In terms of 25 to 34 year olds, only 42 percent of the United States population have received a college degree, which ranks 14th among the 37 OECD member countries. In addition to ranking below member OECD countries in these categories, higher education attainment levels have increased by 1.3 percent in the US since 2000 while they have increased by 3.7 percent on average for other OECD member countries. In this context, it is clear that the quality of education is a critical issue today that affects everyone's well-being. Should the US continue to lag behind other countries in graduation rates, it will slowly fall behind other countries in terms of innovation, production, and economic growth. Because of the importance of education in the structure of society, it is important to analyze the tradeoffs between private and public higher education, as there is a distinct difference in terms of the cost and quality of the two types of educational experiences.

One of the traditional known elements of private education is that it costs more than a state-provided education. That being said, one may also assume that the rates of tuition at each level would grow in similar patterns. According to the US Department of Education (YEAR), from 2000 to 2010, the inflation-adjusted prices for undergraduate tuition, room and board at public institutions increased 42 percent while at private institutions, the same costs rose by 31 percent. Over this 10-year period, the compound annualized growth rate (CAGR) for public institutions was 3.57% versus 2.74% for private institutions. In addition to the statistics provided by the US Department of Education, the National Association of Independent Colleges and Universities (NAICU)

announced in October 2012 that tuition at private colleges and universities increased 3.9 percent for the 2012-2013 school year while tuition at public institutions increased by an average of 6.2 percent. While public schools at the higher education level currently have higher enrollment rates than ever before, they are also facing budget cuts from both the federal and state levels. As a result of these budget cuts, public institutions are responding budget cuts, lay-offs of faculty, and increasing tuition.

As a result of federal, state and internal budget cuts, students at public institutions are effectively paying an increasing amount each year for a diminishing quality of their education as a result of the reduction in faculty and lack in infrastructural investments. While tuition rates ought to rise annually to maintain pace with inflation, increasing tuition as a means to finance budget cuts indicates a diminishing return for the student. On a general level, one measure to track the increasing tuition rates is through the Commonfund Institute's Higher Education Price Index (HEPI), which is "an inflation index designed specifically to track the main cost drivers in higher education" (Commonfund Institute, 2012). Although there are general indexes that are designed to measure inflationary effects, such as the Consumer Price Index (CPI), the HEPI is a cost index specifically designed to measure the changes in the price to attend colleges and universities, both public and private, whereas the CPI measures the change in prices for a market basket of goods. The HEPI takes into account the costs of faculty salaries, administrative salaries, clerical salaries, service employee salaries, fringe benefits, miscellaneous services, supplies and materials, and utilities. The costs for supplies, materials and utilities are historically more volatile than the other components of the HEPI calculation. In 2010, 2011 and 2012, the HEPI index increased 0.9%, 2.3% and

1.7% while the CPI increased by 1.0%, 2.0% and 2.9% over the same period. While this difference may seem miniscule, federal funding is often linked to the CPI, and even one percentage point difference can result in schools receiving millions of dollars less than they actually need to cover the rising operational costs needed to adequately manage their institutions. This dilemma is among the many reasons that schools are lacking the resources they need.

The primary goal of this thesis is to explore both the explicit and implicit costs and benefits between attending a public or private institution for undergraduate education. Through an analysis of the current macroeconomic situation of the United States and trends regarding higher education, this thesis will develop a logical framework that highlights the costs and benefits of choosing between the two types of educational experiences. Through a case study analysis profiling one private and one public school in Texas, the two schools will be compared and contrasted based on their respective profiles, costs, tangible and intangible benefits. The results will indicate which institution provides higher quality to its students relative to the cost. The solution will be presented through a quantitative analysis of the costs from a net present value (NPV) perspective and a qualitative perspective through a detailed analysis of the non-financial benefits and costs of attending each type of institution.

LITERATURE REVIEW

Because of the importance of education and the changes affecting public education, the debate on private and public higher education remains an issue that academics, professionals and the media continue to analyze. Though education affects each individual student in unique ways, education as a system affects the entire society.

Because of this aspect and large-scale effect of education on society as a whole, the growth and improvement of education is imperative for economic and societal growth. Richard Wobbekind (2012) recently published an article in the Business Economics Journal entitled *On the Importance of Education* in which he explains the role of education in society and its implications on future growth in the United States and on a global scale. One of the dynamics that Wobbekind explores is the benefits and costs of education. Wobbekind explains that "academic research shows that at the individual level a strong relationship exists between level of education and earnings" and that, "the average college graduate earns more than twice the amount of a noncollege graduate" (91). Education is a clear driver of personal economic success while also serving as a driver for societal growth. Though there are obvious benefits to attaining higher education, this education comes at a price that can be expensive for some seeking education, and "since 1981 tuition has risen at an annual rate of 7.1 percent, and room and board has increased 5.3 percent, compared with 3.2 percent for the CPI" (92). The costs of education continue to rise due to decreases in federal funding, increases in the student body and weak macroeconomic conditions.

While the costs may be a reason for some not to pursue higher education, Wobbekind describes a recent study conducted by Barrow and Rouse (2005) that discovered "that the income premium associated with education is far greater than the costs, both financial and opportunity, and has been growing over the past decades" (93). From this study, it is clear that pursuing higher education increases the chances for individuals to achieve higher economic success while also contributing to society at large. Wobbekind explains three measures for growth: physical capital, human capital and

technological progress. Wobbekind defines physical capital as "capital deepening or increased capital per worker" and human capital as "increased levels of education and skill formation" (91). As each individual gains more education, it not only increases their chances of improving their economic situation, but it also drives the growth of physical capital, human capital and technological progress. Wobbekind concludes by stating that, "in a globally competitive world with structural change, education is more important than ever before" (95). While the United States continues to be strong in terms of university rankings compared to institutions around the world, it will continue to be critical for individuals to pursue higher education, despite the up-front costs of attaining education. Additionally, despite having top ranking institutions, the US lags behind many countries in terms of educational achievements as indicated in the recent OECD report on education within member countries in terms of higher education attainment among adults.

One of the indirect consequences of not investing enough into the education system is the ultimate lagged effect it will produce on the economy. A recent piece in the International Journal of Business and Social Science, *The Impact of the Financial Crisis on American Public Universities* (2012), highlights the staggering effects that recent macroeconomic developments have left upon public institutions. Altundemir explains that although the recent financial crisis changed purchasing habits of consumers dramatically, enrollment for higher education is approaching record numbers. Altundemir explores the ways public institutions are accommodating the higher demand and increased enrollment, and the common solution found was cutting costs and increasing tuition. While many public institutions rely on some form of federal aid, the need for aid has been more critical due to the recent periods of economic uncertainty. "Until now, emergency federal

aid in the form of federal stimulus funding has helped many universities cover their budget shortfalls. But as of the beginning of 2011, most of that aid has already been used, and as a result, state universities are likely to feel the effects of budget cuts more acutely next year" (191). Altundemir's analysis found that at least 43 states have cut aid to public universities, and "adjusting for inflation, nearly all states are proposing to spend less money in 2012 than they spent in 2008, even though the cost of providing public services will be higher" (193). Both of these results are true for Texas and suggest that while funding is decreasing and the amount of cuts are increasing, the overall quality must inherently diminish at public institutions when compared to private institutions with similar academic prestige. In order to create economic growth, the overall level of human capital within a society should be increasing at a sustainable growth rate, and the government should be willing to fund knowledge creation in order to create the human capital necessary to support economic growth (Curran, 2009). With continued cuts to public funding of higher education, it is clear that there is a lack of governmental attention to one of the core tenants of the economic growth through increased human capital. Because of this lack of funding from the federal level, public institutions are left to deal with the budget cuts on their won. In addition to simply raising tuition in order to offset budget cuts and rising costs, some states are considering more drastic measures to reduce costs, such as "academic reorganizations (closing departments or entire campuses), curtailing student enrollment, layoffs, greater teaching workloads, and position eliminations" (193). In 2012, Texas proposed to "cut public college and university funding by 16 percent, likely forcing tuition increases, reductions in course offerings, and layoffs" (194). From Altundemir's study, it is clear that the landscape for

public higher education is changing drastically on both a national scale and in Texas specifically, with most changes having negative impacts on the educational quality of these institutions.

As the cost to attend college at the public and private level has increased over the last few decades, one may wonder how demand has been affected throughout the tuition growth period. In an article written for the *International Journal of Business and Economic Perpsectives*, Mohamad Hamadeh and Roy Khoueiri (2010) explore the elasticities of demand for higher education in the United States. One of the major assumptions that Hamadeh and Khoueiri make is that "education is considered to be one of the main catalysts of economic growth and development" (60), which is a valid assumption as education drives innovation and increases the overall human capital available in a society. Because of the importance of higher education in a society, "tuition determination is of strategic importance, and it needs to be carefully determined in order to attract students on the one hand and for revenues to cover costs on the other hand" (60). Hamadeh and Khoueiri's research explores the impact of increases in tuition fees on demand for higher education, the unemployment rate, wage rate, income and enrollment in private and public institutions in the US from 1964 to 2005. One of the major findings indicates that that every 1% increase in tuition at private institutions will result in a decrease in enrollment by 0.1%; whereas, a 1% increase in tuition at a public institution results in a 1.7% drop in enrollment. From this data, it is clear that price elasticity for private institutions is low while price elasticity for public institutions is very elastic. While the findings of this study are historical and backward looking, their relevance is still indicative of potential trends regarding the relationship between enrollment and

rising tuition costs. While private institutions generally raise tuition to maintain pace with inflation and to fund various improvements around campus, public institutions are generally raising tuition and laying off faculty to make up for decreases in funding from both the state and federal level. Given that the relationship between public institutions and tuition costs is highly sensitive, as public institutions continue to increase tuition, they begin to lose their primary competitive advantage over their private competitors; cost. From the vantage point of a prospective student balancing the quantitative and qualitative costs and benefits of attending a university, one begins to wonder when the qualitative factors outweigh the quantitative factors of attending a college or university. Although the cost differences may never become negligible between private and public institutions, as the gap between tuition costs begins to narrow, one may assume that the qualitative factors will become of higher importance to the prospective student. As indicated by the price elasticities at both private and public institutions, one may assume that with the current enrollment trends and rising demand to attend private institutions, that qualitative factors are beginning to hold greater weight than quantitative factors in terms of importance for the prospective student in the decision-making process. When a student attends a college or university, he or she is making an investment with the hope that the education received will be worth the initial cost. In this manner, colleges have an obligation to maximize the educational experience for the students (Rothschild and White, 1991). While the higher tuition in private institutions is being used to improve the quality of the institution through hiring additional faculty members and improving the infrastructure, higher tuition in public institutions is being associated with less funding, layoffs of faculty members and deteriorating facilities. As the quality of education begins

to deteriorate, whether through cuts in faculty, programs or a lack of necessary investment in infrastructure, students may not be receiving the full educational experience that a college or university should provide its students.

METHODS AND RESULTS

In order to analyze the costs, benefits and differences between private and public schools, a comparison of the costs and benefits of one private school and one public school in Texas will be used to draw further conclusions regarding national trends and to gain a better understanding of the cost differential. In addition to analyzing the differences in initial costs, the analysis will include a Net Present Value (NPV) analysis of attending either a private or public school by projecting cash flows though the end of graduation and into a career path. For this case study, the private school used was Texas Christian University (TCU), and The University of Texas at Austin (UT) was chosen as the public institution to analyze. For this case study, projections were made based on a prospective student enrolling in the University's business school, attaining an accounting degree and completing an additional year of schooling and achieving a Masters in Accounting. At TCU, this program is referred to as the MAc, and at UT the program is referred to as the Masters in Public Accounting (MPA). The career path of a graduate who begins as a Tax or Audit and Assurance associate at a Big 4 Accounting Firm (Deloitte, Ernst and Young, KPMG and PricewaterhouseCoopers) typically is the same throughout the industry. The typical roles include serving as an associate for approximately three years, followed by a promotion to a senior associate for another two to three years. After serving as a senior associate for three years, the individual is typically promoted to a manager position. The next and final promotion is to become a partner of the firm. The

timeframe for promotion differs with each firm. For the purpose of the NPV analysis used in this thesis, income projections were based on a graduate staying with the same accounting firm and reaching a partner status with the firm in the 11th year on the job.

Case Study

Texas Christian University (TCU) was founded in 1873 and is located in Fort Worth, Texas. According to TCU's Admissions site, there are currently 9,725 total students attending TCU, including 8,456 undergraduate and 1,269 graduate students. The current undergraduate average graduating class size is roughly 2,114 students and there are 19 residence halls on-campus to support on-campus living. The current student-to-faculty ratio is 13:1. In total, there are 131 undergraduate areas of study, 49 master's programs and 23 areas of doctoral study. TCU's freshman-to-sophomore retention rate was 90 percent for the 2011-2012 academic year. TCU's campus has a high amount of student involvement with over 200 student organizations available to students. In addition to broad student organizations, TCU is particularly well-known for their First Year Experience programs, including Academic Orientation, Frog Camp and Connections. As a smaller private college, TCU's base of 82,000 living alumni is rather small when compared to larger public institutions, but still widespread nonetheless. TCU recently joined the Big 12 Athletic Conference and was previously a member of the Mountain West Conference. TCU's Neeley School of Business has more than 1,800 undergraduate and more than 300 graduate students currently enrolled. Bloomberg Businessweek ranks the Neeley School of Business as the 28th best undergraduate business school in the nation and 22nd in terms of academic quality out of 145 schools surveyed. TCU's endowment is currently $1.2 billion, or $123,393.32 per student.

The University of Texas (UT) was founded in 1883 and is located in Austin, Texas. UT is one of the nation's largest universities with a student body of approximately 51,000 total students. According to The Princeton Review, the student-to-faculty ratio at UT is 18:1. There are 17 colleges and schools within UT and over 1,000 registered student organizations. As one of the largest public schools in the United States, UT also has one of the largest alumni bases with over 450,000 living alumni. UT's McCombs School of Business is one of the top ranked business schools in the country. Based on to the recent US News and World Report (2012), the McCombs School of Business is considered a "Top 7 Undergraduate Business Program in the Nation," and their accounting program is considered the best in the country.

Discussion of the "Social Discount Rate"

In the capital budgeting process, it is important to analyze the future cash inflows and outflows for a project in terms of their present value, or the value the cash flows are worth in terms of today's dollars. This analysis, commonly referred to as a net present value (NPV) or discounted cash flow (DCF) analysis, requires a rate to discount the future cash inflows and outflows into their present value in order to reach an accurate conclusion on whether to accept or reject a project:

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + ... + \frac{C_T}{(1+r)^T}$$

$-C_0 = Initial\ Investment$
$C = Cash\ Flow$
$r = Discount\ Rate$
$T = Time$

This discount rate is usually set by a company or investor as a "hurdle" rate, or it is representative of the cost of their capital structure and can be derived through the Capital

Asset Pricing Model (CAPM) or a weighted average cost of capital (WACC). CAPM requires knowledge of the risk-free rate (typically yields on Treasury bills or bonds), the company's beta and a historical risk premium. The CAPM approach is designed to measure a company's cost of equity capital. WACC requires the precise weights of debt, equity and preferred stock in a company's capital structure as well as the costs of each component. The cost of debt is calculated as the after-tax yield on long-term debt, the cost of equity is calculated through CAPM, and the cost of preferred stock is calculated as the percentage of the stock's value that is required to be paid out as a dividend. In a NPV analysis, a negative value is typically the only condition needed to reject a project while a positive NPV satisfies all conditions to accept a project. While finding the discount rate for capital budgeting purposes can be done in a somewhat efficient and straightforward manner through CAPM and WACC calculations, there is no defined process for finding a rate for personal or social investment decisions, also known as the social discount rate.

In a 2009 article from the *International Research Journal of Finance and Economics*, Samih Antoine Azar explores the precise ways to measure the social discount rate for the United States. Azar defines three particular ways to measure the social discount rate for US citizens. The first method analyzed the inflation-adjusted returns on Treasury securities, also known as the risk-free rate. The average rate used by the Office of Management and Budget over 1979 to 2008 was 4.4%. The second method looks at trade-offs in the inter-temporal utility of consumption, together with an estimate of the probability of death, and the long run behavior of consumption per capita and resulted in a range of 4.4% to 4.6%. The third approach is driven by market factors and trade-offs in

financial markets. The critical component of this method is that it assumes "that public budgets displace private investment and not private consumption" (207). This method resulted in a social discount rate of 5.66%. Azar refined the approach in the third method to allow borrowing by the individual investor rather than a collective group, such as a city. While the mathematical complexities of Azar's study are beyond the scope of this thesis, Azar's refined approach yielded a social discount rate for the individual investor to be 3.7%.

Assumptions in NPV Analysis

For the NPV analysis used in this thesis, the social discount rate is Azar's social discount rate of 3.7%. While this may not be the most conclusive measure for the social discount rate, Azar's research is detailed, and this rate reflects an accurate rate of return that individuals might expect to see from their education. In order to show the sensitivity of the NPV calculation in terms of varying the discount rate, a sensitivity analysis table is also included to illustrate how the NPV changes as the social rate increases and decreases. Within the NPV analysis, the cost of private institution tuition increases each year by the 10-year compound annual growth rate (CAGR) from 2001 to 2010 of 2.74%, and the cost of public tuition is grown each year by the 10-year CAGR from 2001 to 2010 of 3.57%. Though these growth rates are not specific to TCU or UT, they do capture the general trends at the institutional level and also illustrate that over the next few years, the cost of public tuition will likely grow faster than the cost of private tuition. In addition to growing tuition by these rates, one assumption made in the NPV analysis is that the average scholarship package amounts are also grown by these rates to offset the effects of rising tuition to the scholarship recipient. Over the course of the next few years,

the Federal Reserve has set an inflationary target of two percent (Spicer, 2012). While this inflationary target will not be the perpetual target of the Federal Reserve, the expected inflation rate used within the NPV analysis is 2 percent. The expected inflation rate is used in the NPV analysis to project the average scholarship package, room, board, books, supplies and miscellaneous expenses.

According to data from the Institute of Colleges and Universities in Texas (ICUT), approximately $156,469,696 in scholarships and financial aid was awarded to 9,142 students at TCU during the 2009-2010 school year. On a per-student basis, roughly $16,089.43 was awarded during the 2009-2010 school year. Assuming the amount awarded for scholarship and financial aid grows at least in line with tuition growth, the estimated amount in scholarship and financial aid awarded to students in the 2013-2014 school year would be:

$156,469,696*(1+.0274)^4 = $174,316,604.23 / 9,725 students = $17,924.59

According to data from the College Board, the average grant aid and tax benefits for students at public four-year institutions was $5,750 for the 2012-2013 school year and was unchanged from the 2011-2012 school year. Because data were unavailable for the specific amount of aid awarded to students at UT, the NPV analysis uses the College Board estimate for expected aid at UT for the 2013-2014 school year, which is $5,750.

The average income for accounting majors graduating in the class of 2012 from the TCU MAc program, including those going into all fields of accounting was $54,385, and the average income for accounting majors, including those going into all fields of accounting, graduating from the MPA program at UT in the class of 2012 was $54,175. While these average income levels reflect value in terms 2012 dollars, and the NPV

analysis begins with income starting in 2018, each of these amounts was grown by the chosen salary growth rate:

TCU 2018 Expected Average Salary = $54,385*(1+0.035)^6 = $66,853.05

UT 2018 Expected Average Salary = $54,175*(1+0.035)^6 = $66,594.91

Salaries at TCU and UT were both grown by 3.5% in the analysis, which is a conservative growth rate for each institution as it is on the lower end of recent salary growth rates for accounting. Each year, Robert Half International publishes a salary guide for the finance and accounting industries. For the purpose of this NPV analysis, salaries were compared between the Tax Services for Large and Audit and Assurance Services for Large firms in order to gain an accurate idea about mid-career salaries as it is typical for most graduates to enter into these roles at the Big 4 accounting firms. In the 2013 Salary Guide from Robert Half, it is clear that positions within Tax Services generally are higher than comparable level positions within Audit and Assurance (see below):

	2012			
Tax Services (Large Firms)*	Low Range	High Range	Average	% Change
Senior Manager / Director	$109,750.00	$175,000.00	$142,375.00	3.60%
Manager	$ 89,000.00	$122,750.00	$105,875.00	3.54%
Senior	$ 72,000.00	$ 94,250.00	$ 83,125.00	3.46%
1 to 3 years	$ 58,000.00	$ 75,250.00	$ 66,625.00	3.38%
Up to 1 Year	$ 51,500.00	$ 63,500.00	$ 57,500.00	3.04%

	2012			
Audit/Assurance Services (Large Firms)*	Low Range	High Range	Average	% Change
Senior Manager / Director	$86,750.00	$120,250.00	$103,500.00	3.38%
Manager	$72,500.00	$ 92,750.00	$ 82,625.00	3.63%
Senior	$57,000.00	$ 74,000.00	$ 65,500.00	3.63%
1 to 3 years	$48,000.00	$ 60,500.00	$ 54,250.00	3.23%
Up to 1 Year	$42,500.00	$ 52,000.00	$ 47,250.00	2.65%

	2012			
Tax/Audit/Assurance Averge (Large Firms)	Low Range	High Range	Average	% Change
Senior Manager / Director	$ 98,250.00	$147,625.00	$122,937.50	3.51%
Manager	$ 80,750.00	$107,750.00	$ 94,250.00	3.58%
Senior	$ 64,500.00	$ 84,125.00	$ 74,312.50	3.53%
Up to 1 Year	$ 47,000.00	$ 57,750.00	$ 52,375.00	2.86%

*Salary Data from the Robert Half 2013 Salary Guide

Since the average annual salaries reported for Accounting majors at TCU and UT include both the Tax and Audit and Assurance, mid-level career salaries for the purpose of the NPV analysis were based on the average between the two salary levels. The average salaries based on the data from Robert Half were grown each year by the 2012 to 2013 percentage change in salary level and projected through 2028 to fit the timeframe of the NPV analysis (see Appendix D: Salary Information).

For Working Year 1 (2018), the income level used for the prospective student in the NPV analysis is based on the average salary from TCU and UT and compared to the salary level from the Robert Half Guide for the category "Up to 1 Year." Income in Working Year and Year 3 (2017 and 2018) are compared to the Robert Half category of "1 to 3 years." When compared to the average salary level in 2018, the estimated income level for students from TCU will be approximately 7.75% higher than the national average in 2018. Students from UT will have an estimated higher salary than the national average by 7.33%. Starting with 2019, the income level for students from TCU and UT are projected based on the average level from the Robert Half Guide. Working Years 2 and 3 assume the student fits in the category of "1 to 3 years," Working Years 4 to 6 assume the student fits the role of "Senior," Working Years 7 to 10 assume the graduate fits the role of "Manager," and Year 11 assumes the graduate is in the role of "Senior

Manager / Director," which would be the equivalent of partner at most accounting firms. In each of these years, the salaries at TCU and UT are adjusted to be higher than the national average by the amount estimated in 2018. For example, the 2019 expected salaries at TCU and UT are:

TCU = $75,906.61*(1+.0775) = $81,789.45

UT = $75,906.61*(1+.0733) = $81,473.63

The above method is used when adjusting the salary level in each year through Working Year 11 (2028).

Discussion of Results

With all of these assumptions included in the NPV analysis, the expected NPV for attending TCU is $831,396.94 while the expected NPV for attending UT is $863.057.00:

	TCU	UT
Net Present Value	$ 831,396.94	$ 863,057.00
Internal Rate of Return	31.91%	38.54%
Modified Internal Rate of Return	17.58%	19.70%
Payback	6.14	5.70
Discounted Paybacl	7.42	6.88

Despite TCU's tuition being more than twice the cost of tuition of UT, the NPV for attending UT is only 3.81% higher than the NPV for attending TCU (see Appendix A: Texas Christian University and Appendix B: University of Texas for detailed results). While there is a large difference in tuition, private institutions tend to award more scholarships, so the actual cost is generally reduced from the stated price for tuition for most students. Over the long-run, studies also show that private education per-capita income exceeds that of public education, and private education is also more likely to

yield lower levels of income inequality relative to public education (Cardak, 2004). While the NPV analysis used within this thesis indicated close trends in terms of income between UT and TCU, the degree of closeness between the projected income of TCU and a school of lesser academic ranking than UT would likely push the NPV in TCU's favor. While there are obvious tradeoffs between TCU and UT, both are well-respected by third-parties, and both are quality institutions that any student should consider attending, especially those who live in Texas. Through the effect of the assumptions within this model, this analysis indicates that while initial costs may be high for attending private institutions, the long-term benefits are nearly identical in financial terms, which suggests that students should choose UT over TCU solely based on financial reasons. Although the costs may be higher to attend TCU than UT, and due to the growing demand for privatized education, this analysis suggests that there is value within the private institution that cannot be captured by only analyzing the costs of attending the institution. That being said, the basis for determining where to attend college should not solely rely on the costs of the degree, but should also take into consideration the quality of the degree and the amount of personalization associated with the educational process.

DISCUSSION

Though private education is more expensive than public institutions, there is value embedded in the premium that must be weighed in determining the cost relative to a public university. If there was no embedded value in the higher cost of tuition, then it would be irrational for students to attend private institutions. At a public institution, students are exposed to fewer individual resources, can be enrolled in core and major classes with hundreds of students, have less access to Honors-based programs, lower

student-to-faculty ratios and typically pay increasingly more each year for tuition as costs are cut. While public education may be more reasonable from a financial perspective, the cost that is not seen as payments are made is the diminishing quality when compared to private education. For a prospective student, getting a degree from a public or private institution should not solely be based on cost, as this analysis suggests, though it should be considered. The National Association of Independent Colleges and Universities (NAICU) announced in October 2012 that "published tuition and fees at the nation's private, nonprofit colleges and universities rose 3.9 percent for the 2012-13 academic year, the lowest rate in at least four decades...at the same time, institutional student aid budgets at private colleges increased an average of 6.2 percent for 2012-13." When net tuition (published tuition less financial aid) is adjusted for inflation, net tuition at private institutions has dropped 4.1 percent from 2006 to 2012 according to the College Board. These statistics indicate a growing trend among prospective college students who are realizing the increasing benefits from attending private institutions over public institutions. One of the drivers behind this trend is due to the rising tuition costs at public institutions relative to private institutions. It is also important to consider the qualitative differences between the private and public institution, such as the reduction in public quality relative to private quality due to increasing levels of tuition amidst budget cuts. While the student may be able to gain education at a lower price at a public institution, there will be less personalization involved in the process of attaining the degree as the student will be in larger classes at the major and core levels, receive less individual attention, have limited access to resources, and will not have as much student-teacher interaction as the student at the private institution.

While this study does analyze the costs from the perspective of two institutions in Texas, the study cannot be generalized to include all institutions within Texas or the United States. The purpose of the analysis is to illustrate that while the costs of a private education may be significantly higher than a public education, the benefits in terms of the present value of the future cash outflows and inflows is closer than one would expect. The NPV analysis also does not take into account the effect of student loans. While the rate of student loans is increasing, it is difficult to forecast an average timeline for when the loans would be repaid. In the NPV analysis, one of the assumptions is that the student will be paying tuition each semester as billed by the institution. Based on this assumption, students who generally rely on financial aid beyond scholarships to finance their education would be unlikely to pursue a degree at a private institution as the costs of the degree would substantially increase the size of the loan needed. While this may not be the case for every student, it is logical to assume that most students relying on financial aid as their main source of funding for their degree would be most concerned with the immediate costs of tuition, rather than the long-term benefits, and would thus choose to attend an in-state public institution. Although the NPV analysis does not take into account the utilization of aid to finance degrees and the growing amount of issued and outstanding student loans, it will be particularly interesting in the next decade to see the effects of these components of financing education.

One topic worth further research is analyzing the time it takes to attain a degree at private versus public institutions and the drivers behind the difference. According to the US Department of Education (2012), the graduation rate for students is higher when attending a private institution versus a public institution. The median time to earn a

degree was approximately 55 months (4.58 years) for individuals graduating from public institutions versus 45 months (3.75 years) for individuals graduating from private institutions. Additionally, NAICU reports that, "all types of students, regardless of family income, race, or ethnicity, are as likely to earn their degree in four years at a private college or university as they are in six years at a state institution. Seventy-nine percent of private four-year college graduates earned their degree in four years, compared to 49 percent at state four-year institutions" (NAICU, 2013). Because of the difference in time it takes to get a degree at each type of institution, there must be some common factors behind students being able to gain their degrees faster at private institutions while their peers at public institutions are taking a longer time. Though these averages are based on national data, the trend is something worth further research and could draw additional conclusions regarding the quality of private versus public education.

One of the fast-growing emerging trends within higher education is the ability to take courses online. While this certainly reduces the expenses from an institutional perspective, the costs are also reduced from an individual's perspective as well. Although online education may be a cost-effective way to attain a degree, it is a different form of education as there is limited to no human interaction involved in the online courses, with the exception of emails and online discussion boards. While gaining a degree is certainly meant to grow one's knowledge of an array of subjects, and the major subject in detail, the interaction between students and teachers is critical in gaining a well-rounded education. When analyzing online education and courses in this manner, there is a high opportunity cost to the individual who chooses to take courses online as they miss out on a critical component in the educational process. In addition to enrolling in an institution

and being able to take online courses as part of satisfying curriculum requirements, some institutions are offering free online classes in a platform called "massive open online courses" (MOOCs). MOOCs and other similar platforms have received growing interest over the last few years as a result of a public desire to freely share information (Martin, 2012). Through platforms such as Coursera and edX, top institutions, including Harvard, MIT, and Stanford, are providing individuals who are wishing to learn more about particular subjects with access to online lectures, including tests and a certificate upon completion of the course (Lewin, 2013). While the idea of MOOCs is appealing to a cost-sensitive prospective student, it may eventually cost the user some fee in order to gain official credit for the completion of a course. Additionally, skeptics of MOOCs argue that in order to gain the maximum educational experience, students need to be able to have interaction with their teachers, an element of the educational process that cannot be simulated by the advanced technology and programming of MOOCs (Carr, 2012). The lack of human interaction associated with a MOOC may leave the student with an incomplete educational experience relative to students who attended physical institutions. Because of the recent growth of the MOOCs offered and of their unknown effect from an employer perspective, it is difficult to predict how they will ultimately impact enrollment in higher education and job placement upon completion. The analysis of this thesis does not take into account the effects of online education on physical enrollment in college, and as the emergence of this trend is relatively new, it will be interesting to see how institutions implement this program going forward.

Implications

For prospective students, this analysis indicates that while the initial costs are

higher to attend a private institution instead of a public institution, the financial benefits in the long-term are relatively close. Because of this dynamic regarding cost, prospective students who have the financial means to do so should also place emphasis on the quality of the institution at the structural and individual level when considering a school to attend. While the initial costs may be significantly less at a public institution, the cost comes at the expense of lower individual attention as the student-to-faculty ratios are higher at public institutions. Additionally, the budgets at public institutions are highly sensitive to changes in federal and state budgets. As budgets are cut at the state and federal level, so too will public institutions need to cut their budgets. One way institutions mitigate budget cuts is through increasing the cost of tuition or through faculty layoffs. Through raising tuition in the face of budget cuts, the student is essentially paying for the same quality of education at a higher price than prior to the budget cuts. In this scenario, the ultimate economic burden of the budget cut is not passed on to the institution, but to the student. Layoffs as a result of budget cuts may save money in the short-term, but will also diminish the quality of the institution and impact the student-to-faculty ratio negatively. Private institutions, while still somewhat subject to changes in federal and state allocations to education, are significantly less exposed to these risks. Because private institutions are less exposed to federal and state budgeting changes, tuition increases can be utilized to hire more faculty members, increase the infrastructural quality of the campus and capital improvements to accommodate any increases in enrollment.

For private and public institutions, this analysis can be utilized in different ways. For public institutions, this analysis shows that based on a purely financial decision, it

still makes sense to attend a public institution. Public institutions can utilize this information and highlight to prospective students that financial burdens will be less while attending their institution instead of a private institution. For private institutions, this analysis can be used to show students that while costs for tuition may be higher, there are many benefits to attending a private institution that is not relevant when analyzing schools only on the cost of enrollment. While the analysis shows that it makes more financial sense to attend a public school in terms of costs, there are other quantitative and qualitative factors of the educational experience that are not taken into consideration, such as benefits and individual resources on campus, career opportunities, student-to-faculty ratios, number of classes offered, majors offered, cost of tuition, average class sizes, average amount of aid granted to incoming students, graduation rate and the public perception of the university as measured by third-parties. Private institutions also tend to be more specialized than public institutions, especially in degrees with high student demand, such as social sciences (Teixeira, Rocha, Biscaia & Cardoso, 2012). The impact of these factors are difficult to measure in terms of future benefits, but through smaller class sizes and individualized experiences at private institutions, students will have the ability to participate more in class, increase their critical thinking skills and have a higher ability to interact with faculty on an individualized basis. In addition to smaller class sizes, students at private institutions will also be exposed to smaller alumni networks relative to public institutions. As a generalized result, "students who graduate from highly selective private colleges in the United States are a small segment of the population [and] they tend to play a disproportionate role in society as top politicians, business leaders, and prominent intellectuals" (Dezhbakhsh & Karikari, 2010). Access to exclusive

alumni networks is another qualitative factor that prospective students may take into consideration in the educational decision-making process.

From a purely financial perspective, it makes logical sense to attend a public institution over a private institution as the costs are typically significantly less. As institutions are aware of this dilemma regarding tuition costs, some private institutions are competing with public universities on a cost basis beyond simply cutting tuition rates. A recent Bloomberg BusinessWeek article by Alison Damast (2009) explores some of the ways that private institutions are competing more aggressively with public schools for high quality students. Due to the financial situation of the economy, "some private schools are starting to take a more aggressive approach to recruiting students...promising them a top-rate private school education at a public school price" (2). At the time when the article was published in April 2009, a NAICU survey found that "nearly 92 percent of private colleges said they plan to increase financial aid next academic year" (2). Davis and Elkins College in Elkins, West Virginia and California Lutheran University in Thousand Oaks, California, though thousands of miles apart, both utilize similar programs to entice students to attend their costly institutions. Both of these institutions offer prospective students the same rates as similar public schools in their state or large discounts to tuition as long as the prospective student has received admittance to at least one of the listed schools. In the case of California Lutheran University, they offer the same tuition rate to students as other California public schools as long as the prospective student has been admitted into either the University of California at Los Angeles or University of California at Santa Barbara. Davis & Elkins College offers a 75 percent discount to students who have also been admitted to West Virginia State University.

Programs like these are reasons why prospective students are now looking at private institutions at a growing rate. While these programs are relatively new, they may be beneficial programs that other private institutions should consider implementing, especially if they are losing quality prospective students to public institutions on the basis of tuition costs.

CONCLUSION

As seen through the NPV analysis, the cost of attaining a degree at a public institution compared to a private institution is most likely going to be less at the public institution relative to the private institution. Although the model used within this thesis is based on specific assumptions for TCU and UT, this model can also be adapted to compare each institution to other schools. In the NPV analysis used for the purposes of this thesis, TCU is compared to a business school with a higher ranking. With slight adjustments to the NPV analysis to compare TCU to a school with a lower business school ranking than UT, the NPV analysis would result with TCU having a higher present value assuming the other business school had a lower starting salary relative to TCU. Though this model is not conclusive for all schools in Texas and the United States, this model can be used to compare similar institutions so that a prospective student can have a more accurate understanding of what the costs and benefits are of a degree and career path in present value terms. Though this model only analyzes one major at two different institutions, this model can also be adapted for other majors and to look at a variety of career paths. Although the NPV analysis will yield important quantitative factors that should be implemented into the educational decision-making process, it is also important to take qualitative facts into consideration before reaching a conclusion as to what

educational experience is best for a prospective student.

In times of poor macroeconomic conditions, one measure of fiscal policy that can be taken is through budget cuts and increasing tax revenues, also known as austerity. In the Keynesian school of thought, austerity measures will have a contractionary effect on the economy, will further depress aggregate demand, and will have a dragging effect on the economy (Fontana and Sawyer, 2011; Bertola and Drazen, 1993). In an analogous manner, when a public institution's budget is cut and they respond through layoffs of faculty and raising tuition, they are effectively causing the student to pay an increased rate of tuition for a degree of lesser quality and thus reducing the qualitative benefits of the educational experience. Because of this dynamic, public institutions are at risk of budget cuts from the state and local levels, and the ultimate economic burden is passed onto the student. Additionally, because the government supplies and funds public education indirectly through taxpayers, there is a lack of incentive to ensure that the government provides the necessary resources to preserve the quantity and quality of the educational system as the taxpayers relieve some of the economic burden relative to the direct recipients of the public education (Shaw, 2010). As a result of this reduced incentive to preserve and enhance the quality of the public education system relative to other publicly funded goods, public institutions are exposed to the risk of budget cuts due to federal and state funding power. At private institutions, there is a heightened incentive to enhance the quality of the education provided, because if the quality begins to diminish, students will be unwilling to pay the high costs of tuition and will enroll elsewhere. Due to the differences in the budgeting process, private institutions are able to avoid these risks since their sources of funding do not rely primarily on federal and state

funds. Because of this, private institutions are better positioned to preserve the quality embedded in their institution, which may serve as an attractive element for a prospective student.

As seen in recent enrollment trends, there is a currently upward sloping trend for the demand for private education. While enrollment trends for both the private and public sector are increasing, the demand for private education is increasing at a faster rate. One area of further study could analyze the impact of increased demand over time for private institutions relative to public institutions and the rise in rankings of the private schools relative to the public schools. As a result of this trend, findings may show that the increased demand in the private sector could increase the NPV of the private institution, and over time the private NPV may surpass the public NPV.

While there is limited research relating to the return on investments for higher education degrees, prospective students should consider potential majors they would like to pursue, what fields they would like to work in and where they would like to attend college. All of these factors should be taken into consideration so that the student can be well-positioned to find a job after graduation, and they should pursue the options that provide them with the largest financial payout relative to the costs required to attend school. In order to make the educational decision-making process easier for prospective students, Senators Ron Wyden (Democrat, Oregon) and Marco Rubio (Republican, Florida) are bringing up legislation that would allow for more transparency regarding the salary levels of recent graduates (Simon and Corkery, 2013). The proposed legislation would require states to make salary information from college graduates accessible to the public. Although the process of collecting all of the data, especially for salary information

in mid-career and late-career individuals, may be tedious, the transparency would help prospective students choose majors and schools to better prepare them to find jobs once they graduate and enter the work force.

Because of the importance of education in a society, the quality of education needs to be not only preserved but also improved upon in order for a country to sustain economic growth. With enrollment rates increasing at rapid rates in the United States, there needs to be quality institutions, both at the private and public level, to support the demand for education and to provide the students with worthwhile experiences that will prepare them for a variety of career paths. Public institutions and private institutions both have positive and negative elements that are different for each prospective student. While public institutions can compete with private institutions on cost, private institutions can compete with public institutions on the quality and personalization throughout the educational experience. Prospective students should take into consideration not only the costs associated with a degree but should also take into consideration the experience of getting the degree and the lasting impact it will have on their life. Through increased awareness of the long-term benefits of a degree in terms of financial costs and rewards at a variety of institutions, both private and public, prospective students will be able to decide which school, major and career path best suits their long-term goals.

Appendix A: Texas Christian University

Texas Christian University (TCU)				
	2013 Freshman	2014 Sophomore	2015 Junior	2016 Senior
Tuition	$ (34,500.00)	$ (35,444.29)	$ (36,414.42)	$ (37,411.10)
Room	$ (6,550.00)	$ (6,729.28)	$ (6,913.46)	$ (7,102.69)
Board	$ (4,100.00)	$ (4,212.22)	$ (4,327.51)	$ (4,445.96)
Books/Supplies	$ (1,200.00)	$ (1,224.00)	$ (1,248.48)	$ (1,273.45)
Misc. Travel Expenses	$ (420.00)	$ (428.40)	$ (436.97)	$ (445.71)
Misc. Personal Expenses	$ (1,500.00)	$ (1,530.00)	$ (1,560.60)	$ (1,591.81)
Average Scholarship Package (including aid)	$ 17,924.59	$ 18,415.19	$ 18,919.23	$ 19,437.06
Income	$ -	$ -	$ -	$ -
	2017 MAc	2018 Working (Year 1)	2019 Working (Year 2)	2020 Working (Year 3)
Tuition	$ (39,100.00)	$ -	$ -	$ -
Room	$ (7,297.09)	$ -	$ -	$ -
Board	$ (4,567.65)	$ -	$ -	$ -
Books/Supplies	$ (800.00)	$ -	$ -	$ -
Misc. Travel Expenses	$ (454.62)	$ -	$ -	$ -
Misc. Personal Expenses	$ (1,623.65)	$ -	$ -	$ -
Average Scholarship Package (including aid)	$ 19,969.06	$ -	$ -	$ -
Income	$ -	$ 66,853.05	$ 81,789.45	$ 84,496.03
	2021 Working (Year 4)	2022 Working (Year 5)	2023 Working (Year 6)	2024 Working (Year 7)
Tuition	$ -	$ -	$ -	$ -
Room	$ -	$ -	$ -	$ -
Board	$ -	$ -	$ -	$ -
Books/Supplies	$ -	$ -	$ -	$ -
Misc. Travel Expenses	$ -	$ -	$ -	$ -
Misc. Personal Expenses	$ -	$ -	$ -	$ -
Average Scholarship Package (including aid)	$ -	$ -	$ -	$ -
Income	$ 109,437.30	$ 113,303.04	$ 117,305.34	$ 154,901.39
	2025 Working (Year 8)	2026 Working (Year 9)	2027 Working (Year 10)	2028 Working (Year 11)
Tuition	$ -	$ -	$ -	$ -
Room	$ -	$ -	$ -	$ -
Board	$ -	$ -	$ -	$ -
Books/Supplies	$ -	$ -	$ -	$ -
Misc. Travel Expenses	$ -	$ -	$ -	$ -
Misc. Personal Expenses	$ -	$ -	$ -	$ -
Average Scholarship Package (including aid)	$ -	$ -	$ -	$ -
Income	$ 160,448.26	$ 166,193.76	$ 172,144.99	$ 229,972.93

Texas Christian University (TCU)				
	2013 Freshman	2014 Sophomore	2015 Junior	2016 Senior
Total Cash Flows	$ (30,345.41)	$ (31,152.99)	$ (31,982.21)	$ (32,833.66)
Cumulative Cash Flows	$ (30,345.41)	$ (61,498.40)	$ (93,480.61)	$ (126,314.27)
Discounted Total Cash Flows	$ (30,345.41)	$ (30,041.46)	$ (29,740.68)	$ (29,443.06)
Discounted Cumulative Cash Flows	$ (30,345.41)	$ (60,386.87)	$ (90,127.55)	$ (119,570.61)

	2017 MAc	2018 Working (Year 1)	2019 Working (Year 2)	2020 Working (Year 3)
Total Cash Flows	$ (33,873.95)	$ 66,853.05	$ 81,789.45	$ 84,496.03
Cumulative Cash Flows	$ (160,188.21)	$ (93,335.16)	$ (11,545.71)	$ 72,950.32
Discounted Total Cash Flows	$ (29,292.12)	$ 55,747.76	$ 65,769.53	$ 65,521.68
Discounted Cumulative Cash Flows	$ (148,862.73)	$ (93,114.97)	$ (27,345.43)	$ 38,176.25

	2021 Working (Year 4)	2022 Working (Year 5)	2023 Working (Year 6)	2024 Working (Year 7)
Total Cash Flows	$ 109,437.30	$ 113,303.04	$ 117,305.34	$ 154,901.39
Cumulative Cash Flows	$ 182,387.62	$ 295,690.67	$ 412,996.00	$ 567,897.40
Discounted Total Cash Flows	$ 81,834.29	$ 81,702.01	$ 81,569.95	$ 103,869.73
Discounted Cumulative Cash Flows	$ 120,010.54	$ 201,712.55	$ 283,282.50	$ 387,152.23

	2025 Working (Year 8)	2026 Working (Year 9)	2027 Working (Year 10)	2028 Working (Year 11)
Total Cash Flows	$ 160,448.26	$ 166,193.76	$ 172,144.99	$ 229,972.93
Cumulative Cash Flows	$ 728,345.66	$ 894,539.41	$ 1,066,684.40	$ 1,296,657.33
Discounted Total Cash Flows	$ 103,750.44	$ 103,631.28	$ 103,512.26	$ 133,350.72
Discounted Cumulative Cash Flows	$ 490,902.67	$ 594,533.95	$ 698,046.22	$ 831,396.94

Net Present Value	$ 831,396.94
Internal Rate of Return	31.91%
Modified Internal Rate of Return	17.58%
Payback	6.14
Discounted Payback	7.42

Appendix B: University of Texas

University of Texas (UT)				
	2013 Freshman	2014 Sophomore	2015 Junior	2016 Senior
Tuition	$ (10,738.00)	$ (11,121.21)	$ (11,518.11)	$ (11,929.16)
Room/Board	$ (12,292.00)	$ (12,628.44)	$ (12,974.09)	$ (13,329.20)
Books/Supplies	$ (874.00)	$ (897.92)	$ (922.50)	$ (947.75)
Misc. Travel Expenses	$ (420.00)	$ (428.40)	$ (436.97)	$ (445.71)
Misc. Personal Expenses	$ (1,500.00)	$ (1,530.00)	$ (1,560.60)	$ (1,591.81)
Average Scholarship Package (including aid)	$ 5,750.00	$ 5,955.20	$ 6,167.73	$ 6,387.84
Income	$ -	$ -	$ -	$ -
	2017 MAc	2018 Working (Year 1)	2019 Working (Year 2)	2020 Working (Year 3)
Tuition	$ (29,275.00)	$ -	$ -	$ -
Room/Board	$ (13,694.02)	$ -	$ -	$ -
Books/Supplies	$ (973.69)	$ -	$ -	$ -
Misc. Travel Expenses	$ (454.62)	$ -	$ -	$ -
Misc. Personal Expenses	$ (1,623.65)	$ -	$ -	$ -
Average Scholarship Package (including aid)	$ 6,615.81	$ -	$ -	$ -
Income	$ -	$ 66,594.91	$ 81,473.63	$ 84,169.76
	2021 Working (Year 4)	2022 Working (Year 5)	2023 Working (Year 6)	2024 Working (Year 7)
Tuition	$ -	$ -	$ -	$ -
Room/Board	$ -	$ -	$ -	$ -
Books/Supplies	$ -	$ -	$ -	$ -
Misc. Travel Expenses	$ -	$ -	$ -	$ -
Misc. Personal Expenses	$ -	$ -	$ -	$ -
Average Scholarship Package (including aid)	$ -	$ -	$ -	$ -
Income	$ 109,014.72	$ 112,865.54	$ 116,852.38	$ 154,303.26
	2025 Working (Year 8)	2026 Working (Year 9)	2027 Working (Year 10)	2028 Working (Year 11)
Tuition	$ -	$ -	$ -	$ -
Room/Board	$ -	$ -	$ -	$ -
Books/Supplies	$ -	$ -	$ -	$ -
Misc. Travel Expenses	$ -	$ -	$ -	$ -
Misc. Personal Expenses	$ -	$ -	$ -	$ -
Average Scholarship Package (including aid)	$ -	$ -	$ -	$ -
Income	$ 159,828.71	$ 165,552.02	$ 171,480.28	$ 229,084.92

University of Texas (UT)				
	2013	2014	2015	2016
	Freshman	Sophomore	Junior	Senior
Total Cash Flows	$ (20,074.00)	$ (20,650.77)	$ (21,244.53)	$ (21,855.78)
Cumulative Cash Flows	$ (20,074.00)	$ (40,724.77)	$ (61,969.30)	$ (83,825.08)
Discounted Total Cash Flows	$ (20,074.00)	$ (19,913.96)	$ (19,755.57)	$ (19,598.82)
Discounted Cumulative Cash Flows	$ (20,074.00)	$ (39,987.96)	$ (59,743.53)	$ (79,342.35)
	2017	2018	2019	2020
	MAc	Working (Year 1)	Working (Year 2)	Working (Year 3)
Total Cash Flows	$ (39,405.17)	$ 66,594.91	$ 81,473.63	$ 84,169.76
Cumulative Cash Flows	$ (123,230.25)	$ (56,635.34)	$ 24,838.29	$ 109,008.06
Discounted Total Cash Flows	$ (34,075.18)	$ 55,532.50	$ 65,515.57	$ 65,268.68
Discounted Cumulative Cash Flows	$ (113,417.53)	$ (57,885.03)	$ 7,630.55	$ 72,899.22
	2021	2022	2023	2024
	Working (Year 4)	Working (Year 5)	Working (Year 6)	Working (Year 7)
Total Cash Flows	$ 109,014.72	$ 112,865.54	$ 116,852.38	$ 154,303.26
Cumulative Cash Flows	$ 218,022.78	$ 330,888.32	$ 447,740.70	$ 602,043.96
Discounted Total Cash Flows	$ 81,518.30	$ 81,386.53	$ 81,254.98	$ 103,468.65
Discounted Cumulative Cash Flows	$ 154,417.52	$ 235,804.05	$ 317,059.03	$ 420,527.69
	2025	2026	2027	2028
	Working (Year 8)	Working (Year 9)	Working (Year 10)	Working (Year 11)
Total Cash Flows	$ 159,828.71	$ 165,552.02	$ 171,480.28	$ 229,084.92
Cumulative Cash Flows	$ 761,872.67	$ 927,424.70	$ 1,098,904.97	$ 1,327,989.89
Discounted Total Cash Flows	$ 103,349.82	$ 103,231.12	$ 103,112.56	$ 132,835.80
Discounted Cumulative Cash Flows	$ 523,877.51	$ 627,108.63	$ 730,221.20	$ 863,057.00

Net Present Value	$ 863,057.00
Internal Rate of Return	38.54%
Modified Internal Rate of Return	19.70%
Payback	5.70
Discounted Payback	6.88

Appendix C: Sensitivity Analysis

Sensitivity Analysis			
Social Discount Rate	**NPV (TCU)**	**NPV (UT)**	**NPV Difference**
1.50%	$ 1,081,260.13	$ 1,112,812.94	2.92%
2.00%	$ 1,018,220.90	$ 1,049,818.20	3.10%
2.50%	$ 959,065.52	$ 990,694.71	3.30%
3.00%	$ 903,529.52	$ 935,178.99	3.50%
3.50%	$ 851,368.04	$ 883,027.08	3.72%
3.70%	**$ 831,396.94**	**$ 863,057.00**	**3.81%**
4.00%	$ 802,354.29	$ 834,013.04	3.95%
4.50%	$ 756,278.11	$ 787,927.49	4.18%
5.00%	$ 712,944.64	$ 744,576.29	4.44%
5.50%	$ 672,173.15	$ 703,779.37	4.70%
6.00%	$ 633,795.90	$ 665,369.62	4.98%
6.50%	$ 597,657.16	$ 629,191.86	5.28%
7.00%	$ 563,612.27	$ 595,101.97	5.59%
7.50%	$ 531,526.79	$ 562,965.99	5.91%
8.00%	$ 501,275.73	$ 532,659.40	6.26%
8.50%	$ 472,742.82	$ 504,066.34	6.63%
9.00%	$ 445,819.87	$ 477,079.00	7.01%
9.50%	$ 420,406.14	$ 451,597.02	7.42%
10.00%	$ 396,407.82	$ 427,526.90	7.85%
10.50%	$ 373,737.46	$ 404,781.52	8.31%
11.00%	$ 352,313.56	$ 383,279.66	8.79%
11.50%	$ 332,060.10	$ 362,945.57	9.30%
12.00%	$ 312,906.15	$ 343,708.56	9.84%
12.50%	$ 294,785.50	$ 325,502.66	10.42%
13.00%	$ 277,636.33	$ 308,266.25	11.03%
13.50%	$ 261,400.86	$ 291,941.76	11.68%
14.00%	$ 246,025.11	$ 276,475.39	12.38%
14.50%	$ 231,458.60	$ 261,816.83	13.12%
15.00%	$ 217,654.11	$ 247,919.01	13.91%

Appendix D: Salary Information

Salary Information

	2012		
Tax Services (Large Firms)*	Low Range	High Range	Average
Senior Manager / Director	$ 109,750.00	$ 175,000.00	$ 142,375.00
Manager	$ 89,000.00	$ 122,750.00	$ 105,875.00
Senior	$ 72,000.00	$ 94,250.00	$ 83,125.00
1 to 3 years	$ 58,000.00	$ 75,250.00	$ 66,625.00
Up to 1 Year	$ 51,500.00	$ 63,500.00	$ 57,500.00

	2013			
Tax Services (Large Firms)*	Low Range	High Range	Average	% Change
Senior Manager / Director	$ 112,000.00	$ 183,000.00	$ 147,500.00	3.60%
Manager	$ 90,750.00	$ 128,500.00	$ 109,625.00	3.54%
Senior	$ 74,000.00	$ 98,000.00	$ 86,000.00	3.46%
1 to 3 years	$ 59,750.00	$ 78,000.00	$ 68,875.00	3.38%
Up to 1 Year	$ 52,750.00	$ 65,750.00	$ 59,250.00	3.04%

	2012		
Audit/Assurance Services (Large Firms)*	Low Range	High Range	Average
Senior Manager / Director	$ 86,750.00	$ 120,250.00	$ 103,500.00
Manager	$ 72,500.00	$ 92,750.00	$ 82,625.00
Senior	$ 57,000.00	$ 74,000.00	$ 65,500.00
1 to 3 years	$ 48,000.00	$ 60,500.00	$ 54,250.00
Up to 1 Year	$ 42,500.00	$ 52,000.00	$ 47,250.00

	2013			
Audit/Assurance Services (Large Firms)*	Low Range	High Range	Average	% Change
Senior Manager / Director	$ 89,000.00	$ 125,000.00	$ 107,000.00	3.38%
Manager	$ 74,750.00	$ 96,500.00	$ 85,625.00	3.63%
Senior	$ 58,750.00	$ 77,000.00	$ 67,875.00	3.63%
1 to 3 years	$ 49,500.00	$ 62,500.00	$ 56,000.00	3.23%
Up to 1 Year	$ 43,250.00	$ 53,750.00	$ 48,500.00	2.65%

	2012		
Tax/Audit/Assurance Averge (Large Firms)	Low Range	High Range	Average
Senior Manager / Director	$ 98,250.00	$ 147,625.00	$ 122,937.50
Manager	$ 80,750.00	$ 107,750.00	$ 94,250.00
Senior	$ 64,500.00	$ 84,125.00	$ 74,312.50
1 to 3 years	$ 53,000.00	$ 67,875.00	$ 60,437.50
Up to 1 Year	$ 47,000.00	$ 57,750.00	$ 52,375.00

	2013			
Tax/Audit/Assurance Averge (Large Firms)	Low Range	High Range	Average	% Change
Senior Manager / Director	$ 100,500.00	$ 154,000.00	$ 127,250.00	3.51%
Manager	$ 82,750.00	$ 112,500.00	$ 97,625.00	3.58%
Senior	$ 66,375.00	$ 87,500.00	$ 76,937.50	3.53%
1 to 3 years	$ 54,625.00	$ 70,250.00	$ 62,437.50	3.31%
Up to 1 Year	$ 48,000.00	$ 59,750.00	$ 53,875.00	2.86%

*Salary Data from the Robert Half 2013 Salary Guide

Tax / Audit / Assurance Services Average Salary Levels (Projected Through 2028)

	2014	2015	2016	2017
Senior Manager / Director	$ 131,713.78	$ 136,334.14	$ 141,116.58	$ 146,066.78
Manager	$ 101,120.86	$ 104,741.89	$ 108,492.60	$ 112,377.61
Senior	$ 79,655.22	$ 82,468.95	$ 85,382.07	$ 88,398.09
1 to 3 years	$ 64,503.68	$ 66,638.24	$ 68,843.44	$ 71,121.61
Up to 1 Year	$ 55,417.96	$ 57,005.11	$ 58,637.71	$ 60,317.07

	2018	2019	2020	2021
Senior Manager / Director	$ 151,190.62	$ 156,494.21	$ 161,983.84	$ 167,666.04
Manager	$ 116,401.74	$ 120,569.98	$ 124,887.47	$ 129,359.57
Senior	$ 91,520.64	$ 94,753.50	$ 98,100.55	$ 101,565.84
1 to 3 years	$ 73,475.17	$ 75,906.61	$ 78,418.51	$ 81,013.54
Up to 1 Year	$ 62,044.53	$ 63,821.46	$ 65,649.29	$ 67,529.46
TCU:	$ 66,853.05	$ 69,192.91	$ 71,614.66	
% Difference	*7.75%*	*8.42%*	*9.09%*	*8.42%*
UT:	$ 66,594.91	$ 68,925.73	$ 71,338.13	
% Difference	*7.33%*	*8.00%*	*8.67%*	*8.00%*

	2022	2023	2024	2025
Senior Manager / Director	$ 173,547.56	$ 179,635.40	$ 185,936.80	$ 192,459.24
Manager	$ 133,991.81	$ 138,789.92	$ 143,759.85	$ 148,907.75
Senior	$ 105,153.53	$ 108,867.95	$ 112,713.58	$ 116,695.05
1 to 3 years	$ 83,694.44	$ 86,464.06	$ 89,325.34	$ 92,281.29
Up to 1 Year	$ 69,463.48	$ 71,452.88	$ 73,499.27	$ 75,604.26

	2026	2027	2028
Senior Manager / Director	$ 199,210.47	$ 206,198.54	$ 213,431.74
Manager	$ 154,239.99	$ 159,763.17	$ 165,484.14
Senior	$ 120,817.17	$ 125,084.89	$ 129,503.36
1 to 3 years	$ 95,335.07	$ 98,489.90	$ 101,749.13
Up to 1 Year	$ 77,769.53	$ 79,996.82	$ 82,287.90

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ABSTRACT

This thesis explores the premium that private institutions charge students relative to public institutions and also analyzes whether or not paying the premium for private education is worth the extra cost. In addition to exploring the premium, this thesis also explores why enrollment is growing at a more rapid rate at private institutions relative to public institutions. Through analyzing macroeconomic indicators and trends in higher education, this thesis also explores the differences between the private and public higher education. To avoid drawing generalized conclusions for trends on a national level, this thesis is limited to an analysis of trends and developments in Texas. The primary goal of this thesis is to explore the composition of the higher education premium between private and public institutions through a detailed case study and net present value (NPV) analysis of one private and public institution in Texas. An examination of the present value of the costs to attend college and of the relevant qualitative factors will be used to determine if the cost of a private higher educational experience is worth the initial explicit and implicit costs to the prospective student.