HIGHER EDUCATION ACCESS GAP: LOTTERY-BASED MODEL FOR MITIGATING POSTSECONDARY EDUCATION ACCESS-GAP IN NORTH CAROLINA

by

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ABSTRACT

ERIC MATTSON GAMBLE. A lottery-based model for mitigating postsecondary education access-gap in North Carolina.
(Under direction of DR. CHARLES HUTCHISON).

The rising cost of obtaining tertiary education threatens the educational dreams of thousands of North Carolina students and creates an educational access-gap between low- and high-income students. Although there are various needs-based state and federal governmental assistance for students, the cost of tertiary education remains formidable and creates a mental barrier that disrupts the educational future orientation of low-income students. In this work, a model for relieving tertiary education costs using a restricted fund for cohorts of kindergarteners and the power of time-value of money is offered. This model is funded by pigovian taxes and disbursed after the successful completion of a qualifying post-secondary certificate or degree. It promotes the educational future orientation of low-income students by mitigating their future costs of college education, and, therefore, eliminating finance-based mental barriers of their education.

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DEDICATION

To my lovely wife, Helena and our four beautiful children, Danilson, Lucas, Halle, and Isaiah, we did it! To my father (via teachings and memories), mother, and brother, thank you for being the role models you are and all of the support you most generously gave. And finally, to all dreamers: If you can conceive it you can achieve it!

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CHAPTER 1: INTRODUCTION

The value of higher education has been a perennial interest of Americans since their colonization of the States. Early institutions of higher learning were initially designed for the education of the elite social class. These early institutions were not structured to educate the masses, nor could the masses afford to pay for such an education. Paying for a higher education has therefore been historically a topic of concern, especially for individuals with meager means. Since the 1940s, especially after World War II, postsecondary education has been a major concern for federal officials and state officials as well. The pursuit of a postsecondary education is intricately woven into the fabric of the American Dream, as represented in the North Carolina constitution, in Article IX, Section 9 - Benefits of Public Institutions of Higher Education:

> The General Assembly shall provide that the benefits of The University of North Carolina and other public institutions of higher education, as far as practicable, be extended to the people of the State free of expense.

The United States' society has realized the benefits of having an educated populous and endeavors to provide all of its citizens access to a quality education. J.T. Adams, in "Epic of America" (1931), defines The American Dream as,

> that dream of a land in which life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement. It is a difficult dream for the European upper classes to interrupt adequately, and too

> many of us ourselves have grown weary and mistrustful of it. It is not a dream of motor cars and high wages merely, but a dream of social order in which each man and each woman shall be able to attain to the fullest stature of which they are innately capable, and be recognized by others for what they are, regardless of the fortuitous circumstances of birth position.

The American dream has become a part of America's social fiber, and higher education plays a major role in its achievement.

Increased Pursuit of The Dream

Institutions of higher learning across the United States have experienced significant growth in student enrollments over the past 20 years. The 1980s saw a growth of 15 percent while the 1990s experienced a growth of 13 percent, resulting in a growth of almost 27 percent between the years of 1980 to 2000. Within these growth periods, minorities outpaced the average growth of Whites. Between 1990 and 2000 Black and Hispanic males' fulltime enrollment in colleges and universities grew 19 and 35 percent respectively, while women of the same races grew even faster than their male counterparts, at 29 and 42 percent respectively. Between the years of 1980 and 2000, enrollment of Black students grew almost 35 percent while their Hispanic counterparts' enrollment swelled to a little more than 63 percent (see Table 1). These increased enrollment numbers demonstrate individuals' desire to pursue their dream, via the pathways of postsecondary education.

Educational Pathway of Urban Students Pursuing the Dream

The increase in postsecondary enrollment numbers, as they pertain to minorities, is quite encouraging given some of the struggles these individuals might have had to

overcome. After World War II, many urban cities across America experienced a mass exodus of middle- and upper-class households to the suburbs (Isenberg, 2004; Wilson, 1987). This exodus concentrated lower income households in certain geographic areas and left many cities, over time, in difficult economic situations. As the middle- and upper-class households left cities, so did many of the jobs. With the departure of these jobs and households, Wilson (1987) also suggest that a critical social support system which were the jobs and middle class values afforded to less fortunate households of these afflicted areas, also left the cities. These support systems extended themselves throughout neighborhoods and schools and helped to maintain a social and economic balance (Wilson, 1987).

With the absence of middle- and upper-income households in or near urban cores, the deterioration of city services and infrastructure, caused by declines in tax revenues, claimed many innocent victims in the demise of these urban cores. The victims were and still are the students receiving their education in one of the many low performing public schools within these areas. The low academic performance of a number of schools in many urban locations across America give rise to the concerns of academic achievement gaps. These concerns are not unwarranted, because achievement gap is diminished, and therefore other issues should be considered as contributing to the low college attendance rates. According to United States Department of Education, an academic achievement gap in reading and mathematics has existed between White students and their counterparts, who are Black and Hispanic for a long period of time – even before White flight. The Department of Education administers an assessment called the National Assessment of Educational Progress (NAEP) to measure reading and mathematical skills

of students aged 9, 13, and 17. The latest result of 2008 NAEP still indicates that a gap exist between the performance of White students and their minority contemporaries; however, since the initiation of NEAP, starting in 1971 for Blacks and Whites and in 1975 for all three races, the gap between Hispanic and Black students with White students has closed significantly (NAEP 2008).

TABLE 1:

Percent Change in Enrollments 1980 to 2000

	Pct. Chg. 1980 to 1990	**Pct. Chg. 1990 to 2000**	**Pct. Chg. 1980 to 2000**
All	**15.4%**	**13.4%**	**26.8%**
- Men	10.3%	7.7%	17.2%
- Women	20.1%	18.1%	34.6%
Blacks	**12.7%**	**25.1%**	**34.7%**
- Men	9.4%	18.9%	26.5%
- Women	15.1%	29.0%	39.7%
Hispanics	**39.8%**	**39.1%**	**63.3%**
- Men	36.4%	34.7%	58.4%
- Women	42.6%	42.2%	66.8%
Others (less Black & Hispanic)	**13.7%**	**8.6%**	**21.1%**
- Men	8.4%	3.4%	11.5%
- Women	18.8%	13.1%	29.4%

Achievement gaps, witnessed in the K-12 environment, can play a major role in

the number of minorities that obtain a bachelors' degree or higher. According to United States Census data, 24 percent of Americans ages 25 and older have bachelor degrees or post graduate degrees, while a little more than 14 percent of Blacks and 10 percent of Latinos attain similar levels of educational success (U.S. Census Bureau, Summary File 2 and Summary File 4). These numbers are troubling due to the correlation of educational attainment and household income: as educational attainment goes up household income goes up with it (U.S. Census Bureau, 2005-2009 American Community Survey). According to a 2005 report by Fox, Connolly, and Snyder, a degree completion gap exists between high test scoring low-income students, with a completion rate of 30 percent, high test scoring middle-income students, with a completion rate of 51 percent, and high test scoring high-income students, with a completion rate of 74 percent (see Figure 1). In light of these relationships, the rising cost of postsecondary education is becoming more of an issue for academically qualified lower- and middle-income student households. In a 2003 report, a congressional analysis of college cost was executed by the U.S. House Committee on Education and the Workforce. The state-by-state analysis found an increase in higher education cost in every state for 4-year institutions and an increase in cost for 48 states for 2-year institutions (College Cost Crisis, 2003).

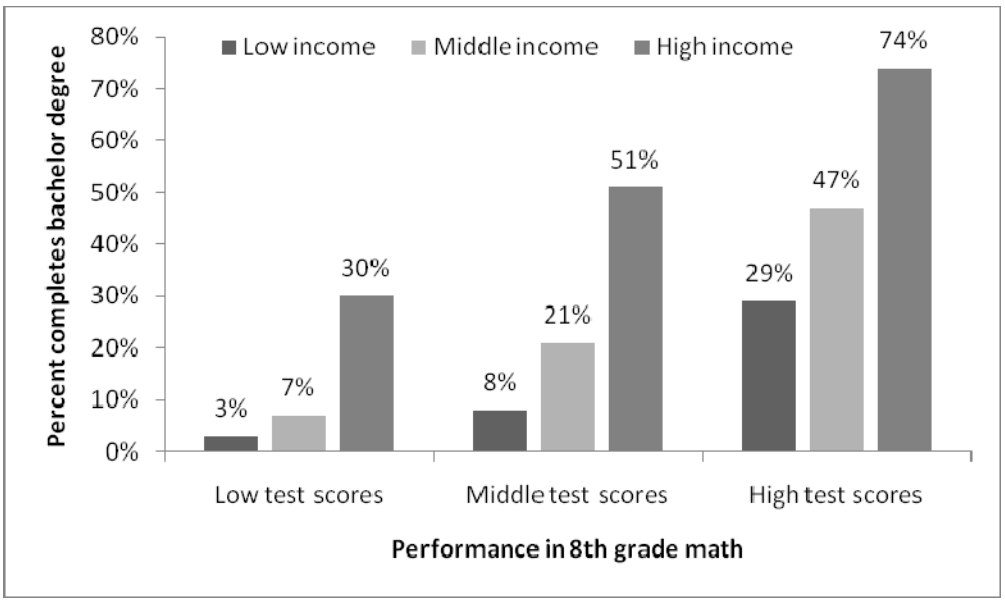

FIGURE 1: Educational outcomes and socioeconomic status

Source: Fox, Connolly, and Snyder (2005).

Increased Costs of the Dream

A 2004 report from the National Center for Education Statistics (NCES) stated, in dollars not adjusted for inflation, that dependent undergraduates who attended full time in 1990 were charged an average of $1,100 in tuition and fees at public 2-year institutions, $2,900 at public 4-year institutions, and $12,000 at private not-for-profit 4-year institutions. By 2000, the averages had risen to $1,600, $4,300, and $15,900, respectively (Paying for College, 2004). These changes over time also have significant impact of how minorities attend postsecondary schools, as will be explained below.

A report by St. John, Paulsen, and Carter (2005) found African Americans demonstrate price sensitivity toward higher education. They used NCES data and a logistic regression model to illustrate the effects of grant money received, loan money received, and the cost of tuition on African Americans' choices for attending institutions

of higher learning. The study found these three variables to be significant. It is appropriate to note at this point that although significance between African American and White students' responses to monies received and tuition costs was found, significance was also found within the African American group. Notably, "there was substantial economic diversity among African American college students. While the majority were low income and highly price sensitive, approximately one quarter were in the upper-middle or upper-income groups." (St. John, Paulsen, and Carter, 2005, p. 560) The pricing effect demonstrated by college going African American is not an issue for this race alone; the greater American population at large is also affected by the increased costs of pursuing a piece of the American Dream that involves tertiary education. The Dream is being challenged by increased postsecondary costs, increased average financial need, and decreased expected family contributions (Paying for College, 2004). The combination of these three factors on a given student has the potential of creating an access-gap to postsecondary education. The three ways a student can make up this potential short fall in funds to pay for their postsecondary education and thus making "The Dream" a realistic probability once again, is by relying on grants, loans, or income from working.

Higher Education Price Index, Consumer Price Index, and Household Income

Researchers of time series data commonly use level-set indices to allow for year-to-year comparisons. The Higher Education Price Index (HEPI) and Consumer Price Index (CPI) are two such indices. These indexes allow a comparison of one year's cost to another year's cost, given a base year. The HEPI was developed and is maintained by the Commonfund Institute, located in Washington D.C.: Commonfund is an investment

management and consulting firm with more than $11 billion under management in one of its operating units. Commonfund caters to educational institutions, foundations, nonprofits, and other similar entities. The CPI is calculated, maintained, and reported by the Bureau of Labor Statistics, which is an agency in the United States Department of Labor. The HEPI is pegged at 1983 levels, where the index equaled 100. Similarly, the Consumer Price Index is pegged at 1983 levels to, which allows a relative comparison of HEPI and CPI changes year-over-year.

In the 2008 HEPI report, Commonfund has the index, calculated to be 269.7, a 3.6 percent increase over 2007's index level. In 2008 the Consumer Price Index was at 215.7, a 3.7 percent increase over the previous year's index level. Between years 2000 to 2008 the HEPI has moved from 196.9 to 269.7 as opposed to the CPI movement of 172.5 to 215.7. These results indicate that the cost of higher education has been growing at a faster rate than other items commonly purchased by the general public. The steady increase in higher education cost since 1983 has made it more difficult for families to pay for students' tertiary education, thereby requiring them to seek additional financial assistance to close the revenue shortfall between what families can pay and the cost to obtain the education. A review of the median household income in North Carolina between the years of 1999 and 2006 shows an ever increasing demand on household income to satisfy postsecondary educational costs (see Figure 2). These movements in median household incomes and average tuition within the state of North Carolina represent a change of 6.8 percent and 60.8 percent increase, respectively. In 1999, the average North Carolina tuition costs consumed 12.9 percent of the North Carolina median household income. By 2006 this percentage was up to 19.4 percent.

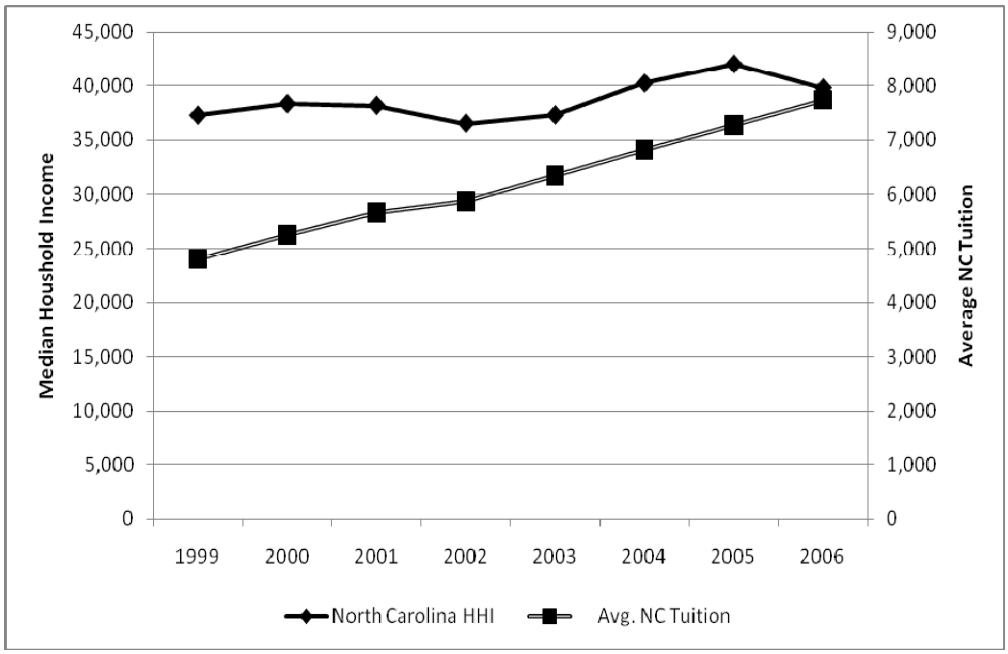

FIGURE 2: North Carolina Median household income and average in-state tuition costs.

Governmental Assistance of the Dream

In 1965 the federal government passed the Higher Education Act. The original goal of this law was to "provide need-based financial aid to low-income students to increase their access to postsecondary education and give them reasonable alternatives from which to choose an appropriate program" (Paying for College, 2004, p. 3). College cost soared during the 1980s, making the pursuit of a college education more difficult for middle-income families, thereby making this issue a governmental priority. The 1992 Reauthorization of the Higher Education Act enacted changes to address this issue. One of the changes dealt with the method for calculating need. This change made it easier for middle-income households to qualify for assistance by raising loan limits for Stafford loans, allowing students to borrow more, and extending the federal guarantee to all unsubsidized student loans regardless of need. To further address the middle-incomes'

issue of paying for college, “within the last decade, the federal government has begun to use the tax code to assist families with annual incomes up to $100,000 with postsecondary education expenses.” (Paying for College, 2004, p. 3) The common method for households to take advantage of this tax benefit is by using the federal government sponsored Coverdell Education Savings Account or a state sponsored 529 Savings Plan. However, families with incomes below $20,000 a year typically do not have a high enough tax burden to benefit from tax programs such as the Coverdell Education Savings Account or a 529 Plan.

The federal government provided $11.3 billion in student need-based aid via the Pell Grant in 2002 (College Costs Crisis, 2003). During this same year, states supported postsecondary education via operating subsidies to public institutions and student grants. Grants made by states during this same time period totaled $5.6 billion (National Association of State Student Grant and Aid Programs (NASSGAP, 2003). A number of states utilize pigovian taxes, like those from state education lotteries, to provide supplemental financial assistance to state residents pursuing postsecondary education. Such taxes are easy to implement because they are not imposed on all residents of a state and only apply to specific services or trade. These services and trade are usually not applied to primary needs of individuals or households, therefore making the payment of the tax optional.

A Dream Deferred?

Might the access gap in tertiary education be growing? With postsecondary education costs continually going up, is any particular group in society losing ground? According to Howard (2003), fewer students from urban schools are attending college,

also fewer are completing college. Smith & Szymanski (2003) suggest that low- and middle-income students are finding it more difficult to pay for college, some may have to forgo the pursuit of a higher education, while others may have to consider signing up for military duty to help offset the costs of education. The underlying reasons triggering these decisions are as complex as the environments urban student come from.

William Julius Wilson, in his 1987 book, *The Truly Disadvantaged*, paints a picture of the inner city, the socio-economic status of its inhabitants, public policies and school environment, and the effect these neighborhood conditions might have on the people that live there. His work demonstrates that a pattern exists in the demise of suffering urban environments. This pattern starts with a decrease of corporate or personal investment within an area. This lack of investment eventually effect households' income by decreasing them and potentially leading to the loss of jobs.

With the loss of jobs, households seek support systems, which include family, friends, nonprofit organizations, and/or governmental agencies. For some time, residents of these investment-poor zones might depend upon the support they have access to. However, these support services could have parameters associated with them that limit their usefulness, limitations such as length of time, number of times utilized, or a specific amount given or utilized. When these support systems start to deteriorate, a sense of helplessness sets in. The helpless feeling becomes more intense as more and more of the support systems can no longer provide for the needs of the community. At this point, a sense of hopelessness might be in place.

The sense of hopelessness can affect people's aspirations and future orientations (Hunt, James, & Tierney; 2006). As Mickelson (1991) suggests (seen in Bohon, Johnson,

& Gorman; 2006), hopelessness to some degree affects educational aspirations. These aspirations (dreams) are continuously challenged in a number of urban areas and without an environment of ongoing support and the shortage of bridging experiences extending positive self-worth or societal-worth building opportunities, a sense of worthlessness takes hold. The pathway of joblessness, helplessness, hopelessness, and worthlessness contribute to a myriad of other well researched areas including educational attainment, poverty, homelessness, and crime to identify a few (Hunt, James, & Tierney; 2006).

Statement of the Problem

A portion of the American Dream is being challenged by increased postsecondary costs, increased student financial need, and decreased expected family contribution rates for tertiary education. Postsecondary educational costs have risen significantly over the last twenty years. Federal and state governments have attempted to respond to the original goal of the Higher Education Act of 1965 by providing more funds to its financial aid programs year after year. The recent global economic collapse has increased the need for social assistance programs and increased the number of jobless individuals, thereby negatively affecting the amount of contribution a family can give their student pursuing postsecondary attainments. Financial aid assistance using future-value dollars is explored in this work. The questions under consideration are: (a) To what extent can lottery proceeds be used in conjunction with time-value-of-money principles to offer a model for supporting postsecondary education? (b) What are the key factors in growing the value of the investment? (c) What are some of the factors that come into play with the disbursement of proceeds? It is the belief of this researcher that education

is the great equalizer for all American citizens, and every effort should be extended in making certain that this dream catalyst is not lost to economics.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

Governmental commitment to increasing the participation of citizenry in higher education is evident among developed countries (Farr, 2003). This commitment, however, is cause for some public officials and other non-governmental bodies to question how widened access to tertiary education is achieved and who benefits from it. Zink (2005) questioned if equality of educational opportunity is politically feasible. This research demonstrated that governments have three avenues to choose from when considering an education funding methodology: ones that focus on lower-income, middle-income, or upper-income family households. Therefore, one of the major issues for access to higher education seems to be the cost to attend and it is not just an American issue. This issue threatens the "American Dream." Using this as the contextual backdrop, this research will focus on the access to higher education for North Carolina urban high school students, using the theoretical lens of public good.

The review of literature will revisit the history of financial assistance for college-bound students from federal and state governments for need-based and non-need-based aid. Particular attention was paid to postsecondary grant aid since this is the most desirable form of financial aid a student can receive. However, providing this form of financial aid may prove to be quite difficult in today's economy, with increased pressures on governmental budgets, higher unemployment caused by market contractions, and

reduced support for public postsecondary education. Therefore, new funding sources must be sought out and developed to continue providing individuals seeking the opportunity to obtain a higher education the ability to do so.

The Massification of Higher Education

The need and competition for an educated work force is felt throughout the world. Spurred by the interconnectedness of financial, industrial, and educational markets, the world is truly becoming more globalized. This globalization of markets demands a borderless flow of ideas, capital, and in some cases people, whereby making education even more valuable and sought after in today's global society. Nations across the globe look to the tertiary system of education of developed countries, like the United States of America to identify methods and procedures to implement in their counties' postsecondary systems. One such area of study is the expansion of higher education to accommodate the masses. To grow an education system to handle a larger student population, a number of issues must be addressed such as funding, facilities, curriculum, and access, to name a few. Each of these areas presents its own set of unique issues. One of these, within the context of access, is funding.

Global Massification of Higher Education

The tertiary levels of education in Japan and the United States "are seen to be advanced in the provision of mass higher education" (Wang, 2003). Following the Second World War, Japan was converted from an elite higher education system to an "Americanized" system with more than 3.1 million students in its system, as of 2002 (Altbach & Ogawa, 2002, p. 1). These researchers note that as the Japanese academic systems expanded, so did its diversity. This diversity, however, refers to the number and

types of postsecondary institutions added over the years. More specifically, the diversity pertains to whether an institution is public, provincial, or private and if it were a university, college, or junior college.

TABLE 2:

Growth of higher education in America 1980-2005

Year	Institution number		Student number	
	Institutions	Growth rate	Enrollments	Growth rate
1980	2,832	-	11,702,478	-
1990	3,903	37.8%	13,999,736	19.6%
1995	5,564	42.6%	14,708,917	5.1%
2000	6,018	8.2%	16,136,860	9.7%
2005	6,689	11.1%	18,262,102	13.2%

Source: Author's calculation of NCES IPEDS data

In the Sultanate of Oman the demand for tertiary education is not being met by the institutions currently in place. The Omani government and it people place a high value on attaining an education. Prior to 1970 only three primary schools existed, educating 900 boys compared to its post-1970 renaissance period of almost 600,000 students of both sexes and 1000 schools (Al-Lamki, 2002). This dramatic growth has outpaced the capabilities of the postsecondary public institution in Oman. By 1999, the primary-secondary education system of Oman was producing 32,000 secondary graduates, making the competition for the 8,198 postsecondary seats available quite

fierce. One of the recommendations from the Al-Lamki (2002) study was the call to "expand and diversify the system of higher education (both public and private) to meet the needs of the public for postsecondary education." Similar to the Japanese massification, the Omani massification revolves around the number of students and the necessary infrastructure to educate the student population. These issues of massification diversity are centered on infrastructure and not racial characteristics.

The European Union's higher education massification, driven by the integrative education policy of the European Union (EU), has an overriding focus of a single converged multinational system (Kivinen & Nurmi, 2003). The standardization of the EU higher education system can be seen as the driver behind the issues typically associated with massification. However, the massification issues the EU system is confronted with include all of the aspects of massification defined earlier. The EU not only has to address infrastructural and enrollment issues, like Japan and Oman, they also have to address social cultural issues.

A number of the tertiary systems of education in the present day European Union were previously elite provincial systems. With the unification of the EU countries, the melding of various social and cultural perspectives must also occur (Kivinen & Nurmi, 2003). This integrative process the EU higher education system must undergo will change the faces of students which once attended particular institutions throughout the system. The tracking of these face changes can be indicative of how accessible postsecondary education is to those who "for a complex range of social, economic, or cultural reason were traditionally excluded from, or under-represented in, higher education" (Schuetze & Slowey, 2002, p. 312).

American Higher Education Massification

The early American system of higher education was designed as an elite system, modeled after the European system the American colonist were accustomed to. "Elite systems of higher education were exclusive or, rather, exclusionary. They were designed for the best and brightest" to provide a steady stream of individuals to "fill privileged and prestigious roles in the [labour] market" (Scott, 1998, p. 113). However, as America's economic base grew so did the need of an educated citizenry. This need be can evidence by the development of normal schools during the late nineteenth and early twentieth centuries. These schools, predecessors to state teacher colleges, were established to educate individuals, usually young women, to become teachers in the growing base of common schools, which today encompass primary and secondary education (Ogren, 2003, pp. 641-642). As the need for common school educators increased, the number of normal schools also increased. The expanded mission of normal schools to teacher colleges than to present day state colleges and universities can be viewed as a massification of higher education.

With massification, diversity becomes a topic of focus because diversity brings with it "nontraditional" students; whereby, requiring new considerations (Altbach & Ogama, 2002; Jongbloed, 2002; Ogren, 2003; Schuetze & Slowey, 2002). As normal schools became state colleges and universities, the massification of American Higher Education started with the faces of women. States which established normal schools for Blacks typically are agricultural or mechanical colleges or universities today. North Carolina and Oklahoma also established normal schools for Native Americans (Orgen, 2003). Today, the new faces in the postsecondary arena are Asian, Hispanic, and

nonresident aliens. College enrollment, in the United States, between the years of 1980 and 2005 has grown rapidly.

TABLE 3:

Gender enrollment 1980 - 2005

Year	Gender count		Gender percentage	
	Women	Men	Women	Men
1980	6,018,516	5,683,962	51.4%	48.6%
1990	7,635,072	6,364,664	54.5%	45.5%
1995	8,203,255	6,505,662	55.8%	44.2%
2000	8,951,017	7,185,843	55.5%	44.5%
2005	10,523,067	7,739,035	57.6%	42.4%

Source: Author's calculations of NCES IPEDS data.

Over these twenty-five years, the number of students pursuing a postsecondary education has increased 56 percent; from enrollments of 11.702 million to 18.262 million (see Table 3). This massification of higher education is evidenced via the increased student body and increased numbers of institutions providing tertiary education across the country (see Table 2). These increased enrollments are attributed to the common belief that the attainment of a higher education leads to a higher standard of living. Therefore, the acquisition of a college degree is widely coveted by people from all racial, religious, and/or social classes (Al-Lamki, 2002; Scott, 1998; Wang, 2003). Massification of higher education can also be viewed as the shift from an elite education system to an

"inclusionary" education system (Scott, 1998, p. 113). The inclusionary philosophy, seen in the massification process, is deemed desirable by most nation-states around the world.

Another view of higher education massification is the growth in the number and type of institutions established to provide postsecondary education. If success for a country's postsecondary system is defined by how diverse its infrastructure and racial profile is, then the American higher education system should receive high marks. The changing demographics of this system over the past two decades are reflective of its efforts to diversify. The majority of enrollment growth in the 1980s and 90s were students over the age of 25, women, working adults, and part-time attenders, while only sixteen percent of today's student body would be classified as traditional students (Levine, 2001). Johnstone (2004) supports Levine's (2001) statement by pointing out that older students, "formerly by-passed by the system" prior to the transformation from elite to massification, are pursuing tertiary-level education with the belief it is a major component for "national economic growth and provider of individual opportunity and prosperity" (p. 407).

To accomplish this national economic growth, the massification of the American postsecondary system has added more than 3,800 postsecondary institution and 6.5 million students between the years of 1980 and 2005. This growth accounts for a 136 percent swell in the number of postsecondary institutions and a 56 percent increase in the number of students pursuing tertiary education in the United States. Similar to Japan and Oman, the American system has had to enlarge its infrastructure to address the phenomenon of massification, while like the European Union, it needed to address the issue of racial diversity.

The growth in the numbers of individuals pursuing a postsecondary education has also inflated the amount of federal and state assistance governmental agencies have put toward need-based and non-need-based aid to assist with the costs of obtaining a tertiary degree.

Higher Education Access Gap

Students from lesser means may potentially have to defer or forgo their pursuit of a higher education because of the confluence of increased postsecondary costs, increased demand for postsecondary education, increased competition for available seats in prestigious postsecondary institutions, increased need for postsecondary financial aid, and household incomes not keeping pace with ever increasing costs of tertiary education. In 2002, Longanecker cited a report from the Advisory Committee on Student Financial Assistance titled *Access Denied* stating, "the substitution of middle-income affordability and merit for access as policy goals has seriously undermined access" (p. 31).

As early as 2001, education researchers have warned about the shift from need-based to merit-based financial aid in higher education (Longanecker, 2002). Data from the National Association of State Student Grant and Aid Programs (NASSGAP) supports the fact that a greater percentage of funding is flowing into the non-need-based grant programs than need-based programs. Although the evidence from NASSGAP suggests that merit-based aid is increasing rapidly, this growth has not affected the growth in need-based aid. For the academic year 2000-2001 non-need-based aid totaled a little more than $1 billion, while non-need-based aid during the 2004-2005 academic year totaled $1.738 billion, in current dollars (NASSGAP, 2004). This growth in non-need-based grants equates to a 59 percent growth in funding levels within the five-year period.

During the same period, need-based grant funding increased more than 33 percent.

A 2007 Issue Brief entitled Higher Education Accountability for Student Learning produced by the National Governors Association (NGA), states "[g]ains in college-going have occurred among all ethnic groups, although the access gap between groups remain. Byrne (2006) cites a Heller and Schwartz 2002 publication where their findings suggest that "diminishing governmental support for four-year institutions, the movement away from affirmative action, and the shift in financial aid policy from need to merit expanded the access gap for many students." The term "access gap" can be viewed as a more contemporary term that has long been prevalent and researched within the body of literature referred to as cost of education. Within this body of literature many well respected organizations, institutions, and researchers have attempted to analysis and communicate the apparent situation revolving around the increasing costs of obtaining a postsecondary education. However, this view of the literature commonly looks at the institution's costs and the student's ability to pay, given the various avenues of financial support available to any particular student. The intent of the paper is to offer another avenue of financial support for students to reduce or offset the cost they incur to obtain a postsecondary education.

The issue of postsecondary access gap for educationally prepared low-income students is a topic of interest for urban education researchers. According to United States Census data 10.8 percent of North Carolina families live below the poverty line (U.S. Census Bureau, 2006-2008 American Community Survey). Bowers (2000), states that one of the issues students in urban schools face is a negative economic household environment.

Not all reports addressing low-income students' access to college revolve around the issue of cost, some place more emphasis on the accessibility and flow of financial information, than potential students' needs. In a report by The Campaign for College Opportunity (2007), they suggest that a gap exist between college aspirations and college knowledge, that is to say the knowledge necessary to address the cost of college, is the issue. Harnisch (2009) looks at these same disparities and points out that not only is there a strong correlation with students' household income but issues also exist with this group of students' preparedness and future aspirations. These issues mirror the ones urban educators endeavor to address.

Higher Education Benefits and Financial Aid in the United States

The higher education system in the United States started with the founding of Harvard College, currently known as Harvard University, in the state of Massachusetts in 1636 (Harvard). The College of William and Mary and the Collegiate School, currently known as Yale University, followed in 1693 and 1701 in the states of Virginia and Connecticut, respectively (William; Yale). Tuition for students, during these founding years was free at William & Mary, and the Collegiate School. Harvard imposed a fee upon its students during these founding years; however, the typical student paid for these fees by performing an on-campus job that required menial labor. This form of labor is considered to be the first form of higher education financial aid, commonly seen today in work-study programs, with financial aid from Federal and State sources currently tending to be distributed in two major manners, need-based and non-need-based financial assistance.

Federal Financial Aid

The increase of cost, for tertiary education, has made it more financially difficult for students to attend colleges and universities across the nation, especially for those from lower socioeconomic backgrounds. Making postsecondary education more financially accessible to both middle-income and low-income households should be a priority for education administrators and states' publically elected officials. A significant foundation has been laid over the past 60 years, because both federal and state level government officials recognized that attending an institution of higher learning was cost prohibitive to a large number of its citizenry. To address this issue, government officials sought ways to utilize public funds to make higher education more accessible; hence, the social experiments of the Servicemen's Readjustment Act of 1944, the National Education Defense Act of 1956, the Higher Education Act of 1965, and various state grants and loans programs. These programs implemented powerful educational access frameworks for achieving a greater good for society via access to education. The Serviceman's Readjustment Act could be deemed an entitlement, because all qualifying veterans of World War II were afforded the opportunity to utilize the benefits offered within the Act, where the National Education Defense Act could be identified as a non-need-based financial assistance program, and the Higher Education Act is a non-need and need-based program. Prior to these social experiments, direct financial aid to students primarily came from colleges and private donors (Creech & Davis, 1999).

The G.I. Bill.

Toward the end of World War II federal government officials realized, "a postwar America faced with the loss of millions of jobs, creating unprecedented unemployment"

was unacceptable (Veterans). To address this undesirable state of economy, a special panel, identified as the National Resource Planning Board, was organized in 1942 to develop and recommend various solutions (Veterans). In June, 1943, the panel recommended a series of programs for education and training (Veterans). The first draft of the Servicemen's Readjustment Act, commonly referred to as the GI Bill, was completed on January 6, 1944. Passage of the bill first came from the Senate on March 24, 1944 with a unanimous vote. A unanimous vote was reached on May 18, 1944 by the House of Representatives. The new law provided six benefits: education and training, loan guarantee for a home, farm or business, unemployment pay for up to 52 weeks, job finding assistance, building materials for Veterans Administration hospitals, and military review of dishonorable discharges; all administered by the Veterans Administration (Veterns).

The G.I. Bill is referred to as America's first great natural experiment in the realm of education financial assistance, which ended July 25, 1956 (Retrieved from: www.gibill.va.gov/gi_bill_info/history.htm). Out of the veteran population of 15.4 million, approximately 7.8 million were trained. This number included 2.2 million attending college, 3.4 million attending other schools, 1.4 million obtaining some form of on job-training, and 690 thousand pursuing farm training (Veterans). The total cost of the World War II education program was $14.5 billion (Veterans). The Servicemen's Readjustment Act of 1944 was followed by the Veterans Readjustment Assistance Act of 1952. This act was prompted by the Korean War. Like the World War II program, it provided education, training, as well as loans for homes, farms and businesses (Veterans). The Veterans Readjustment Assistance Act ended on July 31, 1955. Of the 5.5 million

eligible veterans, 2.4 million received training, while 1.2 million attended institutions of higher learning (Veterans). In 1966, the Veterans Readjustment Benefits Act was signed into law by President Lyndon B. Johnson. This act extended these benefits to post-Korean and Vietnam era veterans. During the years of this program (1966-1989) a total of 8.2 million eligible recipients benefited from these programs, of which, 5.1 million attended colleges (Veterans). The GI Bill is still a viable means by which veterans can attain training and education. The current education plan is referred to as the Montgomery G.I. Bill.

The Higher Education Act of 1965

President Lyndon B. Johnson signed, what is today another historically significant Act, the Higher Education Act of 1965 (HEA). The 89th Congress of the United States at the first session enacted Public Law 89-327:

> To strengthen educational resources of our colleges and universities and to provide financial assistance for students and postsecondary and higher education (Pub. L. No. 89-327).

The passing of the HEA established grants, loans, and other programs to help students pursue education beyond secondary schooling. Since its enactment, the Higher Education Act of 1965 was reauthorized in 1968, 1972, 1976, 1980, 1986, 1992, 1998, and most recently in 2008. Title IV of the HEA defines the various grants and loans available to students pursuing higher levels of education. Part A., of Title IV, Grants to Students, establishes need-based grants, where Part B., establishes the Federal Family Education Loan Program, which are need-based and non-need based loans. The means test the federal government uses to assess a student's ability to pay for higher education is

based upon the Expected Family Contribution (EFC). This calculation determines how much students or their family is expected to contribute toward the student's educational expense. The EFC is calculated by the Department of Education after an applicant has filled out a Free Application for Federal Student Aid (FAFSA). "From 1966 through 2002, an estimated 50 million students and their families borrowed over $485 billion of federal student loans to pursue postsecondary education. In the course of the nearly 40 years of the federal student loan program, more than half of the $485 billion was borrowed in the first 30 years, while the balance has been borrowed in just the past seven years" (http://www.studentloanfacts.org/loanfacts/fastfacts/50milstudents.htm). It is beyond the scope of this work to assess the cause of the rapid growth in borrowed funds. However, we are aware of two component that contribute to this fact; 1) the number of student pursuing a tertiary education has steadily increased over the last 20 years and 2) the average costs to attend postsecondary institutions has steadily gone up.

Loans, Grants, and Scholarships

According to the College Board *Trends In Student Aid* (2005) report, the average undergraduate Stafford subsidized loan was $3,002. Stafford unsubsidized loans were $3,085 and PLUS loans were $6,674, in 1999 using current 2004 dollars. These loans assisted 3.9 million, 2.4 million, and 509 thousand students respectively. The average PELL Grant during the same period was $1,915 in current 2004 dollars, assisted a little more than 3.7 million students. Grant dollars also took the form of Federal Supplemental Educational Opportunity Grants (SEOG), work-study wages, and Federal Perkins grants. In current 2004 dollars, the mean SEOG for 1999 was $529 dollars, where the average work-study and Perkins grants were $1,252 dollars and $1,681 dollars respectively. The

SEOG served almost 1.2 million undergraduates, while work-study aid assisted approximately 733 thousand students, with the Perkins grant assisting just over 655 thousand.

Loans, for the purpose of this research, are considered the least desirable form of financial aid offered to students, followed by work-study aid. The undesirable aspect of loans to finance a higher education implies accumulating debt during college that will need to be repaid upon finishing the educational process. These repayments typically start six months after completing a qualified program or after a six month period, in which the student has not been taking an appropriate amount of course credits within a given term. With work-study, students trade time for dollars, while students with loans trade time for interest expense. This interest expense along with the principal amount borrowed will accumulate and be paid back over time. Of the three forms of money to pay for tertiary educational costs, grants do not typically require some form of time-for-money trade-off. Grants, public and private, are the most desirable form of student aid. Grants are typically given to a student with no conditions of payback.

State Financial Aid to Students

As part of the reauthorization of the Higher Education Act of 1965 in 1972, the State Student Incentive Grant (SSIG) program was established, creating the provision of matching federal funds to states that funded their own scholarship programs. The reauthorization also created the Student Loan Marketing Association (Sallie Mae) as a "publicly contracted private corporation to increase the availability" of guaranteed student loans (Farrell, p. 13). Over the next thirty years, demand for postsecondary financial aid continued to grow. When the Higher Education Act was reauthorized in

1980, the criteria for need-based aid was expanded.

State Need-Based and Non-Need-Based Student Financial Aid

Since the institution of the federal tax incentives, referred to as the Hope Scholarship and Lifetime Learning Credit, federal student aid primarily came in the form of student grants, known today as Pell Grants, or student loans, referred to as Stafford Loans. New student aid policies have been ushered in and are specifically targeted to serve middle- and high-income families (Dynarski, 2002). These new policies set the stage for the federal government and states to establish mechanisms to allow these targeted families to effectively start the equivalent of an "Education IRA" (Dynarski, 2002, p. 629). An Education Individual Retirement Account (IRA) "allows families to put after-tax dollars into college savings and accumulate interest tax-free" (Dynarski, 2002, p. 629). The usage of these tax incentives makes them one of the largest sources for student financial support. For the 1998 tax year 4.8 million families claimed benefits totaling $3.5 billion. In addition to these monies, a growing body of literature argues that merit-based aid, from states, has grown disproportionately to need-based aid, and is an indicator of the rising competitive pressures on colleges and universities (McPherson & Schapiro, 2002; Heller, 2005; St. John, 1999;Longanecker 2002), while attempting to provide postsecondary access for all socioeconomic groups (McPherson & Schapiro, 2002; St. John, Musoba, & Simmons, 2003; Heller, 2005; St. John et al., 2004).

Many postsecondary institutions use this source of financial assistance as an instrument for attracting qualified students (McPherson & Schapiro, 2002; Dynarki, 2002; Heller, 2005). State merit-based aid programs have been found to benefit students of middle- and high-income households, rather than students from low- income

households (Heller, 2004c; McPherson & Schapiro, 2002; Longanecker, 2002). Three arguments used in justifying merit-based aid have been; 1) to increase college enrollment; 2) to keep the best and brightest in the state, 3) and to promote and reward academic achievement (Cornwell, Lee, & Mustard, 2005). These rewards have been shown to increase college attendance with varying implementations and effects. A number of early studies argued that merit-based aid was growing at the expense of need-based aid (Dee & Jackson, 1999; McPherson & Schapiro, 2002; Cornwell & Mustard, 2004; Farrell, 2004; St John, 2004); however, Longanecker (2002) and Heller (2005) demonstrate that this might not be the case.

In a study by Brinkman (1988), results indicate that a $1,000 aid increase increases college attendance by three to five percentage points. Kane, in 1994 and 1999 studies, indicated an increased college attendance of four percentage points for a $1,000 decrease in tuition and 5.2 percentage point increase for lower-income students for a $1,000 decrease in tuition, respectively. Reyes' 1995 study found that a student loan increase of $1,000 increases college attendance by 1.5 percentage points. Therefore, the logical question becomes, how can states provide more grant money to students or lower tuition costs? The latter is much more out of reach for governmental influence due to the existence of private institutions.

Support and implementation of merit-based grants for the pursuit of postsecondary education can be seen across the nation. The push for free education and merit-based postsecondary access can be seen on the international front also. Most notably, in Paragraph 1 of Article 26, in the Universal Declaration of Human Rights, maintained by the United Nations, states:

> Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. (http://www.un.org/en/documents/udhr/index.shtml)

This standard is an admirable standard for all countries to strive for minimally. However, advanced industrialized countries, such as the United States, need to be leading the charge in designing and implementing systems of education that are equally accessible for all that desire a postsecondary education.

In the United States, 46 states have lotteries. Of these, 16 utilize the proceeds from lottery revenues toward the state's education system. According to the National Association of State and Provincial Lotteries (NASPL), between the years of 1966 to 2006, a total of $234.089 billion dollars in revenue have been generated for states via lottery proceeds (http://www.naspl.org/UploadedFiles/File/Cumulative_Lottery_Contributions06.pdf).

Brief Lottery History in America

Roots of the lottery in America can be traced back to the early colonies. Like the colonist, the American lottery was an import from Europeans colonizing the New World (Ezell, 1960). These early lotteries typically fell into two categories: "drawings by individuals for personal profit and those legally sanctioned for public benefit" (Ezell, 1960, p. 12). Even dating back to the early 1700's, evidence of opposition to lotteries was present. A cry from clergy and citizens considering themselves as upright sought to have lotteries abolished. The most vocal opposition, to these early lotteries, "ceased with

the assumption of government regulation," it was deemed to be "one's own affair if he risked his money in an honest lottery" (Ezell, 1960, p. 29). Lotteries were used in various colonies to achieve a public benefit. For example, the colony of Connecticut authorized a lottery in 1747, in the amount of 7,500 British pounds, to erect housing at Yale; Massachusetts in 1761, 1762, and 1765 authorized lotteries to rebuild Faneuil Hall, give additional support to Faneuil Hall, and build housing at Harvard, respectively (Ezell, 1960). The colonist valued education and used lotteries to build its higher education institutions (see Appendix C).

> Among the Variety of Objects we are daily in pursuit of, the Attainment of Knowledge is certainly one of the most laudable. And it is to be hoped every well-directed effort to facilitate so desirable an End will meet with due Encouragement from an enlightened Public. (Unknown)

The rise and fall of the early lottery was caused, in great part, by public opinion. "There were always faint voices of opposition to the system even in the periods of its greatest activity. Strengthened by the reform movement which swept the United States in the 1830's, critics soon were lamenting its abuses and frauds" (Ezell, 1960, p. 177). By January 1, 1894, the legal lottery in the United States ceased to exist (Ezell, 1960,). Beside federal laws prohibiting lotteries, thirty-five states pass constitutional prohibitions "and most of the remainder had strong statues against such schemes" (Ezell, 1960, p. 272).

Today's Modern Lottery

Authorized lotteries reappeared in 1964 (Clotfelter, Cook, & Edell, 1999), in the state of New Hampshire. Other states watched New Hampshire navigate the political

waters before developing referendums for their state. By the end of the 1970s, 14 states had legalized states lotteries. As of December 2006, 42 states including the District of Columbia were operating state lotteries (see Appendix A). Of these states, 21 use lotteries to supplement education funding. The majority of these lotteries uses its proceeds to supplement both K-12 and postsecondary education, as directed by their respective state legislative body. However, five states earmark lottery proceeds just for K-12 funding, where only one state designates all of its lottery proceeds toward higher education (see Appendix D). A cursory examination of lottery revenues and proceeds by state reveal a large variance between states (see Appendix A). These differences could quite possibly be explained by analyzing the states' population and marketing dollars spent on the lottery. Montana's state lottery generated the least amount of revenues and profits for fiscal year 2006, $33.81 and $6.22 million respectively; while the New York state lottery generated the greatest amount of revenue during the same fiscal year, $6.270 billion and profits of $2.062 billion.

North Carolina Education Lottery

The North Carolina Education Lottery became law, along with the 2005 Appropriations Act, in August 2005 by the North Carolina legislative body. Since its inception, the North Carolina Education Lottery has generated $3.486 billion in total revenue and contributed $63.546 million, $314.353 million, $348.310 million, and $413.929 million in 2006, 2007, 2008, and 2009, respectively. These contributions to the North Carolina Education Fund total $1.140 billion dollars to benefit education.

Moral Hazard of Using Lottery Proceeds for Education

The practice of using Lottery proceeds in assisting state residents to attend in-state

institutions is still relatively in its infancy. Of the twenty-one states using lottery proceeds for tertiary education, a number of them passed referendums in the mid- to late-90s allowing lottery profits to be used for the advancement of postsecondary education. Data are becoming more accessible for analysis, and this body of knowledge is still continuing to grow. The state of Georgia and its HOPE Scholarship Program are most often written about and provides a clear glimpse of the moral hazard of using lottery proceeds to financially aid students going to college, from an institutional perspective and student perspective (Cornwell, Lee, & Mustard, 2005; Long, 2004; Rubenstein & Scafidi, 2002; Dynarski, 2000). Four separate studies of the Georgia HOPE Program all came to similar conclusions. Dynarski (2000) stated thus: "evidence suggests that Georgia's program has widened the gap in college attendance between blacks and whites and between those from low- and high-income families." Rubenstein and Scafidi (2002) states:

> Our estimates suggest that lower income and non-white households tend to have higher purchases of lottery products while receiving lower benefits, as compared to higher income and white households. Benefits of HOPE Scholarships, in particular, accrue disproportionately to higher-income and more educated households.

Long (2004) states:

> The results suggest that four-year colleges in Georgia, particularly private institutions, did respond [to students' increased access of student aid via the HOPE Scholarship] by increasing student charges. In the most extreme case, colleges recouped approximately 30 percent of the scholarship award.

Finally, Cornwell, Lee, and Mustard (2005) noted the following:

> First, we find that HOPE decreased full-load enrollments and increased course withdrawals among resident freshmen. Second, the scholarship's influence on course-taking behavior is concentrated on students whose predicted freshmen GPAs place them below the scholarship-retention margin. Third, HOPE substantially increased summer school credits.

Another moral hazard which needs to be addressed is the disincentive of saving for college. If a potential college student is aware of some guaranteed base of higher education financial assistance, this might tempt students to redirect their monies earmarked for the cost of college toward non-college related expenses. Therefore, some scheme might need to be considered that would still have potential college students save money to pay for future higher education expenses.

Alternative Methods To Cover Higher Education Costs

The concern of rising college cost has spurred state governments to devise "novel ways for families to prepare in advance to pay for college" (Ifill & McPherson, 2004). In 1997, Qualified State Tuition Plans, also known as 529 plans, were rolled out by the Internal Revenue Service (IRS) to offer families the opportunity "to pay all or substantial parts of the cost of college either by prepaying tuition or by accumulating wealth over time that can be applied to college expenses." (Ifill & McPherson, 2004) In 2004, Congress permitted these plans to be "treated as parental, rather than student, assets in the federal needs analysis methodology." (Ifill & McPherson, 2004) This new treatment was needed as to not negatively affect the student's financial aid package from an institution.

Early Commitment Programs

Governments and institutions are starting to consider a new form of financial aid referred to as early commitment financial aid (ECFA). This form of financial aid is currently being looked at to address issues of asymmetrical flow of information, which seems to affect the college-going decision making process of lower-income students (De La Rosa & Tierney 2005; Hanrisch 2009; Liu et. al. 2009). In North Carolina, the University of North Carolina at Chapel Hill, the oldest public institution of higher education in the United States, has created a special program to address the financial needs of lower income-students. This program, called The Carolina Covenant ™, is financial commitment to students with lower means. The aim of the covenant is to ensure that all qualified low-income Chapel Hill students will graduate debt-free. The covenant is quite admirable and is an excellent example of addressing the potential issue of access to education for low –income students. However, students do not know if they qualify for this program until after a decision to attend the institution is made. This after-the-fact funding is exactly what early commitment programs are designed to address.

Liu et.al (2009) conducted a randomized study of potential college goers in a rural province of China to measure the effect of early commitment of financial aid. This study indicates "that if ECFA are made early enough; and they are large enough, students will be able to make less distorted decisions when deciding on what college to attend." (p. 24) The findings of Liu's work lends support to the creation of a model, such as the one proposed in this work.

Educational Savings Accounts

Coverdell education savings accounts (ESA) can be set up to pay for qualified

education expenses of the designated beneficiary. These accounts can be opened and used in any state within the United States, due to their incorporation into federal tax laws by way of the Internal Revenue Service (IRS). The proceeds from this account can be used by the account holder or by a named beneficiary. A beneficiary is any person under the age of 18 or is a special-needs beneficiary. Distributions from these accounts that are not qualified educational expenses are subject to taxes. The contribution limit per annum is $2,000 for each benficiary. Any individual whose modified adjusted gross income for the year is less than $110,000, filing as a single, or $220,000, filing a joint return, may establish a Coverdell ESA.

Qualified Tuition Plans

A Qualified Tuition Plan (QTP), also known as a 529 plan or program, allows an individual to either pre-pay or contribute to an account established for paying students' qualified education expenses at an eligible educational institution. Like the Coverdell education savings account, 529 plans must have a named beneficiary. The beneficiary is generally the student, or future student, for whom the plan is intended to benefit. The beneficiary may be changed at any time.

Eligible educational institutions include any college, university, vocational school, or other postsecondary educational institution eligible to participate in student aid programs administered by the Department of Education. Contributions to a QTP cannot exceed the amount necessary to provide for a qualified education expense of the beneficiary. Unlike the Coverdall ESA, there are no income restrictions on individual contributors.

CHAPTER 3: METHODOLOGY

Postsecondary educational costs have risen significantly over the last twenty years. Federal and state governments have attempted to respond to the original goal of the Higher Education Act of 1965 by providing more funds to its financial aid programs year after year. In 2003, a congressional analysis of college cost was convened by the U.S House Committee on Education and the Workforce. In a state-by-state analysis, the committee found an increase in higher education cost in every state for 4-year institutions and an increase in cost for 48 states for 2-year institutions (College Cost Crisis, 2003). A 2004 report from the National Center for Education Statistics (NCES) stated, in dollars not adjusted for inflation, that "[d]ependent undergraduates who attended full time in 1990 were charged an average of $1,100 in tuition and fees at public 2-year institutions, $2,900 at public 4-year institutions, and $12,000 at private not-for-profit 4-year institutions" (Paying for College, 2004, p. 9). By 2000, the average cost for public 2-year, public 4-year, and not-for-profit private 4-year institutions had risen to $1,600, $4,300, and $15,900 respectively (Paying for College, 2004, p. 9).

A reverse engineering methodology, a process by which the end result is defined first and then all of the necessary outputs, processes, and inputs from supporting components to achieve the desired end, is utilized for this research. The goal of this work is focused on generating wealth, for low- and middle-income college going students, using the principle of time-value-of-money and a percentage of pigovian taxes collected

by states, to offset the future cost of their postsecondary educational costs. The output from the wealth creation model will provide grant monies to qualified recipients. A means tested allotment methodology would be used to determine the grant amount each eligible student would qualify for.

Model-Creation Process

Postsecondary preparedness and costs are two major barriers facing low socio-economic status (SES) college-going students. The issue of cost, as it pertains to low SES students, revolves around the lack of financial aid and the lack of information about available aid (Dowd 2003; Kennedy, Olivérez & Tierney 2007; Tierney & Venegas 2009). Using the goal-setting process for strategic management put forth by Curtis (1994) and supported by the seminal work of Locke and Latham (1990), the educational fund model, illustrated and described later in this chapter, is developed to address the issue of higher education costs for low SES college bound and academically prepared students. The use of goal-setting theory "has demonstrated more scientific validity to date than any other theory or approach to work motivation. Moreover, evidence indicates that goal setting holds the most promise as an applied motivational tool for managers." (Curtis, 1994, p.36)

Goal setting for strategic management has five major components. These components are "based on concepts of management planning and strategy" (Curtis, 1994, p.73). The components, as listed by Curtis are: (1) assessing the environment; (2) creating a vision (defining the purpose, philosophy, mission, and goals); (3) formulating strategy by setting measurable objectives, including the plans or tactics to attain those objectives; (4) executing the strategy; and (5) controlling and evaluating the entire

process. The last two steps of this process are outside of the scope of this work. However, the rationale for using a strategic management process model is still useful because it "will focus organizational efforts. It is a way to move forward and fashion the future." (Curtis, 1994, p75) In short, utilizing the goal setting theory allows us to focus on a "situationally specific, conscious motivational factors closest to action: goals and intentions. It then worked backward from these to determine what causes goals and what makes them effective." (Locke & Latham, 1990, p.253) Within this work, the backward steps in developing the model are referred to as reverse sequencing. Another major reason for using the goal setting theory to develop the educational fund model is due to the consist results researchers have obtained in goal-setting studies and because research indicates that goal setting is useful in attaining specific and challenging goals (Locke & Latham, 1990), such as the development of a wealth creation mechanism that is funded with tax dollars, is allowed to grow over a long period of time, is designated for individuals within a specific cohort of students, and is disbursed in a manner to mitigate the costs associated with obtaining a postsecondary education.

Assessing the Environment – Curtis Model

The environmental scan is used to set the context for a successful strategic plan. The scan is usually prepared by an individual or group that is in a position to see the relationship of the organization and the environment in which the organization will need to operate in (Curtis, 1994). "The environmental scan may also include a situation audit, which is an analysis of trends, past, present, and future and provides valuable statistical and financial information for the development of the strategic plan." (Curtis, 1994, p.78) An environmental scan is used to think about an organization's future course (Curtis,

1994).

Assessing the Environment – Educational Fund Model

To assess the current environment, the context was limited to financial grant support from governmental sources, which include federal and state programs. As discussed in the review of literature, grants for postsecondary education come from both federal and state sources. The primary grant source from the federal government comes in the form of a Pell Grant, which is a need-based grant, while in most states they offer need-based and non-need-based grants. In North Carolina, during the 2004-05 academic year, the state awarded $105.59 million dollars and $50.47 million dollars of need-based and non-need-based grants, respectively (36th NASSGAP, 2006).

The mechanisms that currently fund these state programs are under considerable stress. A number of states are experiencing budget constraints (Greer & Klein, 2010), which affect appropriations to the various state agencies, with education (primary, secondary, and tertiary) budgets also being affected. The constraints in budgets are typically caused by shortfalls in tax revenues; thereby, reducing the budgets afforded to state public education institutions. The economic slow-down of 2008 augmented this issue greatly; whereby, increasing the importance of identifying, creating, and funding a mechanism to assist in offsetting the cost associated to all levels of education.

Creating a Vision – Curtis Model

Vision is used to define the purpose, philosophy, mission, and goals of a strategic plan. The purpose of a vision is to address the challenge being presented. Locke and Latham (1990) assert that the challenge is related to performance goals and are "immediate regulators or causes of task or work performance." (p.253) The statement of

purpose is used to measure the products, services, and actions against to see if progress is being made toward the goal (Curtis, 1994). Curtis also suggest that the purpose is used to address why a plan or organization exists (Curtis, 1994).

The philosophy of a strategic plan addresses the plan's overarching "how," the "beliefs and the cornerstones" of the plan or organization (Curtis, 1994, p.81). How will the plan generally move or act to attain the desired goal? The philosophy of a plan can also be viewed as a framework a plan would be expected to operate within. This level of expectation assists in predicting behaviors and actions.

The mission of a plan communicates the desired outcomes or results being aspired towards. The mission statement is also used to describe the product or services being offered. Directly supporting the purpose and mission of a plan are the goals. Goals are "idealistic statements of what an organization wants to attain or what it ought to work toward" (Curtis, 1994, p83). Locke and Latham (1990) referred to five steps of strategic management as designed by Curtis as "The High Performance Cycle" (p.253). In the Locke and Latham model goal-setting consisted of demands, mediators and moderators, performance, rewards and contingent rewards, satisfaction and consequence, which ultimately fed back into demands.

Creating a Vision – Educational Fund Model

The vision of the educational fund, as put forth in this work, is to increase the pursuit of the American dream by mitigating the costs associated with obtaining a postsecondary education. For many of the some reasons why one-quarter of The Bill and Melinda Gates Foundation's money is pledged to education, "the country is built on ingenuity, built on having lots of very well-educated people, and if you were from a poor

family how are you going to break out of that. Well, education is the only way. Education is the thing, 20 years from now, that will determine how strong and as just this country wants to be." (60 Minutes, Gates, 10/03/2010) This quote from Bill Gates embodies a lot of the purpose for developing the fund and provides an insight into the philosophy of how the fund will run.

The purpose of the educational fund is to offset or greatly reduce to cost of postsecondary education for those whose expected family contribution (EFC) is among the lowest. The philosophy of the fund is to utilize the principle of time-value of money to grow a principal amount of money funded by pigovian taxes to reduce the out of pocket expense of pursuing a tertiary education. The principle of time-value of money is used because it is a powerful method to create and grow wealth. Pigovian taxes are used in the development of the model because of reduced contentions over where these tax dollars should be spent. This form of taxation is typically levied by governments to address negative influences of a product or service. A number of pigovian taxes can be avoided by individuals by opting not to purchase the taxed product or service.

The mission of the educational fund is to reduce of costs of education for all North Carolina residents. This mission is directly in line with the Article IX, Section 9 of the North Carolina constitution and Article 26 of the Universal Declaration of human Rights, in Paragraph 1, put forth by the United Nations, both of which suggest the establishment of free education for those rightly entitled to receive it.

> The General Assembly shall provide that the benefits of The University of North Carolina and other public institutions of higher education, as far as practicable, be extended to the people of the State free of expense. (Article IX, Section 9 of the

North Carolina Constitution)

And lastly, the goal of the educational fund was based on quantitative measures involving the fund's annual growth rate, identifiable cohorts of students, and allotment of funds to qualified cohort participants.

Formulating Strategy – Curtis Model

Strategy determines how the organization will go about attaining that its vision. Strategy looks at methods to exploit external opportunities and internal strengths while countering internal weaknesses and external threats (Curtis, 1994). Strategies have objectives and tactics.

Objectives are goals identified in concrete terms, measurable, and attained by a specific date. Tactics are "plans/milestones necessary to implement the objective" (Curtis, 1994, p.87). Tactics answer the question of "what specific steps or tasks must be accomplished to attain the objective (Curtis, 1994).

Formulating Strategy – Educational Fund Model

In formulating the strategy by which the educational fund will be created, funded, managed, and allotted, measurable objectives must be set. These objectives must include plans or tactics to attain the objectives. The implementation of the model will need the review, deliberation, and vote of the North Carolina legislators, since it is being designed to benefit all North Carolina residents and potentially use state monies to fund the model. The strategy of funding the model considered the various revenue sources currently available to a state and potentially available in the future. Most state revenues come in forms of taxes and fees on governmental services, such as permits and licenses, which can also be viewed as another tax. The use of tax dollars can be a divisive proposition;

therefore, the funding mechanisms sought should be less conflict-ridden, as compared to potentially using property taxes as a funding source.

Management of the educational fund can be state run, or the state can utilize private sector firms to manage the fund. A myriad of factors will go into the selection criteria to limit the pool of probable fund managers. The selection of the proper fund management firm is critical because of the amount of time the firm will be managing a fund account and the beginning and future values of the funding over the period of growth are extremely vital to the success of the model.

Allotment of funds will be the final objective of the model. For each funded cohort, at the end of the money growth period, an analysis of the cohort will occur. At this point of a cohort's fund lifecycle, the reward for persisting (that is, not dropping out) is realized. The analysis will look at the beginning members of the cohort, added members of the cohort, and ending members of the cohort to determine the number of eligible cohort members to receive tertiary educational costs offsetting. These offsets should be disbursed in a manner consistent with a democratic view of educational attainment, opportunity, and equity. Cohort members with the lowest Expected Family Contribution (EFC) levels should receive the vast majority of the funds ending-value, which suggest some form of means testing. A model describing this is not offered or suggested here because it is beyond the scope of this work.

The Educational Fund Model

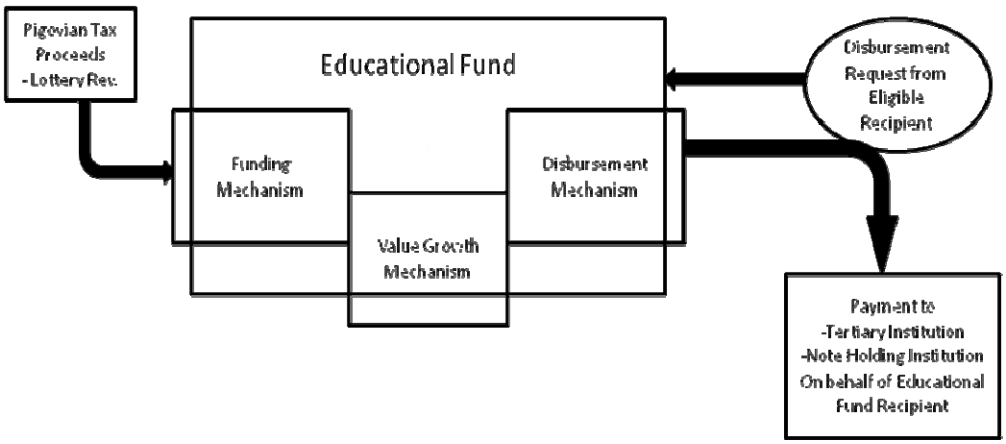

FIGURE 3: The Educational Fund Model

The financing model offered in this work is designed as a wealth creation mechanism to strive for the intent set forth by the North Carolina constitution in Article IX, Section 9. The system has three major components that are connected end-to-end to obtain the goal of this endeavor. The three components are a) a funding mechanism, b) a value growth mechanism, and c) a disbursement mechanism. The ultimate goal of this system is to generate increased wealth over a period of time, for specific cohorts of North Carolina school-aged children, to offset their potential costs of obtaining a postsecondary education.

The funding mechanism is the method by which a state would deposit the initial principal amount, into a restricted account, for a given cohort. In this implementation of the model, the principal amount for a cohort would come from a pigovian tax source. A pigovian tax source was chosen to fund the model because these tax revenues are generally considered to be opt-out taxes, meaning individuals are not required to pay this tax unless they choose to obtain a particular service or product having this tax. These forms of taxes are also known as sin taxes and are commonly associated with state

lotteries, alcohol, cigarettes, and other similar products or services.

The value growth mechanism is the method by which a state will choose to increase the value of the educational fund. The primary purpose of this component is to leverage time and the compounding returns, via prudent investment strategies. Two key elements within this component are the rate of return and the length of time the initial principle is allowed to grow. These two elements work in conjunction and considerably influence how much money might be available to a cohort after a specific period of time. The optimal combination of factors to maximize this component's results would require a maximized initial principal amount, a consistently high rate of return year-over-year, and the maximum amount of time possible to the value grow in an undisturbed manner.

The final component of the wealth creation system is the disbursement mechanism. Within this element the final value of the fund is moved from the growth mechanism, allocated among the members of the cohort, and disbursed to qualified postsecondary institutions on behave of cohort members, after having met certain criteria. The allocation of these funds should be means tested and allotted in a manner to offset the cost of a cohort member's tertiary education in relation to their personal and family's ability to pay for the average in-state tuition for public institutions of higher education. Since only a percentage of a graduating cohort ever pursues a postsecondary education, a time limit should be place upon the use of the funds by cohort members, for their appropriate use.

Model Variables

The major components of this model consist of the initial amount deposited, the kindergarten cohort count, the growth rate of money, the number of times the funds will

compound within a period, and the amount of time before funds are drawn upon. These five components are required input values for the model and affect the model's outputs. The time-value model takes an initial deposit amount, calculates its expected return in seventeen-years given an expected annual growth rate, and divides the future-value of the initial deposit by the number of kindergarteners in a cohort. The resulting number from these steps is referred to as a standard allotment. The initial amount deposited is the amount of lottery proceeds from a given year, or another source deemed appropriate by legislators, can be used to seed the model. The fiscal calendar for state lottery may vary from state to state, so a fiscal calendar of July to July is assumed. This assumption allows for a percentage of a lottery commission's proceeds for a fiscal year to be applied to an incoming kindergarten cohort consistently. The kindergarten cohort count is the number of students entering kindergarten for that academic year.

Time Value Calculation

The $MV = P\left(1+\frac{r}{n}\right)^{nt}$ calculation is utilized to obtain the anticipated future-value of a cohort's fund value. This formula is a standard future-value of money (MV) calculation that takes four variables: P for principal amount contributed, r for the yearly growth rate, n for the number of times the growth rate is compounded per year, and t for the length of time the principal is allowed to grow.

Cohort Grouping

A cohort is established the start of every school year with the first-time enrolling kindergarten students. The students within these cohorts are expected to complete their secondary education within thirteen years of starting kindergarten. During this period of time, some students will leave the state while new students will move into the state.

Students moving out of the state will not have any claim of educational funds afforded to their cohort if they are not state residents upon completion of their secondary education. Students that become state residents after the formation of their respective kindergarten cohort and not enrolled for any part of their kindergarten year of schooling shall be deemed a partial fund participator and receive a percentage commensurate to their expected 13-year participation in the fund. Fund participants entering kindergarten and maintaining their in-state residential status for their primary. middle, and secondary education are considered full-fund participants. Similar to students entering a cohort after the initial grouping, students whose in-state residential status changes over the 13-year cohort life period, are treated as partial-fund participants, with the requirement of in-state completion of their secondary education. This particular situation might occur if a student is a member of a cohort's initial group and the parents move to another state while the child is still in primary education. Then after a few years the family moves back into the state and maintains residency until their child completes their secondary education and many years beyond. In this instance, the student would be entitled to an adjusted allotment of the fund's value for that cohort.

Allotment of Funds

Upon fund maturity, a standard allotment is calculated based upon the number of students within a completing cohort. A completing cohort is the number of students within a cohort that was initially formed 13-years earlier. The completing cohort can have a larger or smaller number of members as compared to the numbers in the cohort's initial grouping. These changes are caused by cohort members' residency status, completion rates of secondary education, and other naturally occurring human events.

The simplest form of this calculation is the current value of the fund for the identified cohort divided by the number of in-state cohort members. This base allotment calculation takes into account that some of the cohort members may have fallen behind their contemporaries. Even if this is the case, their share of their cohort's fund value is made available upon successfully completing their secondary education while maintaining in-state residency. Because the persistence toward a secondary diploma is not a linear process for all students, the fund may consider implementing a window of opportunity for cohort members that have fallen off of the pace toward completion. For the purpose of establishing an upper age limit to complete a secondary diploma, 30-years of age, for example, may be considered.

Study Datasets

Datasets for this study will come from the National Center of Education Statistics, state lottery commissions, and the North American Association of State and Provincial Lotteries (NASPL). The information obtained from these sources will allow this researcher to garner all of the raw data necessary to develop the time-value of money, leveraging a portion of lottery proceeds, for this model.

K-12 Data

The National Center of Education Statistic (NCES) Common Core Data (CCD) data set will utilize *Public Elementary/Secondary School Universe Survey Data* to obtain enrollment figures and the *Local Education Agency (School District) Universe Survey Dropout and Completion Data* to obtain dropout rates for all the researched states. The CCD data was downloaded from the NCES website (http://nces.ed.gov/ccd), housed on the U.S. Department of Education's Internet server. Files for the 2004-2005 enrollment

figures were downloaded and imported into Excel. To capture the appropriate data for this analysis, a total of 277 fields were analyzed (see Appendix A, for field list used in the research from the *Public Elementary /Secondary School Universe Survey Data*); however, only thirteen of these fields were placed into the model.

Lottery Data

State lottery commission data was obtained from all the researched states, using the freedom of information act. The data required from each state at a minimum is the proceeds paid to the state annually since 1990. The instrument to be used for requesting this data will request the financial statements from 1990 to 2006. Since this research is focused on states that use their lottery proceeds to fund higher, secondary, and primary education system, the model will address these states primarily. Data from the National Association of State and Provincial Lotteries (NASPL) was used to verify states with education lottery systems, along with the verification of state's lottery commissions on how the proceeds are used. NASPL data will also serve as a stop-gap in the event a state lottery commission does not report their proceeds for the specified period of time.

Money Growth Rates

A single growth rate is utilized for model demonstration purposes. For this study the geometric average of the Standard & Poor 500, between the years of 2000 and 2009, is utilized. Money growth rates can vary greatly and are not predictable; therefore making time-value-of money (TVM) growth rate a limitation within this research.

CHAPTER 4: MODEL PROTOTYPE

Using the most recent and available data, assumptions have been made to illustrate the potential of the educational fund model. As described earlier in the methodology section, the model requires four components: (1) the initial deposit amount for a cohort, (2) the number of students belonging to the funded kindergarten cohort, (3) the assumed growth rate on the funds deposited, and (4) the targeted amount of time before funds will be drawn upon. The North Carolina Education Lottery (NCEL) sold its first tickets on March 30, 2006, with instant scratch-off tickets and the multi-state game of PowerBall (NCEL Annual Report, 2006). Since NCEL's startup year was 2006 and only operated for nine months, the prototype used full fiscal year lottery revenues from 2007, 2008, and 2009. During these years, the NCEL contributed $314 million, $348 million, and $413 million to the North Carolina Education Fund, respectively. An allocation of ten percent of the proceeds from each fiscal year, to fund this model, would have created seed amounts of approximately $31.4 million, $34.8 million, and $41.3 million to seed the cohort accounts of 2008, 2009, and 2010, respectively.

In the standard implementation, kindergarten cohorts sizes for the cohorts of 2008 (seeded with 2007 lottery proceeds), 2009 (seeded with 2008 lottery proceeds), and 2010 (seeded with 2009 lottery proceeds) would have been matched and calculated using the model. However, due to the lack of cohort data from federal and state level data sources, this researcher utilized a three-year kindergarten cohort size moving average to derive

cohort sizes for the 2009 and 2010 academic years. This data was obtained using the Common Core Data (CCD), managed by the National Center of Education Statistics (NCES) in the Department of Education by obtaining the number of kindergarteners within North Carolina for years 2006, 2007, and 2008 to set the actual size of the 2008 cohort and derive the cohort sizes for the 2009 and 2010 academic years. Kindergartener data for the academic year of 2010 was not available at the time this prototype was being tested; hence, the average of the two preceding kindergarten cohorts was imputed into the model.

TABLE 4:

North Carolina Kindergarten enrollment for 2008-09, with 3-year moving averages for 2009-10 and 2010-11

Total Kindergarten Cohort [2006-07]	Total Kindergarten Cohort [2007-08]	Total Kindergarten Cohort [2008-09]	Three-Year Moving Average Kindergarten Cohort [2009-10]	Three-Year Moving Average Kindergarten Cohort [2010-11]
118,443	120,998	117,282	118,908	119,063

Source: NCES CCD with moving averages calculated by author

The final three components necessary for the model to work is a rate of growth, the number of times the fund can compound within a period, and the amount of time the fund will be allowed to grow. For demonstration purposes these variables were set to fixed amounts of 6.26 percent per year for the annual growth rate (r), 12 times per year

for the number of times the funds can compound in a single period (n), and 13 years for the period of time the funds will be allowed to grow without being drawn upon (t). Table 5 holds all of the variables for each cohort along with its future-value amount and non-means tested standard allotment.

The educational fund model, using the variables described in the previous section, indicate a future fund value of $70.7 million for the 2008-09 kindergarten cohort, approximately $78.4 million for the 2009-10 cohort, and almost $93 million for the 2010-11 cohort. Both the 2009-10 and 2010-11 kindergarten cohorts utilized derived cohort sizes based upon a three-year kindergarten moving average.

TABLE 5:

Example future value of cohort funds, using the educational fund model.

	2008-09 Cohort	2009-10 Cohort	2010-11 Cohort
Kindergarteners	117,282	118,908	119,063
Feed Seed (P)	$31,400,000	$34,800,000	$41,300,000
Rate (r)	6.26%	6.26%	6.26%
Compounding (n)	12	12	12
Time (t)	13	13	13
$MV = P\left(1 + \frac{r}{n}\right)^{nt}$	$70,703,324	$78,359,098	$92,995,136
	Non-means tested allotment		
100% full enrollment participation	$603	$659	$781
80% full enrollment participation	$754	$824	$976
50% full enrollment participation	$1,206	$1,318	$1,562

The non-means tested allotment for these cohorts are based upon the following assumptions: (1) all kindergarteners entering the cohort in their cohort year remain residents of North Carolina when they graduate from high school; (2) all students within the cohort progressive through all grades at the same time; (3) no new students enter the cohort during the life of the fund; and (4) all cohort members are fully qualified to request allotments from the fund.

Table 5 indicates allotments ranging from $603 per cohort member to $1,562 per member. The range of these numbers, within this example, is predicated upon the

number of cohort members taking advantage of the fund. For the 2008-09 cohort, at one-hundred percent participation each member will receive $603, while at eighty percent and fifty percent participation rates, each cohort member will receive $754 and $1,206, respectively. Because of the unpredictable nature of cohort sizes, educational fund seeding levels per cohort, and annual growth rates on investment, the fund value from cohort-to-cohort can vary. It is beyond the scope of this research to devise a method to address these potential variances among cohort educational funds' future values.

Payment and Use of Allotments

When qualified cohort members request an allotment from their cohort educational fund, the use and payment should meet certain criteria. This researcher suggests the following minimum criteria: (1) funds must be utilized for qualified educational costs as defined by the overseeing agency; and (2) any disbursement of funds should be paid directly to an approved institution of learning on behalf of the cohort member. These minimum criteria are an attempt to continuously direct the use of fund disbursements toward the purpose of the model, "to offset or greatly reduce the cost of postsecondary education for those whose expected family contribution (EFC) is among the lowest." (see Creating a Vision)

Limitations to the Model

There are three important components to the Educational Fund model that can significantly affect its potential scope; 1) political discourse and support, 2) a funding mechanism that can provide an appropriate amount of principle funding for each cohort year-after-year, and 3) a consistent rate of return until a fund's maturity that is large enough to produce the desired allotments.

The political discourse and support is paramount to the model's success. Since the model is designed to use tax revenues, one should expect some level of contention due to the redirection of state revenue to offset higher education costs, as opposed to putting more money into early childhood development for example.

The design of the model purposely used a percentage of lottery income as the principal amount, due to its opt-in and opt-out characteristic. However, no all states have lotteries or have lotteries that generate proceeds large enough to fund such a model.

The last major limitation of this work is beyond any one entity's ability to control, with that being positive annual market returns. Wealth creation is the linchpin of success for this model, an annual return that is to low can be just as devastating as negative annual returns. The proper amount of risk must be sought to produce the desired results of this work.

CHAPTER 5: DISCUSSION

What happens to a dream deferred? A question posed by Langston Hughes in his poem “Harlem.” This is a question that North Carolina and other states of the union should not allow to be answered or wait to see if another state will allow it to be answered. Dreams produce inventions. Dreams produce innovations. Without the educational support necessary to fuel and achieve these dreams, the greatness of America, as we have come to know, love, and expect could cease to exist. However, these dreams live in a myriad of people from diverse ethnicities, experiences, economic standings, cultures, and beliefs. And, within these diversities dreams await their catalyst.

Federal and state governments helped fuel these dreams. Dreams of thousands of former military personnel were fueled with the federal investment in human capital via the Serviceman’s Readjustment Act of 1944 (The G.I. Bill), which paid dividends as one of the largest expansions of the American economy in history. Again, in 1965, dreams were fueled with the Higher Education Act, enabling millions of Americans, since its inception, to pursue postsecondary education to better themselves, thereby, bettering society at large. However, given recent economic events and historical pricing trends of tertiary education, the United States runs the risk of losing the dreams of low-income populations. Therefore, to maintain the diversity of inventions and innovations, the aim of this research is focused on keeping “The Dream” alive.

The issues endured by many students in urban areas are bleak and complex. By

no choice of their own, they have to endure neighborhoods with little to no investment, often triggering a state of joblessness. This state of joblessness, along with the lack of support from family, community, and government, leads to a state of helplessness. This sense of helplessness can weaken one's will and determination, producing a state of hopelessness. A prolonged state of hopelessness can eventually generate a feeling of worthlessness (Wilson, 1987). This neighborhood effect can play major roles in a student's future educational attainment because these states have the ability to affect self-esteem, educational aspirations and expectations, and acceptance or rejection of societal norms . (Ibid.) The purpose of this research, therefore, is to motivate students from low-income households by leveraging the educational cohort fund for kindergarteners.

Cohort Selection, Account Funding, and Funds Disbursement

Kindergarteners were selected as the grouping factor because this is the point at which free public education is mandated to be offered to all residents of appropriate age in the state of North Carolina. Any other grade level could be specified as the grouping factor; however, this might adversely affect growth of the fund by shortening the amount of time the money within the fund has to grow.

The cohort educational fund does not necessarily have to be funded via some percentage of lottery proceeds paid to the state. North Carolina can use any funding mechanism it deems appropriate. A pigovian tax source was used in this model for two specific reasons: 1) this form of tax is paid only on an opt-in basis, and 2) unlike property taxes, no single community of interest can lay demanding claims upon the use of the tax to benefit its interest. In addition to funding the cohort account with pigovian tax revenue, the state might consider establishing the account as a charitable fund, thereby,

allowing individuals to personally contribute money to a given cohort account while receiving some level of tax benefit.

As mentioned earlier, the more time the fund has to grow, the larger the fund can potentially become. With this thought in mind, this proposal puts forth the notion that disbursement of funds to cohort members should only occur after the cohort fund has had a minimum of 13 years to grow in value and an eligible member of the cohort has successfully completed some form of postsecondary education. The latter requirement is utilized to potentially increase persistence to high school completion, which directly affects the social-economic indicator of educational attainment.

Depending on the initial funding level, number of cohort members, and projected revenue growth, the fund might be able to support a percentage of cohort members that needs supplemental educational services by offsetting or covering the cost of the service. These services can be used to assist students that have deficiencies in their educational base, possibly closing some of the achievement gap between ethnic groups.

Making Students, Parents, and the Community Aware

Asymmetric flow of information is thought to be a major contributor to students' decisions to pursue or not to pursue postsecondary education. Knowing what is available and how to access it can be a limiting factor for educational attainment. To address this potential gap in and potential use of knowledge, a state standard could be introduced that would require schools or to expose students to the cohort educational fund in some fashion, for all grades, in all of the required content areas via home rooms or counseling services.

Examples of how this might be implemented in a 2nd grade class, a 6th grade class,

and 10th grade class are offered to demonstrate how the state might be able to utilize the actual existence of the educational cohort fund as a motivational tool. In the 2nd grade classroom, a teacher could integrate the existence of the fund in his or her lesson plan when having any type of discussion on what the children would like to be when they grow up. Given the proper transitional point, either presented by a student's comment or placed by design by the teacher, student aspirations could be fueled by the faculty member at this point. This could then be followed up with an affirmative statement to the following effect: "The state of North Carolina believes in each of you and has set aside money that will help you go to college if you choose to." While this exposure to the fund in the classroom setting does not require any organized thought on behalf of the student, this can change as students progress through the education system.

In a 6th grade classroom, a teacher might expose the students to the fund via mathematics. In this scenario, classroom instruction might require students to practice long division to calculate how much each member of their cohort would be allocated, if they were currently completing some level of postsecondary education. This exposure point opens for teachers the opportunity to reinforce the positives of being a life-long learner and how the state has made a commitment to students' education. During this exposure point, it might be a good time to demonstrate a few other mathematical concepts such as exponential growth, given the average growth of the fund and the amount of time left for the fund to mature or possibly some financial literacy concepts that might include how to calculate the change in a number. These concepts can be branched and developed even further to help students obtain a deeper understanding of the fund and, hopefully, a deeper appreciation for what it might be able to afford them in

the future.

In the 10th grade classroom, one would hope for a more critical thinking environment, which allows the teacher to give students a research project that could involve researching the status of their cohort's or another cohort's status. In this activity, students would have to obtain information about a given fund, retrieve information on the number of kindergarten students originally associated with that fund, calculate some statistical problems, and predict what the fund's final value would be, given the growth trend experienced. This level of research may involve Internet research, various mathematical calculations, and written communication.

Keys to the Model

Beyond the political and civic support necessary to implement such a program, three other components are paramount to the program's success: 1) appropriate levels of funding, 2) the restricted use of funds for the cohort, and 3) safe and dynamic growth of cohort educational fund dollars, to provide cohort members an educational grant significant enough to offset a large portion or all of their costs associated with obtaining a postsecondary degree.

The ideal funding level for the cohort educational fund would be to offset the expected costs of obtaining a bachelor's degree for a cohort of entering kindergarteners from one of the state's public 4-year institutions. The expected costs should be based upon the average tuition of these 4-year public institutions for when the cohort is expected to enter and complete their studies. It is understood that the future value of the fund value is also affected by the number of students in the cohort and the annual rate of return during the growth period of the fund. These two variables could be addressed by

utilizing a statistically supported assumption to aid in the predictions.

Restricted use of these funds for their intended purpose should become an irrefutable and irrevocable entitlement for the cohort members. It is implicit that not all of the cohort members will complete their elementary and secondary education within the state and, not all of the cohort will pursue postsecondary education, with a limited contingency for usage of funds might be put into place. After the window of opportunity for use of the funds have expired, the remittance of the monies remaining in the fund to the State's general fund would be deemed appropriate. This restricted use clause is suggested in the hope of limiting or eliminating the supplanting, fungible aspect of governmental funds, and regulatory capture for organizational gains.

Growing the value for the cohort educational fund in a safe and dynamic manner, could be argued as being the linchpin to the proposal's ultimate success. With this said, and with America being one of the world's most financially savvy countries, based upon per capita gross domestic product, a challenge is extended to the financial community: The challenge is to develop a financial offering that minimizes the risk of losing the cohort educational fund's principal, while maximizing the annual returns. This risk reward profile should keep the majority of the fund within current accounts. The returns should be equal to or greater than a market that is expanding, while still generating positive returns even when the market is contracting. In short, the fund will need to keep pace with the inflationary factor associated with the costs of 4-year public institutions' tuitions well also generating additional surplus.

Fulfilling Dreams

In 1963, Dr. Martin Luther King, giving a speech in Washington, D.C. on the steps of the Lincoln Memorial, stated: "I have a dream." This dream helps to fuel the civil rights movement and generate tremendous civic support for the passing of the Civil Rights Act of 1964, the Elementary and Secondary Education Act of 1965, and the Higher Education Act of 1965. These three federal laws can be attributed to the gains in educational attainment and to individual and household incomes for minorities, since their enactment.

In 1981, another inspiring person, Eugene Lang, giving a talk to a group of sixth graders at P.S. 121 in Harlem, referenced the great speech of 1963. He challenged the students to stay in school and financially motivated them to do so. This challenge and motivator has led to the creation of almost 200 "I Have A Dream" programs in 27 states, the District of Columbia, and the country of New Zealand, assisting more than 15,000 "Dreamers" (ihaveadreamfoundation.org).

Current tertiary education funding strategies are under tremendous strain due to decreased tax revenues and increased institutional costs, so to borrow a closing thought from William Julius Wilson (1987), "the pursuit of economic and social reform ultimately involves the question of political strategy." It is my hope that this work triggers or feeds other ideas to keep the dreams of our students' alive well into the future.

Implications of Work

The implications of this work extend into areas of states' budgets and beyond. States with lotteries or other pigovian tax revenues can utilize this methodology as a wealth creation system with the potential of reducing the cost burdens typically

associated with obtaining a postsecondary education for in-state residents. Along with the proper funding mechanism and annual returns, this fund might provide a state the ability to offer students needing supplementary educational services an early access to funds, to assist in closing their achievement gap. And beyond the notion of money, students' aspirations and future orientations should be of a major interest for states. These aspirations and orientations are the things that will make or break a state in the future. By developing an Educational Fund, like the one offered in this work, a state might have the potential of having a large effect size in the areas of educational motivation, educational resilience, and future orientation, to identify a few. This work also lends itself to the notion of how to fund early commitment financial aid (ECFA) endeavours.

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APPENDIX A: STATES LOTTERY REVENUES & PROFITS
2005-06 (UNAUDITED)

Lottery Jurisdiction	**FY '05 Sales (millions)**	**FY '05 Profit (millions)**	**FY '06 Sales (millions)**	**FY '06 Profit (millions)**
Arizona	$397.56	$116.80	$468.70	$141.12
California	$3,333.60	$1,795.30	$3,585.00	$1,240.57
Colorado	$416.97	$103.74	$468.80	$125.60
Connecticut	$932.93	$268.52	$970.33	$284.87
Delaware (1)	$689.29	$234.00	$727.99	$248.80
District of Columbia *** (5)	$233.43	$71.05	$266.20	$73.40
Florida	$3,537.00	$1,103.63	$4,030.00	$1,230.00
Georgia	$2,922.33	$802.24	$3,177.59	$822.40
Idaho	$113.50	$26.00	$131.13	$33.00
Illinois	$1,806.75	$614.00	$1,964.83	$637.67
Indiana	$739.63	$189.04	$816.40	$218.00
Iowa	$210.67	$51.09	$339.52	$80.88
Kansas	$206.72	$62.28	$236.05	$67.09
Kentucky	$707.26	$158.19	$742.30	$204.30
Louisiana	$307.01	$108.92	$332.12	$118.76
Maine	$209.29	$50.33	$229.69	$51.70
Maryland	$1,485.73	$477.10	$1,560.91	$500.97
Massachusetts	$4,484.72	$936.13	$4,534.12	$951.24
Michigan *** (4)	$2,069.49	$667.58	$2,212.37	$688.02

Lottery Jurisdiction	FY '05 Sales (millions)	FY '05 Profit (millions)	FY '06 Sales (millions)	FY '06 Profit (millions)
Minnesota	$408.57	$106.18	$450.00	$121.30
Missouri	$785.59	$218.64	$913.52	$260.67
Montana	$33.81	$6.22	$39.92	$9.11
Nebraska	$100.66	$23.86	$113.11	$30.32
New Hampshire	$227.98	$69.30	$262.74	$80.32
New Jersey	$2,273.81	$804.42	$2,406.57	$849.25
New Mexico	$139.27	$32.23	$154.71	$36.86
New York * (1)	$6,270.49	$2,062.70	$6,803.00	$2,203.00
North Carolina (9)			$229.53	$64.59
North Dakota (7)	$19.15	$6.46	$22.33	$6.92
Ohio	$2,159.10	$645.10	$2,221.00	$646.30
Oklahoma (8)			$204.84	$68.95
Oregon (1)	$943.11	$415.48	$1,104.00	$483.00
Pennsylvania	$2,644.86	$852.56	$3,070.00	$975.85
Puerto Rico	$317.90	$79.00	$334.50	$115.90
Rhode Island (2)	$1,636.84	$307.55	$1,731.47	$323.90
South Carolina	$956.95	$277.50	$1,144.60	$319.40
South Dakota (2)	$675.58	$119.32	$686.16	$118.99
Tennessee (6)	$844.32	$227.42	$996.27	$277.66
Texas **	$3,662.46	$1,076.82	$3,774.69	$1,036.11
Vermont	$92.59	$20.35	$104.88	$22.88
Virginia	$1,333.94	$423.52	$1,365.00	$454.90

Lottery Jurisdiction	FY ’05 Sales (millions)	FY ’05 Profit (millions)	FY ’06 Sales (millions)	FY ’06 Profit (millions)
Washington	$457.62	$115.60	$477.89	$116.95
West Virginia (1)	$1,399.07	$563.32	$1,522.00	$610.00
Wisconsin	$451.87	$128.54	$508.90	$150.60
TOTAL U.S. ($US)	$52,639.42	$16,418.03	$57,435.68	$17,102.1

Results are unofficial and unaudited

* FY ends 3/31

** FY end 8/31

*** FY end 9/30

**** FY ends 12/31

1 Includes net VLT sales (Cash in less cash out)

2 Include gross VLT sales (Cash in)

3 Does not include Casino sales or profits

4 Sales estimated through 9/30/04

5 Sales/Profits reported for July 1, 2003 to June 30, 2004

6 Sales began 1/20/04 and only reflect 5 months and 12 days of FY '04

7 Sales began March 25, 2004

8 No Sales FY'05

9 Instant sales began 3/30/06, online sales began 10/06

Compiled by the North American Association of State & Provincial Lotteries.

APPENDIX B: AVERAGE PUBLISHED TUITION AND FEE CHARGES, FIVE-YEAR INTERVALS, 1980-81 TO 2005-06 (ENROLLMENT-WEIGHTED)

	Tuition and Fees – Current Dollars					Tuition and Fees – Constant (2005) Dollars				
Academic Yr.	Private Four-Yr.	5-yr % Chg	Public Four-Yr.	5-yr % Chg	Public Two-Yr	Private Four-Yr.	5-yr % Chg	Public Four-Yr.	5-yr % Chg	Public Two-Yr	5-yr % Chg
80–81	$3,617		$804		$391	$8,180		$1,818		$884	
85–86	$6,121	69%	$1,318	64%	$641	$11,019	35%	$2,373	30%	$1,154	31%
90–91	$9,340	53%	$1,908	45%	$906	$13,663	24%	$2,791	18%	$1,325	15%
95–96	$12,216	31%	$2,811	47%	$1,330	$15,489	13%	$3,564	28%	$1,686	27%
00–01	$16,072	32%	$3,508	25%	$1,642	$17,982	16%	$3,925	10%	$1,837	9%
05–06	$21,235	32%	$5,491	57%	$2,191	$21,235	18%	$5,491	40%	$2,191	19%

Source: Trends In College Pricing – 2005, p. 10.

APPENDIX C: AUTHORIZED COLONIAL LOTTERIES SERVING EDUCATION

Colony	**Year**	**Amount**	**Purpose**
Connecticut	1747	£7,500	Housing at Yale
	1753	£2,000 (New York Currency)	College of New Jersey (later Princeton)
Delaware	1774	Unknown	Probably 3 churches and Princeton College
Massachusetts	1765	£3,200	Housing at Harvard
New Jersey	1762	£3,000	Princeton College
New York	1746	£3,375	Found King's College (later Columbia)
	1748	£1,800	King's College
	1753	£1,125	King's College (July)
	1753	£1,125	King's College (December)
Rhode Island	1760	$1,200	Library, Providence
	1774	$ 600	Lot and schoolhouse, East Greenwich

Source: Fortune's Merry Wheel: The Lottery in America, Ezell, 1960, pgs. 55-59

APPENDIX D: STATE LOTTERIES FUNDING EDUCATION

State	Year Established	State Lottery	K-12	Higher Education
NH	1964	New Hampshire Lottery Commission	X	
NY	1967	New York State Lottery	X	X
NJ	1970	New Jersey Lottery	X	X
MI	1972	Michigan Bureau Of State Lottery	X	X
IL	1974	Illinois Lottery	X	X
OH	1974	Ohio Lottery Commission	X	
VT	1977	Vermont Lottery	X	
AZ	1982	Arizona Lottery	X	X
WA	1982	Washington State Lottery	X	X
CA	1985	California Lottery	X	X
OR	1985	Oregon Lottery	X	X
MO	1986	Missouri Lottery	X	X
WV	1986	West Virginia Lottery	X	X
MT	1987	Montana Lottery	X	
FL	1987	Florida Lottery	X	X
VA	1988	Virginia Lottery	X	
ID	1989	Idaho Lottery	X	X
KY	1989	Kentucky Lottery		X
TX	1991	Texas Lottery Commission	X	X
GA	1993	Georgia Lottery Corporation	X	X
NE	1993	Nebraska Lottery	X	X

State	Year Established	State Lottery	K-12	Higher Education
NM	1996	New Mexico	X	X
SC	2002	South Carolina Lottery	X	X
TN	2004	Tennessee Lottery	X	X
NC	2005	North Carolina Education Lottery	X	X

Source: North American Association of State and Provincial Lotteries, categorization by author.