

AN ABSTRACT OF THE THESIS OF

Michelle Louise Piccola-Schmidt for the degree of Master of Science in Family Resource Management presented on August 31, 2004.

Title: The Effect of Pell Grants and Other Factors on Debt Accumulation of Stafford Loan Recipients.

<sup>1.</sup>  
**Redacted for Privacy**

Abstract approved: \_\_\_\_\_

Dr. Geraldine Olson

The purpose of the present study was to investigate the effect that Pell Grants have on Stafford Loan debt accumulation and to identify other factors that affect Stafford Loan debt accumulation.

The sample consisted of 32,525 dependent undergraduate students from more than 100 different four-year public institutions. All the students received Stafford Loans but only a portion of these students received federal Pell Grants.

There were eight socio-demographic variables used in the regression analysis equation to explain accumulated Stafford Loan debt of dependent undergraduate students.

The association between Stafford Loans and Pell Grants was significant. The direction was positive meaning that the fact of receiving a grant was not associated with lower levels of accumulated debt but, in fact, seemed to be related to increased levels of debt. The study also identified other factors influencing accumulated student debt. Age of the student, and price of tuition and fees were related to higher debt

levels. Non-tuition financial support by parents, and level of student earnings were negatively associated with Stafford Loan debt accumulation.

Gender, Race/Ethnicity, and Number of Credit Cards with a Debt Balance were not related to the level of debt accumulation at a .05 level of significance.

© Copyright by Michelle Louise Piccola-Schmidt  
August 31, 2004  
All Rights Reserved

The Effect of Pell Grants and Other Factors on  
Debt Accumulation of Stafford Loan Recipients

by

Michelle Louise Piccola-Schmidt

A THESIS

submitted to

Oregon State University

In partial fulfillment of  
the requirements for the  
degree of

Master of Science

Presented August 31, 2004  
Commencement June 2005

Master of Science thesis of Michelle Louise Piccola-Schmidt presented on August 31, 2004.

APPROVED:

  
**Redacted for Privacy**

---

Major Professor, representing Family Resource Management

  
**Redacted for Privacy**

---

Graduate Program Director, Family Resource Management

**Redacted for Privacy**

---

  
Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

  
**Redacted for Privacy**

---

Michelle Louise Piccola-Schmidt, Author

## ACKNOWLEDGEMENTS

Several people have contributed to this thesis and I want to thank them here in writing. The amount of appreciation I have for Dr. Geraldine Olson, department head and my major professor is immeasurable. Dr. Olson's support, encouragement, and tenacity are the major reason why I am here finishing my last requirement for my degree. Dr. Olson's selflessness made me trust her and want to be the best graduate student on campus.

I want to thank Dr. Arlene Holyoak for her kindness, sharp mind, and willingness to be my major professor until her retirement. Dr. Holyoak always had suggestions and ideas for me to act upon which made life as a graduate student much more rewarding.

I would also like to thank the members of my committee: Dr. Chris Ward, Professor Nancy Bryant, Dr. Carmen Steggell and Alice Mills Morrow for their willingness to see me through to the end of this project. I appreciate the statistical expertise of Dr. Paul Scott, who helped me make sense of figures and tables. A big wave of thanks goes to Dr. Bruce Rettig who was willing to support my effort to complete my degree this summer.

Lastly, I want to thank my parents, Albert and Bobbie Piccola for their love and support. A special thanks to my mother who believes I can do anything I set my mind to and helps me remember to always finish what I start. Thanks for all the hours of just listening to me ramble facts and figures, using you as my sounding board. Your devotion to helping me become the best person possible helped me to complete my thesis.

## TABLE OF CONTENTS

	<u>Page</u>
CHAPTER ONE - INTRODUCTION	
Background Statement .....	1
Statement of the Problem .....	3
Justification .....	3
Objectives of the Study .....	4
Delimitations .....	4
Definition of Terms .....	4
CHAPTER TWO – REVIEW OF LITERATURE	
Introduction .....	8
Tuition Costs .....	8
Students’ Financial Aid Choices to Pay for College .....	11
Rational Choice Theory .....	17
CHAPTER THREE - METHODOLOGY	
Introduction .....	20
Research Design .....	20
Description of Sample .....	21
Description of the Instrument .....	22
Data Collection Procedure .....	22
Identification of Variables Used in Study .....	23
Definitions of Variable Terms .....	23
Statement of Hypotheses .....	24

TABLE OF CONTENTS (Continued)

	<u>Page</u>
Proposed Statistical Analysis .....	26
CHAPTER FOUR – RESULTS AND DISCUSSIONS	
Description of the Sample .....	27
Pell Grant .....	27
Age .....	28
Gender .....	28
Race .....	28
Parental Support for Nontuition Expenses .....	28
Earnings from Work .....	29
Credit Card Balance .....	29
Hypothesis Testing .....	31
CHAPTER FIVE – SUMMARY, CONCLUSIONS, AND IMPLICATIONS	
Summary of Procedure .....	39
Summary of Findings .....	39
Implications .....	40
Limitations of this Study .....	43
Suggestions for Further Research .....	44
BIBLIOGRAPHY .....	46
APPENDIX .....	48

## LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Annual Maximum of Federal Stafford Loans for 1999-2000 .....	13
2	Pell Grant Recipient by Race/Ethnicity and Average Award Amount .....	16
3	Distribution of the Sample of 1999-2000 Undergraduates by Race/Ethnicity, Age and Gender .....	30
4	Age and Amount of Stafford Loan Debt .....	33
5	Tuition and Fees with Average Stafford Loan Amount .....	35
6	Standardized Regression Coefficients between Independent Variables and Amount of Stafford Loan Accumulation .....	36
7	Ranking Based on Amount of Earning from Work .....	37
8	Percent of Undergraduates with a Balance Due on Credit Cards and Average and Median Balance Due and Number of Credit Cards .....	38
9	Variables Explaining Level of Accumulated Stafford Loan Debt .....	40

# **The Effect of Pell Grants and Other Factors on Debt Accumulation of Stafford Loan Recipients**

## **CHAPTER ONE**

### **INTRODUCTION**

#### Background Statement

The cost of education is on the rise and many students are finding themselves desperate to finance the college education of their dreams. College costs (tuition, room, and board) have risen at both public and private institutions. For the 1999-2000 academic year, annual prices for undergraduate tuition, room, and board were estimated to be \$12,600 at public colleges and \$21,000 at private colleges (Baum, Payea, & McCrackin, 2003). With college costs on the rise, students are relying on student loans and grants to finance their college education. The College Board states that almost 60% of undergraduate students receive some form of financial aid to help pay for college.

The first scholarship in the United States was established in 1643 by Lady Anne Radcliffe Mowlson at Harvard University. In 1840, the first student loan program was established at Harvard University. For almost 165 years, students have been able to borrow money to attend college. Now, students have an ever-increasing amount of student loan debt to repay upon completion of college. The average student loan amount borrowed for the 1999-2000 school year was \$6,200 (Berkner, Berker, Rooney, & Peter, 2002).

The original goal of federal student financial aid was to make college affordable and accessible to lower income students through a series of grants, and assist lower middle-income students through the use of government subsidized loans (Micceri 1999). Financial aid is offered in several forms. For this study, Federal Financial Aid in the form of Pell Grants (which do not have to be repaid), and their effect on Stafford Subsidized Loan accumulation were studied. Stafford Subsidized Loans are a source of funds in which the government pays for the interest on the loan while the student is in college, but the student takes on the interest and principal payments upon graduation. Unsubsidized loans require recipients to pay the interest while in college, or they can defer the interest payment and add it to the total loan amount once the student loan becomes due. There are a number of additional sources of financial aid such as private loans, grants, scholarship, tax credits, and savings plans that students and/or their parents may use to pay for college expenses, only some of which are explained here.

In 1999-2000, 22% of full-time dependent students were from low-income families, compared to 30% that were from middle-income families (Choy & Berker 2003). How are low-income students paying for college? Are they depending on government loans or grants, engaging in work-study programs, working on or off campus, and/or using savings? In 1999-2000, 52 % of undergraduates received financial aid, most commonly in the form of grants and loans (Berkner et al. 2002). Financial aid awards depend on many variables, key of which are: tuition cost; family income; number of siblings in college; and living on campus, off campus, or with parents. The expected family contribution (EFC) is the amount the federal

government estimates students and their families should contribute to financing the cost of attendance for the school year. For example, the EFC for a four-year public university for a family with income of less than \$30,000 per year is \$1,100; for a family with income of \$30,000-\$44,999 the EFC is \$3,700 (Berkner et al. 2002).

### Statement of the Problem

The main concern of this study was to identify factors that affect Stafford Loan-related debt accumulation for undergraduate students who received this type of loan. The major influencing factor of interest was the receipt of Pell Grants, but the effects of selected socio-economic variables were also included in the analyses.

### Justification

Many researchers have studied factors that affect student loan default rates and factors that affect the type of financial aid borrowed. However, they have not focused on Stafford Loan debt accumulation by comparing Federal Stafford Loan recipients that receive Pell Grants and Federal Stafford Loan recipients that do not receive Pell Grants. Also, both these programs are funded through the federal government, and there is a need to discover if any relationships exist that may not benefit students.

This study will be of interest to the relevant federal government agencies, college or university financial aid offices, students, parents and anyone involved in the process of applying for, receiving, or disbursing financial aid. Ultimately, the education of its citizens is of primary importance to any society.

### Objectives of the Study

The objectives of this study were to:

1. learn the effects that Pell Grants have on Stafford Loan debt accumulation, and
2. identify other socio-demographic factors that affect debt accumulation

### Delimitations

1. The study compared the debt amount only for students who attended public four-year universities.
2. The study only compared the student loan accumulation for Federal Stafford Loans.
3. The study used only students that were considered dependent by financial aid terms.
4. The study did not control for students' personal financial factors. For example, those who lived with many roommates to curb costs were not differentiated from other students who lived by themselves and paid all the bills.

### Definitions of Terms

1. Assets – Investments accounts, stocks, savings, money markets, CDs, and cash reserves
2. College Costs - The price of tuition, books, room, and board for one calendar year

3. Debt Accumulation - The amount of Stafford student loans accumulated while the recipient is in college
4. Dependent Student - a student under 24 years old who doesn't qualify as an independent student by federal guidelines and whose parental income and asset information is used in calculating his or her expected family contribution. Dependent students must include parental information on the FAFSA to be considered for financial aid.
5. EFC - Expected Family Contribution - The financial amount the family is expected to contribute annually to educational expenses of each child
6. Four-Year Institution - An institution legally authorized to offer and is currently offering at least a four-year program of college-level studies, creditable toward a bachelor's degree
7. Grants - A form of financial aid, based on need, which do not have to be repaid
8. Independent Student - An independent student is at least 24 years old, married, a graduate or professional student, a veteran, an orphan, a ward of the court, or someone with legal dependents other than a spouse
9. NCES - National Center for Education Statistics - A statistical branch of the Office of Educational Research and Improvement, a component of the U.S. Department of Education
10. NPSAS -- National Postsecondary Student Aid Study
11. Parent Loan for Undergraduate Students - PLUS - Allows parents to borrow money to cover any costs not already covered by the student's financial aid package, up to the full cost of attendance

12. Pell Grant - A type of grant which provides grant assistance to eligible undergraduate postsecondary students with demonstrated financial need up to \$3,125 per year, not to be repaid
13. Perkins Loan – A loan awarded to undergraduate and graduate students with exceptional financial need. It is a campus-based loan program, with the school acting as the lender, using a limited pool of funds provided by the federal government up to \$3,000 per year maximum per student
14. Private For-Profit Institution – An educational institution in which the individual(s) or agency in control receive compensation beyond wages, rent, or other expenses for the assumption of risk
15. Public Institution - An educational institution whose programs and activities are operated by publicly elected or appointed school officials and which is supported by public funds
16. Stafford Loans – Federal guaranteed loans for educational expenses from eligible lenders to vocational, undergraduate, graduate, and first-professional students at eligible postsecondary institutions. These loans can be either subsidized or unsubsidized, and the two programs are the Federal Family Education Loan Program and Federal Direct Student Loan Program. Up to \$23,000 for dependent students and \$46,000 for independent students may be borrowed over a four-year period
17. Subsidized loans – Loans for which the government pays for the interest accumulated while the recipient is attending college

18. Unsubsidized loans - Loans for which the government does not pay interest while the recipient is attending college
19. Work-Study - A federal program to which the government contributes a percentage of the student's paycheck to the on-campus or off-campus employer for work done on behalf of the university

## CHAPTER TWO

### REVIEW OF LITERATURE

#### Introduction

In this chapter, literature related to student loan debt accumulation is reviewed. The three general topics researched are: 1) public and private four-year university tuition and fee costs, 2) students financial aid choices to pay for college, 3) Rational Choice Theory.

#### Tuition Costs

The cost of tuition varies by state policy, institution control, and state support. It is difficult to compare states as each state has different populations and different state funding requirements for the universities. So, for most research studies, the tuition costs are averaged. Tuition and fees rise more rapidly when state appropriations decrease, which occurred in the 2003-2004 school year (Baum et al. 2003). Thus, the overburdened state budgets across the nation lead to cutbacks in institutional funding, causing an increased reliance on tuition and fees as a major source of revenue (Baum et al. 2003).

At state supported four-year colleges, a small reduction in state support may result in a large increase in the share of tuition a student pays. For example, if a public college received an average of \$5,000 per student in support from the state, and each

student then pays \$1,000 in tuition, a total of \$6,000 is spent on the student's education. If the state lowers its support by \$500 per student, tuition must be raised by 50% to compensate (Lee 2003).

A paper published by the National Center for Public Policy and Higher Education states that state support for higher education increased by 1.2% in 2003 as compared to 2002 which had a 3.5% increase (Trombley 2003). Also, the appropriations dropped in over 14 states, with the largest decline of 11% occurring in Oregon. The paper also states that tuition and fees at four-year public colleges rose in all 50 states.

The fact that federal aid dollars are keyed to student financial need — which rises with tuition increases — makes it appear that colleges should be able to capture more federal aid by raising prices (McPherson & Shapiro 1998). Researcher William Bennett claims that federal student aid increases have backfired by causing private colleges to raise tuition to capture the additional aid, with the result that aid goes mainly to benefit college revenues rather than to ease the payment burden for students (McPherson & Shapiro 1998).

Over the past 10 year period, average tuition and fees rose 47% equivalent to \$1,506 at public four-year colleges and 42% at private colleges (Baum 2003). According to the above report, the growth rate was lower than that of the preceding decade, which had a growth rate of 54% at public four-year colleges and 50% at private colleges. The Consumer Price Index was at 152.20 points in 1993, and in 10 years it increased 41 points, or just 26.9% by 2003.

In a report by the College Board, the average cost of tuition and fees for the school year 2003-2004 at public four-year colleges was \$4,694. This is an increase of 14.1 % or \$579 from the previous year. The tuition and fees for a four-year private college rose 6% to \$19,710.

Most researchers who have examined students' demand for higher education have reached the same basic conclusions: Tuition prices are inversely related to the probability of enrolling in college (Heller 2001). Thus, as tuition rates increase, fewer students are expected to enroll in college. Heller reports that economists describe this relationship between tuition prices and enrollment by stating that students face a downward sloping demand curve. In contrast to the economic evidence in the literature, however, undergraduate enrollments rose through the 1980's, even in the face of larger tuition increases (Heller 2001).

The study, "What Students Pay for College" (Horn et al. 2002) indicates an increase in tuition and fees for colleges between 1992 to 1993 and 1999 to 2000 (after adjusting for inflation). However, when all grants were subtracted from tuition, no change could be detected in the average amount that full-time undergraduates paid between academic year 1992 to 1993 and academic year 1999 to 2000. When living expenses and other non-tuition costs were taken into account, however, all grants combined were not sufficient to offset the increase in price for those attending public or private four-year colleges. Not all students were affected equally by the changes in costs. The increase in all grants (combined federal, state, institutional, and other grant aid) was sufficient to offset increases in total price for low-income students. This finding was consistent across all institution types included in the study.

However, as state support to colleges decreases, students at all income levels have to bridge the gap by paying increased tuition and fees expenses. Over the past 10 years tuition and fees have increased almost 50% at public four-year colleges.

### Students' Financial Aid Choices to Pay for College

Since the founding of the earliest colleges, student aid has provided educational opportunities for a certain number of students who are “needy and deserving,” which was the goal of financial aid programs from the beginning (McPherson & Shapiro 1998). Now the federal government decides who is “needy and deserving” by calculating the expected family contribution. This monetary figure is the maximum amount the student and family are expected to pay toward the costs of attending college (Carey 1993). The difference between the EFC and the actual cost of attending the college for the year can be borrowed, or if the student qualifies, can come in the form of grants.

To determine financial need, colleges classify students as financially dependent on their parents or as financially independent of their parents. Any undergraduate who is 24 years or older is defined as independent. All those under age 24 are defined as dependent unless they are married, have children, or are veterans or orphans. For dependent students, family income is considered to be the income of the parents; for independent students, family income is considered to be the income of the student. Approximately 51% of all undergraduates in 1999-2000 were considered financially independent (Berkner et al. 2002).

Boatwright (1992) studied factors that influence students' decisions to attend college and found that parents and students know little about college costs and federal aid until time for entry into college. For many students this means that there is no long-term savings or investments plan for their college education. Such students will need to resort to financial aid to afford college if their parents and family do not have the resources on hand to help.

Behavioral responses of students and their families to college costs have also been studied in detail, and one of the important conclusions is that changes in the net cost of going to college have had very little effect on the enrollment rates of students from high-income families—but considerable effect on enrollment rates of students from low-income families (McPherson & Shapiro 1998). There is evidence that resources available to give the lowest-income college students a meaningful choice among educational alternatives are dwindling and there is widespread worry that governments, both state and federal, will continue to back away from their commitments to support the education of needy students through grants and loans (McPherson & Shapiro 1998).

Based on class level there is a maximum amount that a student can receive for Federal Stafford Loans. The maximum amount also differs based on whether you are classified as an independent student or a dependent student. Another difference is if you receive subsidized or unsubsidized Stafford Loans. Table 1 gives details of the maximum amounts of Stafford Loans available to student for the 1999-2000 school year.

Table 1 Annual Maximum of Federal Stafford Loans for 1999-2000

Class Level	Subsidized	Unsubsidized	Max
Dependent Students - students can borrow any combination of Stafford Loans (subsidized or unsubsidized) up to the maximum amount for the class level			
First-year	-	-	\$2,625
Second-year	-	-	\$3,500
Third-year	-	-	\$5,500
Fourth-year	-	-	\$5,500
Fifth-year	-	-	\$5,500
<i>All Years Total</i>	-	-	<i>\$23,000</i>
Independent Students -- students can borrow any combination of Stafford loans (subsidized or unsubsidized) up to the maximum per column and maximum for the class level			
First-year	\$2,625	\$4,000	\$6,625
Second-year	\$3,500	\$4,000	\$7,500
Third-year	\$5,500	\$5,000	\$10,500
Fourth-year	\$5,500	\$5,000	\$10,500
Fifth-year	\$5,500	\$5,000	\$10,500
<i>All years</i>			<i>\$46,000</i>

According to the College Board, for the school year 2003-2004, there was \$105 billion in financial aid available to students and their families, an increase of 12% over the previous year. The College Board states that almost half of college students received grant aid. In the school year 2002-2003, grant aid averaged \$2,400

per student at public four-year colleges and \$7,300 per student at private four-year colleges. According to the College Board almost 60% of undergraduate students receive some form of financial aid.

The Federal Pell Grant program is the biggest source of grant funds to undergraduates, providing \$7.3 billion to 3.8 million students in 1999-2000 (Berkner et al. 2002). Berkner also states that low-income students were more likely to receive grants from the federal government than from any other source. About one of every eight dependent undergraduates (13%) came from families earning less than \$20,000 per year (Malizio 2001).

Most low-income students attending full time, full year (75%) received some financial aid in 1999-2000. Most of these (81%) received grants, which averaged \$3,900 for those who received them (Choy 2000). Students are taking out student loans and trying to become eligible for grants to pay for college in order to improve their chances of higher earnings after graduation.

About 54% of undergraduates attending four-year public institutions in 1999-2000 had an average accumulated total federal student loan amount of \$11,000. In comparison, 61% of undergraduates at private four-year institutions had an average accumulated federal student loan amount of \$12,000 (Berkner et al. 2002).

Among those undergraduates that received some form of aid, 40% received only grants; 13% received only loans; 26% received both grants and loans; 8% received grants, loans, and work-study; and 13% received other combinations of aid (Malizio 2001).

Among low-income, dependent students, 61% received aid from federal grants, 29% from state funds, 24% from institutional funds and 8% from private funds. Among middle-income dependent students, 25% received aid from institutional funds, 16% from state funds, and 11% from federal grants. Among high-income dependent students, 21% received funds from institutions, 11% from private funds, 6% from state grants and 1% from federal grants (Berkner et al. 2002).

In 1999-2000, about one-half of all full-time dependent students had at least some unmet financial need. The average unmet financial aid need was \$5,100 for the school year (Choy & Berker 2003).

The two major types of financial aid awarded to students are grants and loans. Many students receive more than one type of financial aid in their aid package. Undergraduates with loans were most likely to receive them from the federal government: In 1999-2000, the percent of undergraduates taking out federal loans was much higher than the percent borrowing through state, institutional, and private sources (Berkner et al. 2002). Undergraduates with grants received them from a variety of sources, but the highest percentage is still through the federal government. Low-income students were more likely to receive grants from the federal government than from any other sources. Middle-income students were more likely to receive grants from the state and college than from the federal government or privately. High-income students were more likely to receive grants from the state, college, and private sources than from the federal government.

Table 2 explains the percent of a particular race that received Pell Grants and the average Pell Grant amount. The amounts and percents are for the school year 1999-2000.

Table 2 Pell Grant Recipient by Race/Ethnicity and Average Award Amount

Race/Ethnicity	Percent receiving Pell grants	Average Pell Grant
White	17.9	\$1,891
Black/African American	45.3	\$2,245
Hispanic/Latino	40.0	\$2,135
Asian	37.0	\$2,291
American Indian/Alaska Native	31.4	\$1,802
Native Hawaiian/Pacific Islander	32.0	\$1,689
Other	24.6	\$2,160

Sixty percent of students that received a bachelor's degree at a public four-year college in 1999-2000 had received federal student loans as an undergraduate with an average of \$16,100 in federal loans (Berkner et al. 2002). At private four-year

colleges, 66% had borrowed from the federal government and had an average of \$18,000 in federal loans (Berkner et al. 2002).

In the year 1999-2000, about one-half of those receiving Stafford loans borrowed only subsidized loans, 17% borrowed only unsubsidized loans, and 36% borrowed both. The average Stafford loan was higher for independent than for dependent students (\$5,500 vs. \$3,800). Among dependent Stafford borrowers, 69% borrowed the maximum amount allowed. Among independent borrowers, whose limit is double that of dependent students, only 27% borrowed the maximum amount allowed (Berkner et al. 2002).

### Rational Choice Theory

Rational Choice Theory (RCT) builds around the idea that all action is fundamentally 'rational' in character and that people calculate the costs and benefits of any action before deciding what choice to make (Browning, Halcli, & Webster, 2000). Browning et al. also states that Rational Choice Theory denies the existence of any kind of actions other than the purely rational and calculative actions.

Turner (2002) in his book The Structure of Sociological Theory states there are three basic assumptions of rational choice theory:

1. Humans are purposeful and goal-oriented
2. Humans have hierarchically ordered preferences
3. In choosing behavior, humans make rational decisions

In rational choice theories, individuals are seen as motivated by the wants or goals that express their preferences. They act within given constraints and on the information they have about the conditions under which they are acting. The theory explains that individuals must anticipate the outcomes of alternative courses of action and calculate that which will be the best for them. Rational individuals choose the alternative that will give them the greatest satisfaction (Heath 1967, Carling 1992).

When it comes to preferences, RCT assumes that each preference can be measured against the other. Someone who prefers A to B to C, also prefers A to C. If one can't get A, B is the next choice. Given the preference order, RTC predicts that individuals will choose the option that realizes his/her highest preference of the available options (Smith 2004).

The current study sample consists of undergraduate students attending school to receive a degree and rational choice theory states that individuals are motivated by the wants or goals that express their preferences. The students could anticipate the outcome that a college degree lands them an entry-level job. The preference would be to complete the degree program to achieve this goal. Now the student has to pay for the degree, and an option is to borrow student loans if the student does not qualify for grants from the federal government. So, if the student qualifies for grants but the grant amount does not cover all cost then the student has the option of borrowing student loans to make up the deficient.

With the rational choice theory in mind, the student would see justification in borrowing student loans to pay for his or her degree with the outcome that it could be paid back upon receiving a job offer after college. At the same time, students would

be expected to select the options that are the most efficient in reaching their goal.

Thus, students need good information about the costs of various financial options as they affect total debt accumulation, especially from Federal loans to make rational choices. The ability of students to make these choices effectively will be discussed in Chapter Four.

## CHAPTER THREE

### METHODOLOGY

#### Introduction

This chapter discusses the selection of the sample, the collection of data, and the analysis of those data. The National Postsecondary Student Aid Study (NPSAS) is a nationwide study to determine how students and their families pay for their education. The National Center for Education Statistics (NCES) of the Department of Education has collected enrollment data from all colleges and universities in the United States. The data set is then analyzed to compare debt accumulation of different groups of undergraduate students in the United States during the 1999-2000 school year.

This chapter discusses how the data set for the NPSAS study was selected. It also addresses how the samples from the NPSAS data set were selected for this debt accumulation study.

#### Research Design

The National Postsecondary Student Aid Study (NPSAS) was designed by the National Center for Educational Statistics. The study is based on a national sample of all students enrolled at postsecondary institutions, including undergraduate, graduate and first-year professional students. All types and levels of institutions were sampled

including public institutions and private for-profit and not-for-profit institutions, two-year and four-year colleges and universities. Data were collected from over 950 postsecondary institutions, 50,000 students, and 8,800 parents. The target population for NPSAS consisted of all students who were enrolled in postsecondary institutions in the United States and Puerto Rico between July 1, 1999 and June 30, 2000.

### Description of Sample

The purpose of the present study was to gain knowledge about the effect of Pell Grants and other factors in debt accumulation of Stafford Loan recipients. The data set used for this study was acquired from the National Center for Educational Statistics and was a study done in 2000 entitled National Postsecondary Student Aid Student: 1999-2000. The Debt Accumulation Study uses the data from students attending public four-year institutions located in the United States and Puerto Rico. Only students who receive Pell Grants and Stafford Loans were selected for the debt accumulation study.

Within this sample, the students of special interest were undergraduate students that received both Pell Grants and Stafford Loans, plus undergraduate students that received only Stafford Loans. In addition, key socio-economic variables were selected because of their potential for explaining total Stafford Loan debt accumulation.

### Description of the Instrument

The NPSAS study used a questionnaire with 300 demographic and financial questions answered during a telephone interview and from the questions answered on the Federal Application for Financial Student Aid.

For the current study, the responses for the students being studied were selected, and key variables, based on the review of literature, were identified for statistical analysis.

### Data Collection Procedure

A multi-stage effort was used for collecting information related to student aid.

1. Electronic student aid reports were collected directly from the Department of Education Central Processing System for federal aid applications
2. Data from student records were at the school from which his or her files were sampled
3. The students were then interviewed through a Computer Assisted Telephone Interviewing (CATI) procedure

Data were collected from over 950 postsecondary institutions, 50,000 students, and 8,800 parents. The present study uses 32,525 dependent undergraduate students from more than 100 different institutions. All of these students borrowed Stafford Loans, but only a share of these received federal Pell Grants.

### Identification of Variables Used in Study

#### Dependent Variable

1. Total amount of Stafford Loan debt accumulation

#### Independent Variables

1. Pell Grant
2. Gender
3. Age
4. Race/Ethnicity
5. Amount of financial support from parent's for non-tuition expenses
6. Tuition and fees
7. Student's earnings from work
8. Student's number of credit cards with a balance due

There were many variables that were eliminated in the sample due to high correlation with other variables. There was a vast amount of missing data for some variables so those variables were not used in the study. For example, expected family contribution, and parents' marital status were not used in the study.

### Definitions of Variable Terms

1. Pell Grant – Received a Pell Grant or did not receive a Pell Grant

2. Gender – The gender of the student: male or female
3. Age category – The age of the student as of January 1, 2000: 17 years or younger , 18-20 years old, and 21-23 years old
4. Race/Ethnicity – The race of the student: White, Black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, Other
5. Amount of financial support from parents for non-tuition expenses – The amount of dollars contributed for non-tuition expenses in fixed categories: no support, \$1,000 or less, and more than \$1,000
6. Tuition and fees – Amount of tuition and fees for the school year 1999-2000 fixed categories: \$1 to \$999; \$1,000 to \$1,999; \$2,000 to \$2,999; \$3,000 to \$3,999; \$4,000 to \$4,999; \$5,000 to \$7,499; \$7,500 or more
7. Students' earnings from work – Amount students earned from work in fixed categories: less than \$2,500; \$2,500 to \$4,999; \$5,000 to \$7,499; \$7,500 to \$9,999; \$10,000 or more
8. Number of credit cards with a balance due – Zero credit cards, one or two credit cards, three or more credit cards

### Statement of Hypotheses

#### Null Hypothesis 1

The loan amounts accumulated by these students will not vary based on Pell grant award

Null Hypothesis 2

The loan amounts accumulated by these students will not vary because of gender

Null Hypothesis 3

The loan amount accumulated by these students will not vary because of age

Null Hypothesis 4

The loan amounts accumulated by these students will not vary because of race/ethnicity

Null Hypothesis 5

The loan amounts accumulated by these students will not vary because of amount of financial support of parents for non-tuition expenses

Null Hypothesis 6

The loan amounts accumulated by these students will not vary based on tuition and fee prices

Null Hypothesis 7

The loan amounts accumulated by these students will not vary because of earnings from work

Null Hypothesis 8

The loan amounts accumulated by these students will not vary because of number of credit cards with balances

### Proposed Statistical Analysis

The review of literature was used to select potential variables to use in the study. A correlation matrix was used to identify independent variables that were highly correlated, choosing only one of these variables when that was the case. (See Appendix) The statistical program SPSS – Statistical Package for the Social Sciences was used for the statistical analysis of the means, medians, ranges, and percentage and number distributions. A simple regression with key variables controlled was employed to test the hypotheses. A level of confidence .05 was used for determining the association between the variables.

## CHAPTER FOUR

### RESULTS AND DISCUSSIONS

The aims of this study were 1) to explore the effect of federal grants on undergraduate Stafford Loan student debt accumulation, and 2) to investigate additional factors affecting Stafford Loan amounts. The results of the data analysis are divided into two sections. The first section describes the demographics of the sample. The second section reports on the hypothesis testing.

#### Description of the Sample

The subjects in the sample for this study were residing in the United States. The participants consisted of 32,525 dependent undergraduate students attending over 100 different four-year public universities. The sample consisted of students receiving only Stafford Loans, plus those who received Pell Grants and Stafford loans. The other common characteristics of these students were that they were all undergraduate students that attended a public four-year college.

#### *Pell Grant*

The average Pell Grant award was \$3,518 with 45.3% of students who applied for financial aid receiving Pell Grants in their financial aid award package.

*Age*

The mean age (in 1999-2000) for undergraduate students in the sample was 20.5 with a range of 15-23. The distribution of the ages showed 9.5% at 17 years or younger, 47.7% 18-20 years old, and 42.8% 21-23 years old.

*Gender*

The sample consisted of 43.3% males and 56.7% females. In the 17 years or younger group, males accounted for 41% and females accounted for 59%. In the 18 – 20-year-old group, males accounted for 45.8% and females accounted for 54.2%. In the 21 – 23-year-old group, males consisted of 41.4% and females consisted of 58.6%.

*Race*

The sample consisted of 67% white, 12.4% black, 12% Hispanic, 5.4% Asian, 1% American Indian/Alaska Native, 1% Native Hawaiian/Pacific Islander, and 1.3% other.

*Parental Support for Nontuition Expenses*

In the sample, 38.6% of the students received no support from their parents, 26.8% received less than \$1,000, and 34% received support of \$1,000 or more.

### *Earnings from Work*

In the sample 26% had annual earnings of less than \$2,500, 21.4% earned \$2,500 to \$4,999, 15% earned \$5,000 to \$7,499, 18.5% earned \$7,500 to \$9,999, and 19.1% earned \$10,000 or more.

### *Credit Card Balance*

The sample consisted of 55.3 % who had either no credit cards or a zero balance on the credit cards and 44.7 % who had a balance due on their credit cards averaging \$3,066. Of the sample that had credit cards balances, 39.1 % had two or fewer cards with an average balance due of \$1,834, and 53.2 % had three or more credit cards with an average balance due of \$4,433.

The sample consisted of undergraduate students attending school to receive a degree and rational choice theory notes that individuals are motivated by the wants or goals that express their preferences. The findings support the idea show that students (49.6%) that qualified for grants and still had unmet financial needs also chose to borrow Stafford loans. The goal being to graduate with a degree from a four-year public university, the students calculate the outcome that they believe would be best for them and, in this study, have decided to seek student loans to cover their college expenses for the school year.

Table 3 details the distribution of the sample by race/ethnicity, age, and gender for the school year 1999-2000. The numbers are shown as percents for each category.

Table 3 Distribution of the Sample of 1999-2000 Undergraduates by Race/Ethnicity, Age and Gender

	White	Black/ African American	Hispanic/ Latino	Asian	American Indian/ Alaska Native	Native Hawaiian/ Pacific Islander	Other
<i>Age</i>							
17 years and younger	9.7	7.9	9.8	9.3	7.9	8.5	10.7
18 - 20 years old	49.1	41.5	46.1	48.8	37.3	48.1	51.8
21- 23 years and older	41.20	50.70	44.10	41.9	54.8	43.5	37.5
<i>Gender</i>							
Male	44.4	36.7	44.2	48.7	39.3	46.4	52.1
Female	55.6	63.3	55.8	51.3	60.7	53.6	47.9

- (n = 32,525)

The effect of Pell Grants on the amount of Stafford Loan debt accumulation.

Hypothesis 1 - The loan amounts accumulated by these students will not vary based on Pell grant awards

This null hypothesis was not supported as there were significant differences ( $p=.05$ ) in the loan amounts accumulated based on Pell grant awards. The regression coefficient for Pell grant awards was statistically significant with an alpha level of .05

There were significant differences in loan amounts accumulated based on Pell grant awards. However, the relationship between Pell grant amounts and Stafford Loan amounts was in what might be seen as a surprising direction. As the average Pell Grant amount awarded increased so did the amount of Stafford loan debt accumulation.

One factor that may influence this finding is the fact that Pell Grants are need-based, so the students that are receiving the grants have a higher amount of need and thus are borrowing the maximum Stafford Loan amounts allowed. As the amount of need increases for these students, they look to the Stafford loans to fill the gap in their financial aid award package. Since class level influences the amount of Stafford loans a student can borrow this needs to be factored into future studies.

The effect of gender on the amount of Stafford Loan debt accumulation.

Hypothesis 2 - The loan amounts accumulated by these students will not vary because of gender

This null hypothesis is supported, as there were no significant differences in the loan amounts accumulated for these students whether they were male or female.

The regression coefficients for gender differences were not statistically significant at an alpha level of .05.

Controlling for any other factors contributing to the loan accumulation amount, the implication is that there is no difference in the amount of loans borrowed based on gender. One can therefore generalize that there is no difference in the amount of Stafford loans borrowed whether you are male or female.

The effect of age on amount of Stafford Loan debt accumulation.

Hypothesis 3 - The loan amount accumulated by these students will not vary because of age

This null hypothesis is not supported, as there were significant differences in the loan amounts accumulated based on age. The regression coefficients for loan amounts accumulated for these students based on age were statistically significant at an alpha level of .05

Table 4 details the results of the significant difference in the loan amounts accumulated based on age with those students' 17 years and younger receiving the least amount of Stafford Loans.

One way this significance can be explained is by class rank. Each year as student's class rank increases so does the amount the student is allowed to borrow in Stafford loans. As a freshman, students can borrow a maximum amount in Stafford loans of \$2,625, whereas when students become seniors, they can borrow up to \$5,500. It is reasonable to assume that students who borrow in their first year of college will continue to make these loans over the 4 - 5 year period, and students who

use savings or parental financial support in the first years may also need to make loans toward the end of their college experience.

Table 4 Age and Amount of Stafford Loan Debt

Age	Average Dollar Amount of Stafford Loans Received
17 years and younger	\$3743
18 - 20 years old	\$4,864
21 - 23 years old	\$6,016

The effect of race/ethnicity on amount of Stafford Loan debt accumulation.

Hypothesis 4 - The loan amounts accumulated by these students will not vary because of race/ethnicity

This null hypothesis was supported as there were no significant differences ( $p=.05$ ) in the loan amounts accumulated based on race. The regression coefficients for gender differences were not statistically significant at an alpha level of .05.

Without any other factors contributing to the loan accumulation amount, the implication is that there is no difference in the amount of loans borrowed based on race/ethnicity. Therefore, there is no difference in the amount of Stafford loans borrowed based on being of a particular race/ethnicity.

The effect of financial support from parents for non-tuition expenses on amount of Stafford Loan debt accumulation.

Hypothesis 5 - The loan amounts accumulated by these students will not vary because of amount of financial support of parents for non-tuition expenses

This null hypothesis was not supported as there were significant differences ( $p=.05$ ) in the loan amounts accumulated based on financial support of parents for non-tuition expenses. The regression coefficient for financial support of non-tuition expenses was statistically significant with an alpha level of .05. The loans amounts accumulated for students that received no support for non-tuition expenses from parents was the highest amount, followed by those that received less than \$1,000, and least by those that received over \$1,000.

The effect of tuition and fees on amount of Stafford Loan debt accumulation.

Hypothesis 6 - The loan amount accumulated by these students will not vary based on the level of tuition and fees.

This null hypothesis was not supported as there were significant differences ( $p=.05$ ) in the loan amounts accumulated based on tuition and fees for the school year 1999-2000. The regression coefficient for tuition and fees were statistically significant with an alpha level of .05.

As tuition and fees rise, so does the accumulated amount of Stafford loans. The results are shown in Table 5 with tuition & fees amounts and the average Stafford loan amount accumulated.

Table 5 Tuition and Fees with Average Stafford Loan Amount

Tuition & Fees Amount	Average Stafford Loan Amount
\$1 to \$999	\$3,228
\$1,000 to \$1,999	\$3,802
\$2,000 to \$2,999	\$4,634
\$3,000 to \$3,999	\$4,985
\$4,000 to \$4,999	\$5,183
\$5,000 to \$7,499	\$5,613
\$7,500, or more	\$6,374

From these data it seems plausible that recent rapid increases in tuition and fees have also contributed to increased student debt. With low-income students and students without non-tuition support of expenses incurring the highest levels of debt, it seems likely that, following rational choice theory, more of these students will choose not to pursue higher education. The study by Horn (2002) indicates that middle-income students that receive grants did not have a sufficient amount of grants to offset the increase in tuition at four-year public colleges. This limits their ability to attend college without taking out additional loans.

Table 6 details the regression coefficients between the independent variables and student loan debt accumulation. The eight hypotheses each have a P value and for this study a .05 was used for the significance level. Of the eight hypotheses, five had a significance level at or below .05.

Table 6 Standardized Regression Coefficients between Independent Variables and Amount of Stafford Loan Debt Accumulation

Research Hypothesis	Independent Variables	Standardized regression Coefficients ( $\beta$ )	P Value
1	Pell Grant	.305	.000
2	Gender	.008	.417
3	Age 17 years or younger 18-20 years old 21-23 years old	-.050 .088 .061	.000 .000 .000
4	<u>Race/Ethnicity</u> White Black/African American Asian American Indian Native Hawaii/Pacific Islander Other	.023 .017 -.030 -.017 -.002 -.019	.142 .111 .074 .095 .865 .096
5	Amount of parental support	-.035	.001
6	Tuition and fees	30.563	.000
7	Earnings from work	-3.027	.002
8	Credit card balance due	.029	.068

- Dependent Variable: Total Stafford Loan debt accumulation.
- (n = 32,525)
- R = .485
- R<sup>2</sup> = .235
- Adjusted R<sup>2</sup> = .234

The effect of earnings from work on the amount of Stafford Loan debt accumulation.

Hypothesis 7 - The loan amount accumulated by these students will not vary because of earnings from work

This null hypothesis was not supported as there were significant differences ( $p=.05$ ) in the loan amounts accumulated based on earnings from work for the school year 1999-2000. The highest loan amount accumulated was by students earning less than \$10,000. Table 7 details the rankings based on the amount of earnings. The difference with the group that earned \$50,000 or more may result from corporate reimbursement of their college expenses. Overall, these results seem rational as students chose income from work as a substitute for student loans.

Table 7 Rankings Based on Amount of Earnings from Work

Ranking of largest amount of Stafford loans accumulated – highest to lowest	Amount of Earnings from Work
1	Under \$2,500
2	\$2,500 – \$4,999
3	\$5,000 – \$7,499
4	\$7,500 – \$9,999
5	\$10,000 or more

The effect of number of credit cards with balances on the amount of Stafford Loan debt accumulation.

Hypothesis 8 - The loan amounts accumulated by these students will not vary because of number of credit cards with a balance

This null hypothesis was supported, as there were no significant differences in the loan amounts accumulated based on credit card balances. The regression coefficients for loan amounts accumulated for these students based on age were not statistically significant at an alpha level of .05. Further study of the relationship between credit card use and debt accumulation from student loans, using different measures or debt intervals, may be warranted. While not statistically significant at the .05 level, the regression coefficient is seen to be positive, indicating that one type of loan is not a substitution for the other. The demographic data show that a majority of students have three or more credit cards and a sizeable average debt. A study of factors contributing to credit card and student loan debt could shed light on the debt choices that students are making, and why. Table 8 details the average amount of credit card debit based on number of credit cards the student had with balances owing.

Table 8 Percent of Undergraduates with a Balance Due on Credit Cards

	Percent with any balance due	Average balance due on all credit cards	Median balance due on all credit cards
One or two credit cards	39.1	\$1,834	\$919
Three or more credit cards	53.2	\$4,433	\$2,974

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS, AND IMPLICATIONS

#### Summary of Procedure

The purpose of the present study was to gain knowledge about the debt accumulation between undergraduates who receive Pell Grants and Stafford Loans as compared to those who only borrowed Stafford Loans. The data set used for this study was acquired from the National Center for Educational Statistics and was a study done in the year 2000, entitled National Postsecondary Student Aid Study: 1999-2000. This current debt accumulation study uses data from students attending public four-year institutions located in the United States. Only students who received Stafford Loans or Stafford Loans with Pell Grants were selected for the current study. Data were collected from over 950 postsecondary institutions, 50,000 students, and 8,800 parents for the master study. The present study uses 32,525 undergraduate students from more than 100 different institutions.

#### Summary of Findings

Eight independent variables were used in a simple regression equation to explain accumulated Stafford Loan debt of undergraduate students at public, four-year colleges and universities. There were many variables that were eliminated based on the variables being highly correlated or because of very high levels of missing data.

The factors explaining accumulated debt are found in Table 9. The table details the direction of association of the five variables that have significance. Variables that were not significant were Gender, Race/Ethnicity, and Number of Credit Cards with a Debt Balance.

Table 9 Variables Explaining Level of Accumulated Stafford Loan Debt

Variable	Direction of Association
Receipt of a Pell Grant	+
Age of the Student	+
Non-tuition Support of Parents	--
Tuition and Fees Prices	+
Earnings from Work	--

### Implications

A major goal of this study was to assess the effect of Pell Grants on accumulated Stafford Loan debt. While the association was significant, the direction was positive.

This means that the fact of receiving a grant was not associated with lower levels of accumulated debt but, in fact, seemed to be related to increased levels of debt. Since Pell Grants are awarded to the most needy students, it is reasonable to assume that, even after the receipt of a Pell Grant, these students may have higher levels of unmet need. This unmet need they meet primarily by receiving student loans. Increasing the level of Pell Grants would be a first step for assisting needy students. At some point, the level of debt faced by the neediest students is likely to discourage them and result in lower college enrollments by this group.

A secondary goal of this study was to identify other factors influencing accumulated student debt. Age of the student and cost of tuition and fees were related in a positive way to higher debt levels. It is reasonable to assume that levels of accumulated debt increase as students progress through their educational programs. However, the review of the debt picture of older-than-average students might be warranted to see if there is a particular pattern of debt for this group. Of course, holding the line on tuition and fees for public institutions would also benefit these students, but this needs to be addressed at a state-by-state basis rather than by change of Federal policy.

Non-tuition financial support by parents and level of student earnings were negatively associated with students' accumulated debt. Perhaps parents of the neediest students were less able to provide financial support of any kind, and their earnings were low relative to students from higher income families. These are assumptions that require further study. Strategies to redress this situation could take many forms, but increasing the level of grants, decreasing the Expected Family Contribution, and

increasing support for work-study programs could help the neediest of students to avoid crushing levels of student debt.

This study is important as there are many students in college that may not understand the relationship between grant money and student loans. This study finds that students that receive Pell Grants also receive a larger amount of Stafford loans compared to those that just receive Stafford Loans. What are the reasons these students are borrowing a higher amount and what is the impact on their finances after graduation? Further study is warranted, since the development of human capital is key to the economic future of the country.

The literature shows that tuition and fees are increasing and those students attending college need financial aid to cover these costs. Studies suggest that students receiving financial aid borrow to pay for tuition and fees but we have little data about how students are using their financial aid loans relative to other financial support. This topic needs further research. Default rates have been studied but we need longitudinal studies to explain how these decisions and how they affect the student loan default rate, as well as future financial decisions made by graduates with heavy debt loans.

Finally, the results of this study have implications for the work of student financial advisors as well as those who make policy relative to types and levels of student financial aid. The high levels of credit card debt held by students in this study suggest that students see no relationship between the debt they are accumulating and the amounts they charge for consumer goods. With financial planning assistance, it may

be possible for students to substitute lower cost student loans for high cost consumer credit as they work through their college costs.

Studies such as this need to be used by policy makers to achieve the original goals of these loan and grant programs, to assure access to higher education for capable students at all income levels. The positive relationship between Pell Grants and Stafford loans implies that this may not currently be the case, and a review of policy and well as levels and types may be in order, especially as college tuition and fees continue to grow at a rate much faster than the costs of other consumer goods.

#### Limitations of this Study

There are a number of limitations that should be noted. First is the restricted sample. All students at two-year and private institutions have been omitted in the analysis so that results could be more clearly understood. However, this limits the generalizability of the findings to students in public, four-year institutions of higher learning. Second, there were a number of potential explanatory variables that had to be eliminated from the analysis because of high percentages of missing data, e.g. Expected Family Contribution, and parents' marital status. In addition, a number of potential variables were highly correlated with another variable of interest e.g. student's marital status with student family size and being dependent; and age of student with student's marital status, student family size, and having dependent children. Thus, choices among variables needed to be made accordingly.

There was also a large amount of missing data. This problem eliminated many variables from the study.

One of the most interesting groups to study might be students who decided to attend a two-year college program or not to pursue a college education at all. These groups are not included in the original sample, and fall beyond the scope of this study. However, they may represent rational choices by students with very limited means.

Finally, there are other Federal grants and loans available to college students and there are many scholarships and awards that need to be studied to see if these have any effects on student loan debt accumulation.

#### Suggestions for Further Research

This study suggests a number of possibilities for further research:

1. Assess debt accumulation and future life and work choices of students who begin their education in 2-year institutions versus four-year institutions.
2. Consider a study of high school graduates who decide not to enter college because of high costs and limited resources, and ask them why they made the choice to not attend college instead of using student loans to pay for college.
3. Study the attitudes and knowledge of students who are accumulating student debt. Both economic and psychological variables may play a role in their financial resource decisions, suggestions implications for programs designed to help needy but capable students obtain their rational educational goals.

4. Pursue better information about the credit card debt of students to determine the role credit cards play in financing educational expenses and total debt accumulation.
5. Study how the students who receive financial spend that aid. Do they really spend it on college costs or does the fact of that financial support change spending habits in other areas? For example, what effects might student aid have on related financial decisions such as decisions to work, where to live, etc.
6. Conduct a study on financial planning knowledge or lack of knowledge on the part of students and the effect of student loan debt accumulation on default rates.

**BIBLIOGRAPHY**

- Baum, S., Payea, K., McCrackin, S., (2003). Trends in college pricing. New York, The College Board.
- Berkner, L., Berker, A., Rooney, K., Peter, K., (2002). Student financing of undergraduate education: 1999-2000. National Center for Education Statistics. 167: 20.
- Bernstein, A. (1999). What can k.o. inequality? College. Business Week: 68-72.
- Boatwright, M. (1992). "Factors that influence student's decisions to attend college." Journal of Instructional Psychology 19(2): 79-87.
- Browning, G., Halcli, A., Webster, F., (2000). Understanding contemporary society: Theories of the present. Thousand Oaks, Sage Publications.
- Brownstein, A. (2000). "Tuition rises faster than inflation, and faster than in previous year." Chronicle of Higher Education 47.
- Carey, P. M. (1993). "Taking the sting out of saving for college." Black Enterprise 23: 6.
- Choy, S. P. (2000). Low-income students: who they are and how they pay for their education. Washington D.C., National Center for Education Statistics. 114.
- Choy, S. P. and Berker, A (2003). How families of low and middle-income undergraduates pay for college: full-time dependent students in 1999-2000. Washington D.C., National Center for Education Statistics. 162.
- Clinedinst, M. E., Cunningham, A., Merisotis, J., (2003). Characteristics of undergraduate borrowers: 1999-2000. Washington D.C., National Center for Education Statistics. 155: 8.
- Cunningham, A. F., Wellman, J. V., Clinedinst, M., Merisotis, J. P., (2002). Study of college costs and prices, 1988-89 to 1997-98, Washington D.C., National Center for Education Statistics. 157.
- Heath, A. (1976). Rational choice and social theory. Cambridge, Cambridge University Press.
- Heller, D. E. (2001). The effect of tuition prices and financial aid on enrollment in higher education. Rancho Cordova, EdFund: 11.

- Heller, D. E. (2002). Condition of access: higher education for lower income students. Westport, American Council on Education and Praeger Publishers.
- Horn, L., Wei, C. C., Berker, A., (2002). What students pay for college: changes in the net price of college between 1992-93 to 1999-2000. Washington D.C, National Center for Education Statistics. 148.
- Kane, T. (1998). "Savings incentive for higher education." National Tax Journal 51(3): 609-621.
- Lee, J. (2003). "Why are college prices increasing and what should we do about it?" NEA Higher Education Research Center Update 9(5): 3.
- Malizio, A. G. (2001). National postsecondary student aid study: student financial aid estimates for 1999-2000. Washington D.C., National Center for Education Statistics. 209.
- McPherson, M. S.& Shapiro, M.O., (1998). The student aid game: meeting need and rewarding talent in american higher education. New Jersey, Princeton University Press.
- Micceri, T. (1999). A Florida perspective on enrollment impacts that will result from recent financial trends. Seattle, WA, Association for the International Research.
- Miles, B. (1993). Federal family education loans: reduced costs, direct lending, and national income. Washington D.C., Library of Congress.
- Schnet, M. A. (1994). The federal pell grant program. Washington D.C., Library of Congress.
- Stern, L. (1997). Financial aid: play or pay. Newsweek. 129: 9-12.
- Toch, T. (1998). More merit money for the middle class. U.S. News & World Report. 123: 70-74.
- Trombley, W. (2003). The Rising Price of Higher Education: National Crosstalk. San Jose, National Center for Public Policy and Higher Education: 1-16.
- Turner, J. H. (2002). The Structure of Sociological Theory. Kentucky, Wadsworth Publishing.

**APPENDIX**

Correlation Matrix among All Variables in the Regression Analysis on Factors that Affect Stafford Loan Debt Accumulation

	STAFSU1	PELLAM1	GENDER1	CENRACE1	AGE1	NCSUPA1	TUITIO1	WKINCI	NDCRDB1
STAFSU1	1.0								
PELLAM1	.3336	1.0							
GENDER1	.0281	.0689	1.0						
CENRACE1	-.0145	.0642	-.0077	1.0					
AGE1	-.0501	.0205	.0178	.0040	1.0				
NSUPA1	-.0139	-.0496	-.0084	-.0206	-.0097	1.0			
TUITIO1	.3469	.0701	-.0054	-.0383	.0831	.1040	1.0		
WKINCI	-.1288	-.1693	-.1008	-.0053	-.1681	.1015	.2177	1.0	
NCRDB1	.0104	-.0743	-.0224	-.0198	-.1048	.0040	.0615	.2059	1.0