

2003

# An Analysis of Student Credit Card Debt Determinants and Factors

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*Eastern Illinois University*

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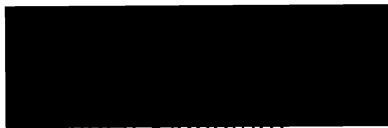
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An Analysis of Student Credit Card Debt

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Determinants and Factors

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(TITLE)

BY

James Paton

**THESIS**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF

Master of Arts (M.A.)

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IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY  
CHARLESTON, ILLINOIS

2003

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## Abstract

The Permanent Income Hypothesis (PIH) derived by Milton Friedman in 1957 states that individuals will base their current consumption on what they consider to be their “normal income.” Normal income is derived by the individual’s current and expected future income.

Credit cards have become prevalent among college campuses. Credit card issuers seek out students because of market saturation and the idea that students, are generally in independence limbo; still being supported by parents, yet regarded as legal adults.

This study seeks to find if the PIH is valid amongst college students by using student credit card debt as a sort of proxy for consumption and their views on expected income upon graduation. A regression analysis will be performed on data that was collected via surveys testing the student’s credit card debt against a primary variable, expected income, and other explanatory variables.

The results will show conflicting results due to the unique properties of the student population.

This thesis is dedicated to my loving wife and best friend, Kristen.

## Acknowledgement

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I extend my deepest appreciation to my parents who instilled in me my values and their ability know when, and when not to lend a helping hand.

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I am solely responsible for any and all mistakes contained in this study.

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## Chapter 1

### Introduction

Imagine an 18 year old, with no job, no cosigner, no credit history and no “permanent” address entering a bank and asking for a loan of \$2,000. This individual would more than likely be laughed out of the building. Why is it then that a college student fitting the same description is able to acquire credit cards? The answer can be traced to the history of the credit cards and the deregulation of the banking industry.

During the early 1980’s banks expanded their consumer financial services divisions and targeted middle income families with credit cards. By the late 1980’s they had saturated the market so much that they began looking to new markets, in particular college students. The beauty behind the college market is the fact that every year a portion of the market is replaced with the incoming freshmen class (Manning, 2000, p.167). Credit card companies realize that many students are still dependent on their parents for expenses. It is easy to see then that the credit risk of the example individual above is greatly diminished by the assumption that parents will “bail” their children out of debt if they charge too much. Manning’s study, *Credit Cards on Campus*, (1999) found that 15% of the students interviewed had their monthly credit card bills paid by their parents (p. 18). It should also be noted that his study found that 30% of students received their credit cards from their parents before entering college; surely we could expect a modicum of parental guidance in terms of the usage of credit cards by their children.

Credit card companies are not the only ones to benefit from college students obtaining credit cards, the universities themselves are getting in on the action. University departments such as athletics receive funding from credit card issuers to allow them exclusive advertising rights. Advertising methods include signage, tabling and spot announcements (GAO, 2001, p. 30). The General Accounting Office (GAO) also reported that university student groups also receive funds if they advertise for credit card companies; the report noted that, “(at one university) credit card vendors paid \$4,359 to five Greek organizations, and one other student organization, over the course of 3 academic years...” (p.28).

For these reasons student credit card debt has become an important topic among university administration and consumer advocacy groups. The currently held belief is that students obtain credit cards and use them liberally without realizing the ramifications of their actions. The belief is so strong that there have been calls to action both at the state and federal level to regulate and monitor the actions of the credit card industry related to their practices in higher education (GAO, 2001, p.53-66).

While there have been many studies conducted on the amount of credit card debt and the type of student who carries this debt, there have been few studies conducted on the factors and attributes that determine the amount of credit card debt students carry.

### **1.1 Purpose and Hypothesis**

The purpose of this paper is to determine what factors, if any, determine the amount of credit card debt that a student is willing to carry. This study hypothesizes that

the main determinant of student credit card debt is the amount of income they expect to receive upon graduation. This theory is derived, in part, from the Permanent Income Hypothesis put forth by Milton Friedman in his 1957 paper entitled, “A Theory of the Consumption Function.” According to Friedman, people will base their consumption on what is perceived by them as “normal” income. Essentially individuals base their current consumption on current and expected incomes. However, for the purposes of this study, it is difficult to “truly” examine the Permanent Income Hypothesis. This is due in part to the uniqueness of the population being studied. Many students do not have current income per se, because their expenses are covered by parents or financial aid. While this may be considered to be income, it is transfer income and was not considered in this study.

In this study, expected income is the only variable that will be used to test the Permanent Income Hypothesis.

Other factors that may also influence the amount of debt that a student carries will be discussed in chapter 2.

## **1.2 Review of Literature**

There have been numerous articles dedicated to student credit card debt. These articles are usually descriptive in nature. Although there has been research concerning student debt, there were no studies found concerning the relationship between student credit card debt and expected income after graduation.

### **College Students and Credit Cards by the General Accounting Office, 2001**

The GAO is part of the legislative branch of the federal government, and conducts research upon the request of congress. In this report, the GAO compiled the results of several major studies that have been conducted on student credit cards; these studies will be reviewed below. The GAO conducted supplementary interviews, “of about 100 officials at 12 universities and colleges around the country.”(p.1) The GAO also conducted surveys of credit card issuers; these surveys were voluntary because the GAO does not have a legal right to access private business’ records. The report concluded that due to “aggressive marketing campaigns” several universities regulate credit issuers’ ability to advertise to students. The study also noted that universities are in a position to benefit from students obtaining credit cards. In particular, alumni associations often generate significant revenue from credit card issuers, either by means of a percentage of balances carried by alumni or by fees given to universities for every credit card application. The report also found that card issuers tailor their minimum requirements so that more students will be issued cards. The report noted that student credit card interest rates and other fees differ from those of non-students, often including higher interest and late fees that would not apply to non-students. Students are offered less credit, usually under \$500.

### **Undergraduate Students and Credit Cards by Nellie Mae Foundation, 2002**

Nellie Mae provides undergraduate and graduate students with private, credit based loans. Students and families may use these credit based loans when they do not qualify, or have reached their maximum borrowing ability from government loans. Nellie Mae has conducted surveys for the past three years on student credit card debt.

This is one of three studies that is cited in the 2001 General Accounting Office's report. The Nellie Mae survey is unique in that it does not rely on student submitted responses to questionnaires or interviews. Instead, the study relies on credit reports that are obtained when a student applies for one of Nellie Mae's educational loans. The 2002 report consisted of a random sampling of 600 undergraduate students attending four-year public and private institutions. The study has been consistent in methodology every year since its inception in 1998. The current report shows that students carried a median credit card balance of \$1,770 and an average balance of \$2,327. It was previously stated that generally, credit cards issued to students have less than a \$500 credit limit, we may logically surmise that these students have more than one credit card. While the number of students in possession of a credit card was 84%, a 24% increase from the 1998 survey, the average credit card debt actually fell by 15% from the 2000 survey. The survey also noted that the amount carried by students increased with age. This study is unique in that the students observed have exhausted their federal government loans.

**Credit Risk or Credit Worthy, The Education Resources Institute, The Institute for Higher Education Policy, 1998.**

The Education Resource Institute (TERI), "is a national not-for-profit organization that aids students in attaining an education and assists educational institutions in providing an education in an economical fashion."(p.2) The Institute for Higher Education Policy (IHEP), "is a non-profit, non-partisan organization whose mission is to foster access to and quality in post-secondary education."(p.2) This joint study used a stratified random sample of two million college students with on-campus telephones, using a computer assisted telephone survey that lasted about nine minutes.

The sampling strata included: 85% undergraduate students, 15% graduate; 60% of the students were from four year institutions; and from 40% two year institutions; 80% of the institutions were public institutions, and 20% private institutions. The survey was created by a professional firm, and was tested prior to full implementation. There were revisions to the survey including rewording of questions and design. The authors of the report noted that due to a technical problem with the data that was collected, they were unable to examine the relationship between credit card use/debt and the students' income level. Thus there is a flaw in the report. Their study concluded that nearly two-thirds of the students surveyed have at least one credit card. They also found that most students, (59%) pay off their credit card balances monthly. Of the remaining 41% "who carry balances each month, 81% pay more than the minimum amount due." The study also found that, "82% of students with credit cards who know their balances report average balances of \$1,000 or less, and 9% have average balances between \$1,001 and \$2,000."

**Credit Cards on Campus by Consumer Federation of America, Robert D. Manning, 1999**

Consumer Federation of America (CFA) is a non-profit consumer advocacy group that provides education and recommendations on areas of finance, utilities, etc. Robert D. Manning, a Georgetown University Sociologist, conducted a study for CFA. This study differed from the previous in that data was collected from both mail surveys and interviews. The data collected from the interviews were the main focus of the study. The surveys were conducted at both a four-year private, and a four-year public institution. These surveys focused on undergraduates and gathered socioeconomic data as well as

data on general credit card use. The interviews spanned four years and were conducted at the same institutions in each of the four years.

One more university and 50 graduate students were added midway through the study. Manning, however, does not indicate if those interviewed were the same individuals that took part in the mail surveys. He emphasizes that student credit card debt changes rapidly. The study points out that when a “paper survey” is conducted, e.g. the beginning of the school year or the end, can greatly affect the responses given. It was stated in the study that students at the beginning of school often have little or no debt because they pay it off during summer work. Manning also points out that one way students pay down debt is to use their financial aid refund checks, which in some cases can be substantial. He found that students tend to understate their credit card balances on traditional paper surveys. Finally, he found that about 70% of the students in this survey had credit card debt average of around \$2,000.

**Differences in Spending Habits and Credit Use of College Students by Hayhoe et. al., 2000.**

This study differs from those above in that it is not a simple descriptive statistical analysis but rather a regression analysis on several factors including attitudes towards debt and financial practices. A paper survey was sent to 500 students randomly selected at six state funded schools for a total of 3000 surveys. Four hundred eighty completed surveys were returned. The study found that “Affective credit attitudes and financial management were significant in predicting the number of credit cards with a balance that a student carried. The higher the affective credit attitude and the lower the number of financial management practices, the more likely that a student carried a balance on

several credit cards.”(p.130) Given the apparent importance of these variables, affective credit attitudes and a modified form of Hayhoe’s financial management will be used for the purpose of this study.

**Sing the Student Loan Blues: Multiple Voices, Multiple approaches? In Student Loan Debt: Problems and Prospects, Somers and Cofer, 1997.**

This study examined students’ opinions, concerns and experiences with student life, debt and credit cards. The data was collected from interviews with 107 students at five public universities in the spring of 1996. The interviews were directed at students towards the end of their academic careers. The second set of interviews (with the addition of electronic surveys) focused on graduate and professional students; the sample size was 396 students. One of the findings was that students carry high levels of debt thinking they will secure high paying jobs after graduation. Another area that was brought up in the interviews is a way to “finance college for free.” By exploiting a loophole in the bankruptcy laws, an individual can pay for college on credit cards and after graduation discharge the debt through bankruptcy leaving them debt free with a college education. Student loans are not eligible for discharge unless they are still in existence seven years after they are due.

**College Seniors’ Personal Finance Knowledge and Practices, Markovich and DeVaney, 1997.**

Markovich and DeVaney mailed surveys on personal finance knowledge to 500 seniors at a four year public institution. There were 236 usable surveys that were returned. The average age of the respondents was 22.8. The survey consisted of several



questions regarding personal finance procedures and knowledge including credit card information, and investment questions; correct answers were assigned one point then summed. The results showed that seniors lacked basic knowledge of personal finance. For the purpose of this paper, it is noted that the survey found that only 6% of the respondents did not own a credit card

**Student Attitudes to Student Debt, Davies and Lea, 1995.**

Davies and Lea conducted a study "...to look at the extent and nature of debt among students...(and) look at the factors associated with indebtedness in a student group."(p.665) The authors note that a longitudinal study is best for the type of questions they were asking; however, they performed a pseudo-longitudinal study of students in a British university with cohorts at each stage of their education as a proxy. Their study included 49 first year, 40 second year and 51 third year students (most English universities' course work last 3 years). Data collection was in the form of surveys, some administered in residence halls, and others administered in classrooms. Surveys collected general demographic information as well as student attitudes towards debt. Their findings show that, "debtors tended to be older, to have a more pro-debt attitude, to have several kinds of debt, to worry less about the level of their bank account, and to be male."(p.674) The study also showed that current income was not related to student debt.

## Chapter 2

### 2.1 Methodology

This study gathered data via a one page (front and back) survey (see appendix A). The survey took about five minutes to complete if a respondent owned a credit card and about three minutes if the respondent did not. A test questionnaire was given to 15 students to identify problems with survey questions and the survey was then revised. The test survey had questions pertaining to the use of credit cards throughout the survey; students who did not own credit cards were confused as to what questions to answer, this lead to students being confused as to the flow of the questionnaire. Other questions in the survey gave a list of responses for the subject, feedback from the students indicated that additional choices were needed. For example, a question dealing with alcohol consumption did not have a choice of “0,” indicating that a student consumed no alcohol. This and other questions were reworded for clarity.

The survey was rearranged into two sections. Section I dealt with credit card information; Section II gathered general information and financial data. Survey questions that students did not fully understand and ambiguous questions were corrected. These refinements made it easier for students who do not own a credit card to skip to Section II, which collected no credit card information. At the top of the questionnaire was a small paragraph indicating what the survey was for, how long the survey would take, assurance that no personal identifiable information would be collected and a clarification that only credit cards should be taken into account, not debit or check cards.

Section I of the questionnaire pertaining to credit card use

The first set of questions dealt with credit attitudes. It consisted of a set of four statements, taken directly from Hayhoe et. al.'s, 2000 paper, "Differences in Spending Habits and Credit Use of College Students" study on spending habits and credit card use. The subject circled their response on a five point Likert Scale with "1" being strongly disagree and "5" being strongly agree. The statements are as follows: "My credit card makes me happy." "I like using my credit card," "The very thought of using credit cards disgust me," and "I love to have a credit card." The third statement, "The very thought of using credit cards disgust me," was reverse-scored, meaning that if the subject responded by circling, "1" (strongly agree) it was recorded as a "5." The responses were then summed, with a total possible score of 20. There are two questions where choices are given and the subject chooses the appropriate response they are:

- "Frequency of cash advances on their credit card(s)" choices: never/ about once a week/about once a month.
- "Amount of financial aid used to pay credit card debt" choices: 0%/less than 25%/50-75%/75-100%

The remaining questions, which required a response in a provided space, were:

- How many credit cards do you have?
- What is your current total credit card debt?
- Have you sought employment to help pay credit card bills, if so, how many hours do you work?
- Do you feel that credit card debt has affected your ability to reach your full potential at school?
- Do you apply for more credit cards when you reach your current card(s) limit?
- Have you ever been late on a credit card payment?
- Did your parents give you a credit card before coming to college?
- Do your parents know that you have (a) credit card(s)?

Section II pertaining to general information and financial practices

A modified bank of 10 questions dealing with the subject's financial practices taken from Hayhoe et. al. (p. 119) was included. Again, this was a set of statements based on a Likert Scale with responses ranging from "1" (never) to "4" (almost always); again the negative statements were reverse-scored. The statements were: "I write a monthly budget," "I make a list before I go shopping," "I have felt sorry for purchasing something," (reverse scored) "I keep my bills and receipts," "I plan my expenditures," "I save on a regular basis," "I have an interest bearing account," "I make minimum monthly payments on my bills," (reverse scored) "I feel that I am managing my finances responsibly," and "I have written checks with insufficient funds in the bank" (reverse scored). The responses were then summed, for a maximum score of 40. To acquire general information about the survey taker, additional questions were included in this section.

Questions pertaining to general information where the subject was given a list of choices to questions were:

- "Ethnicity" choices: Caucasian/not-Latino/Asian/African-American/Latino/and other.
- "Combined Parental Income" choices: below \$24,000/\$24,000-50,000/\$50,000-75,000/\$75,000-100,000/and \$100,000+.
- "Marital Status" choices: single/divorced/engaged/married.
- "Per week alcohol consumption" choices: 0/1-2/3-4/4-6/6+

The remaining questions were supplied by the subject in provided spaces. They are:

- What is your expected income range after graduation?
- Do you receive financial aid (from the financial aid office), if so, how much?
- What is your major?
- Gender
- Age
- Years to expected graduation
- Current monthly income (excluding money given to you from your parents or financial aid)
- How much non-credit card debt do you have (e.g. car loan)?

- Have you ever taken a course in personal finance?
- Based on your number of hours, what is your current year in school?
- What is your cumulative GPA?
- What are your current monthly living expenses? (off campus students only)

The Survey also includes a set of questions concerning parental support. These questions asked if the subject's parents paid full/partial tuition, full/partial housing expenses, and whether or not they received financial assistance on a regular basis, i.e. an "allowance."

A few questions deserve comment. This study tries to see if there is a link between student credit card debt and a student's expected income after graduation. Second, the study seeks other factors that may prove to have a bearing on the amount of debt carried such as combined parental income. It is hypothesized that students may grow accustomed to a certain lifestyle while living with their parents; upon entering college, students may wish to continue that lifestyle. Total non-credit card debt was also assessed to provide insight on how students feel about carrying debt. Are students with higher non-credit card debt more prone to credit card debt or the opposite?

The survey was administered at Eastern Illinois University. Eastern is located about 150 miles south of Chicago, in the city of Charleston. Eastern is a regional, state-funded school with about 10,000 students.

About half of the data collection occurred in classes, which were selected to obtain a broad range of students in all class standings. Classes were chosen based on course level (freshman, sophomore, etc.) and division (College of Science, School of Business, etc.) A prearranged time was discussed with the class instructor to administer the survey. In all cases, the survey was administered at the beginning of class, promptly at the starting time. Students who entered class two minutes late to class were not given a

survey so the surveys would not take up too much time of the class. Before the survey was conducted, it was explained that the data collected was to be used for a thesis, that the data would be kept confidential, and that the survey was voluntary. If they did not fully understand what the question was asking, they were told to use their best judgment; this was to prevent leading the subject. Students were also instructed not to take the survey if they had already done so. In the single instance where the survey was administered by a different party other than the author, these same instructions were given to the instructor who administered the survey for his class.

The other method that was used to collect data consisted of setting up a survey table in high traffic areas in the university and soliciting students to take the survey. These areas were chosen to capture a broad range of students. In these cases, a sign was made asking students to participate in a survey for a thesis. The high traffic areas were the student recreation center and a student residence hall housing upper class students, and a dining center that can be used by any student.

Data collection lasted eight days, over a two week period during March of 2003. It should be noted that the surveys were conducted after spring break. The total number of surveys collected was 787. Surveys were examined for completeness; if the back of a survey was not filled out, it was removed from the sample. Fraudulent surveys were also discarded, one example of a fraudulent survey consisted of one respondent indicated that they received one billion dollars in financial aid ever year. A total of 22 surveys were deemed unusable due to incomplete surveys and obvious fraudulent responses.

All answers were transformed to a numerical value. This left 765 usable surveys. In about 17 surveys, it was noted that responses were entered incorrectly, i.e. data was

entered in the incorrect cell, in some instances the cell for GPA contained an age reference etc. therefore, these were dropped from the sample. Because the surveys were not individually numbered, there was no way of correcting the incorrect cells from a specific survey. Therefore, the number of surveys used for this study stands at 748, more than 7% of the student population.

Data entry was accomplished by the author and an assistant. Questions with a yes response were coded as “1” while a response of no was coded as “0.” The questions with the Likert scale were summed and entered as the numerical value. A few of the surveys included expected incomes greater than \$1 million upon graduation. These individuals were prospects for future professional sports teams where incomes such as these are expected. As such, these large expected incomes remain in the sample due to the fact that high incomes are possible. Recall that income range was asked of the respondent. If a range was in fact given, the difference between the ranges was averaged and that number was added to the base number. For example, if a respondent indicated that they expected an income range of \$30,000-50,000, the difference of \$20,000 was divided by two to get \$10,000 which was then added to \$30,000 to get a single expected income of \$40,000.

## **2.2 Definition of Variables**

The following variables were chosen to be used in the study:

TCCD =Total Credit Card Debt

EI =Expected Income (after graduation)

CA =Credit Attitudes (taken from Hayhoe et. al.)

NC =Number of Credit Cards the student owns

Age =subject's age in years

GPA =Subject's Grade Point Average (on a 4.0 scale)

FP =Financial Practices (taken from Hayhoe et. al.)

PI (1-5)\* =subject's combined parental income

YTG =Years to Graduation

NCCD =Non credit card debt

FEM =Whether or not the subject is a female.

MIN =Whether or not the subject belongs to a minority group.

PROB =Probability a student has a credit card (derived from Probit regression).

### **2.3 Model Design and Expectations**

To test the hypothesis, an OLS regression was performed. The hypothesized model used in the regression analysis was:

$$\text{TCCD} = \text{Constant} + \beta_1 \text{EI} + \beta_2 \text{CA} + \beta_3 \text{NC} + \beta_4 \text{Age} + \beta_5 \text{GPA} + \beta_6 \text{FP} + \beta_7 \text{PI} + \beta_8 \text{YTG} + \beta_9 \text{NCCD} + \beta_{10} \text{FEM} + \beta_{11} \text{MIN} + \text{PROB} + \text{ERROR TERM. (model 2.3.1)}$$

The hypothesis is that the expected income has a positive relationship in the determining the amount of credit card debt that a student carries. This is consistent with Friedman's Permanent Income Hypothesis that individuals base their current consumption on their expected future income. Credit attitudes also should have a

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\* Used as a dummy variable where "1" indicates a yes to particular parental income and "0" for all other incomes. P1= <24K, P2=24-50K, P3=50-75K, P4= 75-100K, P5= >100K



positive relationship: if someone is more comfortable with credit cards, she should be more likely to acquire debt. The number of cards should also be positively related to the amount of debt, chances are the credit cards will be used. The effects of age are difficult to predict. Generally, as students get older, they get closer to graduation. Therefore, in line with the theory that individuals base their consumption on expected income, we expect there to be higher levels of debt. However, it could also be argued that as an individual gets older and ultimately matures, that they would see that credit card debt is usually not something that should be kept for long periods of time and thus they may carry less credit card debt. While a higher GPA does not necessarily imply greater intellect, it can be generally hypothesized that the higher the GPA the more likely it is for an individual to realize that higher credit card balances are not wise to carry. Financial practices is a score based the respondents answers to questions dealing with budgeting, savings, and responsibility towards their finances, for a more detailed look at this bank of questions, please see the appendix. The financial practices score is expected to have a negative relationship to the amount of credit card debt carried. Parental income is another variable that may prove difficult to predict. One initial hypothesis is that individuals may be accustomed to a lifestyle that they wish to continue. The higher the parental income, the better the lifestyle and the more debt acquired to maintain that lifestyle. However, individuals with a higher parental income may also have credit card debt paid off by their parents. Years to graduation is expected to have a negative relationship; as the years to graduation decrease (closer to graduating), the original hypothesis indicates that there should be more debt. Non credit card debt is another variable that could prove to be a positive or negative relationship. Individuals who have

large amounts of non-credit card debt may be more comfortable with debt in general; therefore their credit card debt may be high as well. According to Hayhoe et. al. gender does play a role in the amount of credit usage. Hayhoe's study found that, "...female students used their credit cards more than male students...(p.129)" It could then be construed that being female would have a positive effect on the amount of credit card debt. All things held constant, whether or not an individual belongs to a minority group, should not necessarily affect the amount of credit card balances. However, this variable remains in the equation for exploratory reasons.

### **Chapter 3 Statistical Analysis**

This chapter will statistically examine the data that was obtained. First descriptive statistics are used to give the reader a better understanding of the make up of the students who participated in the survey. Secondly, the results of the regression analysis will be covered.

#### **3.1 Descriptive Statistics**

The tables below (3.1.1 and 3.1.2) contain the statistical results as tabulated from the data. The results may not add up to 100 due to rounding. Unless otherwise indicated, the figure noted within the cell is the mean.

Table 3.1.1-descriptive statistics with var., std. dev. and range

	Credit Attitudes	Number of Credit Cards	Expected Income	Average credit card debt	Age	Years to graduation	Non-Credit Card Debt	Financial Practices	GPA
<b><u>Students with credit cards</u></b>	14	2	\$56,932	\$1,408	21	2	\$4,446	27	3.09
<b><u>Range</u></b>	4-20	1-16	0-3,400,000	0-20,000	18-43	.5-7	0-200,000	16-40	1.38 - 4.00
<b><u>variance</u></b>	11.54	3.6	3.50E+10	3587695	9.4	2.19	2.60E+08	20.1	0.28
<b><u>std. dev.</u></b>	3.39	1.89	186,056	\$1,894	3.1	1.48	\$16,084	4.48	.57
<b><u>Students without credit cards</u></b>	N/A	N/A	\$109,132	N/A	20	3	\$1,684	27	2.99
<b><u>Range</u></b>	N/A	N/A	0-10,000,000	N/A	18-26	.5-8	0-8,000	16-37	.33-4.00
<b><u>variance</u></b>	N/A	N/A	4.60E+11	N/A	2.3	2.26	4.10E+07	17.28	0.32
<b><u>std. dev.</u></b>	N/A	N/A	\$678,949	N/A	1.5	1.5	\$6,370	4.16	0.57
<b><u>Total sample</u></b>	N/A	N/A	\$75,068	N/A	21	2	\$3,427	27	3.05
<b><u>range</u></b>	N/A	N/A	0-10,000,000	N/A	18-43	.5-8	0-200,000	16-40	.33-4.0
<b><u>variance</u></b>	N/A	N/A	1.83E+11	N/A	7.1	2.28	1.80E+08	19.02	0.3
<b><u>std. dev.</u></b>	N/A	N/A	427,567	N/A	2.6	1.51	13397.97	4.36	0.5-7

Table 3 1.2 descriptive statistics

	<u>Students with credit cards</u>	<u>Students without credit cards</u>	<u>Total sample</u>
<b>Gender</b>	43% Male	49% Male	47%
<b>Alcohol Consumption</b>	51% < 4 drinks per week	50% < 4 drinks per week	52% < 4 drinks per week
<b>Course in Personal Finance</b>	72% no	81% no	75% no
<b>Credit Cards affected full potential</b>	92% no	N/A	N/A
<b>Apply for more cards once current ones are maxed</b>	96% no	N/A	N/A
<b>Late on a credit card payment</b>	67% no	N/A	N/A
<b>Given a card before entering college</b>	70% no	N/A	N/A
<b>Work to pay off credit card bills</b>	68% no	N/A	N/A
<b><u>Cash Advance</u></b>			
<b>Never</b>	79%	N/A	N/A
<b>About once a week</b>	7%	N/A	N/A
<b>About once a month</b>	14%	N/A	N/A
<b><u>Race</u></b>			
<b>White</b>	89%	86%	88%
<b>African- American</b>	8%	8%	7%
<b>Asian</b>	2%	1%	2%
<b>Latino</b>	2%	3%	2%
<b>Other</b>	1%	1%	1%

Looking at average credit card debt, we see that according to the sample, students carry an average of \$1,408 in credit card balances; this figure is below the \$2,327 and \$2,000 average student credit card debt as cited by Nellie Mae and Manning respectively as discussed in the literature review. However, the figure from this study is larger than the TERI report, which notes that only 9% of students surveyed carry balances between \$1,001 and \$2,000.

According to the results, students who have credit cards are more prone to have non-credit card debt. In this case the average non-credit card debt for students with credit cards is \$4,446 while students with no credit cards have \$1,684 in non-credit card debt. Perhaps it could be explained that students with credit cards are more comfortable with debt or that they are able to acquire debt because of a (possible) better credit report. It should be noted that the survey did not distinguish between education related debt (student loans) or non education debt (car loans, etc.).

In order to compare the sample results to the population at Eastern Illinois University, the Financial Aid office was contacted to obtain population statistics, it was found that 78% of the students enrolled at Eastern receive some form of financial aid, this partially coincides with the 38% of students whose parents pay all living and tuition expenses. The records office provided information on average GPA, race and age. The population averages are 2.95 average GPA for undergraduate and graduate, 10% belong to a minority group, and the undergraduate student average age is 20. These figures roughly coincide with the sample statistics, suggesting a reasonably representative sample.

### 3.2 regression analysis

Two OLS regression were performed using Statistical Package for Social Sciences (SPSS). To review, the (predicted) model being tested is:

$$\text{TCCD} = \text{Constant} + \beta_1\text{EI} + \beta_2\text{CA} + \beta_3\text{NC} - \beta_4\text{Age} - \beta_5\text{GPA} - \beta_6\text{FP} + \beta_7\text{PI} - \beta_8\text{YTG} + \beta_9\text{NCCD} - \beta_{10}\text{FEM} - \beta_{11}\text{MIN} + \text{PROB (explained below)} + \text{ERROR TERM}$$

(model 2.3.1).

A total of 324 observations were used in the regressions. The discrepancy in this number and the total number of students with credit cards is due to missing data in various cells of the variables chosen.

Because of the unique nature of the primary independent variable EI (expected income) in that there are individuals who expect to make in excess of \$1 million, it was decided to compare the results including and excluding those individuals. The first regression includes the entire expected income spectrum. The second regression focuses on those individuals who expect to make annual incomes in the five figure range.

A Probit regression was initially performed on the entire sample (excluding those dropped for reasons stated in the methodology section). This was to “capture” the probability of a student obtaining a credit card. This also took into account the students whom, for whatever reason, chose not to obtain a credit card. This procedure derives a constant that is then included into the regression analysis. This procedure is done so that the sample is not biased. If the regression was done on solely those students with credit cards, the sample would be biased, hence, not a true reflection of the results. The basis

for this procedure is taken from James Heckman's 1976 paper entitled, "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models."

In his paper, Heckman explains the necessity for this in the following example:

. . . this phenomenon arises in the Gronan (1974)-Lewis(1974) wage selectivity bias problem. In their analyses  $Y_{1i}$  is the wage rate which is only observed for working women, and  $Y_{2i}$  is an index of labor force attachment (which in the absence of fixed costs of work may be interpreted as the difference between market wages and reservation wages). If the presence of children affects the work decision but does not affect market wages, regression evidence from selected samples of working women that women with children earn lower wages is not necessarily evidence that there is market discrimination against such women or that women with lower market experience-as proxied by children-earn lower wages. Moreover, regression evidence that such extraneous variables "explain" wage rates may be interpreted as evidence that selection bias is present.(p. 477)

Essentially, unless there is another independent variable to "nullify" bias, the results would not be a "true" reflection of the sample. The Probit analysis derives the constant that is then used in the regression analysis, Heckman states, "Subject to the standard identification condition in Probit analysis, it is possible to maximize  $\mathfrak{J}^\dagger$  to obtain consistent estimates of  $B_i$ ,  $\Phi_i$  and hence  $\lambda_i$ . These estimates of  $\lambda_i$  (derived from Probit

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<sup>†</sup> This is the constant estimator that is being sought ( $\lambda$ ),  $\Phi$ , is another parameter within that formula.

analysis) may be used in place of the true  $\lambda_i$  (constant) as regressors in equations...they yield consistent estimates of the true parameters since  $\lambda_i$  estimated from Probit analysis is a consistent estimator of the true  $\lambda_i$ ...”(p. 481).

The results of the regression testing the entire sample (including individuals who expect to earn in excess of \$1 million) are shown in the following tables:

Table 3.2.1 initial regression

<u>VARIABLE</u>	<u>EI</u>	<u>CA</u>	<u>NC</u>	<u>AGE</u>	<u>GPA</u>
<b>COEFFICIENT</b>	.002	-14.97	29.91	29.93	-353.29
<b>SIGNIFICANCE</b>	.000	.534	.499	.604	.035
<u>VARIABLE</u>	<u>PI1</u>	<u>PI2</u>	<u>PI3</u>	<u>PI4</u>	<u>PI5</u>
<b>COEFFICIENT</b>	1338.85	121.93	-21.74	-311.13	-326.21
<b>SIGNIFICANCE</b>	.043	.840	.971	.599	.584
<u>VARIABLE</u>	<u>YTG</u>	<u>NCCD</u>	<u>FEM</u>	<u>FP</u>	<u>MIN</u>
<b>COEFFICIENT</b>	-87.28	.025	109.91	-35.61	-159.08
<b>SIGNIFICANCE</b>	.187	.000	.54	.058	.655
<b>F-value</b>			6.49		
<b>R-squared</b>			.253		
<b>Adjusted R-squared</b>			.214		
<b>Durbin Watson</b>			2.087		



The model at this stage can be written as follows:

$$\begin{aligned} \text{TCCD} = & 1618.34 + .002(\text{EI}) - 14.97(\text{CA}) + 29.91(\text{NC}) + 29.93(\text{Age}) - \\ & 353.29(\text{GPA}) - 35.61(\text{FP}) + 1338.88(\text{PI1}) + 121.93(\text{PI2}) - 21.74(\text{PI3}) - \\ & 311.13(\text{PI4}) - 326.21(\text{PI5}) - 87.28(\text{YTG}) + .025(\text{NCCD}) + 109.91(\text{FEM}) \\ & - 159.08(\text{MIN}) + \text{ERROR TERM. (model 3.2.1)} \end{aligned}$$

Focusing on the model itself we find an F-value of 6.49 which is greater than the reject value of 1.67 indicating that the overall model is significant at the 5% level. The adjusted R-squared's value of .214 indicates that the variables explain 21.4% of the overall variance of the dependant variable. The Durbin-Watson value of 2.087 indicates that there is no autocorrelation with this model.

The Variance Inflation Factor (VIF) available on SPSS was used to detect multicollinearity. This is best explained in the following passage found in, "SPSS Web Books" compiled by Chien, Ender and Wells:

The "tolerance" is an indication of the percent of variance in the predictor that cannot be accounted for by the other predictors, hence very small values indicate that a predictor is redundant, and values that are less than .10 may merit further investigation. The VIF, which stands for *variance inflation factor*, is (1 / tolerance) and as a rule of thumb, a variable whose VIF values is greater than 10 may merit further investigation.

Of the independent variables, only two showed VIF greater than 10, they are: PI3 and PI4 with values of 10.73 and 10.46 respectively, PI5 had a value of 9.89. The reader should observe that it is these variables that change signs from the lower combined parental incomes. Therefore, we may expect slight multicollinearity within these variables due to

the fact that they are essentially showing the same thing, students whose parents make more than \$50,000 have less credit card debt.

To correct for the possibility of multicollinearity and to investigate the changing of the signs in parental income were combined into one dummy variable. The new dummy variable is now “1” if the students’ parents make more than \$50,000 and “0” if they make less than \$50,000. The new regression gives us the following results:

Table 3.2.2-model after correcting for multicollinearity

<u>VARIABLE</u>	<u>EI</u>	<u>CA</u>	<u>NC</u>	<u>AGE</u>	<u>GPA</u>
<b>COEFFICIENT</b>	.002	-12.82	41.54	51.82	-362.29
<b>SIGNIFICANCE</b>	.000	.596	.351	.357	.031

<u>VARIABLE</u>	<u>YTG</u>	<u>NCCD</u>	<u>FEM</u>	<u>FP</u>	<u>MIN</u>
<b>COEFFICIENT</b>	-90.67	.024	136.83	-26.32	-99.14
<b>SIGNIFICANCE</b>	.173	.000	.446	.157	.782

<u>VARIABLE</u>	<u>MORE50</u>
<b>COEFFICIENT</b>	-603.87
<b>SIGNIFICANCE</b>	.004

<b>F-value</b>	7.58
<b>R-squared</b>	.226
<b>Adjusted R-squared</b>	.197
<b>Durbin Watson</b>	2.11

This model can be written as follows:

$$\text{TCCD} = 1413.64 + .002(\text{EI}) - 12.82(\text{CA}) + 41.54(\text{NC}) + 51.82(\text{Age}) - 362.29(\text{GPA}) - 26.32(\text{FP}) - 603.87(\text{MORE50}) - 90.67(\text{YTG}) + .024(\text{NCCD}) + 136.83(\text{FEM}) - 99.14(\text{MIN}) + \text{ERROR TERM. (model 3.2.2)}$$

This has corrected the problem of multicollinearity. We also see that this model is still significant overall; however, the Adjusted R-squared has fallen to .197.

A white test ( $X^2 = nR^2$ ) was performed on the model, to test for homoscedasticity. The White test showed that the model was heteroscedastic. To correct heteroscedasticity, White's Standard Errors procedure was used as taken from, "Heteroscedasticity: Testing and Correcting in SPSS" by Gwilym Price.

After correcting for heteroscedasticity, the final model has the following attributes:

Table 3.2.3-table after correcting for heteroscedasticity

<b>VARIABLE</b>	<b>EI</b>	<b>CA</b>	<b>NC</b>	<b>AGE</b>	<b>GPA</b>
<b>COEFFICIENT</b>	.002	-12.82	41.54	51.82	-362.29
<b>SIGNIFICANCE</b>	.001	.571	.399	.808	.019
<b>VARIABLE</b>	<b>YTG</b>	<b>NCCD</b>	<b>FEM</b>	<b>FP</b>	<b>MIN</b>
<b>COEFFICIENT</b>	-90.67	.024	136.83	-26.32	-99.14
<b>SIGNIFICANCE</b>	.212	.446	.577	.22	.893
<b>VARIABLE</b>	<b>MORE50</b>				
<b>COEFFICIENT</b>	-603.87				
<b>SIGNIFICANCE</b>	.004				

This final model can be written as:

$$\text{TCCD} = 1413.64 + .092(\text{EI}) - \mathbf{12.82}(\text{CA}) + 41.54(\text{NC}) + \mathbf{51.82}(\text{Age}) - 362.29(\text{GPA}) - 26.32(\text{FP}) - \mathbf{603.87}(\text{MORE50}) - 96.67(\text{YTG}) + .024(\text{NCCD}) + \mathbf{136.83}(\text{FEM}) - 99.14(\text{MIN}) + \text{ERROR TERM. (model 3.2.3)}$$

The variables in bold indicate an opposite of what was predicted in the construction of the model. Here, we see that as Credit Attitudes *increase*, that TCCD decreases. This contradicts the findings in Hayhoe et. al's (2000) that, "the higher the affective credit attitude...the more likely that a student carried a balance..."(p.130) however it does seem to agree with financial practices, "...the lower the number of financial practices, the more likely that a student carried a balance..."(p.130) Another finding that indirectly differed from those found in Hayhoe's study is that females tended to have better financial practices than males. We could logically construe that females then should have lower credit card debt. We see here that females are more likely to have credit card debt.

Although the relationship of debt to age proved difficult to predict, we see that as a student gets older, their credit card debt increases. This is in step with the theory that as a student gets closer to graduation (and gets older) that their debt will increase.

An interesting finding is the relation of credit card debt to parental income. For students who have combined parental incomes of less than \$50,000 we see that they have more credit card debt. However, for students whose combined parental income is greater than \$50,000 we see negative coefficients, indicating that credit card debt would decrease, this was alluded to in chapter 2. There it was stated that students with higher parental incomes may be in a better position to have less credit card debt due to parental assistance, this would appear to be the case.

The signs of other coefficients were as predicted.

While variables: EI, GPA and MORE50 were the only ones that proved to be significant; the remaining explanatory variables were included due to some explanatory factors.

The following model is the regression that examines only the students who expect to make incomes in the five figure range upon graduation. There are a total number of 306 observations for these regressions, meaning, 18 observations were omitted because they were not five figure expected incomes.

Table 3.2.4-regression examining five figure incomes

<u>VARIABLE</u>	<u>EI</u>	<u>CA</u>	<u>NC</u>	<u>AGE</u>	<u>GPA</u>
<b>COEFFICIENT</b>	-0.002	-15.35	51.23	55.65	-342.86
<b>SIGNIFICANCE</b>	.674	.513	.234	.296	.039

<u>VARIABLE</u>	<u>YTG</u>	<u>NCCD</u>	<u>FEM</u>	<u>FP</u>	<u>MIN</u>
<b>COEFFICIENT</b>	-117.8	.056	172	-30.51	-187.22
<b>SIGNIFICANCE</b>	.073	.000	.323	.09	.597

<u>VARIABLE</u>	<u>MORE50</u>
<b>COEFFICIENT</b>	-465.67
<b>SIGNIFICANCE</b>	.02

<b>F-value</b>	9.596
<b>R-squared</b>	.282

<b>Adjusted R-squared</b>	.253
<b>Durbin Watson</b>	2.09

This model can be written as follows:

$$\text{TCCD} = 1990.93 - .002(\text{EI}) - 15.35(\text{CA}) + 51.22(\text{NC}) + 55.65(\text{Age}) - 342.862(\text{GPA}) - 30.51(\text{FP}) - 465.67(\text{MORE50}) - 117.8(\text{YTG}) + .056(\text{NCCD}) + 172(\text{FEM}) - 187.22(\text{MIN}) + \text{ERROR TERM. (model 3.2.4)}$$

The model itself has a F-value of 9.56 which makes it significant because it is greater than the reject value of 1.67 at the 5% level, and an adjusted R-squared of .253, which indicates the variables chosen explain 28.2% of the dependent variable. Again, we see a Durbin-Watson value of 2.09 indicating that autocorrelation is not present. Using the information taken from the previous model, the Combined Parental Income variable was changed to the MORE50 variable (respondents parent's make more than \$50,000 per year). There was no multicollinearity present within the model.

Another White Test (testing for heteroscedasticity) was performed, the test, again, showed the existence of heteroscedasticity. To correct this problem, White's Standard Errors was used again.

After correcting for heteroscedasticity, the results of final model testing the students who are expecting five figure incomes are:

Table 3.2.5 table after correcting for heteroscedasticity

<u>VARIABLE</u>	<u>EI</u>	<u>CA</u>	<u>NC</u>	<u>AGE</u>	<u>GPA</u>
<b>COEFFICIENT</b>	-0.002	-15.35	51.22	55.65	-342.86
<b>SIGNIFICANCE</b>	.636	.509	.26	.808	.022

<u>VARIABLE</u>	<u>YTG</u>	<u>NCCD</u>	<u>FEM</u>	<u>FP</u>	<u>MIN</u>
<b>COEFFICIENT</b>	-118	.056	172	-30.51	-187.22
<b>SIGNIFICANCE</b>	.076	.162	.515	.152	.811

<u>VARIABLE</u>	<u>MORE50</u>
<b>COEFFICIENT</b>	-465.67
<b>SIGNIFICANCE</b>	.1

The final model for expected incomes in the five figure range can be written as follows:

$$\text{TCCD} = 1990.93 - .002(\text{EI}) - 15.35(\text{CA}) + 51.22(\text{NC}) + 55.65(\text{Age}) - 342.86(\text{GPA}) - 30.51(\text{FP}) - 465.67(\text{MORE50}) - 118(\text{YTG}) + .056(\text{NCCD}) + 172(\text{FEM}) - 187.22(\text{MIN}) + \text{ERROR TERM (model 3.2.5)}$$

Focusing solely on the model above (3.2.5) it is noticed that this model has only one significant independent variable, GPA.

Comparing models 3.2.3 (final model with all observations) and 3.2.5 (final model with five figure incomes observed) we see drastic changes. Model 3.2.3 has three significant independent variables, EI, GPA, MORE50, while model 3.2.5 has only one, GPA.

## **Chapter 4**

### **4.1 Conclusion**

To review, the hypothesis was that students' credit card debt will be directly related to their expected income. Secondary hypothesis include that years to graduation, credit attitudes and financial practices would also prove important as explanatory variables to the student's credit card debt.

The results, to say the least, are mixed. If the entire observed expected income is taken into account, we see that it is a major factor in student credit card debt. The higher the expected income after graduation, the more likely a student is willing to carry credit card debt. However, if we focus on the five figure expected incomes (a mere 18 observation difference out of 324 observations) we find totally conflicting results. We find that expected income appears to be irrelevant in determining student credit card debt. Another factor that is significant but has an inverse effect on credit card debt is a students GPA. The higher the GPA, the lower the credit card debt, this holds true in both models.

An interesting an unexpected variable that also has an inverse relationship with credit card debt is parental income. However, it only has an inverse relation if the student's parents make more than \$50,000 per year, which may coincide with the theory that parents pay for their children's debt.

Credit Attitudes and Financial Practices, proved to be insignificant in the determination of credit card debt, which differ from the results obtained from the study conducted by Hayhoe et. al. All other variables tested were insignificant.



The Permanent Income Hypothesis as derived by Friedman, in terms of basing consumption on future income seems to hold only if all observed incomes are considered. In theory, the same results should hold regardless of the number of observations. It would seem that PIH does not hold in this study. However, as previously stated, the student population is a unique sector of society in that generally students focus on academics and not necessarily on living expenses due to the fact that they may be covered by parents, loans, scholarships, etc. It could also be stated that total credit card debt is not a good proxy for current consumption as it was used in this study.

#### **4.2 Concluding Remarks** **and Suggestions for Further Research**

This study set out to examine a possible link between the expected income of college students and the amount of credit card debt that students carry. A link was not found.

There is, however, interesting information that arises from the results that may prove fruitful to explore in the future. One such item is the relationship between parental income and student credit card debt. There appears to be a turning point in which the parent's income will have a negative affect on their child's credit card debt. In this paper it was determined that the threshold is \$50,000. The "true" threshold, if any, could be at another level.

A variable of current income should be included in future studies to see what bearing this would have on individuals' behavior.

Perhaps a variable that would provide information on the current and expected job market would prove beneficial if looked into. Results may in fact change depending on the current state of the economy. If the job market is bad, perhaps students would be reluctant to acquire debt as opposed to a low unemployment rate which suggests jobs would be plentiful upon graduation.

Obviously the phenomenon discovered in this paper that a mere 18 outlying observations in the Expected Income variable has such a great effect on the outcome of results should be studied further.

Another factor that should be studied is the existence of credit cards in relation to PIH. While credit cards were in existence during Friedman's paper, they were probably not as prevalent as they are today. In actuality, credit cards may in fact create the illusion of "implied or extended income" in which an individual is allowed to consume more than their actual income allows. We see this today when individuals overextend themselves financially and ultimately declare bankruptcy.

## REFERENCES

- Chien, X., Ender, P., Mitchel, M., & Wells, C. *Regression with SPSS*. Retrieved from University of California Los Angeles Web site:  
<http://www.ats.ucla.edu/stat/spss/webbooks/reg/default.htm>
- Consumer Federation of America. (1999). *Credit cards on campus: costs and consequences of student debt*. Washington, DC Manning, R. D.
- Davies, E. & Lea, S. (1995). Student attitudes to student debt. *Journal of Economic Psychology*. V.16, 663-679
- Eskilson, A., & Wiley, M. G. (1999). Solving for the X: Aspirations and expectations of college students. *Journal of Youth and Adolescence*. V.28, 51-53.
- Friedman, M. (1957). *A theory of the consumption function*. Princeton, NJ. Princeton University Press.
- General Accounting Office. (2001). *College students and credit cards*. Washington D.C.: US Government Printing Office.

- Hayhoe, C. R., Leach, L. J., Turner, P. R., Bruin, M. J. & Lawrence, F. C. (2000). Differences in spending habits and credit use of college students. *Journal of Consumer Affairs*. V. 14 #1, 113-133.
- Heckman, J. J. (1976). The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. *Annals of Economic and Social Measurement*. V. 5 #4 475-492.
- Hoover, E. (2001). The lure of easy credit leaves more students struggling with debt. *Chronicle of Higher Education*. V 47, (40) A35-37.
- Lea, S. E.G., Webley, P., & Walker, C. (1994). Psychological factors in consumer debt: money management, economic socialization, and credit use. *Journal of Economic Psychology*. V. 16 681-701.
- Levesque, R. *Raynald's SPSS Tools*. Retrieved on March 20, 2003 from Web site:  
<http://pages.infinit.net/rlevesqu/index.htm>
- Manning, R. D. (2000). *Credit card nation*. New York: Basic Books.
- Markovich, C. A. & DeVaney, S. A. CFCS. (1997). College seniors' personal finance knowledge and practices. *Journal of Family and Consumer Sciences*. Fall 1997 61-65

- Nellie Mac. (2002). *Undergraduate students and credit cards*. Braintree, MA.
- Norvilitis, J. M. & Santa Maria, P. (2002). Credit card debt on college campuses: causes, consequences, and solutions. *College Student Journal*. V. 36 (3). 356-365.
- Palmer, T. S., Pinto, M. B., & Parente, D. H. (2001) College students' credit card debt and the role of parental involvement: implications for public policy. *Journal of Public Policy and Marketing*. V. 20 (1). 105-124.
- Price, G. *Heteroscedasticity: Testing and Correcting in SPSS*. Retrieved March 20, 2003 from Web site:  
<http://pages.infinit.net/rlevesqu/tutorials/heteroscedasticitytestingandcorrectinginSPSS.zip>.
- Somers, P., Cofer, J. (1997). Singing the student loan blues: multiple voices, multiple approaches. Retrieved 2003, from Web site:  
<http://www.umsl.edu/~edupsome/singingthestudentloanblues.htm>
- The Education Resource Institute (TERI). (1998). *Credit risk or credit worthy: college students and credit cards*. Boston, MA.

## APPENDIX A<sup>‡</sup>

**This survey was created for a graduate thesis pertaining to student credit card debt. Your truthful responses to this survey are greatly appreciated. This survey will take about 3-5 minutes to complete. Please keep in mind that this is a confidential survey. If you are unclear what a question is asking, use your best judgment. Please note: you are to answer only about CREDIT CARDS not debit cards or “check cards.”**

### THIS SECTION DEALS WITH CREDIT CARD INFORMATION, IF YOU DO NOT OWN A CREDIT CARD PLEASE GO TO SECTION II.

*The following question deal with your attitude towards credit cards, please circle the appropriate number.*

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My credit card makes me happy	1	2	3	4	5
<b>I like using credit cards</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The very thought of using credit cards disgust me	1	2	3	4	5
<b>I love to have a credit card</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
If you receive financial aid, about what percent, do you use to pay credit card debt (please circle one)					
0%	less than 25%	50-75%	75-100%		
How many credit cards do you have?	_____				
What is your current total credit card debt?	_____				
Have you sought employment to help pay credit card bills, if so, how many hours do you work?	_____				
Do you feel that credit card debt has affected your ability to reach your full potential at school?	_____				
Do you apply for more credit cards when you reach your current card(s) limit?	_____				
Have you ever been late on a credit card payment?	_____				
Did your parents give you a credit card before coming to college?	_____				
<b>Do your parents know that you have (a) credit card(s)?</b>	_____				
How often do you use your credit card for a cash advance? (please circle one)					
Never	about once a week	about once a month			

<sup>‡</sup> Due to formatting restrictions, actual survey is different than one shown.

\*\*\*\*\*SECTION II\*\*\*\*\*

What is your expected income range per year after graduation? \_\_\_\_\_

Do you receive financial aid (from the financial aid office), if so, how much? \_\_\_\_\_

What is your major? \_\_\_\_\_

**PLEASE CONTINUE SURVEY ON REVERSE**

Ethnicity (please circle one)

**Caucasian /Not Latino                      Asian                      African American                      Latino                      Other**

**Gender** \_\_\_\_\_

**Age** \_\_\_\_\_

Do your parents:

Pay full tuition? \_\_\_\_\_

Pay partial tuition? (what dollar amount) \_\_\_\_\_

Pay your full living expenses? \_\_\_\_\_

Pay partial living expenses? (what dollar amount) \_\_\_\_\_

Give you a monthly "allowance"? (how much) \_\_\_\_\_

**Years to expected graduation** \_\_\_\_\_

Current monthly income (excluding money given to you from your parents or financial aid) \_\_\_\_\_

Combined Parental Income (please circle one)

**Below 24,000                      24,000-50,000                      50,000-75,000                      75,000-100,000                      100,000+**

How much ***NON-CREDIT CARD*** debt do you have (e.g. car loan)? \_\_\_\_\_

Marital status (please circle one)

single

divorced

engaged

married

What is your per week alcohol consumption? (one drink = one beer, one glass of wine, etc) (please circle one)

0

1-2

3-4

4-6

6+

**Have you ever taken a course in personal finance?** \_\_\_\_\_

The following questions deal with your Financial Practices, please circle the appropriate number.

	Never	Sometimes	Most of the Time	Almost always
<b>I write a monthly budget</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I make a list before I go shopping	1	2	3	4
<b>I have felt sorry for purchasing something</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I keep my bills and receipts	1	2	3	4
<b>I plan my expenditures</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I save on a regular basis	1	2	3	4
<b>I have an interest bearing account</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I make minimum monthly payments on my bills	1	2	3	4
<b>I feel that I am managing my finances responsibly</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I have written checks with insufficient funds in the bank	1	2	3	4
Based on your number of hours, what is your current year in school?				_____
What is your cumulative GPA?				_____
What is your current monthly living expenses? <i>(OFF CAMPUS STUDENTS ONLY)</i>				_____