A PREDICTIVE MODEL FOR THE
REPAYMENT OF STUDENT LOANS
IN COMMUNITY COLLEGES

BY

JAMES A. SCHMIDT

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OF THE UNIVERSITY OF FLORIDA IN
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The problem of this study was to determine the relation-
ship between selected variables which characterize community
college students and student loan defaults and to develop a
model using these variables to predict student loan payback.
Given the current economic crisis and the increasing reliance
on the student loan programs to help students meet educational
expenses, a study of the importance of selected student demo-
graphic characteristics and their relationships to the student
loan default problem is of great importance to the future
support of the student loan programs.

The literature provided a theoretical basis for this
study including appropriate variables for study as predictors
of student default. These variables included size of loan
total, marital status, sex, grade point average, college
standing, and age.

The data presented in this study were supplied by the
Florida Student Financial Aid Commission, Tallahassee,

Florida, and represented a statewide sample of 76 community college students who have participated in the Guaranteed Student Loan program.

Of the six variables selected, only the size of the loan total and marital status distinguished significantly those who repaid their student loans from those who did not. In addition to these variables, sex, grade point average, college standing, and age were useful in developing a prediction model. Although the model did not provide an infallible formula for predicting those students who are most likely to repay their student loans, the model predicted group membership (defaulter of non-defaulter) for 70% of the sample cases. These findings underscore Pattillo and Wiant's conclusion that items reflecting financial rather than biographical data appear to be better predictors of loan delinquency.

Therefore, it appears that the inclusion of additional discriminating variables and a more detailed study design may be necessary in order to improve the identification of students who are likely to repay their student loans.

CHAPTER I

INTRODUCTION

From modest beginnings over three hundred years ago the
role and impact of financial assistance to students in
American colleges have changed dramatically. Like the gift
presented by Lady Anne Mowlsen of London to the deserving
Harvard student, most early student financial aid awards
were granted with money given to colleges by private individ-
uals to aid worthy, needy students. Therefore, the original
purpose of providing student financial aid was to expand
educational opportunities to those students whose incomes
presented a barrier to higher education.

In fact, only during the period of time immediately
following World War II was substantial aid awarded on the
basis of merit alone. From the late 1940s through the early
1960s the Serviceman's Readjustment Act of 1944 (GI Bill)
provided substantial amounts of money to returning service-
men for educational expenses regardless of individual finan-
cial need. Many colleges and universities found that the
large amounts of scholarship funds, previously used to sup-
port needy students, were no longer needed and those insti-
tutions began to use the funds to attract and reward students

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with academic or other special talents, with little or no
regard for financial need.

Currently, the essential criterion of the major federal
aid programs (Pell Grant, College Work Study, National
Direct/Guaranteed Student Loan Programs) is the students'
need for funds. Accordingly, the purpose of the principal
financial aid programs of today is remarkably similar to the
original intention of the early student aid programs. The
return to a need-based student aid system has caused a great
deal of consternation to financial aid administrators. Today
it becomes increasingly difficult to reward students with
merit-based aid when the available resources do not ade-
quately take care of the needy students. In order to encour-
age both needy and worthy students, a balance between need-
based and merit-based aid is critical to the development of
an impartial and equitable student financial aid delivery
system. However, most student financial aid administrators
apparently feel that the current, primarily need-based,
delivery system provides the best use of available resources
for it attempts to extend the opportunity for higher education
to as many worthy students as possible.

The Role of Financial Aid

Since 1972 there has been considerable discussion con-
cerning the role of financial aid in American higher educa-
tion. In nearly every deliberation much attention has been

devoted to the related issues of access and tuition charges
because they are so intertwined with the role of financial
aid.

As a nation, the United States has demonstrated its
commitment to citizen access to postsecondary educational
opportunities by instituting programs of assistance to needy
students, establishing support programs for colleges and
universities (i.e., Land Grant College Program) and develop-
ing a strong system of public colleges and universities.

According to Ostar (1978), 80% of all students attend-
ing higher educational institutions today are in programs
at public institutions where the state partially subsidizes
the institutional costs of the student. As a part of the
public higher educational system, the public community
college is an important factor in providing higher educa-
tional opportunities to American students. The impact of
the community college system on the issue of access is high-
lighted in the state of Florida where more than 95% of the
state population live within commuting distance of a commun-
ity college program.

Although the costs of attending a community college
program may be lower because of public subsidies, the indi-
viduals attending the community college seem to have the
greatest need for financial assistance. A 1972 American
College Testing (ACT) Program Study indicated that the
financial needs of community college students sharply

exceeded those of the majority of students enrolled in other colleges and universities. The ACT study estimated that financially disadvantaged students constituted 25% of the total student population at community colleges and cited the following factors as contributing to this high percentage:

> (1) 70% of the students depend on the automobile to reach campus,
>
> (2) the higher age distribution (average age of student is 29) indicates the average student has assumed adult responsibilities, and
>
> (3) 66% of the students come from families with (1974) incomes below $10,000. (Blocker, 1974, p. 126)

Therefore, it would also appear that the retention of low tuition policies is critical to maintain access to higher educational opportunities for a large number of students in the community college system. In fact, a University of Wisconsin study highlights the impact tuition policies have on the issue of access (Ostar, 1978). This study determined that for every 1% reduction in total cost of attending a University of Wisconsin Center participating in the study there was a corresponding 1.33% increase in enrollment. The study also attributed the increased enrollment to new students who were not enrolled in the University of Wisconsin system and concluded that many of these new students would not have been able to attend were it not for the lower tuition policy (Ostar, 1978).

Despite the establishment of the relationship between low tuition and access by this and other studies, much debate regarding federal aid centers on the strategy of providing individual student aid rather than institutional aid. It is feared that the reliance on the student-based aid delivery system may cause additional pressure on state governments and lead both public and private institutions to raise tuition fees (Ostar, 1978). Although the underlying assumption of raising tuition fees is that the truly needy student will be taken care of, a University of Tennessee study indicated that a $100 increase in tuition would yield only a $26 increase in an individual student's Pell Grant Award (Ostar, 1978). Truthfully, every tuition increase falls hardest on the $13,000 - $25,000 income family and yet this student is eligible for little federal aid in the form of grants or College Work Study (Ostar, 1978). In addition, Ostar maintains that an overemphasis on student-based aid leads to a growing number of charges involving fraud, waste, and abuse and leads to ever-tightening regulations and increased numbers of bureaucrats, investigators and bill collectors.

The previous discussion regarding access would indicate that the best approach regarding federal assistance may be the increasing of federal support to higher educational institutions enabling colleges and universities to retain lower tuition charges. However, because of economic and

political factors the financial aid delivery system is oriented toward individual student awards. Given this under-standing two major questions must be addressed: what aid is available to students and how effective is the delivery system?

Student Aid Resources

Essentially student financial aid is available in the form of grants, work-study opportunities and loans. A grant is gift money that is offered to those most needy in order to prevent over-indebtedness through borrowing. Work-study is a self-help program which provides meaningful, college-related job experiences and earnings enabling the student to earn money and meet current expenses from bi-weekly wages. Loans constitute a program of borrowing whereby students must repay the loan with interest from future earnings after leaving college. The federal programs representing these categories of aid include Pell (BEOG) and Supplemental Educational Opportunity Grants, College Work-Study, and National Direct and Guaranteed Student Loan Programs.

Most of the federal programs have not seen substantial increases in federal money in recent years. However, the Pell Grant Program (BEOG) which was traditionally limited to low income students has been expanded to assist families from middle income levels. In addition, the amount of money expended and the numbers of students served through the

Guaranteed Student Loan Program (GSL) have risen dramatically.

During the 1982-83 fiscal year modest cuts were made in the financing of the campus-based programs (SEOG, CWSP and NDSL). Although support for the Pell Grant Program was retained at previous levels, eligibility and dollar delivery regulations were instituted to reduce fraud, abuse and errors. The combination of reduced support for some programs and increased regulation of the Pell Grant Program created a dilemma for student financial aid administrators who could stretch local and institutional funds only so far.

At the same time, colleges and universities are experiencing higher costs because of increases in major dollar operating items (i.e., salaries, energy, supplies) which seem to be severely affected by an inflationary economy. This increase in costs translates into higher tuition charges. Since the financial aid application requires the student's resources to be balanced with the expected expenses, many students are experiencing higher need figures as the expected expenses rise. Without corresponding increases in student aid to offset the rise in expenses, a "need gap" crisis occurs for the student. Although existing support for assistance programs is generally at the highest level ever recorded, the increasing cost factor is rising faster than increased federal support and therefore the number of "need gap" victims continues to grow.

The Student Aid Delivery System

Most of the blame for the "need gap" crisis must be put on increasing costs and expenses since the majority of the financial aid researchers conclude that the student aid delivery system appears to be quite effective (Deitch, 1978).

The financial aid delivery system in the United States is the mechanism used to provide individual students with the resources to attend postsecondary schools. Application for the Federal Pell Grant Program may be made separately on a free federal application; or, for a nominal charge, an in-depth assessment of need may be presented along with the eligibility report for the Pell Grant Program. Although there has been some recent discussion of the effectiveness and equity of the need-analysis system, previous studies indicate the system is in pretty good shape. According to a study presented at the Annual Meeting of the American Association for Higher Education in March of 1979 the following conclusions were presented:

> (1) The need based system of financial aid has gone far in removing a meaningful element of price competition from the buying and selling of higher education,
>
> (2) the structure of the aid system (mix of parental contribution, need-based grant and self help) is meeting the public's perception of how post-secondary education should be financed,
>
> (3) the major goal of providing access is quite clear, and correspondingly the programs have been successfully reaching toward the goal (i.e., the number of minorities has increased significantly),

(4) federal, state and institutional funds seem sufficient to insure that any qualified student could afford to attend most of the nation's institutions, and

(5) the problem is not with the different kinds of aid available but for more efficient and equitable distribution of the funds that are available. ("Premises of Federal," 1979)

According to Kenneth Dietch (1978), the current system of student financial aid is a thoroughly developed, pervasive and well-functioning system of price discrimination. However, he cites several problems which are likely to arise with the current system including

(1) competitive pricing (by institutions),

(2) lack of sensitivity to student costs,

(3) loss of financial privacy of families of applicants,

(4) efforts to depart from the need-based system to attract (non-needy, outstanding) students, and

(5) need for fairness in the treatment of independent students. (Dietch, 1978)

Regardless of the potential problems with the financial aid delivery system, its current status seems to be that it is well respected among professionals and researchers. Financial aid administrators and federal program personnel have struggled to solve the problems of "need-gap" by working together to tighten requirements and enforce regulations through extensive validation procedures.

The Growth and Importance of Loans

As other political priorities become apparent in Washington and free student aid programs (grants) are retained at previous funding levels, most aid administrators have increasingly used the available loan programs to meet student aid needs. In fact, loan programs have been increased substantially while most of the other aid programs have been limited or decreased in size. Therefore, the importance of an equitable loan system has far greater implications today than it did previously as more and more students use the device to solve the "need gap" crisis.

General Definition and Philosophy of Student Loan Programs

As indicated previously, loans are awards of money granted with the prior requirement that they subsequently be repaid, in whole or in part, with or without interest. According to Davis and Van Dusen (1978), loans are the most attractive form of student aid to most policy-makers because they must be repaid and therefore are an investment rather than a direct expenditure of funds. Recent discussion of national student aid policies indicates that those in decision-making roles believe loan programs to be very effective. Therefore, the great increase in the use of the current loan programs and the addition of new loan programs are quite understandable.

The underlying philosophical premise of a loan program is that the person who derives the benefit from an education should pay for its costs, without denying low income students access to postsecondary education due to lack of current resources (Davis & Van Dusen, 1978). Not only has such a philosophy been utilized to develop loan programs but it has also led to arguments concerning how much of the cost of an education should be reflected in the tuition charge. For example, in 1973 the Committee for Economic Development recommended that tuition costs should be raised to 50% of the total educational cost within five years at colleges and universities and within 10 years at community colleges. Subsequently the issue was studied in detail by the Carnegie Commission. It suggested that tuition should be raised to 30% of the educational cost within 10 years at colleges and universities, but the Carnegie Commission exempted community colleges due to the historical concept of two years of free access to higher education. Many states have cited the Carnegie Commission report in introducing data supporting the raising of fees at low-cost public institutions.

However, Howard Bowen (cited in Balderston, 1970) effectively argues that an investment in higher education is really an investment in the society. It is an investment in the nation's human capital leading to increased individual productivity and societal benefits (i.e., a more informed electorate, increased national productivity, lower

unemployment rates, a populace more adaptable to technology, increased social consciousness). Mr. Bowen concludes that typical students already bear 75 to 80% of the cost of their education in the form of tuition, books and foregone earnings. Many studies conclude that the heavy reliance on loan financing has the effect of shifting the eventual burden of payment for the cost of higher education toward students and their future income (Balderston, 1970). According to Mr. Bowen, the increased availability of loans is not an appropriate solution to the need gap crisis since students already bear such a large portion of the cost of their education. Mr. Bowen argues that since society receives significant benefits from educating students, it should bear an increasing portion of the cost of educating them.

Those who support the argument that students should bear the cost of their education also favor the increasing use of loans to help students finance the increasing costs. However, the desirability of increasing the burden of cost on students by raising fees and then assisting the needy students through loan programs is an issue that will remain unresolved as both pro and con advocates have many arguments of merit. However, the current federal administration favors the use of loans to help needy students bear the increasing costs of higher education and therefore it has instituted new loan programs to help relieve the "need gap" crisis.

Types of Loan Programs

Among the original loan programs are the National
Direct Student Loan (NDSL) Program (formerly the National
Defense Student Loan Program) and the Guaranteed Student
Loan (GSL) Program. The NDSL is a low-cost deferred repay-
ment loan administered by the educational institution and
funded 90% with federal monies and 10% with institutional
monies. Under the NDSL Program there are no security or
endorsement requirements and its distinctive feature is that
in addition to a deferment of three years for public service,
the student may arrange for cancellation of the loan based
on military service in an area of hostility, full-time
teaching service in selected schools (for five years) or
full-time staff service in a head start program (for seven
years).

The Guaranteed Student Loan Program is available in
nearly all states where a state level guarantee agency has
been developed. In the remaining states students may apply
for a Federally Insured Student Loan (FISL). Administra-
tively, private parties and non-federal agencies loan their
own capital to students in both programs. In the GSL pro-
gram there is a central monitoring agency. While the
federal government insures the loan and helps pay the in-
terest, the agency acts as intermediary, overseer and
collections processor. However, in the FISL program the

lenders rely directly on the U. S. Department of Education for an interest supplement, insurance against default and a collection mechanism. Repayment regulations for both the GSL and FISL programs are similar to the NDSL; however, deferments of up to three years are only available for service in the armed forces, Action or the Peace Corps, and there are no provisions for cancellation.

The Increasing Use of Loans

The growth of both of these programs is indicative of the current emphasis on the issuance of loans to solve the student aid crisis. In 1977, Ernest L. Boyer (cited in Hauptman, 1978), then Commissioner of Education, estimated that between 1965 and 1977 six million students borrowed $11.1 billion. Commissioner Boyer stated that in 1975-76 alone $2.6 billion were loaned to students and that the national increase rate in the number of loans processed was averaging 5% each year. Mr. Boyer concluded that thousands of students have been served by the loan programs including many students who otherwise may have been denied a postsecondary education. In addition, Sanford (1980), in his research of the impact of loans on graduate education, found that graduates with loans are slightly more likely to attend graduate or professional school than those without loans. Therefore, it appears that there is substantial value in supplying loans beyond merely providing access to undergraduate degree programs. The most

recent data indicate a total of 2.75 million loans were pro-
cessed through the GSL system alone during the 1981-82
academic year representing an investment of $6.1 billion
(The Chronicle of Higher Education, 1983).

Accordingly, the success of the federal loan programs
seems to be the impetus for the development of new programs.
For example, the Federal Government announced the creation
of the PLUS/ALAS Loan program in 1980. This program is
similar in administrative details to the other federal loan
programs. The major difference between these programs and
the original loan programs appears to be the lack of defer-
ment and cancellation provisions and higher interest rates.
It also should be noted that, in addition to the federal
loan programs, many institutions, states and private founda-
tions provide loan funds to students. Many of these programs
pre-date the federal efforts, but the importance and reliance
on loan programs are a result of the widespread application
of the loan principles effected through the federal programs.

Of the federal loan programs the GSL/FISL program is the
most widespread. The reason is that the NDSL is institution-
ally administered and many institutions choose not to parti-
cipate in the program. Other institutions have been re-
stricted from participating in the NDSL program due to their
high student default rates. Therefore, due to the universal-
ity of the GSL/FISL program, much of the data and research
presented in the remainder of this study will focus on the
GSL/FISL program.

Program Problems and the Default Rate

The federal loan programs have several disadvantages. According to Tate (1979), abuses in loan programs occur at each of the three stages through which any student loan passes: (1) eligibility; (2) disbursement; and (3) collection. Both institutions and students are responsible for abuses apparent in the loan programs of today. Institutional abuses range from mismanagement to halfhearted collection efforts and student abuses include outright fraud in supplying eligibility data to shrewd bankruptcy declarations in order to discharge outstanding debts. The most obvious abuse regarding the loan system is the default or lack of repayment by student borrowers.

By statute a default is defined as an overdue loan payment of 120 days (20 U.S.C. & 1080 (c), 1976). However, the Department of Education does not recognize a default until the lender's obligation is suspended and the subrogation by the Federal Court takes effect.

Regardless of the procedural issue concerning the commencement of the default status, the American public is constantly reminded of the thousands of students who have participated in the federal loan programs and who have decided not to repay their loan obligations. Headlines in papers consistently highlight the default rate and recent efforts to initiate novel collection methods such as impounding automobiles have received national television attention.

The "default rate" is computed as a ratio of the cumulative amount of delinquent funds to total receivables and can be measured by the following formula:

$$\frac{\text{cumulative claims paid to lenders}}{\text{all loans having entered repayment status.}}$$

Current researchers estimate the overall default rate to be around 12%; however, the rate is slightly lower in the GSL program because the financial institutions exercise more selective lending practices and the guarantee agencies exercise more administrative vigilance.

There is much debate concerning the reliability of data regarding the default rate. Arthur Hauptman (1978) argues that loan default rates are not consistent due to several factors:

      (1) the measurement standards changed and the data prior to 1973 are not consistent with the data collected after 1974;

      (2) the default rate is conceptually flawed since it (a) uses only the federal expenditures in the numerator (federal expenditures are only 80% of the costs) and (b) includes death and disability defaults; and

      (3) the default rate is cumulative; therefore, data for each year's statistics are not sorted out (not everyone defaults in the first year of repayment). (Hauptman, 1978, p. 160)

Hauptman concludes that a single measure of default is inadequate to explain levels and trends in the behavior of

students who default because default activity differs by the
type of guarantee (FISL or GSL), the type of educational
institution the borrower attends, the type of lender and
the demographic characteristics of the borrowers.

In addition to the internal problem concerning the re-
liability of the default rate statistics, there is much con-
cern about the use of the default rate as a performance
indicator regarding the success of the student loan programs.
As cited by Hauptman, an Office of Education Report (1979)
illustrates the three major weaknesses of this argument:

      (1) too many variables beyond the con-
           trol of the Guarantee Agency have a
           significant impact on default rates
           (i.e., depression/recession, high
           unemployment rates, etc.);

      (2) loan default rates may only reflect
           the availability of loans (higher
           rate may be due to significantly
           more loans arranged); and

      (3) cumulative default rates are his-
           torical and may not reflect current
           management philosophies. (Hauptman,
           1978, p. 162)

In effect, two conclusions can be reached based on the
previous discussion:

      (1) the tendency to default may have
           increased over the last several
           years but it may not be as high
           as it has been reported, and

      (2) a large number of variables which
           are external to the guarantee
           agency and the financial lender
           affect the default rate.

The Problem of This Study

Regardless of the elusiveness of concrete reliable statistics, the public perceives the default rate as too high. The federal government's determination to stem the default rate must include research on the socio-economic characteristics of student borrowers and defaulters in addition to data concerning administrative procedures. Accordingly this study has attempted to provide data concerning some of the variables that may be related to the student default rate.

In addition, these variables may be useful in formulating a prediction model to determine who will repay their student loans. Such a model would be of valuable assistance to the student aid administrator in reducing the default rate because it would distinguish the characteristics of defaultees and non-defaultees. The aid administrator could then award and approve loans for only those students with the greatest likelihood of repayment. Since loan money may not be as readily available in the future as it is today, a model that could provide assistance in selecting the "best" student loan risk may be critical in maintaining the integrity of the loan programs and in replenishing the source of funds for future loans.

Statement of the Problem

The problem of this study was to determine the relative
influence of selected variables which characterize community
college students who are most likely to repay student loans.

Questions

Specifically, a primary question of this study was to
determine the usefulness of the model derived from the data
presented in this study to predict those students likely to
repay student loans from those students who are not likely
to repay student loans.

Therefore, the following supplemental question was
addressed: will the selected variables be useful in discrim-
inating between students who will repay student loans and
students who will not repay student loans?

Justification for the Study

As indicated previously, throughout the last few years
concern regarding student loan default rates has risen tre-
mendously. The issue has become the source of critical edu-
cational fiscal management decisions and delicate political
debates. During the period from September, 1982, through
February, 1983, The Chronicle of Higher Education reported
on 17 articles relating to recent developments concerning
student loans. Thus, the selection of this issue is

justified on its standing as a practical problem facing

higher education administrators today. Discussion relative

to some of the many student variables contributing to the

default rate is imperative. This study analyzes six vari-

ables (age, marital status, sex, college standing, grade

point average and loan total) identified in the previous

research of Dyl and McGann (1977), Myers and Siera (1980),

Emmert (1978) and other researchers for the impact these

variables have on the student default rate.

Delimitations and Limitations

Since there are several procedural issues impacting the

results of this study, the following delimitations and limi-

tations are applicable.

Delimitations

(1) This study was confined to students
who have received a loan through a
program administered by a Florida
public community college.

(2) Only data made available to the
researcher by the Student Financial
Assistance Commission of the State
of Florida were utilized in this study.

(3) A sample approximating 31% of the
total population was selected by a
systematic random process for both
categories of students identified
in the analysis (i.e., students who
repay student loans and students
who do not repay student loans).

(4) The analysis of data was confined to
the discriminant analysis procedure
utilized by the computer

techniques of the Statistical
Analysis System (SAS), which pro-
duced a set of equations from
which a predictor model could be
evolved.

Limitations

(1) This study was limited to those
variables identified in the re-
search design, specifically:
college standing, age, marital
status, sex, grade point average,
and loan total.

Research Design and Procedures

This study was designed as an ex post facto research
study in which several continuous and discrete independent
variables obtained from data collected on loan application
forms were observed. From these variables, the dependent
variable of loan repayment was predicted.

According to Ary, Jacobs and Razavich (1979), ex post
facto research can supply much information of value in edu-
cational decision making even though its design differs sig-
nificantly from pure experimental research. In an ex post
facto research design an experimenter can study two groups
that are different in some respect in order to discover the
reasons for the difference. Such is the case with this
study. The design format as suggested by Ary et al. is as
follows:

Group	Independent Variable(s)	Dependent Variable
E	(X) (variable)	Y_1 (Repaid Loan)
C	-	Y_2 (Did Not Repay Loan)

The supposed effect of treatment occurs in the experimental group. Therefore, according to Ary et al. (1979), the researcher attempts to relate the dependent variable Y_1 to a previously occurring independent variable, a nonmanipulable variable indicated by (X) which occurred in the experimental group but not in the control group.

The purpose of utilizing the ex post facto research design was to illustrate the significant data to be utilized in a model that could be useful in predicting the repayment rate probability of students requesting loans for educational use at community colleges. Such a model would be helpful to financial aid personnel in determining what student characteristics are representative of those students who have repaid their student loans.

Sample

The data for this study were selected randomly from the total population of students in each of the following two categories:

> (1) students who are repyaing their
>   student loans and/or are not

> identified as defaulting on
> their student loan commitment,
> and
>
> (2) students who are not repaying
> their student loans and have
> been identified as defaulting
> on their student loan commit-
> ment.

These categories were determined based on the data collection and storage procedures established by the Florida Student Financial Assistance Commission (FSFAC) in Talla- hassee, Florida. The FSFAC is the central storage/retrieval center regarding GSL repayment data for all institutions in Florida. The sample size (76) represents approximately 31% of the total population in each category involving loans made to community college students in Florida.

Data Collection

Data on each student included in this study were supplied by the FSFAC to the researcher in June, 1982. During this session files were randomly selected by FSFAC personnel for review by the researcher.

The appropriate data were then extracted from the files for those students who were identified as community college students. Since there are two separate files maintained by the FSFAC (i.e., those who have not defaulted, those who have defaulted) the researcher obtained a sample for each category representing 31% of the total population.

The sample size (38 in each category) meets the required minimum (30) sample size suggested by Ary et al. (1979) and the 31% sample size exceeds the 10 to 20% sample size suggested by Art et al. for descriptive research.

The following variables were extracted from the data files based on their availability and their identification in previous research studies by Dyl and McGann (1977), Myers and Siera (1980), and Emmert (1978):

(1) Age,

(2) Marital Status,

(3) Sex,

(4) College Standing,

(5) Grade Point Average, and

(6) Loan Total.

A full discussion of the selection of these variables and the results of previous studies utilizing these variables appears at the beginning of Chapter III.

CHAPTER II

REVIEW OF RELATED LITERATURE

The financial pressures exerted on colleges and univer-
sities have had a direct effect on the expansion of loan pro-
grams. As a result the loan programs are experiencing some
unique problems. An analysis of the responses to the prob-
lems surfacing in the student loan programs and a review of
the research regarding student loan default and student
demographics provide an overview of the issues surrounding
the problem presented in this study.

Fiscal Pressures and the Demand
For Expanded Student Loan Programs

Higher education is a social institution that depends
on tuition and service charges, philanthropy, and govern-
mental support in order to balance its budget. The heavy
reliance on these sources of support has created a dilemma
concerning the funding of higher education during weak eco-
nomic times. The current fiscal crisis can be readily con-
firmed by reviewing the funding sources and relative support
for higher education since 1950.

In terms of tuition and service charges, there has been
a percentage decline in these fees as a source of income

from 1950 to 1974 (Change Magazine, 1976). This decline
has been attributed to the larger percentage of students
attending public colleges in 1974 (76%) compared to 1950
(50%) and the corresponding lower tuition charges at these
public institutions (Change Magazine, 1976). In addition,
colleges and universities have found themselves in compe-
tition with local facilities for the student dollar regarding
auxiliary charges including food, housing and books. There-
fore, there has been a decline in income from this revenue
source as well.

Although all service charges such as room and board
accounted for approximately 40% of the total income in
colleges and universities in 1974, Kelly (1983) estimated
that tuition charges in 1977 accounted for only 11% of the
total income for colleges and universities. As a result of
present trends on college campuses, Kelly (1983) estimates
that this percentage will increase to 20% by 1988. Based
on this estimate it appears that students will be forced
to bear an increased percentage of the cost of their educa-
tion in the form of increased tuition charges. Correspond-
ingly there is likely to be additional pressure on the
student aid delivery system to compensate for this in-
creased cost. However, many colleges and universities are
fearful of an increased dependency on student fees. These
colleges and universities are justifiably concerned that
the resultant increased fees will add a new pressure to

the university budget--declining enrollments and the loss
of dollar income from student charges based on underenroll-
ment.

In terms of philanthropical support, higher education
has been the beneficiary of increased dollar support from
1950 ($200 million) until 1974 ($2.4 billion) (Change Maga-
zine, 1976). As indicated in Table 1, due to the tremen-
dous rise in the cost of higher education, this increased
dollar support represents an actual percentage decline from
1950 (8%) to 1974 (5%) in terms of total income for colleges
and universities (Change Magazine, 1976).

Table 1
Philanthropical Support
for Higher Education

Year	Total Dollar Support	Percent of Income for Colleges & Universities
1950	$200 million	8%
1974	$2.4 billion	5%

Since the dollar increase is not consistent with the needed
percentage increase for institutional philanthropical sup-
port, more of the cost of higher education will have to be
absorbed elsewhere.

In the recent past, the government (federal, state,
and local) has provided this increased support for higher

education. In 1974 it was estimated that the government pro-
vided 54% of the total income to colleges and universities
(Change Magazine, 1976). This increase in total income
represents additional support for both private and public
institutions as it includes research monies, building
assistance, and student aid dollars. However today, govern-
ments whose support figures so largely in the financing of
higher education are concentrating on other major concerns
and priorities. Therefore, there has been a decline in the
rate of income growth to higher education from the govern-
ments. For example, the federal government is under con-
trary pressures to hold down expenditures in student aid
(which has risen 600% from 1967 to 1977) on the one hand and
to respond to the continuing demands of middle income par-
ents for selective relief (i.e., additional aid, tuition tax
credits) on the other. In addition, many concerns outside of
higher education are uppermost in the minds of our legisla-
tors. For example, state legislators are highly conscious
of the "Proposition Thirteen" sentiments in their districts.

Therefore, the new depression in higher education is
generally not based upon declining support, but it is due in-
stead to a decrease in the rate of increase of support for
higher education. Nowhere is this more evident than in the
dollar support for student aid during the last two fiscal
years. Colleges and universities have received essentially
the same amount of support in total dollars from the

government, but as the rate of increase has dropped, increased pressure to raise fees and start fund raising activities has surfaced. Because the slowdown has not been uniform, some states and individual institutions have had to contend with declining income.

As a solution to the pressure added by increased fees, the Carnegie Council on Policy Studies in Higher Education (1979) has recommended expanding explicit self-help components (work-study and loan opportunities) of the student aid delivery system and revising the loan system to make loans more easily attained and widely available with less risk of default (i.e., longer payback terms, loan consolidation procedures).

It appears that the Reagan administration has seriously considered the Carnegie recommendations since they have proposed a 60% increase in College Work-Study funds, a "self-help" requirement for Pell Grant eligibility and changes in the Needs Test for the Guaranteed Student Loan Program for fiscal 1984. In addition, Mr. Reagan has proposed continuing dollar support for the federal grant programs at the same level as the past two fiscal years. However, under his proposal, eligibility qualifications for individual students have been substantially altered. Therefore, it is safe to assume that as fees increase, endowment expansion decreases and federal grant money remains the same, an increasing number of students will seek to participate in the student loan program.

A potential problem arising from the decision to rely on the student loan programs for the increased dollar support to higher education is that the private lenders simply may not have funds they want to lend to students (as other loans may be more financially advantageous) or there may not be enough loan money to meet recognized need. Further, the loan programs in effect today have many problems. Therefore, before considering an expanding role for student loans in the financing of higher education, it appears the government should consider the weaknesses of the current loan system.

Problems Inherent in Student Loan Programs

A closer examination of the student loan default problem reveals several contributing factors. Therefore, nearly all researchers agree that the student should shoulder only a part of the blame for the escalating default ratio.

Foremost among the factors to consider is the history of incompetent management of loan programs. For years neither the lender nor the government was making any noticeable effort to collect many of the outstanding loans (Jenkins, 1978). In addition, Jenkins noted that the Office of Education could not afford to install a computerized collection system until 1978 (Jenkins, 1978). Although governmental investments in the area of administrative strategies have resulted in much improvement in collection procedures, the previous administrative procedures account for a

substantial part of the default problem attributed to the historically impacted default rate (Jenkins, 1978).

A second factor to consider is the nature of student loans. Kendis (1978) states that even though student loans are not the same as consumer loans, the lack of rules concerning asset and income analysis, borrowing limits and collection procedures are "diametrically opposed" to methodologies long since proved successful in consumer credit (Kendis, 1978). Although Kendis feels that the rules should be somewhat different from the rules utilized in consumer credit situations, he states that the result is an "attitude problem" surrounding student loans. This "attitude problem" affects not only students but lenders and legislators as well.

Students borrowing as a part of their investment in their own human capital are forced into a decision process to attend or not to attend a college or university, wherein the negative consequences of increasing costs, and debt, are minimized by the ability to borrow funds. Lenders continue to lend greater volumes of funds leading to a greater median debt loan (with increasing financial concern) in the interest of assuring access and individual collegiate choice. And finally, the Government in its effort to assume capital availability guarantees loans by merely increasing existing programs while disregarding the long-term costs and the social consequences of the program. Any one of the conditions highlighted previously would have

significant impact on the student loan problem; however, in combination there is no doubt that the "attitude problem" suggested by Klendis is a very real factor affecting student loan defaults.

A third major factor affecting the student loan problem is the mechanism for repayment. Balderston (1970) notes in an analysis of incomes between those students choosing to go to college and those choosing not to go to college that the former will not "catch up to" the latter in real dollars realized until very late in the working life of the individual primarily due to the foregone earnings (lack of income during college years) of the college student (Balderston, 1970). In fact, in some instances the college-going student may never catch up to the non-college student whether the dollars are discounted for inflation or not. Therefore, any student researching the wisdom of the investment of a college education from a purely financial perspective may decide it is not worthwhile to attend college based on the market payoff (Balderston, 1970).

Beyond the decision the student must make regarding the wisdom of attending college, if a loan is utilized, then the repayment mechanism that currently operates which seeks to concentrate the repayment in the early years of one's working life (10 years) may have some deterrent effect upon college attendance. If loan financing is heavily relied upon, the effect may be substantial. Balterston's

conclusion is that short repayment periods lead to fewer

students opting to attend college if loans must be utilized

because they impose too heavy a burden of cash outflow on

the student. He also notes the effect is stronger on stu-

dents who do not finish programs or finish programs with

less optimistic forecasts of projected future incomes (i.e.,

humanities, home economics) because these students do not

have the advantage of cashing in on a completed or market-

able degree and the loan payment constitutes a higher per-

centage of their total income than it does for students with

higher incomes.

The solution proposed by Balderston is to make long

term loans and to tie the repayment mechanism into the in-

come tax system or set up a similar system which reduces

administrative costs (Balderston, 1970). Although there is

much debate as to the wisdom of Balderston's proposal,

especially as it relates to the use of the income tax system,

there appears to be little doubt that the repayment system

for current loans is a component of the overall problem

regarding loan defaults.

Many other factors are cited in the literature as con-

tributing to the student loan problem. For example, Jenkins

notes that there is such a "smorgasbord" of student assist-

ance programs that it is possible for one student to be

eligible for eight different loan programs, sponsored by

eight different banks or lending institutions to pay eight

different terms with eight different sets of conditions for forgiveness and eight different groups to deal with (Jenkins, 1978). Some consolidation appears to be necessary.

Another factor involves the apparent lack of sensitivity to issues of student loans from student financial aid administrators. For example, the student aid packaging process usually relegates the discussion of the terms of a student loan to the exit interview. Certainly this factor is within the control of the student aid offices. Hopefully, these offices will incorporate the suggestions made in the National Association of College and University Business Officers (NACUBO) manual in order to manage better the loan programs.

Finally, a legal process has been cited as a major factor contributing to the student loan problem. The availability of a bankruptcy action to discharge a student loan debt has become increasingly apparent to many student borrowers. The use of a bankruptcy action, its effect on the system of student aid and the governmental response to its use are important considerations in student loan research because they demonstrate an area where judicial and legislative cooperation has assisted in reducing the number of the student loan bankruptcies and encouraging more students to repay their student loans.

Bankruptcy Actions

Bankruptcy is the mechanism by which insolvent debtors may be released from the obligation to repay their debts. The proceedings are handled by a federal bankruptcy court and conducted under laws enacted by Congress. In the mid-1970s the problem of student loan bankruptcies received significant attention from Congress, colleges and universities, professional organizations and the courts and governmental agencies. This attention was not unwarranted as the problem became quite prominent. During the five fiscal years from 1966 through 1970 only 348 bankruptcies were discharged on NDSL and GSL loans totaling $400,000. However, in the fiscal year 1975 alone, a total of 4,559 bankruptcies were discharged on loans totaling $6,800,000 (Leonard, 1980).

The effect of the tremendous rise in the use of bankruptcy actions to discharge student loan debts resulted in a great deal of negative publicity for all student aid programs. Prior to the disclosures regarding the use of bankruptcy actions, support for all federal aid programs was exceedingly strong and resulted in the passage of the BEOG (Pell Grant) Program. After considerable press exposure (i.e., New York Times) public resentment led to a hearing by the House Subcommittee on Postsecondary Education in October, 1975. The resentment was specifically aimed at a very few of the 12 to 15% defaulting student borrowers, since very few

students default through bankruptcy. Most defaulting students choose not to provide forwarding addresses and thus are "lost." According to some researchers, the small number of students abusing the bankruptcy process solely to escape federal educational debts is not a serious threat to the loan programs. However, the anger surfacing at the October committee hearing appeared to be generated by the apparent misuse of a constitutionally sanctioned remedy to escape a moral obligation (Tate, 1979).

Consequently, in 1976, Congress passed the Education Amendments of 1976 which changed the procedures utilized to discharge student loan debts by setting out specific restrictions. The primary restriction was a mandatory five-year delay from the commencement of the repayment period in the filing of a bankruptcy action. Although a subprovision allows for actions based on undue hardship, the purpose of the amendment is to enforce a moratorium on all but the most necessary bankruptcy discharges until sufficient time has passed for a loan holder to either pay off the debt or have enough at stake to make bankruptcy a genuine last resort effort (Tate, 1979). This provision has since been incorporated into the Bankruptcy Reform Act of 1978.

The Congressional action highlighted above indicates that student loan problems can be adequately addressed and resolved. However, some writers feel that the most potent weapon against bankruptcy abuse and student loan defaults

may rest in the college registrar's office. Therefore,
actions taken by institutions as well as professional organi-
zations, the government and professional educators are worth
researching as possible weapons in combatting the high stu-
dent loan default rate.

Institutional Responses
to Student Loan Defaults

Nearly every college has a statement in its catalog in-
dicating that the college reserves the right to withhold
grades, degrees, statements of honorable dismissal or a
transcript of credits until satisfactory settlement of col-
lege fees and other financial obligations has been made.
This strategy has worked well for many years at several in-
stitutions and is probably partly responsible for keeping
the default rate within its current level.

The appropriateness and legality of utilizing this
strategy have been questioned in several court cases; how-
ever, the courts have not provided a definitive response to
guide colleges and universities especially if the student
has discharged the debt by bankruptcy action. It appears
that in situations where the debt was discharged prior to
October 1, 1979, the court will require state institutions
to release the transcript (Handsome v. Rutgers University,
445 F. Supp. 1362). However, private institutions may have
the authority to withhold transcripts of students whose
debts were discharged prior to October 1, 1979 (Girardier v.

Webster College, 563 F. 2d 1267). Due to the change in the bankruptcy code, students are not now likely to have their educational debts discharged, but if they do, it seems that the college cannot take any action (including withholding transcripts) to collect the debt.

The Handsome and Girardier cases point out that even if the debt to the college has been discharged by a bankruptcy decree there are other legal obstacles to the practice of withholding transcripts. A future court may decree that the student has sufficient property interest in the transcript to require the college to provide adequate notice prior to withholding the transcript. Or a court may determine that there exists between the student and the college a contract and that the college must demonstrate that the contract was entered into with adequate notice regarding the withholding of the transcript. In either case, additional responsibility may be placed upon the colleges utilizing this strategy to compel students to pay their educational debts.

In addition, courts have indicated that an unpaid debt must be one that is sufficiently related to the student's acquiring an education to justify retention of the transcript. This decision presents several new issues. For example, is a student's unpaid bookstore bill or a student parking fine "sufficiently related" to permit the college to withhold the student's transcript?

A final consideration regarding the withholding of
transcripts rests with the Family Educational Rights and
Privacy Act (Public Law 93-380). This act requires an edu-
cational institution to allow the inspection of a transcript.
Although this act does not require a college to release an
official transcript, a court may rule in the future that
the institution must release an unofficial copy of a tran-
script.

Obviously the strategy of withholding transcripts has
been viable throughout the years, but educational institu-
tions should consider the legal ramifications of their
policies in light of the recent court decisions and the
questions presented in the court dicta.

Professional Organization Action
Regarding Student Loan Defaults

Beyond the strategies utilized by colleges and univer-
sities to encourage student borrowers to repay their educa-
tional loans, a few professions have begun policing their
members regarding loan defaults. The most notable example
is the case of the Florida Board of Bar Examiners re G.W.L.
(364 So 2d 454, Fla. 1978). In this case the Florida
Supreme Court refused admission to the state bar to the
petitioner, who had discharged his student loans in bank-
ruptcy, on the premise that the petitioner's financial

status and apparent motivation at the time of filing reflected a sufficient lack of the proper moral character and requisite values to practice law in the State of Florida (Martin, 1980). Since the court never questioned the act of filing for bankruptcy but rather based its decision on the student's conduct and the apparent breach of the Florida Character Standards for bar admission (which were established to protect the public interest), the decision did not conflict with federal bankruptcy law regarding unlawful penalties imposed on bankruptcy petitioners.

This court decision was the first to link discharge in bankruptcy to moral turpitude and it has been cited in cases in other states with similar provisions for professional licensing. The purpose of the standards as stated by the Minnesota Supreme Court is not to punish the attorney but to guard the administration of justice and to protect the general public (in re Peterson, 274 N.W. 2d 922, 925, Minn. 1979). Therefore, the legal profession has set a precedent by refusing bar admission to those who have utilized the student loan system and irresponsibly neglect their debt obligation. Since this strategy appears to be useful for professional student bankruptcy actions and defaults, other professional organizations, for example the AMA or ADA, should institute and enforce similar provisions for licensing. This action is particularly relevant since the

pursuit of higher education is valued so greatly by the American public in whose interest the professional serves and any interference with the financial aid system supporting the program of higher education in America should not be treated lightly.

Governmental Action Regarding
Student Loan Defaults

Many governmental organizations and agencies have demonstrated concern for the student loan default problem and have initiated reports and actions to help remedy the problem. In addition, the U. S. Congress has been involved with legislation designed to curtail the default rate among federal employees and in providing a forum in which to discuss possible solutions for the loan default problem.

The General Accounting Office (GAO) has published several reports concerning the student loan system. Some of the suggestions listed in its 1977 report included the following:

> (1) require financial statements of all debtors,
>
> (2) refer all defaults immediately to legal action,
>
> (3) set up guidelines for compromise settlements,
>
> (4) institute a payroll deduction system for all federal employees, and
>
> (5) require any contractor for collection service to document unsuccessful efforts. (U.S. General Accounting Office, 1977)

Although these suggestions seem realistic, they have met re-
sistance from several sources. For example, in 1979 the
U. S. Department of Health, Education and Welfare (now the
U. S. Department of Education) argued successfully that only
it should negotiate settlements of compromise. In a subse-
quent (1981) report the United States Comptroller General in-
dicated that many schools visited by the GAO made inadequate
efforts to collect defaulted loans, that the schools needed
to adopt a tougher attitude toward collecting defaulted
loans and that the Department of Education should take
stronger actions against those institutions that failed to
do so. Consequently, in April of 1982, the Department of
Education notified colleges with a poor record of loan
collection that they would not receive any new federal loan
money appropriated for the 1982-83 year. Although these
actions referred specifically to the NDSL program, they
sufficiently demonstrate the interest in Washington regard-
ing the student loan problem.

During the Oversight Hearing before the Subcommittee
on Postsecondary Education of the Committee on Education and
Labor (House of Representatives) the following methods were
suggested as appropriate to cut down the GSL default rate:

> (1) discharging federal employees
> who default,

> (2) extending deferments to one year
> for those who are unemployed,

   (3) permitting lower rates of
    repayment for those with low
    incomes, and

   (4) prohibiting defaulters from
    obtaining other federal loans.
    (U. S. Congress, 1977)

In response to item number one above, Education Secre-

tary Terrence Bell and Senator Charles Percy (R-Ill.) spon-

sored legislation in 1982 enabling the government to garnishee

the wages of federal employees who have defaulted on their

student loans. Recently, the Department of Education sent

letters to federal employees notifying them of the Debt

Collection Act of 1982 and indicating they must make

arrangements for the repayment of their loan by February 1,

1983, or risk the garnishment of their wages. Therefore, it

is apparent that both the Executive and Legislative branches

of the U. S. Government have also taken actions to assist

in the solution of the loan problem.

Responses to the Student Loan
Default Problem by Education Spokesmen

Professional educators have also addressed the problem

of student loans and are often quoted in the literature of

higher education. For example, Robert Hartman identifies

several factors that impinge on the effectiveness of the

current student loan system including the variety of loan

programs and regulations, the use of bankruptcy actions to

discharge debts and the differences among students and

their respective needs. He recommends several restrictions
to the current loan program. Among his suggestions are:

> (1) the development of a single
>   loan instrument,
>
> (2) curtailing the use of bank-
>   ruptcy actions (at least for
>   the first 10 years rather
>   than the five years provided
>   in the Education Amendments
>   of 1976), and
>
> (3) a provision allowing different
>   loan amounts for students of
>   different needs, and extended
>   payment and variable repayment
>   options. (Hartman, 1978, p. 96)

Hartman argues that his suggestions would increase the cost
effectiveness of the loan program (items one and two), in-
crease the manageability of loan repayment procedures (items
one and three), widen student accessibility (items one and
three), and reduce defaults and delinquency (items one and
three). Essentially he is suggesting that the loans be
conformed to fit the student, that the loan programs be
supported identically by each of the fifty states and that
the performance requirements and benefits of the loan pro-
grams be identical regardless of the program utilized.
Hartman's suggested actions seem to be consistent with the
goals of the student aid delivery system and show great in-
sight concerning the many elements constituting the student
loan problem.

Several other plans have been suggested by professional
educators regarding the student loan program. A panel of

advisors during the Kennedy Administration developed the idea of an Educational Opportunity Bank. The proposal would have allowed students to borrow money to cover their expenses at whichever college they decided to attend. The loan would be paid back over the next 30 to 40 years and an interest rate of 1% of the students' gross income would be applied. Although this program would have allowed students to pay their own college expenses, Duke University and Yale University encountered several problems when instituting similar programs including administrative and collection difficulties.

D. Bruce Johnstone, in his proposal of the National Student Loan Bank, recommends that one new major governmental agency should assume the responsibility for all student loans (Johnstone, 1978). In addition, Johnstone suggests that the colleges and universities (rather than the lending institutions) should originate all loans and that the repayment of interest should be tax deductible necessitating a tie-in to the Internal Revenue Service. This radical plan appears to be quite practical; however, it tends to come into conflict with many existing offices, agencies and banks as it would drastically change and/or perhaps eliminate their participation in the student loan system. Therefore, support for this proposal has never materialized.

Most attention today regarding changes in the student loan programs has focused on John Silber's Tuition Advance

Fund (TAF) proposal. The proposal incorporates several key
factors including

> (1) loans would only be negotiated
> for successful students (after
> their freshman year),
>
> (2) individual student TAF accounts
> would have to be established
> with the respective college
> business office,
>
> (3) involvement of the Internal
> Revenue Service would be re-
> quired in the transaction and
> repayment procedures, and
>
> (4) indefinite repayment periods
> would be instituted since the
> repayment provisions require
> students to repay their loan
> at the rate of 2% of their
> annual gross income each year
> until they have paid back 150%
> of their loan. (Silber, 1978, p. 7)

To its credit the TAF proposal provides some novel
ideas such as treating loan payments as tax obligations and
pooling the income of married couples with loans for the
purpose of calculating their taxable income. However, the
plan has come under negative scrutiny as many have argued
that the proposal assumes that the burden of paying for an
education should rest with the student. Beyond the previous
arguments concerning who should bear the cost of an educa-
tion, many professionals fear this approach may lead par-
ents, private donors and the taxpayer to abandon their
support for higher education which would force an even
greater burden on the student.

In addition, although research studies show that a long repayment period provides the best opportunity for a reasonable return incentive for investing in higher education, many bankers indicate that the TAF could never be self-sustaining based on the proposed 2% interest rate over an estimated 30 year repayment period. Other arguments against the TAF include the feeling that any plan that provides for the paying of higher education through long term student debts will result in limiting equal access and opportunity for higher education. Further, the tuition and enrollment controls suggested to distribute TAF funds to institutions would cause widespread disruptions in the higher education system. For example, the expanded eligibility requirements for private college and university students would enable them to be eligible for a larger proportionate share of the available money. Regardless of one's point of view, the TAF represents a proposal which has provided healthy discussions of the student loan system and the options available to solve the problems.

Antecedent Studies Relating to
Student Loans and Demographic Characteristics

It is apparent that all the participants in the student aid delivery system are concerned about the student default rate on educational loans. The changes implemented thus far in the student loan system have been instrumental in improving administrative procedures. For example, new and better

resources for collecting loans and monitoring repayment pro-
gress have been devised. A second approach to solving the
student loan problem should consist of researchers studying
the demographic characteristics of student borrowers in
order to distinguish those students who are likely to repay
student loans from those students who are not likely to repay
student loans. Thus far only a few researchers have explored
the characteristics of student borrowers in the last five
years.

In 1977, Dyl and McGann applied a multivariate discrim-
inant analysis to the problem of identifying defaulting and
non-defaulting student borrowers at the University of Wyoming.
They analyzed 33 different variables including class standing,
college attended, grade point average, amount of the loan,
academic major, marital status, living quarters, total amount
of university loans, and size of the monthly payments. Four
of the significant discriminators displayed direct positive
relationships with actual loan repayment behavior. The stu-
dents who were more likely to repay their student loans in-
cluded those students who

   (1) had higher grade point averages,

   (2) were married,

   (3) were engineering majors, and

   (4) chose high monthly payments.

Dyl and McGann also discovered three factors which were nega-
tively associated with repayment of student loans including

the (large) size of the loan, the residence of the student
in an apartment and the total amount of indebtedness to the
university (including previous loans). As cited by Davis and
Van Dusen (1978), this study, in concert with the earlier
studies of Pattillo and Wiant (1972) and Spencer (1974), was
instrumental in identifying for other researchers the factors
most worthy of analysis and providing a format in which to
research the characteristics of student borrowers.

Hauptman, in his 1978 study for the College Scholarship
Service, explored many of the same characteristics for stu-
dents participating in the GSL/FISL programs. One of the
most interesting findings of his study was that the follow-
ing groups of students had a higher percentage of defaults
than would be expected:

        (1) students with low family incomes,

        (2) female students,

        (3) married students,

        (4) black students, and

        (5) junior college students.

Hauptman discovered that students attending public schools
had a lower default rate than those attending either private
or proprietary schools and that college and university
students had a lower default rate than junior college stu-
dents or vocational students. Although the results of this
study did not duplicate the results presented by Dyl and

McGann (1977), it is equally important because it researched a variety of institutions and concentrated its data on one loan program.

Also in 1978, Emmert studied the characteristics of students defaulting on their NDSL loans and concluded that the demographic make-up of student populations has an equal or greater impact upon default rates than do internal admin- istrative factors. He suggested that schools with higher default rates are not necessarily administering their pro- grams any less effectively. Instead he argued that they may have students from substantially different backgrounds that account for the different default rate. Emmert also cited all the previous researchers in synthesizing the crucial variables selected in his study. Among the variables selected were:

(1) age,

(2) marital status,

(3) sex,

(4) college standing,

(5) grade point average,

(6) loan total, and

(7) employment status.

Like the Hauptman study (1978), the differing results Emmert discovered seem to suggest that student demographic character- istics should be weighted in order to establish variable de- fault rates for the different postsecondary institutions.

In 1979 the Office of Education completed its first study of student borrower characteristics. Although the data collection was restricted to eight proprietary institutions, the study singled out several variables that may impact the default rate. Essentially this study underscores the necessity of establishing statistical validity by researching individual types of institutions independently since the results vary for the separate types of institutions studied. Therefore, because of the unique demographic characteristics of the proprietary student, this study concluded that the higher default rate among proprietary institutions discovered in the Hauptman study is understandable.

Finally, a study completed by Myers and Siera in 1980 concentrated on data available from the New Mexico Student Loan Program for the New Mexico State University. Using the Statistical Package for the Social Sciences (SPSS) Discriminant Program, Myers and Siera attempted to develop a prediction model to discern defaulters from non-defaulters. The results indicated that the variables selected did not lead to an accurate prediction of the likelihood of a student defaulting on a loan. What prediction was possible was not substantially different from what one might expect to accomplish based on chance alone. Although the study did not present an acceptable prediction model, the work of Myers and Siera was instrumental in pointing out the need

to explore and refine the application of predictive models
to the student loan problem.

Summary

All of the personnel, institutions, organizations and
governmental agencies involved with student loan programs
have provided input and taken selective action to reduce
the student loan default rate. A majority of the strate-
gies implemented thus far have been concerned with the ad-
ministrative or judicial (bankruptcy) aspects of the pro-
blem. In order to deal effectively with the problem of de-
faults the studies cited demonstrate the necessity of iden-
tifying the characteristics of defaultees and non-default-
ees.

Several of the studies presented emphasized the cru-
cial demographic characteristics worth researching. Other
studies demonstrate the necessity of restricting the popu-
lation researched due to the inherent differences among the
students choosing to attend the different institutions of
higher education. Therefore, this study has restricted its
data base to community college students in the state of
Florida and researched the available data that corresponded
to the variables highlighted in the previous studies.

The student loan problem is not the creation of a
single causality but rather it is the result of the

attitudes, procedures, economics and actions of all of the participants (students, lenders, aid administrators) in the program. Certainly, additional study needs to be performed regarding the administrative problems within the student loan program. However, research regarding the students who partake in the program has long been relegated to a subsidiary status. It appears crucial that additional re-search needs to be conducted to identify those variables which are effective in predicting the likelihood of a stu-dent default, because the student is indeed the major factor contributing to the student loan default problem.

CHAPTER III

DEVELOPMENT OF THE MODEL

The research reviewed in Chapter II provided an over-
view of the demographic variables to consider in the forma-
tion of a prediction model for student loan repayment.
Names of the major contributors to the literature and the
primary variables they studied are shown in Table 2. As
presented in Chapter II many of these studies provided rele-
vant findings concerning relationships between demographic
characteristics of student borrowers and loan default. These
relationships will be reviewed as a basis for developing the
prediction model.

In one of the first studies researching demographics
and student loans, Pattillo and Wiant (1972) as cited by Davis
and Van Dusen (1978), discovered that students who borrowed
late in their academic years, who had previous loans, or who
came from large families were more likely to be delinquent
in their student loan payments (Davis & Van Dusen, 1978). In
addition, Pattillo and Wiant concluded that items reflecting
financial rather than biographical data appeared to be better
predictors of loan delinquency (Davis & Van Dusen, 1978).

Spencer completed a study of the relationship between
demographics and student loan default in 1974. In this study,

Table 2
Overview of Major Variables
Selected by Previous Researchers

	(1972) Pattillo & Wiant	(1974) Spencer	(1977) Dyl & McGann	(1978) Hauptman	(1978) Emmert	(1979) Office of Education	(1980) Myers & Siera	Total
Age		X	X		X	X	X	5
Marital Status		X	X	X	X	X	X	6
Sex		X	X	X	X	X	X	6
College Standing	X	X	X		X		X	5
Grade Point Average			X		X		X	3
Loan Total	X	X	X		X		X	5
Family Income			X	X			X	3
Student Aid Received			X				X	2
Cost of Attendance							X	1
College Major			X				X	2
Type of College				X				1
Ethnic Background				X		X	X	3
Employment Status		X			X			2
Academic Load							X	1
Degree Earned							X	1
Type of Residence			X		X			2
Dependents (Number)			X			X		2
Age of Automobile		X			X			2
Family Size	X							1
Telephone		X			X			2

according to Emmert (1978), Spencer described the worst
possible student loan risk as an unmarried, unemployed male
student, in his last semester, with an old car, without a
phone, and with a large outstanding loan debt (Emmert, 1978).

The results that Dyl and McGann obtained in 1977 indi-
cated that the following factors related positively to the
repayment of student loans: college major (engineering),
marital status (married), grade point average (high), and
the size of loan payments (low). Dyl and McGann (1977) also
found the following three factors to be negatively associated
with repayment: residence type (apartment), total university
indebtedness, and loan indebtedness (high loan totals). In
this study Dyl and McGann also presented the results of a
discriminant analysis of their data, and they were able to
correctly classify 84% of the cases in their study. However,
as pointed out by Myers and Siera (1980), Dyl and McGann did
not test their model with any new cases. Therefore, the
reliability of the model presented by Dyl and McGann is, as
yet, untested.

Essentially these three studies presented the basis
upon which most of the research in this area has concen-
trated. These researchers have not only provided insight con-
cerning the appropriate variables to research but they also
have suggested the appropriate statistical designs for fu-
ture studies. However, the conclusion originally presented
by Pattillo and Wiant (1972) regarding the inappropriate use

of biographical data for predictive purposes has not been
heeded. Many researchers have continued to search for stu-
dent demographic characteristics which would distinguish
student loan defaulters from non-defaulters.

For example, in 1978 Hauptman studied five demographic
variables and reported that the worst risk student loan par-
ticipant was a married, Black, female student from a low
family income who attended a proprietary vocational school.
In another study presented in 1978, Emmert summarized the
previous studies reported in the literature. In this
article Emmert reported the variables that have been studied
and the conclusions that have been presented concerning the
effect these variables have had on the student loan default
problem. Emmert also noted the different default rates
among postsecondary institutions and suggested that the demo-
graphic make-up of a given student population may place an
institution in a high risk category for student loan defaults.
In conclusion, Emmert suggested that the demographic factors
should be weighted in order to establish variable default
rates for differing types of institutions.

A 1979 study prepared by the Office of Education also
reported student demographic data in relation to the problem
of student loan defaults. Although the study primarily was
designed to research the administrative procedures utilized
by selected proprietary institutions, it did show that many

but not all of the same variables selected by other research-
ers were important variables concerning the student loan
default problem in proprietary institutions. The findings
presented in this study demonstrate the necessity of study-
ing individually the different types of postsecondary insti-
tutions.

The most recent study in this area of financial aid re-
search was carried out in 1980 by Myers and Siera. Through
t-test analysis, Myers and Siera found the following vari-
ables to be highly associated with the repayment or non-
repayment of student loans: college standing, loan total,
amount of loan requested, grade point average, and degree
completion. Myers and Siera also attempted to replicate
the study design presented by Dyl and McGann (1977); and, al-
though they were able to formulate a promising prediction
model, when this model was tested using new cases only 42.5%
of the new cases were correctly predicted. The validity
problem experienced by Myers and Siera in their prediction
model illustrates the difficulty researchers have encountered
in their search for an accurate, useful prediction model for
student loan defaults.

It is apparent from the above discussion that although
the conclusions of the previous studies differ considerably,
there does appear to be some consensus regarding the impor-
tance of researching student demographics and which demo-
graphics should be studied. In selecting which variables

to use in this study, the researcher selected the variables
which had been most frequently used by previous researchers
(see Table 2). Although ethnic status and family income
were studied by several researchers, these variables were
not included in this study because of the difficulty in col-
lecting and verifying these variables. The remaining six
variables were available in the data bank of the Florida
Student Financial Aid Commission in Tallahassee, Florida.
As a result, the following six variables were selected for
the prediction model presented in this study:

   (1) age,

   (2) marital status,

   (3) sex,

   (4) college standing,

   (5) grade point average, and

   (6) loan total.

Analysis of Variables

As indicated in Chapter I, this ex post facto study was
designed to determine the usefulness of a model to distin-
guish those students likely to repay student loans from those
students who are not likely to repay student loans. Prior to
developing any model, there was one major issue to address:
were the selected variables useful in discriminating between
students who will repay student loans and students who will
not repay student loans?

In order to determine the usefulness of the variables in discriminating those students who will repay student loans from those students who will not, data representing each of the six variables were collected for both defaulting and non-defaulting students in the sample. Since three of the variables were nominal in nature, the t-test statistic utilized by previous researchers to determine significant differences between defaulters and non-defaulters was not applicable to the data. Therefore, a chi-square analysis was performed on the data collected for each of the variables in this study to determine if the differences between the proportions of subjects that fell into the two different categories (defaulters and non-defaulters) were significant.

Since this study represents exploratory research and any model developed from the data will need to be validated with new data, the researcher selected a .10 significance level. Essentially the chi-square analysis determines if the difference between the expected and observed frequencies for each of the classifications within each variable is greater than the difference one would expect to find based on chance alone. The results of the chi-square analyses showing the relationship of each of the six variables to student loan default are presented in Table 3 through Table 9.

Table 3
Chi-Square Analysis of the
Relationship Between Age and Student Loan Default

Age		Defaulters	Non-Defaulters
18-20	Number % of total frequency	8 10.53	10 13.16
21-24	Number % of total frequency	10 13.16	9 11.84
25-27	Number % of total frequency	8 10.53	6 7.89
Over 27	Number % of total frequency	12 15.79	13 17.11

Chi-Square = 0.6010   DF = 3   Probability = .8960

As shown in Table 3, the chi-square analysis of the re-
lationship between age and student loan default indicates
that age was not significant at the .10 level. The expected
frequency for each cell based on chance alone would be 12.5%
and, as shown, the actual frequency percentage for the cells
ranged from 7.9% to 17.1%.

The chi-square analysis of the relationship between
marital status and student loan default is shown in Table 4.
The results of the chi-square analysis for marital status
indicate a statistical significance at the .10 level. The
expected frequency for each cell based on chance alone would
be 25% and, as shown by the table, the actual frequency per-
centage for the cells ranged from 14.5% to 35.5%. Therefore,

Table 4
Chi-Square Analysis of the Relationship
Between Marital Status and Student Loan Default

Status		Defaulters	Non-Defaulters
Married	Number	18	11
	% of total frequency	23.68	14.47
Single	Number	20	27
	% of total frequency	26.32	35.53

Chi-Square = 2.732   DF = 1   Probability = 0.0983

the use of the variable marital status in a subsequent pre-
diction model was appropriate.

As shown in Table 5, the chi-square analysis of the re-
lationship between sex and student loan default indicates
that sex was not significant at the .10 level.

Table 5
Chi-Square Analysis of the Relationship
Between Sex and Student Loan Default

Sex		Defaulters	Non-Defaulters
Male	Number	18	13
	% of total frequency	23.68	17.11
Female	Number	20	25
	% of total frequency	26.32	32.89

Chi-Square = 1.362   DF = 1   Probability = 0.2432

The expected frequency for each cell based on chance alone would be 25% and, as shown, the actual frequency percentage ranged from 17.1% to 32.9%.

The chi-square analysis of the relationship between college standing and student loan default is shown in Table 6. The data collected did not indicate college standing to be significantly related to defaulters and non-defaulters at the .10 level. The expected frequency for each

Table 6
Chi-Square Analysis of the Relationship Between
College Standing and Student Loan Default

College Standing		Defaulters	Non-Defaulters
Freshman	Number	21	17
	% of total frequency	27.63	22.37
Sophomore	Number	17	21
	% of total frequency	22.37	27.63

Chi-Square = 0.8420   DF = 1   Probability = 0.3588

cell based on chance alone would be 25% and, as shown, the actual frequency percentage ranged from 22.4% to 27.6%.

Table 7 shows the chi-square analysis of the relationship between grade point average and student loan default. The results of the chi-square analysis indicated that grade point average was not significant at the .10 level. The

Table 7
Chi-Square Analysis of the Relationship Between
Grade Point Average and Student Loan Default

Grade Point Average		Defaulters	Non-Defaulters
1.50-1.99	Number	2	0
	% of total frequency	2.63	0.00
2.00-2.49	Number	18	13
	% of total frequency	23.68	17.11
2.50-2.99	Number	8	12
	% of total frequency	10.53	15.79
3.00-3.49	Number	8	8
	% of total frequency	10.53	10.53
3.50-4.00	Number	2	5
	% of total frequency	2.63	6.58

expected frequency percentage for each cell would be 10%

based on chance alone; however, the actual frequency percent-

age for the cells ranged from 0.00% to 23.68%.

The chi-square results of the relationship between loan

total and student loan default are presented in Table 8. The

loan total variable was significant at the .10 level. The

expected frequency for each cell based on chance alone would

be 8.3% and, as shown, the actual frequency percentage for

the cells ranged from 0.0% to 18.42%. Therefore, the size

of the loan total was a significant variable to include in

any prediction formula designed to ascertain the likelihood

of a student loan default.

Table 8
Chi-Square Analysis of the Relationship Between
Loan Total and Student Loan Default

Size of Loan			Defaulters	Non-Defaulters
0-$1,000	Number		13	6
	% of total frequency		17.11	7.89
$1,001-$2,000	Number		11	6
	% of total frequency		14.47	7.89
$2,001-$3,000	Number		13	14
	% of total frequency		17.11	18.42
$3,001-$4,000	Number		1	5
	% of total frequency		1.32	6.58
$4,001-$5,000	Number		0	5
	% of total frequency		0.00	6.58
$5,001-$6,000	Number		0	2
	% of total frequency		0.00	2.63

Chi-Square = 15.7530   DF = 5   Probability = 0.0173

The results of the chi-square tests showed that only two
of the variables were significant at the .10 level (marital
status and loan total). The differences found between the
categories (student loan defaulters and non-defaulters) for
both of these variables cannot be attributed to chance alone.
The remaining four variables (sex, grade point average, age
and college standing) were not statistically significant
according to the chi-square results of this study, but they
may demonstrate some differentiation between defaulters and

non-defaulters on student loans based on the results of
previous researchers.

The results of the chi-square analyses indicated that
only two of the six variables studied most frequently by pre-
vious researchers were significant according to the data
collected in this study. The discovery that the only finan-
cial type variable (loan total) was also one of the two vari-
ables found to be significant may underscore the importance
of Pattillo and Wiant's (1972) conclusion that items reflect-
ing financial rather than biographical data appear to be
better predictors of loan delinquency. This finding may
indicate that since students with high loan needs have good
loan payback rates, the students with the highest needs are
the best loan risk for any one of a number of reasons (i.e.,
they may value money more due to its scarcity, they may have
learned to manage money more frugally or they may have
learned how to budget more effectively). The strength of the
relationship of this one variable to student loan payback
indicates that other financial type data should be studied.

Before developing a prediction model based on the re-
sults of the chi-square analyses, the researcher explored
the possibility of interaction effects between the six vari-
ables. These results are presented in Table 9. It can be
observed that no interaction between the variables related
significantly to payback.

Table 9
Interaction Effects Between the Variables

Variables	F	Pr $>$ F	Significant (α =.10)
Loan by Sex	1.45	.2320	No
Loan by Grade Point	0.01	.9185	No
Loan by Marital Status	0.10	.7573	No
Sex by Marital Status	0.05	.8250	No
Sex by Grade Point Aver.	0.47	.4956	No
Grade Point by Marital Status	2.14	.1483	No

Therefore, in developing the prediction model, the researcher utilized only the six original variables selected from the literature review.

Although four of the selected variables were not significant according to the chi-square results of this study, they were included in the formation of the prediction model because the literature was inconclusive regarding which variables should be used in a prediction model. It should be noted that the unique results of the chi-square analyses in this study may be due to the unique population. Since the previous studies did not examine the relationship between selected variables and student loan default for community college students, the difference in results may be due to the

specific characteristics of the community college population.
Since the results presented in the literature and the results
found for the community college students in this study were
not corroborative regarding the significance of the vari-
ables, all six selected variables were utilized in the pre-
diction model.

Development of the Model

In order to try to predict categorical membership based
on the most discriminating variables, a multiple discriminant
analysis technique was employed. Essentially this statisti-
cal procedure "weights" the predictor variables to yield
maximum discrimination between the two groups (i.e., in this
study it discriminates defaulters from non-defaulters) (Hays,
1981). In addition, the nominal variables of marital status,
college standing and sex were used to define dummy variables
in order to introduce variance into the prediction equation.

Three notable formulae generated by the multiple discrim-
inant analysis function of the Statistical Analysis System
(SAS) program were useful in distinguishing student loan
defaulters. Therefore, three prediction models were devel-
oped.

The first formula included all six variables which were
entered into the data file in the following (arbitrary)
order: age, marital status, sex, college standing, grade

point average, and loan total. The results of this multiple
discriminant analysis indicate that the six selected vari-
ables correctly predicted group membership for approximately
68% of the sample cases. Considering that the prior proba-
bility (based on chance alone) would be a 50% correct pre-
diction, the six selected variables appear to be successful
in improving the accuracy of predicting group membership.

In order to improve the chances of making more accurate
predictions, a second discriminant analysis procedure was
performed. This time the multiple discriminant analysis
enabled the researcher to catalogue the individual effect of
each selected variable on the accuracy of the categorical
prediction. Based on the probability and significance
levels of the chi-square analysis the most differentiating
variables were first included in the prediction model. When
the first variable, loan total, was entered into the pre-
diction formula, the chances of making accurate predictions
improved notably. Instead of the 50% prior probability of
making accurate categorical predictions the accuracy rate
improved to 66%. The only other significant variable
(marital status) was entered into the model next. The in-
clusion of this variable increased the probability of
correctly categorizing the defaulting and non-defaulting
student loan recipient from 66% to 71%. Therefore, this
second formula (generated by the stepwise multiple

discriminant technique) included only the two variables demonstrating the acceptable degree of significance based on the chi-square results (α = .10) and it provided the best accuracy for categorical prediction (71%).

When the next two variables, sex and grade point average, were included in the model, the percentage of correct categorical classifications essentially remained the same. Although the variables would appear to be useful in a prediction formula as indicated in the literature review, their inclusion was not helpful in formulating a more accurate prediction model. When the variable sex was included in the model, the accuracy rating remained at 71%; however, when the variable grade point average was included, the number of correct classifications decreased by one and reduced the accuracy rating to 70%. Such a result seems to be inconsistent with statistical theory. After studying the values for each of the sample cases generated by the prediction formula, the researcher believes that the decreasing accuracy may be due to the mathematical rounding procedure within the Statistical Analysis System program. As a result, one sample case that defaulted on a student loan was classified by the prediction model as a non-defaulter on the total probability difference of .0033. Therefore, the apparent decreasing accuracy of the prediction model may be attributed to the mathematical precision of the computer program rather than the reflection of a conflict with statistical theory.

The third formula was generated at the conclusion of the stepwise multiple discriminant technique and it included all six selected variables. The addition of the remaining two variables, college standing and age, did not improve the accuracy rating for the prediction model. Therefore, the formula, including all six selected variables, generated by the stepwise technique was able to predict correct categorical membership for 70% of the sample cases.

Although both the first and third formulae included the six selected variables, the disparity in the predictive accuracy of the formulae is accounted for in the statistical technique employed for the derivation of the formulae. Since the stepwise multiple discriminant analysis technique enters the variables in the order of probability, the improved accuracy of the third formula (70%) is a result of the mathematical process of weighting the variables as they are entered into the prediction formula. Because the order of inclusion in the formula is different and the mathematical weighting is improved, the accuracy of the formula is improved.

Based on the results of the discriminant analysis, it would appear that the best predictive formula for determining correct classification of defaulting and non-defaulting community college students would include only data regarding the students' loan totals and marital status. Adding the

variables grade point average, sex, college standing and age, essentially maintained the effectiveness of the prediction formula. As evidenced, the stepwise technique employed to produce the second and third formulae improved the accuracy for categorical classification over the regular multiple discriminant analysis technique utilized for the first formula.

Results

Based on chance alone, one would expect to predict correctly the proper placement of students into the two categories (defaulting and non-defaulting) 50% of the time. The prediction formula generated by the inclusion of data concerning loan total and marital status increases the likelihood of making an accurate prediction from 50% to 71%. Therefore, it would appear that these data are relevant in predicting whether a student is likely to default on a student loan. The additional data that were collected for the other four variables (sex, grade point average, college standing and age) also appear to be relevant in producing a prediction model since the prediction formula derived from all six variables produced a 70% accuracy rating concerning categorical prediction and this rating is substantially higher than the 50% probability based on chance alone.

However, all three of the prediction formulae reflect an error factor of nearly 30% indicating that roughly one-third of the cases were classified in error. In addition, the testing of the prediction formula utilizing new cases is not possible since the formula is derived from a stratified sample (which was necessary in order to perform the chi-square tests to determine variable usefulness). Therefore, the usefulness of the results of this study is limited even though the prediction formula demonstrates moderate success in differentiating defaultees from non-defaultees.

Previous researchers also produced prediction models with limitations. For example, although Dyl and McGann (1977) reported significant success with their prediction model, Myers and Siera (1980) indicated that Dyl and McGann did not validate their results by applying the formula to cases other than those from which the formula was derived. In addition, the results of the study performed by Myers and Siera seem to indicate that although they presented a useful model, when they attempted to validate their model by predicting new, non-sample cases, the model was not reliable or useful.

The results of this study show that the six variables which were selected based upon the results of the studies presented by previous researchers were not reliable predic-tors of payback for community college students. Therefore, a dependable prediction model cannot be formulated for

community college students based on these variables. Perhaps
the importance of this study is that the results coincide
with findings reported by Hauptman (1978), Emmert (1978) and
Pattillo and Wiant (1972).

Hauptman first suggested that research must be indepen-
dently conducted on the different types of postsecondary in-
stitutions. Underscoring this perception, Emmert concluded
that institutional default rates may not be comparable if
the schools' respective populations are from substantially
different backgrounds. It may be significant that the two
studies previously successful in determining reliable demo-
graphic variables and formulating prediction models (Dyl and
McGann, 1977, and Myers and Siera, 1980) were based on four-
year public univeristy (University of Wyoming and New Mexico
State University respectively) samples.

Previous discussion regarding the importance of finan-
cial aid for community college students demonstrated the
meaningful differences between the typical community college
student and the typical four-year university student. The
disappointing accuracy of this model, specifically the in-
correct classification of 30% of the sample, may be attrib-
uted to the demographic differences between the sample in
this study and the samples used in the previous studies.
For example, the results of the previous research reported
in the literature indicate that the demographic data repre-
sented by the six selected variables discriminate student

loan defaulters and non-defaulters for four-year college or university students. However, as indicated by the chi-square results in this study, these same variables do not entirely discriminate student loan defaulters from non-defaulters for community college students. Therefore, the variables, selected based on the success of the previous studies conducted with a university student sample, are apparently not the best variables to use when attempting to predict community college student loan defaulters.

The results of this study also appear to support Pattillo and Wiant's (1972) conclusion that financial rather than biographical data are better predictors of loan delinquency. One of the two variables that met the .10 statistical significance level in the chi-square analyses of this study was the loan total. It was also the only variable that was financially related since all of the other (five) variables in this study represented purely biographical demographic characteristics. Considering that the only financially related variable was also statistically significant, perhaps more financially related variables would yield a more accurate prediction model. Therefore, the results of this study may lead to the conclusion that, as suggested by Pattillo and Wiant, more financial data need to be collected and analyzed in order to make any reliable prediction of loan delinquency. This conclusion may be also applicable to the results presented by Dyl and McGann (1977) and Myers and Siera (1980).

Although they have been able to develop successfully a pre-
diction model, neither Dyl and McGann nor Myers and Siera
has been able to validate successfully their models by pre-
dicting accurately new cases, cases not presented in the
sample that derived the prediction model. Perhaps they need
to collect more financial data regarding their students in
order to formulate an accurate prediction model that can be
validated by new cases.

Summary

The prediction formula derived from the data available
through the Florida Student Financial Aid Commission for
Florida community college students indicates that it is
possible to make a useful discrimination regarding who will
and who will not repay their student loans for approximately
70% of the sample cases. This prediction formula was
derived through a (stepwise) multiple discriminant analysis
computer program utilizing the six selected variables high-
lighted in previous research studies as useful discriminators
between defaulting and non-defaulting students. A second
(stepwise) multiple discriminant analysis utilizing only the
two variables demonstrating statistical significance
(α = .10), loan total and marital status, yielded a pre-
diction formula with a categorical prediction accuracy
rating of 71%. A third formula utilizing all six selected
variables entered into the formula in random order

(non-stepwise) generated a model that predicted correct
categorical membership for 68% of the sample. Regardless of
the formula utilized, approximately one-third of the sample
cases were not predicted accurately. Although none of the
prediction models are accurate for one-third of the cases,
each prediction model is capable of predicting nearly 70%
of the cases correctly. Therefore, the models are of some
value in addressing the questions of this study. Future
models may be more useful in predicting those students
likely to repay student loans from those students who are
not likely to repay student loans since the models derived
from the data in this study have limitations concerning
their application as discussed in Chapter IV.

　　　The limited success of these prediction models appears
to be consistent with the findings presented by the previous
researchers in the field. Since the difficulty in validat-
ing even successful prediction models appears to be wide-
spread, as confirmed by the results of previous researchers,
it may be that the variables utilized thus far are not the
most discriminating variables regarding student loan de-
faults. Perhaps future research should focus on financial
type variables in order to provide relevant, statistically
acceptable prediction models to assist student financial aid
administrators in predicting student loan defaulters.

CHAPTER IV

CONCLUSIONS, IMPLICATIONS AND
RECOMMENDATIONS

Previous studies researching the relationship between
student demographics and loan repayment recorded similar
results to this study. However, the results of this study
demonstrate several unique implications for future re-
searchers.

Conclusions

Since the models presented in this study improve the
chances of making an accurate prediction concerning the
likelihood of default on student loans from 50% (based on
chance alone) to nearly 70% (based on the models), the
models are successful in discriminating student loan de-
faulters from non-defaulters. Therefore, the questions of
this study presented in Chapter I must be answered in the
affirmative.

Even though some of the six selected variables were not
statistically significant in this study, the inclusion of
all six variables in the prediction models was warranted
because of the inconclusive results regarding the importance
of the individual variables as demonstrated by previous
university researchers. Inclusion of all six variables was

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also appropriate since this study was the first to utilize a community college sample, and the results of the chi-square analyses in this study may indicate that the variables distinguishing community college student loan defaulters may be different from the variables distinguishing university student loan defaulters.

Despite the differing results of the chi-square analyses for the individual variables, the models formulated utilizing all six selected variables were accurate in predicting default or non-default for nearly 70% of the sample cases. Therefore, the models presented in this study are useful in predicting student loan defaulters. The conclusions of this study suggest several implications of importance for future studies.

Implications

The most notable implication of this study is that there are differences between community college students and university students regarding the significant variables distinguishing student loan defaulters from non-defaulters. This study shows that, although previous researchers identified the six selected variables and determined that they were significant in distinguishing defaulting university students, only two of the six variables were significant in distinguishing defaulting community college students. Therefore, this study underscores the importance of performing separate

study designs yielding specific results for the different kinds of institutions utilizing the Guaranteed Student Loan system.

The results of the chi-square analyses also appear to indicate that the data currently being collected for community college students do not adequately distinguish defaulting from non-defaulting student borrowers. As suggested previously, it appears that more financial data should be collected and analyzed if one is to achieve a more accurate prediction model for community college student loan defaults. Although there are inherent differences between the administrative mechanisms employed for the student loan system and those utilized by commercial lending institutions, information found useful in determining eligibility for commercial loans may be useful in distinguishing student loan defaulters from non-defaulters. Therefore, a second implication based on the results of this study is that future research should provide more focus on the financial data of community college students in order to improve the chances of formulating a better prediction model.

Limitations of the Model

The results of this study reveal two major limitations of importance for future researchers.

First, the models presented in this study do not accurately categorize nearly one-third of the sample cases.

As indicated, an inaccurate prediction regarding the probability of default or repayment was made for nearly one-third of the students in the sample. This imperfection results in the limited application of the prediction models. Previous researchers were unable to formulate a prediction model and validate their models with any great success; similarly, this study did not find a sufficiently accurate prediction model for determining who will default on their student loan.

Second, since the models were not effective in making an accurate prediction for all cases in the sample, it appears that additional (especially financially related) variables may be of value in future research studies. This study was restricted to the use of data highlighted as significant in the literature and available through the Florida Student Financial Aid Commission (FSFAC) in Tallahassee, Florida. The results of this study and the previous studies seem to indicate that some variables which were not available through the FSFAC data files may be of critical importance in formulating a more accurate prediction model. For example, the employment status and type of job held at the time of loan application or the family's financial data including loan repayment history may be reliable variables to consider when predicting student loan defaults. In addition, data concerning ethnic background, college major, and adjusted gross income were found to be of value in prediction formulae presented by university researchers. Although the

data are not currently available in the data system provided
through FSFAC, perhaps these variables are also important in
the formation of a prediction model concerning the probabil-
ity of default for community college students. Any further
study regarding a prediction model for determining the prob-
ability of default should also research the value of includ-
ing these variables. Based on the difficulty of collecting
data concerning these variables, the inclusion of these
variables would alter considerably the methodology section
of any similar research study. However, the variables do
appear to be of value in examining critically the student
loan default problem and presenting a model that improves
predictive accuracy. Therefore, the resources employed to
collect the data would appear to be prudently utilized.

Recommendations

The use of any of these predictive models for deter-
mining the likelihood of students defaulting on their stu-
dent loans is limited. Therefore, the foremost recommenda-
tion derived from the data and the literature search is the
need to encourage further research. The importance of this
study is that the data indicate it is possible to formulate
a model which will accurately predict 70% of the students
within the sample. It appears realistic to assume that
further research, especially the financially related
research suggested in the previous discussion, may result

in a more inclusive and accurate prediction model which would
be useful in determining the probability of default. Such
research would need to be more inclusive and therefore the
collection of the new data would demand much more time and
financial resources. However, the possibility of finding an
appropriate collection of variables and the usefulness of
the resultant prediction formula would indicate that student
loan default prediction is an appropriate area for further
study.

In the event that a subsequent study does provide a re-
liable prediction model, it should be tested and validated
by the researcher using new cases derived from a different
sample. In addition, before the model is implemented on any
individual college campus, it should be tested and validated
by the financial aid officer for applicability on his/her
campus. Only when these validations are performed can there
be confidence in the predictive capability of the model, for
the results of this study and the research presented in the
literature clearly indicate that the models and appropriate
variables vary from institution to institution. This varia-
tion is dependent upon the type of institution being re-
searched. Another reason for establishing institutional
validation procedures is to determine if significant
differences occur among institutions of the same type. It
is possible that a single, reliable prediction model that is
derived from data representing a state-wide population for a

selected type of institution may have no validity or useful-
ness on a single campus.

Because of the increased emphasis on student loan pro-
grams as a major component of the student financial aid
delivery system, further research concerning student demo-
graphics and the probability of default is of utmost impor-
tance. Such importance is underscored by the discussions
presented in the literature search and the successful
results of this study.

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    Office, 1981.

BIOGRAPHICAL SKETCH

James A. Schmidt was born December 11, 1950, at Pittsburg, Pennsylvania. He attended local schools in St. Petersburg, Florida, and graduated from Dixie M. Hollins High School in 1968. He entered the Florida State University in 1968 and received the Bachelor of Science degree in criminology in 1972 and the Master of Science degree in education (student personnel/higher education) in 1973. He served Southeastern Community College (N.C.) as Director of Admissions and Student Activities and Researcher from 1973 until mid-1976. In the fall of 1976, he entered Stetson University College of Law in St. Petersburg, Florida. The following year, 1977, he accepted a counseling position with Edison Community College in Fort Myers, Florida. During the 1981-82 academic year, he attended the University of Florida while on leave from Edison Community College in order to complete residency and course requirements for the Doctor of Philosophy degree in educational administration (higher education). Upon returning to Edison Community College in July, 1982, he assumed his present position as Director of Financial Aid.

James A. Schmidt is married to the former Linda Dale Thompson of Callahan, Florida. They have two sons, Daniel and Timothy. He is a member of Beta Theta Pi, Kappa Delta

Pi, Phi Delta Kappa, several professional and service organizations and has been selected as an Outstanding Young Man of America for 1983.
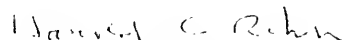
I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

James L. Wattenbarger, Chairman
Professor of Educational
    Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

John M. Nickens
Professor of Educational
    Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Harold C. Riker
Professor of Counselor Education

This dissertation was submitted to the Graduate Faculty of the Department of Educational Administration and Supervision in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dean for Graduate Studies and
Research