INVESTIGATING THE ECONOMIC RETURNS

FROM COLLEGE GRADUATION FOR RE-ENTRY WOMEN

by

Pamela M. Cornell

Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Community College Education

APPROVED:

_____
Dr. Don G. Creamer, Chairman

_____   _____
Dr. Roseanne J. Foti   Dr. Timothy Z. Keith

_____   _____
Dr. Samuel D. Morgan   Dr. Daniel E. Vogler

July 1993

Blacksburg, Virginia

INVESTIGATING THE ECONOMIC RETURNS

FROM COLLEGE GRADUATION FOR RE-ENTRY WOMEN

by

Pamela M. Cornell

Committee Chairman: Dr. Don G. Creamer

(ABSTRACT)

This study investigated the economic returns from higher education for re-entry women. Re-entry women are continually concerned with whether or not returning to college and acquiring a degree will result in increased earnings. While sufficient evidence exists to show that earnings increase as years of education increase, this study concluded that this may not hold true for re-entry women. As a result of prior work experience, these women may have relatively high earnings among the occupations that do not require college degrees only to acquire entry-level positions upon completion of the college degree. There may be little or no difference between the salaries of these two work levels.

This study was directed by the major research question -- "Does the age at the time females obtain four-year degrees affect their subsequent earnings?" and used path analysis to test a model of the direct and indirect effects of age at the time the degree is received on earnings while holding constant the effects of other variables. These analyses included and accounted for labor market, human capital and socioeconomic variables, prior earnings, race, prior

work experience, college major and occupation, all of which may affect earnings.

The findings did not support the null hypothesis that earnings for re-entry women will increase after the receipt of the college degree. The findings also indicated that earnings before the degree had a significant effect on earnings after the degree.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

CHAPTER II

EDUCATION, INCOME, AND THE RE-ENTRY WOMAN:

CHAPTER III

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Numerous studies have been undertaken that suggest a direct correlation between earnings and the decision to invest in higher education (Becker 1975; Levy & Michel, 1988; Mincer, 1974; Pencavel, 1991). Moreover, a number of empirical studies have indicated that the positive relation between education and earnings holds across a number of variables. Thus, higher education correlates with higher earnings for males and females, as well as minorities and majority populations (Kominski, 1987). Similarly, education enhances earnings for Americans as well as international populations (King, 1990; Rao & Datta, 1985).

Indeed, existing literature provides such strong documentation of the positive returns to the investment in higher education that institutions of higher education as well as the general public have transformed the research findings into a postulate -- those who invest in higher education will receive positive net economic returns. The research findings are, however, probabilistic rather than deterministic. In most cases, higher education does provide positive economic returns. However, a few studies have been carried out that identify those circumstances which may invert the traditional relation between higher education and earnings.

Accordingly, this study is designed to investigate the economic gains which accrue from higher education for females who complete the four-year college degree beyond the traditional timespan. It is based upon the hypothesis that a number of variables may interact to reduce or create negative returns to this particular population. The underlying rationale for such a premise is somewhat complex. While prior work experience is directly related to earnings (Kostiuk & Follman, 1989), the receipt of a college degree for a person already in the labor market may constitute surplus education if the individual continues in the current job. A rather obscure study by Verdago and Verdago (1989) found that white males who were "overeducated" for their occupations actually earned less than their peers who were appropriately educated. Moreover, such persons earned even less than their undereducated colleagues. Kolstad (1982) reported that wage rates of young male college graduates took eight years to equal that of their high school graduate counterparts. While these studies were based on males, they invite further investigation of the relation between surplus education and earnings for females.

Older female college graduates, or re-entry women as they sometimes are called, may, of course, choose to enter a new occupation after graduation. Again, however, a priori reasoning would support the hypothesis that earnings

may decrease rather than increase. Several factors, according to Owens and Koblenz (1991) can influence the wage gap for older women:

     a.   The work force is segregated by gender, with women, especially older and black, disproportionately concentrated in low wage jobs.

     b.   Women are less likely to have union representation.

     c.   Higher education does not mean higher earnings.

Additionally, an occupational shift may require that the new but older graduate accept an entry level position. However, the entry level position may pay less than the newly vacated position. While researchers have examined a number of questions regarding the economic status of women (Adelman, 1991; Herz, 1988; Hough, 1992), few studies have sought to determine whether the traditional relation between education and earnings holds when college graduates are of nontraditional age.

Nevertheless, the relation between age at the time a four-year degree is received and earnings is an important one. Institutions of higher education are actively recruiting females in general and re-entry females in particular (Copland, 1988; Weinstein, 1980). While both target age groups participate in higher education for reasons which are noneconomic as well as economic, it is important that both institutions and students have access to accurate theory and data regarding the economic returns of the higher education experience.

The labor market is rapidly increasing in the number of female workers (Boston, 1990). Concomitantly, institutions of higher education are reflecting these crucial changes. In 1990, more than 57% of all female high school graduates enrolled in college in comparison to less than 55% of male high school graduates (U.S. Bureau of Census [USBC], 1991). In contrast, in 1960, 35.3% of female high school graduates relative to 46.1% of males enrolled in college (USBC, 1989). Of additional interest, a substantial proportion of the incremental increase in female enrollment occurred among women beyond the traditional college age. In 1970, 25% of females enrolled in college were 25 years of age and above. Over the years, however, this figure grew considerably. Thus, the comparable figures in subsequent years were 36% for 1975, 40% for 1980, 43% for 1986, 46% for 1990 and 47% for 1991.

The USBC (1991) projects females will constitute 61.5% of the total labor force in the year 2000, and 63% of the net growth in the labor force. The potential exists, however, for even greater female participation. Currently, females comprise 52% of the total population and 46% of the labor force (USBC, 1991). Thus, colleges and universities may be required to serve the needs of even greater numbers of female students.

The Impact of Female Students On Institutions
of Higher Education

In some respects, the increased enrollment of women has provided

financial balance for enrollment-driven college and university budgets. In 1987,

there were 12,768,307 people enrolled in institutions of higher education

(USBC, 1989). By 1997, the number of students enrolled in college is projected

to have declined to 12,173,000. Indeed, from 1970 to 1980, aggregate

enrollment increased by 41%. This growth decreased, however, over

subsequent years. Thus, from 1980 to 1989, overall college enrollment grew by

only 11%. Female students, however, disproportionately contributed to this

growth. During the last decade, the number of male college students grew by

only 5% -- less than one-third of the 17% increase in female enrollment.

A similar trend also occurred at the graduate level. From 1983 to 1989

alone, the number of males in graduate schools increased by only 8% relative

to a 25% increase among females (NCES, 1991). Graduate education,

however, has quite different occupational consequences than undergraduate

education. That is, graduate education more typically prepares individuals for

continuation in their existing occupations. Thus, age at the time the degree is

received is, perhaps, less key at the graduate than at the undergraduate level.

As college administrators are aware, the increased enrollment of females in higher education has provided financial benefits to institutions. The relation is a straightforward one. Female students constitute a disproportionate number of full-time equivalent enrollment figures (FTEs), and FTEs continue to determine funding levels for institutional budgets. Additionally, when female enrollees are disabled or disadvantaged, institutions also have increased opportunities for gaining federal grant support.

The impact of female students upon colleges and universities has not been totally positive. The presence of women, and particularly older women, has sometimes adversely affected academic curricula. Female students tend to choose non-scientific, non-mathematical majors (Berger, 1988; Mueller, 1988; Vetter, 1980). In spite, for example, of a 500% increase in the number of female engineering majors in the last 10 years, females are still grossly underrepresented in engineering curricula (Campbell, 1986). Thus, schools with large numbers of female students may still experience declining enrollment in traditionally male-dominated majors and may need to adjust curricula accordingly. Indeed, such adjustments are already taking place in response to the female majorities which comprise many college campuses. While some evidence exists that a number of re-entry women choose business management as a major, women overall appear to be continuing college curricula away from business management, engineering and engineering

technologies and computer and information sciences, and back toward the

social sciences and other predominantly female fields (Berger, 1988; Mueller,

1988).

Statement of the Problem

As previously mentioned, literature currently exists regarding the

economic returns to higher education for traditional-age college students.

Simultaneously, a new body of literature is emerging regarding re-entry

females. However, despite the varied areas of research in these fields, the

current literature is lacking in information on the economic benefits from higher

education for re-entry women. Consequently, it is not known whether it is

economically worth the effort for re-entry women to get a four-year college

degree. Although there are data to substantiate the premise that college

graduates economically benefit from the college degree (USBC, 1991), these

data do not specifically represent the re-entry females who graduate from

college after age 30. While it is generally assumed that re-entry women will

receive the same economic benefits as traditional-age college graduates, no

empirical evidence exists in documentation of such an outcome. Therefore, the

problem is that re-entry women expect to receive economic benefits from the

college degree (Owens & Koblenz, 1991) when, in fact, there are no data to support this conclusion.

As mentioned earlier, the labor market status of women over age 30 is unique. Many of these women have reached a relatively high earnings plateau in occupations that do not require degrees (Owens & Koblenz, 1991). Consequently, the college degree may require a job shift. This job shift may be to an entry level professional job which, in some instances, would lead to a decrease, rather than an increase, in earnings. This possibility appears to have been ignored throughout the research because few existing studies seek to investigate this issue. In economic language, a woman, already in the workforce, who receives the degree after age 30, may encounter a negative income effect as she substitutes a new professional job for a previously held non-professional job. This negative income could imply negative returns from the investment in higher education. This possibility must be recognized by college administrators who target re-entry women, by counselors who advise re-entry women, and by women themselves. Thus, empirical data are needed which can address this under-asked question.

Purpose of the Study

The literature is characterized by a void regarding the economic benefits of higher education for those women who receive the degree beyond the traditional age. Accordingly, this research was designed to investigate the relation, not merely between education and earnings, but also between earnings and the age of the female at the time the degree is received. This research addressed the void in the literature by examining the effect of age (at the time the degree is received) on earnings for re-entry women who received a Bachelor's degree. Finally, this study will enhance the quality of advising and academic counseling for college matriculating re-entry women who plan to enter the workforce.

Research Question

The following question guided the research: Does the age at the time females obtain their four-year degrees affect their subsequent earnings?

Hypothesis

The literature leads to the expectation that earnings increase as education increases. While this notion is widely documented throughout the literature, only a few studies report that earnings for females may not increase after receiving the college degree. In accordance with the literature, the hypothesis selected for testing is: earnings for re-entry females will increase after receipt of the college degree.

Limitations of the Study

This study had several limitations. The greatest limitation was the sample size. The National Longitudinal Surveys of Labor Experience (NLS) data base used for this study contained data on 5,083 mature females. Preliminary examination of the data tapes indicated that 203 of the 5,083 females received their bachelors degrees at 30 years of age and above. An unexpected finding was that the number of females further dropped to 59. A number of factors explained this small sample size -- (a) the non-availability of subjects during subsequent surveys, (b) the absence of before and after graduation earnings information, and (c) missing data on work experience. This small sample size made estimation of the direct and indirect effects of the

model problematic; however, it comes close to the rule of thumb number for multiple regression.

Second, the model was, perhaps, not fully specified relative to the variable, race. Although the NLS sample (N=5,083) was representative of the minority population across the nation and the sub-sample appeared representative (22% of sample), the minority races are co-mingled and did not allow for a disaggregation by race. In addition, the specification of the model could have been enhanced by estimating the indirect effects of race on post-graduation earnings through age at the time of the degree. That is, it could very well be that race has an indirect effect on earnings through prolonging the education process.

Also, the degree to which the hypothesis could be sufficiently tested using the variables as operationalized was limited. By defining earnings as a data point, as opposed to an interval, the relative effects are not discernable. The use of a statistical technique in which a more explicit comparison between early and late graduates may have generated more decisive findings. In the model as it stands, there is no standard against which to gauge the effects, either positive or negative, of age at the time the degree is received, on earnings.

Finally, this research is limited to studying earnings as a result of investing in higher education. It does not attempt to explore psycho-social

variables such as goals, aspirations, or any other variables hypothesized to have an effect on earnings in any other way than as residuals in the regression equations.

Despite the limitations, this study provides useful insight and information for re-entry women. Since path analysis is not deterministic, the information from this study will be most valuable for advising re-entry women so they can make informed decisions. As students, they should have access to theory and data regarding the economic returns from their higher education experience.

Definitions

Economic returns/benefits -- The employment status and level of earnings generated as a consequence of investing in higher education for a degree.

Human Capital -- The systematic investment in humans such as dollars spent on education, training and health care or any other area which provides measurable economic returns (Smith, 1976).

Net Present Value -- Obtained by and discounting the future earnings from education and/or by calculating the internal rate of return (Freeman, 1975).

Pay Off -- The monetary difference between the investment in higher education and the earnings after the degree is received (Kolstad, 1982).

Re-entry women -- Women who enter or re-enter college at non-traditional

ages. For purposes of this study, re-entry women are 30 and above at the time

their degrees are received.

Significance of the Study

Educational costs continue to escalate. While aggregate higher

education enrollment increased by 29% from 1970 to 1980 (NCES, 1989), total

funding revenues increased by 63.9%. Thus, per pupil costs more than

doubled. From 1980 to 1986, the comparable rates of change were 6% for

enrollment and 34% for funding (NCES, 1987). Thus, per pupil costs increased

five times over.

Whether the costs of the degree are covered through financial aid,

employee benefit programs or personal resources, tuition, and related costs are

a considerable expense. The financial investment in college is sufficient to

warrant an economic return (Psacharopoulos, 1989). At the very least, a

college education is a powerful predictor of an individual's economic well-being

(Altonji, 1990; Hill, 1981).

The literature revealed that while females were relatively less driven by

job-related motives than their male counterparts, more than half of adult

females who took courses of any type were motivated by job-related reasons

(NCES, 1989). Additionally, an NCES (1987) study indicated that 59% of adult women, but 20.9% of males, who enrolled in courses did so for job-related reasons. Thus, while females of all ages enroll in college courses for many of the nonquantifiable benefits, they also expect the accrual of economic returns (King, 1990). Both theory and data support the conclusion that, under ordinary circumstances, the four-year degree generates additional earnings for the traditional-age female as well as male college graduates (Altonji, 1990). However, re-entry female students may be operating in a vacuum. Indeed, advisors, and instructors as well as students are currently basing their decisions upon intuitive or anecdotal rather than solid evidence. This study is designed to provide empirical evidence regarding the economic returns from higher education for re-entry females.

Organization of the Study

Chapter 1 presents the introduction to the study, statement of the problem and the purpose of the study. Also presented in Chapter 1 are the research question and hypothesis which guide the investigation. The chapter concludes with the limitations of the study, definitions of terms, significance of the study, and organization of the study.

Chapter 2 is a review of the literature. Accordingly, it presents findings, trends, and conclusions regarding the economic returns from higher education. Specifically, Chapter 2 discusses the theoretical views that frame education and earnings and the impact of discrimination of women on earnings. Also presented in this chapter are the benefits from the college degree that accrue to college students in general as well as to re-entry women.

Chapter 3 describes the method used to collect and analyze data for this study of the economic returns to re-entry women from higher education. This chapter also describes the population, instruments, and data analysis used to test the hypothesis and research question.

Chapter 4 describes the results of the data analysis and presents the statistical findings. Also presented in this chapter is a summary section answering the research question.

Chapter 5 presents the conclusions and implications of the findings resulting from this investigation. This chapter also reports recommendations for further study.

CHAPTER 2

**EDUCATION, INCOME, AND THE RE-ENTRY WOMAN:
A REVIEW OF THE LITERATURE**

The theme of this study -- the economic returns to re-entry women from higher education -- implicitly involves several bodies of literature. On the one hand, it requires some discussion of the broader issue of the relation between education and earnings for workers in general. "Do students in general receive economic benefits from the college degree?" Additionally, an investigation of the returns to higher education as a function of age must also consider the theoretical issues which link the level of education to the level of earnings. Third, this study requires some attention to the issue of gender, race, and those theoretical perspectives that explain the relatively lower earnings that accrue to females and racial minorities.

Finally, a review of the literature for this study must be inclusive of the various studies on re-entry women as a unique segment of the collegiate population. What are the characteristics of this group of students? How do institutions of higher education define their needs? And, ultimately, does the four-year degree provide economic benefits to this group that match and/or exceed those economic benefits received by their female counterparts of a more traditional age? Accordingly, this review of literature summarizes existing research in these areas.

General Benefits From The College Degree

Students do benefit from college degrees. The students who graduate receive benefits that include financial and non-financial rewards. In 1987, for example, the mean annual income of persons who completed four years or more of college was $50,879. By contrast, those with one to three years of college received $34,677. College dropouts had incomes only 68% as high as that of college graduates (USBC, 1988). High school graduates had incomes only 57% of the level of college graduates (USBC, 1988). A human capital study conducted in Maryland (Montgomery College, 1983) assessed the rate of return on college costs by contrasting the future lifetime earnings between college graduates and high school graduates. The study found that the average college graduate could expect a 33.8% rate of return on his/her investment. Another study (Kolstad, 1982) produced quite different findings. When comparing starting wage rates of high school graduates versus college graduates, the wage rates of young men who did not attend college remained higher than their college-educated classmates for at least eight years after high school. For females, however, the wage rates of young women college graduates quickly caught up to and exceeded those of their female high school classmates who did not attend college. Additional rewards also accrue by major field. In 1988, the mean monthly salary offers for persons with a

bachelor's degree in engineering ranged from $2,119 for civil engineers to $2,672 for petroleum engineers. Mathematics majors were offered $2,237. Social science majors, however, were offered mean monthly salaries of only $1,881 (College Placement Council, Inc., 1989). Berger (1988) also asserted that engineering and business majors' starting salaries were higher compared to science and liberal arts majors.

Other gains also may accrue to those college students who persist and graduate. Duncan (1976), for example, argued that the private economic gains from completing a college degree extend beyond wages. College graduates also have better working conditions and more comprehensive fringe benefits. A survey of non-traditional age college graduates also found that the degree not only improves economic opportunities, it also provides access to professional and managerial positions (Kanter, 1989). Haveman and Wolfe (1984) focused primarily on the benefits accruing to the college educated. Their findings correlated a college education with such benefits as broad-minded attitudes, concern for others and leadership ability. Other personal benefits include the acquisition of knowledge, moral sophistication, and intellectual, social, personal, and career development (Graham, 1986; Kuh, 1985). Astin's (1977) findings on the effects of college revealed even more nonmonetary benefits such as increased interpersonal skills, intellectual esteem, and a more positive self-

image. Hill (1981) also discussed job security and job satisfaction as nonpecuniary benefits of a college degree.

For females, however, the pay-off for the college degree was substantially lower than for their male counterparts. Female college graduates earned 38% less than male college graduates. When the data are disaggregated by race, the economic returns to the degree are even lower for females. Black female college graduates earn 24% less than their male counterparts and hispanic female college graduates earn 42% less than their male counterparts. As would be expected, female graduates of various racial and ethnic backgrounds earned more than their high school counterparts. Stewart (1986) studied male/female earnings differentials and concluded that the average earnings for women with four years of college were lower than for men with less than an eighth grade education.

The Women's Bureau (1990) reports that in 1988, the earnings gap for hourly earnings was 26%; for weekly earnings, 30%; and for annual earnings, 34%. Although there has been movement toward greater equality of pay, the pace has been slow. It is important, however, to note that the earnings ratio data vary among occupations. For example, Tolbert (1986) found that in nontraditional occupations, women received approximately equal compensation. She further writes that, traditionally, women have crowded into a few occupations and these few traditionally have lower salaries.

Such data and information are not new. Both historically and contemporaneously, the relation between education and earnings has been intermediated by gender. From 1890 to 1940, for example, the median years of school completed for white females exceeded those completed by white males. Yet, those females who were in the labor force earned less than one-half the earnings of their male counterparts (Reich, 1981). A parallel trend existed for black males and females from 1948 to 1970. Similarly, from 1948 to 1983, the unemployment rate of college-educated females was slightly higher than their male counterparts (NCES, 1989). And, as mentioned, females with four year degrees earned, on average, 38% less than males with four year degrees (USBC, 1991). For females, then, the relation between education and earnings has been characterized by contradictions.

Nevertheless, females have accelerated their investment in higher education and they are receiving higher incomes relative to females who only complete high school. In fact, females with four years of college are advantaged relative to their less-educated counterparts in several respects. First, females with college degrees have lower levels of unemployment. In 1987, women who had completed four years or more of college were 2.8 times less likely to have experienced unemployment than female high school graduates. The relative advantage of college graduates over high school graduates holds true even when the data are disaggregated by race (see

Table 1). Since 1970, the unemployment gap between white female high school and white female college graduates has widened. By contrast, the gap between black female high school and college graduates has narrowed. Nevertheless, both white and black female college graduates have lower rates of unemployment which could affect the economic returns of their investment in a college degree.

The decision to invest in a college degree not only affects the probability of finding employment, it also directly and indirectly shapes occupational possibilities. Thus, it is not surprising that in 1987, 57.2% of all women employed in managerial and professional positions held four-year degrees or better. By contrast, only 19.6% of female high school graduates held such positions. In other words, a college degree increased the probability of a woman acquiring a managerial professional job by nearly 200%. Simultaneously, female high school graduates were disproportionately employed in technical, sales, and administrative areas, service positions, and in nonsupervisory industrial positions (see Table 2).

Differential rates of unemployment and a differential occupational structure between female high school and college graduates are variables that are reflected in different income and earnings streams (USBC, 1988). Thus, female college graduates also had more income than female high school

Table 1

Unemployment Rates for Women by Educational Attainment: 1970 and 1987

Females	1970	1987
Females -- Total		
High School: 4 years	4.6%	6.8
College: 4 years or more	2.0%	2.4
Females -- White		
High School: 4 years	3.6%	6.2%
College: 4 years or more	1.5%	2.3%
Females -- Black		
High School: 4 years	7.2%	14.3%
College: 4 years or more	1.4%	5.3%

Adapted from: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States: 1988 Table No. 634, "Unemployment Rate By Sex, Race, and Educational Attainment: 1970 to 1987", pg. 382.

graduates. In 1985, for example, median annual income for females with four years of college education was $21,389 relative to $15,481 for female high school graduates (see Table 3). While the earnings gap between female high school and college graduates has narrowed over the last two decades, female high school graduates still have less than three-quarters the level of income of their college-educated counterparts (NCES, 1989).

The narrowed gap is reflective of a trend which has been debated in the literature for the last decade -- the decrease in the returns from higher education first reported by Freeman (1976). However, basic economic theory informs us that it is in the interest of females to continue to invest in higher education as long as the additional gains exceed the additional costs. And, indeed, some studies have found direct increases in income and earnings for females with each additional level of education and training. A study by The United States Bureau of the Census (1989) clearly documents such a pattern. Analysts found increases in income and earning for all additional education and training. Additionally, this study reported an even greater economic advantage to women with a four-year degree relative to a high school graduate -- mean monthly earnings of $886 and $496, respectively. Such data

Table 3

Median Annual Income of Females 25 Years and Over by Years of School Completed: 1970-1985

| YEAR | TOTAL | ELEMENTARY SCHOOL | | HIGH SCHOOL | | COLLEGE | | |
		LESS THAN 8 YEARS	8 YEARS	1-3 YEARS	4 YEARS	1-3 YEARS	4 YEARS	5 YEARS OR MORE
1970	5,616	3,798	4,181	4,655	5,580	6,604	8,156	9,581
1971	5,872	3,946	4,400	4,889	5,808	6,815	8,451	10,581
1972	6,331	4,221	4,784	5,253	6,166	7,020	8,736	11,036
1973	6,791	4,369	5,135	5,513	6,623	7,593	9,057	11,340
1974	7,370	5,022	5,606	5,919	7,150	8,072	9,523	11,790
1975	8,117	5,109	5,691	6,355	7,777	9,126	10,349	13,138
1976	8,728	5,664	6,433	6,800	8,377	9,475	11,010	13,569
1977	9,257	6,074	6,564	7,387	8,894	10,157	11,605	14,338
1978	10,121	6,648	7,489	7,996	9,769	10,634	12,347	15,310
1979	11,071	7,414	7,788	8,555	10,513	11,854	13,441	16,693
1980	12,156	7,742	8,857	9,676	11,537	11,537	15,143	18,100
1981	13,259	8,419	9,723	10,043	12,332	12,332	16,322	20,148
1982	14,477	8,424	10,112	10,661	13,240	13,240	17,405	21,449
1983	15,292	9,385	10,377	11,131	13,787	13,787	18,452	22,877
1984	16,169	9,828	10,848	11,843	14,569	14,569	20,257	25,076
1985	17,124	9,736	11,377	11,836	15,481	15,481	21,389	25,928

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, Money Income and Poverty Status of Families and Persons in the United States, Series P-60, No. 154.

25

provide conclusive evidence that a college degree is a financial asset for

females (see Table 4).

Education and Earnings:
The Views of the Theorists

Even as recently as 1989, educational institutions were not characterized

by equality of opportunity. Attention is often directed toward the fact that

differences in access to education exist across social and ethnic lines

(Chiswick, 1988). Less attention has been given the fact that educational

access also differs by gender (Pearson, Shavlik, & Touchton, 1989). Rather,

the focus has been upon income differences by gender. To some degree,

however, low earnings among women has been reflective of the weaker

educational opportunities of 30 or more years ago (Women's Bureau, 1990).

That is, earning differences, between males and females can be explained, in

part, by educational differences.

As discussed earlier, females are proactively seeking to change their

labor market status. In some respects, the acceleration of interest in higher

education is a part of this effort. Hence, the question becomes relevant, "Does

education still pay off under contemporary labor market conditions?" An

abundance of literature exists regarding the returns from higher

Table 4

Monthly Income, Monthly Earnings, by Educational Attainment, For Females

Females	Monthly Income (Dollars)			Standard Error
	Mean	Standard Error	Mean	
Professional	1,864	221	1,745	220
Master's	1,645	105	1,322	102
Bachelor's	1,148	55	886	53
Associate	959	40	819	38
Vocational	923	54	703	49
Some College, No Degree	789	50	608	46
High School Graduate Only	684	31	496	13
Non-High School Graduate	453	8	202	8

Source: U.S. Department of Commerce, Bureau of the Census, "What's it Worth? Data From the Survey of Income and Program Participation, Spring 1984, Table No. 2. "Four-Month Average Income, Earnings, and Work Activity, and Educational Attainment, by Sex, Race and Age for Persons 18 Years and Over.

27

education. Essentially such literature argues that educational expenditures

should be viewed as an investment. Thus, preliminary to an effort to calculate

the returns from education for re-entry women is some discussion of the

literature regarding the relation between education and earnings. During the

latter part of the fifties, and throughout the sixties, a theoretical shift among

economists highlighted education as an economic commodity. Economists

such as Becker (1973), Schultz (1963), and others began to conceptualize the

acquisition of learning and skills through education and training as an

investment in human capital. Such an analogy provided a framework for the

investigation of the decision-making process that guides the individual in

choosing to allocate time and resources to the pursuit of higher education

(Becker, 1973). Specifically, human capital theory argues that an individual will

be inclined to invest in higher education if the net present value of higher

education equals its cost (Freeman, 1975). The net present value of the

education is obtained by summing and discounting the future earnings from

education, and/or by calculating the internal rate of return (Freeman, 1975).

The costs of higher education are defined such that direct costs, i.e. books,

tuition, fees, supplies and transportation, are included. Additionally, the

earnings that the student must forego to obtain the education are also included

as a cost.

Using this framework, a number of researchers have calculated the

returns to individuals who obtain a college degree. Freeman (1975, 1980)

found that the economic returns from a college education decreased from 11%

in 1959 to 10.5% in 1974. Some analysts reported a return in 1959 as high as

18% (Carnoy & Marenbach, 1975; Hines, Tweeten & Fedfern, 1970). This rate

has, reportedly, continued to decrease in the contemporary labor market

(Watson, 1989). However, some analysts have argued that the returns to

higher education began increasing again in the eighties (Henderson & Ottinger,

1985; Montgomery College, 1983).

Nevertheless, higher education continues to be correlated with higher

financial as well as nonfinancial rewards. Ehrenhalt (1983) and Levy and

Michel (1988) revealed that college graduates are substantially better off in the

labor market than those with less education. Ehrenhalt concluded that higher

education translates into better working conditions, higher level positions, as

well as higher wages and salaries. Such benefits do not, however, solely

accrue from investment in education. Labor market experiences are both

directly and indirectly related to familial characteristics. A family's nurturing

patterns, income and wealth, or social network are some of the intervening

variables in determining the linkages between education and earnings (Sewell &

Hauser, 1975). Additional variables that have been postulated as

intermediating variables in the education/earnings equation are innate cognitive

abilities and quality of education (Behrman, 1980; Taubman, 1976; Wales, 1973). Given the implicit and explicit difficulties inherent in obtaining empirical estimates of "ability" and "quality," it is not surprising that the inclusion of such variables has been controversial.

Considerable empirical evidence has accumulated in support of the notion that the returns from education are strongly contoured by labor market segment (Dickens & Lang, 1985; Osterman, 1987). That is, such studies indicate that level of education may be less important than the individual's access to primary labor markets. Primary sector jobs are characterized by higher mean wages, superior working conditions and better fringe benefits than are jobs in the secondary sector (Cain, 1976). Indeed, the returns from education vary dramatically across different fields within the primary market. The mean monthly earnings for a holder of a bachelor's degree ranged from a low of $1,065 in Home Economics to a high of $2,382 for a person with a degree in Economics. The range for advanced degrees exhibited even greater variability. A holder of an advanced degree in Religion and/or Theology had mean monthly earnings of $1,211. An advanced degree in medicine or dentistry provided $3,797 per month (USBC, 1989).

Labor market structure interacts with another variable which also determines the rate of return to education -- labor market discrimination. When employers exhibit a preference for workers of a particular race or gender, labor

markets are affected and subsequently rates of returns to education are differentially distributed. Thus, economic theory provides a framework which leads to the hypothesis that such groups may invest in fewer years of education than do groups who do not experience discrimination. And, indeed, research has documented such a trend. Thus, the recent acceleration of interest in higher education among females of all ages and ethnic statuses can be viewed as somewhat surprising. This is particularly so given the fact that the returns from higher education are lower for females than for males.

Explaining Gender Differences in Education and Earnings

Numerous studies have documented that the income levels of males and females are not equal. And, while some of the differential can be attributed to differences in years of education, it appears that a number of other factors may be operative. Indeed, the disparities are so great that even today female college graduates earn approximately the same as men with an eighth grade education (Minnesota State Commission on the Economic Status of Women, 1984). Of additional interest to the matters of issue in this study, current data reveal that females who have attended graduate school earn less than male high school dropouts (Ferber, 1986; Hughes, 1988; Pounder, 1988; Women's Bureau, 1990). Moreover, the asymmetrical relation between gender,

education, and earnings prevails at a global level. For example, King (1990) identified similar patterns in the Peruvian economy. While females with college degrees earned substantially more than females with only a high school diploma, college educated females earned substantially less than their male counterparts. A similar pattern existed in India (Rao, 1985). Even when females and males have equal levels of education, disparities persist. Pounder (1988) found, for example, that female college professors earn approximately $5000 less than their male counterparts of equal education and rank. Additionally, female professors advanced through the professorial ranks more slowly than did their male counterparts.

Such data alone do not demonstrate that the returns to education for women is a direct function of discrimination. Indeed, a number of factors interplay to reduce the returns to education for women. For example, females sometimes choose occupations which require lower skill levels (Madhere, 1983; Women's Bureau, 1990). Females tend to have more work interruptions than their male counterparts. (Salvo & McNeil, 1984). Given the operation of these and other variables, it is not surprising that some scholars have found that females receive a lower return to education than males (Altonji, 1990).

Beginning in the sixties, a large body of research emerged regarding the differential earning status of males and females. Sanborn (1964) published a study conducted in 1950 for his doctoral thesis using Census data for the year

1949. Sanborn adjusted median wage and salary incomes of females and

males to take into account differences in occupation, hours of work, education,

age, urbanness, race, turnover, absenteeism, and work experience for workers

of the same age. Starting with an unadjusted 58% for the level of females'

incomes compared to males', he was able to bring female incomes up to

between 87% and 88% of the incomes of male workers. The remaining 13%

Sanborn leaves unexplained in quantitative terms. Sanborn also added in a

footnote that the same calculations from 1940 Census data produced

essentially the same result. Sackley (1965) found that the average annual

earnings of full-time female workers were smaller proportions of the earnings of

male workers in 1963 than in 1958 in all but two industry groups -- personal

services and non-federal public administration. During the seventies and

eighties, researchers continued to investigate the male/female earning

differential. Mellor (1984) reported that the overall ratio of female-to-male

earnings changed significantly between 1979 and 1982. For workers 25 and

over, the gender-earnings ratio rose from 61% to 64%, and it rose even after

race and years of school completed were taken into consideration. He further

revealed that among whites age 25 and over, women gained relative to men for

the education groups with less than four years of college. The balance of the

good news Mellor has for women is intuitive. He acknowledged that although

the earnings of women with four years or more of college did not advance

relative to men, they continued to have a higher gender-earnings ratio (67%) than those women completing fewer years of school.

But women cannot quite seem to reach the 100% salary and wage levels of men. From Suter and Miller (1973) we learn that by adjusting women's incomes for differences in education and occupational status only, the estimated annual income would be increased to 41% of male income. Further, adjusting for year-round and full-time work raises the level of women's income to 62% of men.

A circular explanation, or rather, a series of unanswered questions was posed by Oaxaca (1973) in his study of Male-Female Wage Differentials in Urban Labor Markets. He acknowledged a large difference between the earnings of females and males and showed that a substantial proportion of the male-female wage differential was attributable to the effects of discrimination. He goes on to question whether the differences would exist even without discrimination. He wondered if women plan on shorter work lives and do not invest as much as men in training for the work they do. To his credit he does point out that his approach does not take into account the effects of the feedback from labor market discrimination on the male-female differences. He further implied that the differences could reflect the adaptation of women to the biases of the labor market.

Some of the earnings gap between male and female college graduates reflects the traditional status of women in the society. The woman's place traditionally has been in the home. If she works outside the home, society sees her income as secondary to the male head of household or as temporary. The biases of the labor market reflect this position of women in society. Quoting Reynolds (1980) of the United States Department of Labor, "Despite the impressive number gains, women continue to be concentrated in fields where they traditionally have been employed" (p. 40). Carroll (1965) studied working women and their families' economic positions. In discussing the wife's age and labor force participation, she felt that age in itself was not necessarily the key factor. She further explained that the wife's age distinguishes more than her longevity; it described her generation with its social pattern and attitude toward employment of married women, and to some extent it described her education. Later studies add to the strength of Carroll's position. Polachek (1975) studied the effects of family characteristics on the female-male wage gap. He pointed out that being married and having children had opposite effects on the wage rates of husbands and wives and that these diverging wage patterns were perpetuated over the length of the marriage. As this relates to married women seeking graduate degrees, Feldman (1973) summarized a pattern in his study. He revealed a sequence that occurs for some women: (a) initially, there is a conflict between the spouse and student roles, (b) divorce

results and (c) there is an increased commitment to the student role. While Feldman could not establish causality, he concluded that marital status did appear to have an effect upon the student roles of both men and women. Furthermore, his observations were consistent with Durkheim (1951) who wrote about the stabilizing effect of marriage upon men. Both Feldman and Durkheim agreed that while marriage lessens conflicts for men, it increases them for some women. Some react to these increased conflicts by choosing divorce, some minimize the conflict by becoming part-time students and others abandon education.

In her book, A Lesser Life, Hewlett (1986) asserted that society, especially in the United States as compared to Europe, does not support working mothers. Even in the 1990s, women must make career versus motherhood decisions, and when working women interrupt their careers their advancement may be irretrievably derailed, no matter how short or how long the interruption.

However, women do not seem to harbor a pessimistic attitude about the prospects of always being at the 60% or below level of male income. Ferber and McMahon (1979) investigated the earnings expectations of female and male college graduates upon graduation from college. As could be predicted, both females and males expected to earn more upon graduation than the mean actual earnings of the fields that they were entering. Males expected 201% of

actual salaries, and women expected 210% of actual salaries. The study also noted that there may be a tendency for women to overestimate the rewards associated with occupations from which they have historically been excluded. Furthermore, although women are likely to be disappointed when the rewards are lower than expected, the positive effect of their present high hopes on their investment in education should itself help to close the wide gap of earning between women and men. In reality, according to Mellor (1984), the differences in school years completed account for only a small portion of the earnings gap. If years of school completed by employed women 25 and over had been equal to that of men, women's median earnings would have increased only by two dollars and the gender-earnings ratio would have increased only by .5%.

Filer (1985) investigated the differences in average earnings between men and women. He concluded that these differences may be the result of sorting by the sexes into jobs with different levels of disagreeable and agreeable working conditions. He further substantiated his findings with an analysis of data from the 1977 Quality of Employment Survey which showed that, on average, men and women hold jobs with substantially different working conditions and that these differences are of a pattern suggesting the need to pay higher wages to attract employees to the jobs held by men. Filer also believed that estimations of wage equality show that these differences in

working conditions contribute significantly to the ability to explain average earnings for each gender.

Staffing patterns as a cause of lower wages for females is discussed by Sieling (1984) in his article on the female-male earnings gap. He said, ". . . the greater earnings disparity (at the higher skill levels) largely reflects an uneven distribution of men and women among the work levels of the occupations --- that is, different staffing patterns" (p. 29). His tables show that where men and women are more equal in numbers at an occupation skill level, the wages are more nearly equal, and these areas of equality tend to be at the lower skill levels.

Ferber and McMahon (1979) summed up the issue when they revealed that the present earnings differential is associated with women's less advanced education, their concentration in traditionally female occupations, and their discontinuous labor force participation. Their calculations, using 1970 Census data, showed that an additional year of schooling raises women's earnings 3.3%, on the average, assuming their present occupational distribution. When more highly educated women choose different and higher paying occupations, the mean increase in women's earnings goes up to 8.5 percent. Moreover, the study showed that a radical shift by women to an occupational distribution similar to that of men would increase their earnings by 12 percent, even without any increase in schooling or in relative earnings within occupational categories

Ferber and McMahon concluded that an increase in education combined with a shift to less traditional occupations would appear to have a considerable payoff for women.

The Discrimination of Women in the Labor Force

The issue of discrimination against women in the labor force has become even more important as more women are not only entering the market but are also moving into higher paying jobs. Over 50% of adult women are currently in the labor force. This is a large increase from the 32% which existed in the sixties (Gutek, 1985). In spite of the explanations discussed in the literature, discrimination does exist. Although women have made some progress in the labor force in general, they are still moving slowly in the higher-paying professional fields, which do require a college degree.

The male-female disparity in earnings is particularly threatening. Between 1960 and 1979, women earned only $.59 for each dollar earned by the average man. By 1988, that figure reached only $.64 (USBC, 1989). This disparity in earnings was also documented by Pounder (1988); however, her results indicated that only a small but statistically significant proportion of the salary variance is explained by gender. The study then further concludes that

varying market conditions, individual negotiating skills, and past experience may account for some salary disparities.

Government projections (USBC, 1989) and others (National Commission on Working Women [NCWW] 1987; Stewart & Cannon, 1986) indicate that this pay gap is not coming to a close. Between now and the year 2000, the economy is expected to create fewer high paying jobs.

The government projects show that most of the new jobs will be in female-dominant areas, such as clerical and service positions. These, of course, pay below average wages. Thus, women in general and re-entry women in particular may have some degree of risk attached to their decision to invest in the college degree.

In fact, The Bureau of Labor Statistics (1988) predicts that the rise of women in professional jobs will be quite slow through the year 2000. From 1986 to 2000, twenty-one million new jobs are expected to be created, but only 17% of those will be in the professional fields. Most of the new jobs will be typically low-paying positions, such as registered nurse (93% female), office clerk (80% female), retail sales (69% female), and food counter worker (79% female) (Bernstein, 1988). Such data are threatening. Re-entry women are often unaware that the degree does not guarantee improved labor market status.

**Re-entry Women and Higher Education:
The Economic Dimension**

In 1987, 52.8% of all college students were female and 44.6% of these females were twenty-five years of age or older (U.S. Dept. of Education [USDE], 1989). It is projected that by 2000, 54% of all enrollees in institutions of higher education will be female and 48.9% of this group will consist of females age 25 and above (USDE, 1959). Yet, the literature on discrimination indicates that such women may receive no returns or low returns from their educational investment. Furthermore, colleges are failing to address this critical area.

Such data are not new. The trend toward the accelerated enrollment of older females began in the seventies and has continued, almost exponentially, throughout the eighties. From 1970 to 1987, the number of women 18 and 19 years of age enrolled in college increased from 1,200,000 to 1,400,000 -- an increase of 16.6%. By contrast, the number of female college enrollees age 35 and over increased from 409,000 to 1,339,000 from 1970 to 1987 (USDE, 1988). The enrollment of women in this age bracket more than tripled.

This is not to imply that college administrators and counselors have passively responded to the emergence of these new students (Copland, 1988). Rather, concentrated efforts have been made to identify, measure, and design

strategies to address the needs of these older, or re-entry females. But for the most part, academic inquiry into the needs of re-entry women has resulted in the creation of intervention strategies, none of which addresses the economic area.

Special advisement programs have been created to address the unique psychological needs of re-entry women (Grottkau & Davis, 1987). Structural changes have been initiated in program offerings to accommodate the scheduling needs of older female students (Simpkins & Ray, 1983). Financial assistance, career counseling, and in some cases, child care facilities, have been included as part of a comprehensive program to address the multidimensional needs of re-entry women (Dunkle, 1980; Murphy & Achtziger, 1982).

As one reviews the literature that has emerged in an assessment of the needs and experiences of re-entry women, the analytical void of economic returns from college becomes apparent for this population. College administrators have directed considerable resources in the creation of strategies and programs designed to assist older women in their persistence efforts. However, fewer resources have been directed toward the provision of information and programs to assist older female graduates in making the occupation transitions commensurate with their newly-acquired educational status. Indeed, few advisors, counselors, and/or recruiters of re-entry women

provide any information to enrollees regarding the economic impacts of
obtaining a college degree. Do older female graduates find employment in
areas related to their degree at rates comparable to their younger female
counterparts? And, what strategies and programs can colleges adopt to
enhance the labor market opportunities of re-entry women who complete their
degrees? The research herein is designed to answer such questions.
Preliminary to a discussion of methods and/or a presentation of findings,
however, is a brief review of existing programs and strategies that address the
needs of re-entry females.

Re-entry Women: An Overview of Strategies and Program Interventions

The increased enrollment levels of women over age 25 has, in some
respects, been providential for colleges and universities. The increase in
female enrollment corresponded with a period of declining college enrollment.
Thus, a number of colleges and universities began specifically targeting older
women during the decade of the seventies (Fox, 1979). Simultaneously,
researchers began to explore this phenomenon. Academic studies were
designed to identify the characteristics of returning women and to explore their
reasons for returning to college. Institutional researchers focused upon the

problems and needs of their particular body of mature women and examined the programmatic implications of their findings (Scott, 1980). Lastly, administrators identified ways that their institutions could become more responsive to the problems and needs of this new group of students (Fisher-Thompson, 1980).

Programmatic efforts to service re-entry women have continued. As in the seventies, such programs have been designed in terms of the specific need areas of re-entry women. Indeed, the various areas of need in this group were even more sharply defined in the eighties. Moore (1985) identified and rank-ordered the various barriers faced by women of nontraditional ages. Moore found that factors related to economics, age, social attitudes, and sexist stereotypes were the major factors that prohibit the enrollment of older women. Once enrolled, however, structural factors of the educational institution, i.e. class scheduling, requirements for the transfer of credits, and similar institutional factors, comprised the greatest barrier to academic progression. Such findings contrast with the tendency of counselors and advisors to direct intervention strategies toward psychological barriers. Indeed, both theory and research as well as programs and strategies have been disproportionately focused upon the psychological needs of returning women. The issues of coping and role conflict have been addressed by theoreticians and practitioners. For example, Pitman (1986) examined the nature of the conflicts experienced

by re-entry women. Beutell and O'Hara (1987) studied alternative coping mechanisms among re-entry women. Roehl and Okun (1984) investigated causal factors associated with depression. Perry (1985) created a theoretical typology for cataloguing the coping styles of re-entry women in a nursing program. Numerous other studies of this type have been conducted and the prevalence of psychological oriented research is reflected in collegiate programs directed toward the more mature female student. Grottkau and Davis (1987) reported on the use of group counseling to support individual coping. Dinuzzo and Tolbert (1981) also summarized the use of a group approach to reduce psychological barriers to persistence among re-entry women. McGraw (1982) reviewed a number of programs and counseling strategies directed toward the psychological arena.

Moreover, it appears that administrators, counselors, and advisors may have overemphasized the psychological needs of re-entry females. Caracelli (1988) in a longitudinal study of adult women, found that, for the most part, older students have stable identities and above average self-concepts.

In other areas, however, intervention strategies have been well targeted. Adult women returning to college may need support services in the development of study skills (Cramer, 1981) and test taking skills (Chickering & Obstfeld, 1982).

Some institutions offer comprehensive programs designed to address the broad range of needs of re-entry females. The Houston Community College System integrates psychological counseling, child care provisions, and attention to economic needs in the form of career counseling (Durnovo & McCrohan, 1987). Pennsylvania State University's Probe program is designed to comprehensively address the needs of mature female students (Towns, 1987).

Nevertheless, the economic dimension of the needs of adult female students remains a relatively under-explored arena. Implicit in this neglect is a degree of irony for Kirk and Darfman (1983) who found that much of the psychological stress experienced by re-entry females is associated with dissatisfactions with the existing job, and the need for financial assistance to persist in the college or university. While few schools focus on financial interventions (Dunkle, 1980), such interventions, when implemented, enhance persistence rates (Goldberg, 1985).

Even less attention has been directed toward the counseling of women regarding the levels of occupational demand in the labor market and gender and age based labor market discrimination. Nor have re-entry women been counseled to assess whether the economic benefits of the college degree outweigh the economic costs.

Even when the economic perspective is approached, a psychological counseling approach is used. Assertiveness training, interviewing skills, social

networking, and similar strategies are emphasized (Christian & Wilson, 1985; Durnovo, 1988).

Given the discrimination literature, it becomes clear that this neglect of the economic dimension of the re-entry experience is not benign. Employment preparation is a key factor in the decision of adult women to re-enter higher education (Corman, 1980). However, one study (Martin, 1980) revealed that at one institution where 75% of mature women enrolled for career purposes, only a minority of enrollees actually entered new careers. Also, only a small minority of women took a mathematics course although math skills are increasingly required in the labor market. Additionally, the majority of African-Americans interviewed obtained lower socio-economic status than the white female enrollees (Martin, 1980). The study did not, however, calculate the exact stream of income that accrued to these women as a consequence of the degree. Thus, a void of data, theory, and practice exists in the literature regarding the economic dimensions of the re-entry experience.

Preliminary to the formulation of hypotheses regarding the economic returns to incremental education is additional attention to theory regarding possible outcomes of the educational experience.

Will Re-entry Women Earn More Income?:
A Theoretical Perspective

The theoretical perspective which has been used to explain the labor market status of individuals is called "Human Capital Theory." Human capital theory asserts that the decision to invest in education and training, is analogous to the decision to invest in a piece of equipment. And, just as the equipment provides a return, so will the human capital investment.

This theory had its origination with Smith (1976) in "The Wealth of Nations." Smith viewed the time, labor, and money spent when building a machine as analogous of the time, training, and money spent in educating a man. He concluded that both the machine and the man should produce the amount of work that can replace the initial investment and produce a profit. Other economists revived the original theory of human capital in the sixties (Becker, 1975).

The linkages between human capital and the labor market are quite clear. Producers' demand for labor will depend upon the productivity of that labor. Education and training enhance productivity. Education and training are also a major means for increasing productivity. Thus, additional schooling does translate into additional wages (Morehouse, 1988; Weiss, 1988).

49

In spite of the clarity of human capital theory, it has been heavily

criticized (Griliches, 1977; King, 1979). Essentially, critics have charged that

human capital theorists overemphasize the role of individual characteristics and

underemphasize the total structure of the economy.

It is not surprising that another theoretical perspective actually challenges

the importance placed upon human capital theory. This set of theories, which

can be loosely called "The Structuralist School," emphasizes the structure and

operation of labor markets (Doeringer & Piore, 1971). Based upon these two

theories, it becomes clear that they lead to different hypotheses. This can be

examined.

In other words, human capital and structural theory provide different and

conflicting hypotheses regarding these questions: (a) "Do older women earn

more income after acquiring a degree in comparison to before acquiring a

degree?", and (b) "What is the level of their earnings stream relative to college

graduates who receive the degree at the traditional age? While existing

theoretical perspectives permit the formulation of clear hypotheses relative to

the first question, theory is less clear regarding directions of outcomes on the

second.

Human capital theory (which came to dominate labor economics in the

1960s) leads one to hypothesize that adult women, like their younger

counterparts, will receive additional income as a consequence of their

investment in higher education (Blaug, 1986). The logic is straightforward. Education is one of the best predictors of older women's labor force patterns and it transmits signals regarding skills and competencies that lead to greater productivity. Greater future productivity leads to a larger earnings stream (Herz, 1988). Furthermore, human capital theory includes no assumptions that would lead one to conclude that the age of the "investor" can be expected to reduce this stream of earnings.

On the other hand, the structural theories of the labor market, which emerged during the seventies, imply that higher earnings for adult women who obtain a college degree may not always occur (Beck, Horar, & Talbert, 1987). Labor market stratification theory, which synthesizes competing structural views, argues that it is not only additional education that determines the return from education, but also the structure of the industry in which one is employed (Beck, et al, 1987). Thus, females with high school diplomas who work in the steel industry may have lifetime earnings that exceed those of college graduates who teach in the primary grades. Bird (1985) also conducted a similar study and found that teachers earn $10,268 less annually when compared with non-teaching college educated workers with the same sociodemographic characteristics. Furthermore, once individuals undertake employment in a given industry, barriers to mobility may emerge that interfere with the individual's movement in a higher-paying industrial strata even if the

human capital requirements are met. When this theoretical perspective is applied to the educational investment of women over thirty, it leads to the hypothesis that the returns from higher education for women over thirty with work experience may not only be low, but may possibly be negative.

Traditional female graduates, for the most part, enter directly into employment in the primary sector where a complementary relation exists between human capital achievements and the structural characteristics of the labor market. Thus, for female college graduates of traditional age, the probability of positive returns to the higher education investment is quite high. In contrast, employed women over thirty who earn the college degree may have accumulated work experience in a labor market strata which is noncomplementary to the human capital investment. To access a higher earnings stream, she must transfer to another strata. However, her lack of work experience in the new strata, geographical immobility and other factors may constitute barriers to mobility. Thus, the over-thirty female graduate may experience negative economic returns from the college investment. This theoretical possibility should especially concern administrators and counselors in institutions with significant numbers of re-entry females, for implicit to their programs are unstated promises regarding the economic value of additional years of education.

Do Benefits Also Accrue to Re-entry Women?

Data introduced earlier indicate that increasingly women of nontraditional college age are entering institutions of higher education. For such women, the opportunity costs of their decisions are quite high. Indeed, numerous institutions of higher education have designed special counseling programs to facilitate the educational process for these students. Implicit to such programs has been an assessment of the relative "rewards" for the adult females enrolled in college. Very few studies have been conducted on the economic benefits of the college degree. The focus, rather, has been on psycho-social benefits.

According to Wheaton and Robinson (1983), if a woman is able to hurdle the barriers encountered as she re-enters education, she will reap decided benefits for herself as well as for her family. She will (a) become more mature in her vocational awareness, (b) experience increased achievement via independence and autonomy, (c) learn to manage her time more efficiently and become more self-aware, and (d) have more self-esteem.

Davis (1981) conducted a follow-up study of women who had been involved in a special re-entry program at Brevard Community College in 1977. It was found that students who completed the program experienced increased self-confidence, better family relations, and enhanced decision-making. Again, there was no documentation made of financial benefits which may have

accrued to these women. Other studies have focused on the satisfaction with the re-entry experience (Edmondson, 1986), the economic and educational background of re-entry women (Kirk, 1982) and the impact of the educational experience upon the attitude of re-entry women (Stoney & Reid, 1980). The question of financial returns is usually absent in the research.

Only a few studies have focused on economic returns from the college degree for re-entry women. Owens and Koblenz (1991) reported that although older women comprise an increasing portion of the workforce, this does not mean equal opportunity in the workplace. This research further concludes that several factors influence the wage gap for the population:

    a.   higher education does not mean higher earnings,

    b.   women are less likely to have union representation, and

    c.   wage-setting practices have depressed earnings.

In another study (Adelman, 1991), it was reported that only 7 of 33 major occupations achieve pay equity between males and females. This study cited other benefits for females such as job satisfaction, relations on the job, and good working conditions, and that the women believed they benefitted from the college degree. These benefits, however, did not hold up in the labor market.

Further research on the value of the college degree for older women graduates found that while the degree provides access to professional and

managerial positions and improves economic opportunities, the monetary

returns are quite limited.

Summary

This study required the investigation of several bodies of literature, (a)

college education and earnings, (b) education and earnings for females, and (c)

re-entry women. The literature regarding college education and earnings

generally concluded that:

        a.   higher education generally equals higher earnings for both

              males and females (Cohn & Rhine, 1989).

        b.   there are clear economic advantages to higher education

              (Patrick, 1988).

        c.   the college degree is a key to a better life (Collison, 1991).

On the other hand, the literature on females and earnings had conflicting

messages. It reported that:

        a.   returns from the college degree are less for college females

              than college males,

        b.   there is a difference in earnings for females (Owens &

              Koblenz, 1991), and

55

c.   higher education equals higher pay for females (Levy &

Michel, 1988).

The re-entry women literature was practically void of studies focusing on

earnings after the college degree was received. Of the few earnings-based

studies that were found, the results were:

a.   higher education does not mean higher earnings (Owens &

Koblenz, 1991).

b.   monetary returns from the college degree are quite limited

(Kanter, 1989).

c.   college benefits for mature women are discounted in the

labor market (Adelman, 1991).

Despite the possible negative economic returns from the college degree

for females and re-entry females, the education and earnings literature still

directs the belief that the college degree pays off.

The pay off, which assumes not only an increase in earnings but also

compensation for the economic investment in higher education, is potentially

affected by any number of variables. According to the literature, the variables

most highly correlated with the relation between re-entry women and earnings

are previous earnings, race, work experience, college major, and occupation.

CHAPTER 3

METHOD

The purpose of this dissertation is to determine the impact of the variable "age at the time the degree is received" upon the relation between education and earnings for females. Accordingly, this research is designed to investigate the economic returns from higher education for women who receive the degree at a nontraditional age. This chapter provides a detailed discussion of the specific questions which the study is designed to answer, as well as the methods and techniques used to provide the necessary data. Included in this method section are the: (a) research question; (b) research objective; (c) description of the population and sample; (d) description of the instrument; and (e) data analysis.

Research Question

As the literature review indicates, there is a positive relation between education and income (Freeman, 1978; Levy & Michel, 1988; Occupational Outlook Journal, 1991; United States Bureau of the Census, 1991). Moreover, the literature also indicates that a positive correlation exists between education and earnings for females (Henderson & Ottinger, 1985; Mellor, 1984; National

Committee on Pay Equity, 1987). Similarly, existing research also documents a direct relation between age and earnings (Rumberger, 1984). Accordingly, additional empirical research is not needed to merely document that higher education increases earnings, nor that earnings increase as age increases. Rather, research is needed which defines the relation between earnings, and the "age at the time the female receives her bachelor's degree." Thus, this study is directed by the following question: "Does the age at the time females obtain their four-year degree affect their subsequent earnings?"

While not a direct focus of this study, it is very possible that the relation between earnings and education is also mediated by race (Altonji, 1990).

Research Objective

The objective of this research was to investigate the causal relation between age at the time the degree is received and earnings. While a substantial number of studies have been executed regarding the returns to higher education in general, such studies have been based upon the implicit assumption that degree holders enter and leave college within traditional time boundaries (Adelman, 1991; Levy & Michel, 1988). This study has implications for those institutions of higher education which cater to returning women, and for college counselors, administrators, and advisors.

Population and Sample:

National Longitudinal Surveys of Labor Market Experience (NLS)

The nature of the research question implies the need for a particular type of data. Specifically, the study requires the use of a longitudinal data base which tracks women's earnings, educational experience, and labor market experience over a period of years. While a number of such data bases exist, few data bases have all of the necessary variables. The National Longitudinal Surveys of Labor Market Experience (NLS) data base was selected because it contained the required variables. Accordingly, to provide answers to the described research questions, data tapes obtained from the Ohio State University Center for Human Resource Research were used. This center houses longitudinal data for four major probability samples drawn from the total population of the United States. These four nationally representative samples consist of over 5,000 persons each and are stratified by age and sex. The initial panel consisted of 5,020 older males ages 45 to 59; 5,225 younger males ages 14 to 24; 5,083 older females ages 30 to 44; and 5,159 younger females ages 14 to 24.

To ensure the selection of a representative sample, the NLS staff employed rigid sampling techniques. Approximately 235 geographical areas across the country were selected. This grouping represented over 485 counties

and cities including the District of Columbia. These 235 sample areas were chosen through multi-stage sampling techniques which had been applied in the choosing of 1900 primary sampling units. These sampling units were carefully selected to be representative of the socio-economic characteristics of the larger society. To include proper representatives of African Americans, this demographic group was over-represented in the final sample.

For purposes of this study, the NLS cohort of mature women ages 30 to 44 was selected. Interviews with this cohort of 5,083 women began in 1967 and have been conducted at regular intervals since that time. During this time, attrition rates for this cohort have been relatively low as 78% of the mature women have remained in the sample.

The mature women's sample contains data on females who are college graduates as well as those who are not college graduates. Included among respondents are females who received their degrees at traditional ages as well as those who received the four-year degree after the age of thirty. Preliminary examination of the data tapes indicated that 203 of the 5,083 females interviewed had received their bachelors degrees at or beyond age thirty. However, this number dropped to 59 due to non-availability during subsequent surveys, and the absence of before and after graduation earnings and work information for most of the women.

The NLS Instrument

The NLS instrument was designed to answer questions regarding each respondent's (a) labor market experience, (b) human capital investments, (c) socio-economic status and (d) the labor market supply and demand conditions within each individual's local area. Specifically, each survey instrument is organized around core sets of questions regarding: employment, education, training, work experience, income, marital status, health, attitudes toward work, and occupational and geographic mobility. The variables needed for this study fall into several categories: labor market experience, human capital, as well as socio-economic. Appendix A lists the specific variables in all categories.

Given the comprehensiveness of the NLS studies, all of the variables required to answer the defined research question were represented in the surveys.

Data Analysis

The research question is, of course, causal in nature. Regression is often viewed as the strongest method of analysis for examining causation when the variables are continuous. However, a careful review of the defined research question indicates that the research transcends a straightforward

61

causal study. As mentioned, both theory and data exist in support of a causal relation between earnings and age. Thus, the proposed research question requires a method which lends itself more to the testing of a theoretical model than to the measurement of the magnitude and direction of the relation between dependent and independent variables. The described research question required the construction of a theoretical model regarding the relation between earnings and the age of a woman when the degree is received and the testing of this model. One such method which is consistent with this research objective is path analysis. Accordingly, the data from the NLS survey were analyzed through the use of path analysis. More specifically, path analysis was used to investigate the causal influence that age at the time the degree is received has on earnings. The hypothesized model (See Figure 1) has been specified after careful consideration of relevant theoretical and substantive issues in the literature. This analysis will discuss the model and the path analysis used to identify the patterns of relations between the variables in the model. Thus, before further discussion of path analysis, it is necessary to review the hypothesized model.
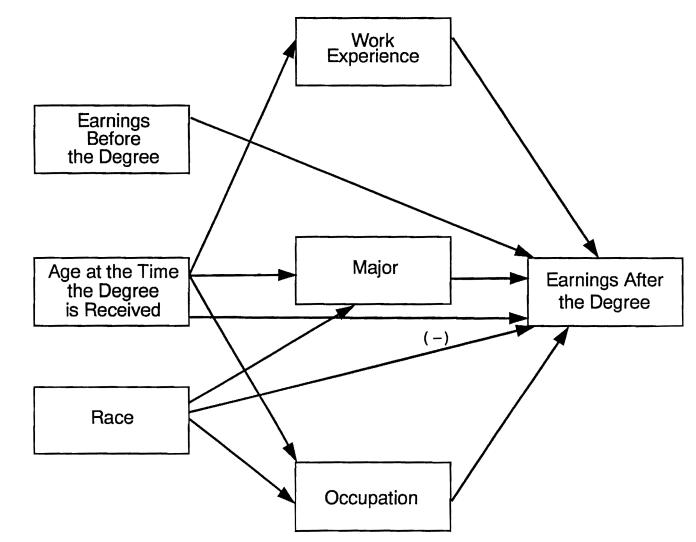
Figure 1. Hypothesized model of the relation between age at the time the degree is received and earnings intermediated by other variables.

63

The Hypothesized Model

Figure 1 identifies selected labor market experience, human capital, and socioeconomic variables impacting earnings and illustrates the patterns of relations among these variables. The independent variables earnings before the degree, age at the time the degree is received, race, work experience, college major and occupation were selected based on theory substantiated in the literature. The path diagram displays the potential lines of causality among these most frequently postulated determinants of earnings. The relations between the variables are predicted to be recursive. Accordingly, paths depicted by unidirectional arrows are drawn from the independent variables to the dependent variables.

In causal models, a distinction is made between exogenous and endogenous variables (Asher, 1983; Kerlinger, 1973). This distinction between these two kinds of variables is illustrated in the model. The variables, earnings before the degree, age at the time the degree is received, and race are exogenous. The variability of these variables is assumed to be determined by causes outside the model. Consequently, this determination is not under consideration by the model. The variables, work experience, major, occupation, and earnings after the degree are endogenous. The variability of these

variables can be explained by other exogenous or endogenous variables in the system.

The independent variables postulated from the literature to affect the subsequent earnings for re-entry women were hypothesized to result in the following:

a. Earnings before the degree will have a positive effect on earnings after the degree. Females with higher earnings are more likely to have higher future earnings.

b. Age at the time the degree is received will have both a direct and an indirect effect on earnings.

c. Race will have both a direct and an indirect effect on earnings. Race will have a negative direct effect on earnings because of discrimination. However, race will also have an indirect effect on earnings via the mediating variables, major, and occupation.

c. Higher rated occupational levels tend to correlate with higher wages. Thus, age at the time degree is received on subsequent earnings is mediated through occupation and may have a positive direct effect on earnings. It may also intervene between age at time degree is received and subsequent earnings.

e.   Major field or discipline has a direct effect on earnings level. The field of education is widely cited for its low returns to human capital investment and its popularity among returning women. Acquiring an education degree may intervene between age at time degree was received and subsequent earnings.

f.   Work experience tends to have a positive, direct effect on earnings. Work experience could also have a mediating relation between age at time degree was received and earnings.

Variable Coding

The variables in the model have been operationalized in the following manner. Age at time degree was received (GRADAGE) is a continuous variable which ranges from 34 to 55 years. The mean age at receipt of degree for the sample was 44.7 years. Race (RACE) and major field (MAJOR) were dummy coded. With respect to the race variable, whites in the sample coded as 1 and nonwhites coded as 0. Education majors were given a score of 1 while non-education majors were scored 0. The two earnings variables reflective of earnings before (RATE1) and earnings after (RATE2)

receipt of degree were measured in dollars per hour. These rates indicate

earnings for two years before and two years after the conferral of degree.

Occupation (OCC) was coded using the Duncan Scale of Occupational

Prestige. Work experience (WRKEXP) was measured in years of full-time

employment. The above variables are used in the model to study direct and

indirect effects on earnings after the degree is received.

Path Analysis

Path analysis was applied to shed light on the tenability of the described

model by determining whether the theoretical formulation was consistent with

the data. In general, path analysis is used to identify the patterns of relation

between the variables in the model. This method is preferred because it

provides additional information about the effects of intermediating variables on

the dependent variables. While indirect effects of intermediating variables may

be obscured by a simple regression analysis (Asher, 1983; Morcol &

McLaughlin, 1991), path analysis will measure the effect of intermediating

variables. Additionally, path analysis will estimate the magnitude of the chain of

causation between the selected variables, thereby unraveling the underlying

causal processes (Asher, 1983). More concretely, path analysis allows one to

decompose the correlation between any two variables into a sum of simple and

compound paths with some of the compound paths being substantially

meaningful indirect effects. The decomposition of the correlation is important

because it not only gives information about the causal process but also

provides a way to test the adequacy and strength of a model. It is important to

note that path analysis is useful in testing a causal model formulated by a

researcher on the basis of knowledge and theory (Asher, 1983; Kerlinger, 1973;

Morcol & McLaughlin, 1990).

The causal model introduced in this research graphically displays

patterns of relations among the variables, earnings before the degree, age at

the time the degree is received, race, employment status, years of work

experience, major occupation and the effect these relations have on earnings

after the degree. Since it is virtually impossible to account for the total variance

of a variable, path analysis accounts for residual variables (Asher, 1983; Heise,

1975; Kerlinger, 1973; Sewell, 1976), by introducing the error term to the

regression equations. Therefore, the effects of any variables that are not

included in the model can be taken into account. Specific to Figure 1, the error

term will account for the combined effect on earnings from all variables which

are not explicitly considered.

Through path analysis, coefficients are calculated to indicate the amount

of expected change in earnings as a result of a unit change in the independent

variables in the model. The regression equations used to represent the direct

and indirect effects in the model are:

$$\text{RATE2} = a + b(\text{GRADAGE}) + c(\text{OCC}) + d(\text{WRKEXP}) + e(\text{MAJOR})$$
$$+ f(\text{RATE1}) + e \tag{1}$$

$$\text{WRKEXP} = a + b(\text{GRADAGE}) + e \tag{2}$$

$$\text{MAJOR} = a + b(\text{GRADAGE}) + c(\text{RACE}) + e \tag{3}$$

$$\text{OCC} = a + b(\text{GRADAGE}) + c(\text{RACE}) + e \tag{4}$$

where:

RATE2	=	Post-degree earnings
GRADAGE	=	Age at the time the degree was received
RACE	=	Race
OCC	=	Occupation
WRKEXP	=	Work Experience
RATE1	=	Prior earnings
MAJOR	=	College major

Chapter 4 summarizes the results of this analysis.

CHAPTER 4

RESULTS

As previously mentioned, the economic returns from the college degree for re-entry women have been underinvestigated. Owens and Koblenz (1991) reported that older women expect higher earnings for higher education. Additionally, Jones and Jackson (1990) reported that females as well as males expect higher earnings for higher education. These findings lead to a basic question: "Can re-entry women expect the economic returns from a four-year degree to outweigh the costs?" This chapter summarizes the results of the investigation and reports positive findings.

Path analysis was used to determine the relation between earnings and age at the time the degree was received. Specifically, path analysis was used as a technique for the identification of the patterns of relation between earnings on the independent variables selected for the use in the model. As mentioned in Chapter 3, path analysis was selected over multiple regression analysis because such a technique can provide additional information relative to the indirect effects of the independent variables upon the dependent variable.

Although the female sample contained approximately 5,000 respondents, only 203 females received their degrees during the study. Further, this number dropped to 59 due to subjects' non-availability during subsequent surveys and

incomplete or no work history before or after the degree. Ultimately, before and

after graduation earnings information was collected only on these 59 subjects

(see Table 5). This small sample is one of the study limitations. The

subsample of women for this study reported earnings data for 1974, 1976,

1979, 1981 and 1984. To measure the earnings in real terms, earnings were

deflated using the 1972 Consumer Price Index so that all earnings were

measured in constant dollars.

All women in the selected sample had degrees. Thus, variability in

income was unexplainable by differences in human capital investment since all

women had economically invested in the college degree.

Correlation Analysis

The results of multivariate correlation analysis presented in

Table 6 showed the absence of a significant relation between age at time the

degree was received and post-graduation earnings. A small, yet significant

relation was evident between age at time the degree was received and earnings

prior to degree receipt. The older the woman at the time the degree is

received, the higher their earnings. There was also a strong, positive

correlation between earnings before and earnings after the degree ($r=.54$,

$p<.001$). It appears that earnings received before graduation had a

Table 5

Descriptive Statistics

Variable	Graduates (n=59) Means (SD) or %
Age at Time of Degree	44.7 (4.7)
% Caucasian	78.0%
% Education Major	49.2%
Mean Years of Work Exp	17.6 (3.8)
Hourly Rate 2 Years Before Degree	10.8 (3.6)
Hourly Rate 2 Years After Degree	11.5 (3.2)

Table 6

Correlation Matrix

	Race	Work Experience	Major	Occupation	Earnings Before Degree	Earnings After Degree	Age at time of Graduation
Race	1.00						
Work Experience	-.07	1.00					
Major	.04	-.10	1.00				
Occupation	-.09	.05	-.45*	1.00			
Earnings Before Degree	-.21	.19	-.34*	.22	1.00		
Earnings After Degree	-.22	.17	-.02	.18	.54*	1.00	
Age at Time of Graduation	-.11	.10	-.22	.07	.28*	.01	1.00

* p < .05 earnings

72

more decisive effect on post-graduation earnings than the age at which the degree was received.

Results of Path Analysis

A block-recursive path model was used to predict the patterns of relations between earnings before the degree and earnings after the degree, age, work experience, race, major, and occupational status. This method allowed the estimation of the degree to which intervening variables determine the relations between prior and subsequent wages. More specifically, the use of path analysis permitted the examination of blocked as well as unblocked variables through an assessment of the degree of covariation between the residuals. The direct effects of the primary and secondary independent variables upon earnings were measured through a series of multiple regressions (see Figure 2, Table 7). Also, the indirect effects of the variables on the dependent variable were calculated as the sum of the products of the path coefficients associated with specific variables (Table 8).

Path analysis was evaluated along three dimensions. The first dimension of the path analysis was the overall fit of the model to the data. This was assessed through a chi-square distribution. Secondly, an assessment was made of direct effects (Table 7). To measure direct effects, earnings after the
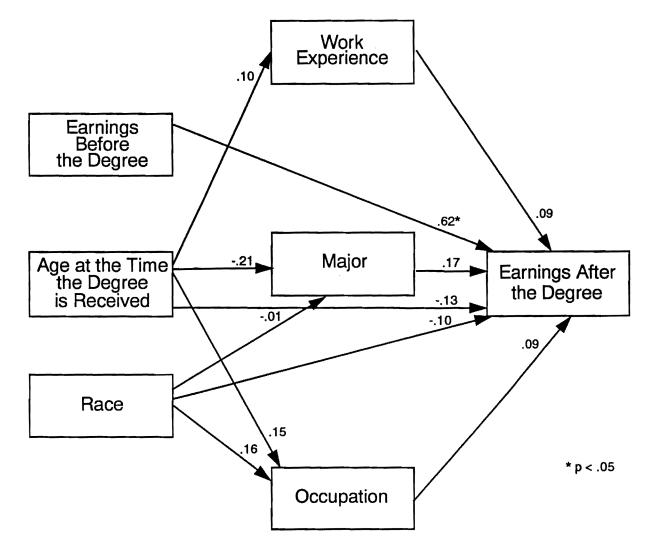
Figure 2. Effects of the variables, earnings before the degree, age at the time the degree is received, race, work experience, major, and occupation on subsequent earnings.

Table 7

Model Path Coefficients -- Direct Effects on Earnings After the Degree

Independent Variables	Unstandardized Coefficients	Standardized Coefficients
Age at time Degree is Received	-.10	-.13
Race	-.82	-.10
Work Experience	.08	.09
Major	1.14	.17
Occupation	1.06	.09
Earnings Before the Degree	.55	.62*

R^2 = .398
F = 4.86*
p <.05

Table 8

Direct, Indirect, and Total Effects of Earnings Before Degree, Age at Time of
Degree, Race, Work Experience, Major, and Occupation on Earnings After
Degree

	Effects		
Variable	Direct	Indirect	Total
Earnings Before Degree	.62	--	.62
Age at Time Degree is Received	-.13	-.013	-.14
Race	-.10	.013	-.09
Work Experience	.09	--	.09
Major	.17	--	.17
Occupation	.09	--	.09

degree is regressed on all variables. Age at the time the degree is received did not have a significant effect on earnings after the degree. Of the variables hypothesized to have direct effects on earnings after the degree, only the variable earnings before the degree had a significant effect ($\beta = .62$, $p < .01$). As indicated by this coefficient, the higher a woman's earnings prior to receiving the degree, the higher their post-graduation earnings. This was true regardless of the age at which a woman received the degree. The measurement statistic representing these effects, the path coefficient, is interpreted to mean that a standard deviation change in the independent variable will change the dependent variable in a magnitude equal to the value of that path coefficient. The general rule of thumb that path coefficients need to be .05 or greater was followed. Lastly, the total direct and indirect effects or total effects of the variables in the analysis were calculated by summing the products of the path coefficients associated with specific variables (Table 8).

Findings for selected variables are as follows:

Age at the time the degree is received

Age at the time the degree was received did not have a significant direct or indirect effect on post-graduation earnings. While the effect was not statistically significant, the direction of the relation between age at time degree

was received was negative indicating a slight decrease in earnings at later ages of degree acquisition. A standard deviation (SD) difference in age would result in approximately -1 SD in wages after school. Thus, a person who was, perhaps, 4 years older would earn 30 cents less per hour than a younger peer. While small, this presents some support for the literature which reports that re-entry women may receive no economic benefits from the college degree. The total direct and indirect effect is -.14. Age at the time the degree was received had only negligible effects on work experience and occupation and a small negative effect on major.

Race

Similarly, race had only negligible effects on occupation, major and earnings after the degree. The effects of race on major and on earnings after the degree were both negative. None of the effects were significant. A SD difference in age would result in approximately -1 SD in wages after school. Thus, a person perhaps 4 years older might be earnings 30 cents less per hour than a younger peer. However, the overall impact of race is larger than age but remains fairly small. The total direct and indirect effect is -.09.

79

Earnings Before Degree

The only variable in the model that had a statistically significant effect on earnings after the degree was earnings before the degree ($\beta=.62$, $p<.05$). As expected, rates for women before they returned to school and completed their degree led to high post-graduation earnings. In fact, the effects of earnings before receiving degree had a greater direct effect on subsequent earnings than all the other variables in the model combined.

Summary

In sum, the hypothesized relation between age at time that degree was received and level of earnings was not supported. Earnings did not increase significantly for women that graduated at nontraditional ages. The strongest direct effect on earnings after the degree was earnings before the degree. The higher a woman's wages before receiving the degree, the higher the wages would be afterward, regardless of age at time the degree was received.

CHAPTER 5

IMPLICATIONS AND CONCLUSIONS

The last several years have been characterized by projections intermixed with prophecy regarding the changing structure of the American labor market. And, while the precise demographic patterns which will prevail are debatable, it is virtually certain that females will comprise nearly one-half of the total labor force. (U.S. Bureau of Labor Statistics, 1991). Moreover, the workforce will also be older. Indeed, as recently as 1987, females comprised 40% of all workers over the age of 55 (Hertz, 1988).

Given their greater participation in the work force, it is not surprising that women of all ages have accelerated their participation in higher education. As of 1991, for example, there were 1,636,000 females 35 years old and over in school and 1,680,000 females 25 to 34 years. Thus, nontraditional age females comprised 43.5% of the 7,618,000 females enrolled in college. This figure compares with a proportion of 25.7% in 1972 (U.S. Bureau of the Census, 1992).

Numerous colleges and universities now target this unique demographic population. Schools of Continuing Education, specially designed weekend colleges, credits for experiential learning, and a disproportionate increase in evening courses, are but a few of the marketing strategies which colleges and

universities have used to attract older, female students. And, as the review of literature indicates, researchers, too, have sought to describe, explain, analyze, and prescribe strategies which facilitate and enhance learning among older, female students.

In some respects, however, colleges and universities have approached the subject matter of additional education and re-entry women myopically. That is, those principles which have traditionally governed the relation between age, education, and income have been automatically assumed to apply to this new population. More specifically, counselors and administrators appear to have assumed that independently of their age at the time the degree is received, the four year degree will catalyze higher earnings, thereby providing a positive economic return.

However, as one reviews the literature on education, age, and earnings, certain signals in the literature indicate that this intuitive approach may be counterfactual. First, while evidence continues to indicate that a four year college degree is positively correlated with earnings, the actual return to the degree has now fallen. During the fifties and the sixties, individuals received a 10% to 15% return for all dollars spent on the college degree. During the seventies, this figure fell below 10% (Reynolds, Masters & Moses, 1986). Second, because the majority of re-entry women attend part-time, their attrition rate is higher. However, there is an effect in operation whereby if these women

do not complete school, their returns may be zero and/or negative. Third, because women 35 and older in particular are approaching their peak earning years anyway, the addition of the degree may not be able to generate additional earnings because additional earnings are beyond the ranges set for their current occupation. However, if they enter into a new career track, the entry level earnings may actually be less than their peak earnings in the old occupation (Lazer, 1977; Taubman & Wolfe, 1974).

Given such considerations, the purpose of this investigation was that of trying to provide some empirical verification that, in spite of the age at which a woman completes her degree, the four year degree will provide pecuniary benefits. Such a study is heuristic. The re-entry woman has been a relatively recent phenomenon over the past 15-20 years; consequently, existing longitudinal data bases which track labor market experience reflect the fact that in the sixties and seventies, the greater proportion of women who pursued degrees did so at a more traditional age. Re-entry women themselves are a non-traditional population. The facility of their re-entry status is itself indicative of the presence of certain psychological attributes which may reflect themselves in earnings behavior, thereby leading to a Type II error in data analysis. Third, the sheer smallness of the volume of existing data reduces the number of meaningful cross tabulations and therefore enhances the probability of spurious relations.

In spite of such limitations, however, even a simplistic analysis provides data which, while not conclusive, is of certain value as an exploratory research tool. Consequently, in spite of the described limitations, the study was useful.

The literature reports that higher earnings are expected to accrue to college graduates. However, the results from the path analyzed data were less encouraging. When the data were examined in terms of the impact of additional years of higher education, the results were negative. Accordingly, it becomes necessary to explore the implications of these findings for the recruitment and enrollment of women of nontraditional age.

Institutional Imperatives

Although the findings of the study are exploratory rather than conclusive, they do imply certain behaviors regarding those colleges and universities which target re-entry women. First, it is key that the colleges apply all of the resources of their institutional research office to begin asking and answering questions regarding the economic benefits of the degree for women of nontraditional age who have graduated from their programs. Additionally, given the higher rate of attrition, the economic results of additional training must be assessed for nongraduates as well. Such a change is particularly important since adults incur opportunity costs which are not borne by students of

traditional age. Of additional interest, the economic returns to higher education, even if positive, may exhibit considerable variability across institutions. Thus, each college or university ought to be able to assess economic outcomes by student.

Second, the study implies the need for research-based curriculum development when programs are specifically designed for re-entry women. To document such a need, it is necessary to briefly review past trends regarding education and economic returns. As mentioned earlier, prior to the seventies, a four year degree definitely provided double digit returns for virtually any major. However, beginning in the late sixties, this trend reversed itself. The starting salaries of those with degrees not only stopped increasing but actually decreased during the seventies. Male college graduates in the sixties had earned 40% more than their counterparts who held only high school diplomas. By 1974, however, this figure had dropped to only 15% more (Freeman, 1976). The unemployment rate for male college graduates tripled, leading to a 100% increase in the proportion of college graduates who accepted employment in fields for which no degree was required.

Simultaneously, research from this period indicates that demand decreased considerably. Then, as is true today, the public sector was the largest employer of college educated persons. In the seventies this number plateaued. In the eighties, it actually declined. Educational institutions were

another major employer of the college educated. However, as is true today, declining enrollment reduced work opportunities. Another major employer of the college educated is the Defense sector. Today, of course, the Defense sector has contracted even more. Although managerial and professional employment increased, initially, it also plateaued in the seventies and has remained plateaued. When each of these variables are examined today, it becomes clear that the market for college graduates remains stagnant.

Interestingly, however, males have been observant of those trends and have reduced their investment in higher education. However, females, as a group who already had lower economic returns than their male counterparts, began to increase their investment at the same time that the market began its collapse. In some select occupational areas, however, the returns to education have remained high. For example, one of the fastest growing occupational areas is systems analysts and computer specialists. Thus, colleges and universities who integrate such a major into the curriculum for re-entry women will increase the probability of positive economic returns to those who enter and graduate. Indeed, the existing discussion implies that colleges and universities may have a unique mandate to research labor market changes and alter curriculum to reflect such changes to enhance economic returns to re-entry females.

Third, the curriculum modifications which an economic returns oriented institution of higher education initiate may require modification on a regular basis. The pattern which characterizes the returns to higher education are quite clear. As colleges and universities produce more graduates, the supply curve shifts forward, lowering the return to a given major. Consequently, in a subsequent period, market demand requires curriculum update. Economists call this phenomenon a cobweb feedback system (Freeman, 1976; 1981). However, while programs directed towards traditional students ought to also take this effect into consideration, programs directed towards re-entry females are almost morally mandated to apply the required curriculum responsiveness (Freeman, 1981).

Fourth, the data imply the need for intensive attention to the economic dimension of the re-entry decision by recruiters, counselors, and advisors. Students often embody a "halo effect" as they contemplate the re-entry decision. That is, many students see the decision to return to school as a "solution" to a number of problems. Students must be counseled to approach this decision systematically. Re-entry women, as mentioned, embody tremendous opportunity time. They must allocate time between education, work in the labor market, household work, and personal needs, in such as way as to maximize lifetime satisfaction. Additionally, they incur direct costs as a consequence of the process. However, they also incur psychological costs

because they are deviating from the normal life cycle -- schooling, on-the-job training, work, and retirement. They are engaging in a process of recycling. And, if the possibility of economic returns weighs heavily in their decisionmaking value hierarchy, they must be taught how to do the present value analysis which can assist them in their decisionmaking.

Re-Entry Women and the Returns from Higher Education:
A Research Agenda

The issue of the returns to re-entry women transcends the arena of those institutions who actually serve them. Scholars of student personnel, industrial psychology, economics and educational research must develop a more comprehensive base of theory and research regarding re-entry women. Women have made their decision to invest in higher education in spite of the fact that their economic returns are lower than those of their male counterparts. However, in order to obtain maximal gain from this decision, females require a body of information which will allow them to make an informed decision. What are their true costs of the degree? How do these costs change at different points in the life cycle? What are the future earnings patterns of women in general? How are these earnings patterns affected by life-cycle issues? Do older women who graduate pursue their previous occupational trajectory? Do

they shift occupations? If so, how are their previous years of work experience factored into the hiring decision by managers? What are the rates of unemployment between these women and their younger counterparts? What is their promotion trajectory after the degree has been received?

These questions need to be answered by further research so re-entry women can base their higher education decisions on empirical evidence. This research should initiate dialogue on these key issues.

Bibliography

Akin, S., & Garfinckel, I. (1977). School expenditures and the economic returns to schooling. Journal of Human Resources, 12, 460-484.

Aigner, D., & Cain, G. (1977). Statistical theories of discrimination in labor markets. Industrial and Labor Relations Review, 30(2), 175-187.

Altonji, J. (1990). Accounting for uncertain educational outcomes in estimating the return to education. (Technical Paper No. 15). New York: National Center on Education and Employment.

Astin, A. (1977). Four critical years. San Francisco, CA: Jossey-Bass.

Beck, E.M., Horar, P., & Talbert, C. (1987). Stratification in a dual economy. American Sociological Review, 43, 704-720.

Becker, G. (1975). Human Capital (2nd ed.). New York, NY: National Bureau of Economic Research.

Behrman, J. (1980). Socioeconomic success: A study of the effects of genetic endowments, family environment, and schooling. New York, NY: National Bureau of Economic Research.

Berger, M. (1988). Cohort size effects on earnings: Differences by college major. Economics of Education Review 1(4), 375-383.

Bernstein, A. (1988). So you think you've come a long way, baby? Business Week. F29, 48-52.

Beutell, N.J., & O'Hara, M.M. (1987). Coping with role conflict among returning students-professional versus nonprofessional women. Journal of College Student, 28(2), 141-145.

Blau, F. & Beller, A. (1988). Trends in earnings differentials by gender. Industrial and Labor Relations Review 8(4), 436-455.

Blaug, M. (1986). The empirical status of human capital theory: A slightly jaundiced survey. Journal of Economic Literature, 14(3), 827-855.

Boston, T. (1990). Segmented Labor Markets: New Evidence from a study of Four Race-Gender Groups. Industrial and Labor Relations Review, 44(1), 99-115.

Cain, G. (1976). The challenge of segmented labor market theories to orthodox theory. Journal of Economic Literature, 14(4), 1215-1257.

Cain, G. (1976). The economic analysis of labor market discrimination: A survey. In O. Ashenfelter and R. Layard (Eds.), Handbook of Labor economics. North Holland: Elsevier Science Publishers.

Carnoy, M., & Marenbach, D. (1975). The Return to Schooling in the United States, 1939-1969. Journal of Human Resources, 10(3), 312-331.

Carroll, M. (1965). The working wife and her family's economic position. Monthly Labor Review, 85(4), 366-374.

Chickering, J.N., & Obstfeld, L. (1982). A collaborative approach to aiding a women returning to college. Human Educator, 20(4), 167-172.

Chiswick, B.R. (1988). Differences in education and earnings across racial and ethnic groups: Tastes, discrimination, and investment in child quality. Journal of Economics, 103, 571-597.

Christian, C., & Wilson, J. (1985). Re-entry women and feminist therapy: A career counseling model. Journal of College Student Personnel, 26(6), 396-500.

Cohen, A. (1982). The American Community College. San Francisco, CA: Jossey-Bass.

⁃ Copland, B. (1988). Returning women on campus: Higher education tasks notice. New Directions for Continuing Education, 39, 35-47.

Corman, H. (1980). Economic aspects of women returning to school. Paper presented at the Annual Convention of the National Association for Women Deans, Administrators and Counselors, Cincinnati, Ohio.

Cramer, G.R. (1981). Study skills help for the adult woman re-entering college. Reading World, 21(2), 109-115.

Cross, K.P. (1971). Beyond the open door: new students to higher education. San Francisco, CA: Jossey-Bass.

Daymont, T. & Andrisani, P. (1984). Job Preferences, College Major, and Gender Gap in Earnings. Journal of Human Resources, 19(3), 408-48.

Dickens, W.L., & Lang, K. (1985). A test of dual labor market theory. American Economic Review, 75, 792-805.

Dinuzzo, T., & Tolbert, E. (1981). Promoting the personal growth and vocation maturity of the re-entry woman: A group approach. Journal of NAWDAC, 45(1), 26-31.

Doeringer, P.B., & Piore, M.J. (1971). Internal labor markets and manpower analysis. Lexington, MA: D.C. Heathland Co.

Duncan, G. (1976). Earnings and nonpecuniary benefits. Journal of Human Resources, 24(3), 462-483.

Dunkle, M.C. (1980). A unification of forces: Coalition works for sex equity in education. Vocational Education, 55(4), 43-45.

Dunkle, M. (1980). Financial aid: Helping re-entry women pay college costs: What institutions can do to provide financial resources to women re-entering the educational system. Washington, D.C.: Association of American Colleges.

Durnovo, Maya & McCrohan, B. (1987). Strategies for serving the neglected majority: An institutional framework for addressing students' needs over the next decade. Paper presented at the Annual Convention of the California Association of Community Colleges, Santa Clara, CA.

Durnovo, M. (1988). <u>A resource manual for the women in transition</u>. A product of Women's Support Services. Houston, TX: Houston Community College System.

Edmonson, M. (1986). Role management, educational satisfaction and role dynamics in post secondary, re-entry women. <u>Research in Rural Education, 4</u>(1), 17-21.

El-Khawas, E., Carter, D., & Ottinger, C. (1988). <u>Community College Fact Book</u>. New York, NY: Macmillan.

Feldman, S.D. (1973). Impediment or stimulant: Marital status and graduate education. <u>American Journal of Sociology, 78</u>(4), 982-994.

Feknkeem D,G, (1988). Returning to school and women's occupational attainment. <u>Sociology of Education, 61</u>(1), 29-41.

Ferber, M.A., & McMahon, W.W. (1979). Women's expected earnings and their investment in higher education. <u>The Journal of Human Resources, 14</u>(3), 405-420.

Filer, R.K. (1985). Male-female wage differences: The importance of compensating differentials. <u>Industrial and Labor Relations Review, 38</u>(3), 426-437.

Fisher-Thompson, J. (1980). <u>Obtaining a degree: Alternative options for re-entry women</u>. Washington, D.C.: Association of American Colleges.

Freeman, R.B. (1975). Overinvestment in college training? Journal of Human Resources, 10(3), 98-103.

Freeman, R. (1976). The Overeducated American. New York, NY: Academic Free Press.

Freeman, R.B. (1981). The facts about the declining economic value of education. Journal of Human Resources, 15(1), 97-105.

Fox, K.F. (1979). Attracting a new market to Northwestern's undergraduate programs: Older women living on the north shore. (Evaluative Rep. No. 142). Evanston, IL: Northwestern University.

Garen, J.E. (1984). The returns to schooling: a selectivity bias approach with a continuous choice variable. Econometrica, 52, 1199-1128.

Gerhart, B. & Cheikh, N. (1991). Earnings and percentage female: A longitudinal study. Industrial Relations, 30, 62-78.

Glass, J.C., & Rose, A.R. (1987). Re-entry women: A growing and unique college population. NASPA Journal, 25(2), 110-119.

Goodman, J.D. (1990). Economic returns to education: An assessment of alternative models. Social Science Quarterly, 60, 269-283.

Goldberg, B. (1985). Perceived effects of a financial and scholarship on returning women students. (Research Report No. 7). College Park, Maryland: University of Maryland College Park, Counseling Center.

Griliches, Z. (1977). Estimating the returns to schooling: Some econometric problems. Econometrica, 45, 1-22.

Griliches, Z., & Freeman, R. (1977). Econometric investigations of determinants and returns to schooling, training, and experience: Final report. (Research Rep. No. 143). Washington, D.C.: National Institute of Education.

Grottkau, B.J., & Davis, J.L. (1987). Re-entry women: Will higher education meet the challenge? Journal of National Association for Women Deans and Counselors, 50(4), 8-15.

Gutek, B. (1985). Sex and the workplace. San Francisco, CA: Jossey-Bass.

Hertz, D. (1988). Employment characteristics of older women, 1987. Monthly Labor Review, 111(9), 9-12.

Hill, C. (1981). Education earnings: A review of evidence. Economics of Education Review, 1(4), 403-420.

Hines, F., Tweeten, L., & Fedfern, M. (1970). Social and private rates of return to investment in schooling, by race-sex groups and regions. Journal of Human Resources, 5(3), 318-340.

Hersh, J. (1991). Male-female differences in hourly wages: the role of human capital, working conditions, and housework. Industrial Labor Relations Review, 44, 746-759.

Hough, J. (1992). Women, education, training at work: An essay review. Economics Education Review, 11(1), 87-90.

Jones, E. & Jackson, J. (1990). College grads and labor market rewards. Journal of Human Resources, 25(2), 253-266.

Kanter, S. (1989). The value of the college degree. Innovative Higher Education, 13(2), 90-105.

King, A.G. (1979). Note on Lucas' critique of the human capital model. Journal of Human Resources, 14, 130-135.

King, E. (1990). Does education pay in the labor market? (Working Paper No. 67). Washington, D.C.: World Bank.

King, M.C., & Elledge-Heimer, M.K. (1979). Dynamics of community college women's programming. New Directions for Community Colleges, 7(3), 79-85.

King, R.A. (1979). Toward a theory of wage determination for teachers: Factors which determine variation in salaries among districts. Journal of Education Finance, 4(3), 358-369.

Kirk, P. (1982). Return to Study Provision. Adult Education, 55(3), 241-248.

Kirk, C., & Darfman, L. (1983). Satisfaction and role strain among middle age and older re-entry women students. Educational Gerontology, 9(1), 15-29.

Kolde, R. (1985). Women in the labor force. Vocational Education Journal, 60(7), 22-25.

Kolstad, A. (1982). Does college pay? Wage rates before and after leaving school. (Report 143). Washington, D.C.: National Center for Education Statistics.

Lazear, E. (1977). Education: consumption or production? Journal of Political Economics, 85, 211-215.

Levy, F. & Michel, R. (1988). Education and income: Recent U.S. trends. Paper presented to the Joint Economic Committee of the U.S. Congress, Washington, D.C.

Low, S. & Ormiston, M. (1991). Stochastic earnings functions, risk, and the rate of return to schooling. Southern Economic Journal, 57, 1124-1132.

Malin, M. & Stallworth, J. (1991). Grievance arbitration accommodating an increasingly diversified workforce. Labor Law Journal, 42, 551-556.

Martin, M.K. (1980). Statewide assessment of career aspiration and job attainment among women returning to college in Maryland. (Evaluation Rep. No. 142). Annapolis, MD: Maryland State Board for Higher Education.

McGraw, L. (1982). A selective review of programs and counseling interventions for the re-entry woman. Personnel and Guidance Journal, 60(8), 469-472.

Mellor, E.F. (1984). Investigating differences in weekly earnings of women and

men. Monthly Labor Review, 107(6), 17-27.

Minnesota State Commission of the Economic Status of Women (1984). Equity

in Education. (Report No. 140). St. Paul, Minnesota.

Mishler, C. (1983). Adults' perceptions of the benefits of a college degree.

Research in Higher Education, 19(2), 213-230.

Montgomery College (1983). Rates of return on investments in education at

Montgomery College: A human capital study. (Report No. 143).

Rockville, MD: Montgomery College, Office of Institutional Research.

Moore, W.Y. (1985). Barriers non-traditional age freshmen women encounter

as they seek entrance to four-year colleges and universities. (Research

Report No. 143). Washington D.C.: U.S. Government Printing Office.

Morehouse, M. (1988). Education: Schools facing strains as workforce shifts.

Congressional Quarterly, 46, 2512-2513.

Muench, K.E. (1987). A comparative study of the psychological needs of adult

men and women students in an adult degree program. Paper presented

at the Annual Meeting of American Association of Adult and Continuing

Education. Washington, D.C.

Murphy, D.T., & Achtziger, M.A. (1982). Recruiting the older adult, female

student. College and University, 557(3), 314-322.

National Center for Educational Statistics. (1987). Financial statistics of institutions of higher education. Washington, D.C.: U.S. Government Printing Office.

National Center for Education Statistics. (1989). Digest of education statistics 1989, 25th edition. Washington, D.C.: U.S. Government Printing Office.

National Center for Education Statistics. (1989). Undergraduate financing of postsecondary education: A report of the 1987 national postsecondary student aid study. Washington, D.C.: U.S. Government Printing Office.

National Center for Education Statistics. (1989). Digest of education statistics, Table 260, "Percent of Undergraduates Enrolled in Fall 1986 and Average Amount Awarded Per Student, by Type and Source of Aid and Selected Student Characteristics." Washington, D.C.: U.S. Government Printing Office.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. International Economic Review, 14(3), 693-709.

Orban, J.L., & Veracky, J.E. (1986). Recognizing the special needs of the re-entry woman. Ohio Business Teacher, 6, 16-20.

Osterman, P. (1987). Choice of employment systems in internal labor markets. Industrial Relations, 26, 46-67.

Owens, C. & Koblez, E. (1991). <u>Paying for prejudice: A report on midlife and older women in America's labor force.</u> Washington, D.C.: Older Women's League.

Parnell, D. (1985). <u>The Neglected Majority</u>. Alexandria, VA: Community College Press.

Pearson, C.S., Shavlik, D., & Touchton, J.G. (1989). <u>Educating the majority</u>. New York: Macmillan.

Pencavel, J. (1991). Higher education, productivity, and earnings: A review. <u>Journal of Economic Education</u>, <u>22</u>(4), 331-359.

Perry, G.R. (1985). <u>Coping styles of nurses returning to school.</u> (Research Rep. No. 143). Chicago, Illinois.

Pitman, M.A. (1986). Continuing education for women -- checkmate? <u>Educational Horizons</u>, <u>64</u>(3), 123-126.

Polachek, S.W. (1975). Potential biases in measuring male-female discriminations. <u>The Journal of Human Resources</u>, <u>10</u>(2), 205-229.

Pounder, D. (1988). <u>Male/Female salary disparity for professors of educational administration</u>. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Psacharopoulos, G. (1989). Time trends of the returns to Education: Cross-National Evidence. <u>Economics of Education Review</u>, <u>8</u>(3), 225-231.

Ras, M. & Datta, R. (1985). Human capital and hierarchy. <u>Economics of Education Review</u>, <u>4</u>(1), 67-76.

Reich, M. (1981). <u>Racial Inequality: A political-economic analysis</u>. Princeton, N.J.: Princeton University Press.

Reynolds, R.T. (1980). All about working women. <u>American Demographics</u>, <u>2</u>(1), 40-41.

Roehl, J.E., & Okun, M.A. (1984). Depression symptoms among women reentering college: The role of negative life events and family social support. <u>Journal of College Student Personnel</u>, <u>25</u>(3), 251-254.

Romano, R. (1986). What is the economic pay off to a community college degree? <u>Community/Junior College Quarterly of Research and Practices</u>, <u>10</u>(3), 153-164.

Roos, P.A. (1981). Sex stratification in the workplace: Male-female differences in economic returns to occupation. <u>Social Science Research</u>, <u>10</u>, 195-224.

Sackley, A. (1965). Trends in annual earnings and income. <u>Monthly Labor Review</u>, <u>88</u>(11), 1302-1306.

Sanborn, H. (1964). Pay differences between men and women. <u>Industrial and Labor Relations Review</u>, <u>17</u>(4), 534-550.

Schultz, T.W. (1963). <u>The economic value of education</u>. New York: Columbia University Press.

Schwartz, J. (1988). Learning and earning. American Demographic, 10, 12-16.

Scott, N.A. (1980). Returning women students: A review of research and descriptive studies. (Review Literature No. 070; Bibliography 131). Washington, D.C.: National Assoc. for Women Deans, Administrators and Counselors.

Sewell, W., & Hauser, R. (1975). Education, occupation, and earnings. New York: Academic Press.

Sieling, M.S. (1984). Staffing patterns prominent in female-male earnings gap. Monthly Labor Review, 107(6), 29-35.

Simpkins, T.C., & Ray, J.W. (1983). What makes the difference with re-entry women -- program content or program structure? The Journal of General Education, 35(2), 99-109.

Smith, A. (1976). The Wealth of Nations. Chicago: University of Chicago Press.

Stewart, H. & Cannon, M. (1986). Women in Delaware: A documented profile. Dover, Delaware: Delaware University, College of Human Resources.

Stokey, N. (1991). Human capital, product quality, and growth. Quarterly Journal of Economics, 106, 587-616.

Stoney, S., & Reid, M. (1980). Further opportunities in focus: A study of bridging courses for women (Report No. 143). London, England: National Foundation for Educational Research in England and Wales.

Suter, L.E., & Miller, H.P. (1973). Income differences between men and career

women. American Journal of Sociology, 78(4), 962-974.

Taubman, P. (1976). Earnings, education, genetics and environment. Journal

of Human Resources, 11(3), 447-461.

Tolbert, P. (1986). Organizations and inequality: Sources of earnings

differences between male and female faculty. Sociology of Education,

59(4), 227-235.

Towns, K. (1987). Probe: Empowering the individual. Paper presented at the

Annual Meeting of the American Association for Adult and Continuing

Education, Washington, D.C.

U.S. Bureau of Census. (1984). "What's it worth? Educational background and

economic status." Washington, D.C.: U.S. Government Printing Office.

U.S. Bureau of the Census. (1988). Statistical abstract of the United States

1988, Table 634, "Unemployment Rate by Sex, Race, and Educational

Attainment." 1970-1987. Washington, D.C.: U.S. Government Printing

Office.

U.S. Bureau of Census. (1988). Statistical abstract of the United States, Table

728. Money Income of Persons. Washington, D.C.: U.S. Government

Printing Office.

U.S. Bureau of Census. (1988). Current population reports, Series P-60, No.

161. "Money Income of Households-Aggregate and Mean Income, By

Race and Hispanic Origin of Householder: 1987." Washington, D.C.:
U.S. Government Printing Office.

U.S. Bureau of Census. (1988). Statistical abstract of the United States: 1988,
Table 643. "Unemployment Rate by Sex, Race, and Educational
Attainment: 1970 to 1987." Washington, D.C.: U.S. Government Printing
Office.

U.S. Bureau of Census. (1989). Statistical abstract of the United States: 1989.
109th Edition. Washington, D.C.: U.S. Government Printing Office.

U.S. Bureau of Labor Statistics. (1988). "Labor force statistics, 1948-87".
Washington, D.C.: U.S. Government Printing Office.

U.S. Bureau of Census. (1984). "Four month average income, earnings and
work activity and educational attainment, by Sex, Race and Age for
Persons 18 Years and Over". Washington, D.C.: U.S. Government
Printing Office.

U.S. Bureau of Census. (1987). Detailed population characteristics: U.S.
summary. Section A. U.S. Rpt. No. PC80-1-D1-A, Table 281.
Washington, D.C.: U.S. Government Printing Office.

U.S. Bureau of Census. (1987). Current population reports, Series P-60, No.
162. Civilian workers by total money earnings in 1987, work, experience
and sex. Washington, D.C.: U.S. Government Printing Office.

U.S. Bureau of Census. (1983). Current population reports, Series P-60, No.

139. Lifetime earnings for men and women in the U.S. Washington,

D.C.: U.S. Government Printing Office.

U.S. Dept. of Education (1989). Projections of education statistics to 2000.

Total Enrollment Fall 1975-Fall 2000. Washington, D.C.: U.S.

Government Printing Office.

Wales, T. (1973). The effect of college quality on earnings: Results for the

NBER-Thorndike data. Journal of Human Resources, 8(3), 306-317.

Watson, B. (1989). The economic returns to higher education for African

Americans. Unpublished manuscript, Howard University, Washington,

D.C.

Weiss, A. (1988). High school graduation, performance, and wages. Journal of

Political Economics, 96, 785-820.

Wheaton, J., & Robinson, D. (1983). Responding to the needs of re-entry

women: A comprehensive campus model. NASPA Journal, 21, 47-58.

Wilson, E.F. (1988). The relations of career maturity, vocational identity, and

sex role identity of employed women enrolled in a liberal arts college.

Dissertation Abstracts International, 49, 08A.

Women's Bureau (1990). Earnings differences between women and men.

(Report No. 90-3). Washington, D.C.: Women's Bureau.

Wright, D. & Springsten, J. (1991). Gender gap narrowing. <u>Public Relations</u>

    <u>Journal</u>, <u>47</u>, 22-24.

Zwerling, L. (1976). <u>The Crisis of the community college: Second Best</u>. New

    York: McGraw-Hill.

Appendix A: National Longitudinal Surveys of Labor Market Experience

I.   LABOR MARKET EXPERIENCE VARIABLES

   A.   Current Labor Force and Employment Status

          Labor force and employment status

          Hours worked in survey week

          Weeks worked

          Usual hours worked during weeks worked

          Weeks unemployed

          Spells of unemployment in past year

          Weeks out of labor force

   B.   Characteristics of Current or Last Job

          Occupation, industry, class of worker

          Start date / stop date

          Hours per week usually worked

          Commuting time and costs

          Covered by collective bargaining?

          Is subject union member?

          Shift worked

          Fringe benefits available

          Work for employee at home

          Size of firm

107

Displaced worker

Supervises others

C.   Work Experience Prior to Initial Survey

Occupation, industry, class of worker, start date, stop date, and reason for leaving first job after leaving school

Occupation, industry, class of worker, start date, stop date, and reason for leaving longest job since leaving school

Occupation, industry, class of worker, start date, stop date, and reason for leaving longest job between school and marriage

Occupation, industry, class of worker, start date, stop date, and reason for leaving longest job between marriage and first birth

Occupation, industry, class of worker, start date, stop date, and reason for leaving longest job since first birth

Number of years since leaving school R worked six months or more

D.   Work Experience Since Previous Survey

Occupation, industry, class of worker, hours per week, start date, stop date, and reason for leaving intervening jobs (details vary)

Occupation, industry, class of worker, hours per week, start

date, stop date, and reason for leaving intervening

employers

Interfirm mobility (details vary)

Promotions (any?, effects?)

II.   HUMAN CAPITAL AND OTHER SOCIOECONOMIC VARIABLES

    A.   <u>Early Formative Influences</u>

        Nationality

        Type of residence at age 15

        Person(s) subject lived with at age 15

        Occupation of head of household when subject was 15

        Highest grade completed by father/mother

        Occupation of mother when subject was 15

    B.   <u>Migration</u>

        Years at current residence

        Comparison of birthplace to current residence

        Geographic mobility

    C.   <u>Education</u>

        Current enrollment status

        Highest grade completed

        High school curriculum

Year of high school diploma or GED

Math courses taken in high school

College (attended, duration, hours per week attended, field

of study, highest degree received)

D.   Training

OJT (did woman take?, duration, hours per week attended,

did woman complete?)

Additional/other training or educational program (type,

sponsor, duration, hours per week attended, reason took,

did women complete?, certificate, use on job)

E.   Health and Physical Condition

Self-rating of health

Comparison of woman's condition with past

Does health limit work/housework?

Duration of health limitations

Problems (activities, things that bother, working conditions)

Does others' health limit work? (details vary)

Accidents (on-the-job, how?, when)

Does health permit going outdoors, using public

transportation, or personal care without help?

Does husband's health limit his work?

Duration of husband's limitations

F.   Marital and Family Characteristics

Marital status

Marital history (details vary)

Husband's attitude towards woman's working

Life status of woman's/husband's parents

Number of dependents

Child acquisition history

Number/ages of children in household

Child care arrangements (type, cost, preferences, attitude

toward, hypothetical use, affect on work)

Child care (extent of responsibility)

Family members (age, sex, relation to women, date of birth,

education, school enrollment, weeks worked, hours per

week worked, occupation)

Unemployment of husband (weeks)

Household activities (responsibility for, attitude toward,

hours per week spent on) (details vary)

Responsibility for care of chronically ill or disabled

Frequency of contact with family members and friends

Unrelated household members (relation to women, sex, age)

G.   Financial Characteristics

Total net family assets

Total family income

Income from farm/business

Wages or salary income

Unemployment compensation income

Income from supplemental unemployment benefits

Income from public assistance

Social Security income

Pension income

Disability income

Interest or dividend income

Total market value of food stamps received

Income from AFDC

Alimony payments

Child support payments

Amount of financial assistance from others

Income from other sources

H. Attitudes/Perspectives

How woman feels about job?

What does woman like best/least about job?

Would woman continue to work if had enough money to live on?

What is more important: high wages or liking work?

Attitude toward women working

Rotter Internal-External Locus of Control score

Way feeling these days?

Discrimination (woman ever experienced?, type, ways in which experienced, practiced by employers)

Has woman progressed, held own, or moved backward?

Have job pressures increased, decreased, or remained the same?

I. Retirement

Expected age of retirement

Will woman be eligible for social security or railroad retirement benefits?

Characteristics of current employer's pension plan

Years employed in jobs covered by social security or railroad retirement

Eligible for other pensions (type, number of years worked on jobs)

Eligible for spouse's benefits (type)

Expected age of retirement (spouse)

Will spouse be eligible for social security or railroad retirement benefits?

Spouse eligible for other retirement benefits (type)

Woman or spouse have personal retirement plan?

Sources of retirement income

J.   Hypothetical Job Offer

Would woman accept?

Hours per week would work

Rate of pay required

Kind of work desired

K.   Volunteer Work

Did any unpaid volunteer work?

Number of weeks/hours per week participated

Organization worked for

Why volunteered?

Activities aimed at changing social conditions?

The two page vita has been removed from the scanned document. Page 1 of 2

The two page vita has been removed from the scanned document. Page 2 of 2