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An Examination of the Relationship Between Various Methods of Financing College Costs and Academic Achievement

by Kenneth R. Ostberg

I. Introduction

The past three decades have witnessed an exponential growth in higher education. More students are attending postsecondary institutions and increasing proportions of the college age cohort have been pursuing training beyond high school. Higher education institutions and systems have radically increased educational expenditures. The largest increases have been for undergraduate education in order to accommodate increased numbers, subsidize annual per capita costs and provide financial assistance for qualified but needy students. A serious question is whether such expenditures represent wise social decisions.

II. The Problem

In 1977 a study was conducted at Columbia University which addressed the facet of that question concerned with financial assistance. The problem was to examine whether there was a statistically significant relationship between the manner in which academically and socially similar students paid their college expenses and their academic performance during college. To accomplish this the academic achievements of students were examined relative to the differing manners by which their educational costs were paid.

III. Summary of the Literature Review

The last two decades have witnessed considerable social research into the questions of which youth go to college, for how long and with what academic success, where they go and why. The question of why substantial proportions of the academically qualified population do not complete college has also been examined in some detail. Research to date demonstrates a variety of psychosocial, social and economic factors impinge greatly on educational achievement as it is related to ability. Major studies conducted over the past twenty-five years are reviewed in the following pages.

A number of researchers have addressed the question of why students with similar ability have different educational aspirations and achieve at different levels. Their studies reveal there are a number of factors associated with the individual, the family unit and the family's position in society that influence educational aspirations and attainment. Social and educational aspirations have a direct effect on educational achievement. Additionally, the proximity of a college campus as well

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as low cost college options increase college attendance and graduation rates.

There is research relating socio-economic status (SES) background, academic ability and the chances of students graduating from high school and high school graduates entering and completing college. Feldman and Newcomb note that for males SES is less important than intelligence in determining who will go to college upon graduation from high school.¹

Astin studied college dropouts. He found that academically talented dropouts tend to come from lower SES backgrounds and to have lower educational aspirations, indicating intelligence is not of particular importance.²

Despite increasing awareness of low cost educational options and financial assistance, data from the mid-1970s continues to reflect earlier studies. Kenneth L. Wilson and Alejandro Portes studied 2,000 males to discover which variables most affect educational attainment. Their conclusions indicate that SES background still has a significant effect although some change toward a more egalitarian system may be occurring as students' awareness increases. Wilson and Portes indicate that now measured ability is as important as SES background and that educational aspirations have substantial significance as well.³

There is a further piece of new evidence from which we can extrapolate a more egalitarian system as awareness of options becomes more widespread:

... results indicate that ability and social economic status are strong and consistent influences on the probability of attending college. However, among the socio-economic variables, family income is the least important in fostering college attendance.⁴

This is logically the result of more open-access, low cost commuter colleges, more extensive and sophisticated financial assistance programs and an increasing awareness of and commitment to the values of higher education throughout all social strata.

Economic expansion is providing more room in the middle class but it does not have equal effect in terms of who takes how much advantage of educational opportunity. Dael Wolfe indicates that

... the occupation of a high school student's father is a good prediction of whether or not he will enter college. The socioeconomic factors which are indicated by a father's occupation begin early to influence a child's educational progress and expectations.⁵

Lansing, Lorimer and Maraguchi note that there is a very high positive correlation between family SES and the likelihood of attending college.⁶ Their findings, with regard to whites, are that the variables determining college attendance, in order of importance, are the education of the head of household, education of wife, family

¹Kenneth A. Feldman, and Theodore M. Newcomb. *The Impact of College on Students* (San Francisco: Josey-Bass, Inc., 1969), pp. 107-108.

²Alexander W. Astin. "Personal and Environmental Factors Associated with College Dropouts Among High Aptitude Students." *Journal of Educational Psychology*, 55 (1964), pp. 219-227.

³Kenneth L. Wilson, and Alejandro Portes. "The Educational Attainment Process: Results from a National Sample." *American Journal of Sociology*, 81 (1975), pp. 343-363.

⁴Sandra Christensen, John Melder, and Burton A. Weisbrod. "Factors Affecting College Attendance." *Journal of Human Resources*, 10 (1975), pp. 174-188.

⁵Dael Wolfe. "Educational Opportunity, Measured Intelligence and Family Background," in *Education, Economy and Society*, eds. Halsey, Flood and Anderson, (New York: The Free Press, 1961) p. 229.

⁶J. B. Lansing, T. Lormier, and C. Maraguchi. *How People Pay for College* (Ann Arbor: University of Michigan Press, (1960), pp. 108, 112, and 114.

income and the occupation of the head of household.⁷ There is a similar positive correlation in favor of white over non-white children attending college.⁸

Sewell and Shah shed more light on this issue. They examined students in Wisconsin to discover which social factors affected educational aspiration and achievement. They verified that SES, intelligence and parental encouragement all have substantial independent relationships to college plans.⁹

B. K. Eckland summarized previous studies relating SES and persistence in college. He concluded there is a strong relationship but attributes it more to the cultural aspects of class than to economic factors.¹⁰

Sarane S. Boocock summarizes much of the available literature regarding relationships between SES, ability and academic success. The author states that:

The family characteristic that is the most powerful predictor of school performance is the SES: the higher the SES of the student's family the higher his academic achievement. This relationship . . . seems to hold no matter what measure of status is used (occupation of principal breadwinner, family income, parents' education, or some combination of these).¹¹

A study by Sewell, Haller and Strauss provides a good summary of the impact of SES on higher education aspirations and achievements. The authors controlled for measured ability to determine the relationship between social status and educational and occupational aspirations. They examined most male and female high school seniors in Wisconsin in the course of their study. Their findings show that at all intelligence levels, high school students from higher SES backgrounds planned to attend college, and did attend, at greater rates and for longer periods than did their equally bright but lower SES counterparts.¹²

It is clear that the availability of higher education opportunities and the societal pressures to attend as an entree into the middle class and above are not yet sufficient to counteract alone the effects of social class background. There is, however, firm and consistent evidence of psycho-social forces influencing educational attainment.¹³

Social attitudes also have an impact on educational aspirations and achievement. Elizabeth Cohen studied two groups, each composed of fifty high school males from working class backgrounds. The groups were matched for intelligence. Her conclusions demonstrate that the parents of boys planning college were more socially upwardly mobile than the others. The fathers were upwardly mobile for vocational reasons and the mothers for social reasons.¹⁴

J. Richard Hackman and Wendell S. Dysinger investigated the problem of

⁷Ibid.

⁸Ibid.

⁹W. H. Sewell, and V. P. Shah, "Social Class, Parental Encouragement and Educational Aspirations," *American Journal of Sociology*, 73 (1968), pp. 559-572.

¹⁰B. K. Eckland, "Social Class and College Graduation: Some Misconceptions Corrected," *American Journal of Sociology*, 70 (1964), pp. 36-50.

¹¹Sarane S. Boocock, *An Introduction to the Sociology of Learning* (Boston: Houghton-Mifflin Co., 1972), p. 36.

¹²W. H. Sewell, A. O. Haller, and M. A. Strauss, "Social Status and Educational and Occupational Aspirations," *American Sociological Review*, 22 (1957), pp. 67-73.

¹³Robert H. Beezer, and Howard F. Hjelm, *Factors Related to College Attendance* (Washington, D. C.: Government Printing Office, 1963).

¹⁴Elizabeth G. Cohen, "Parental Factors in Educational Mobility," *Sociology of Education*, 38 (1965), pp. 404-425.

educational commitment as a factor in college attrition. They examined 1407 students at three midwestern liberal arts colleges together with their parents with reference to the students' commitments to higher education, their parents' commitments and college persistence. They concluded that parental attitudes and values toward higher education are at least as important to student persistence as student values.¹⁵ Gottlieb found that in all social classes, educational achievement was strongly related to aspirations.¹⁶

Boocock agrees that ability and SES are not the only pertinent factors; upward mobility is also powerful.

It is clear that high achieving children tend to come from families that have high expectations for them, and who consequently are likely to "set standards" and to make greater demands at an earlier age.¹⁷

It is not class per se that explained differential behavior, but the degree to which families retained the values and outlook of their own class as a reference group. Once students acquire the motivation to achieve, their social background does not seem to hold them back.¹⁸

Indeed,

. . . the higher the parental aspiration, the higher the proportion of students within a given race-SES subgroup with high performance or aspirations.¹⁹

There are, finally, data concerning students with both ability and desire who are prevented from pursuing higher education by financial barriers. Robert Iffert noted that, "in 975 samples (out of 1,000) the median income figure for parents of (College) graduates would have been higher than for parents of non-graduates."²⁰ Iffert concludes that "while the financial problem does not rank first in importance, it is a major factor in student mortality."²¹ Iffert's study reveals one other important factor concerning finance.

Differences between the several attendance groups do not provide convincing evidence of the probability that earning part or all of college expenses seriously affects persistence in college.²²

Norman Crawford reviewed these same financing questions. His sample was a group of National Merit Scholarship Examination finalists whose parents could make either no or only minimal contributions toward college costs. He found that of those who enrolled in college without financial aid, the majority commuted to low cost colleges near home. He also determined that one-third of those with no financial assistance withdrew within two years while only one-sixth of those receiving aid failed to complete their degrees. Finally, half of the finalists who did not go to

¹⁵J. Richard Hackman, and Wendell S. Dysinger, "Commitment to College as a Factor in Student Attrition," *Sociology in Education*, 43 (1970), pp. 311-324.

¹⁶D. Gottlieb, "Social Class, Achievement and the College Going Experience." *School Review*, 70 (1962), pp. 273-286.

¹⁷Boocock, *An Introduction to the Sociology of Learning*, p. 60.

¹⁸*Ibid.*, p. 61.

¹⁹Boocock, *An Introduction to the Sociology of Learning*, p. 62.

²⁰Robert E. Iffert, *Retention and Withdrawal of College Students* (Washington, D. C.: U. S. Office of Education Bulletin #1, 1958), p. 62.

²¹*Ibid.*, p. 63

²²*Ibid.*, p. 65

college reported they would have had they received financial aid.²³

Bernadette M. Gadzella studied factors influencing students to withdraw from college. Thirty percent of the students who withdrew and completed her questionnaire indicated they withdrew primarily because of financial problems.²⁴

William H. Sewell notes that at all ability levels, students from higher SES backgrounds enter and complete college at significantly greater rates than students of equal, or even greater ability, but from lower SES backgrounds. Indeed, he found the evidence so conclusive that he offered as a solution the wide availability of grant assistance to encourage educational aspirations in all SES groups.²⁵

The pertinent literature reports increased access to higher education fostered by a variety of forces. All social strata are aware of the advantages of a college degree and aspirations have been awakened. Society has moved to provide the opportunity to fulfill these aspirations by increasing the relative number of college places, opening new institutions to provide additional commuting opportunities for students who cannot or do not wish to leave home for college, offering an increased variety of educational programs, relaxing traditional admissions standards, providing low cost educational options and providing financial assistance where necessary. These efforts have yet to provide complete equality of educational opportunity for society at large. This is evidenced by the research indicating SES background is still a significant determinant of college entrance and academic success, although its proportionate influence appears to be diminishing and is being replaced by ability and aspirations. The logical extrapolation is that those students secure in their ability and desire to achieve college success can now do so if they are able to pay the bills.

The purpose of this study was to test whether that logical conclusion is validated in a small sample of the undergraduate population in the United States. The study tested whether a variety of college financing combinations help determine college success, as measured by grade-point average, for students who were academically and socially similar at the point of entrance.

IV. Methodology

The Columbia College Class of 1974 was used as a sample. Several variables were controlled in order to isolate subgroups of academically and socially similar students. Academic ability at the point of entrance into college was defined as the mean of the Scholastic Aptitude Test scores administered by the College Board. Academic achievement at the point of admission was determined by averaging three of the College Board Achievement Test scores. Socio-economic status was determined by the occupations of the heads of household on the occupational prestige scale of the National Opinion Research Center (NORC). The sample was further grouped along ethnic lines (Asian Americans, Black Americans, Hispanic Americans, foreign students, and all others) with foreign students grouped together and considered as a minority population. Finally, academic achievement during college was determined by computing grade-point averages for each member of the test group. The sample was divided into subgroups of academically and socially similar students. Each subgroup was analyzed for how college bills were paid from various combinations of

²³Norman C. Crawford, Jr., *Effects of Offers of Financial Assistance on College-Going Decisions of Talented Students with Limited Financial Means* (Evanston, Ill.: National Merit Scholarship Corp. Research Reports, 1967): pp. 3-5.

²⁴Bernadette M. Gadzella, "Factors influencing Students to Withdraw from College," *College Student Survey*, 1 (1967), pp. 55-60.

²⁵William F. Sewell, "Inequality of Opportunity for Higher Education," *American Sociological Review*, 36 (1971), pp. 793-809.

parental contribution, loans and work, and grant/scholarship assistance. Statistical cross-tabulations were used to compare subgroups.

The sample was first divided into the ethnic groups defined above. The members of each group were coded for both ability and achievement at the point of admission according to their College Board Scholastic Aptitude Tests and Achievement Test scores. The members of each group were also categorized according to SES background on the NORC scale described above. Finally, each member of the sample was categorized according to the proportion of educational cost paid through loans and work, the proportion paid by scholarships and grants and the proportion paid by parents. The categories were as follows:

Student contributions from loans and/or work: 1 - 25 percent of total costs, 26 - 50 percent, 51 - 75 percent, 76 - 100 percent.

Student receipts from all scholarships and/or grants: 0 percent of total costs, 1 - 25 percent, 26 - 50 percent, 51 - 75 percent, 76 - 100 percent.

Student receipts from parental assistance: 0 percent of total costs, 1 - 25 percent, 26 - 50 percent, 51 - 75 percent, 76 - 100 percent.

The study analyzed members of each subgroup who were similar in ability and achievement at the point of entrance and who came from similar SES backgrounds. The problem was to test whether there were statistically significant relationships between levels of college achievement and the methods by which members of the various subgroups paid for their educations. The analysis was done by means of cross-tabulations of various categories of grade-point averages to methods of payment, controlling for the following variables: ethnicity, SES background, ability and achievement. In order to discover if college achievement was a function of the method of financing college costs among students of similar ability levels and social backgrounds, the Chi Square was used as the test for significance. Fisher's Exact Test was used with groups too small to be analyzed using Chi Square. Results were accepted as statistically significant if they were significant at or below the five percent level.

V. Hypotheses

- 1) There were no statistically significant differences in college achievement, as measured by grade-point average, between students who received loans and work not exceeding 25 percent of their total educational costs, and no other financial aid, and the group as a whole.
- 2) There were no statistically significant differences in college achievement, as measured by grade-point average, between students who received loans and work not exceeding 25 percent of their total educational costs, and no other financial aid, and their academic and social peers who financed their educations differently.
- 3) There were no statistically significant differences in college achievement, as measured by grade-point average, between students who received loans and work totaling 51 percent or more of their educational costs and the group as a whole, regardless of how the balance of their costs were paid.
- 4) There were no statistically significant differences in college achievement, as measured by grade-point average, between students who received loans and work totaling 51 percent or more of their educational costs and their academic and social peers who financed their educations differently, regardless of how the balance of their costs were paid.
- 5) There were no statistically significant differences in college achievement, as measured by grade-point average, between students whose total financial aid resources equalled 75 percent or more of their educational costs and the group as a whole.

6) There were no statistically significant differences in college achievement, as measured by grade-point average, between students whose total financial aid resources equalled 75 percent or more of their educational costs and their academic and social peers who financed their educations differently.

VI. Findings

Hypothesis 1 was rejected by the evidence. Students who earned and borrowed 25 percent or less of their total educational costs and received no other financial aid, had higher grade-point averages than the class mean. The differences were statistically significant at the .01 level.

Hypothesis 2, however, was sustained by the evidence. Differences in grade-point averages for students who received 25 percent or less of their total costs in loans and work, and no other financial aid, as opposed to students with different funding patterns, were not related to academic and social backgrounds.

Hypothesis 3 was also sustained on the basis of the sample evidence. There were no statistically significant differences in college achievement between students who received loans and work totaling 51 percent or more of their school costs and others, regardless of how the balance of their costs were paid. Unlike those tested in Hypothesis 1 the test group in Hypothesis 3 did less well academically than the average member of the class. Hypothesis 4 was also sustained. There was no statistically significant pattern to the lower level of achievement among academically and socially similar students, some of whom received loans and work totaling 51 percent or more of costs and some of whom paid educational expenses in different ways.

Hypothesis 5 was not sustained by the evidence. Students whose college costs were at least three quarters paid by financial assistance achieved less well than their average classmates. The differences were statistically significant only at the .0005 level. Hypothesis 6, however, was sustained. The levels of statistical significance noted for different academic and social background subgroups whose costs were at least three-fourths paid by financial aid, as compared to other similar students, indicated there were no general patterns hinged to academic and social backgrounds, as defined.

VII. Conclusions and Recommendations

This study examined the academic performance of students relative to the manner in which their educational costs were paid. A number of variables were isolated and controlled in order to compare students with similar academic and social backgrounds. The purpose was to discover whether there were statistically significant relationships between the manner in which such similar students financed their educations and their academic performance during college. There were, in fact, no statistically significant relationships.

Hypotheses 2, 4 and 6 tested the sample controlling for academic and social backgrounds. Students who paid educational costs with loans and work totaling 25 percent or less of their aggregate costs and who received no other financial aid were divided into academically and socially similar subgroups. They were compared to students from like backgrounds who financed their educations differently. There were 28 tests for statistically significant differences and none were significant at the .05 level. The second area where no general patterns of statistical significance could be discerned was among the academically and socially similar subgroups, some of whom financed 51 percent or more of their college costs with loans and work and some of whom used other financing patterns. In this case there were 49 tests for statistically significant differences and again none were significant at the .05 level. Finally, academically and socially similar students, some of whom paid 75 percent

or more of their educational costs with some form of financial aid and some of whom did not were compared. In this instance there were 56 tests for statistically significant differences and again none were significant at the .05 level.

To summarize, the purpose of this study was to ascertain whether there were statistically significant relationships between methods of financing college costs and college grade-point averages among academically and socially similar students. The purpose of asking such a question initially, of course, was to examine the success of a need based financial aid program where students were required to earn and borrow portions of their educational costs. The intent of the program of financial assistance was to provide students equal opportunities to attend a high cost private institution; to provide equality of opportunity for access. The results of this study indicated the financial aid program tested did fulfill the intended purpose. This was supported by the evidence indicating there were no statistically significant relationships between financial aid received and academic achievement of students with academically and socially similar roots.

Additionally, based on the costs incurred by the students in the sample, the amounts of self-help expected from them and the flexibility of the aid program as noted below, it can be stated that substantial increases in individual grants in order to reduce loan and work requirements would not have changed relative student success.

TABLE 1
STUDENT EXPENSE BUDGETS

Resident Students			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
\$4,450	\$4,950	\$5,200	\$5,500
+ travel	+ travel	+ travel	+ travel
\$3,400	\$3,900	\$4,200	\$4,400

TABLE 2
STUDENT SELF-HELP LEVELS BY ADMISSIONS RATINGS

Year	Summer Savings All Students	Academic-Year Self-Help by Admissions Rating		
		High*	Middle	Low
1	\$500	\$1,000	\$1,250	\$1,500
2	600	1,000	1,250	1,500
3	700	1,100	1,350	1,600
4	700	1,250	1,500	1,750

*All needy minority students and students from impoverished backgrounds received the lowest self-help levels (equivalent to the most attractive packages offered to those with the high admission ratings) regardless of their admission ratings.

Students lived on campus or commuted by choice and were funded according to their needs. They could alter the packaging configurations implied in the above tables in a variety of ways. They could appeal aid decisions; live more frugally or extravagantly; borrow and/or earn more or less than was packaged; attend summer school to graduate early; or take time off from school to work and save money.

Students with lower ability and achievement levels at the time of admission, those from lower SES backgrounds and members of ethnic minorities did less well academically. Those achievement differences, however, were not related to financial aid differences, but rather reflected other background variables. The major recommendation stemming from this conclusion relates to other things colleges should do to equalize opportunity for academic achievement. The available literature reports minority students and students from lower SES backgrounds achieve less well regardless of ability. This indicates environmental press is important and does not operate uniformly on all students. Educators should study the effects of academic

and other environmental influences to discover how and to what degree they influence different kinds of students. The effort should be to manipulate and control those influences in the environment to equalize student's chances for academic success. One important factor which requires study is the effect of remedial work and compensatory aid, such as tutoring, on academic achievement.

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