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The Influence of Student Aid on Persistence

Edward P. St. John

The increased emphasis on loans during the 1980s as a major source of student financial aid has caused some people in the higher education community to speculate that this shift could have detrimental effects on long-term persistence. This article examines the evolving influence of student financial aid on year-to-year persistence for three student cohorts, the high school classes of 1972, 1980, and 1982. A comparative analysis of the National Longitudinal Study and High School and Beyond Survey is presented.¹ The findings include: (1) loans as the only form of aid were negatively associated with first-to-second-year persistence in the 1970s, but not the 1980s; and (2) all types of aid packages were positively associated with year-to-year persistence in the 1970s and 1980s.

Most need-based student financial aid seeks to promote student persistence in the college of choice. Yet, financial aid administrators and government policy makers do not always agree about whether all forms of aid actually promote persistence. Most of the controversy centers around loans. Some research concludes that loans have a negative, or at best neutral, impact on persistence (e.g. Astin, 1975; Carroll, 1987; Peng and Fetters, 1978), while others conclude loans have a positive impact on persistence (e.g. St. John, Kirshstein, and Noell, 1988; Vorhees, 1985). In their recent review of research on the impact of student financial aid, Leslie and Brinkman (1988) conclude that loans as well as grants have a positive influence on persistence, but that grants have a more positive effect on persistence than do loans.

Lurking beneath the surface of the controversy over loans versus grants are a number of policy questions about the impact of student aid on persistence:

- Has the influence of different forms of aid changed over time?
- Does the impact of different forms of aid change as students progress through college?
- Has the increased emphasis on loans influenced student persistence?

Given the shifts in federal student aid policy and institutional pricing practices during the 1980s, these questions are important not only to federal and state policy makers, but also to financial aid administrators who package aid awards. This article analyzes and compares the impact financial aid packages had on year-to-year college persistence by students in three high school classes: the high school class of 1972 which entered college in fall 1972, the year before the Pell grant program was implemented; the class of 1980, which entered in the fall of 1980, after the Middle Income Student

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Assistance Act; and the class of 1982, which entered college in the fall of 1982, amid controversy about the shift away from grants. The analyses examine not only how the types of aid packages students received changed over time, but also the impact these packages had at different points in the college experience.

The Study

To address these questions about the evolving influence of student aid, the impact of different types of aid packages on year-to-year persistence was examined for three student cohorts. The model used for the analysis was devised from a review of research on educational attainment, persistence, and student choice (St. John, Kirshstein, and Noell, 1988). The model views persistence as a function of social background, academic ability/achievement, high school experience, college experience, and student financial aid. The data bases, model specifications, and analysis methods are described briefly below.

Data Bases

The study analyzes longitudinal data collected by the U.S. Department of Education's Center for Educational Statistics (CES) on three high school classes: the National Longitudinal Study of the High School Class of 1972 (NLS-72), the High School and Beyond Senior Cohort (HSB-80), and the High School and Beyond Sophomore Cohort (HSB-82). Members of HSB-82 who made normal academic progress were high school seniors in 1981-82 and entered college in fall 1982. The CES surveys had follow-up surveys on each class that collected information on each year of college attended by students in each class. This article compares the influence of different types of financial aid packages on year-to-year persistence by each cohort.

The base year for NLS-72 was the 1971-72 academic year, when a stratified two-stage probability sample of 12th graders was conducted (Tourangeau, Sebring, Campbell, Glusberg, Spencer, and Singleton, 1987). It provides data on student social background, high school experience, and achievement test scores. The first follow-up was conducted from October 1973 to October 1974; the second follow-up from October 1974 to April 1975; the third from October 1976 to May 1977; and the fourth from October 1979 to May 1980. These follow-up studies contrasted data on the five years of college experience used in this analysis. Of this sample, 4,485 attended college the first year after high school and responded to all the survey items used in the study, and were *the 1972 cohort* for this study.

For HSB-80, the base survey, three follow-up surveys, and a supplemental survey on student financial aid were used (Sebring, Campbell, Glusberg, Spencer, and Singleton, 1987). The base-year survey was conducted in spring of 1980, using a highly stratified national probability sample. The base-year survey collected information on student background, high school experience, and ability/achievement tests. Follow-up surveys were conducted in the winter and spring of academic years 1981-82, 1983-84, and 1985-86. The follow-ups contained information about work and postsecondary schooling. The Senior Financial Aid File, which contains financial records from postsecondary institutions and federal records for the

Pell Grant and Stafford Loan Programs, was also used. Of those surveyed, 4,178 students in the 1980 senior cohort attended a higher education institution the first year after high school and responded to all the survey items used in this study. This group was *the 1980 cohort* for this study.

For HSB-82, the first HSB follow-up—conducted during the senior year for the high school class of 1982—was used for data on social background, high school experience, and ability/achievement (Sebring, Campbell, Glusberg, Spencer, Singleton, and Turner, 1987). The second and third follow-ups provided, collected in academic years 1983-84 and 1985-86 respectively, were used for information on student aid and college experience during the first four years of college for *the 1982 cohort*. A sample of 3,965 attended college and responded to the survey items used in the study. This number is slightly smaller than the other two cohorts because some members of the 1980 high school sophomore class dropped out before their senior year of high school.

Specification of the Model

The statistical model was specified with the same variables for each cohort. Based on a review of prior research (St. John, Kirshstein, and Noell, 1988), a model was developed that assumed persistence was influenced by social background (ethnic background, family income, and parental education), ability/achievement (test score), high school experience (grades and track in high school), aspirations (as measured by the highest expected level of postsecondary attainment), and college experience (type of institutions, grades, full-time attendance). The most reasonable and consistent variables in the data bases were used for each of these measures.

Persistence was defined as continuing enrollment from one year to the next. If students were enrolled in either semester in the base year and re-enrolled either semester of the next year, they were classified as persisters. If students received degrees (associate or bachelor's) during the base year, they were counted as persisters. This definition of persistence allowed students to stop out for one semester a year and still be considered persisters. Four transitions were examined: the first-to-second year after high school, the second-to-third, the third-to-fourth, and the fourth-to-fifth. Persistence was coded as a dichotomous variable (coded "1" for persisters, "0" for non-persisters).

This definition of persistence is similar to the outcome measure used in most other national studies.² Most studies examine whether the aid was sufficient for students to continue their enrollment to a subsequent year or to graduation (Astin, 1975; Peng and Fetters, 1978; Terkla, 1985). Astin (1975) examined the effects of student aid on whether freshmen returned the next year and whether they persisted for a four-year period. Peng and Fetters (1978) examined the effects student aid had on student decisions to return the next year.

The year-to-year analysis of persistence is also consistent with

Tinto's model (Tinto, 1975, 1982), the most refined persistence model. Most research using Tinto's model focuses on first-to-second-year persistence. This study extends knowledge of the persistence process by examining multiple transitions for three national longitudinal surveys.

Using this definition of persistence, the analysis considers the influence of the type of aid package and other background factors on whether a student persists to the next year. The influence of the aid package a student received the next year is not considered. Trends were examined to explore whether there were changes in the types of packages students received. There were small decreases between the first and second years in the percentage of students with grants only for the high school classes of 1980 and 1982. The possible influence of these small shifts is considered in the analysis.

"An increased probability of receiving a loan during the second year did not seem to dissuade students who had received grants only as freshmen from re-enrolling."

For *social background*, five variables were used. For ethnicity, dummy variables were created for *black* and *Hispanic* (each was compared to the rest of the population). These two groups were explicitly considered because they have historically attended at lower rates (Mingle, 1987). *Males* were coded as 1 to control for the influence of gender. *Mother's educational* level was used³ as a measure of parental education. *Family income* during the senior year of high school was reported on a multiple-category measure of progressive income levels.⁴

Two variables related to *high school experience* were used. *Academic* track and *vocational* track were each coded as dummy variables and compared to students in a general curriculum.

Standardized test results were used for *ability/achievement*. The standardized composite scores were reported in three categories: lowest quartile, middle two quartiles, and highest quartile. This was the only consistent measure of composite test scores.

Postsecondary plans in high school were used as a measure for aspirations. A question that asked high school seniors about their highest expected level of educational attainment was used, a six-category measure with each successive category representing an increased level of expected attainment. The categories ranged from less than high school to graduate education.

Four variables were used for *postsecondary experience*. Whether the student attended a *four-year college* or a *private college* as a freshman were treated as dummy variables. Whether a student attended *full-time* in the base year was also coded as a dummy variable. *College grade point average* was a scale, with high grades having the highest value.⁵

Finally, a series of variables was created for different types of financial aid packages. *Loan only*, *grant only*, *grant and loan*, *grant and work study*, and *all three types of aid* were considered. Too few students had packages with work and loans to permit analysis and therefore were dropped. Students in each category were compared to students who did not receive aid.

Statistical Methods

Given that the outcome measures were dichotomous, logistic regressions were used. Delta P statistics were calculated for each variable in the logistic regression using a methodology recommended by Peterson (1984). Model Chi Squares are also presented for each model.

The Delta P statistic provides a measure of the change in probability in the outcome variable that can be attributed to a unit change in a given variable in the model. When a Delta P statistic is significant, it can be interpreted as the increased probability of attendance resulting from change in one unit measure. Since all financial aid variables are coded as "yes" or "no," then receipt of an aid package is compared to students who did not receive aid. A significant and positive Delta P increases the probability of persistence a corresponding number of percentage points. For example, a Delta P of .118 for a particular type of aid package can be interpreted as meaning that this type of aid package increased probability of persistence to the next year in college by 11.8 percentage points. Similarly, when a Delta P statistic of .017 is significant for a scaled variable, such as grade point average, then a one unit increase in that scale increases the probability of attendance by 1.7 percentage points. And if a dummy variable is significant and has a Delta P of .085, this variable can be interpreted as increasing the probability of persistence by 8.5 percentage points.

The Delta P statistics for different variables should not be compared with each other unless the same unit of measurement is used. For the financial aid variables in the models presented here, the same units of measurement are used. Therefore, comparisons of the relative size of different aid variables could be made. However, there is not a test of significance to determine whether the differences between Delta P's are significant. Therefore, caution should be used when comparing the size of Delta P statistics for different aid packages. When aid variables in these analyses are compared with each other, the discussion usually considers only whether each type of aid is significant and the direction (positive or negative) of influence. Occasionally, Delta P statistics are cited to illustrate how they can be interpreted.

Limitations

CES's longitudinal data bases represent the best available data for analyzing the effects of aid on persistence at a national level, as well as for analyzing national progress on the persistence outcome. These data bases are the only nationally representative surveys that track student enrollment behavior. There are, however, two important limitations in this data.

First, each data set has missing values for each variable used. No attempt is made to impute these missing values. Instead it is assumed missing values are randomly distributed, which is usually done when NLS or HSB is used in regression analyses.

Second, several of the variables selected for the model used nominal scale variables. This includes mother's education, family income, educational aspirations, and test score. The categories for these measures represent a progression, but not an ordinal scale. No

attempt was made to convert these variables to ordinal scales. This would have involved imputing numeric values: income averages for each income category; average years of education for each attainment level; and average years of planned attainment for each category of educational plans. This step was considered beyond the purpose of the article, which is to examine a set of questions about the influence of different types of aid packages on persistence, controlling for necessary background factors. Given this limitation, the Delta P statistics for these variables are discussed only in terms of their significance and direction (positive or negative), which is sufficient to control statistically for the influence of these variables.

Findings

The availability of the NLS and HSB surveys allows for a comparison of the impact of student financial aid on year-to-year persistence in the middle 1970s with the early and middle 1980s. In this section the basic persistence model described above is used to analyze the effects of student financial aid packages on year-to-year persistence by the three cohorts. The findings are presented in five parts.

Student Aid Packages

The types of student aid packages persisters received each year in the three high school classes changed slightly between the 1970s and the 1980s (see Exhibit 1). A smaller percentage of students in the high school class of 1972 received some type of aid package during their first year in college: 60.1 percent of freshmen in the class of 1972 did not receive aid compared to 53.6 percent of the class of 1980 and 50.7 percent of the class of 1982. A slightly smaller percentage of students in the 1972 cohort received aid each subsequent year.

The types of aid packages student persisters received did not vary greatly from year to year for each cohort. There were only small changes in the types of aid packages persisters in the 1972 cohort received from one year to the next. For the 1972 cohort, approximately 17 percent of the students in each successive class received grants as the only form of aid each year. However, the percentage of persisters in the 1980 and 1982 cohorts with grants as the only form of aid dropped after the freshman year, while the percentage of students with loans in their packages increased. Also a larger percentage of persisters received packages with loans in the 1980s than in the middle 1970s. These differences are considered in the analysis of year-to-year persistence.

First-to-Second-Year Persistence

There are some variations in the effects of background on persistence from the first-to-second year when the three classes are compared (Exhibit 2). For example, family income was positive and significant for first-to-second-year persistence for students in the 1972 and 1982 cohorts, but not the 1980 cohort. Therefore, it is possible that student financial aid helped to mitigate the effects of income on first-to-second-year persistence for the 1980 cohort. Test scores also had a positive and significant association with first-to-second-year persistence for the students in the 1972 and 1982 cohorts, but not the 1980 cohort. In contrast, attending a private college

EXHIBIT 1
Types Of Aid Packages By Year In College

Year in College	High School Class Of			
	1972	1980	1982	
First Year	No Aid	60.1%	53.6%	50.7%
	Grant only	17.2	15.0	20.8
	Loan only	7.4	12.6	7.7
	Work only	1.9	0.3	0.8
	Grant and Loan	7.4	9.7	11.7
	Loan and Work	0.9	0.4	1.0
	Grant and Work	2.1	3.5	2.7
	All three	3.0	4.9	4.6
Second Year	No Aid	61.3%	52.0%	51.6%
	Grant only	16.5	12.0	16.2
	Loan only	6.2	16.2	9.3
	Work only	2.3	0.3	1.6
	Grant and Loan	7.1	11.1	12.0
	Loan and Work	0.8	0.1	0.7
	Grant and Work	2.6	3.3	2.9
	All three	3.2	4.9	5.7
Third Year	No Aid	56.6%	55.2%	49.9%
	Grant only	17.9	11.2	14.6
	Loan only	6.8	13.7	10.6
	Work only	2.0	0.4	2.6
	Grant and Loan	9.9	11.1	11.2
	Loan and Work	0.8	0.3	1.8
	Grant and Work	1.9	2.9	2.4
	All three	4.2	5.3	6.8
Fourth Year	No Aid	55.1%	54.2%	47.1%
	Grant only	17.4	11.2	13.6
	Loan only	7.1	12.9	10.9
	Work only	1.7	0.4	2.6
	Grant and Loan	10.8	12.6	14.4
	Loan and Work	0.9	0.4	1.9
	Grant and Work	2.1	2.3	2.4
	All three	4.9	6.1	7.1

* The fourth-to-fifth year persistence model was not run for the high school class of 1982 because data on fifth year attendance or graduation was not available.

Source: High School and Beyond Base Survey and Follow Ups and National Longitudinal Study, Base Survey and Follow Ups.

had a significant and positive association with first-to-second-year persistence for the 1980 cohort, but not the 1972 and 1982 cohorts.

However, there was far more commonality than difference in the effects of background variables on first-to-second-year persistence for students from the three high school classes. Being in an academic program in high school, having high postsecondary aspirations, attending college full-time, receiving high grades in college, and attending a four-year college were significant and positive and thus all increased the probability of persisting from the first to second year of college.

There are some notable differences among the cohorts in the ways different types of aid packages influenced first-to-second-year persistence. Grants as the only form of aid had a positive association with this outcome for students from the 1982 cohort, but not the other two. Loans as the only form of aid had a negative and significant association with first-to-second-year persistence for the 1972 cohort, a positive and significant association for the class of 1980, and no significant influence on the 1982 cohort. For the 1972 cohort, receiving loans only as freshmen decreased the probability of persistence to year two by 7.2 percentage points, while this type of package actually increased the probability of persistence by 4.8 percentage points for first-year students in the 1980 cohort. Grants packaged with loans had positive and significant associations with first-to-second-year persistence by college students from all three cohorts, while grants packaged with work was significant for students from the 1972 cohort, but not for the 1980 and 1982 cohorts. The receipt of all three types of aid had a significant and positive association with persistence for the 1980 and 1982 cohorts but not the 1972 cohort. First year students in the 1982 cohort who received packages with all three types of aid in their first year were 11.5 percentage points more likely to persist to year two.

It was necessary to give close scrutiny to the effects of grants only for the three cohorts since a smaller percentage received grants only after their freshman year (see Exhibit 1). In these analyses, grants only were significant and positive for all three cohorts. In fact, the size of the Delta P for grants only was even larger for the 1980 and 1982 cohorts than for the 1972 cohort. Thus, an increased probability of receiving a loan during the second year did not seem to dissuade students who had received grants only as freshmen from re-enrolling.

Second-to-Third-Year Persistence

Social and high school background influenced second-to-third-year persistence, although specific variables did not have a consistent influence across cohorts (Exhibit 3). Being black and being a male were significant and positively associated with persistence by the 1972 cohort, but not for the 1980 and 1982 cohorts. Family income was significant and positive for the 1972 and 1980 cohorts, but not for the 1982 cohort. Mother's education was significant and positively associated with first-to-second-year persistence for students from the 1980 and 1982 cohorts but not those from the 1972 cohort. Being in

“There is some evidence to suggest that the increased emphasis on loans in the 1980s did not negatively influence year-to-year persistence.”

EXHIBIT 2
Comparison Across Years on
First-to-Second-Year Persistence

	1972 Cohort	Delta P Statistic 1980 Cohort	1982 Cohort
Background			
Black.....	0.016	0.005	0.033
Hispanic	0.057	0.010	0.048
Male	0.024	0.011	0.049**
Family Income	0.009**	0.002	0.015**
Mother's Education	0.003	0.007	0.022**
High School Experience			
Academic Program	0.056**	0.038**	0.039**
Vocational Program	-0.034	-0.024	0.008
Aspirations			
Postsecondary Plans.....	0.070**	0.037**	0.046**
Ability/Achievement			
Test Score	0.064**	0.016	0.030**
College Experience			
Full Time Year 1	0.058*	0.042**	0.060**
Grades (1).....	0.027**	0.039**	0.016**
Four-Year College Year 1.....	0.100**	0.032**	0.030*
Private College Year 1.....	0.001	0.036*	-0.025
Student Aid Package			
Grant Only Year 1	0.009	0.022	0.039*
Loan Only Year 1	-0.072**	0.048**	0.041
Grant and Loan Year 1	0.025**	0.056**	0.073**
Grant and Work Year 1.....	0.099*	0.041	0.058
All Types Year 1	0.080	0.065*	0.115**
Baseline P.....	0.726	0.852	0.847
Model Chi Square	798.89**	370.44**	422.52**
Sample Size:.....	4485	4178	3965

* Significant at .05 level
** Significant at .01 level

(1) Grades for Year 1 for 1972 cohort and for the first two years of college for the 1980 and 1982 cohorts.

Source: High School and Beyond Base Survey and Follow Ups, and National Longitudinal Study Base Survey and Follow Ups.

EXHIBIT 3
Comparison Across Years on
Second-to-Third-Year Persistence

	1972 Cohort	Delta P Statistic 1980 Cohort	1982 Cohort
Background			
Black.....	0.062*	0.006	-0.024
Hispanic	-0.022	0.023	-0.005
Male	0.054**	0.014	-0.021
Family Income	0.011**	0.016**	0.005
Mother's Education	0.001	0.021**	0.025**
High School Experience			
Academic Program	0.028	0.040**	0.031
Vocational Program	-0.052	-0.017	-0.096**
Aspirations			
Postsecondary Plans.....	0.059**	0.030**	0.049**
Ability/Achievement			
Test Score	0.025*	0.038**	0.043**
College Experience			
Full Time Year 2	0.064**	0.086**	0.019
Grades (1).....	0.014**	0.038**	0.032**
Four-Year College Year 1	0.099**	0.046**	0.113*
Private College Year 1.....	-0.031	0.018	-0.044
Student Aid Package			
Grant Only Year 2	0.039*	0.047*	0.056**
Loan Only Year 2	-0.017	0.015	0.038
Grant and Loan Year 2	0.089**	0.105**	0.043
Grant and Work Year 2.....	0.099**	0.055	0.018
All Three Year 2	0.105**	0.100*	0.054
Baseline P.....	0.795	0.844	0.783
Model Chi Square	521.59**	439.95**	424.31**
Sample Size:.....	3228	3546	3469

* Significant at .05 level

** Significant at .01 level

(1) Grades for Year 2 for 1972 cohort and for the first two years of college for the 1980 and 1982 cohorts.

Source: High School and Beyond Base Survey and Follow Ups, and National Longitudinal Study Base Survey and Follow Ups.

an academic program in high school was significant and positively associated with second-to-third-year persistence from the 1980 and 1982 cohort but not the 1972. Test scores and postsecondary plans were the only two background variables that were significant and positively associated with second-to-third-year persistence for all three cohorts.

College experience was quite important in second-to-third-year persistence. Attending full-time was significant and positively associated with second-to-third-year persistence for the 1972 and 1980 cohorts. College grades and attending a four-year college as a freshman were significant and positively associated with second-to-third-year persistence for all three cohorts. However, attending private college was not significant for all three cohorts.

Student financial aid, especially grants, was positively associated with persistence between the second and third year for all three cohorts. Grants, as the only type of aid, was significant and positive for second-to-third-year persistence for all three cohorts. Further, the receipt of grants only increased the probability of persistence from year two to year three by 3.9 percentage points for the 1972 cohort, by 4.7 percentage points for the 1980 cohort, and by 5.6 percentage points for the 1982 cohort. Grants and loans were significant and positively associated with second-to-third-year persistence for the 1972 and 1980 cohorts; packages with grants and work were significant and positive for the 1972 cohort. All three types of aid were significant and positive for the 1972 and 1980 cohorts. In fact, the receipt of all three types of aid increased the probability of persistence by 10.5 percentage points for the second year students in the 1972 cohort and by 10.0 percentage points for the 1980 cohort. Loans as the only form of aid were not significant for all three cohorts.

Third-to-Fourth-Year Persistence

Social and academic background before college continued to exert a strong influence on second-to-third-year persistence, although there continued to be inconsistencies across cohorts in which variables exerted a significant influence (Exhibit 4). Being male was significant and negatively associated with third-to-fourth-year persistence for the 1972 cohort, but not the others; family income was significant and positive for the 1972 and 1980 cohorts; and being in an academic program in high school was significant and positive for the 1972 and 1982 cohorts. Postsecondary plans were again significant and positive for all three cohorts.

College characteristics and experience also continued to be important for third-to-fourth-year persistence, although there was some variation in which variables were significant. Attending full-time was significant and positive for the 1972 and 1982 cohorts; college grade point average was significant and positive for the 1980 and 1982 cohorts; and starting in a four-year college was significant and positive for the 1972 and 1982 cohorts.

All forms of student financial aid packages were significant and positively associated with third-to-fourth-year persistence for at least one of the three cohorts. Grants as the only form of aid were signifi-

EXHIBIT 4
Comparison Across Years on
Third-to-Fourth-Year Persistence

	1972 Cohort	Delta P Statistic 1980 Cohort	1982 Cohort
Background			
Black.....	0.019	-0.006	-0.030
Hispanic.....	-0.018	0.022	0.002
Male.....	-0.031*	-0.013	0.009
Family Income.....	0.008**	0.011**	0.008
Mother's Education.....	0.010	0.007	0.012
High School Experience			
Academic Program.....	0.031*	0.020	0.053**
Vocational Program.....	0.019	-0.014	-0.051
Aspirations			
Postsecondary Plans.....	0.028**	0.014**	0.037**
Ability/Achievement			
Test Score.....	0.005	-0.005	0.004
College Experience			
Full Time Year 3.....	0.071**	0.042**	0.035
Grades Year 2.....	0.006	0.016**	0.023**
Four-Year College Year 1.....	0.069**	0.006	0.058**
Private College Year 1.....	0.014	0.005	0.003
Student Aid Package			
Grant Only Year 3.....	0.049**	-0.019	0.049*
Loan Only Year 3.....	0.046	0.054**	0.053*
Grant and Loan Year 3.....	0.053*	0.006	0.080**
Grant and Work Year 3.....	-0.038**	0.062*	0.072
All Three Year 3.....	0.118**	0.035	0.095**
Baseline P.....	0.860	0.921	0.856
Model Chi Square.....	264.40**	138.32**	222.71**
Sample Size:.....	2281	2658	2686

* Significant at .05 level

** Significant at .01 level

Source: High School and Beyond Base Survey and Follow Ups, and National Longitudinal Study Base Survey and Follow Ups.

cant and positive for the 1972 and 1982 cohorts. Loans only were significant and positive for the 1980 and 1982 cohorts. Packages with grants and loans were significant and positive for the 1972 and 1982 cohorts. Grants and work were significant and positive for the 1980 cohort. All three types of aid were significant and positive for the 1972 and 1982 cohorts. Receiving all three types of aid increased the probability of persistence by 11.8 percentage points for the 1972 cohort and by 9.5 percentage points for the 1982 cohort.

Fourth-to-Fifth-Year Persistence

The fourth-to-fifth-year model examines the impact of financial aid received during the fourth year in college on degree completion or continuing enrollment in the fifth year after high school. Data were available to test the fourth-to-fifth-year model on the 1972 and 1980 cohorts (Exhibit 5).

Academic and social background before college continued to exert an influence, although there were inconsistencies across years in the variables that influenced fourth-to-fifth-year persistence or degree completion. Mother's education, being Hispanic, and being male were positive and significant for the 1972 cohort but not the 1980 cohort. Postsecondary plans were significant and positive for fourth-to-fifth-year persistence for both cohorts.

College characteristics and experience also influenced fourth-to-fifth-year persistence. Attending full-time during the fourth year after high school was positive and significant for the 1980 cohort; starting in a four-year college was positive and significant for both cohorts; and attending a private college was significant for both years, although it was positive for the 1972 cohort and negative for the 1980 cohort.

Student financial aid had very little influence in this final model. Loans as the only source of aid had a negative and significant influence on persistence from the fourth-to-fifth year or to degree completion for the 1980 cohort. Otherwise aid had no influence. The negative association between loans and fourth-to-fifth-year persistence merits further analysis. Students in the 1980 cohort who received loans as the only form of aid as fourth year students were (6.9 percentage points) less likely to graduate or return than students with no aid.

Conclusions

The primary purpose of this article is to address a set of questions about the evolving influence of student financial aid on persistence. However, the study findings are also pertinent to research on the persistence process. Therefore, the general conclusions about persistence are addressed first below; the research questions are explicitly considered.

Cross-Model Comparisons

The applications of the model demonstrate that social background and high school experience influence the persistence process. While there was substantial variability in which variables influenced persistence both across transitions and cohorts, variables related to these factors were usually significant. Postsecondary plans were significant in all nine applications of the model.

EXHIBIT 5

**Comparison Across Years on
Fourth to Fifth Year Persistence**

	Delta P Statistic	
	1972 Cohort	1980 Cohort
Background		
Black.....	0.065	-0.066
Hispanic	0.216**	0.008
Male.....	0.083**	0.010
Family Income	0.005	-0.005
Mother's Education.....	0.024*	0.015
High School Experience		
Academic Program.....	0.033	0.005
Vocational Program.....	-0.001	-0.071
Aspirations		
Postsecondary Plans.....	0.045**	0.050**
Ability/Achievement		
Test Score.....	0.034	-0.023
College Experience		
Full Time Year 4	-0.053	0.081**
Grades Year 2.....	0.008	0.009
Four-Year College Year 1.....	-0.074**	0.047*
Private College Year 1.....	-0.092**	-0.097**
Student Aid Package		
Grant Only Year 4	0.009	-0.006
Loan Only Year 4	-0.030	-0.069*
Grant and Loan Year 4	-0.006	-0.026
Grant and Work Year 4.....	0.028	0.044
All Three Year 4	-0.018	0.065
Baseline P.....	0.549	0.802
Model Chi Square	68.86**	108.15**
Sample Size:.....	1978	2332

* Significant at .05 level

** Significant at .01 level

Source: High School and Beyond Base Survey and Follow Ups, and National Longitudinal Study Base Survey and Follow Ups.

College experience consistently exerted an influence on year-to-year persistence, although there was some variation across years and cohorts. In most applications, attending full-time, college grades, and starting in a four-year college as a freshman were significant and positive. In contrast, the influence of starting in a private college was inconsistent. It was positive in some early transitions, but was negative in the fourth-to-fifth-year transition for one cohort.

Has the Influence of Different Forms of Aid Changed Over Time?

Perhaps the most important finding from the study is that the influence of loans on persistence has changed over time. Consistent with earlier research (e.g. Astin, 1975), this study found that loans had a negative association with first-to-second-year persistence in the early 1970s. In the early 1980s, the situation was reversed: loans were positively associated with persistence during the first two years of college. This suggests that a negative attitude toward loans, evident for college freshmen in the 1970s, was no longer evident in the early 1980s. However, loans were consistently and positively associated with year-to-year persistence for college students in the 1980s, except for fourth-to-fifth-year persistence for the class of 1980. This finding is important because Astin's (1975) conclusion that loans had a negative influence on persistence is still widely cited (e.g. Newman, 1985).

Does the Impact of Different Forms of Aid Change as Students Progress Through College?

With the exception of loans noted above, loans and grants had a positive influence on persistence during each of the first three years of college. Loans, as the only form of aid, were not positively associated with persistence during each transition (e.g. second-to-third-year persistence), but packages with loans were positive each year. However, for fourth-to-fifth-year persistence, no form of aid had a positive influence on persistence. As students approached the end of their college careers, the availability of aid had little apparent influence on decisions to return to and complete college.

Has the Increased Emphasis on Loans Influenced Changes in Persistence?

During this decade, federal loan programs, especially Stafford, have grown more rapidly than federal grant programs (e.g. Pell and SEOG), which has caused concern in the higher education community that federal student aid is somehow less effective than it was in the 1970s (e.g. Newman, 1985). The findings from this study do not fully resolve the question. However, it appears that loans had a positive association with year-to-year persistence in the 1980s.

Two findings support the argument that the effectiveness of aid in promoting persistence actually increased in the 1980s compared to the 1970s. First, the percentage of students receiving financial aid was more for postsecondary students in the first and second year in 1980 and 1982 cohorts compared to the 1972 cohort. After all, the class of 1972 entered college before the Pell program was implemented, and was through college before the extension of federal aid programs to middle-income students in the late 1970s. Second, the influence of all forms of aid on persistence was positive in the 1970s

and the 1980s. Thus it appears there were increased benefits from the expansion in student aid.

Further, there is some evidence to suggest that the increased emphasis on loans in the 1980s did not negatively influence year-to-year persistence. While the percentage of students in the 1980 and 1982 cohorts who received grants only dropped after their first year in college, this type of aid was significantly and positively associated with first-to-second-year persistence for students in these cohorts. Therefore, the prospect of receiving a loan the second year apparently did not dissuade these students from returning.

However, these gains are not without blemish, since loans apparently were negatively associated with fourth-to-fifth-year persistence and degree completion. Therefore, these findings provide ample reason to reflect on the course of federal student aid policy.

Implications

These conclusions have two implications for financial aid administrators (FAAs), as well as for federal policy on student financial aid. First, the finding that packages with loans as the only form of aid were negatively associated with fourth-year persistence to degree completion or fifth-year re-enrollment merits closer scrutiny. It is possible that students who are eligible for loans only are either more vulnerable to debt burden or more likely to find work rather than complete their degrees. Certainly these possibilities merit exploration by researchers, policy makers and FAAs.

Second, the overall, inescapable conclusion is that all forms of student aid have a positive influence on persistence. This is true in spite of shifts over time in the philosophies that underpin federal and state financial aid policy. Oscillations in emphasis from grants to loans, or from low-income to middle-income and back again, may be less important than the fact that financial aid is available. Certainly each shift in emphasis raises new issues that should be considered in the policy process. For example, the shift in the emphasis in state and federal grant programs from low- to middle-income students and back to low-income students raises concerns about the increasing or decreasing impact of aid for both income groups. As long as the total amount of dollars available for aid is limited, which no doubt will be true for the next decade, these debates should flourish. ♦

Footnotes

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² The primary exception to this approach is a paper by Carroll (1987) who used HSB-80 to examine the influence of financial aid on persistence to the completion of the school year they received aid. He found grants were consistently positive and significant, while loans were either neutral or negative if significant. He concluded that grants had a positive influence and loans were neutral.

³ For consistency, a 5-category measure was constructed, each with a higher level of attainment. It was coded 1 for less than high school graduation, 2 for high school graduation, 3 for some college, 4 for four-year degree, and 5 for graduate school.

⁴ Family income was a 10-category measure for NLS-72, a 7-category measure for HSB-80, and an 8-category measure for HSB-82. It was not possible to recode this variable into consistent categories.

⁵ For NLS-72, respondents were asked their grades for each of the first two years. The first year's grades were used in the first-to-second-year model, the second year's grades in the second-to-third-year model, and the second year's grades for the remainder of the models. HSB-80 and HSB-82 asked students for their grades for the first two years of college. This measure was used in each year-to-year model.

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