

The Impact of Florida's Bright Futures Scholarship Program on High School Performance and College Enrollment

Steve Harkreader, John Hughes, Melanie Hicks Tozzi, Gary Vanlandingham



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National Association of Student Financial Aid Administrators

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David L. Gruen, National Chair, 2008–2009
University of Wyoming

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Editor's Column: Facilitating Access

Portions of this column were presented by the writer in testimony before the Federal Advisory Committee on Financial Aid in September 2006.

The recently enacted Higher Education Opportunity Act (HEOA) offers the prospect of facilitating access to postsecondary education through streamlining the financial aid application process. This goal has been on the national agenda for many years. Indeed, a just-released report published by The College Board with funding from the Spencer Foundation and Lumina Foundation for Education, *Fulfilling the Commitment: Recommendations for Reforming Federal Student Aid*, reinforces the simplification theme.

When the Basic Educational Opportunity Grant (now Federal Pell Grant) program was established in 1972, access to postsecondary education took a great step forward. Students from the neediest backgrounds could qualify for grant aid—a “foundation to build on,” it was called—that could be taken to any eligible school in the country. Getting the grant aid, however, entailed completing a separate paper application developed by the federal government. From the late 1970s to the early 1990s “multiple data entry” eliminated the separate paper process for many students who completed national need analysis organizations’ forms. A change in federal law precluded the use of these forms for federal aid, and the Free Application for Federal Student Aid (FAFSA) was born.

Processes can sometimes be obstacles to achieving an objective. The problem was that the aid application process had evolved since the mid-1950s from a strategy for distributing institutional aid on the basis of need at selective colleges to a congressionally mandated procedure. The initial efforts were aimed at determining need among dependent students from middle-income families. Basically the same set of data is collected now as then, but the clientele served has expanded dramatically and become much more diverse.

Most federal student aid is targeted on students from low- and middle-income backgrounds. Only a small portion of Pell Grant recipients come from families with incomes of more than \$40,000. The federal campus-based programs are directed at needy students by statute. And, since 1987, the same need test has been applied to subsidies for Guaranteed Student Loans (now Stafford Loans).

Eligibility for these programs could be determined with far fewer than the several dozen family financial data elements now used. Excessive income and asset detail and copious instructions are an impediment to access, especially for grant funds directed to the neediest applicants. Recent changes in the FAFSA have made significant progress for students whose families have income from need-tested federal programs. As

envisaged in HEOA, similar strides can be achieved for students whose families are tax filers by drawing on Internal Revenue Service data. The U.S. Department of Education should move promptly on the initiative to reduce data requirements through use of information from IRS.

The federal eligibility formula needs to be examined and updated, too. Current law arithmetically links the expected family contribution with Pell Grant award amounts. By severing this connection, Congress could be liberated from budgetary marks that limit its ability to overhaul the formula. Pell Grants could simply be indexed to the federal formula results and not tied to essentially dollar-for-dollar adjustments in grants versus family contribution. In similar fashion, eligibility for campus-based programs and Stafford Loan subsidies could be separately indexed.

Obviously simplification has the potential for some redistribution of aid and benefits. This must be studied carefully. But the ultimate objective should be kept in mind: further facilitating access to postsecondary education through simplifying the process for all who seek federal student aid, especially federal grant aid.

In This Issue

This issue of NASFAA's *Journal* presents three articles relating to simplification. Steve Harkreader, John Hughes, Melanie Hick Tozzi, and Gary Vanlindingham report on a study of the Bright Futures program in Florida. Their findings indicate that this merit-based scholarship initiative has positively influenced students in college attendance and the quality of their secondary school educational curricular pursuits. Notably, they find that students from lower-income backgrounds and students of color made the greatest gains in these measures. Dr. Harkreader and Dr. Vanlindingham are in the Florida Legislature's Office of Program Policy Analysis and Government Accountability. Dr. Hughes is with the Agency for Workforce Innovation, and Dr. Tozzi is with the Independent Colleges and Universities of Florida. Their findings are especially important in continuing support for the Bright Futures program in their respective organizations.

Natala (Tally) Hart and Shoumi Mustafa investigate whether students borrow more because of the availability of loans, as opposed to borrowing out of absolute necessity. Their findings distinguish between students according to family income and net cost. Those from less affluent backgrounds borrowed more when annual loan maximums increased, but this was not because of availability of loans per se, but instead the replacing of more expensive loans with less costly ones. Middle-income students, on the other hand, seem less influenced by ready availability of loans, particularly in the context of their net cost of education. Ms. Hart is senior advisor in the Office of Economic Access at Ohio State University and a member of the *Journal's* editorial board. Dr. Mustafa is a research consultant at Noel-Levitz.

David Hardy and Stephen Katsinas are strong advocates of community colleges, and make a compelling case for support of community colleges in rural settings. They use IPEDS data to explore enrollments and financial aid funding of community colleges and compare the data for institutions in differing geographic settings. Hardy and Katsinas point to the average Pell Grants and Federal Supplemental Educational Opportunity Grant aid received by rural community college students as evidence of their serving populations as disadvantaged as community colleges in urban settings. Furthermore, they cite the added problem of commuting without the support of public transit systems as a particular concern for students in rural community colleges. Dr. Hardy is director of research and Dr. Katsinas is director of the Education Policy Center at the University of Alabama.

Joe Paul Case
Editor, October 2008

The Impact of Florida's Bright Futures Scholarship Program on High School Performance and College Enrollment

By Steve Harkreader, John Hughes, Melanie Hicks Tozzi, and Gary Vanlandingham

Steve Harkreader is Chief Analyst in the Office of Program Policy Analysis and Government Accountability of the Florida Legislature, Tallahassee. John Hughes is Program Manager with the Office of Early Learning at the Agency for Workforce Innovation, Tallahassee, Florida. Melanie Hicks Tozzi is Director of Research Programs, Independent Colleges & Universities of Florida, Tallahassee. Gary Vanlandingham is Director of the Office of Program Policy Analysis and Government Accountability, Florida Legislature, Tallahassee. All authors contributed equally to this article.

Florida's Bright Futures program is one of the nation's largest merit-based scholarship initiatives. This study used high school transcript and college enrollment data to examine the program's impact on high school course-taking patterns, school grades, college entrance exam scores, and rates of college attendance over time. The study indicates that the program has contributed to educational improvements by encouraging high school students to take academically challenging courses and attend college in the state, with low-income and minority students showing the largest improvements.

The ongoing debate on the relative benefits of merit- and need-based programs (Cornwell, Mustard, & Sridhar, 2006; DesJardins, Ahlburg, & McCall, 2002; Dynarski, 1999) reflects differences in approaches to addressing barriers to postsecondary instruction. There are at least two critical barriers to college degree attainment: cost and preparation. Students who cannot afford college obviously will not attend. However, academic preparation is also critical; students with sufficient financial support may fail to graduate if they struggle academically (Adelman, 1999). Need-based programs directly address the financial barrier and target populations underrepresented in higher education. Merit-based programs address financial access while emphasizing the role of student preparation and, if broad based, can potentially have widespread impact on academic preparation.

A key issue in this debate is whether merit-based financial aid provides equitable benefits to low-income and minority students. Opponents of need-based scholarships argue that merit-based programs have regressive effects because they are often funded through lottery programs that are disproportionately supported by low-income groups, whereas recipients disproportionately come from middle- and upper-class families (Glenn, 2003; Rubenstein & Scafidi, 2002). Some assert that need-based aid is better public policy because it specifically targets those with financial need and represents a more efficient and equitable use of limited tax dollars (Dynarski, 2000; Singell & Stone, 2002).

In contrast, researchers supporting merit-based aid note that such programs result in higher college enrollment regardless of race (Cornwell et al., 2006), improved student performance in Grades K-12, and increased student motivation to improve academic preparation (Betts, 1997; Henry & Rubenstein, 2002).

Florida's Bright Futures Scholarship Program

The importance of academic preparation for college is well supported by research. For example, Betts and Morell (1998) found that high school preparation significantly affected college grade point average (GPA) even when controlling for family and personal background characteristics. This is a critical point, as academic success, not simply enrollment in postsecondary education, is the ultimate goal.

Unfortunately, research has found that low-income and minority students are less likely to take college preparatory courses and that lower-income students have lower college completion rates (Mortensen, 2003; Stinebrickner & Stinebrickner, 2003). This suggests that academic preparation is at least as important as finances in assisting low-income and minority students achieve postsecondary success.

Merit-based aid programs hold the promise of motivating students to improve their academic preparation, which in turn results in higher grades and test scores (Betts, 1997; Bishop, 1996; Kuh & Hu, 1999; Levin & Tsang, 1987). A direct extension of this argument holds that the incentive created by such aid will reflect the potential marginal benefit students expect to receive and will be the greatest for low-income and minority students who otherwise may not be able to attend college.

Our objective was to test these assertions by examining whether Florida's merit-based scholarship program produced the intended benefits of increasing the percentage of high school students (particularly minority and low-income students) taking challenging college-preparatory courses, earning high GPAs and college entrance test scores, and subsequently enrolling in college.

Georgia inaugurated the nation's first broad-based merit scholarship program, Helping Outstanding Pupils Educationally (HOPE), in 1993. Funded through lottery proceeds, the HOPE program offers essentially free college tuition to any Georgia student who attains a specified GPA while in high school. At least 14 other states have adopted similar initiatives (Ness & Noland, 2007).

Florida's Bright Futures Scholarship Program was created in 1997, and provided \$346 million to over 149,000 students in fiscal year 2006–2007 (Office of Student Financial Assistance, Florida Department of Education, 2007). The Florida Legislature specifically intended the program to encourage better student preparation and performance. The program requires students to take a minimum of 15 credits from a list of approved college preparatory courses, including English, mathematics, natural science, social sciences, and foreign languages, and attain a minimum GPA. Students must also attain specified scores on the SAT or ACT, to provide an objective measure of student performance and to help address concerns regarding potential grade inflation (Betts, 1998; Henry & Rubenstein 2002; Kuh & Hu, 1999).

Table 1
Bright Futures Scholarship Awards

	GPA	Exam Scores	Award Level
Florida Academic Scholars	3.0	SAT composite 1270 ACT composite 28	100% of tuition, plus up to \$300 per semester for fees and \$300 per semester for college-related expenses
Florida Medallion Scholars	2.75	SAT composite 970 ACT composite 20	75% of tuition and up to \$300 per semester for fees; 100% of tuition if attending a community college seeking an associate degree

Note. Both scholarships require students to take 15 credits of college preparatory academic courses, including 4 English courses, 3 mathematics courses including Algebra 1 and above, 3 natural science courses including 2 with substantial lab work, 3 social sciences courses, and 2 foreign language courses in the same language.

The program makes two types of awards available to students seeking college degrees (see Table 1). The Florida Academic Scholars Award pays 100% tuition and fees plus \$300 per term for the highest performing high school students. The more common Medallion Scholars Award is awarded to students with slightly lower high school performance, and covers 75% tuition and fees.

Our assessment of Florida’s broad-based merit scholarship program aimed to answer three questions:

- (1) Does the Bright Futures program foster increases in the percentage of students taking college preparatory courses?
- (2) Did more students enroll in postsecondary education after Bright Futures was established (which should occur due to these students’ improved preparation and the availability of financial aid)?
- (3) Did students with the largest marginal benefits—low-income and minority students—show a disproportionate response to the program?

Data and Methodology

Our study examined students who graduated from Florida public high schools with a standard diploma between the 1996–1997 and 2000–2001 academic years ($N = 503,102$). We used Florida’s 1996–1997 high school graduates as a benchmark by which to assess the effects of the Bright Futures program on college preparation and attendance. Students graduating from high school in 1996–1997 were eligible for Bright Futures scholarships in fall 1997, but had not had the opportunity to respond to the program’s incentives to better prepare for college. By contrast, students in subsequent graduation cohorts had at least part of their high school careers to respond to the programs’ incentives, and the last 2 of our 5 graduation cohorts had their entire time in high school to respond. Our data included demographic characteristics, high school course selections, cumulative high school GPA, college entrance exam scores (SAT/ACT), Bright Futures

scholarship eligibility, and whether the student attended college in Florida (Florida Department of Education, 2003).

We first used multinomial regression to estimate the likelihood of high school graduates in each successive cohort being better prepared for college, with three categories of college preparation as our dependent variable. The group best prepared for college consisted of those who were eligible for Bright Futures meeting all program requirements for courses, grades, and SAT/ACT scores. The middle group consisted of graduates who took the necessary college preparatory courses but did not meet the program's minimum grade point requirements and/or SAT/ACT scores. The group with the least amount of preparation did not take the college preparatory courses required for Bright Futures scholarships. We regressed the degree of preparation for college, as defined by the three groups, on indicator variables for year of high school graduation, sex, race/ethnicity, limited English proficiency, and eligibility for free or reduced-price lunches. To test if minority and low-income high school graduates had a disproportionate increase in the likelihood of being better prepared for college in each successive year, we included terms interacting the graduation year with the independent variables defining these groups. The reference group for this analysis was English-proficient White females in the 1996–1997 graduation cohort who were not eligible for free or reduced priced lunch and did not take college preparatory courses that met Bright Futures eligibility requirements.

In our second analysis, we used logistic regression to estimate the likelihood of graduates in each successive cohort attending college in Florida. We regressed the dependent variable, attending college in Florida, on indicator variables for sex, race/ethnicity, limited English proficiency, eligibility for free or reduced priced lunches, high school GPA, and degree of college preparation. To aid in interpreting the results we “centered” the GPA, subtracting the population mean GPA from graduates' GPAs. We included two-way interaction terms for the degree of college preparation for with the independent variables used to define graduates as being from minority and low-income populations who traditionally are less likely to attend college. These interaction terms tested if the degree of preparing for college had more of an effect on the likelihood of these graduates attending college. The reference group for this analysis was English-proficient white females in the 1996–1997 graduation cohort who were not eligible for free or reduced priced lunch and who took college preparatory courses that met Bright Futures eligibility requirements but did not meet other eligibility requirements. Tables 2 and 3 describe the variables used in these analyses.

Results

Are Florida High School Graduates Better Prepared for College?
High school graduates in each successive cohort since the start of the Bright Futures program were better prepared for

college. As shown in Table 3, the percentage of graduates who met the program's eligibility requirements for college preparatory courses, grades, and college entrance exam scores steadily increased between 1997 and 2001, rising from 20.1% to 29.3%. The overall percentage taking the required college preparatory courses similarly grew from 54% to 67%. The multinomial regression results in Table 4 show similar results while controlling for changes in the demographic and economic characteristics of each year's graduates. The coefficients for the independent effect of graduation year on the likelihood of being eligible for Bright Futures increased for each successive year, rising from

Table 2
Variables Included in the Analyses

Category	Variable	Description
Degree of college preparation	Bright Futures	Coded 1 if eligible for Florida Academic Scholar or Florida Medallion Scholar. Coded 0 otherwise.
	College prep, no Bright Futures	Coded 1 if not eligible for Florida Academic Scholar or Florida Medallion Scholar but took the required college preparatory courses. Coded 0 otherwise.
	No college prep	Coded 1 if did not take the required college preparatory courses. Coded 0 otherwise.
Attended college in Florida	College	Coded 1 for attending a community college, state university, or private postsecondary institution in Florida. Coded 0 otherwise.
Race/ethnicity	Asian/Pacific	Coded 1 for Asian/Pacific Islander. Coded 0 otherwise.
	Black	Coded 1 for African Americans (non-Hispanic). Coded 0 otherwise.
	Hispanic	Coded 1 for Hispanics. Coded 0 otherwise.
	Native	Coded 1 for Native Americans. Coded 0 otherwise.
	Multiracial	Coded 1 for multiracial. Coded 0 otherwise.
	White	Coded 1 for White (non-Hispanic). Coded 0 otherwise.
Sex	Male	Coded 1 for males. Coded 0 for females.
Limited English proficiency	LEP	Coded 1 for limited English proficiency. Coded 0 otherwise.
Free or reduced-price lunch	FRL	Coded 1 if eligible for free or reduced-price lunch. Coded 0 otherwise.
High school grade point average	GPA	Subtracted mean population GPA from graduates' GPA.
Graduation year	Cohort	Four dichotomous variables coded 1 to represent year graduation from high school and 0 otherwise.

0.26 to 0.61. For students in each successive graduation cohort, holding other characteristics constant, the relative likelihood of meeting the Bright Futures college preparation requirements to not taking the required college preparatory courses increased gradually, from 1.21 to 1.72 ($\text{Exp}(B_{\text{intercept}} + B_{\text{year}})$). The independent effect of graduation year on the likelihood of taking college preparatory courses but not meeting Bright Futures eligibility requirements was not as strong. Only the coefficients for the 1999 and 2001 graduation years were statistically significant, indicating a small increase in relative likelihood of graduates who were not eligible for Bright Futures having taken a college preparatory curriculum compared to those who did not take college preparatory classes.

Are More High School Graduates Attending College?

Our analysis found that since the start of Bright Futures, the rate at which high school graduates attended college in Florida increased, from 44% for 1996–1997 graduates to 55% for 2000–2001 graduates (see Table 3). This increased percentage corresponds to the increased percentage of graduates meeting Bright Futures eligibility requirements, which we found in our

Table 3
Descriptive Statistics, Florida High School Graduates

Variable	1997	1998	1999	2000	2001
Eligible for Bright Futures (FAS or FMS)	20.1%	24.8%	26.6%	29.0%	29.3%
Took required college prep, not eligible for Bright Futures (FAS or FMS)	33.4%	31.6%	33.8%	33.7%	37.9%
Total – Took required college prep	53.5%	56.4%	60.4%	62.7%	67.2%
Did not take college prep	46.5%	43.6%	39.6%	37.3%	32.8%
Attended college in Florida	43.7%	47.7%	47.1%	53.4%	55.1%
Asian (Pacific Islander)	2.7%	2.8%	2.8%	2.9%	2.8%
Black (non-Hispanic)	21.4%	21.0%	20.7%	20.4%	20.4%
Hispanic	14.9%	14.6%	15.1%	15.2%	16.4%
American Indian or Alaskan Native	0.2%	0.2%	0.2%	0.2%	0.3%
Multiracial	0.1%	0.2%	0.3%	0.4%	0.5%
White	60.7%	61.2%	60.9%	60.9%	59.6%
Male	48.7%	47.6%	47.5%	47.1%	47.3%
Limited English proficiency	8.4%	9.3%	10.4%	11.1%	12.6%
Eligible for free or reduced price lunch	13.4%	15.5%	17.5%	16.8%	17.9%
High school GPA	2.7	2.8	2.8	2.8	2.9
GPA standard deviation	0.6	0.6	0.6	0.5	0.5
Average SAT score	1005.0	1000.1	996.7	995.6	994.0
SAT standard deviation	201.3	196.4	194.5	194.0	193.2
Percentage taking SAT	43.7%	45.1%	46.9%	48.8%	48.9%
Average ACT score	20.8	20.8	20.6	20.6	20.4
ACT standard deviation	4.8	4.7	4.6	4.6	4.6
Percentage taking ACT	33.6%	35.3%	35.7%	37.0%	37.3%
<i>N</i>	85,670	94,136	97,681	101,623	106,402

Note. FAS = Florida Academic Scholars, FMS = Florida Medallion Scholars, GPA = grade point average.

Table 4
Multinomial Regression Results for Degree of Preparing for College

Category	Bright Futures		College Prep, No Bright Futures	
	B	Exp(B)	B	Exp(B)
Intercept	-0.07*	0.93	0.02	1.0
Year = 2001	0.61*	1.83	0.16*	1.17
Year = 2000	0.50*	1.65	0.03	1.03
Year = 1999	0.42*	1.52	0.10*	1.11
Year = 1998	0.26*	1.30	0.01	1.01
Asian/Pacific Islander	1.10*	3.00	0.66*	1.93
Black	-1.56*	0.21	-0.22*	0.81
Hispanic	-0.70*	0.50	0.06*	1.06
Native American Indian or Alaskan Native	-0.05	0.95	-0.05	0.95
Multiracial	-0.11	0.89	0.19	1.20
Male	-0.55*	0.58	-0.30*	0.74
LEP	-1.68*	0.19	-1.06*	0.35
FRL	-1.09*	0.34	-0.54*	0.58
2001 × Asian/Pacific Islander	0.01	1.01	-0.04	0.96
2000 × Asian/Pacific Islander	0.06	1.07	0.00	1.00
1999 × Asian/Pacific Islander	-0.04	0.96	-0.06	0.95
1998 × Asian/Pacific Islander	0.04	1.04	-0.06	0.94
2001 × Black	0.38*	1.46	0.52*	1.67
2000 × Black	0.33*	1.39	0.39*	1.47
1999 × Black	0.15*	1.16	0.14*	1.15
1998 × Black	0.05	1.05	0.04	1.04
2001 × Hispanic	0.52*	1.68	0.43*	1.53
2000 × Hispanic	0.43*	1.54	0.29*	1.33
1999 × Hispanic	0.35*	1.42	0.15*	1.16
1998 × Hispanic	0.14*	1.15	-0.04	0.96
2001 × Native American Indian or Alaskan Native	0.04	1.04	0.09	1.10
2000 × Native American Indian or Alaskan Native	0.06	1.06	0.31	1.36
1999 × Native American Indian or Alaskan Native	-0.16	0.86	0.19	1.21
1998 × Native American Indian or Alaskan Native	-0.23	0.79	0.17	1.19
2001 × Multiracial	0.11	1.12	0.17	1.18
2000 × Multiracial	0.26	1.29	0.03	1.03
1999 × Multiracial	-0.02	0.98	0.06	1.06
1998 × Multiracial	0.16	1.17	-0.05	0.95
2001 × Male	-0.06*	0.94	-0.07*	0.93
2000 × Male	-0.07*	0.93	-0.06*	0.94
1999 × Male	-0.05	0.95	-0.04	0.96
1998 × Male	-0.03	0.97	-0.02	0.98
2001 × LEP	0.86*	2.36	1.15*	3.16
2000 × LEP	0.65*	1.91	0.80*	2.23
1999 × LEP	0.45*	1.57	0.46*	1.58
1998 × LEP	0.19*	1.21	0.15*	1.16
2001 × FRL	0.22*	1.24	0.32*	1.38
2000 × FRL	0.27*	1.31	0.28*	1.33
1999 × FRL	0.22*	1.25	0.21*	1.23
1998 × FRL	0.25*	1.28	0.15*	1.16

Note. LEP = limited English proficiency, FRL = free or reduced-price lunch. Reference category is 1997 no college prep, White, female, non-LEP, non-FRL.

previous analysis. As indicated by the logistic regression coefficient for Bright Futures eligibility in Table 5, graduates eligible for Bright Futures were more likely to attend college than those who took the Bright Futures college preparatory courses but did not meet other eligibility requirements (e.g., the GPA or SAT/ACT score requirements). The size of this “Bright Futures effect” varied across demographic and economic categories. As

Table 5
Logistic Regression Results
for Attending College in Florida

Category	B	Exp(B)
Intercept	0.08*	1.08
Year = 2001	0.27*	1.31
Year = 2000	0.23*	1.26
Year = 1999	0.00	1.00
Year = 1998	0.09*	1.09
Asian/Pacific Islander	0.20*	1.22
Black	-0.02	0.98
Hispanic	0.06*	1.06
Native American or Alaskan Native	-0.27*	0.76
Multiracial	-0.18*	0.84
Male	-0.19*	0.83
LEP	-0.09*	0.91
FRL	-0.30*	0.74
Bright Futures	1.09*	2.99
No College Prep	-0.82*	0.44
GPA	0.28*	1.32
Asian/Pacific × Bright Futures	-0.29*	0.75
Asian/Pacific × no college prep	0.40*	1.49
Black × Bright Futures	0.17*	1.19
Black × no college prep	0.01	1.01
Hispanic × Bright Futures	0.01	1.01
Hispanic × no college prep	0.07*	1.08
Native × Bright Futures	0.15	1.16
Native × no college prep	0.24	1.27
Multi × Bright Futures	0.14	1.15
Multi × no college prep	-0.09	0.91
Male × Bright Futures	0.01	1.01
Male × no college prep	-0.13*	0.88
LEP × Bright Futures	0.25*	1.29
LEP × no college prep	0.00	1.00
FRL × Bright Futures	0.11*	1.12
FRL × no college prep	0.00	1.00

Note. LEP = limited English proficiency, FRL = free or reduced-price lunch, GPA = grade point average. Reference category is 1997 White, female, average GPA, non-LEP, non-FRL, took college prep but was not eligible for Bright Futures.

* $p < .05$.

indicated by the coefficients for the interaction effects in Table 5, high school graduates who were eligible for Bright Futures and African American, limited English proficiency, or eligible for free or reduced-price lunches had an increased likelihood of attending college than those who were not eligible for Bright Futures.

In addition, our results indicate that, all else being equal, graduates in the 1998, 2000, and 2001 graduation cohorts were more likely to attend college. If Bright Futures provided the incentive for more high school students to prepare for college, which our model suggests, it also indirectly increased the likelihood of college attendance through increasing the proportion of students taking college preparatory courses.

A small part of the increase in college attendance was likely due to a higher percentage of college-bound graduates staying in Florida to receive the program's financial assistance. Data from the Board of Governors for the State University System of Florida (2007) showed that the overall percentage of Florida high school graduates who attended college out-of-state declined from 9.8% of 1997 graduates to 7.2% of 2001 graduates. This slight decline thus cannot account for the 11-percentage-point increase in attending college in Florida during this period.

Do Low-Income and Minority Students Benefit From Bright Futures?

Our results indicate that low-income and minority high school graduates benefited disproportionately from Bright Futures in terms of preparing for and attending college. We tested for this disproportional benefit with interaction terms in our college preparation and college attendance models (see Tables 4 and 5).

Our multinomial regression model for college preparation included interaction terms for cohort year with race/ethnicity, gender, limited English proficiency, and eligibility for free or reduced-price lunches. Most of the interaction term coefficients for Blacks, Hispanics, limited-English-proficiency graduates, and low-income graduates (eligible for free or reduced-price lunch) were statistically significant and increased for later graduation cohorts. Although graduates with these characteristics were less likely to be eligible for Bright Futures or take college preparatory courses, the likelihood of cohorts with these characteristics being eligible for Bright Futures or take college preparatory courses, for the most part, increased in each successive graduation cohort.

Bright Futures also had disproportionate positive effects for minority and low-income graduates in terms of attending college in Florida. Our logistic regression model for attending college created interaction terms for degree of preparing for college with race/ethnicity, gender limited English proficiency, and eligibility for free or reduced-price lunches. The interaction terms involving Bright Futures eligibility (e.g., Black non-Hispanic \times Bright Futures) for Asians/Pacific Islanders, Blacks, limited-

If Bright Futures provided the incentive for more high school students to prepare for college, ... it also indirectly increased the likelihood of college attendance through increasing the proportion of students taking college preparatory courses.

English-proficiency graduates, and low-income graduates were statistically significant and (with the exception of Asian/Pacific Islanders) increased the likelihood of attending college. Bright Futures-eligible graduates in these demographic groups had a greater likelihood of attending college compared to graduates who were not eligible for Bright Futures but took the required college preparatory courses. There was an increased likelihood for graduates in the Asian/Pacific Islander category to attend college out of state.

Despite these disproportionate increases, minority and low-income high school graduates continued to be underrepresented among graduates most prepared for college (see Table 6).

Table 6
Percentage of 2000–2001 High School Graduates
by Degree of College Preparation

Variable	Bright Futures	College Prep, No Bright Futures	No College Prep
Asian/Pacific Islander	49.3%	32.6%	18.1%
Black	11.3%	49.6%	39.1%
Hispanic	18.3%	49.8%	31.9%
Native American or Alaskan Native	34.9%	32.7%	32.4%
Multiracial	31.8%	39.5%	28.7%
White	37.5%	30.8%	31.7%
LEP	12.2%	52.7%	35.1%
Non-LEP	31.8%	35.7%	32.5%
FRL	12.4%	46.5%	41.2%
Non-FRL	33.0%	36.0%	31.0%

Note. LEP = limited English proficiency, FRL = free or reduced-price lunch.

Discussion

There are limitations to our analyses that should be recognized. Because we did not have data on several graduation cohorts prior to Bright Futures, we cannot establish that the increasing trends we found were not a continuation of trends related to other policies besides Bright Futures. Also, the statistical models did not fit the data exceptionally well. The college preparation model only predicted 45% of the cases correctly, and the college attendance model 68%. Demographic and income characteristics were statistically significant but were not strong predictors; this was especially the case for the college preparation model. We did not have information on parental education, college aspirations, academic support in the home, household income, or other environmental factors that influence college preparation

and attendance. Finally, some of the increase in Bright Futures eligibility may have been due to well-prepared high school students being better informed about the program over time.

Our research shows that the Bright Futures scholarship program has contributed to improvements in Florida's educational system by encouraging more students to improve college preparation and attend college in the state. Low-income and at-risk students have shown the largest improvement in academic preparation, although they were still less likely to be prepared for college and attend college (with the exception of Hispanic students).

Our findings answer many of the questions regarding the effects of merit-based scholarship programs and provide strong support for these programs as a means of addressing barriers to college. By providing a powerful financial incentive to students to take tough courses in order to qualify for scholarships, Bright Futures has helped improve academic performance for a broad range of Florida students as well as addressing financial barriers to college attendance. The program also appears to have spurred school districts to make challenging Bright Futures coursework available to all of their students, including those with low GPAs who often are otherwise guided away from college-track courses. Even if these students fail in the end to qualify for Bright Futures scholarship, more of them have continued on to college. As the greatest improvements are attained by low-income and minority students, the program produces important equity outcomes that answer in part the claimed advantages of need-based programs.

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What Determines the Amount Students Borrow? Revisiting the Crisis–Convenience Debate

By Natala K. Hart and Shoumi Mustafa

Natala Hart is a senior advisor in the Office of Economic Access, The Ohio State University, Columbus and Shoumi Mustafa is a research consultant at Noel-Levitz. Shoumi Mustafa was a postdoctoral researcher in the Office of Financial Aid at the Ohio State University when the paper was written. The authors would like to thank Lumina Foundation for a research grant that funded Mustafa's position.

Recent studies have questioned the wisdom in blaming college costs for the escalation of student loans. It would appear that less affluent students borrow large amounts because inexpensive subsidized loans are available. This study attempted to verify the claim, estimating a model of the amount of loan received by students as a function of net total costs after grants, scholarships, and tuition discounts, and of the availability of subsidized loans. Results showed large effects of net cost, especially for poor students, who used low-interest subsidized loans to replace more expensive loans. In contrast, middle-income students increased borrowing in response to increased availability of subsidized loans, although such responses were small relative to the impact of net costs.

Loans are the largest source of funding for postsecondary students in the United States. In 2005–2006, public and private lenders disbursed a combined total of \$76.8 billion in student loans, equivalent to half of the sum of federal, state, institutional, and private resources channeled to postsecondary students (The College Board, 2006). At the individual level, half of all 4-year college students borrow an average of \$6,200 a year (U.S. Department of Education, 2004).

Although the loan dependence of postsecondary education is commonly considered a crisis fueled by skyrocketing college costs and the inadequacy of need-based grants, the convenience accorded by the availability of inexpensive, subsidized federal loans is also held accountable. For example, King (1999) noted that students with a maximum family income of \$30,000 borrowed because inexpensive loans were available. Redd (2001) similarly reported an increase in borrowing between 1992–1993 and 1995–1996 by students with a family income in the \$40,000–\$60,000 range, although average costs apparently went down for them over the period. Average costs went down for those students because relative to previous years, they attended less expensive colleges in larger proportions between 1992–1993 and 1995–1996 (Redd, 2001).

These conclusions were drawn from observed associations between college costs and average borrowing over time, and from changes in the average amount of loan when policy shifts alter individual specific allocations of loan or allow previously ineligible students to receive subsidized loan. Although useful for illustrating broad trends, the unconditional associations do not control for the influence of time-varying or individual-specific

determinants of borrowing, and may not represent the effect on the individual borrower of either college costs or the availability of subsidized loans. In this study, we identify the impacts of college costs and of the availability of subsidized loans on the amount borrowed by individual students.

Research on the impact of student loans has followed two themes. The first focuses on how loans influence aspects of access to college, including enrollment, retention, and graduation (Dynarski, 2002; Moore, Studenmund, & Slobko, 1991; Reyes, 1995; Schwartz, 1985; St. John, Kirshstein, & Noel, 1991). The second considers the effect of debt on post-college consumption (Baum & O'Malley, 2003), progress to graduate studies (Monks, 2001), and career choices (Colquitt, Zeh, Killian, & Cultice, 1996; Minicozzi, 2005). An important but often overlooked consequence of borrowing that touches on both of the above aspects concerns income inequality. The impacts of net cost and the availability of subsidized loans, and whether those influences vary by family income levels, feature centrally in the resulting unequal consequences of student borrowing.

If net costs have a larger impact on borrowing among the poor because they have less access to alternative resources, an increase in total costs in the absence of offsetting grants will cause them to borrow larger amounts on the margin. For large enough increases in net costs, overall borrowing by the poor may exceed overall borrowing by more affluent students. In that case, the prospect of accumulating larger debt would yield smaller expected returns for the poor, dampening their college attendance incentives even if the gross returns of completing 4 years of college are the same for all.

In light of possible adverse effects of excessive loans on access to college for the poor, the knowledge of the impact of net cost on borrowing has a direct bearing on policy decisions about tuition and the allocation of need-based grants. The impact of loan availability, on the other hand, holds the key to predicting the ability of subsidized loans to reduce attendance costs for the target student body.

Method

The current study estimated a model of the amount of student loan borrowing by individual students as a function of their net cost of attendance (i.e., total costs minus the sum of grants, scholarships, and tuition discounts), the availability of subsidized loans, and individual and family characteristics. Our estimates identify the increase in the average amount borrowed when the net cost of attendance or the availability of subsidized loans increases by a given amount, holding everything else constant. In light of observed differences in borrowing patterns among students from different levels of family income, we posit a model using a pooled sample of students, regardless of family income, and alternatively, with subsamples comprising students from different income groups. Following Brouwer and Spaninks (1999),

we used these estimates to test whether borrowing behaviors of students from diverse economic strata are identical.

Sample

Our sample comprised first-year students from the freshman classes entering in 2000 through 2005 at the Columbus campus of the Ohio State University ($N = 38,398$). In order to establish the determinants of borrowing for students from different income groups, we needed complete records of students' family income, net cost of attendance, expected family contribution (EFC), and the amounts they borrowed. However, this type of information was available only if a student applied for or received financial aid. Between 25% and 30% of the students in each class do not apply for financial aid. After excluding those students, our working sample had a total of 28,059 students.

Our sample was remarkably representative of first-time freshman students attending public 4-year colleges in the nation. However, similar to national statistics, almost 40% the students in our sample did not borrow; that is, they had a value of zero for the amount of loan, the dependent variable in our model. With the dependent variable censored at zero, ordinary least squares (OLS) estimation methods yield inconstant estimates. Our econometric specification, therefore, follows a Type I Tobit model that takes into account the non-linearity of the regression function (in parameters) in the presence of censored dependent variables.

Because our sample students were from 6 different years between 2000 and 2005, we converted all nominal variables, including the amount of loan, into constant 1999 prices using the consumer price index from the Bureau of Labor Statistics.

We used family income levels to divide the sample into four groups. The first group comprised students with a maximum family income of \$32,000; the second group included students with income in the \$32,000–\$60,000 bracket; and students in the third group had a family income between \$60,000 and \$92,000. The most affluent group included students with family income in excess of \$92,000. The groups thus represented low-income, lower-middle-income, upper-middle-income, and high-income students, respectively. The cutoff values were borrowed from a recent report on the financing of postsecondary education (U.S. Department of Education, 2006).

We identified the effect of loan availability by exploiting an increase in the limit of Federal Perkins Loan at OSU. Perkins Loans are allocated to OSU students only if their EFC does not exceed \$5,000. In 2002, OSU increased annual limits of Perkins Loan by \$2,000. We obtained the difference in average (total) loan amounts between students who were Perkins eligible and ineligible, respectively, before and after the change. A comparison of the two differences, known as the difference-in-difference estimator, yields the effect of the increase in loan limits.

Our sample was remarkably representative of first-time freshman students attending public 4-year colleges in the nation.

Model and Estimation Framework

Loans are a means for students to bridge the gap between current costs and available resources. The amount of loan received by an individual, therefore, depends on the cost of attendance, available resources, and the cost of borrowing represented by the availability of inexpensive loans. There may also be variations in the amount of loan among individuals because of differences in preferences and expectations of post-college lifetime earnings. We denote the actual amount of loan for individual i as y_i^* and express it as a linear function of observed determinants of borrowing, included in the vector x :

$$y_i^* = x_i\beta + u_i \text{ for } i = 1, 2, \dots, n. \quad (1)$$

β is the coefficient (vector) of x , reflecting how the determinants influence borrowing; u_i represents the composite influence of determinants not included in x .

When an individual borrows a strictly positive amount, it is a reflection that current costs exceed available resources. However, if available resources actually exceed or equal current costs, an individual has savings (negative borrowing) worth the difference. Although the extent of such savings can be quite heterogeneous, observed data on borrowing inform only that the individual in question does not receive loans (i.e., borrows zero amounts). As a result, the observed amount of loan, the dependent variable in our model, becomes censored at zero.

Denoting y_i as the observed amount of loan, we express the censored nature of the data as follows:

$$y_i = y_i^* \text{ if } y_i^* > 0 \quad (2)$$

$$y_i = 0 \text{ if } y_i^* \leq 0$$

Assuming $u_i \sim N(0, \sigma^2)$, Equations 1 and 2 constitute a censored (at zero) normal regression model, commonly known as the Type I Tobit model. The model is estimated using full information maximum likelihood.

We define *amount of loan* as the sum of federal, state, institutional and commercial student loans received by students. Although OSU provides detailed accounts of loans received by students from the first three sources, official records include commercial loans only if they are reported to the office of student financial aid.

Variables in x include those representing net cost of attendance, the availability of subsidized loan, family wealth, and additional individual and family characteristics likely to capture the influence of preference and expectations of post-college lifetime earnings. We define *net cost* as the difference between total cost of attendance and the sum of grants, scholarships, and tuition discounts. This is the amount that students must combine using their own resources, paid employment, and borrowing.

Poorer students command less of their own resources, and we expected the coefficient of net cost to be larger among them.

Our measure of *loan availability*, based on a recent change in the allocation of federally funded campus-based subsidized Perkins Loan at OSU, is free from the influence of variations in net costs. The federal government requires Perkins Loan allocation to be based entirely on the basis of EFC but leaves the specific cutoff value and the amounts to the discretion of individual institutions. According to the guidelines of the Office of Student Financial Aid at OSU, Perkins Loans are available to students who have a maximum EFC of \$5,000. In 2002, the limit of Perkins Loan at OSU was increased by \$2,000. In our model, we included one dummy variable to indicate the period (either before or after increase), another dummy variable to indicate eligibility (whether $EFC \leq \$5,000$), and another dummy variable—an interaction between the first two—to capture the impact of the exogenous expansion of loan limits. The coefficient of the interaction dummy variable is essentially a difference-in-difference estimator, which identifies the impact of loan limit expansion for all students who satisfied eligibility conditions after the change.

Among family characteristics, we included indicators of family wealth, including parental education. We use two dummy variables: one to indicate whether both parents of the student had 4-year college degrees, and another to indicate if one parent had a 4-year college degree. Students for whom neither parent had a 4-year college degree were the excluded category. We included annual family income in the model as well.

Among individual characteristics, we included students' gender, race, status of financial dependence, and whether the student attended OSU as an in-state or out-of-state student. Gender was indicated with a dummy variable for male students; a set of dummy variables also indicated Black, Asian, Hispanic, and Native American students, with White students used as the excluded race category.

We used the age of the student as an explanatory variable on the ground that older students would be inclined to borrow smaller amounts because they had a small number of active years in the post-college labor market. We also included students' ACT scores as a measure of academic ability. If expectations of post-college earnings motivate students to borrow larger amounts, then ACT scores should increase borrowing due to positive correlations between academic ability and post-college earnings.

Results

Summary Statistics and Loan Amounts

Table 1 reports summary statistics on loan, net cost, expected family contributions, and individual and family characteristics. As seen in Column 1, OSU freshman students are mostly from educated and middle-income families. Average family income

is \$73,913, and at least one parent has a 4-year college degree for almost 70% of the sample. The sample is split almost evenly between male and female students, has a heavy concentration of Ohio residents, and is largely financially dependent (88.0% of the

Table 1
Summary Statistics of Borrowing, and
Individual and Family Characteristics

	All Students Mean (SD)	Income			
		≤\$32K Mean (SD)	\$32K-\$60K Mean (SD)	\$60K-\$92K Mean (SD)	>\$92K Mean (SD)
Proportion of borrowers	0.583	0.649	0.702	0.589	0.419
Loan amount (in constant 1999 dollars)	1,734 (1,864)	2,344 (2,116)	2,375 (2,116)	1,493 (1,470)	992 (1,237)
Loan amount if loan > 0	2,977 (1,505)	3,611 (1,888)	3,383 (1,722)	2,535 (1,014)	2,370 (628)
Net cost (in constant 1999 dollars)	11,785 (4,680)	8,098 (4,716)	11,437 (4,226)	12,572 (4,001)	13,649 (4,346)
EFC	14,399 (16,544)	1,519 (4,391)	5,919 (5,940)	13,840 (8,825)	31,451 (20,304)
Family & Individual Characteristics					
Family income (in constant 1999 dollars)	73,913 (51,832)	19,861 (8,605)	46,548 (8,137)	75,122 (9,066)	133,764 (59,367)
At least one parent a 4-year college graduate	0.694	0.449	0.599	0.741	0.892
Both parents 4-year college graduates	0.403	0.182	0.286	0.422	0.636
Only one parent a 4-year college graduate	0.291	0.267	0.313	0.319	0.256
Student age (years)	18.590 (0.580)	18.669 (0.972)	18.582 (0.579)	18.576 (0.396)	18.564 (0.367)
ACT Score (out of possible 36)	24.892 (3.907)	22.952 (4.200)	24.543 (3.817)	25.315 (3.642)	26.021 (3.542)
Dependent	0.989	0.943	0.998	0.999	1.000
Male	0.484	0.438	0.469	0.506	0.504
White	0.784	0.553	0.769	0.853	0.873
Black	0.115	0.300	0.126	0.063	0.041
Asian	0.056	0.083	0.058	0.046	0.046
Hispanic	0.030	0.046	0.031	0.026	0.024
Ohio Resident	0.880	0.892	0.911	0.896	0.824
N	28,059	4,938 (17.6%)	7,233 (25.8%)	8,289 (29.5%)	7,599 (27.1%)

Note. EFC = expected family contribution.

sample students are Ohio residents, and 99.0% are financially dependent on their parents). The proportion of White, Black, Asian, and Hispanic students was 78.5%, 11.5%, 5.5% and 3.0%, respectively.

The average family income of \$73,913 in our sample is very similar to the median family income of \$72,126 of two-earner families in the nation; in current dollars, the median family income of two-earner families was \$76,814 in 2003–2004 (U.S. Census Bureau, 2008). Similarly, the racial makeup of our sample corresponds to the national proportion of White students (78.5%), for example, is almost identical to the 78.6% proportion of White students observed in samples of first-time 4-year college entrants in the nation (Sax, 1999).

The average OSU student at the time of our study faced net cost of \$11,752, which again is very similar to the average net cost of attendance for students attending doctoral degree granting public four-year colleges in the nation. For example, in 2003–2004, full-time full-year students at doctoral degree granting public 4-year colleges faced average net costs of \$12,207 (U.S. Department of Education, 2006).

Almost three fifths of the students in our study received loans, with an average loan amount for borrowers of \$2,977. In contrast, in 1999–2000, 49.7% of full-time, full-year 4-year college students in the nation received loans, borrowing \$5,700 on average (U.S. Department of Education, 2004).

Average loan amounts are smaller in our sample for the following reasons. First, we included only freshman students in our sample. Students in their sophomore, junior, and senior years may borrow larger amounts. Second, we considered the actual amount of borrowing by students and not the amount offered to them. Although we do not have information on which measure of loans is used in U.S. Department of Education reports, there are considerable differences between the two measures in our sample.

When these considerations are taken into account, the average loan amount in our sample increases considerably and becomes close to the national average. For example, between 2000 and 2005, the average loan borrowed by OSU students in their sophomore, junior, senior, and higher years were \$3,296, \$4,268, \$4,659, and \$4,287, respectively. If one measures loans by the amounts offered to students, the average for OSU students in their sophomore, junior, senior and higher years would be \$3,678, \$4,609, \$5,107 and \$5,039, respectively. We suspect that average loan amounts for OSU students could be even larger if one includes a comprehensive account of commercial student loans.

The average EFC for low-income students in our sample was \$1,520, implying that a large number of them were eligible for varying amounts of Pell Grant. In contrast, the average EFC for students from lower-middle-income families was almost

\$6,000, and a large number of them were ineligible for Pell Grants. As shown in Table 1 (Columns 2–5), net cost of attendance increases along with income, reflecting the reduced eligibility for grants as family income rises.

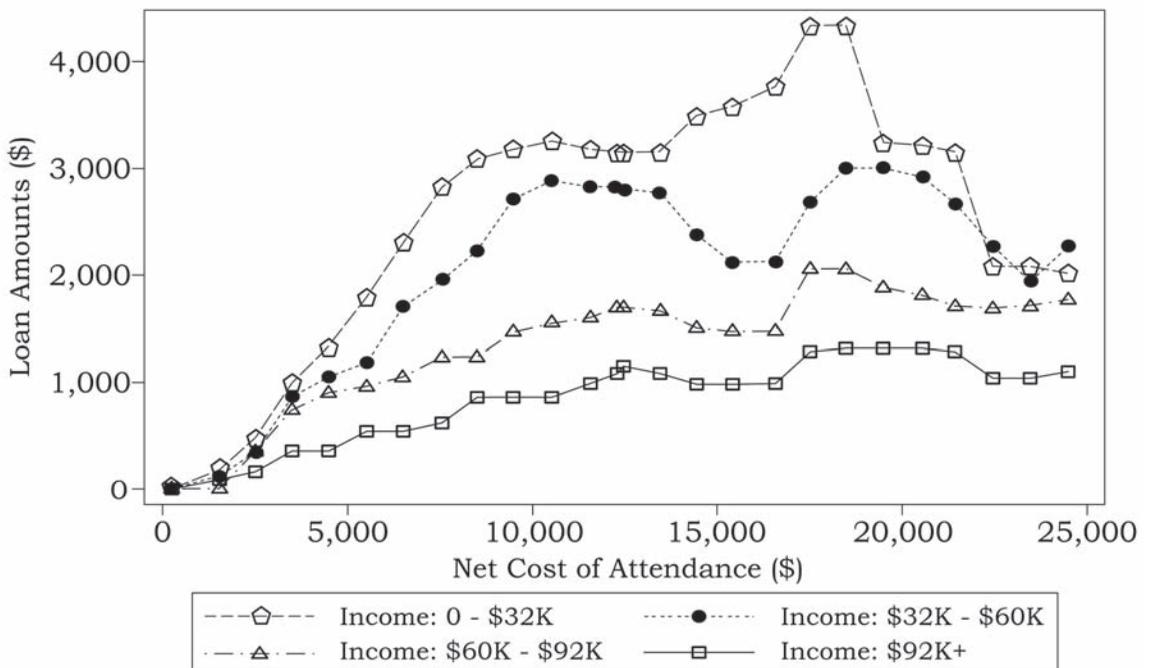
Because net cost rises with family income, we considered the net cost-borrowing association separately for students from each of the income groups, partially abstracting from the influence of family income. Figure 1 plots average loan amounts against net cost of attendance separately for the four income groups, showing mostly positive associations. The dip in the graph for the low-income students for very large values of net cost is due to the presence of too few observations. The associations follow nonlinear patterns, and are the strongest for initial increases in net cost. The figure also illustrates that the amount of loan received at a given value of net cost is largest for the poorest students, and declines with the level of family income.

Impact of Availability of Loans on Student Borrowing

The Ohio State University allocates Perkins Loans to students only if their EFC does not exceed \$5,000. In 2002, OSU increased the limit of Perkins Loans by \$2,000, but did not change the eligibility criteria.

To assess the influence of the increase in loan limits, we plotted the average amount of loan against EFC, before and

Figure 1
Net Cost of Attendance and Average Loan Amount, Freshman Classes 2000–2005
at the Ohio State University



after the limit expansion (see Figure 2). The vertical line at EFC equal to \$5,000 denotes the cut-off value of Perkins Loan. If the increase in the availability of Perkins Loan influenced overall loan amounts, the graph for the post-2002 period (after limit expansion) should be above the graph for the pre-2002 period (after limit expansion) for Perkins-eligible students (i.e., to the left of the vertical line at EFC equal to \$5,000). Moreover, because students with EFCs in excess of \$5,000 were ineligible for Perkins Loan in both periods, the difference between the two graphs should drop sharply to the right of the vertical line.

Figure 2
Average Amounts of Total Loan Received
Before and After Limit Expansion: All Students

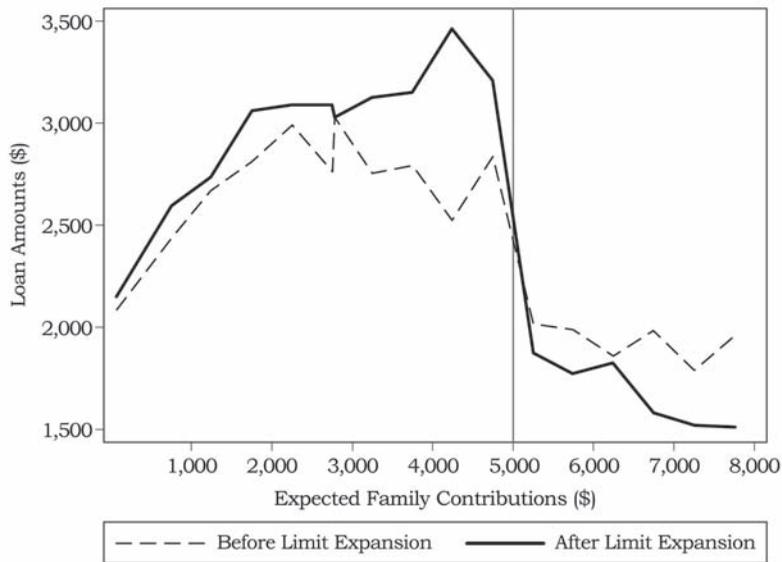


Figure 2 shows that post-2002 average loan amounts exceeded pre-2002 average loan amounts for EFC values less than \$5,000. There is also a sharp decline in the difference between the two lines to the right of the vertical line at EFC equal to \$5,000, suggesting positive effects of the loan limit expansion.

Figure 3 presents evidence on the impact of increased loan limits for low-income students, dispelling any notion that average borrowing by those students underwent a consistent change after the increase in Perkins Loan limits. The difference between the pre-2002 and the post-2002 graphs is not consistent either to the left or to the right of the vertical line at EFC equal to \$5,000.

Figure 4, in which we plot average loan amounts against EFC for lower-middle-income students, suggests positive impacts of the increase in the limit of Perkins Loan. The post-2002 average loan amounts are consistently larger than the pre-2002

Figure 3
Average Amounts of Total Loan Received
Before and After Limit Expansion:
Students With Income \leq \$32,000

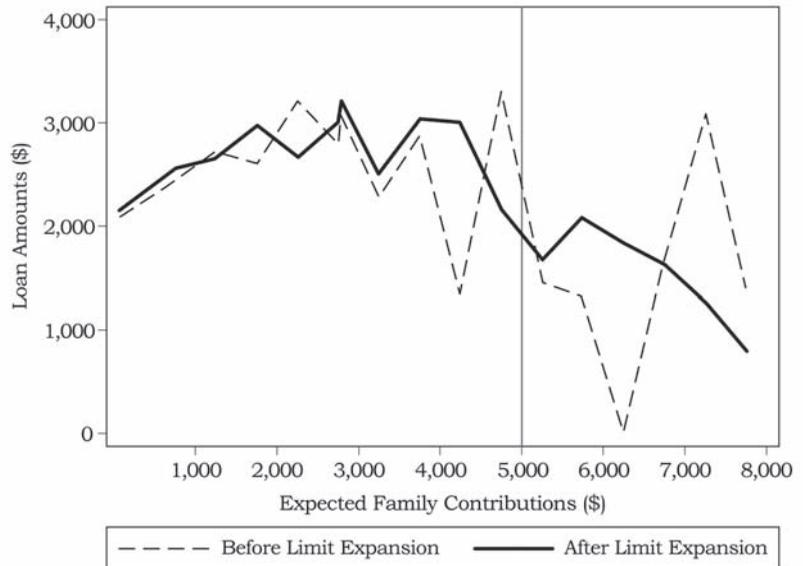
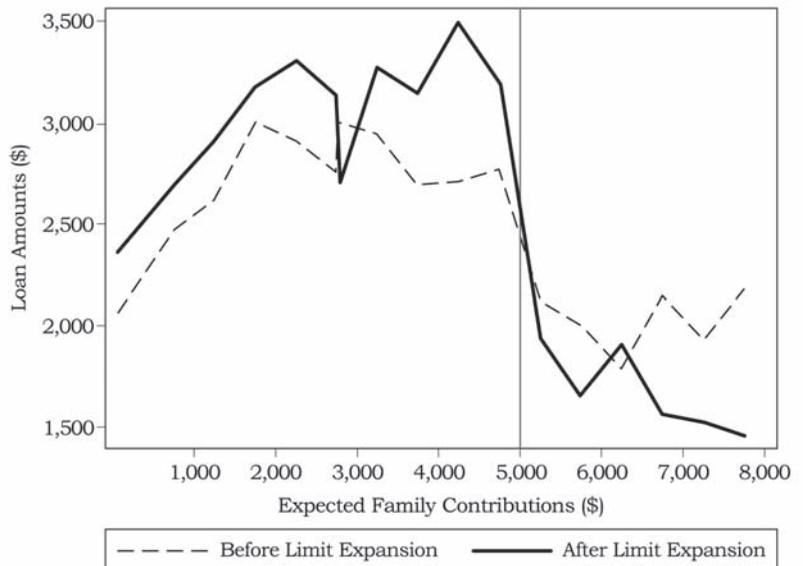


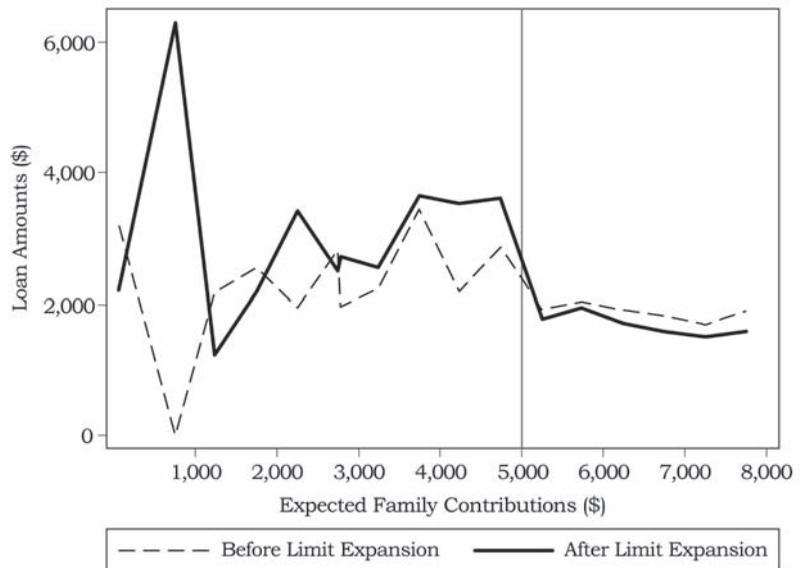
Figure 4
Average Amounts of Total Loan Received
Before and After Limit Expansion:
Students With Income \$32,000–\$60,000



average loan amounts to the left of the vertical line at EFC equal to \$5,000.

In a similar vein, Figure 5 suggests positive effects for Perkins Loan limit expansion on overall borrowing for upper-middle-income students; the average loan amount after the limit expansion generally stays above pre-limit expansion average loan amount to the left of the vertical line at EFC equal to \$5,000, with the difference disappearing abruptly to the right of the vertical line.

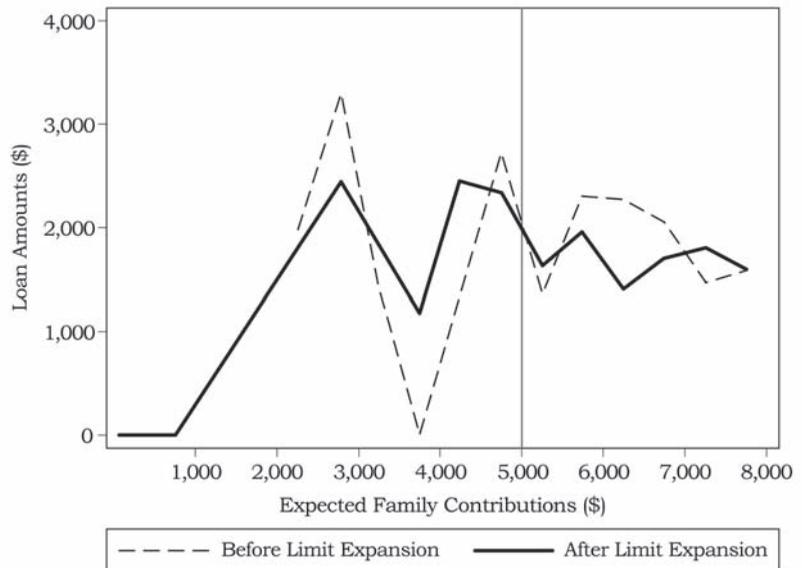
Figure 5
Average Amounts of Total Loan Received
Before and After Limit Expansion:
Students With Income \$60,000–\$92,000



Finally, Figure 6 shows the lack of consistent patterns in the difference between pre-2002 and post-2002 average loan amount for students from high-income families. This suggests that overall borrowing by those students did not respond to the increased availability of subsidized loans. It should be noted that there were only a few students from the group who satisfied the Perkins Loan eligibility criterion ($EFC \leq \$5,000$). The apparent lack of an effect of the increase in loan limit for those students could be an artifact of too few relevant observations.

Differences in Borrowing Behavior: Estimates from Tobit Model
 Table 2 reports estimated coefficients and standard errors from the Tobit model. Column 1 contains the estimates for the entire sample; Columns 2–5 present estimates for the low-income, lower-middle-income, upper-middle-income, and high-income students, respectively. As seen in Column 1, net cost of attendance

Figure 6
Average Amounts of Total Loan Received
Before and After Limit Expansion:
Students With Income > \$92,000



had a positive, statistically significant effect. Our model includes a fourth-order polynomial in net cost to accommodate the non-linear nature of the association. The higher order variables are all statistically significant for the entire sample. (See Appendix A for the full set of estimates.) The increase in the availability of subsidized Perkins Loan also caused loan amounts to increase, as shown by the positive, statistically significant coefficient for the interaction dummy “Perkins Eligible × After Limit Expansion.” Column 1 also shows statistically significant effects of indicators of race and parental education.

Following Brouwer and Spaninks (1999), we tested a series of hypotheses on the pooling of samples of students from different income groups. The results, presented in Appendix B, reject the hypothesis that borrowing behaviors of students from low-income, lower-middle-income, upper-middle-income, and high-income families are identical.

The differences in the borrowing behavior across family income groups are evident in the estimates reported in Table 2, Columns 2–5. Although net cost had statistically significant, positive coefficients for all four groups, the magnitude of the coefficients declined as family income increased. Focusing on the role of the increase in the availability of subsidized loans, we found positive coefficients for the interaction dummy variable “Perkins Eligible × After Limit Expansion” only for students

Table 2
Estimates of the Tobit Model of Loan Amounts

	Income				
	All Students Coefficient (SE)	≤ \$32K Coefficient (SE)	\$32K-\$60K Coefficient (SE)	\$60K-\$92K Coefficient (SE)	> \$92K Coefficient (SE)
Net cost (constant \$1,000)	1,670.40*** (64.89)	1,791.18*** (119.95)	1,562.22*** (155.78)	969.60*** (142.13)	717.81*** (169.04)
Perkins Loan eligible	1,763.963*** (63.710)	2,932.162*** (348.069)	1,761.344*** (108.934)	1,762.191*** (160.996)	1,171.764 (1,154.032)
After limit expansion	-322.112*** (45.420)	175.484 (406.962)	-444.053*** (103.319)	-270.798*** (61.515)	-365.548*** (82.526)
Perkins eligible × after limit expansion	232.197*** (69.482)	-452.539 (414.580)	602.348*** (127.600)	607.021*** (214.239)	-290.833 (1,457.494)
Male	21.040 (31.877)	-72.012 (83.076)	57.357 (61.042)	-65.757 (50.761)	112.322* (65.656)
Financially dependent on parents	-155.449 (163.216)	-710.799*** (206.141)	411.279 (907.005)	2,466.038 (1,715.180)	
Age	-571.828*** (183.154)	-393.688 (323.267)	-576.729* (321.469)	-2,911.553* (1,755.341)	-9,304.606** (4,428.469)
Age2	15.954*** (4.265)	12.661* (7.217)	16.316** (7.517)	79.101* (46.546)	248.555** (118.902)
Black	284.779*** (59.854)	-192.364 (118.595)	510.338*** (107.186)	723.288*** (111.681)	714.300*** (167.009)
Asian	-780.131*** (76.032)	-1,136.803*** (169.519)	-990.779*** (140.101)	-551.035*** (131.683)	-317.412* (169.453)
Hispanic	113.539 (94.385)	-281.771 (206.916)	-178.677 (179.888)	486.459*** (160.100)	108.037 (216.048)
ACT score	173.219*** (40.354)	79.689 (83.728)	122.410 (77.858)	169.319** (76.354)	-67.541 (109.955)
ACT2	-4.577*** (0.817)	-2.477 (1.807)	-3.251** (1.589)	-4.461*** (1.518)	-0.576 (2.137)
Ohio resident	-736.347*** (72.955)	-1,714.079*** (182.794)	-737.616*** (153.330)	-576.480*** (125.640)	-432.532*** (139.639)
Income (constant \$1,000)	-11.878*** (0.724)	-5.143 (19.917)	18.788 (46.812)	-97.008* (50.277)	-12.528*** (1.384)
Income2 (constant \$1 million)	0.011*** (0.001)	0.407 (0.543)	-0.138 (0.505)	0.538 (0.332)	0.013*** (0.002)
Both parents 4-year college graduates	-523.510*** (40.556)	-325.308*** (111.592)	-438.334*** (74.257)	-578.506*** (63.242)	-616.011*** (102.902)
One parent 4-year college graduate	-156.944*** (40.321)	-19.347 (94.841)	-206.740*** (70.481)	-181.634*** (64.664)	-300.340*** (112.077)
Log likelihood	-158,768.68	-30,936.515	-48,526.687	-46,933.525	-32,031.748
N	28,059	4,938	7,233	8,289	7,599

* $p < .10$. ** $p < .05$. *** $p < .01$.

from lower-middle-income and upper-middle-income families. Similar to findings with respect to net cost and loan availabilities, the coefficients of variables including parental education, states of residence, status of financial dependence, race, age, and academic ability differed in value and statistical significance across income groups.

In order to contrast the effects of the determinants of borrowing—against each other and across income groups—we report corresponding marginal effects. The marginal effect of a determinant shows how the average value of loan changes for a given change in the variable, holding everything else constant. There are two different sample average values of loans: the unconditional average value that represents borrowing by all students in the sample, including those who did not borrow; and the conditional (on borrowing) average value that represents the average amount of loan only for those who borrowed strictly positive amounts.

Following McDonald and Moffit (1980), we obtained the marginal effect of a determinant on the unconditional average value of loan as a (weighted) sum of its marginal effect on the conditional average value of loans, and the marginal effect on the probability of borrowing. Tables 3 and 4 present the marginal effects on the conditional average value of loan and the probability of borrowing, respectively.

Table 3 Column 1 reports the marginal effects for the entire sample; Columns 2–5 report the marginal effects for low-income, lower-middle-income, upper-middle-income, and high-income students, respectively. Column 1 shows that a \$1,000 increase in net cost increases average loan amounts by \$748 for the borrowers in our sample. (Our Tobit specification includes a fourth-order polynomial in net cost, and second-order polynomials in age, ACT scores, and family income. The marginal effects of those variables are calculated by summing the estimated marginal effects of the relevant terms.) Columns 2–5 show that the same increase in net cost affected average loan amounts by almost identical increases of \$897 and \$871 for borrowers from low-income and lower-middle-income groups, respectively, and by \$442 and \$241 for borrowers from upper-middle income and high-income families, respectively. In contrast to the effect of net cost, the \$2,000 increase in loan availability affected students' borrowing by an increase of only \$106. Moreover, only students from lower-middle and higher-middle-income families increase their loans in response to loan limits increases—by \$344 and \$301, respectively.

Parental education has a large bearing on amount of loan. Table 3 Column 1 shows that if both parents of a student were at least 4-year college graduates, the student borrowed \$233 less than children of parents who did not have a 4-year college degree. Columns 2–5 illustrate that the children from households with two 4-year college graduate parents borrowed

Table 3
Marginal Effects of Determinants on Expected Value of Loans for Borrowers

	Income				
	All Students	≤ \$32K	\$32K–\$60K	\$60K–\$92K	> \$92K
Net cost (\$1,000 increase in constant price)	748***	897***	871***	442***	241***
Eligible for Perkins Loan	858***	1,121***	969***	995***	459
After Perkins Loan limit expansion	-147***	88	-253***	-126***	-126***
Perkins eligible × after limit expansion	106***	-231	344***	301***	-95
Male	9	-36	32	-30	38*
Dependent	-71	-383	221	814	
Age (1-year increase)	-251***	-192	-314*	-1,300*	-3,065*
Black (relative to White)	132***	-96*	298***	362***	263***
Asian (relative to White)	-324***	-519***	-505***	-236***	-104*
Hispanic (relative to White)	52	-138	-98	238	37
ACT score (1-point increase)	78***	40	69**	78**	-23
Resident of Ohio	-355***	-993***	-441***	-281***	-152***
Income (\$1,000 increase in constant price)	-5***	-2	10	-44*	-4***
Both parents have 4-year college degrees (relative to no college)	-233	-161***	-241***	-262***	-213***
One parent has a 4-year college degree (relative to no college)	-70	-10	-115***	-83***	-100***

* $p < .10$. ** $p < .05$. *** $p < .01$.

smaller amounts in each of the subsamples as well. Interestingly, the impact of parental education generally increased (in magnitude) with family income levels. We suspect that “4-year college degrees” include larger proportions of postgraduate degrees among more affluent families.

Black and Asian students from the low-income group borrowed smaller amounts relative to White students from the same group (see Table 3). For example, relative to Whites, borrowers among Black, Hispanic, and Asian students borrowed \$96, \$519, and \$138 less, respectively. Anecdotal evidence suggests a similar apparent aversion to borrowing among low-income Hispanics in California (Vera-Orta, 2007). At higher levels of income and for the sample as a whole, students of Black and Hispanic origin, however, borrowed larger amounts relative to Whites.

We find large marginal effects of students’ residence status. In-state students borrowed \$355 less than out-of-state students on average, possibly because proximity to a parent’s home makes available in-kind family contributions. The Congressional Budget Office (2004) estimates that living at home allowed in-state students average savings worth \$3,419 in 1999–2000.

Table 4
Marginal Effects of Determinants on Probability of Borrowing

	Income				
	All Students	≤ \$32K	\$32K–\$60K	\$60K–\$92K	> \$92K
Net cost (\$1,000 increase in constant price)	0.259***	0.233***	0.193***	0.170***	0.116***
Eligible for Perkins Loan	0.256***	0.428***	0.223***	0.246***	0.189
After Perkins Loan limit expansion	-0.050***	0.023	-0.054***	-0.047***	-0.060***
Perkins eligible × after limit expansion	0.036***	-0.059	0.073***	0.100***	-0.047
Male	0.003	-0.009	0.007	-0.012	0.018*
Dependent	-0.024	-0.086	0.054	0.437	
Age (1-year increase)	-0.087	-0.050	-0.070*	-0.499*	-1.476*
Black (relative to White)	0.044***	-0.025	0.059***	0.118***	0.117***
Asian (relative to White)	-0.127***	-0.162***	-0.139***	-0.101***	-0.051*
Hispanic (relative to White)	-0.127***	-0.162***	-0.139***	-0.101***	-0.051*
ACT score (1-point increase)	0.027**	0.010	0.015**	0.030**	-0.011
Resident of Ohio	-0.109***	-0.187***	-0.082***	-0.096***	-0.071***
Income (\$1,000 increase in constant price)	-0.002***	-0.001	0.002	-0.017*	-0.002***
Both parents have 4-year college degrees (relative to no college)	-0.082***	-0.044***	-0.056***	-0.102***	-0.100***
One parent has a 4-year college degree (relative to no college)	-0.082***	-0.044***	-0.056***	-0.102***	-0.100***

* $p < .10$. ** $p < .05$. *** $p < .01$.

Although our estimates account for lower residence costs of students living at home, we do not account for family contributions in important categories such as food and transportation. Focusing on the characteristics of students, we found larger borrowing by students with higher ACT scores (the proxy variable for expected post-college earnings).

Finally, we found that a 1-year increase in students' age at time of enrollment at OSU reduced borrowing by \$251. It is possible that older students borrow less because they expect smaller post-college earnings, or have greater access to alternative resources not reflected in student aid packages. The impact of age appears to rise with family income; a 1-year increase in age reduced borrowing by \$314, \$1,300, and \$3,065 among lower-middle-income, upper-middle-income, and high-income students, respectively.

A \$1,000 increase in net cost increased the probability of borrowing by 25.9% for the entire sample, and by 23.3%, 19.3%, 17.0%, and 11.6% for students from low-income, lower-middle-income, upper-middle-income, and high-income families,

respectively (see Table 4). A \$2,000 increase in loan availability, by contrast, increased borrowing probabilities by only 3.6% for the entire sample, and by 7.3% and 10.0% for lower-middle- and higher-middle-income students, respectively.

Among individual and family characteristics, parental education, race, and age at time of enrollment had large effects on the probability of borrowing. Relative to Whites, Asian students were 12.7% less likely to borrow in the entire sample, and 16.2%, 13.9%, 10.1%, and 5.1% less likely to borrow among low-income, lower-middle-income, upper-middle-income, and high-income students, respectively. Age at time of enrollment had large effects on the probability of borrowing: a 1-year increase in age caused borrowing probability to fall by 8.7% in the entire sample, and by 7.0%, 49.9%, and 147.6% among lower-middle-income, upper-middle-income, and high-income students, respectively.

Discussion

Our results show that net cost of attendance has a large, positive effect on the amount of loan. For a \$1,000 increase in net costs, the borrowers in our sample increased the average loan amounts by \$748. The same increase in net cost raised the probability of borrowing by 25.9%. In contrast, a \$2,000 increase in loan limits, with net costs held constant, led to an additional borrowing of only \$106, and a 3.1% higher probability of borrowing.

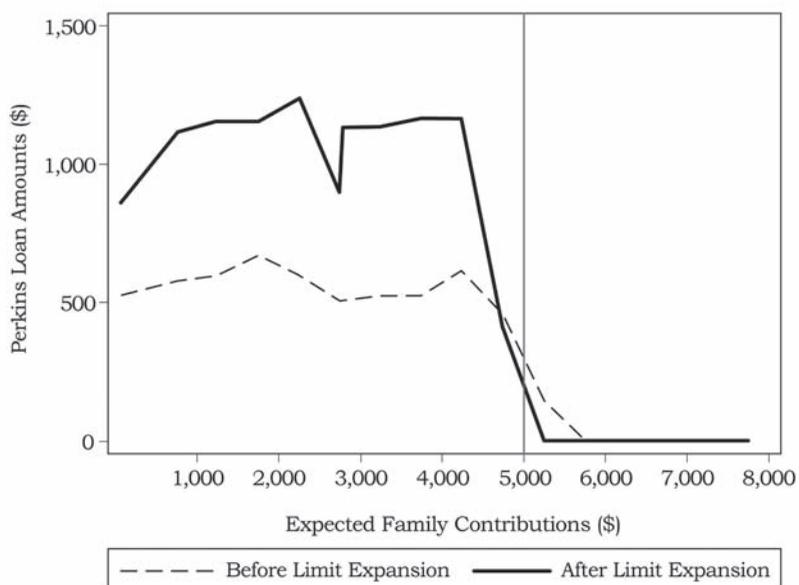
Borrowing behaviors of students from different income groups were statistically different and these differences were particularly large with respect to the effects of net cost. For example, with a \$1,000 increase in net costs, borrowers from low-income (\leq \$32,000) and lower-middle-income families (\$32,001–60,000) increased their average loan amounts by \$897 and \$871, respectively. However, with the same increase in net cost, borrowers from upper-middle-income (\$60,001–92,000) and high-income ($>$ \$92,000) families increased borrowing by only \$442 and \$241, respectively.

The impact of the availability of subsidized loans also differed across family income levels. Most telling, low-income students in our sample did not increase borrowing because of increased availability. Only students from lower-middle-income and upper-middle-income families increased borrowing in response to the \$2,000 increase in loan limits, by \$344 and \$301, respectively.

Although an increase in net cost may force students to borrow additional amounts, an increase in the availability of subsidized low-interest loans provides the opportunity to lower college costs. Subsidized low-interest loans reduce costs: The subsidy value has a direct negative impact on costs, and students can lower total interest costs of borrowing if the low-interest loan in question replaces existing higher interest loans. The lack of a response of low-income students in overall borrowing to an increase in the availability of subsidized loans, therefore, deserves scrutiny.

To investigate this issue, we plotted the average amount of Perkins Loan against EFC for low-income students (see Figure 7). The dashed line represents the average amount of Perkins Loan received by students before the limit expansion, and the solid line represents average Perkins Loan amounts after the limit expansion. A vertical line is placed at EFC equal to \$5,000 to mark the eligibility cutoff value of Perkins Loan. The graphs show a rather large increase in the amount of Perkins Loans following the limit increase for students with $EFC \leq \$5,000$. Coupled with our earlier evidence on the lack of an increase in total loan amounts after the limit increase, it appears that Perkins-eligible students from low-income families use the additional subsidized loan to replace other loans.

Figure 7
Amounts of Perkins Loan Received Before and After
Limit Expansion: Students With Income \leq \$32,000



These results strongly suggest that loan dependence of students in postsecondary education is mostly a consequence of rising college costs, and not the outcome of increased availability of loans, especially for less affluent students, contradicting opinions in King (1999) and Redd (2001). In our study, low-income students increased intakes of Perkins Loans in response to the limit increase, but did not increase overall borrowing—in other words, they used the lower interest rate Perkins Loan to replace loans with high interest rates.

Our results suggest that an emphasis in financial aid toward loans and away from grants deepens the loan dependence of postsecondary students across the board and by the largest

margin for the poor. The expansion of low-interest subsidized loans, on the other hand, is nonetheless beneficial because they replace expensive loans and help lower college costs.

If the borrowing decisions of students are made in connection with college choice (i.e., net cost of attendance), our results on net costs apply to students attending OSU or other public 4-year colleges with similar net costs. Our estimates of the effect of increased loan availability, on the other hand, were obtained by exploiting exogenous increases in loan limits, and are not affected by selection problems.

Conclusion

Students borrow to bridge the gap between total cost of attendance and the sum of grants, scholarships, and tuition discounts. One would expect the amount of loan to depend on the size of the gap, levels of family resources, and, additionally, on the cost of borrowing. Our results indicate that for very poor students, net costs and the availability of family resources are substantially more important determinants of student borrowing than are the costs of borrowing. The importance of net cost is evident in its very large marginal effect, especially for the two poorer groups.

The evidence on the role of family resources is twofold. First, parental education, as indicator of family wealth, has large effects on borrowing at all levels of family income. Second, and more importantly, the impact of net cost declines sharply between lower-middle-income and the upper-middle-income students, meaning that a given increase in net cost results in smaller additional loan for more affluent students.

As noted in the Discussion section, Perkins-eligible students from low-income families used subsidized loans to replace other loans following the limit increase for students with EFC \leq \$5,000. Because Perkins is the lowest cost variety of available federal student loans, these students essentially substituted more expensive loans with their less expensive counterparts.

Students from lower-middle- and upper-middle-income families, however, increased overall borrowing after the Perkins Loan limit increase. Summary statistics from Table 1 strongly suggest that those students, especially those from lower-middle-income families, were severely constrained from seeking inexpensive loans prior to the limit increase. For example, lower-middle-income students faced a net cost of \$11,437, and had an average EFC of \$5,919. After subtracting the EFC from the net cost, they needed to raise \$5,528 through a combination of student loans and earned income. Since Stafford loan (subsidized plus unsubsidized) allocations were capped at \$2,625 for financially dependent freshman students, those students were forced to seek alternative, more expensive sources of financing. All of our sample students were in their freshman classes, and 98.9 were financially dependent on their parents. Among lower-middle- and upper-middle-income students, proportions

This is the first study to analyze the borrowing response of low-income students to exogenous increases in the availability of subsidized loans.

of financially dependent students are 99.8% and 100.0%, respectively. The increased availability of Perkins Loans thus allowed them to lower borrowing costs.

The problem with inadequate allocation of inexpensive Stafford loans assumes greater importance once we take into account the inflated nature of the EFC as a measure of actual contributions of the family. In our sample of freshman OSU students between 2000 and 2005, the average family income for lower-middle-income students is \$46,548, yet they have an average EFC of \$5,919, meaning they are expected to contribute \$5,919 toward direct and indirect educational costs—almost 13% of the pretax income of the family. If the family can contribute even 50% of the expected contributions, lower-middle-income students have to obtain an additional \$2,959 without concomitant increases in loan allocations.

It should be noted that this is the first study to analyze the borrowing response of low-income students to exogenous increases in the availability of subsidized loans, although results from previous studies suggest positive impacts of exogenous increases in loan availability among middle-income students, similar to our findings. Dynarski (2002), for example, utilized the removal of home equity values from the determination of EFC to investigate effects of increased loan availability on the educational attainment of middle-income students. The positive result in the study suggests that those students also took advantage of an increase in the availability of subsidized loans.

Recent studies have questioned the wisdom of blaming college costs wholly for the escalation of student borrowing, claiming that low-income and lower-middle-income students borrow large amounts because inexpensive subsidized loans are available. In this study, we verified the claim, estimating a model of the amount of loan as a function of net cost, the availability of subsidized loans, and other determinants. Our results showed large effects of net cost, especially for low-income and lower-middle-income students. Increased availability of low-cost federal loans does not lead to additional borrowing by the poor, but allows such students to replace more expensive varieties of student loans. Middle-income students increase borrowing when availability rises, but such effects appear small when contrasted against the impact of net cost.

We also found that parental wealth plays a large role in student borrowing. In conjunction with a dramatic reduction in the effect of net cost in family income, the large role of family wealth suggests that borrowing by students is mostly a function of the cost of attendance and the level of resources they command, and not an outcome of the expansion of federal loan limits. Our findings suggest that curbing the growth of the net cost of college checks the loan dependence of postsecondary education, whereas increased allocations of low-interest subsidized loans allow less affluent students to lower their attendance costs.

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APPENDIX A
Estimates of the Tobit Model of Loan Amounts

	All Students	Income			
		≤ \$32K	\$32K-\$60K	\$60K-\$92K	> \$92K
Net cost (in constant \$100)	167.040*** (6.489)	179.118*** (11.995)	156.222*** (15.578)	96.960*** (14.213)	71.781*** (16.904)
Net cost ² (in constant \$10,000)	-1.196*** (0.080)	-1.301*** (0.167)	-0.961*** (0.194)	-0.568*** (0.158)	-0.439** (0.190)
Net cost ³ (in constant \$1 million)	0.003*** (0.000)	0.004*** (0.001)	0.002** (0.001)	0.001 (0.001)	0.001 (0.001)
Net cost ⁴ (in constant \$100 million)	0.000*** (0.000)	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Perkins Loan eligible	1,763.963*** (63.710)	2,932.162*** (348.069)	1,761.344*** (108.934)	1,762.191*** (160.996)	1,171.764 (1,154.032)
After limit expansion	-322.112*** (45.420)	175.484 (406.962)	-444.053*** (103.319)	-270.798*** (61.515)	-365.548*** (82.526)
Perkins eligible × after limit expansion	232.197*** (69.482)	-452.539 (414.580)	602.348*** (127.600)	607.021*** (214.239)	-290.833 (1,457.494)
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Financially dependent on parents	-155.449 (163.216)	-710.799*** (206.141)	411.279 (907.005)	2,466.038 (1,715.180)	
Age	-571.828*** (183.154)	-393.688 (323.267)	-576.729* (321.469)	-2,911.553* (1,755.341)	-9,304.606** (4,428.469)
Age ²	15.954*** (4.265)	12.661* (7.217)	16.316** (7.517)	79.101* (46.546)	248.555** (118.902)
Black	284.779*** (59.854)	-192.364 (118.595)	510.338*** (107.186)	723.288*** (111.681)	714.300*** (167.009)
Asian	-780.131*** (76.032)	-1,136.803*** (169.519)	-990.779*** (140.101)	-551.035*** (131.683)	-317.412* (169.453)
Hispanic	113.539 (94.385)	-281.771 (206.916)	-178.677 (179.888)	486.459*** (160.100)	108.037 (216.048)
ACT score	173.219*** (40.354)	79.689 (83.728)	122.410 (77.858)	169.319** (76.354)	-67.541 (109.955)
ACT ²	-4.577*** (0.817)	-2.477 (1.807)	-3.251** (1.589)	-4.461*** (1.518)	-0.576 (2.137)
Ohio resident	-736.347*** (72.955)	-1,714.079*** (182.794)	-737.616*** (153.330)	-576.480*** (125.640)	-432.532*** (139.639)
Income (in constant \$1,000)	-11.878*** (0.724)	-5.143 (19.917)	18.788 (46.812)	-97.008* (50.277)	-12.528*** (1.384)
Income ² (in constant \$1 million)	0.011*** (0.001)	0.407 (0.543)	-0.138 (0.505)	0.538 (0.332)	0.013*** (0.002)
Both parents 4-year college graduates	-523.510*** (40.556)	-325.308*** (111.592)	-438.334*** (74.257)	-578.506*** (63.242)	-616.011*** (102.902)
One parent is 4-year college graduate	-156.944*** (40.321)	-19.347 (94.841)	-206.740*** (70.481)	-181.634*** (64.664)	-300.340*** (112.077)
Log likelihood	-158,768.68	-30,936.515	-48,526.687	-46,933.525	-32,031.748
N	28,059	4,938	7,233	8,289	7,599

* $p < .10$. ** $p < .05$. *** $p < .01$.

APPENDIX B
Results From Hypotheses Tests on the Equality of Coefficients
Across Income Groups

	Low-Income [b ₁]	Lower-Middle Income [b ₂]	Upper-Middle Income [b ₃]	High-Income [b ₄]
Low-income [b ₁]		b ₁ b ₂ = 242.731***	b ₁ b ₃ = 6,012.968***	b ₁ b ₄ = 3,406.376***
Lower-middle income [b ₂]	b ₂ b ₁ = 365.243***		b ₂ b ₃ = 1,531.935***	b ₂ b ₄ = 3,757.928***
Upper-middle income [b ₃]	b ₃ b ₁ = 4,250.678***	b ₃ b ₂ = 457.379***		b ₃ b ₄ = 650.218***
High-income [b ₄]	b ₄ b ₁ = 999,872.33***	b ₄ b ₂ = 17,385.44***	b ₄ b ₃ = 252,015.46***	
LR ratio test (χ ²)		680.41***		

Note. The likelihood ratio test (LR; Brouwer & Spaninks, 1999) uses the following test statistic and has a χ² distribution.

$$2 \times \text{LogLikelihood}_{(\text{entire sample})} - \sum_{i=1}^4 \text{LogLikelihood}_i$$

$$b_1b_2 = (b_1 - b_2)'V^{-1}(b_1 - b_2)$$

$$b_2b_1 = (b_2 - b_1)'V^{-1}(b_2 - b_1)$$

b_i represents the vector of estimated coefficients; V_i is the estimated symmetric variance-covariance matrix. There are no independent students among high-income families. The equality of coefficients involving the high-income group is tested using models that exclude independent students from the other income groups.

*p < .10. **p < .05. ***p < .01.

Patterns in Student Financial Aid at Rural Community Colleges

By David E. Hardy and Stephen G. Katsinas

David Hardy is Associate Professor and Director of Research, and Stephen Katsinas is Professor and Director, Education Policy Center, The University of Alabama, Tuscaloosa.

This article uses the 2005 Basic Classifications of the Carnegie Foundation for the Advancement of Teaching as a framing device through which to examine patterns of student financial aid at America's rural community colleges, which represent 64% of all U.S. community colleges. Rural community colleges serve more first-time, full-time students than suburban and urban community colleges, and their 3.2 million students have different patterns of student financial aid. Rural small and medium colleges have the most aided students, receive more Pell Grants and institutional aid, and have more students incurring loan indebtedness than do other types of community colleges. The article offers recommendations for future research, as well as for policy development and practice.

Low rates of adult educational attainment among the U.S. rural population have long been a challenge to educators and policy makers alike (U.S. Department of Education, 1994); this was part of the impetus for major federal poverty initiatives in the 1960s. Then, as now, accessible child care and transportation presented key challenges preventing larger numbers of students from enrolling. In addition, there are the twin challenges of encouraging rural high school students, particularly in high-poverty areas, to envision themselves in college (and thus to apply for admission), and then to apply for financial aid. All of America's community colleges, whether rural, suburban, or urban, play an important role in serving traditional first-time postsecondary students, as well as older and other nontraditional students (Cohen & Brawer, 2003).

In this article, we discuss the 2005 Carnegie Foundation for the Advancement of Teaching Basic Classifications of Associate's Colleges (Carnegie Foundation, 2006a, 2006b) and analyze financial aid data from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) Fall 2000 IPEDS Student Financial Aid Cohort Study Survey (SFA). Our analysis and recommendations for policy, practice, and research are intended to add to the growing literature on rural community colleges in recent years (see Cejda, 2007; Eddy & Murray, 2007; Katsinas, Alexander & Opp, 2003).

According to the 2005 Carnegie Basic Classifications (Carnegie Foundation, 2006a; 2006b), 10.3 million students were enrolled at 2-year institutions in the U.S. in 2000–2001 in three major categories: (a) publicly controlled, (b) privately controlled, and (c) federally chartered and special use institutions. As Table 1

The 2005 Carnegie Basic Classifications

shows, nearly 9.7 million students were enrolled at the nation's 860 public community college districts and 1,552 campuses, and the 36 districts and 114 campuses of public 2-year colleges operated under the governance of 4-year public universities. The public community college sector is divided into rural, suburban, and urban community colleges, and the rural sector is further subdivided into small, medium, and large institutions. Of the 9.4 million students attending public community colleges, 3.1 million attend urban, 3.0 million attend suburban, and 3.2 million attend the 553 identified rural community college districts and 922 rural community college campuses. (Urban and suburban sectors are divided into single and multicampus districts, whereas size determines the three rural classifications.) The Carnegie classifications utilize data from the 2000 U.S. Census, NCES IPEDS data sets, geographic information system data, and other institutional characteristics data gleaned from college and university Web sites, directories, and other sources (Carnegie Foundation, 2006a, 2006b; Hardy & Katsinas, 2007).

The 2005 Carnegie classifications use annual unduplicated headcount student enrollment, not full-time equivalent (FTE) student data. In practice, community college leaders plan for individuals, not FTEs, which do not translate to numbers of part-time students who enroll at peak usage times and need parking, counseling, and online access to computer systems. As noted in an American Educational Research Association panel discussion (2002), 2-year frames are needed to study 2-year institutions, rather than applying 4-year frames to community college students and institutions. The 14,269 mean enrollment at the 110 large rural districts in 2000–2001 (see Table 1) is similar to many urban and suburban colleges. In contrast, the 303 medium rural districts and the 140 small rural districts had mean enrollments of 4,642 and 1,699, respectively. Nearly 64% of U.S. community college districts are rural; they enroll over one-third of all community college students (Hardy & Katsinas, 2007).

The Dominance of Pell Grants

Table 2 shows total student aid awarded by community colleges in 2000–2001 as reported in the NCES IPEDS 2001 Finance Survey (Hardy, 2005). Between 92% and 100% of the colleges in each classification responded. Of the nearly \$3.6 billion awarded by U.S. community colleges, \$2.4 billion (68%) came in the form of Federal Pell Grants. About \$190 million was other federal aid, including Federal Supplemental Educational Opportunity Grants (FSEOG). State and institutional aid totaled \$612 million and \$250 million, respectively. Pell Grant awards exceeded state aid by roughly 4 times, institutional aid by roughly 10 times, and private aid by 25 times (Hardy).

This disaggregation by student aid type illustrates the importance of Pell Grants to community colleges. State aid is the second largest category, ranging from 15% to 21% of aid

Table 1
Summary of Two-Year Associate's Degree Institutions, Academic Year 2000-2001

	No. of Districts or Institutions	No. of Individual Campuses	Mean No Campuses/ Districts	Total 2000-2001 Unduplicated Enrollment	Mean Enrollment/ District	Mean Enrollment/ Campus
Publicly controlled 2-year colleges						
Rural-serving colleges/districts						
Small (< 2,500 annual unduplicated enrollment)	140	206	1.5	237,918	1,699	1,155
Medium (2,500-7,500 annual unduplicated enrollment)	303	499	1.6	1,406,512	4,642	2,819
Large (> 7,500 annual unduplicated enrollment)	110	217	2.0	1,569,547	14,269	7,233
Total	553	922	1.7	3,213,977	5,812	3,486
Suburban-serving colleges/districts						
Single campus	122	122	1.0	1,464,219	12,002	12,002
Multi-campus	73	206	2.8	1,563,767	21,421	7,591
Total	195	328	1.7	3,027,986	15,528	9,232
Urban-serving colleges/districts						
Single campus	44	44	1.0	569,661	12,947	12,947
Multi-campus	68	258	3.8	2,611,348	38,402	10,122
Total	112	302	2.7	3,181,009	28,402	10,533
Total, publicly controlled 2-year colleges	860	1,552	1.8	9,422,972	10,957	6,072
2-year colleges under 4-year universities	36	114	3.2	265,693	7,380	2,331
Total, all publicly controlled 2-year colleges	896	1,666	1.9	9,688,665	10,813	5,816
Privately controlled 2-year colleges^a						
Nonprofit colleges						
For-profit colleges	211	211	1.0	152,317	823	823
Total, privately controlled 2-year colleges	614	614	1.0	369,471	666	666
Federally chartered and public 2-year institutions						
Special-use institutions						
Tribal colleges	32	50	1.6	22,732	710	455
Public 2-year special-use institutions	11	88	8.0	71,136	6,467	808
Total, federally chartered and special-use institutions	43	138	3.2	93,868	2,183	680
TOTAL	1,764	2,629	1.5	10,304,321	6,137	4,050

Note. Calculations of enrollment/district and enrollment/campus have been adjusted accordingly for both privately controlled 2-year colleges and total 2-year, tribal, and special-use colleges.

^a2005 Carnegie Basic Classification. ^b185 Private nonprofit and 555 for-profit institutions reported unduplicated credit enrollment for 2000-2001.

Table 2
Student Aid Expenditures by Publicly Controlled Two-Year Institutions, as Percentages of Total Expenditures,
Academic Year 2000–2001

Institutional Type ^a	Total Student Aid	Pell Grants	Other Federal Aid	State Govt. Aid	Local Govt. Aid	Private Aid	Institutional Aid
Rural							
Small	191,006,397 (5%)	118,424,542 (5%)	9,533,468 (5%)	39,760,932 (6%)	240,323 (2%)	3,103,378 (3%)	19,943,754 (8%)
Medium	798,894,088 (22%)	522,833,123 (22%)	38,128,966 (20%)	146,595,861 (24%)	949,468 (8%)	26,744,302 (27%)	63,642,368 (25%)
Large	573,711,624 (16%)	393,567,353 (16%)	30,335,684 (16%)	83,315,580 (14%)	961,051 (8%)	20,004,857 (20%)	45,527,099 (18%)
Rural Total	1,563,612,109 (44%)	1,034,825,018 (43%)	77,998,118 (41%)	269,672,373 (44%)	2,150,842 (18%)	49,852,537 (50%)	129,113,221 (51%)
Suburban	766,721,908 (21%)	503,481,009 (21%)	42,350,214 (22%)	155,823,019 (25%)	1,373,342 (12%)	19,295,443 (20%)	44,398,881 (18%)
Urban	1,250,196,053 (35%)	879,152,338 (36%)	69,095,210 (36%)	186,894,968 (31%)	8,184,521 (70%)	29,613,555 (30%)	77,255,461 (31%)
TOTAL	3,580,530,070 (100%)	2,417,458,365 (100%)	189,443,542 (100%)	612,390,360 (100%)	11,708,705 (100%)	98,761,535 (100%)	250,767,563 (100%)

Note. Expenditures in U.S. dollars. Percentages may not sum to 100 due to rounding.

^a2005 Carnegie Basic Classification.

Aid Patterns of Students at Rural Community Colleges

awarded within each community college type, and representing 17% of all student aid expenditures nationally. Aid from institutional, private, and local government sources represent the smallest categories. Table 2 reveals a significant fact: The largest percentage of every aid category (save local government aid) goes to students attending rural community colleges. Pell Grants account for the lion's share—between 62% and 70%—of all aid provided within each institutional type.

Together, Tables 1 and 2 show that rural community colleges serve 35% of total enrollments; their students receive \$1.56 billion (44%) of all student aid awarded, of which two thirds (66%) comes in the form of Pell Grants. Urban community colleges enroll 33% of total students, who are awarded \$1.25 billion in student aid (36% of all aid awarded), of which 70% comes in the form of Pell Grants. In contrast, suburban community college students are “less aided” than their rural and urban counterparts; these institutions enroll 32% of total students, who receive only 21% of total aid awarded, of which 66% comes in the form of Pell Grants. It is clear that Pell Grants are critical for students at all types of community colleges.

Tables 3–5 use the 2005 Carnegie Basic Classifications to show differences by institutional type for first-time, full-time, degree- or certificate-seeking (FT/FT/DC) students as reported in the Fall 2000 IPEDS SFA. The high rates of institutional participation in the IPEDS SFA suggest an acknowledgment of the “completeness” and representativeness of the data being analyzed. Among the 5.4 million students enrolled at U.S. community colleges in Fall 2000, 35% attended rural community colleges, 32% suburban, and 33% urban. The 511,049 FT/FT/DC students in the cohort comprised 9% of the 5.4 million enrolled.

The 246,370 FT/FT/DC students enrolled at rural community colleges constituted 48% of all students in the cohort, larger than the 27% served by suburban and 24% by urban community colleges (Hardy, 2005). Rural community colleges also clearly served larger numbers of FT/FT/DC students than their suburban and urban counterparts (13% of total enrollment, compared to 8% and 7%, respectively)

Table 4 shows the numbers and percentages of FT/FT/DC students at community colleges in in Fall 2000 who received any financial aid, as well as the number and percentage of students in the entire IPEDS SFA cohort who received each type of aid and who were enrolled in each particular type of institution. In the Fall 2000 term, 1,881,147 of the 5,418,671 total community college students were enrolled at rural community colleges. A significantly larger proportion of FT/FT/DC students enrolled in rural community colleges and received financial aid than in suburban and urban community colleges. Of the 511,049 total students in the cohort, 246,370 (48%) were enrolled at rural community colleges; of the 288,583 students in the cohort who

Table 3
First-Time, Full-Time, Degree- or Certificate- Seeking Students
as a Percentage of All Publicly Controlled Associate's Degree College Students

Institutional Type^a	No of Districts Reporting (% of total districts)	Total Student Enrollment	No. of FT/FT/DC	FT/FT/DC as Percentage of Student Enrollment	Total Student Enrollment as Percentage of All Students in Cohort	FT/FT/DC as Percentage of All Students in Cohort
Rural						
Small	133 (95%)	148,910	28,791	19%	3%	6%
Medium	298 (98%)	849,035	129,751	15%	16%	25%
Large	108 (98%)	883,202	87,828	10%	16%	17%
Rural Total	539 (97%)	1,881,147	246,370	13%	35%	48%
Suburban	192 (98%)	1,734,682	139,608	8%	32%	27%
Urban	105 (94%)	1,802,842	125,071	7%	33%	24%
Total	836 (97%)	5,418,671	511,049	9%	100%	100%

Note. FT/FT/DC = first-time, full-time, degree- or certificate-seeking. Expenditures in U.S. dollars. Percentages may not sum to 100 due to rounding.
^a2005 Carnegie Basic Classification.

Table 4
Number and Percentage of First-Time, Full-Time Degree- or Certificate-Seeking Students
Receiving Financial Aid, Fall 2000

Institutional Type^a	Total Enrolled Students	Total No. FT/FT/DC Students	FT/FT/DC Receiving Any Financial Aid	FT/FT/DC Receiving Pell/SEOG Grant Aid	FT/FT/DC Receiving State/Local Grant Aid	FT/FT/DC Receiving Institutional Grant Aid	FT/FTDC Incurring Student Loan Debt
Rural							
Small	148,910 (3%)	28,791 (6%)	21,667 (8%)	13,464 (7%)	9,254 (6%)	5,550 (9%)	6,462 (8%)
Medium	849,035 (16%)	129,751 (25%)	89,103 (31%)	54,384 (30%)	40,859 (27%)	23,110 (37%)	27,495 (36%)
Large	883,202 (16%)	87,828 (17%)	47,983 (17%)	27,528 (15%)	21,484 (14%)	14,658 (24%)	14,628 (19%)
Rural Total	1,881,147 (35%)	246,370 (48%)	158,753 (55%)	95,376 (53%)	71,597 (48%)	43,318 (70%)	48,585 (63%)
Suburban	1,734,682 (32%)	139,608 (27%)	61,442 (21%)	37,712 (21%)	37,658 (25%)	8,980 (15%)	15,966 (21%)
Urban	1,802,842 (33%)	125,071 (24%)	68,388 (24%)	48,144 (27%)	40,366 (27%)	9,576 (15%)	12,510 (16%)
TOTAL	5,418,671 (100%)	511,049 (100%)	288,583 (100%)	181,232 (100%)	149,621 (100%)	61,874 (100%)	77,061 (100%)

Note. Expenditures in U.S. dollars. Percentages may not sum to 100 due to rounding. FT/FT/DC = first-time, full-time, degree- or certificate-seeking students.
^a2005 Carnegie Basic Classification.

The percentage of students at rural colleges who receive institutional grant aid is more than double that for students attending suburban and urban community colleges.

received any financial aid, 158,753 (55%) were enrolled at rural community colleges. Rural small and medium colleges comprised 3% and 16%, respectively, of total community colleges enrollments, 6% and 25% of students, respectively, in the IPEDS SFA cohort, and even larger percentages (8% and 31%, respectively) of students who received any financial aid.

Of the 181,232 students who received direct federal grant aid (Pell Grants and FSEOG), 95,376 (53%) were at rural community colleges, compared to 37,721 (21%) at suburban community colleges and 48,144 (27%) at urban community colleges. Of the 149,621 students who received state and local grant aid, 48% attended rural community colleges, compared to 25% suburban and 27% urban. Of the 61,874 FT/FT/DC students who received institutional grant aid, 43,318 attended rural community colleges, compared to 15% each for suburban and urban community colleges. More FT/FT/DC students at rural community colleges take loans compared to similar students at other types of community colleges. Of the 77,061 FT/FT/DC students attending community colleges in Fall 2000 who borrowed student loans, 48,585 (or 63%) were enrolled at rural community colleges.

Although the federal and state grant aid percentages shed light on the financial challenges students at rural community colleges face, the willingness of these institutions to invest in their own students is significant. The percentage of students at rural colleges who receive institutional grant aid is more than double that for students attending suburban and urban community colleges. Further, the percentage may understate the institutional investment; college officials completing IPEDS surveys might not include both need- and merit-based grants and scholarships in the numbers they report. In addition, college-sponsored work-study is not included in the IPEDS SFA.

Table 5 shows the percentages of FT/FT/DC students in the IPEDS cohort, by aid type and institutional type. Among the 511,049 FT/FT/DC students enrolled nationally, 288,583 (56%) received some type of financial aid. At rural community colleges, 64% of these students received some aid, compared to 44% at suburban community colleges and 55% at urban community colleges. The 75% and 69% figures, respectively, of students at the 133 small and 298 medium rural community colleges receiving any type of financial aid are striking: In general, the smaller the college, the higher the percentage of students receiving any and all types of financial aid.

Analysis of the IPEDS SFA cohort in Table 5 reveals very different financial aid patterns at small and medium rural community colleges. Both rural and urban community colleges reported larger percentages of students receiving direct grant aid (Pell Grants and FSEOG) than their percentage of enrollments

Table 5
Percentage of First-Time, Full-Time, Degree- or Certificate-Seeking Students
Receiving Financial Aid, by Type of Financial Aid Received, Fall 2000

Institutional Type ^a	Received Any Financial Aid	Received Pell/FSEOG Grant Aid	Received State/Local Grant Aid	Received Institutional Grant Aid	Incurred Student Loan
Rural					
Small	75%	47%	32%	19%	22%
Medium	69%	42%	31%	18%	21%
Large	55%	31%	24%	17%	17%
Rural total	64%	39%	29%	18%	20%
Suburban	44%	27%	27%	6%	11%
Urban	55%	38%	32%	8%	10%
Total	56%	35%	29%	12%	15%

Note: Percentages may not sum to 100 due to rounding.
^a2005 Carnegie Basic Classifications.

among all U.S. community college students. Table 5 reveals that for large rural community colleges, the percentage distribution for each aid category more resembles that of suburban and urban community colleges than small or medium rural community colleges, except for the higher levels of student loan indebtedness. In contrast, 64% (89,103 of the 129,751 students in the cohort) at medium rural community colleges, and 75% (21,667 of the 28,791 students in the cohort) for students in the cohort at small rural community colleges reported receiving any financial aid. Again, greater numbers of students at rural community colleges received institutional grant aid.

Table 5 also shows different patterns in student loans at different types of community colleges. The percentage of students at rural-serving institutions as a portion of all students receiving institutional aid was almost five times that of students at suburban- or urban-serving institutions. Similarly, the percentage of students at rural-serving institutions as a portion of all students taking student loans was three times that of students at suburban-serving colleges and four times that at urban-serving colleges.

Discussion

Our analysis of student financial aid data from IPEDS by type of 2-year college using the 2005 Carnegie Basic Classifications shows that access and utilization of all types of financial aid is critical to community college students. Financial aid unquestionably provides new students with access to higher education, and rural community colleges are a major portal of access for millions of first-generation, FT/FT/DC students. As Cohen and Brawer (2003) noted, the choice is often not between a community col-

lege and another college; the choice is between a community college and nothing.

These data also illustrate major differences across types of public community colleges by type of institution (rural, suburban, and urban) in the patterns of financial aid utilized by their students. Often, the rural sector more resembles the urban sector than either of the two resembles the suburban sector.

The Pell Grant program is by far the most important financial aid program for all types of U.S. community college students. That rural-serving institutions award Pell Grants in percentages higher than their proportion of total enrollments suggests that this national program serves all types of needy students, and is not, as some assume, a program that is designed to assist primarily low-income, urban, minority students. As Alexander noted in 2002, federal direct grant aid programs are of great importance to community college students.

Significant differences exist in the financial aid awarded within the rural community college sector. In the IPEDS SFA cohort we examined, 75% of students at small rural community colleges, and 69% of students at medium rural colleges, receive financial aid; nearly 5 in 10 students at these small colleges, and 4 in 10 at the medium rural community colleges, reported receiving Pell Grants. The smaller the college, the more likely its students receive aid.

Significant differences exist in student loan indebtedness by type of community college. In the IPEDS SFA cohort, 63% of the students who reported incurring loan debt attended rural community colleges; by sector, rural community college students incurred loan debt at rates more than double those at urban and suburban community colleges. In general, the smaller the college, the more likely it is that students take loans.

One reason for higher indebtedness may be that students in geographically isolated rural areas live too far from home to afford commuting; there is a lack of publicly subsidized mass transit in rural America. This may add to FT/FT/DC students in rural community colleges' greater reliance on financial aid for access. Moeck's (2005) analysis of IPEDS surveys found 232 community colleges with housing, of which 90% (according to the new Carnegie classifications) were "rural." Higher housing and transportation costs may explain the higher rates of indebtedness at rural colleges.

Implications for Policy, Practice, and Research

Rural America's educational attainment rates continue to lag behind those of other areas, and there are significant gaps in information to help improve the rates. Special effort is needed to target expanded access for students served by small and medium rural community colleges—which include most of America's rural counties with persistently high rates of poverty. The Appalachian Resource Commission (ARC, 2004) reported that its largely rural

That rural-serving institutions award Pell Grants in percentages higher than their proportion of total enrollments suggests that this national program serves all types of needy students.

At what point does student loan indebtedness “push” rural community college students away from their home areas, even if they wanted to stay after graduating?

region “still lags in postsecondary education” (p. i). ARC cited U.S. Department of Education estimates of the college-going rates of high school graduates nationwide at 63.3%; for Appalachia, the rates were between 35% and 55%.

Programs such as College Goal Sunday (2007), which assists low-income families and families with no tradition of pursuing postsecondary education to fill out financial aid forms and to access information about available financial aid, and the Ohio Appalachian Center for Higher Education’s (OACHE) Access Project, which since the early 1990s has provided grants to K–12 schools for activities to encourage students to aspire to and prepare for college (OACHE, 2007), are a starting point and deserve further study. In many areas of rural America, high school students simply do not see the possibility of college as being within their grasp, despite the availability of financial aid.

Additionally, student aid and sustainable economic development policies should be better integrated to reinforce state rural development goals. At what point does student loan indebtedness “push” rural community college students away from their home areas, even if they wanted to stay after graduating? The Rural Policy Research Institute (Fisher, 2005) found the wage differential between workers in metropolitan and nonmetropolitan areas to be roughly 15% lower for rural workers. ARC (2004) reported that only 17.7% of Appalachian adults ages 25 and older had a college degree, compared with 24.4% nationally, noting that

While this gap may not appear large, it is growing. Because at least some college or postsecondary training is now necessary to obtain jobs that pay a livable wage, it is critical that we close the college-going gap between Appalachia and the nation. (p. i)

Future research might investigate the relationship between student financial aid and rural development goals, as well as explore special programs to bolster college-going rates in rural areas; rural community colleges are often the only accessible college for the students they serve.

Further research also is needed to investigate if and why urban community college students do not participate in federal student aid programs at levels consistent with their representation in the population—and, conversely, why students at rural institutions appear to be more likely to participate than their urban counterparts.

We see a role of special importance for state policy makers, who can bring institutions together to expand participation in college access programs. Two national organizations, the Rural Community College Alliance (an affiliated council of the American Association of Community Colleges) and the Rural Colleges Coalition of the American Association of State Colleges and Universities, could bring greater visibility to successful efforts,

and identify deficiencies in policy, practice, and research. This is important because we hypothesize that the same belief patterns that cause lower numbers of rural Americans to enroll in their local community colleges may persist as these students contemplate transfer to 4-year baccalaureate institutions.

Conclusion

Our analysis shows significant and often striking differences by type of community colleges—differences that are not always well understood by policy makers. In the rhetoric related to student aid within the community college sector, financial aid (particularly the financial assistance provided through the federal Pell and FSEOG programs) is often cast as welfare for underprivileged inner-city students. The data presented here clearly show that this is not the case; policy makers should note that reductions or limitations in Pell Grants, FSEOG, state-provided, and locally funded student financial aid programs can impair the ability of lower-income students in rural America to participate in post-secondary education as well. The extent to which America's rural-serving community colleges are taking steps to "take care of their own" by providing institutionally funded scholarships and grants might establish best practices that could be replicated at urban-serving and suburban-serving institutions with students who have unmet financial need.

The issue of student loan indebtedness among all community college students (and particularly among students attending rural-serving institutions) requires attention. The number of students amassing student loans should be seen as a call to action for policymakers, practitioners, and researchers alike.

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The *Journal of Student Financial Aid* invites the submission of manuscripts that report original research or discuss policy or position issues. The Editorial Board also welcomes correspondence about financial aid issues or articles and letters appearing in the Journal.

Writing and Organizing Manuscripts

Authors should present their material in clear and concise language appropriate for the general reader as well as financial aid administrators. Attention should be given to the use of proper English. The presentation and development of the theme should be orderly, avoiding irrelevancies and wordiness. Generally, articles are structured into segments with headings that suggest the logical progression from introduction to conclusion. Headings reflect the manuscript organization and denote the relative importance of each topic.

Research Articles

A research article should begin with an introductory statement of purpose, which does not have a heading. It should proceed with a discussion of recent and related research, followed by a presentation of the methodology. The analysis of the evidence follows, then conclusions and implications directly related to the evidence presented.

Statistics, Charts, and Graphs

Statistical data should be summarized in the text. Figures and tables must be clear, comprehensible, and used only when they add to the presentation or when they reduce the need for a lengthy discussion in the manuscript. Particularly complex research (including statistical terminology) should be explained in an understandable way for readers not fully acquainted with research methodology and analysis. Complicated graphs should be submitted with actual plotting points indicated.

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An issue article should address a position or a perspective on a student aid policy or topic. The headings should reflect the organization of the article. The author presents the issue in the introduction, which is not headed. Unlike the components of a research article, the sections of an issue article are arranged by relationship. The sections display the perspectives of others, the evidence and logical argument, and positive and negative implications. The conclusion should suggest next steps or otherwise finalize what has been introduced and argued earlier.

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Questions of style should be referred to the fifth edition of the *Publication Manual* of the American Psychological Association (APA). Although APA style has been historically oriented toward research, the APA stresses the adaptability of the style to more theoretical manuscripts.

Authors unfamiliar with APA style should read the first chapter of the manual, "Content and Organization of a Manuscript," from which the primary points of these guidelines are derived.

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