State Merit-based Aid and Enrolling in Graduate Study: Evidence From the Kentucky Educational Excellence Scholarship

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This study considers the effect of a state merit-based aid program for undergraduate students on subsequent enrollment in graduate school. It uses student unit record data to analyze the impact of the Kentucky Educational Excellence Scholarship (KEES). Price theory is used as a framework for understanding the incentives provided by KEES. Using a logistic regression approach, this study shows an approximately forty percent increase in the probability that students would attend graduate school if their KEES award amount increased from zero to the maximum award amount. This finding has important implications for policymakers in Kentucky and other states.

State merit-based aid programs are large-scale student financial aid programs awarded on the basis of merit, sponsored and administered by state governments. Most state merit-based aid programs are new, as eight states have begun programs since 1999. Although there are some disagreements in the literature about which states' programs count as being broad-based, approximately 16 states have large scale merit-based aid programs (Heller, 2001; Educational Commission of the States, 2005; Doyle, 2006). States spent $1.7 billion on undergraduate non-need-based aid in 2004-05, which represented 27 percent of the total undergraduate student aid expenditures by the states (NASSGAP, 2006).

Merit-based aid programs represent an important shift in state student aid funding practices. Between 1994-95 and 2004-05 merit-based aid awards grew by 347.9 percent in the states, whereas need-based grant aid awards grew by only 98.5 percent (NASSGAP, 2006). Traditionally, state investment in student financial aid has been exclusively through need-based aid programs. Awarding student financial aid on the basis of merit, instead of need, represents a break from this tradition and could have important consequences. Given the perceived political popularity of merit-based aid programs, it is likely that they will be a part of state higher education funding for some time. Understanding both the intended and the unintended consequences of these programs is important as states consider future student financial aid and the returns from investing in merit-based aid programs.

Merit-based aid programs are unique in that receipt and continuation of the award is contingent on academic achievement. Traditional studies of student financial aid focus on the financial implications of these programs.

Because of the unique requirements of merit-based aid, this study instead questions the *academic* consequences of merit-based aid. Understanding the effect of merit-based aid programs on significant academic outcomes at the postsecondary level is important as states consider future student financial aid and the returns from investing in merit-based aid programs. This study explores the impact of merit-based aid on one important postsecondary academic outcome: enrollment in a graduate program.

Review of the Literature

There are a variety of findings in the higher education finance literature that price, derived solely from tuition or in combination with student financial aid, matters for students' college decisions (Jackson & Weathersby, 1975; Leslie & Brinkman, 1987; Heller, 1997; McPherson & Schapiro, 1999; Dynarski 2003; Kane, 2003). Merit-based aid changes the price of a college education as do other forms of student financial aid, and it is expected that it too will lead to changes in student demand.

Much of the debate in the academic literature surrounding merit-based aid programs has focused on the trade-off between need-based aid and merit-based aid (Dynarski, 2003; Education Commission of the States, 2005; Heller, 2000, 2001; Heller & Rasmussen, 2001; St. John & Chung, 2002). This study does not address this trade-off. Instead, it considers only merit-based aid with the understanding that, like other types of financial aid, merit-based aid is a tool that can be used by the state to achieve particular goals.

In addition, because merit-based aid is awarded on the basis of academic achievement, it is expected that this form of financial aid will have an effect on postsecondary academic outcomes. Previous literature has shown that merit-based aid programs have a particular impact on the academic performance of students.

Considering high school performance, Henry and Rubenstein (2000) found that the number of students who qualify for the Georgia HOPE scholarship by achieving a 3.0 average in high school has steadily increased since the introduction of the merit-based aid program. Testing the relationship between high school grades and SAT scores, they showed that high school achievement remained steady or increased over this period, indicating real improvement in high school performance (not grade inflation). In sum, Henry and Rubenstein (2000) found that HOPE scholarships increased the quality of K-12 education.

For entering students at the University of Georgia, Cornwell, Lee and Mustard (2005) found that HOPE scholarships increased freshman Gradate Point Averages (GPAs) by 0.13 points. Likewise, Dynarski (2003) found an increase in the proportion of freshman with grades below a B dropped from 40 to 27 percent following the introduction of the HOPE program.

Binder, Ganderton and Hutchens (2000) found that, during college, grade point averages (GPAs) rose after the introduction of the New Mexico Success merit-based aid program. At the University of Georgia,

Cornwell et al. (2003) found a 22 percent increase in students taking summer course, which indicates that students are changing their academic behavior, such as spreading their coursework over more calendar time, to maintain their GPA's and their HOPE scholarships.

Considering college persistence and completion, Binder et al. (2000) found that retention of college students fell in New Mexico after the introduction of the state's merit-based aid program. However, Henry, Rubenstein, and Bugler's (2004) analysis shows that the HOPE scholarship had a positive effect on four-year graduation rates and on college GPAs.

The Kentucky Educational Excellence Scholarship

In order to study the impact of merit-based aid on enrollment in a graduate program, this study analyzes the Kentucky Educational Excellence Scholarship (KEES). KEES was created in 1998 by an act of the General Assembly of Kentucky. The first awards were granted in 1999. Kentucky is an ideal location for this study because the state maintains extensive data on college students, which allows for detailed empirical analyses that are not possible in other states.

KEES also has a number of innovative policy features that make it unique for study. Students do not apply for KEES. Each year of high school, students' GPAs are automatically reported to the state. The Kentucky Higher Education Assistance Authority (KHEAA) then sends letters to eligible students informing them of the amount of the award they are eligible for if they attend a college in-state. Once a student enrolls in college, students automatically receive the scholarship with no paperwork submitted. With these policy innovations, Kentucky ensures that the scholarships are awarded to all eligible students and that concerns about barriers created by applications, which are common in other merit-based aid states, do not exist with KEES. In addition, these innovations serve to mitigate sample selection bias that is a common concern when examining the effect of academic scholarships on financial aid programs.

In order to receive the KEES base award, students must achieve at least a 2.5 cumulative G.P.A. at the end of at least one academic year of high school. The award amounts for KEES are graduated based on the G.P.A. of the student – the higher the G.P.A., the higher the award amount. Students who earn a G.P.A. equal to or greater than a 4.0 receive the maximum award of $500. This process is cumulative, since the award for each year of high school is added to the previous year's awards. The student receives the total amount of KEES that they have earned over the course of high school for each year of college.

Students can also receive bonus KEES awards based on their scores on college admission exams. In order to qualify for a bonus award, a student must first have received a base award. Students who earn a score of 15 or higher on the ACT or a 710 on the Scholastic Aptitude Test (SAT) qualify for a bonus award. Bonus awards are also graduated: the higher the ACT score, the higher the amount. The ACT bonus award is received for each year of postsecondary study. Award amounts are based on the highest ACT score achieved by the student before high school graduation. Table 1

shows the annual amount of KEES money that a student will earn for a given GPA and the amount of "bonus" KEES money that a student will earn for a given ACT score.

Following is an example of how KEES works in high school. If a student has a 3.00 grade average at the end of her freshman year of high school, then she would earn $250 for each year she is enrolled in college. If

Table 1: KEES Base and Bonus Awards Based on High School GPA per Year and ACT Scores, 2005.

GPA	KEES Base Award Amount	ACT Score	KEES Bonus Award Amount
2.50	$125	15	$36
2.60	150	16	71
2.70	175	17	107
2.75	187	18	143
2.80	200	19	179
2.90	225	20	214
3.00	250	21	250
3.10	275	22	286
3.20	300	23	321
3.25	312	24	357
3.30	325	25	393
3.40	350	26	428
3.50	375	27	464
3.60	400	28+	500
3.70	425		
3.75	437		
3.80	450		
3.90	475		
4.00	500		

Sources: KHEAA website – KEES base awards. Available at: http://www.kheaa.com/KEESfaqs.html#how%20much%20for%20GPA website viewed on 1-19-05).
KHEAA website – KEES ACT bonus awards. Available at: http://www.kheaa.com/KEESfaqs.html#how%20much%20for%20GPA (website viewed 1-19-05).

in her sophomore year, she receives a 2.75 grade average, she would receive an additional $187 dollars for each year of college, for a total award of $437. The student would receive a letter from KHEAA that she has $437 in her KEES "bank account." If at the end of her junior year, she earns a 3.1 grade average, an additional $275 would be added to her KEES scholarship, which would now pay $712 per year of college. If at the end of her senior year, she earns a 3.2 grade average she will earn an additional $300 in her KEES scholarship, for a total payout of $1,012 per year of college. If the student also took the ACT during their senior year and scored a 21, then an additional $250 would be added to her scholarship. In total this student would receive $1,262 per year while she is enrolled in postsecondary education.

Jeff Green Scholars, named after the late state senator and General Assembly member, are students who earn a 4.0 GPA for each of their four years in high school and score a 28 or higher on the ACT. Jeff Green Scholars earn the maximum amount possible for the KEES scholarship, $2,500 per year for college for a total of $10,000 over four years.

Students must maintain a minimum GPA while enrolled in postsecondary education in order to continue to receive KEES. In their freshman year, students must earn a cumulative college GPA of 2.5 in order to receive KEES during their sophomore year. For each of the following years, students must earn a cumulative GPA of 3.0 in order to receive the maximum KEES in the subsequent academic year. If a student earns a cumulative GPA less than 3.0, but greater than 2.5, then the student will earn 50 percent of his or her KEES award in the subsequent academic year. If a student earns less than a 2.5 GPA, then he or she will lose the KEES award for the next academic year. However, students who have lost KEES eligibility may regain the award by earning a 2.5 GPA (or higher) in a subsequent year. KEES can only be used for eight academic terms of undergraduate study over the course of five years. Part-time students receive a percentage of their KEES award based on number of hours enrolled. KEES can be used to cover any educational expenses – tuition, fees, books, supplies, room, board, etc.

The Impact of KEES on Graduate Study

Data for this study come from two sources: the Kentucky Higher Education Assistance Authority (KHEAA), which administers the KEES program and the Kentucky Council on Postsecondary Education (CPE), which provides data on academic outcomes. The dataset ranges from 1990 to 2005 and contains observations at the semester level. The data are uniquely identified at the individual student level and include all high school and college students in public or private institutions in the state of Kentucky. This study is the first study to use these particular data for academic research.

This paper addresses the following research question: *What is the effect of KEES on students continuing immediately on to graduate study in Kentucky?* Price theory was used as a conceptual framework. Because KEES reduces the price of undergraduate education, students should be more likely to attend graduate school. KEES does not provide any funds for graduate school.

However, compared to students who did not receive KEES as undergraduates, those who did receive it should have more financial resources available to use toward graduate school expenses. In addition, KEES is awarded to high-achieving students, those most likely to attend graduate school in any case. The effect is not causal, but because KEES recipients are higher-achieving than their peers who did not receive the award, they should be more likely to attend graduate school.

There are some limitations with this analysis. Since the data include only students in Kentucky, individuals who may have attended graduate school out of state are not included in the analysis. Also, because the years in the dataset are limited, only students who attended graduate school soon after completing their undergraduate programs could be considered. Finally, not all cohorts of students could receive the full KEES award since KEES was not fully implemented until the fourth year of the program.

In the program's first year, high school seniors were only eligible to receive KEES awards based on their last year of high school. Students, who were high school juniors when KEES was introduced, were only able to use their last two years of high school to qualify for KEES awards. The same pattern holds for other cohorts of students. Table 2 shows the KEES awards received by each cohort available in the data.

Assuming that it takes students four years to receive an undergraduate degree, the data make it possible to observe the 1999-2000 and 2000-2001 cohorts in graduate school. Neither of these initial cohorts received the full amount of the KEES award, so it is expected that any observed effect will be less powerful than with subsequent cohorts. For the 1999-2000

Table 2: Maximum Number of Years of KEES Awards Received by High School Cohort

Year	Number of Years KEES Can be Awarded
1999-2000	1 year of KEES award
2000-2001	2 years of KEES award
2001-2002	3 years of KEES award
2002-2003	4 years of KEES award
2003-2004	4 years of KEES award
2004-2005	4 years of KEES award

cohort, the dataset includes observations for students who attended graduate school within two years of receiving their undergraduate degree; for the 2000-2001 cohort, the data includes observations for those who went on to graduate school immediately after they received their undergraduate degree.

Table 3 presents available data on the number of graduate students[1] versus non-graduate students. This analysis uses a cross-sectional dataset that has only one entry per student and was created by collapsing the panel dataset complied from KHEAA and CPE data. The frequency counts and all of the data presented in this section come from the cross-sectional dataset.

In considering the effect that KEES has on enrollment in graduate school, differences between graduate students who did and did not receive a KEES award were examined. There are two possible reasons for students not to receive a KEES award: first, students who attended high school after KEES was introduced and did not receive the award because they did not qualify; and, second, students who were in high school before KEES was introduced. In this cross-sectional dataset, it is impossible to differentiate between these two groups of students.[2] Table 4 presents frequency counts for graduate verses non-graduate students who received a total KEES award of an amount greater than zero.

Next t-tests were used to look for differences in the mean number of graduate students who did and did not receive KEES awards. Table 5 presents the results of the Welch corrected t-test. Among students who received KEES awards, 2.10 percent enrolled in graduate study; among those who did not receive a KEES award, 0.91 percent did so. The 0.0119 difference in mean number of students enrolled in graduate study is significant ($t = -20.1215$). This finding indicates that there is a significant difference in graduate enrollment between students who did and did not receive KEES. Although this result is diagnostic of a difference in graduate school enrollment, it is far from conclusive, especially because the group of students who did not receive KEES includes both those who did not qualify for the award and those who enrolled before the program was introduced.

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[1] Graduate students are defined by either being enrolled at a graduate degree level or by declaring a major in a graduate field. Students listed in any of the following degree levels are included: master's degree, master's degree – college education, doctoral degree, first-professional degree, post-baccalaureate certificate, or post-master's certificate. In addition, students who have declared either a first or second major in one of the following fields are considered graduate students: doctoral degree, house staff, master's degree, or first professional degree. Students with a first or second major in the following fields are not included: non-degree, specialist's degree, not designated, undecided, undeclared.

[2] Both groups of students have intentionally been kept both in this dataset. Including students from the pre-KEES years allows a better comparison of students of like academic ability with one group receiving KEES and the other group not. By including students from the post-KEES years, comparisons may be made between groups of students when the program actually existed, which is important for the study of the program. However, since KEES is awarded on the basis of academic achievement, the comparison between students who did and did not receive KEES in the post-KEES years is complicated as it is difficult to hold academic ability constant. Because it is difficult to tell which control group is better, both types of non-recipients are included in the dataset.

Table 3: Frequency Counts Indicating If a Student Was Ever a Graduate Level Student

	Frequency
Non-Graduate	164,589
Graduate Student	2,900

Table 4: Students Who Received a Total KEES Award Amount Greater than Zero and Their Graduate Student Status

	Frequency
Non-Graduate	112,727
Graduate Student	2,423

Table 5: Differences in the Number of Graduate Students Pre- vs. Post-KEES

Group	Observations	Mean	Standard Error	Standard Deviation
Pre-KEES	52,339	0.0091	0.0004	0.0950
Post-KEES	115,150	0.0210	0.0004	0.1435
combined	167,489	0.0173	0.0003	0.1304
diff		0.0119	0.0006	
t =	-20.1215			
Welch's df =	145,863			
Pr(|T| > |t|) =	0			

Given the significant finding from the t-test, a cross-sectional logistic regression model was used that allowed controls to be added to better model the effect of KEES on graduate enrollment. Demographic controls included: age as measured by date of birth, gender, race (with white, non-Hispanic as the excluded category), and family income by using a mean of net family income during the period that the student was included in the

dataset.[3] Other controls were added for academic ability by using ACT score, SAT score, and mean high school GPA. Because major field could influence a student's decision to attend graduate school, a control that indicates whether a student was a Science Technology Engineering or Mathematics (STEM) major was also included.[4]

In this analysis, KEES award amounts are considered to form a continuous function, ranging between $125 and $2500 for each year of college. Students qualify based on their high school GPA for each year of high school. Because there are four years in high school and students can earn different GPAs for each year, many combinations of GPA amounts are possible. KEES awards are granted in increments of 0.10 GPA points. In addition there are separate award amounts for GPAs of 2.75, 3.25, and 3.75 respectively. There are 19 possible award amounts based on GPA, and 20 possibilities if $0 is considered to be an award amount. Given that any of these award amounts is possible for every year of high school, there are160,000 amounts possible for the base award (20*20*20*20 = 160,000). Furthermore, 15 different amounts of supplemental awards may also be added to base award amounts to determine total KEES award. Students can earn any of these award amounts independent of their base awards. Combining the base award with the supplemental award yields 2,400,000 possible values for KEES awards (160,000*15 = 2,400,000). Since award amounts vary between $125 and $10,000, it is reasonable to argue that the 2,400,000 possible combinations lead to a function that is essentially continuous.

Equation 1 is the general estimating equation used to test the effect of KEES award amount on graduate study.

$$
\begin{aligned}
& GradStudent_u = \alpha + \beta_1 TotalKEES_u + \beta_2 Birth_u \\
& + \beta_3 Female_u + \beta_4 Black_u + \beta_5 Hispanic_u + \beta_6 Asian_u \\
(1) \quad & + \beta_7 AmericanIndian_u + \beta_8 OtherRace_u \\
& + \beta_9 MeanNetIncome_u + \beta_{10} ACTscore_u + \beta_{11} SATscore_u \\
& + \beta_{12} MeanHSGPA_u + \beta_{13} STEM_u + \varepsilon_u
\end{aligned}
$$

where,

$GradStudent_u$ is a dichotomous variable that indicates if a student, *u,* was ever enrolled in a graduate level program;

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[3] This model was run using standardized forms of mean net family income. Standardizing is a common practice that eliminates negative values for family income. This variable was standardized by using two different methods: first, by taking the log of net family income and, second, by squaring net family income. However, the fundamental results did not change when either of the standardized forms of net family income was used. Because there is no difference in results and raw mean net family income is easiest to interpret for nonnegative values, results are presented using the raw form of mean net family income.

[4] It would have useful to have included additional controls such as student loan burden; however, data on student loans were not available at the time the dataset request was prepared.

$TotalKEES_u$ is a continuous variable that is equal to the total amount of KEES award received by student, *u*;

$Birth_u$ is a continuous variable that is reports the date of birth (measured by day) for student, *u*.

$Female_u$ is a categorical variable that is equal to 1 if student, *u*, is female and 0 if the student is male.

$Black_u$ is a categorical variable that is equal to 1 if student, *u*, is Black, Non-Hispanic and 0 otherwise.

$Hispanic_u$ is a categorical variable that is equal to 1 if student, *u*, is Hispanic and 0 otherwise.

$Asian_u$ is a categorical variable that is equal to 1 if student, *u*, is Asian or Pacific Islander, and 0 otherwise.

$AmericanIndian_u$ is a categorical variable that is equal to 1 if student, *u*, is American Indian or Alaskan Native, and 0 otherwise.

$OtherRace_u$ is a categorical variable that is equal to 1 if student, *u*, is of Other Race or Alien, and 0 otherwise.

$MeanNetIncome_u$ is a continuous variable that is equal to the mean of the net family income for student, *u;*

$ACTscore_u$ is a continuous variable that reports the ACT score students, *u*;

$SATscore_u$ is a continuous variable that reports the SAT score for student, *u*;

$MeanHSGPA_u$ is a continuous variable that records the mean high school GPA for student, *u*;

$STEM_u$ is a categorical variable that indicates if student, *u*, has ever been a Kentucky identified STEM major as either a first or second major;

ε_u is a random error term.

Table 6 presents descriptive statistics for the estimating sample used. Several points in Table 6 are worth noting. Of the students in the dataset, 3 percent had enrolled as a graduate level student at one time. The mean KEES award amount received during the years of the dataset is $2,391. Of those in the dataset, 62 percent are women, African Americans comprise 4 percent, and Asians are approximately 1 percent. The mean net family income for these students is $53,840. Mean ACT score is approximately 20 and includes scores for the full range of the test (from zero to 36). Mean high school GPA is approximately 3.5. Approximately 35 percent of the students in the dataset had at one time declared a major in a STEM field.

Table 6: Descriptive Statistics for Pooled Dataset Testing KEES and Graduate Study

Variable	Mean	Std. Dev.	Min	Max
If ever Graduate- Level Student	0.03	0.16	0	1
Total KEES award amount	2,391.13	2,037.61	0.00	8,000
Date of Birth	8,914.15	598.67	6,851	11,226
Female	0.62	0.49	0	1
Black	0.04	0.20	0	1
Asian	0.01	0.08	0	1
Mean net family income (in 1000s)	53.84	43.92	-236.80	847.32
ACT Score	19.63	7.96	0	36
SAT Score	124.21	360.00	0	1600
Mean High School GPA	3.49	0.72	0	6
If ever a KY- identified STEM Major	0.35	0.48	0	1

Note: The racial categories of Hispanic, American Indian, and Other Race were dropped due to lack of variation in the data.

Using the dataset described above, a cross-sectional logistic regression model was run. The results are presented in Table 7, including log odds ratios and standard errors.

Given that the model is a cross-sectional logistic regression, the marginal effect of the coefficients was calculated to interpret the log-odds ratios (Wooldridge, 2002). Table 8 presents the marginal effects (dy/dx) of the log-odds ratios.

When controls were included, the same positive significant result (z = 4.09) was found as had been obtained with the t-tests. The marginal effect (dy/dx) of total KEES is 0.000000490 with a standard error of 0.00000 (z = 4.10). If a student went from having zero dollars in KEES to having the maximum amount of KEES award ($8,000) in the sample, the probability of his or her attending graduate school would increase by 0.39 percentage points. As shown in the t-tests, of students who did not receive KEES, 0.91 percent went on to graduate school. If a hypothetical student had instead received $8,000 in KEES, the probability of attending graduate school would increase to 1.3 percent. This is approximately a 40 percent increase in the probability that the students who previously did not receive KEES would attend graduate school if they received the maximum amount in the sample.

Table 7: Effect of Total KEES on Ever Enrolling in Graduate Study

	If ever a Graduate – Level Student	Robust Standard Errors
Total Cumulative KEES Award Amount Received	.000161	(.0000393)**
Student Birth Date	-.0032	(.00019)**
Female	.194	(.125)
Black	.07	(.333)
Asian	-.99	(1.15)
Mean Net Family Income (in 1000s)	-.013	(.00206)**
ACT Score Value	.0593	(.0156)**
SAT Score Value	.000454	(.000132)**
Mean HS GPA	.223	(.183)
If First or Second Major Was Ever Kentucky-Identified STEM	.918	(.12)**
Constant	20.6	(1.6)**
Observations	13,997	

Notes:
* = significant at 5%; ** = significant at 1%
White is the excluded race category. Hispanic, American Indian, and Other Race were also dropped due to lack of observations.

In addition to the positive significant result on the total KEES variable, there was also a positive significant result for the Kentucky-identified STEM major variable (z = 7.62). In other words, students who major in STEM fields are more likely to attend graduate school than those who major in other subjects. The marginal effect (dy/dx) of the Kentucky-identified STEM major is 0.003332 with a standard error of 0.00086 (z = 3.88). This indicates that if a student changes into a STEM field, the probability of his or her attending graduate school increases by 0.3 percentage points.

Other variables also show significant results, although the marginal effects are very small. Student age has a negative relationship with enrolling in graduate school: younger students are more likely to enroll than their older peers. Interestingly, in the dataset, mean net family income also has a negative relationship: wealthier students are less likely to enroll in graduate school. As would be expected, both ACT and SAT scores have a positive relationship with enrolling in graduate school. The higher students' scores on a college entrance exam, the more likely they are to enroll in a graduate-level program.

Table 8: Marginal Effects of Total KEES on Ever Enrolling in Graduate Study, Controlling for Kentucky

STEM Majors

Variable	dy/dx	Std. Err.	z
Total KEES award amount	4.90E-07	0.00000	4.10
Date of Birth	-9.74E-06	0.00000	-6.52
Female*	0.00058	0.00036	1.60
Black*	0.00022	0.00108	0.20
Asian*	-0.00193	0.00138	-1.40
Mean Net Family Income (in 1000s)	-4E-05	0.00001	-4.20
ACT Score	0.000181	0.00005	3.79
SAT Score	1.38E-06	0.00000	2.69
Mean High School GPA	0.000678	0.00056	1.21
If ever a KY-identified STEM Major*	0.003332	0.00086	3.88

Note: (*) dy/dx is for discrete change of dummy variable from 0 to 1

Conclusion

Both the t-tests and the cross-sectional logistic regression results indicate that there is a positive effect of receiving KEES on attending graduate school. In other words, receiving an additional dollar of KEES has a positive significant effect on a student's prospect of enrolling in graduate-level study. Also, students who had a first or second major in a STEM field were more likely to attend graduate school than their peers.

The cross-sectional dataset did not distinguish between those students who received KEES because the program did not exist and those who did not qualify. Given this limitation, these results should not be interpreted as being causal, but rather indicative of a trend. Perhaps in subsequent years when more cohorts of students under the KEES program have passed through their undergraduate careers, researchers can conduct a more nuanced study using panel data and look at issues such as length of graduate study and years between finishing a baccalaureate degree and enrolling in a graduate-level program. In addition, it is likely that the limitations of available data – having only two cohorts who could have gone to graduate school, not having a cohort that received the full benefit of KEES, and only being able to look at entry into graduate school within one to two years after graduation in Kentucky – result in an underestimate the effect of KEES on graduate study.

The analysis shows that merit-based aid has a positive effect on the academic choices and outcomes of college students. No longer is student financial aid limited only to the financial sphere of higher education. With the introduction of merit-based aid, financial aid appears to have an impact on the academic decisions of college students, as well. KEES seems to change the academic behavior of college students in Kentucky, particularly with regard to their enrollment in graduate study.

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