State Aid and Access to Higher Education for Low-Income Students

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ECO 495

Professor Vandegrift

April 27, 2021

ABSTRACT

Introduction

In my senior thesis, I would like to examine if state institutions have been giving less assistance to lower-income students in favor of have more higher income students who would receive a smaller amount of assistance. In my opinion, this means state institutions are failing their mission, which is educating any student in their state who is qualified to enroll. State institutions have a duty to serve the public, not prioritize the better off students.

For my study, I will compare the percent of first year undergraduates who received Pell grants to the percent of students receiving institutional grant aid. Pell-grants are need-based aid while institutional grant-aid helps lower the cost for students that could already afford and planned to go to college. I will also compare the number of students paying in-state vs out of state tuition. This will be for a secondary comparison where I see if attracting out-of-state tuition has increased, because those paying out-of-state are paying more and likely better off. For both of these, I will be looking at it over a set of 252 state universities from the academic years 2007-2008 to 2018-2019. I would be focusing on large universities with 10,000 or more students, granting bachelor's degrees or higher, to capture the experience of the majority of the state. By showing if Pell grants have diminished while institutional grant aid has increased would mean states are prioritizing students that can likely pay the full cost over students that need more financial support. My research will distinguish itself from the existing literature with the selection of institutions used and the comparison of percentage of institutional grand-aid recipients compared to the percent of students receiving Pell-grants. My research deviated from where I expected and became less of a story about Pell grant recipients and merit aid and more

about how state universities distribute state appropriations, which seems to have great potential for future research.

Literature Review

In the study, "State Higher Education Funding Cuts Have Pushed Costs to Students, Worsened Inequality", by Michael Mitchell, Michael Leachman, and Matt Saenz, they examined how states have cut higher education spending per student since the Recession and raised student debt levels. While this study is by a think tank and not peer-reviewed, their data is from the College Boards trends in pricing. They argue that colleges should rethink the amount of merit-aid that they provide in favor of more need-based aid to lower inequality, especially if they want to attract more students of color (Mitchell, Leachman, & Saenz, 2019). Though this is not a study focused on studying merit aid, it helps shows the landscape of what students are paying overall and how crucial the aid might be to them.

In the paper, "The Consequences of Merit Aid" by Susan Dynarski, she examines how the merit aid programs in seven states have affected education outcomes, particularly in respect to demographic information. Historically, merit aid was given the least frequently. However, this changed in the early Nineties who had certain GPAS in high school (Dynarski 2002). The author mainly focuses on the Georgia HOPE scholarship and then expands the analysis to states with similar programs (Dynarski 2002). Dynarski mostly used the Current Population Survey (CPS) for data, with some modifications for its limitations (Dynarski 2002). Dynarski looked at how the program increased the attendance at a four-year state-instutiton (Dynarski 2002). She also examined how it affected racial attendance (Dynarski 2002). She looked for similar results at other colleges (Dynarski 2002). The amount that merit-aid increases attendance in four-year

institutions in its state and how it effects the racial gaps in attendance has overlap with my paper but differs from my thesis where I am examining income over race.

In the paper, "Merit-Based Student Aid and Freshman Interstate College Migration: Testing a Dynamic Model of Policy Change" by Orsuwan, M., & Heck, R, the authors examine how different types of merit scholarships at state universities can encourage more students to attend college in their own home state. State universities do so to prevent those seeking higher education from attending college elsewhere and thus making their highly educated labor force more likely to stay in their state of origin (Orsuwan & Heck, 2009). Though the article of the paper mainly examines this student migration, they also noted in their research that this state of action cuts into budgets for need-based aid and privileges more economically well-off students (Orsuwan & Heck, 2009). The variables in their study included unemployment, per capita income, and state spending on higher education overall (Orsuwan & Heck, 2009). This paper is tertiary to my own research but shows how the question I am pursuing can be linked with other areas of interest with regards to higher education and merit scholarships.

In the article "How do merit scholarships effect minorities?" by Kim, M. S. & Sambonsugi, N., the authors argue that the increase in merit scholarships exacerbate the existing racial and class gaps at colleges (Kim and Sambonsugi, 2010). The focus of their research is on 9 merit aid program and their effect on minorities in 12 Southeastern states (Kim and Sambonsugi, 2010). Though my design would be on large state universities across the country and focusing on Pell-eligible students, as the article points out, a large portion of low-income students are racial minorities (Kim and Sambonsugi, 2010). There seems to be a strong correlation between family income and standardized test scores, which are often crucial for obtaining those merit-based

scholarships (Kim and Sambonsugi, 2010). The research examined first-time freshman enrollment, the existence of a merit program, state population, state per-capita income, unemployment rate, poverty rate, and the number of high school graduates, and the broke the dependent variable into multiple equations examining it by gender and race (Kim and Sambonsugi, 2010). Their data came from one of the same sources as my data, the NCES, and they also utilized the Southern Regional Education Board, SREB (Kim and Sambonsugi, 2010). Their study is similar to mine, but more focused on race and in a specific geographic region and does not use Pell-eligibility as a variable.

In the article, Changes in Institutional Aid, 1992-2003: The Evolving Role of Merit Aid, the author Doyle, W. R. examines how universities themselves have changed how they have provided aid. Much of the paper is built on existing student price response studies (Doyle, 2010). The study focuses on why universities chose to distribute certain types of aid and as such, follows the trend of how certain aid is given over time (Doyle, 2010). The data here is from the National Post-Secondary Student Aid Study (NPSAS) focusing on dependent students at not-for profits, with the dependent variable being total institutional grant aid per student. Family income and college entrance exam scores are two of the most important independent variables (Doyle, 2010). The controls are student demographics and tuition and financial aid (state and federal) per student (Doyle, 2010). The study here included private and public colleges, as well as non-doctoral institutions. It had a different focus but again, may have found similar conclusions to what I will in my study.

In the article, Does Merit-Based Aid “Crowd Out” Need-Based Aid?”, the author Doyle, W. R. looks at need and merit based spending at states over twenty years to determine if merit-

based spending eliminate the ability to give need-based aid.(Doyle, 2010). Doyle examines the history and current trade-off between need and merit-based aid (Doyle, 2010). Need-based aid loses purchasing power over time while merit-based aid does not aid in changing inequality with regards to what sort of students are able to attend the college (Doyle, 2010). The dependent variable here is the amount of need-based aid per full time student, from the National Association of State Student Grant and Aid Programs annual survey and the primary independent variable is the total amount of merit-based aid awarded per state to full-time students. The controls are for budgetary restrictions and policy liberalism (Doyle, 2010). While the variables are radically different, and the author is looking by state across all institutions of higher education while I am looking at state institutions, the author here is pursuing a research question similar to mine.

There has been a significant amount of research surrounding the cost of higher education, merit scholarships, and what sort of students should be prioritized for aid. My research will share similarities in aim and some variables with existing research. However, my thesis will distinguish itself by the particular model I will create. I will compare the percent of institutional grant-aid recipients to the percent of Pell-grant recipients at large, four-year public instructions over the course of eleven years. If state universities are indeed decreasing need-based aid in favor of merit-based aid, I would deem this to contradict their missions to serve their tax-payer base and serve all students qualified to attend, no matter their family income.

Data and Methods

I had panel dataset of 252 state institutions of higher education, sorted by in-person mainly, degree granting, granting bachelor's degrees or higher, at universities with 10,000 or

more students. Six schools had been eliminated from this data because they were missing data for a significant number of years. UnitID and Institution name identify all the colleges in my data. My variables are from the academic years 2007-2008 to 2018-2019. These fall under the variable, Year. PercentPellGrant is the percent of full time first year undergraduates awarded Pell grants. I regressed all other variables on this. PercentMerit is the percent of full-time first-time undergraduates awarded institutional grant aid(i.e. merit-based scholarships from the school). PercentInState is the percentage of students in the fall cohort who are paying in-state tuition rates. PercentOutOfState is the percentage of students in the fall cohort who are paying out-of-state tuition rates. StateAppropriations, TotalRevenue, and Endowment are exactly what their names are, in millions of dollars. I also included variations of all three variables divided by one million to make analysis easier. TotalApplicants and TotalEnrolled were as they described, and I also had two variations divided by one thousand to make analysis easier. I also took the average per year for the variables PercentPellGrant, PercentMerit, PercentInState, PercentOutOfState, StateAppropriations for ease of depiction. I also had lagged variable, labeled as such, for PercentMerit, StateAppropriations, and the Difference in State Appropriations from year to year divided by total enrolled students. Then I also had three variables, State Appropriations, the Difference in State Appropriates from year to year, and Endowment, all divided by total enrolled students.

My main equations were:

(1) $PercentPellGrant = PercentMerit_i$

(2) $PercentPellGrant = PercentMerit_i + PercentOutOfState_i + TotalRevenueMillions_i + TotalApplicants_Thousands_i + Stateappropriations_MillionsLag1_i$

(3) *PercentPellGrant* = *PercentMerit*i + *PercentOutOfState*i + *TotalRevenueMillions*i + *TotalApplicants_Thousands*i + *Stateappropriations_MillionsLag1i* + *Endowment_Millions*i

(4) *PercentPellGrant* = *Stateappropriations_enrolled*i

(5) *PercentPellGrant* = *Diff_Sappropriations_enrolled*i

(6) *PercentPellGrant* = *Diff_Sappropriations_enrolled_lag*i

(7) *PercentPellGrant* = *Diff_Sappropriations_enrolled*i + *Year*i

(8) *PercentPellGrant* = *Diff_Sappropriations_enrolled*i + *Year*i + *Year PercentOutOfState*i

(9) *PercentPellGrant* = *Diff_Sappropriations_enrolled*i + *Year*i + *Year PercentOutOfState*i + *PercentMerit*i

(10) *PercentPellGrant* = *Stateappropriations_enrolled*i + *Diff_Sappropriations_enrolled*i + *Year*i + *Year PercentOutOfState*i + *PercentMerit*i

(11) *PercentPellGrant* = *Stateappropriations_enrolled*i + *Diff_Sappropriations_enrolled*i + *Year*i + *PercentOutOfState*i + *PercentMerit*i + *Endowment_enrolled*i

Findings

After running the regressions, the findings were not what I expected. I had expected merit aid to have a statistically significant negative correlation with percent of Pell grants.

Table 2. Initial regressions

		Fixed effects, robust	
	1	2	3
PercentMerit	0.1642	0.1834	0.1875
	0.0088	0.01754	0.0178
PercentOutOfState		-0.1139	-0.1209
		0.0362	0.0368
TotalRevenue_Millions		0.0002	0.0002
		0.0006	0.0006
TotalApplicants_Thousands		0.1707	0.1763
		0.0477	0.0487

Stateappropriations_MillionsLag1		-0.0131	-0.0126
		0.0022	0.0021
Endowment_Millions			-0.0002
			0.0005
Constant	26.9082	26.6154	26.5207
	0.9240	0.8845	0.8999
Observations	3,012	2,844	2,793
R-squared	0.0088	0.0172	0.0232

Robust standard errors in parentheses

In all three regressions in Table 2, you can see it has a statistically significant positive correlation with the percent of Pell grants. Also unexpected is that an increase in state appropriations is correlated with a stiatistically significant decrease in percent of Pell grant recipient students. Total endowment, revenue, and enrollment were not statistically significant in either regression but the total number of applications was positively correlated with percent of Pell grant recipients. In regression 3, as suspected, more in-state students is positively correlated with percent of Pell grant recipients and out of state students are negatively correlated with Pell grant recipients.

Table 3.Expanded regressions with fixed effects, robust

	4	5	6	7	8	9	10	11
Stateappropriations_enrolled	-0.000904						-0.0000957	-0.0000929
	0.000019						0.0000172	0.0000171
Diff_Sappropriations_enrolled		0.0000585		0.0000229	0.0000248	0.0000244	0.0000676	0.0000686
		0.0000136		9.11E-06	9.33E-06	9.46E-06	0.000013	0.0000131
Diff_Sappropriations_enrolled_lag			7.90E-06					
			9.45E-06					
Year				0.5644561	0.6538727	0.5710782	0.5535198	0.6047649
				0.043483	0.0434064	0.0509999	0.0530471	0.0574156
PercentOutOfState					-0.214278	-0.2137985	-0.2419522	-0.2392526
					0.0354284	0.0353432	0.0365057	0.0369856
PercentMerit						0.0504574	0.0592258	0.0588882
						0.0174753	0.0171394	0.0172836
Endowment_enrolled								-9.42E-06
								3.60E-06
Constant	38.52892	35.07489	35.90876	-1101.208	-1277.664	-1113.396	-1073.653	-1176.02
	0.8719719	0.004384	0.0041522	87.53304	87.18391	102.0943	106.1902	114.9336
Observations	2,849	2,605	2,365	2,605	2,605	2,605	2,605	2,559
R-squared	0.0025	0.0035	0.0022	0.0182	0.3179	0.2885	0.231	0.2787

Robust Standard errors in parentheses.

There seemed to be more to explore with state appropriations so I did a series of regressions that included it. There is a significant negative correlation between the percent of Pell grant recipients and state appropriations divided by the number enrolled, which makes sense that higher levels of funding per student, there would be more low-income students. To examine this more closely, one can look at the regression of the percent of Pell grant recipients with the difference in state appropriations and see that there is a positive and statistically significant difference, as seen in Table 2 in column 5. State appropriations seem to be increasing with year and there are more Pell grant recipient students, which seems positive. However, when a lag is added, the result is statistically insignificant in column 6 of Table 2. Adding year did not change the results to be any more significant. When state appropriations enrolled, percent of merit aid were added, each variable was statistically significant, with the percent of out of state attendees being negative in column 9. When state appropriations enrolled, percent of merit aid, and state appropriations divided by the number enrolled was added to the regression in column 10, every single variable was statistically significant with the difference in state appropriations divided by enrolled being slightly positive, state appropriations divided by enrolled having a slight decrease, a positive correlation with percent of students given merit aid, a negative correlation with students from out of state, and a positive correlation with the year. Adding endowment by total enrolled in column 11 did not make much difference in the regressions.

Conclusion

One of the main correlations I was expecting to find, that the percent of merit aid would be statistically significant and negatively correlated with the percent Pell grant aid, did not pan out. As seen in Figure 4, the average percent of students getting Pell grants per year across these

large state institutions peaked around the height of the Great Recession but stayed relatively flat, whereas merit aid has steadily increased. I was surprised that state appropriates led to a decrease in the percent of Pell grant recipients and I do not understand why that would be. I was unsurprised that more out of state students were correlated with higher percentage of merit aid because many of those students crossing state lines are wealthier and do not need financial aid. Another unsurprising result were that increased state appropriations were correlated with a decrease in out of state students. Similarly unsurprising is how the percent of students receiving merit aid increased with higher levels of state appropriations per student enrolled. A shocking element is how an increase from year to year in state appropriations per total students enrolled is positively correlated with percent of Pell grant recipients but per each year, it is negatively correlated. This suggests that overall increases in state appropriations to universities will decrease out of state students, give them more opportunity for merit aid, but still will not aid in getting more low-income students. An area for further research would be to investigate what specific programs can incentivize state universities to attract low-income students, because it seems to be beyond finances. State universities are intended to serve their tax-payers, which means everyone, from lower-income to high-income. Those with more money should not be favored or courted by state institution when they are meant to be able to provide quality and low-cost education to everyone in their state that can make it into their school.

Appendix

Figure 1

Table 1. Summary of the Mean				
Variable	Mean	Standard Error	[95% Confidence Interval]	
PercentPellGrant	35.940	0.285	35.381	36.499
PercentMerit	48.251	0.434	47.401	49.102
PercentOutOfState	16.684	0.317	16.062	17.306
Endowment_Millions	414.677	21.277	372.953	456.402
TotalRevenue_Millions	869.331	23.060	824.110	914.552
TotalApplications_Thousands	17.442	0.302	16.850	18.034
TotalEnrolled_Thousands	3.237	0.035	3.167	3.306
StateappropriationsMillions_Lag1	146.682	2.562	141.657	151.707
Endowment_enrolled	93119.940	3463.734	86327.610	99912.280
Diff-Sappropriate_enrolled_lag	-468.819	186.276	-834.105	-103.534
Diff-Sappropriate_enrolled	-0.319	178.352	-350.064	349.426
Stateappropriations_enrolled	45572.250	570.485	44453.540	46690.970
Stateappropriations_lag	1.47E+08	2562452	1.42E+08	1.52E+08
Year	2013.536	0.060	2013.419	2013.653
Number of observations				

Figure 2

Table 2. Initial regressions			
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R-squared	0.0025	0.0035	0.0022	0.0182	0.3179	0.2885	0.231	0.2787

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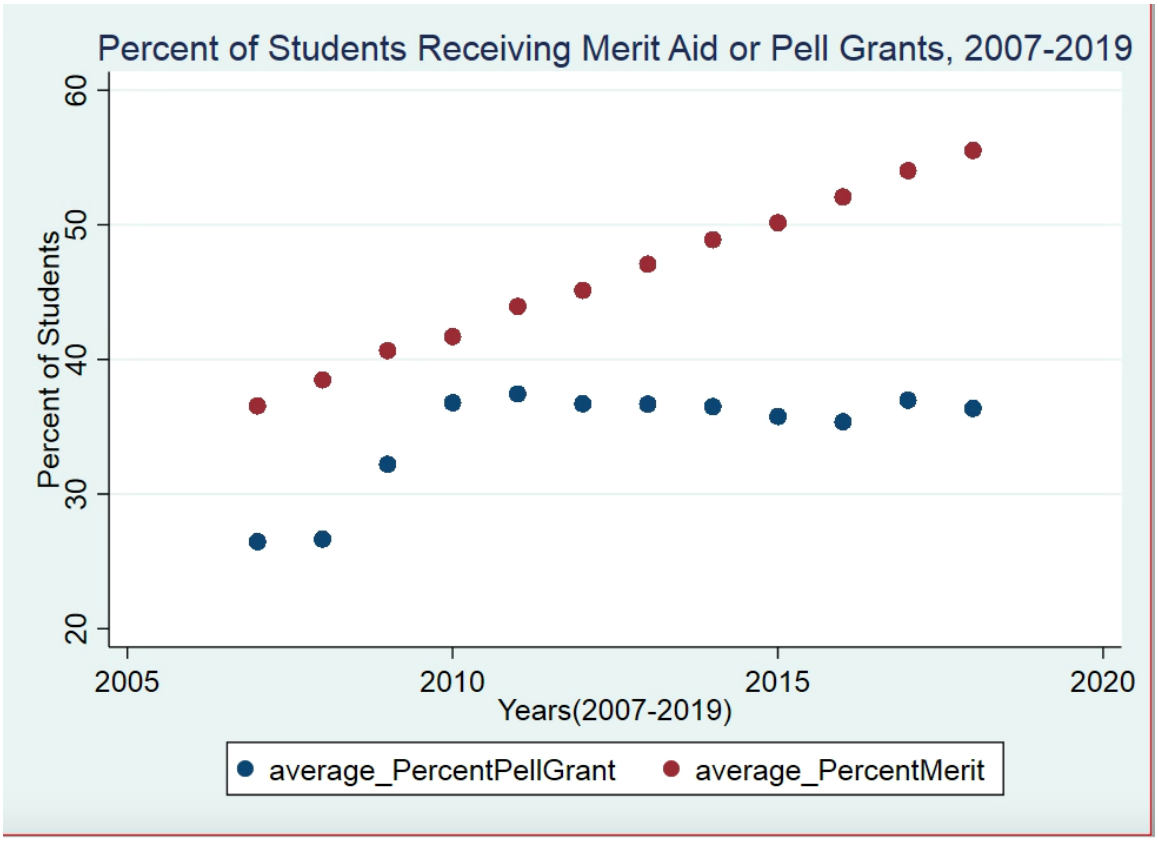
Figure 4


Percent of Students Receiving Merit Aid or Pell Grants, 2007-2019
Percent of Students
20
30
40
50
60
2005
2010
2015
2020
Years(2007-2019)
average_PercentPellGrant
average_PercentMerit

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