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The Effects of Higher Education Policy on the Location Decision of Individuals: Evidence from Florida's Bright Futures Scholarship Program

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Abstract:
Over the past two decades, numerous states have adopted merit-based aid programs to subsidize higher education for in-state students. One of the main objectives of these programs is to increase the stock of educated labor in the state by retaining those whose education is subsidized. This study provides evidence on the extent to which such a program in Florida has affected the location decision of college-educated Florida natives. The analysis utilizes a difference-in-difference approach and data from the Census and American Community Survey (ACS). The results indicate those eligible for the program are significantly more likely to locate in Florida after completing their education than those who were not eligible. These results are robust to a number of alternative specifications, including a comparison with neighboring states.

Keywords: Higher Education; Geographic Mobility; Subsidization

JEL Codes: I2; J61; R23

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1 Introduction

Beginning with Arkansas in 1991, several states have decided to supplement existing subsidies for higher education by adopting merit-based aid programs. These programs, which now exist in at least 13 states, cover at least half - and in many cases, nearly all - of the costs of tuition at in-state public institutions for the students who become eligible based on academic merit. In most cases, these programs have fairly lenient requirements for academic merit, meaning a large proportion of high school graduates may qualify.

These programs are popular with legislators, as well as voters, who propose several positive effects. One such effect is improved access for students who may otherwise be unable to afford college, or are unwilling to incur the debt necessary to attend. A second common justification is the idea of keeping the most talented students in state. By subsidizing the out-of-pocket costs to essentially zero, the hope is that this will induce talented students to remain within their home state for college, and in this way the state may retain and benefit from its most productive students for years to come. Before measuring both the private and social returns that might arise from a policy increasing the attainment or altering the college location choice of individuals, a more basic issue must be addressed. That question is: does the fact that an individual attends college in a state, particularly their home state, make it more likely that the individual will remain in that state after completing his or her education?

increase in the probability of staying in state for college, this paper estimates the effect of college location on the migration probability of individuals.

In particular, this paper focuses on the effects of Florida's Bright Futures Scholarship Program, which began in 1997. The timing of this program's initiation is ideal for the analysis being performed because of the availability of the annual American Community Survey (ACS) beginning with the year 2000. The yearly data provided by this source allows for better identification than waiting for changes to appear in decennial Census periods.

The next section of the paper reviews the related economic literature. This is followed by background information regarding the history of state merit-based aid programs, with a focus on Florida. Section four provides a brief discussion of the theoretical ideas being tested. Section five presents the data sources and some descriptive statistics, as well as outlining the estimation strategy. The results and robustness checks are presented in section six. A final section offers concluding remarks.

2 Literature Review

The first impact to expect from a reduction in the private cost of higher education to an individual is on the decision of whether or not to attend. The obvious problem faced by the researcher is that the cost to an individual is most likely correlated with unobservable characteristics that are also correlated with the schooling outcomes of the individual. For example, students who typically receive large scholarships often do so because they have

Considerably less attention has been paid in the literature to the relationship between college costs and persistence to degree. Angrist (

question from the perspective of a state deciding on the proper level of aid might be; what are the benefits of increasing the level of educational attainment?

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3 Background

The specific policy instrument being examined in this research is the state merit-based aid programs that have become prevalent over the past two decades. Because these programs are generally implemented for political reasons and apply to large numbers of students, they provide a good means to test a variety of questions related to the subsidization of higher education. The previous section gives an idea of the types of relationships being examined. This section provides some background information regarding these programs and some specific information for Florida, the focus of this analysis.

In 1991, Arkansas became the first state to enact legislation on a broad educational aid program for in-state high-school students who met a basic level of merit. The program went into effect for the class graduating high school in 1991. Georgia became the next state to implement merit-based aid in 1993 with the HOPE Scholarship Program. This program, which is funded by state lottery revenues, provides full subsidization

4 Conceptual Foundations

Rather than present a formal theoretical model, this section is intended to provide the conceptual basis to preface the empirical estimation being proposed. The basic question being tested is whether exposure to a state merit-based aid program significantly impacts the location decision of an individual after his or her education has been completed.

While it is often assumed that labor is perfectly mobile and can move to areas with higher wages, lower rents, or better amenities, there are numerous factors that may deter an individual from simply moving to the area where they can make the highest real wages. One factor that readily comes to mind is the idea of a social network. Individuals build a network of friends and family who live nearby and who impact the utility of the individual in a positive way. When deciding whether or not to relocate, an individual almost certainly must factor the disutility or costs involved in living farther from his or her social network, or in building a new social network in the new location. An individual's immediate family may also directly affect the decision to locate, as families with two labor force participants must simultaneously choose where to work. Sjaastad (1962) was among the first to detail both the monetary and nonmonetary "psychic" costs of migration.

Another issue that may be involved in the location decision is the relative risk aversion of the individual. A risk-averse person may choose to locate based on familiarity due to the disutility resulting from choosing to live in an unknown region. The less knowledge an individual has regarding a particular location, the more risk there is involved in moving there and the lower the utility of that individual. Heitmueller (2005), for example, presents a model in which risk-averse individuals engage in less migration.

The reasons mentioned above do not necessarily justify the notion that keeping an individual in state for college will increase the likelihood of that individual permanently locating

This study is based on a sample of all 23-27 year old individuals from each of the surveys mentioned above who were born in the state of Florida. That is to say, the sample is constructed by retaining all individuals reporting ages between 23 and 27 and a state of birth of Florida, and dropping all other observations. This results in a combined sample of 20,976 observations. Of these, 4,698 individuals report being in school at the time of the sample. These individuals are dropped from the analysis as their location is largely driven by school choice, and the focus here is on post-education location decisions. Also, individuals that have had military service or are currently in the military often have different factors involved in location decision. Dropping those with current or past military service reduces

mobility between treatment and control groups is almost 4 percentage points larger for those who continue their education beyond high school than for those who do not. This is consistent with the idea that those who would be affected most by exposure to the Bright Futures Scholarship Program are those who obtain some level of college education.

5.3 Estimation Strategy

The basic form of the equation to be estimated is:

$$InState_{iat} \quad _0 \quad _1 Treat_{iat} \quad Education_{iat} \quad (Education_{iat} * Treat_{iat}) \quad X_{iat} \quad _t \quad _{iat}$$

The dependent variable, ***InState***, in the equation above indicates whether or not the individual resides in Florida at the time they are surveyed. That is, it will have a value equal to one if individual i, age a, born in Florida, lives in Florida when surveyed in year t, and a value equal to zero otherwise. The binary nature of the dependent variable will lead to estimation using the probit model.

The variable ***Treat*** is the key variable in the estimation. The variable is equal to one if the individual is 18 in a year when the Bright Futures Scholarship Program was in operation. There are two issues to note at this point. First, because Census data is being employed, there is no way of knowing where the individuals in the sample attended (and more importantly) graduated from high school. Essentially, individuals are assumed to graduate high school in their state of birth. On the plus side, the survey will not have the problem ofRBB13;RymT(6)51I6B)B13;Ry,T(;)R3B

tertiary education. The coefficients on these interaction terms tell us whether the Bright Futures Program makes it more likely that those who attend postsecondary institutions decide to locate in Florida after they complete schooling. The assumption with this estimation strategy is that the change in probability of residing in Florida that i

Using data available from the Florida Department of Education's Office of Student Financial assistance[9], we can approximate the cost of keeping an additional college educated individual in Florida. Consider, the first cohort eligible for the program, those graduating high school in 1997. There were an estimated 103,700 high school graduates, of which roughly 50.5 percent, or about 52,368, will go on to some form of college. The estimate of a 3.4 percentage point increase in the probability of college-educated locating in Florida means an additional 1780f c

bachelor's degree. Mobility may differ across these occupations, causing the mobility of individuals with some college experience to be different from those with a degree.

those with advanced degrees, in that order. However, the null hypothesis that the treatment effect is the same for all of these levels of education cannot be rejected.

As discussed in the literature review, past studies on state merit-based aid programs indicated there seems to a much smaller effect on the decision of whether to attend college than on the decision of where to attend. This may alleviate some concern. To further address the issue, we can also change the comparison group to include only high school dropouts. It is much less likely that this group will see a change in composition as a result of the tuition subsidization program. High school graduates who do not go on to college will now be a separate group. The results of this specification are presented in Table 12.

The estimated treatment effect for the highly educated (college) group has been reduced from previous specifications and is no longer significant. However, the estimated coefficient still indicates an increase of nearly 3 percentage points in the likelihood of remaining in Florida with the treatment. The estimated impact of the program on those who graduate high school is negative, of much smaller magnitude and insignificant. The treatment coefficients for the two groups, while both not significantly different from zero, are significantly different from each other (p-value of 0.03). This provides at least some evidence that there may not be much change in the composition of the group graduating from high school before and after the implementation of the program.

Another way to check the validity of the results would be to run the same regressions with other (similar) states that did not implement

results for Florida and three other states that did not have substantial programs in place by 2001. For each state, the treatment and control groups were constructed as described for Florida

The results for the comparison states indicate that the construction of the control and treatment groups alone cannot explain the increase in propensity of residing in Florida for college-educated natives. None of the comparison states examined have a significant coefficient on the interaction term of interest. Alabama is the only state with a significant increase in propensity to remain in-state for all natives (as shown by the significant positive coefficient on the treatment dummy), but the interaction term indicates the highly-educated group were relatively less likely than their less-educated counterparts to remain in Alabama once completing schooling.

The basic results are robust to a number of additional alternative samples. For example, dropping any particular age of individual from the sample has no significant impact on the results. Similarly, dropping any specific survey year produces no substantial changes[15]. In particular, dropping the survey years in which there are no individuals from the treatment group (2000-2001) or the year in which there are no individuals from the control group (2006) do not change the results significantly.

7 Conclusion

A recent trend in higher education involves states providing broad merit-based tuition subsidies to in-state high school graduates that meet basic requirements. The justification of these programs centers on improved access to higher education, allowing middle class families affordable college choices, and enticing the state'

Using micro data from the 2000 Census and the subsequent annual ACS, and focusing on the Florida Bright Futures Scholarship Program, this study identifies the extent to which state merit-based aid programs increase the likelihood that the state retains its brightest young students after they complete their education. The study utilizes a treatment-control design and assigns individuals to treatment based on the year in which they are most likely to have graduated from a Florida high school.

The results show that there is a significant positive effect from the program on the likelihood that college educated individuals will still be residing in Florida at the time they are surveyed. This study provides evidence that state funding of higher education may allow the

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Table 1:
Percentages of High School Graduates in Florida Meeting Eligibility Requirements and Accepting Awards

Academic Year	***% Of H.S. graduates eligible for***

Table 3:
Treatment/Control Assignment

2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
23	23	23	23	23	23	23
24	24	24	24	24	24	24
25	25	25	25	25	25	25
26	26	26	26	26	26	26
27	27	27	27	27	27	27

Notes: Columns indicate survey year, individual cell entries represent age at the time of survey. Cells shaded in gray indicate age/survey year groups that are assigned to treatment. These groups are assumed to have graduated high school in or after 1997.

Table 4:
Descriptive Statistics by Treatment Type

Observations	7682	7815
Female	47.0%	49.3%
Black	21.3%	20.2%
Asian	0.9%	1.2%
Hispanic	7.1%	9.5%
College	50.5%	49.2%
Florida Resident	66.1%	71.0%
Average Age	25.4	24.6

Table 5:
Educational Attainment by Treatment Type

Less than HS	17.0%	16.3%
HS Grad	32.5%	34.5%
No College	**49.5%**	**50.8%**
Some College	21.7%	19.5%
Associate's	6.6%	7.2%
Bachelor's	18.5%	19.7%
Postgraduate	3.7%	2.8%
College	**50.5%**	

Table 6:
Probability of Residing in Florida by Treatment Type

Less than HS	74.5%	77.5%	3.0%	--
HS Grad	71.6%	74.5%	2.9%	--
No College	**72.6%**	**75.5%**	**2.9%**	**--**
Some College	64.2%	69.1%	4.9%	2.0%
Associate's	66.3%	74.2%	7.9%	5.1%

Table 7:
Labor Marketd;d6d;d;dIy(I31UUd;)GId;d;d;)GId;d;d c mHERUd g s H;d;d;d

Table 8:
Basic Specification and Disaggregated Education Probit Results

Notes: The dependent variable is a dummy for whether the individual lives in Florida when surveyed. Reported values are estimated marginal effects, with standard errors in parentheses. Interaction effects have been calculated following Norton et. al (2004). * indicates significance at 10% level, ** indicates significance at 5% level, *** indicates significance at 1% level.

Table 9:
Coefficient Tests for Disaggregated Specification

	χ^2

Table 10:
Treatment/Control Assignment in 2-year Specification

Table 11:
Basic Specification Regression Results for Various Alternative Samples

Table 12:
Regression Results: HS Dropouts as Comparison Group

Notes: The dependent variable is a dummy for whether the individual lives in Florida when surveyed. Reported values are estimated marginal effects, with standard errors in parentheses. Interaction effects have been calculated following Norton et. al (2004).
* indicates significance at 10% level, ** indicates significance at 5% level,
*** indicates significance at 1% level.

Table 13:
Regression Results: Basic Specification Cross-State Comparisons