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The Effect of the HOPE Scholarship Program on Interstate Migration

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Abstract

The HOPE scholarship program, created by the state of Georgia in 1993, is the first large scale, merit-based higher educational scholarship program in the United States. In this research, I use border analysis and difference-in-differences estimates to test the hypothesis that the HOPE scholarship program attracts interstate education migration from Georgia's neighboring states. My results support my hypothesis. I find that border areas in Georgia attract high school seniors from the adjacent areas in border states that do not have the HOPE scholarship program. In addition, I use the IPUMS dataset to provide further analysis to the effect of the HOPE scholarship program on interstate migration for entire states rather than for border areas. I find that for a family with high school children, Georgia is the most popular destination state in the inter-state migration within the southeastern area in the period of 1995-2000, because the HOPE scholarship reduces tuition in Georgia significantly.

Keywords: HOPE Scholarship; Interstate Migration; College Tuition; ArcGIS.

JEL Classification: R50; R51; R58; I22; I28; I38

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Introduction

I. What is the HOPE scholarship program?

The HOPE scholarship program (Helping Outstanding Pupils Educationally), created by the state of Georgia in 1993, is one of the most popular public policies in the state (Rubenstein, 2003). This program is a merit-based higher education scholarship and is funded entirely by the revenue from the Georgia Lottery. A student's ability to pay for education is not a factor in determining if he or she receives it. The basic eligibility requirements for a HOPE scholarship are as follows: the student graduates high school with a 3.0 GPA ("B" average); the student is a resident of the state of Georgia for at least one year; the student maintains a cumulative 3.0 GPA throughout college. By March 2010, $5.2 billion in scholarships had been awarded to more than 1.5 million Georgia students[1].

Merit-based scholarship programs are quickly spreading to other states. Since 1993, at least sixteen other states have implemented scale merit-based programs like Georgia's (Cornwell etc. 2009). In July 1995, President Clinton modeled his America's HOPE program, a tax credit for education expenses of the first two years of postsecondary education, after Georgia's HOPE scholarship program[2]. Today, states have a HOPE scholarship program or similar merit-based scholarship program: these include the New Mexico Lottery Success Scholarship; the West Virginia Promise Program; the Nevada Millennium Scholarship Program; the Georgia, Tennessee, Washington and South Carolina HOPE Scholarship Programs; the Oklahoma Higher Access Learning Program; the Alaska Scholars Award; the

[1] https://www.gsfc.org/gsfcnew/SandG_StatReport.CFM
[2] http://www.gsfc.org/gsfcnew/SandG_facts.CFM

Florida Bright Futures Scholarship; the Kentucky Educational Excellence; the Louisiana Tuition Opportunity Program for Students; the Michigan Merit Award Scholarship; the Mississippi Eminent Scholars Program; the Missouri Higher Education Academic Scholarship Program; and the Arkansas Academic Challenge scholarship program. Maryland began their HOPE Scholarship program in 1999 and cancelled it in 2004 because of the state revenue problem and the fewer than expected students applying for the Scholarship[3].

II. Why might some people move across state borders?

Higher education in the United States is well known to the world for its high quality, but it is just as well known for the high cost. In the *2005 Global Higher Education Rankings report*, the Educational Policy Institute looks at the complete and high quality data on affordability of higher education in fifteen countries: Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, New Zealand, Sweden, the United Kingdom and the United States (Belgium's two linguistic communities, Flemish and French, are reported separately). Table 1 shows that the United States has the highest education cost in these countries.

[Insert Table 1 here]

Based on the annual report from the College Board regarding the price of obtaining a college education, "undergraduate tuition and fees at public two-year colleges in 2009-10 averaged $2,544, compared to $5,930 at public baccalaureate colleges, $6,094 at public

[3] Some students did not like the additional restrictions on the Maryland HOPE Scholarship. For example, the HOPE Scholarship is only for college students in science and technology majors and recipients have to pay back the money if they do not work for at least one year in Maryland after graduation. See for details: http://findarticles.com/p/articles/mi_m0DXK/is_8_16/ai_54938007/

master's universities, and $7,797 at public doctorate-granting universities. In the private not-for-profit sector, tuition and fees average $24,040 at baccalaureate colleges, $23,700 at master's universities, and $32,349 at doctorate-granting universities." Table 2 shows the tuition and aid for the 2009-10 academic year.

[Insert Table 2 here]

Moreover, "published tuition and fees at public four-year colleges and universities rose at an average annual rate of 4.9 percent per year beyond general inflation from 2000 to 2010, more rapidly than the 3.0 and 4.0 percent of the previous two decades." In contrast, the inflation adjusted grant aid per undergraduate student increased at only an average rate of 3.4 percent per year in the same period.

From 1998 to 2003, six years in a row, the National Association of State Student Grant and Aid Programs (NASSGAP) ranked Georgia number one among the 50 states in academic-based student financial aid because of the HOPE Scholarship[4]. This is an outstanding achievement for the state's education policy -makers.

HOPE scholarships pay full tuition, a book allowance of up to $100 per quarter or $150 per semester, and most mandatory student fees for the recipient to attend any public college in Georgia's university system. For the HOPE scholarship recipients who attend private colleges in Georgia, an equivalent amount, $3,500 in year 2008-2011, is applied towards tuition. Considering the high cost of college (for example, in 2009-10, the average tuition cost of a U.S., private four-year college is $26,273 and public four-year college is $7,020[5]), many families applied for the scholarship to cover tuition costs.

[4] http://www.gsfc.org/gsfcnew/SandG_facts.CFM
[5] http://www.collegeboard.com/student/pay/add-it-up/4494.html

Because the HOPE scholarship program is only for recipients attending colleges in Georgia[6], a big bonus for interstate migrants is their children could attain a high quality college education. Parents would like to have their children attain a college education in Georgia because of its high college education quality. According to the *U.S. News and World Report rankings of national public universities*[7], Georgia is one of only four states that have at least two top 20 public universities (Georgia Institute of Technology and the University of Georgia). Table 3 shows the comparative advantage of Georgia relative to its neighbors on quality of higher education. The table indicates that not only does Georgia have two top 20 public universities, two top 50 national universities and three top 100 universities, placing first, second and second, in each category respectively, among the six adjacent states (Georgia, North Carolina, Florida, Tennessee, South Carolina, and Alabama).

[Insert Table 3 here]

Families living in Georgia's neighboring states become aware of Georgia's HOPE scholarship program in many ways. First, President Clinton's HOPE tax credit created in 1995 proclaimed the great success of Georgia's program. Second, the governors in Alabama and South Carolina, who were elected in 1998, both pledged they would imitate Georgia's HOPE scholarship program in their own states (Dynarski, 2000). Third, Georgia's lottery for the scholarship program is also an effective advertisement. Selingo (1999) finds that "in fact, 18 out of 24 Alabama daily newspapers carry the Georgia or Florida lottery numbers."

[6] http://www.gsfc.org/gsfcnew/SandG_regs_2009.cfm
[7] U.S. News & World Report, 2009 http://colleges.usnews.rankingsandreviews.com/college/national-top-public

III. Are there restrictions against interstate migration to pursue the HOPE scholarship?

According to *Georgia Residency Requirements for State Programs*, a dependent student meets the Georgia residency requirements, for purposes of the state programs, "if his or her parent has established and maintained domicile in the State of Georgia for at least 12 consecutive months immediately preceding the first day of classes of the school term for which the student is seeking assistance from a state program, and: 1. Such student graduated from an eligible high school located in the state of Georgia; or 2. Such parent claimed the student as a dependent on the parent's most recent federal income tax return.". Accordingly, it is not too difficult for migrants from other states to pursue the HOPE scholarship in Georgia.

The designers of the HOPE scholarship program also considered the cases of interstate migration. In *Georgia Residency Requirements for State Programs*, it is written that "no independent student shall have gained or acquired Georgia Residency, for purposes of state programs, while attending any postsecondary educational institution located in the state of Georgia without clear evidence of having established domicile in the State of Georgia for purposes other than attending a postsecondary educational institution in Georgia". With further consideration for controlling the number of recipients from other states, Senate Bill 492 was implemented in July 2008, which increased the Georgia residency requirement for the HOPE scholarship from 12 to 24 months for students who did not graduate from high school as a Georgia resident.

IV. Concern for the HOPE scholarship financial source and its implication to interstate migration

As previously stated, the revenue from Georgia's lottery is the financial source of the

HOPE scholarship. One important concern about it is that more and more states bordering Georgia have initiated lotteries to fund their own scholarships, which captured the millions of dollars spent by their residents on Georgia's game. The decrease in lottery revenue in 2005 led the Georgia Student Finance Commission to worry about whether the funding would be sufficient to continue offering the scholarship in its present form. Some people believe that because of decreased lottery revenue and increased tuitions, the scholarship program is destined for failure unless changes are instituted (Stephanie, 2005). The Georgia legislature has approved a system of triggers that would gradually do away with the scholarship's benefits if it started losing money[8]. In the first year the lottery revenue is less than that of the previous year, the first trigger will kick in, which would reduce the HOPE book allowance from the $300 to $150. If the lottery revenue does not increase in the second year, the book allowance would be eliminated. The final trigger would eliminate the allotment for mandatory student fees for all students. Although much of the debate and worries disappeared when the lottery revenue increased in 2006, similar debates will perhaps resurface in the future, when lottery revenue is unavoidably affected by economic recession. In February 2009, Margaret DeFrancisco, the President and CEO of Georgia Lottery Corp. said, "the Georgia lottery has reached its 'apex' and revenues it provides HOPE Scholarship…will likely soon be surpassed by demand in coming years[9]."

V. Literature review

Several studies investigate the affection brought by HOPE scholarship, including college enrollment, different benefit for different groups. Using data from the Current Population

[8] http://www.gsfc.org/main/publishing/pdf/2004/hope_highlights.pdf

[9] http://www.bizjournals.com/atlanta/stories/2009/02/02/daily71.html

Survey from 1989 to 1997, Susan Dynarski (2000) finds that the impact of Georgia's HOPE scholarship program on the college enrollment rates among all 18-19 year olds is 7.0 to 7.9 percent. In addition, the program has different impacts on black students and white students in Georgia, because there are many more white students with adequate high school academic performance than black students. Therefore, Georgia's HOPE program has widened the gap between white and black students' college enrollment rates.

Chris Cornwell and David B. Mustard (2001) find that the HOPE program does not help students who are unable to attend college. Although the first-time freshmen enrollment rate in Georgia increases 8 percent more than other states in the control group, it results from students' choice about where (not whether) to attend college. Specifically, more students with better academic performance choose colleges in Georgia instead of colleges in other states, as well as enrollment in a four-year rather than a two-year college.

Ross Rubenstein and Benjamin Scafidi (2002) , using household survey data with lottery spending and lottery winnings, find that, compared to white and higher-income households, non-white and lower-income households have more net spending on Georgia's lottery. In contrast, using data from the three lottery–funded programs, they find non-white and lower-income households receive fewer benefits from the lottery-funded programs. Therefore, the net benefits from lottery-funded program distribute disproportionately among whites and non-whites; higher-income households and lower-income households.

Chris Cornwell and David B. Mustard (2007) examine the effect of Georgia's HOPE scholarship program on automobile consumption. They believe when the income cap of the HOPE scholarship was raised in 1994 and then eliminated in 1995, the HOPE scholarship is entirely unanticipated for those freshmen scholarship recipients from upper-income families in 1995. They are more likely to alternately spend their planned educational expenditures on

automobile purchases than students from lower-income families. Their hypothesis is well supported by the data in 1994 and 1995.

Noel D. Campbell and Frank Smith (2009) investigate the relationship between home price and the award eligibility level of the HOPE scholarship in each metropolitan county in Georgia. They assume local manipulation of grading standards for the HOPE scholarship truly exist. Using a two-step approach, they find in counties with low local grading standards, home price normally appreciates faster than that in counties with high standards. However, they cannot find any relationship between the rate of home price change and the change of local grading standards.

It is difficult to analyze welfare migration by state comparisons without good methodologies. McKinnish (2006) reviews three major approaches used in this area. The first is the state border approach, which analyzes the migration behaviors among state borders and state interiors, contiguous high-benefit areas and low-benefit areas at state borders, or contiguous border areas within the same state. The second, and most popular approach, is to compare the different migration behaviors between two demographic comparison groups, normally a welfare-prone group and a group less likely to receive welfare. The third is to investigate the welfare participation of migrants, i.e. whether the migrants from low-benefit states to high benefits states exhibit higher rates of welfare participation than natives or migrants from other high-benefit states.

Some articles provide a border effects methodology for policy evaluation. Holmes's (1998) study of state right-to-work laws incorporates the idea that any unobservable characteristic is unlikely to vary between businesses on both sides of the border. His results indicate that the state policies have a significant impact on the location of an industry. Bronars and Lott (1998) examine the effect of concealed weapon laws on neighborhood

crime. Using cross-section time series county-level crime data for the continental United States, they find that counties allowing citizens to carry concealed guns generate crime spillovers to neighboring counties without such concealed weapon laws.

Most of previous literatures about the HOPE scholarship program concentrate on the benefits, the effect of the HOPE scholarship program on education quality and the modification of local grading standards. No one has examined the welfare-induced interstate migration which is a very important topic about social assistance.

Although the state border analysis has some advantage regarding policy effect on neighboring states, it has a natural deficiency in that we cannot apply it to the interior of the states. Hence, in additional to using the state border approach, I also use the second approach as supplement to investigate interstate migration for Georgia's HOPE scholarship program.

The rest of my paper is organized as follows. In the first chapter, I use border analysis to find evidence on interstate migration for the HOPE scholarship. In the second chapter, I study the demographic comparison groups and provide evidence regarding the interstate migration for the HOPE scholarship from the whole states' perspective.

I. The state border analysis

The border analysis methodology is an effective way to control for heterogeneous area characteristics. First, to compare the effects of different policies in different areas, researchers must consider variables describing the difference of policies as well as other variables affecting the policies. For example, the effects of a policy can be affected by characteristics related to the area, such as environment, traditional culture, regional public psychology, economic conditions and so on. It is difficult to control for those heterogeneous area characteristics, because many of them are often unobserved and potentially correlated with other variables. To solve this problem, one can use neighborhood areas on different sides of the border of an administrative territory to analyze the effects of policies, as the neighborhood areas normally have similar characteristics related to the environment, traditional culture, public psychology and economic conditions. For example, when the areas on two sides of a state border share similar area characteristics but have different policies, if we narrow the research area to certain border areas by building layers on the state borders or constructing border pairs, we can efficiently control for these unobserved heterogeneous area characteristics and analyze the effects of policy with greater confidence..

Second, the border analysis methodology may provide the best results for our research question. The methodology is based on the assumption that the moving cost of state-to-state migration is lower for households located close to the borders of the states involved. The physical moving costs include a fixed cost (for example, the sale and purchase of housing), a

cost proportional to distance, and a benefit or cost related to differences in economic conditions associated with job availability. In addition, the short-distance moves between borders of a state may allow people to retain their social networks, which also reduce the invisible moving cost. Last but not the least, comparing to people living in the interior area, those living in border areas may be more aware of the policy on the other side of the boarder, and will be more likely to move for the benefit. Therefore, it is reasonable to assume the costs of relocating are relatively lower for an interstate migrant who moves from an area close to the state border to the other side. As a result, we will observe disproportionately more interstate migration in the state border areas than that of the interior areas. It is for this reason "the estimate of the effect at the border places an upper bound on the statewide effect of the policy (Holmes, 1998)." More specifically, Georgia should disproportionately have more potential HOPE scholarship recipients (high school seniors) in the state border areas than that of interior areas, and Georgia's bordering states should have fewer eligible students in the border areas than that of interior areas.

II. Data

In this chapter, I use the Common Core of Data (CCD)[10] from the National Center for Education Statistics. My sample period is from 1986 to 2006. I use the school district level data on Georgia's boarders from these six states: GA, AL, TN, NC, SC and FL. Because CCD is a comprehensive, annual, national data set about all the public schools in the United States, all the data I used in this paper is from public schools.

The number of school districts and schools in those areas changes during the 20-year

[10] The Common Core of Data (CCD) is from the U.S. Department of Education's National Center for Education Statistics that annually collects data about all public schools in the United States.

period. For example, in 1986, there were 328 school districts, 3,275 schools, 1,908,021 students, 102,650 teachers, and 96.95 percent (318) of the school districts offer 12th grade as the highest grade; in contrast, in 2006, there were 327 school districts, 4,346 schools, 2,601,930 students, 178,911 teachers, and 99.08 percent (322) of the school districts offer 12th grade as the highest grade.

I only used enrollment variables from kindergarten to 12th grade from public schools in this paper. I considered adding data from private schools into my sample see the whole picture regarding all students in those areas; but, private school data are at the county level instead of the school district level and there are conflicts with some school districts that cross the county borders. Therefore, I only use public school data in this chapter.

III. The treatment of the geographic data

I consider the effect on the Georgia's borders only, which consists of five neighborhood states. Of these five states, only Alabama and North Carolina do not have HOPE scholarship programs. Florida has the Bright Futures scholarship program (from 1997) and Tennessee has the Tennessee HOPE scholarship program (from 2004). South Carolina has the South Carolina HOPE scholarship program for incoming freshmen and the South Carolina LIFE scholarship program for upper level college students[11] (from 2001). The Florida Bright Futures scholarship program provides full tuition to students with a GPA greater than 3.5 and 75 percent tuition to students with a GPA between 3.0 and 3.5[12]. The Tennessee HOPE Scholarship was enacted in 2004, which awards $4,000 for students enrolled in 4-year

[11] http://www.che.sc.gov/New_Web/GoingToCollege/HOPE_Hm.htm
[12] http://www.floridastudentfinancialaid.org/ssfad/bf/awardamt.htm

institutions and $2,000 for students enrolled in 2-year institutions. In addition, The Tennessee HOPE Scholarship also provides some supplement awards for students from low-income families[13]. Figure 1 shows the states around Georgia with and without HOPE programs after 2004.

[Insert Figure 1 here]

A. The first geographic treatment: creating layers on GA state borders

To show that high school seniors are attracted from the other side of the state border to areas in Georgia and to make the border analysis methodology more applicable, we need to create compatible areas to compare across the state borders. I create two layers on each side of Georgia's border. First, I create the first HOPE border layer for school districts on Georgia's borders in the side of Georgia State and the second HOPE border layer consists of school districts touching the boundary of the first HOPE border layer. Second, I create the first non-HOPE border layer for school districts on Georgia's borders in the side of other neighborhood states and the second non-HOPE border layer consists of school districts touching the boundary of the first non-HOPE border layer. Figure 2, it shows the four layers of school districts on Georgia's borders for my analysis.

[Insert Figure 2 here]

B. The second geographic treatment: Creating border-area pairs on the borders

Using ArcGIS[14], I matched every Georgia school district on the state border with a border-

[13] http://www.tn.gov/CollegePays/mon_college/hope_scholar.htm

[14] ArcGIS is an integrated collection of GIS software products that provides a standards-based platform for spatial analysis, data

area pair, which includes one school district in Georgia's border areas and other adjacent school districts on the opposite side of the state borders. With this method, I obtained the percentage of the enrollment of 12^{th} grade students on the HOPE side for each border-area pair and examined the change of percentage caused by interstate education migration. Meanwhile, as high school students move across the HOPE borders, there could be changes in the relative ratio of students in 12^{th} (or even 11^{th} /10^{th}) grade to students in other grades. Considering the basic one-year-residency eligibility requirement, these school districts in Georgia may have more migrant students in the 12^{th} grade than in other grades. I expect the migration effects of the HOPE scholarship program on other grades will be smaller. Figure 3 shows all the border-area pairs on Georgia's boarders. FIG 4 shows two examples of those pairs; we can see one school district from a neighboring state may belong to one or more border-area pairs.

[Insert Figure 3 and Figure 4 here]

IV. Cross-Tabulation of the Data from the Border Layers

In this section, I use CCD data in 1992 and 1998 from the National Center for Education Statistics. I end the analysis at 1998, because 64 percent of freshmen who received the HOPE scholarships during academic year 1997-1998 lost their scholarships in the following year, which perhaps make the HOPE scholarship not that attractive to students and has a negative effect on interstate migration (Dynarski, 2000).

According to Holmes's paper (1998), we are able to determine the following theoretical model (Figure 5) for the education migration on the state borders. Because

management, and mapping.

households closer to the border have less moving costs, they are more willing to move to the HOPE side of the border to receive the HOPE scholarship. Therefore, we can expect a increase between the first layer of Non-HOPE and the first layer of HOPE as illustrated in Figure 5.

[Insert Figure 5 here]

However, although two first layers on the state border have similar area characteristics, because of different state education policies, we cannot simply conclude that the original enrollment characteristics on both sides are the same or almost the same relative to the changes caused by the HOPE program. If the enrollment or increase in enrollment of high school seniors in the first Non-HOPE layer is greater enough than that of the first HOPE layer, we cannot necessarily observe a discontinuous jump in the growth of 12 graders upon crossing the border onto the HOPE side.

The difference between the first layer and second layer on either the HOPE or Non-HOPE side does exist, because they have the same area characteristics and policy characteristics. Furthermore, because people pursue less moving costs, regardless of whether migrants were originally from the first or second layer on the Non-HOPE side, they will prefer the first layer to the second layer on the HOPE side as a destination. Therefore, I predict the difference between the two layers on the HOPE side is greater than that on the Non-HOPE side.

Considering the three initial statuses (enrollment characteristics on the Non-HOPE side are better than the other side, are the same, or are worse), the three theoretical indicated in Figures 6 through 8 are possible.

[Insert Figure 6, Figure 7 and Figure 8 here]

Based on Figure 2, I calculated the number of students in each layer. Table 4 presents the growth of total students in grades 4 through 12 between 1992 and 1998. I created a bar chart (Figure 9) after Table 4 to make it more explicit when comparing to our theoretical model.

[Insert Table 4 here]

[Insert Figure 9 here]

We find an interesting pattern for students from grades 8 through 12 (with the exception of grade 10): the growth of students in these grades goes up gradually with a movement in the direction of the Non-HOPE scholarship layer, except for a big drop at the border. The patterns of each grade from grades 8 through 12 (with the exception of grade 10) in figure 9 look like the theoretical models, but for earlier grades, we cannot find a similar pattern. Table 4 shows the unweighted means of the growth of students in a given grade between 1992 and 1998 and figure 9 is a bar chart that describes Table 4.

We also find the same pattern for students from grades 7 through 12 (with the exception of grade 10): the percent changes for students in these grades go up gradually with a movement in the direction of the non-HOPE scholarship layer, except for the a drop at the border. The patterns of each grade from grades 7 through 12 (with the exception of grade 10) in the following figure look like the theoretical models. Once again, we cannot find a similar pattern for or other grades. Table 5 shows the unweighted means of the percent changes for students in a given grade between 1992 and 1998 and figure 10 is a bar chart that describes Table 5.

[Insert Table 5 here]

[Insert Figure 10 here]

V. The effect of the HOPE scholarship program on migration

This section estimates two statistical models and two measures of enrollment are considered. One is, the unbalanced increase in the number of 12^{th} /11^{th} /10^{th} grade students in the first layer of the HOPE side. The other measure is, in a border pair, the percentage of 12^{th} grade students on the HOPE side. Because the border approach is a good way of controlling for these unobserved time-varying area characteristics, by comparing adjacent border-areas, I utilize the spatial correlation of area characteristics, thereby minimizing any area specific changes.

Regression 1: *Analysis on school district layers in Georgia border areas*

If there are interstate migrations, the increase of enrollment of students in 12^{th} (11^{th} /10^{th}) grade in the areas with the HOPE scholarship program on the border (The first layer of the HOPE side, as defined in Figure 5) would be greater than adjacent interior areas (The second layer of the HOPE side, as defined in Figure 5). To test this hypothesis, this subsection will define two quasi-experiment groups. One is the first layer of the HOPE side, which is considered the treatment group, the other one is the second layer of HOPE side which is considered as the control group. According to our hypothesis, we set year 1993 as the

commencement year of significant interstate migration and for convenience, we only analyze the data from 1986 to 1996. Hence, we get a two group and two time period (Before 1993 and after 1993) dataset to apply difference-in-differences methodology.

$$Increase_{i\,t} = \alpha + ß_0 Borderdum_i + ß_1 YEARdum_t + ß_2 (Borderdum_i * YEARdum_t) + \varepsilon_{i\,t},$$

where i means different school districts in the two layers, $increase_i$ is the increase in the number of students in 12th grade from the previous year to this year (In the previous year, the students are in 11th grade). $Borderdum_i$ is a dummy variable for the first layer of the HOPE side, which equals one if a Georgia school district, i is in the first layer of the HOPE side and equals zero if it is in the second HOPE side layer. $YEARdum_i$ equals one if it is after 1993 (Year = 1993-1996) or equals zero if it is before 1993 (year = 1986-1992). The coefficient of interest is θ, the coefficient of the interaction between $Borderdum_i$ and $YEARdum_i$. It captures the effect of the HOPE scholarship program on the interstate migration by testing the increase of students in high schools.

There are three regressions separately on the increasing number of students in grades 12, 11 and 10. The results for 12th grade, 11th grade and 10th grade are as follows:

(1) The effect of the HOPE scholarship program on the increase of students in 12th grade in the first layer of HOPE side

[Insert Table 6 here]

(2) The effect of the HOPE scholarship program on the increase of students in 11th grade in the first layer of HOPE side

[Insert Table 7 here]

(3) The effect of the HOPE scholarship program on the increase of students in 10^{th} grade in the first layer of HOPE side

[Insert Table 8 here]

Table 6, Table 7 and Table 8 indicate the results of when I used the increasing number of high school students in the first layer of the HOPE side to measure the effect of the HOPE scholarship on interstate migration. Table 6, Table 7 and Table 8 show that Georgia's school districts on the state borders attract more migration than the interior adjacent school districts. The HOPE scholarship program increases the enrollments of students in 12^{th} grade by 7.56%, 11^{th} grade by 5.30%, and 10^{th} grade by 8.23%. All the results are positive and significant(7.56/0.02, 5.30/0.09, 8.25/0.04). What we cannot see from these tables is that all the regression results on grades under grade 10 are not significant.

Regression 2: *Analysis on the border-area pairs*

In regression 2, each observation is a border pair (adjacent school districts on opposite sides of a state border).

$$Percentage_{it} = \alpha + \theta Typedum_{it} + \varepsilon_{it}$$

Where the dependent variable is the percentage of 12^{th} grade students at the geography area of the HOPE side in each border-area pair, i indexes a pair of border-areas, t is year variable, $Typedum_{it}$ is a dummy variable that indexes the type of the borders. It equals one if only the Georgia side has HOPE and equals zero if both sides are the same, which exists before 1993 and after 1997 when some neighborhood states also had the HOPE scholarship

programs.

In Table 9, I report the results from using the increasing ratio of the number of students in 12^{th} grade on the HOPE side for each border-area pair to measure the effect of the scholarship program on interstate migration. The results are positive and significant. Table 9 shows the HOPE scholarship makes a 2.328% increase on the enrollment of 12^{th} grade students on the HOPE side. It indicates that some students in grade 12 moved to school districts on the HOPE side from the Non-HOPE side in each border-area pair.

[Insert Table 9 here]

VI. Conclusion and Limitations

This section examined the border areas between states with the HOPE scholarships and without the HOPE scholarships. The difference for the percentage of students in the 12^{th} grade was quite significant (Sometimes also on grades 11^{th}, 10^{th}, and even 9^{th}). There is much uncertainty and debate about whether or not state policies make a significant difference in the geographic distribution of migration. Using ArcGIS, this paper developed a procedure for identifying whether the HOPE scholarship affects interstate migration and the results suggest the program does attract migration.

This procedure has its own limitations. First, it is possible education migration decreases as one moves away from the border. Therefore, we cannot say conclusively that the effect observed at the border also holds true throughout the entire state. Second, it cannot distinguish

the impacts of other possible state policies that are favorable for 12th grade. Finally, although we hope that extraneous factors will average out, nature can have discontinuities. For example, the Okefenokee Swamp which is the largest peat-based “blackwater” swamp in North America straddles the Georgia–Florida border. This means that even if Georgia’s HOPE scholarship program did have an impact, households of Florida in this area cannot cross the border into Georgia. It is possible there are other such border conditions we cannot take into account.

Chapter II: Evidence from the IPUMS Dataset

I. Introduction of IPUMS Database

In Chapter I, I use border analysis to explain the effect of the HOPE scholarship program at the state border areas. However, it is possible that the effect observed at the border does not hold robust to non-border areas. In this chapter, I use the IPUMS dataset to provide further analysis to the effect of the HOPE scholarship program on interstate migration for entire states rather than for border areas.

IPUMS-USA is a project dedicated to collecting and distributing United States census data. Specifically, the IPUMS database provides information about economic, education, demographic and migration characteristics in individual, household and family level. In the IPUMS database, Public Use Microdata Area (hereafter, PUMA) refers to the location of each housing unit. The classification of PUMAs generally follows the boundaries of county groups, single counties, or census-defined "places". When an area has more than 200,000 residents, the area will be divided into as many PUMAs each with about 100,000+ residents. Therefore, PUMA is the lowest level of geographic classification in the IPUMS database. It normally represents county group(s).

My data from IPUMS-USA is a five percent sample of the 2000 Census. For each family, I obtained information such as family income, house value, race, father's educational attainment, number of children, children's grade level, and etc. from the IPUMS database. More importantly, I collect migration information during a five year period for each household from this database, including the family's state of residence in 1995 and its state of residence in 2000.

To test the effect of the HOPE scholarship program on interstate migration, I further select observations from the IPUMS dataset by requiring the families migrate during the year of 1995-

2000 (i.e., the household's residence state in year 1995 and that in year 2000 is different). To control for the culture and geography characteristics, rather than the effect of the HOPE scholarship program, that may affect the migration decision, I focus on the southeast region of United States including 7 states, Georgia, Alabama, Tennessean, South Carolina, North Carolina, Florida, and Mississippi[15]. Specifically, I require a household to live in southeast states in 1995 and to move to another southeast state by 2000 to be included in my sample. Georgia started the HOPE scholarship program in 1993. In contrast, none of other states in southeast USA had the HOPE scholarship program in 1995 and only Florida started its Florida Bright Futures Scholarship started from 1997. The difference between Georgia and other states in southeast America allows me to analyze how interstate migration decision is affected by the HOPE scholarship.

II. literature review

Two streams of literature are relevant for Chapter II. The first stream investigates whether and how scholarship programs affect migrations and the second stream further examines the effect of scholarship programs on different groups of families, e.g. among families with different races, religions, incomes, education levels, and etc.

The Tiebout Model is well referred by many previous studies on the HOPE scholarship program (Dee, 1998; Campbell and Smith, 2009). According to Tiebout (1956), an individual's utility is determined by public goods and personal valuations. To maximize utility, individuals may move from one community to another community until the maximized utilities are realized. The Tiebout Model has some basic assumptions including perfect mobility, complete

[15] In this chapter, since I extend my analysis to all the states in southeast United States rather than border areas around Georgia State, I add Mississippi to my sample. As a result, I have a sample of households who move during the 1995-2000 period within the seven states of southeast region..

information, no moving costs, and no spillover of public benefits/costs from one community to the next.

Some scholars believe that the HOPE scholarship program provides a highly illustrative example of the Tiebout Model in reality. As described in Chapter 1, the migration from state border areas into Georgia meets almost all the assumptions of Tiebout Model: People in those areas have perfect mobility and complete information about the border areas; families who choose to move to Georgia do not actually move far away and bear very low or almost no moving cost; the benefit of the HOPE scholarship only applies to Georgia residences and thus has no spill-over effect to families in other states even in the border areas. Many studies use the Tiebout Model in the previous literature, such as Dee (1998) and Campbell and Smith (2009), who find a positive relation between the HOPE scholarship and home price/residential construction. According to the Tiebout Model, I also believe that, as a sharp and plausibly independent change in the quality of Georgia's public goods, the HOPE scholarship will attract people from other states to Georgia.

Another good example of where the Tiebout Model may apply is the Kalamazoo Promise Program, another popular higher education scholarship program in US. The Kalamazoo Promise, which was launched in 2009, is a scholarship helping college education for *all* students who resides in Kalamazoo Public Schools (hereafter "KPS") district of Michigan. Whereas the HOPE scholarship program is a *merit-based* scholarship, the Promise scholarship is a *need-based* scholarship. To qualify for this scholarship, a student must have all of the high school years (9-12 grade) in KPS (enrollment & residency) and graduate from KPS. The scholarship is graduated based on the length of enrollment in the KPS system and covers up to 100 percent of all college tuition and mandatory fees. One of the three purposes of the Kalamazoo Promise Program is to

promote economics and community development in the Kalamazoo area by attracting families and business to this area.

Several studies find that the Promise Scholarship Program has a positive effect on the total enrollment of students in KPS. For example, Bartik, Eberts, and Huang (2010) find a large one-year increase in KPS enrollment in the year following the announcement of the Promise Program. After decades of shrinking enrollment of white students in KPS, the Promise has led to a stabilization of the ethnic percentages in Kalamazo. Bartik and Lachowska (2013) also confirms the finding that the number of students entering KPS has been rising after the advent of the Kalamazoo Promise Program. However, these studies do not further examine whether the increasing students are due to migration from outside of the KPS district.

The second stream of studies investigates whether and how the effect of scholarship programs varies among different groups of people. Some of the studies that scholarship programs only works for specific groups of student. For example, Leuven, Oosterbeek, and van der Klaauw (2010) conduct a randomized experiment among first-year undergraduate students at the University of Amsterdam. The experiment provides a cash reward for those students who completed all of their first-year requirements by the start of the next academic year. They find that rewards matter *only* for students who had a relatively high probability of winning the scholarship. In contrast, some of studies show that scholarship programs might have externalities even for students who are not entitled or who have low probability of winning the scholarship. For example, Kremer, Miguel, and Thornton (2009) study the effects of a similarly randomized merit-based scholarship program for girls in primary schools in Kenya. They find that the scholarship program not only increased performance of girls' substantially but also had positive externalities for girls with low pretest scores and unlikely to win the scholarship, as well as for boys who were not entitled to the scholarship.

Scholarship programs may have different effect on students with different races. When investigating the effect of the HOPE scholarship program, the *merit-based* scholarship, Dynarski (2000) finds that the HOPE scholarship program increased the college enrollment rates among all 18-19 year olds in Georgia by 7.0 to 7.9 percent by using data from the Current Population Survey from 1989 to 1997. More interestingly, he finds that the program has different impacts on black students and white students, because more white students with adequate high school academic performance than black students can win the HOPE scholarship for their college education. Consequently, Georgia's HOPE program has widened the gap between white and black students' college enrollment rates.

Comparatively, Kalamazoo's Promise scholarship is a *need-based* scholarship. When examining the changes in behavior and achievement of individual students after the program was launched, Bartik and Lachowska (2013) find evidence that the Promise Scholarship reduced students' behavior problems in Kalamazoo, but they find no clear evidence that the Promise Scholarship improved students' overall academic performance. However, for African American students, the Promise Scholarship both improved their behavior and their high school GPAs dramatically.

Parental education levels can also affect the outcomes of scholarship programs. Previous study find that scholarship programs related to academic output-performance works better for people who can understand the mapping between educational inputs and outputs. According to the agency theory, if we want to motivate a student to exert effort which is not perfectly observable, the optimal contract should be conditional on output. However, this does not works if students do not understand the mapping between educational inputs and outputs. Fryer (2011) investigates this issue in experiments on what incentives work best in urban schools. Based on randomized experiments in New York City, Dallas, Chicago, and Washington, D.C., Fryer

concludes that incentives tied to output (e.g., being paid to do well on a test) are not as effective as those tied to inputs (e.g., being paid to read a book). In addition, Fryer also finds that rewarding works best when the students perceive that they can exert control over their inputs. These findings are consistent with students not fully understanding the education production mapping between inputs and achievement.

According to the above argument, if a high school student comes from family which does not understand the mapping between educational inputs and outputs, then the benefits of a college scholarship might appear to be too abstract to alter any behavior. In contrast, the student's own behavior and his/her family's behavior can be adjusted if the family understands the benefit of the scholarship. Normally, the father is the important information source and role model for a student. His education level also decides his insight on the importance of education for his children. Also the father may play a very (if not the most) important role to a family's migration decision (if any). Therefore, I use “father's educational attainment” as a important proxy for a family's ability of mapping the benefit of the HOPE scholarship.

Previous studies also examine the location patterns. Researchers believe there are several factors that decide where people choose to live. First, amenities affect people's choice of residential location. Brueckner, Thisse and Zenou (1999) argue that topographical and historical amenities in the city center may attract the rich more strongly than the poor. Brueckner, Thisse and Zenou (1999) present an amenity-based theory of location by income. Specifically, their theory predicts that the high-income families are likely to live at center locations (suburbs) when the center has a strong (weak) amenity advantage comparing to the suburbs and the real-world multiplicity of location patterns across cities confirms their prediction. The second factor which may affect people's residential location is the convenience of transportation. Some scholars suggest better access to public transportation or a new, fast transport mode may determine

people's migration choices (LeRoy and Sonstelie, 1983; Rosenthal, 2009; Glaeser, Kahn and Rappaport, 2008). Last but not the least, employment opportunity may also affect people's decision regarding migration. Economists generally agree that the availability of jobs in different states is the principal factor in determining the direction and the amount of interstate migration, although there is no satisfactory evidence based on the analysis of national data. Blanco (1963) find that from 1950 to 1957, 86 percent of the variation in the rate of interstate migration can be explained by changes in the number of federal military personnel and changes in the level of unemployment. DaVanzo (1978) finds evidence that family heads who are unemployed are more likely to move than other family heads. In this study, we assume that the seven southeast states have low transportation costs and similar amenities. I control for the unemployment rate for different states in this study as the employment opportunity in Georgia compared to other southeast states, rather than the HOPE scholarship program, might be one important reason for people to move to Georgia.

III. Cross-Tabulation of the Data

In this section, I present descriptive information about my sample. Table 10 presents how I select my sample for analysis from the IPUMs database. First, I start with all the families originally from the seven southeast states and moving to one other states during 1995-2000. Next, I select all the migration families which moved to one of the other six southeast states in the same period. Third, in order to rule out migrations for reasons of retirement (e.g. many people might move to Florida to retire), I further require the father of the migration families to be younger than 50 years old. Last, I require a family to have at least one child 22 years old or younger to be included in the sample. The HOPE scholarship requires a student to be enrolled in a high school in Georgia for at least one year before he/she starts college. If a student

moves to Georgia as early as 1995 at his/her 11th grade (i.e. when he/she was17 years' old), he/she should be 22 years old by the year of 2000. If the student moved to Georgia later than 1995 or earlier than 11th grade, he/she will be younger than 22 years old by 2000. Accordingly, to consider the one-year enrollment requirement of the HOPE scholarship program, I focus on families with child(ren) 22 years old or younger, who originally lived in one southeast state in 1995 and then moved to another southeast state and have the father younger than 50 by 2000.

[Insert Table 10 here]

For example, from the first row of Table 10, there are 32,173 families who originally lived in Alabama and moved to another state in the US between 1995 and 2000. Among these families, 2,945 of them moved to another state in the Southeast United States, which account for about 9.15% of total migrations from Alabama in this period. Next, among all families which moved within the southeast region, 2,251 (76.43%) families have a father younger than 50 years old. Finally, 1,039 (46.16%) families, which originally lived in one southeast state and then moved to another southeast state and have the father younger than 50 by 2000, have at least one child younger than 22 years old. The second to the seventh rows in Table 10 present the corresponding information about migration for families who originally lived in Florida, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee.

Table 11 shows a 7*7 decomposition about the origin state and the destination state of interstate migration families in my sample. For example, the first row of Table 11 shows, for the 1,039 families that originally lived in Alabama with father younger than 50 and at least one child younger than 22 years old, 244 or 23.48% moved to Florida, 354 or 34.07% moved to Georgia, 119 or 11.45% moved to Mississippi, 88 or 8.47% moved to North

Carolina, 43 or 4.14% moved to South Carolina, 191 or 18.38% moved to Tennessee. The next six rows presents the destination states for families that originally lived in the other six southeast states.

[Insert Table 11 here]

Overall, Georgia is the most popular destination state when families choose interstate migration within the southeast region. For families that originally lived in Alabama, Florida, and Tennessee, Georgia is the most popular destination of interstate migration compared to other Southeastern states. For families who originally lived in South Carolina, North Carolina, and Mississippi, Georgia is the second, third, and fourth destination state for interstate migration in the southeast region. Comparatively, Florida is the second most popular destination state while Mississippi is the least popular destination state. The last row gives the cumulative destination across families with interstate migration. Georgia is the largest destination state for interstate mitigation within the Southeast, with more than 26% families moving there.

As the incentives for interstate migration due to the HOPE scholarship is closely related to the number of children in a family, in Table 12 - Table 15, I present the migration decomposition table for families with one child, two children, three children, and more than three children, no older than 22 years old respectively.

Table 12 shows the interstate migration information for families with only one child younger than 22. For example, the first line of Table 12 shows, for 450 families originally lived in Alabama with father younger than 50 and one child younger than 22 years old, 104 or 23.11% moved to Florida, 152 or 33.78% moved to Georgia, 46 or 10.22% moved to Mississippi, 46 or 10.22% moved to North Carolina, 21 or 4.67% moved to South

Carolina, and 81 or 18.00% moved to Tennessee. Similar to the results from Table 11, Georgia is the most popular destination state for families who originally lived in Alabama, Florida, and Tennessee while Mississippi is the least popular destination.

[Insert Table 12 here]

Table 13 shows the interstate migration information for families with two children younger than 22. For example, the first line of Table 13 shows, for 398 families that originally lived in Alabama with father younger than 50 and two children younger than 22 years old, 90 or 22.61% moved to Florida, 137 or 34.42% moved to Georgia, 48 or 12.06% moved to Mississippi, 30 or 7.54% moved to North Carolina, 15 or 3.77% moved to South Carolina, and 78 or 19.60% moved to Tennessee. Georgia is the most popular destination state for families that originally lived in Alabama, Florida, and Tennessee and the second most popular choice for families who originally lived in North Carolina and South Carolina.

[Insert Table 13 here]

Table 14 shows the interstate migration information for families with three children younger than 22. For example, the first line of Table 14 shows, for 150 families originally lived in Alabama with father younger than 50 and three children younger than 22 years old, 42 or 28.00% moved to Florida, 50 or 33.33% moved to Georgia, 17 or 11.33% moved to Mississippi, 9 or 6.00% moved to North Carolina, 4 or 2.67% moved to South Carolina, and 28 or 18.67% moved to Tennessee. Georgia is the most popular destination state for families that originally lived in Alabama, Florida, and Tennessee and the second most and third most popular choice for families that originally lived in South Carolina and North

Carolina, respectively.

[Insert Table 14 here]

Table 15 shows the interstate migration information for families with more than three children younger than 22. For example, the first line of Table 15 shows, for 41 families originally lived in Alabama with father younger than 50 and more than three children younger than 22 years old, 8 or 19.51% moved to Florida, 15 or 36.59% moved to Georgia, 8 or 19.51% moved to Mississippi, 3 or 7.32% moved to North Carolina, 3 or 7.32% moved to South Carolina, and 4 or 9.76% moved to Tennessee. Georgia is the most popular destination state for families that originally lived in Alabama, Florida, North Carolina, and Tennessee and the second most popular choice for families that originally lived in South Carolina and Mississippi.

[Insert Table 15 here]

In Table 16, I summarize the findings for the popularity of the destination states from Table 11 to Table 15. I define a destination state as "the first winner" if the largest number of families from the same original state moved to it. For example, among all families that originally lived in Florida with the father younger than 50 and with at least one child younger than 22, Georgia is the most popular destination states, so Georgia is "the first winner" for Florida. Similarly, if a state has the second (third) most families moving to it, we call it "the second (third) winner". Following the earlier example, North Carolina and Tennessee is "the second winner" and "the third winner" respectively for Florida. I then count how many times each of the states is "the first winner", "the second winner" and "the third winner" in Table 11 through Table 15. I have the following findings. First,

Georgia is the first winner more often than any other state. No matter how many child(ren) younger than 22 a family may have, Georgia is the first winners for Alabama/Florida/Tennessee. I conjecture that the HOPE scholarship program is an important reason for Georgia to become the most popular destination in the 1995-2000 period. Second, Florida is the second most popular destination state, perhaps because it is an ideal place for retirement. Third, North Carolina and South Carolina are always the first winner for each other, perhaps because of the historical connection between the two states. Finally, Tennessee is always the first winner for Mississippi, perhaps because Mississippi is far from the other Southeastern states. For the same reason, Mississippi is barely a winner for any states at any number of younger child(ren). To summarize, I have found some preliminary evidence that Georgia is the most popular destination state within the southeast region.

[Insert Table 16 here]

IV. Methodology

In the previous section, I present evidence that Georgia is the most popular destination choice among southeast states in the period of 1995-2000. In this section, I am going to formally investigate the effect of the HOPE scholarship program on people's interstate migration decision. Specifically, I use Conditional Logit regression method to investigate how tuition reduction, a direct measure on the importance of the HOPE scholarship program, affects a family's migration decision.

In order to estimate the Conditional Logit model, I first transform (i.e. expand) my data from IPUMs into a personal choice file, in which each family faces six migration choices (because an interstate-migration family from one southeast state has six choices before it moves

to another southeast state). In the transformed dataset, I have a stratifying variable (*family ID*) that indexes each family in my sample, a response variable (*possible destination state*) that indexes the six possible response options for the migration destination, and a dichotomous choice variable (*migration decision*) that indicates which response option is the family's actual migration choice (i.e., the migration decision variable is equal to one for the actual destination state; and equal to zero for the other possible migration choices).

I run the following Conditional Logit regression using the transformed sample:

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction + \sum \gamma_i * control_i + \varepsilon$$

where:

Migration decision is a dichotomous choice variable that indicates a family's actual migration choice among all the response options for interstate migration, as we described earlier.

Tuition reduction is the expected college tuition for each optional state minus the expected college tuition of the original state (in unit of thousand dollars; refer to Page 38 for expected college tuition), which directly measures the importance of the HOPE scholarship for a family. If the destination-specific tuition reduction is large, then the HOPE scholarship will be more attractive.

Control variables are amenity variables that may affect a family's migration decision. First, I include *unemployment reduction* as a control variable. It is equal to the unemployment rate of the optional migration state minus the unemployment rate of the original state. People are more likely to move to a state with a lower unemployment rate, especially if they are currently unemployed. Second, I control for the father's educational attainment. As the education level of a household's head will interact with the effect of tuition reduction on the migration decision, I

include the interaction of *tuition reduction* and *fcollege,* which is an indicator variable equal to one if the father of a family has a college degree and zero otherwise. Third, I include the effect of *total income* (in unit of thousand dollars) of a family. Since the relative importance of each dollar of tuition reduction various across families with different income levels (e.g. the tuition reduction of $10,000 has much larger impact to a family with annual family income of $50,000 than to a family with annual family income of $500,000), I include the interaction term of *tuition reduction* * (1/*total income).* Fourth, I control for Family Head's *race*, an indicator variable equal to one if the family's head is white and zero otherwise. I include the interaction of *tuition reduction* and *race* because different groups of people may have different attitude regarding education and hence the impact of tuition reduction might have different weight on their migration decisions. Finally, I control for the *number of child(ren)* younger than 22 years old in a family. Since the total tuition reduction by moving to a low tuition state will be more meaningful to a family with more children, I control for the interaction term of *tuition reduction* * *number of child(ren).*

When I calculate the *tuition reduction*, I need to first determine college tuition for each state. I use "average undergraduate tuition by state" data in 1997-98 from the database of Institute of Education Sciences[16]. Because I have no further information about the exact moving year for families in my sample, I choose the data from the middle of the period of 1995-2000, i.e. year 1997. Because Georgia pays most mandatory student fees for the recipient of the HOPE scholarship to attend any public college in the state's university system or an equivalent amount of currently $3,500 per year to attend private colleges in Georgia, I chose the public 4-year college tuition data instead of private or 2-year college tuition data to calculate the tuition

[16]Information Source: Table 318 from "Average undergraduate tuition, fees and room and board rates paid by full-time-equivalent students in degree-granting, by control of institution and by state;1997-98 and 1998-99". http://nces.ed.gov/programs/digest/d99/d99t318.asp.

reduction when trying to evaluate the effect of the HOPE scholarship program on tuition. Detailed information is presented in Table 17.

[Insert Table 17 here]

Although the public college tuition in Georgia is near the middle of the seven southeastern states, the HOPE scholarship program significantly decreases the expected tuition in Georgia because as many as 57.9% students obtain a HOPE scholarship[17]. I calculate the expected tuition rate for public college in Georgia after considering the effect of the HOPE scholarship as below:

The Expected Public College Tuition Rate in Georgia

= 0 * the Probability of Winning a HOPE scholarship

+ Georgia Public College Tuition Rate * (1- the Probability of Winning a HOPE Scholarship)

= $0 * 57.9%+ $2,356 * (1 - 57.9%)

= $992

Since Florida started its Florida Bright Futures Scholarship in 1997, we also need to calculate the expected tuition rate for public college in Florida. In academic year 1997-1998, the Florida Bright Futures scholarship program provides full tuition to 7,011 students (7,011 students awarded Florida Academic Scholars) and provides 75 percent tuition to 16,699 students (9,861 students awarded Florida Merit Scholars plus 6,838 students awarded Florida Gold Seal Vocational) [18]. In the same way that we calculate GA expected college tuition, we calculate the

[17] Information Source: Table 1 from Burglar, Henry, and Rubenstein (1999). "Number and Percent of Students Eligible for HOPE, An Evaluation of Georgia's HOPE Scholarship Program: Effects of HOPE on Grade Inflation, Academic Performance and College Enrollment". *Education and Literacy.* http://www.issuelab.org/resource/evaluation_of_georgia_hope_scholarship_program_effects_of_hope_on_grade_inflation_academic_performance_and_college_enrollment

[18] Table on Page 23 from "Annual report to the commissioner 1997-1998", Office of Student Financial Assistance

expected tuition rate for public college in Florida, based on the facts that there are 103,700 Florida Public and Private High School Graduates in academic year 1997-1998, and 23,710 students are disbursed Florida Bright Future Scholarship[19].

The Expected Public College Tuition Rate in FL

= 0 * the Probability of Winning a Full-Tuition HOPE scholarship

+FL Public College Tuition Rate * 0.75 * the Probability of Winning a 75-Percent-Tuition HOPE Scholarship

+ FL Public College Tuition Rate * (1- the Probability of Winning a HOPE Scholarship)

= $0 * (7011/103700)+ $1,909 *0.75*(16699/103700) + $1,909 * (1 - 23710/103700)

=$1,702

It is obvious that the HOPE scholarship program decreases the expected public college tuition for students residing in Georgia and Florida. Table 18 shows that after I change college tuition to the expected value in Georgia and Florida, Georgia has the lowest college tuition in all its neighboring states.

[Insert Table 18 here]

Table 19 shows the unemployment rate for all southeast states between 1995-2000. The unemployment rate of North Carolina is not the lowest in 2000, but its average between 1995-2000 is the lowest among all the 7 states in the Southeast. The unemployment rate of Georgia is the second lowest among the seven southeastern states average between 1995-2000 and it is the

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http://www.floridastudentfinancialaid.org/SSFAD/pdf/annualreport97-98.pdf

[19] Information Source: http://www.floridastudentfinancialaid.org/SSFAD/PDF/BFstats/BFReportsB.pdf, in 1997-1998, Estimated Florida Public and Private High School Graduates is 103,700

lowest in the year of 2000. In contrast, Mississippi has the highest unemployment rate in all years and all Southeastern states between 1995-2000.

[Insert Table 19 here]

V. The Migration Decision for Families who Originally Lived in Alabama / Florida / Tennessee

In this section, I start with the sub-sample of people who originally lived in the three winner states for Georgia: i.e. families from Alabama, Florida and Tennessee in 1995. These families have six possible choices regarding interstate migration between 1995 and 2000. We know they are more likely to move to Georgia than to other southeast states, from the descriptive information in Section III. In this section, I use Conditional Logit regression to further ask whether their migration decisions are affected by tuition reduction due to the HOPE scholarship.

Regression 1: Migration decision on tuition reduction

In regression 1, I run the following univariate Conditional Logit regression for a family's migration decision:

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction + \varepsilon$$

[Insert Table 20 here]

In Table 20, the coefficient on *tuition reduction* is 0.714, with the z-value equal to 37.08, significant at the 1% level. This indicates that a family with at least one child under 22 years old is very likely to move to a state because of tuition reduction. As the tuition reduction will be significant if a family from another southeastern state moves to Georgia, the family then will more likely move to Georgia.

Regression 2: Migration decision on tuition reduction and unemployment reduction

In regression 2, I run the following Conditional Logit regression for a family's 4 migration decision not only on tuition reduction, but also on unemployment reduction. Since Georgia has many rising industries and comparatively lower unemployment rate, it is possible that some families move Georgia for job opportunities. I control for unemployment reduction to control for important economic factors, other than tuition reduction, that may affect a family's decision to move to Georgia. Specifically, I run the following regression:

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction + \beta_2 * unemployment\ reduction + \varepsilon$$

[Insert Table 21 here]

In Table 21, the coefficient on *tuition reduction* is 0.710, with the z-value equal to 36.99, which is significant at the 1% level, consistent with the results in Table 20. The coefficient on *unemployment reduction* is 0.013, with the z-value equal to 4.87, which is also significant at the 1% level. This result indicates that both *tuition reduction* and *unemployment reduction* are important reasons for interstate migration. However, the impact of *tuition reduction* seems to be more significant than *unemployment reduction*. In addition, the effect of *tuition reduction* on migration is not changed by the effect of *unemployment reduction.*

Regression 3: Migration decision on tuition reduction, unemployment reduction and other covariates

In regression 3, I run the following Conditional Logit regression for a family's migration decision on tuition reduction, unemployment reduction, four covariates, their interactions with tuition reduction, and their interactions with unemployment reduction as follows.

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction\ (TR)$$
$$+\beta_2 * TR * fcollege + \beta_3 * TR * (1/family\ income) + \beta_4 * TR * race$$
$$+\beta_5 * TR * number\ of\ children$$
$$+\beta_6 * unemployment\ reduction(UR) + \beta_7 * UR * fcollege$$
$$+\beta_8 * UR/family\ income + \beta_9 * UR * race$$
$$+\beta_{10} * TR * number\ of\ children + \varepsilon$$

[Insert Table 22 here]

In Table 22, the coefficient on *tuition reduction* is 0.208, with z-value equal to 2.19, which is significant at the 5% level. The coefficient on *unemployment reduction* is 0.033, with the z-value equal to 0.75, insignificant at conventional level. Regarding the effect of tuition reduction on interstate migration for different groups of people: the interaction of *TR * Race* is significant at the 1% level, suggesting that all else equal, the effect of *tuition reduction* is greater for white families ; however, I find the interactions of *TR * college, TR*(1/family income)* and *TR * number of children* are not significant, which seems indicates that the effect of *tuition reduction* is not affected by *father's education, family income* and the *number of children.* Regarding the effect of unemployment reduction on migration for different groups of people: the interaction of *UR * fcollege* is significant at the 1% level, implying that all else equal, the effect of *unemployment reduction* is stronger for families with the higher educational level; in contrast, I

do not find the interactions *UR * race, UR * (1/family income)* and *UR*number of children* to be significant.

To test the overall effect of tuition reduction (unemployment reduction) on migration decisions, I do likelihood ratio tests. Specifically, I calculate the chi-square of regression 3 minus the chi-square of regression 3 without *tuition reduction* (*unemployment reduction*) and its interactions. The chi-square difference is 1480.00 (= 1512.74 - 32.74) for tuition reduction and 39.18 (=1512.74 - 1473.56) for unemployment reduction respectively, both significant at the 1% level for Chi-square tests with degree of freedom equal to five. The test results suggest that both *tuition reduction* and *unemployment reduction* have significant impact on migration decisions, although the impact of *tuition reduction* is much larger than the impact of *unemployment reduction*.

The number of children younger than 22 years old includes children at young ages who may not enjoy the benefits of a HOPE scholarship in the near future. For example, a family with a one year old infant is less likely to move to Georgia because of possible tuition reduction. Therefore, I use an alternative measure for the *number of children* who are more likely to enjoy the benefit of the HOPE scholarship after their migration. Specifically, *the number of children Grade 9 and up* measures how many children in a family are in high school when they move.

[Insert Table 23 here]

In Table 23, I report the results when I change the *number of children* to *the number of children Grade 9 and up* and the results keep very similar to the results in Table 22.

To summarize, I find that *tuition reduction* (a major effect of the HOPE scholarship) has significant effect on a family's decision of migration for the three winner states. It is important to point out that, as Georgia is the winner destination for the three origin states, the probability for

observation a significant coefficient on *tuition reduction* in the Conditional Logit regression is higher. In the next section, I will investigate whether the coefficient on *tuition reduction* in regression 3 is still significant when I expand my analysis for families originating from any of the other six southeastern states.

VI. Migration Decision for Families that Originally Live in the Seven Southeastern United States

In this section, I investigate the migration decision for families that originally live in any of the seven southeastern states. Each of these families has six possible choices regarding interstate migration in the Southeast between 1995 and 2000. In this section, I repeat the Conditional Logit regression used in the earlier section to investigate whether migration decisions are affected by tuition reduction due to the HOPE scholarship.

Regression 1: Migration decision on tuition reduction

In regression 1, I run the following univariate Conditional Logit regression for a family's migration decision:

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction + \varepsilon$$

[Insert Table 24 here]

In Table 24, the coefficient on *tuition reduction* is 0.579, with the z-value equal to 39.86, significant at the 1% level. This confirms my finding in Section V (when I select only three originating use states) that a family with at least one child under 22 is very likely to move to a state for tuition reduction concerns; for example, a family is very likely to move from other

southeast state moves to Georgia since tuition reduction from other states to Georgia is large because of the HOPE scholarship.

Regression 2: Migration decision on tuition reduction and unemployment reduction

In regression 2, I run the following Conditional Logit regression for a family's migration decision not only on *tuition reduction*, but also on *unemployment reduction*:

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction + \beta_2 * unemployment\ reduction + \varepsilon$$

[Insert Table 25 here]

In Table 25, the coefficient on *tuition reduction* is 0.582, with the z-value equal to 40.70 and significant at the 1% level, which is consistent with the results in Table 24. The coefficient on *unemployment reduction* is 0.034, with the z-value equal to 17.44 and also significant at the 1% level. The results from seven southeast states confirm that both *tuition reduction* and *unemployment reduction* are important reasons for migration.

Regression 3: Migration decision on tuition reduction, an employment reduction and other covariates

In regression 3, I run the following Conditional Logit regression for a family's migration decision on tuition reduction, unemployment reduction, and four other covariates, their interactions with tuition reduction, and their interactions with unemployment reduction as follows.

$$Prob(migration\ decision = 1) = \beta_0 + \beta_1 * tuition\ reduction\ (TR)$$

$$+\beta_2 * TR * fcollege + \beta_3 * TR * (1/family\ income) + \beta_4 * TR * race$$

$$+\beta_5 * TR * number\ of\ children$$

$$+\beta_6 * unemployment\ reduction(UR) + \beta_7 * UR * fcollege$$

$$+\beta_8 * UR/family\ income + \beta_9 * UR * race$$

$$+\beta_{10} * TR * number\ of\ children + \varepsilon$$

[Insert Table 26 here]

The results from Table 26 are consistent with the results from Table 22 in general. First, the coefficient on *Tuition Reduction* is 0.124, with the z-value equal to 1.76 and significant at the 10% level. Second, regarding the effect of unemployment reduction on migration for different groups of people: the interactions of *TR * fcollege* and *TR * race*, and *TR * number of children* are significant at the 10% level or lower, suggesting that all else equal, the effect of *tuition reduction* is on migration decisions is greater for families with the father having higher educational attainment, white families, and families with more children; however, I did not find the interactions of *TR * (1/family income)* to be significant as in Table 22. Third, the coefficient on *unemployment reduction* is not significant at 10% level. However, I find positive and significant coefficient on the interactions *UR * fcollege* and *UR * (1/family income),* significant at the 1 % and 5% levels respectively, and the negative and significant coefficient on the interaction *UR * number of children, which is* significant at the 10% level. It indicates that, all else equal, the effect of unemployment reduction on migration is stronger for families with the higher education level, lower family income, and fewer children. I find insignificant coefficient on the interaction of *UR * Race,* which implies that the effect of unemployment reduction on migration is indifferent for families of different races.

To test the overall effect of tuition reduction (unemployment reduction) on migration decisions, I do likelihood ratio tests. Specifically, I calculate the chi-square of regression 3 minus the chi-square of regression 3 without *tuition reduction* (*unemployment reduction*) and its interactions. The chi-square difference is 1759.89 (= 2,021.71 - 261.82) for tuition reduction and 343.61 (=2,021.71 - 1,678.10) for unemployment reduction respectively, both significant at the 1% level for Chi-square tests with degree of freedom equal to five. The test results suggest that both *tuition reduction* and *unemployment reduction* have significant impact on migration decisions, although the impact of *tuition reduction* is much larger than the impact of *unemployment reduction*.

I also replace *number of children* with *the number of children Grade 9 and up* in the regression and find consistent results in Table 27, except that the interaction *UR * number of children* is no longer significant.

[Insert Table 27 here]

To summarize, in this section, I find confirmative evidence that *tuition reduction* has significant effect on a family's decision of migration for the families from all the southeastern states. Evidence show that the HOPE scholarship program, which drives significant tuition reduction if moving to Georgia, significantly affects inter-state migration within the southeastern states.

VII. The elasticity of tuition reduction on people's migration choice

Since the coefficient are not directly tied to the marginal effects for each migration choice (such as moving to the decision to move to Georgia), I follow the recommendation by of Hensher (1991) and calculate the elasticity of tuition reduction on each migration choices.

Specifically, the effect of tuition reduction (x1) attribute of migration choice m on each individual family's (family i) probability to migrate to one state j (Pij) would be:

$$\frac{\partial \ln P_j}{\partial \ln x_{m1}} = x_{m1}[1(j = m) - P_{im}]\beta_1$$

where:

$x_{m1}$is the tuition reduction amount if a family choose to move to state m (m=1,2,...7, which represents the seven statement migration choices);

j is the actual migration choice;

$P_{im}$is the predicted probability if a family choose to move to state m in my sample based on results of the conditional logistic regression with control variables in Section II:

$$\text{Prob}(\text{migration Decision} = 1) = \beta_0 + \beta_1 * \text{Tuition Reduction} + \sum \gamma_i * \text{Control}_i + \varepsilon$$

β_1 is the coefficient on tuition reduction the conditional logistic regression with control variables in Section IV. The effect of tuition reduction on each migration choice m is summarized in Table 28.

[Insert Table 28 here]

It can be seen clearly that tuition reduction has positive effect on family's migration choice to Georgia, Florida, and North Carolina. Comparing the average magnitude of the tuition reduction effect on migration decision, the coefficient is 0.11 for Georgia, 0.04 for Florida and 0.01 for North Carolina, indicating that tuition reduction plays the most important role for the migration decision to Georgia.

VIII. Conclusion

In this chapter, I use the IPUMs dataset for additional tests to illustrate the effect of the HOPE scholarship program on people's interstate migration decisions. I investigate migration families who originally live in one of the seven southeastern states and investigate their migration decision. I find that for a family with high school children, Georgia is the most popular destination state in the inter-state migration within the southeastern area in the period of 1995-2000, because the HOPE scholarship reduces tuition in Georgia significantly. Conditional Logit analysis indicates that *tuition reduction* is a significant factor to make migration decisions; and all else equal, the effect is especially stronger for families with the father having higher educational attainment. Whereas the regression results are stronger for the three origin states that Georgia is the winner destination (since the probability of moving to Georgia with tuition reduction is higher for families originates from Alabama, Florida and Tennessee); I find similar results when I expand my analysis for families originating from any of the other six southeastern states.

Figures

Figure 1: Georgia and its neighbors (After 2004)

Figure 2: The four layers on Georgia's state borders

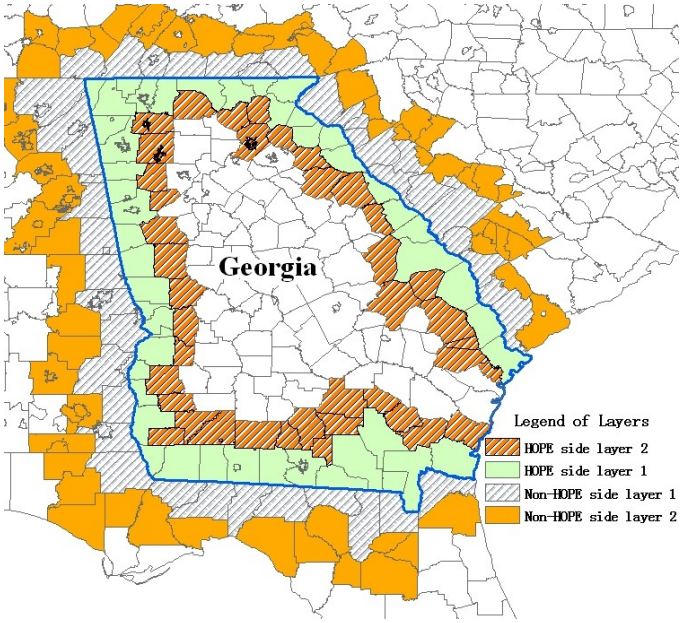


Figure 3: The school districts on GA borders

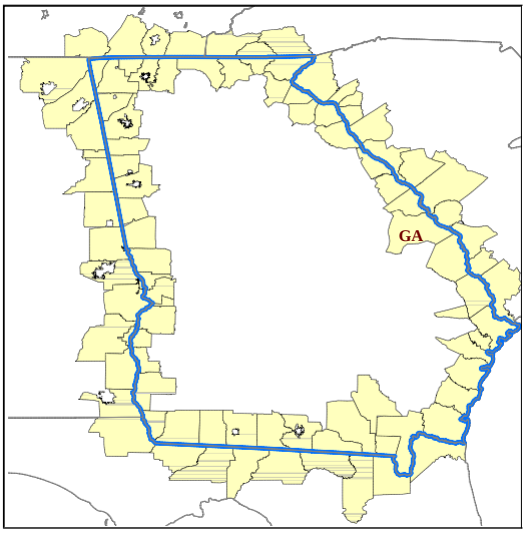


Figure 4: Two examples of a border-area pair

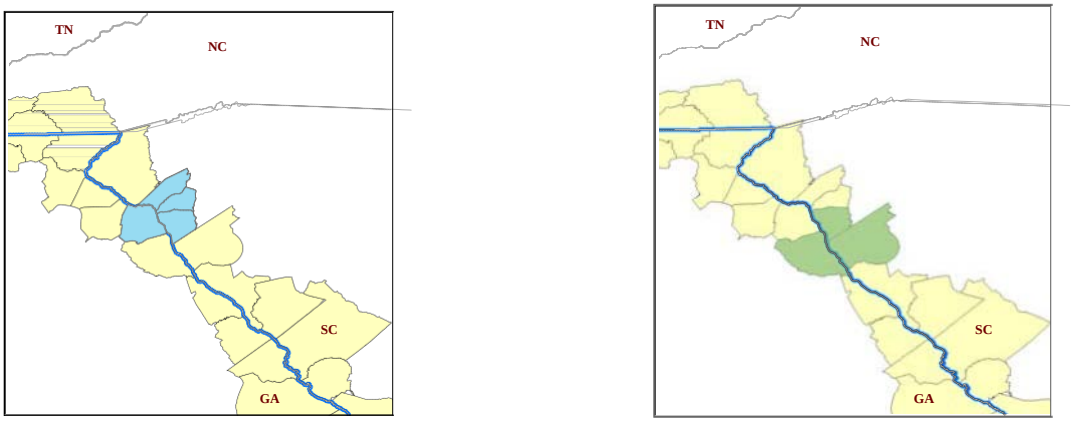


Figure 5: The theoretical model

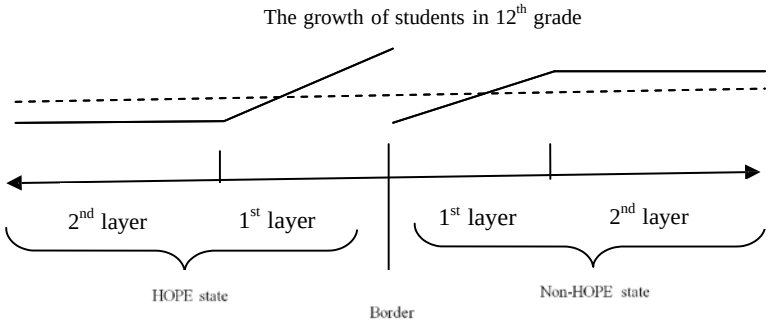


Figure 6: The first theoretical model (Initial status is better at the Non-HOPE side)

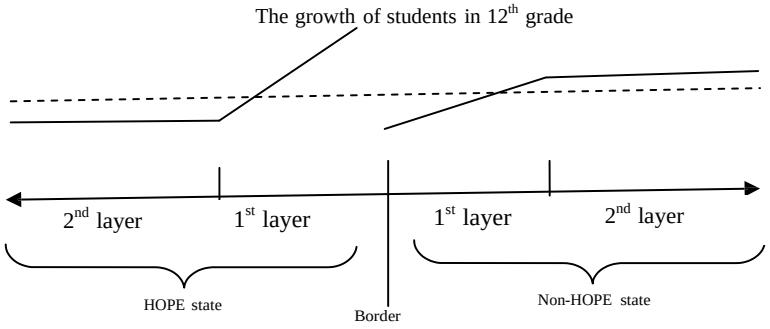


Figure 7: The second theoretical model (Initial status is the same at both sides)

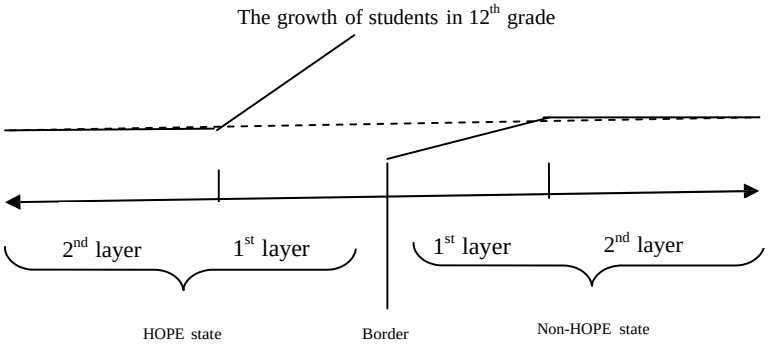


Figure 8: The third theoretical model (Initial status is better at the HOPE side)

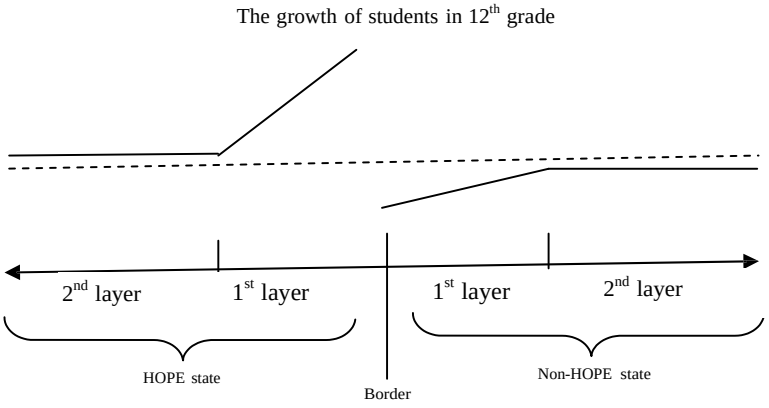


Figure 9: The growth of students in every grade between 1992 and 1998

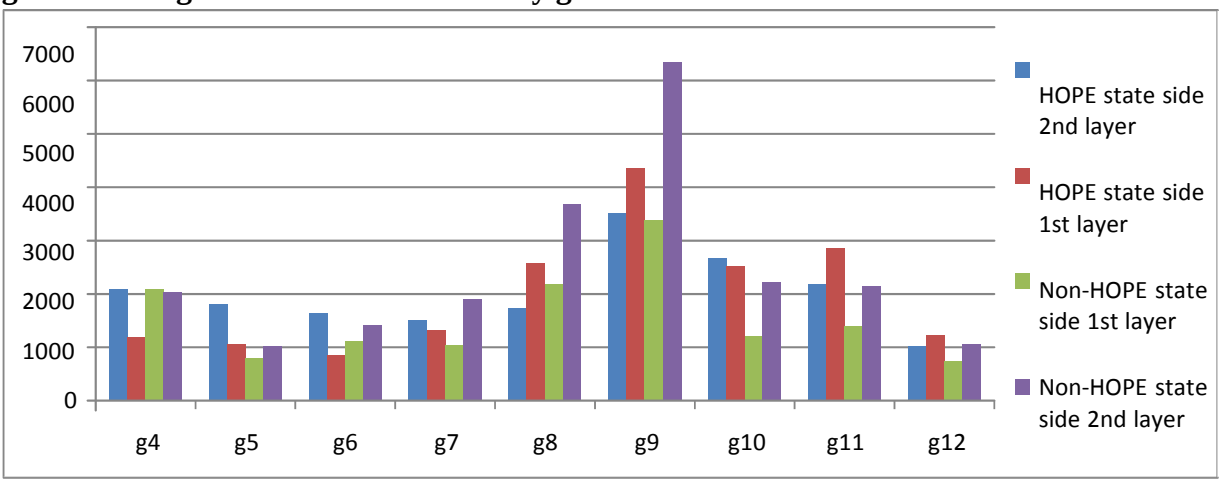


Figure 10: Percent changes for students in each grade between 1992 and 1998

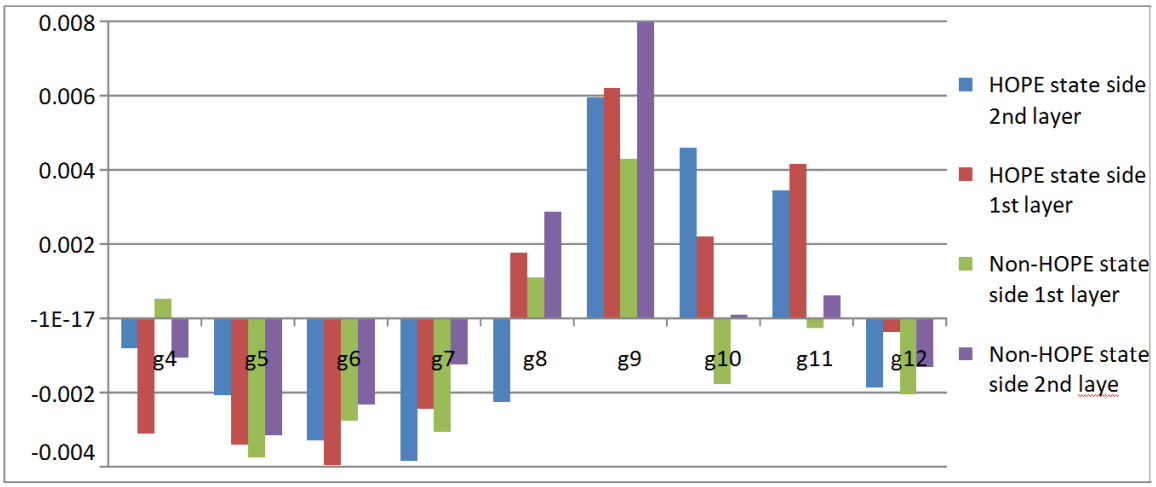
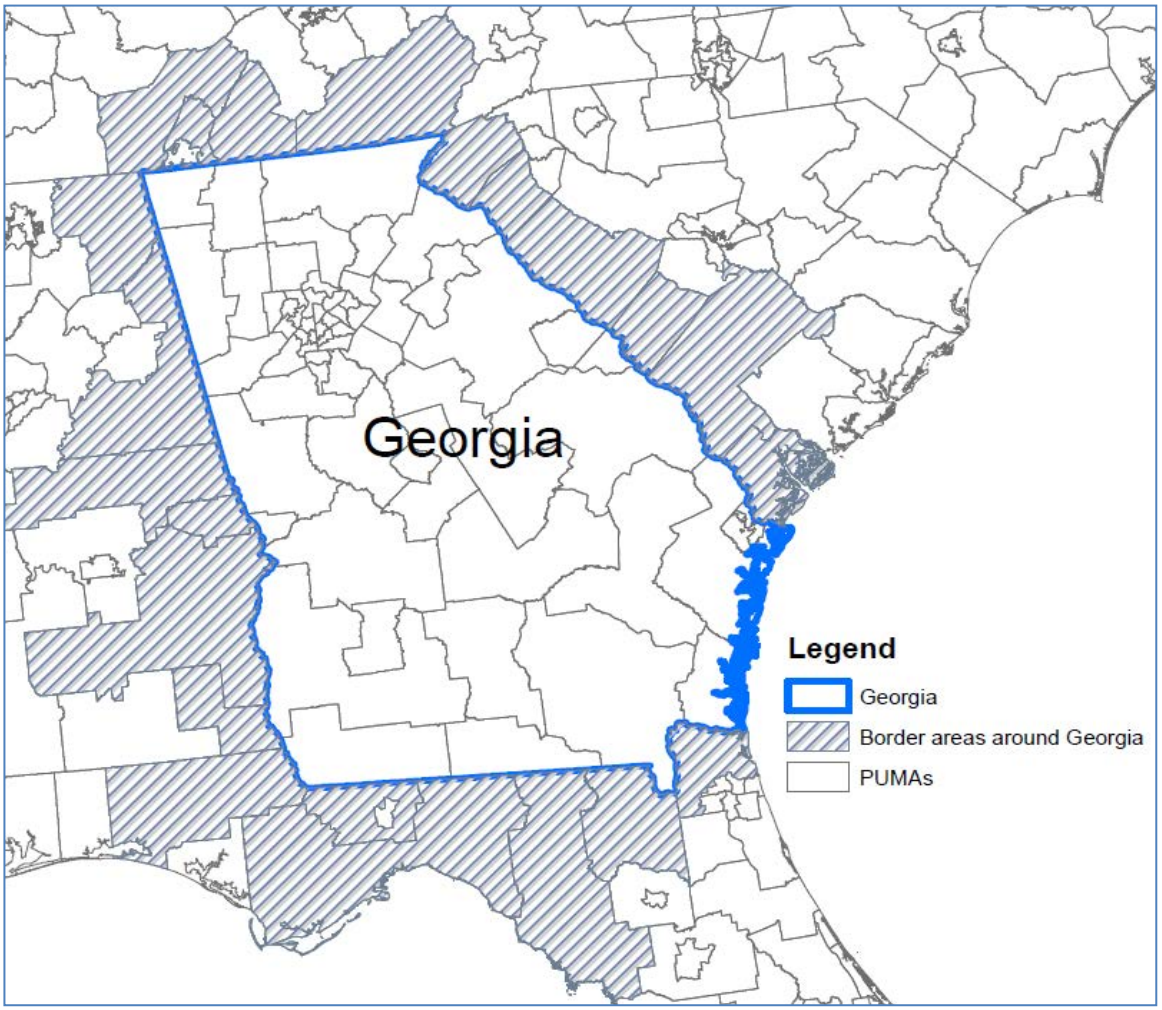


Figure 11: Border areas around Georgia



Tables

Table 1: The average cost of higher education

	Education Costs	Living Costs	Total Costs
Australia	3,828	6,720	10,548
Austria	1,478	5,821	7,299
Belgium (Flemish)	821	4,145	4,966
Belgium (French)	821	4,615	5,436
Canada	4,149	4,909	9,058
Finland	271	5,229	5,500
France	1,738	5,401	7,139
Germany	2,083	4,417	6,500
Ireland	1,575	4,957	6,532
Italy	2,135	4,421	6,556
Japan	8,248	6,156	14,404
Netherlands	1,990	4,924	6,914
New Zealand	3,327	7,546	10,873
Sweden	852	5,431	6,283
United Kingdom	3,257	8,602	11,859
United States	9,604	6,344	15,948

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

Source: *combined from several tables in Global Higher Education Rankings of 2005 by the Educational Policy Institute*

Table 2: Average college cost and aid for the 2009-10 academic year[20]

	Private Not-for-Profit Four-Year	Public Four-Year In-State	Public Four-Year Out-of-State	Public Two-Year	For-Profit
Published 2009-10 Tuition and Fees	$26,273	$7,020	$18,548	$2,544	$14,174
Estimated Average Grant Aid and Tax Benefits per Student	$14,400	$5,400	$5,400	$3,000	NA

Source: *http://www.gsfc.org/gsfcnew/SandG_facts.CFM*

Table 3: The national top universities in the six states(Indicators of the quality of high education in the six states)

	GA	NC	FL	TN	SC	AL
The number of university in the top 20 of national public university	2	1	1	0	0	0
The number of university in the top 50 of national university	2	3	1	1	0	0
The number of university in the top 100 of national university	3	4	2	1	1	1

Source: *U.S. News & World Report, 2009*

[20] From *Economic Challenges Lead to Lower Non-tuition Revenues and Higher Prices at Colleges and Universities* in October 2009 by the College Board

Table 4: The growth of students in each grade between 1992 and 1998

	HOPE State Side		Non-HOPE State Side	
	The 2nd layer	*The 1st layer*	*The 1st layer*	*The 2nd layer*
The growth of 4th graders	2101	1197	2084	2037
The growth of 5th graders	1810	1055	796	1031
The growth of 6th graders	1639	862	1107	1422
The growth of 7th graders	1502	1320	1051	1906
The growth of 8th graders	1738	2572	2195	3686
The growth of 9th graders	3509	4364	3377	6339
The growth of 10th graders	2676	2525	1201	2228
The growth of 11th graders	2184	2865	1403	2141
The growth of 12th graders	1020	1231	738	1056

Table 5: Percent changes for students in each grade between1992 and 1998

	HOPE State Side		Non-HOPE State Side	
	The 2nd layer	*The 1st layer*	*The 1st layer*	*The 2nd layer*
The ratio of 4th graders to Total	-0.000804	-0.00311	0.000529	-0.001063
The ratio of 5th graders to Total	-0.002081	-0.003392	-0.003742	-0.003155
The ratio of 6th graders to Total	-0.003301	-0.003952	-0.002759	-0.002319
The ratio of 7th graders to Total	-0.003848	-0.00244	-0.003071	-0.001252
The ratio of 8th graders to Total	-0.002245	0.001776	0.001096	0.00288
The ratio of 9th graders to Total	0.005947	0.00619	0.004291	0.008028
The ratio of 10th graders to Total	0.004584	0.00221	-0.00177	9.10E-05
The ratio of 11th graders to Total	0.003454	0.004151	-0.00026	0.00061
The ratio of 12th graders to Total	-0.00186	-0.00037	-0.00204	-0.00132

Table 6: Regression 1: The effect of HOPE scholarship program on the increase of students in 12th grade in the first layer of HOPE side. Dependent variable = $Increase_{i\,t}$.

	Exp. Sign	Coef.	Std. Err.	*t* Value	P > |t|
Intercept		-1.85398	1.87106	-0.99	0.3241
$Borderdum_i$ *$YEARdum_t$	+	7.55896	3.27564	2.31	0.0230

Table 7: Regression 1: The effect of HOPE scholarship program on the increase of students in 11th grade in the first layer of HOPE side. Dependent variable = $Increase_{i\,t}$.

	Exp. Sign	Coef.	Std. Err.	*t* Value	P > |t|
Intercept		-9.70953	1.74698	-5.56	<.0001
$Borderdum_i$ *$YEARdum_t$	+	5.29514	3.05841	1.73	0.0864

Table 8: Regression 1: The effect of HOPE scholarship program on the increase of students in 10th grade in the first layer of HOPE side. Dependent variable = $Increase_{i\,t}$.

	Exp. Sign	Coef.	Std. Err.	*t* Value	P > |t|
Intercept		-11.48708	2.26862	-5.06	<.0001
$Borderdum_i$ *$YEARdum_t$	+	8.25317	3.97163	2.08	0.0402

Table 9. Regression 2: The effect of HOPE scholarship on the increase of students in 12th grade at the geography area of HOPE side in each border-area pair. Dependent variable = $Percentage_{it}$.

	Exp. Sign	Coef.	Std. Err.	*t* Value	P > |t|
Intercept		-0.00367	0.00728	-0.50	0.6142
Typedum*it*	+	0.02328	0.01012	2.30	0.0216

Table 10: Families originally moved from one southeast state to another southeast state in 1995-2000

Orig. State	Num. of Families	Moved to Southeast		Father Age<50		With Children < 22	
		Num.	%	Num.	%	Num.	%
Alabama	32,173	2,945	9.15	2,251	76.43	1,039	46.16
Florida	126,079	7,477	5.93	5,176	69.23	2,620	50.62
Georgia	61,368	5,357	8.73	3,874	72.32	1,846	47.65
Mississippi	18,791	1,467	7.81	1,173	79.96	541	46.12
North Carolina	58,617	3,986	6.80	2,964	74.36	1,401	47.27
South Carolina	27,325	3,047	11.15	2,322	76.21	1,067	45.95
Tennessee	43,306	3,079	7.11	2,236	72.62	1,073	47.99

Table 11 Migration of families with father age<50 and at least one child younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	1,039			244	23.48	354	34.07	119	11.45	88	8.47	43	4.14	191	18.38
FL	2,620	318	12.14			1,012	38.63	96	3.66	622	23.74	233	8.89	339	12.94
GA	1,846	302	16.36	609	32.99			68	3.68	329	17.82	259	14.03	279	15.11
MS	541	121	22.37	103	19.04	83	15.34			36	6.65	23	4.25	175	32.35
NC	1,401	77	5.50	361	25.77	336	23.98	33	2.36			433	30.91	161	11.49
SC	1,067	48	4.50	219	20.52	304	28.49	15	1.41	392	36.74			89	8.34
TN	1,073	138	12.86	203	18.92	312	29.08	191	17.80	160	14.91	69	6.43		
Sum	9,587	1,004	11.75	1,495	21.46	2,047	26.44	403	4.46	1,539	18.80	1,017	11.94	1,043	12.25

Note: red: first place; green: second place; yellow: third place.

Table 12 Migration of families with father age<50 and ONE child younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	450			104	23.11	152	33.78	46	10.22	46	10.22	21	4.67	81	18.00
FL	1,070	137	12.80			411	38.41	33	3.08	255	23.83	105	9.81	129	12.06
GA	770	127	16.49	258	33.51			28	3.64	122	15.84	122	15.84	113	14.68
MS	237	53	22.36	47	19.83	35	14.77			16	6.75	9	3.80	77	32.49
NC	606	33	5.45	160	26.40	125	20.63	9	1.49			200	33.00	79	13.04
SC	464	22	4.74	83	17.89	133	28.66	7	1.51	185	39.87			34	7.33
TN	443	46	10.38	79	17.83	134	30.25	80	18.06	73	16.48	31	7.00		
Sum	4,040	418	11.64	627	21.11	838	25.63	157	4.13	651	18.96	467	13.06	432	12.01

Note: red: first place; green: second place; yellow: third place.

Table 13 Migration of families with father age<50 and TWO children younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	398			90	22.61	137	34.42	48	12.06	30	7.54	15	3.77	78	19.60
FL	1,021	121	11.85			391	38.30	39	3.82	243	23.80	82	8.03	145	14.20
GA	700	110	15.71	236	33.71			25	3.57	125	17.86	90	12.86	114	16.29
MS	194	49	25.26	35	18.04	29	14.95			10	5.15	10	5.15	61	31.44
NC	540	32	5.93	126	23.33	143	26.48	16	2.96			164	30.37	59	10.93
SC	419	14	3.34	101	24.11	121	28.88	5	1.19	144	34.37			34	8.11
TN	446	65	14.57	87	19.51	125	28.03	81	18.16	63	14.13	25	5.61		
Sum	3,718	391	11.78	585	21.69	809	26.81	166	4.71	585	18.41	371	11.25	413	12.62

Note: red: first place; green: second place; yellow: third place.

Table 14 Migration of families with father age<50 and THREE children younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	150			42	28.00	50	33.33	17	11.33	9	6.00	4	2.67	28	18.67
FL	372	41	11.02			143	38.44	17	4.57	93	25.00	32	8.60	46	12.37
GA	296	50	16.89	95	32.09			12	4.05	61	20.61	39	13.18	39	13.18
MS	74	15	20.27	17	22.97	14	18.92			6	8.11	3	4.05	19	25.68
NC	181	7	3.87	55	30.39	48	26.52	5	2.76			51	28.18	15	8.29
SC	135	9	6.67	29	21.48	35	25.93	2	1.48	44	32.59			16	11.85
TN	140	19	13.57	29	20.71	39	27.86	22	15.71	20	14.29	11	7.86		
Sum	1,348	141	11.77	225	23.05	279	26.52	58	4.55	224	19.19	136	11.21	135	11.18

Note: red: first place; green: second place; yellow: third place.

Table 15 Migration of families with father age<50 and MORE THAN THREE children younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	41			8	19.51	15	36.59	8	19.51	3	7.32	3	7.32	4	9.76
FL	157	19	12.10			67	42.68	7	4.46	31	19.75	14	8.92	19	12.10
GA	80	15	18.75	20	25.00			3	3.75	21	26.25	8	10.00	13	16.25
MS	36	4	11.11	4	11.11	5	13.89			4	11.11	1	2.78	18	50.00
NC	74	5	6.76	20	27.03	20	27.03	3	4.05			18	24.32	8	10.81
SC	49	3	6.12	6	12.24	15	30.61	1	2.04	19	38.78			5	10.20
TN	44	8	18.18	8	18.18	14	31.82	8	18.18	4	9.09	2	4.55		
SUM	481	54	12.27	58	17.90	121	30.17	22	4.94	79	19.41	43	9.95	63	14.42

Note: red: first place; green: second place; yellow: third place.

Table 16 Winners as the destination states for migration families with father age<50 and child(ren) age<22

State	Overall			One Child			Two Children			Three Children			More than 3 children		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
GA	3	1	1	3	1	1	3	2	0	3	1	1	4	2	0
FL	1	3	2	1	2	3	1	2	2	3	1	1	1	2	2
NC	1	2	0	1	1	1	1	2	0	1	2	0	2	1	1
SC	1	0	0	1	0	0	1	0	0	0	1	0	0	1	0
TN	1	0	2	1	0	2	1	0	3	1	0	2	1	0	2
AL	0	1	1	0	2	0	0	1	0	0	0	2	0	1	3
MS	0	0	1	0	1	0	0	0	1	0	0	1	0	2	0

Table 17: Average undergraduate tuition and fees paid by full-time-equivalent students in degree-granting (1997-1998)

State	Public 4-year		Private 4-year		Public 2-year
	Total	Tuition(in -state)	Total	Tuition(in -state)	Tuition only(in-state)
United States	$7,673	$3,110	$19,070	$13,344	$1,314
Alabama	6,362	2,488	12,576	8,241	1,345
Florida	6,891	1,911	16,895	11,525	1,250
Georgia	6,936	2,356	16,845	11,241	1,206
North Carolina	5,920	1,895	17,139	12,307	584
South Carolina	7,199	3,414	14,675	10,660	1,159
Tennessee	5,793	2,296	15,689	11,090	1,134

Table 18: Average undergraduate tuition and ranking before and after (1997-1998)

Public 4-year	Actual tuition		Expected tuition after considering the effect of HOPE	
	Tuition(in -state)	Rank(low to high)	Tuition(in -state)	Rank(low to high)
Alabama	2,487	5	2,487	5
Florida	1,909	2	1,702	2
Georgia	2,356	4	992	1
Mississippi	2,568	6	2,568	6
North Carolina	1,895	1	1,895	3
South Carolina	3,414	7	3,414	7
Tennessee	2,296	3	2,296	4

Table 19 Unemployment rate between 1995-2000 for all states

%	US	Georgia	Florida	North Carolina	South Carolina	Tennessee	Alabama	Mississippi
1995	5.6	4.8	5.5	4.4	5.1	5.3	5.2	6.5
1998	4.5	4.2	4.5	3.5	3.6	4.5	3.9	5.4
2000	4.0	3.5	3.8	3.7	3.6	4.0	4.1	5.7
Average (1995-2000)	4.8	4.2	4.7	3.9	4.4	4.8	4.4	5.9
Rank		2	5	1	3	6	3	7

Table 20: Conditional Logit Regression - Migration Decision on Tuition Reduction (Three States)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.714006	0.019257	37.08	0.0000
Number of obs.		29,358			
LR chi2		1,415.23			
Prob > chi2		0.0000			
Log likelihood		-8,059.47			
Pseudo-R^2		0.0807			

Table 21: Conditional Logit Regression - Migration Decision on Tuition Reduction and Unemployment Reduction (Three States)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.710190	0.019200	36.99	0.000
unemployment reduction (UR)	+	0.013094	0.002691	4.87	0.000
Number of obs.		29,358			
LR chi2		1,439.30			
Prob > chi2		0.0000			
Log likelihood		-8,047.43			
Pseudo-R^2		0.0821			

Table 22: Conditional Logit Regression - Migration Decision on Tuition Reduction, Unemployment Reduction and Other Covariance Variables (Three States)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.208081	0.095000	2.19	0.029
*TR * fcolledge*	+	0.032646	0.043815	0.75	0.456
*TR * (1/family income)*	+	-0.000131	0.017811	-0.01	0.994
*TR * Race*	+	0.369651	0.049451	7.48	0.000
*TR * number of children grade 9 and up*	+	0.009871	0.020853	0.47	0.636
unemployment reduction (UR)	+	0.006817	0.013370	0.51	0.610
*UR * fcollege*	?	0.015961	0.006222	2.57	0.010
*UR *(1/family income)*	?	0.011507	0.007009	1.64	0.101
*UR * race*	?	-0.006842	0.007099	-0.96	0.335
*UR * number of children*	?	-0.003610	0.002913	-1.24	0.215
Number of obs.		29,358			
LR chi2		1,512.74			
Prob > chi2		0.0000			
Log likelihood		-8,010.71			
Pseudo-R^2		0.0863			

Table 23: Conditional Logit Regression - Migration Decision on Tuition Reduction, Unemployment Reduction and Other Covariance Variables (Three States, Number of 9 Grade up)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.224773	0.088834	2.53	0.011
*TR * fcolledge*	+	0.032747	0.043816	0.75	0.455
*TR * (1/family income)*	+	-0.000205	0.017731	-0.01	0.991
*TR * Race*	+	0.371007	0.049364	7.52	0.000
*TR * number of children grade 9 and up*	+	-0.000528	0.036806	-0.01	0.989
unemployment reduction (UR)	+	0.001810	0.012504	0.14	0.885
*UR * fcollege*	?	0.015941	0.006222	2.56	0.010
*UR *(1/family income)*	?	0.011401	0.006951	1.64	0.101
*UR * race*	?	-0.007418	0.007089	-1.05	0.295
*UR * number of children grade 9 and up*	?	-0.004053	0.005096	-0.80	0.426
Number of obs.		29,358			
LR chi2		1,511.65			
Prob > chi2		0.0000			
Log likelihood		-8,011.26			
Pseudo-R^2		0.0862			

Table 24: Conditional Logit Regression - Migration Decision on Tuition Reduction (Seven States)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.578709	0.014517	39.86	0.0000
Number of obs.		59,406			
LR chi2		1,618.58			
Prob > chi2		0.0000			
Log likelihood		-16,930.92			
Pseudo-R^2		0.0456			

Table 25: Conditional Logit Regression - Migration Decision on Tuition Reduction and Unemployment Reduction (Seven States)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.581877	0.014298	40.70	0.000
unemployment reduction (UR)	+	0.033946	0.001946	17.44	0.000
Number of obs.		59,406			
LR chi2		1,938.01			
Prob > chi2		0.0000			
Log likelihood		-16,771.20			
Pseudo-R^2		0.0546			

Table 26: Conditional Logit Regression - Migration Decision on Tuition Reduction, Unemployment Reduction and Other Covariates (Seven States)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.124683	0.070833	1.76	0.078
*TR * fcolledge*	+	0.077614	0.032486	2.39	0.017
*TR * (1/family income)*	+	-0.005619	0.014767	-0.38	0.704
*TR * Race*	+	0.250926	0.034972	7.18	0.000
*TR * number of children grade 9 and up*	+	0.027716	0.015603	1.78	0.076
unemployment reduction (UR)	+	0.013129	0.009629	1.36	0.173
*UR * fcollege*	?	0.016145	0.004493	3.59	0.000
*UR *(1/family income)*	?	0.015339	0.006023	2.55	0.011
*UR * race*	?	0.005081	0.004783	1.06	0.288
*UR * number of children*	?	-0.003693	0.002118	-1.74	0.081
Number of obs.		59,406			
LR chi2		2,021.71			
Prob > chi2		0.0000			
Log likelihood		-16,729.35			
Pseudo-R^2		0.0570			

Table 27: Conditional Logit Regression - Migration Decision on Tuition Reduction, Unemployment Reduction and Other Covariates (Seven States, Number of Children Grade 9 and up)

	Exp. Sign	Coef.	Std. Err.	z	P>z
tuition reduction (TR)	+	0.169133	0.066158	2.56	0.011
*TR * fcolledge*	+	0.077902	0.032487	2.40	0.016
*TR * (1/family income)*	+	-0.005910	0.014741	-0.40	0.688
*TR * Race*	+	0.254426	0.034922	7.29	0.000
*TR * number of children grade 9 and up*	+	0.008818	0.027307	0.32	0.747
unemployment reduction (UR)	+	0.007080	0.008999	0.79	0.431
*UR * fcollege*	?	0.016052	0.004492	3.57	0.000
*UR *(1/family income)*	?	0.015412	0.006027	2.56	0.011
*UR * race*	?	0.004626	0.004775	0.97	0.333
*UR * number of children grade 9 and up*	?	-0.000510	0.003707	-0.14	0.891
Number of obs.		59,406			
LR chi2		2,015.27			
Prob > chi2		0.0000			
Log likelihood		-16,732.58			
Pseudo-R^2		0.0568			

Table 28: The Elasticity of Tuition Reduction to Interstate Migration Decisions (Seven States)

Migration choice	Obs.	Mean elasticity
Georgia	7,987	0.11
Florida	7,192	0.04
Alabama	8,826	-0.06
Mississippi	9,347	-0.07
North Carolina	8,459	0.01
South Carolina	8,803	-0.18
Tennessee	8,792	-0.04

Appendix:

Tables 29 to 34 : Descriptive information for people originally moved from one southeast state to another southeast state in 1995-2000, with father age<50 and child(ren) age<18

Table 29: People originally moved from one southeast state to another southeast state in 1995-2000

Orig. State	Num. of households	Moved to Southeast		Father Age<50		With Children < 18	
		Num.	%	Num.	%	Num.	%
Alabama	32,173	2,945	9.15	2,251	76.43	1,016	45.14
Florida	126,079	7,477	5.93	5,176	69.23	2,540	49.07
Georgia	61,368	5,357	8.73	3,874	72.32	1,789	46.18
Mississippi	18,791	1,467	7.81	1,173	79.96	526	44.84
North Carolina	58,617	3,986	6.80	2,964	74.36	1,355	45.72
South Carolina	27,325	3,047	11.15	2,322	76.21	1,037	44.66
Tennessee	43,306	3,079	7.11	2,236	72.62	1,037	46.38

Table 30 Migration of families with father age<50 and at least one child younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	1,016			236	23.23	347	34.15	117	11.52	88	8.66	42	4.13	186	18.31
FL	2,540	307	12.09			983	38.70	95	3.74	605	23.82	226	8.90	324	12.76
GA	1,789	293	16.38	586	32.76			67	3.75	321	17.94	252	14.09	270	15.09
MS	526	116	22.05	101	19.20	81	15.40			34	6.46	23	4.37	171	32.51
NC	1,355	74	5.46	351	25.90	325	23.99	33	2.44			417	30.77	155	11.44
SC	1,037	44	4.24	217	20.93	295	28.45	14	1.35	380	36.64			87	8.39
TN	1,037	135	13.02	192	18.51	301	29.03	184	11.52	159	15.33	66	6.36		
Sum	9,300	969	10.42	1,683	18.10	2,332	25.08	510	5.48	1,587	17.06	1,026	11.03	1,193	12.83

Table 31 Migration of families with father age<50 and ONE child younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	451			101	22.39	149	33.04	45	9.98	48	10.64	23	5.1	85	18.85
FL	1,068	136	12.73			415	38.86	32	3	258	24.16	103	9.64	124	11.61
GA	758	124	16.36	258	34.04			28	3.69	122	16.09	118	15.57	108	14.25
MS	242	50	20.66	49	20.25	38	15.7			16	6.61	11	4.55	78	32.23
NC	599	34	5.68	157	26.21	124	20.7	10	1.67			197	32.89	77	12.85
SC	459	20	4.36	87	18.95	134	29.19	6	1.31	180	39.22			32	6.97
TN	435	45	10.34	73	16.78	133	30.57	81	18.62	75	17.24	28	6.44		
Sum	4,012	409	10.19	725	18.07	993	24.75	202	5.03	699	17.42	480	11.96	504	12.56

Table 32 Migration of families with father age<50 and TWO children younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	384			85	22.14	136	35.42	47	12.24	30	7.81	12	3.13	74	19.27
FL	987	114	11.55			379	38.4	41	4.15	231	23.4	80	8.11	142	14.39
GA	683	106	15.52	225	32.94			26	3.81	124	18.16	89	13.03	113	16.54
MS	184	49	26.63	33	17.93	24	13.04			10	5.43	8	4.35	60	32.61
NC	518	29	5.6	123	23.75	137	26.45	15	2.9			157	30.31	57	11
SC	404	12	2.97	100	24.75	115	28.47	5	1.24	138	34.16			34	8.42
TN	433	65	15.01	83	19.17	120	27.71	78	18.01	61	14.09	26	6		
Sum	3,593	375	10.44	649	18.06	911	25.35	212	5.90	594	16.53	372	10.35	480	13.36

Table 33 Migration of families with father age<50 and THREE children younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	145			43	29.66	49	33.79	17	11.72	7	4.83	5	3.45	24	16.55
FL	346	40	11.56			130	37.57	15	4.34	88	25.43	32	9.25	41	11.85
GA	274	49	17.88	84	30.66			10	3.65	56	20.44	39	14.23	36	13.14
MS	67	14	20.9	15	22.39	14	20.9			5	7.46	3	4.48	16	23.88
NC	172	6	3.49	53	30.81	45	26.16	5	2.91			47	27.33	16	9.3
SC	129	9	6.98	24	18.6	33	25.58	2	1.55	45	34.88			16	12.4
TN	132	18	13.64	29	21.97	37	28.03	18	13.64	20	15.15	10	7.58		
Sum	1,265	136	10.75	248	19.60	308	24.35	67	5.30	221	17.47	136	10.75	149	11.78

Table 34 Migration of families with father age<50 and MORE THAN THREE children younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	36			7	19.44	13	36.11	8	22.22	3	8.33	2	5.56	3	8.33
FL	139	17	12.23			59	42.45	7	5.04	28	20.14	11	7.91	17	12.23
GA	74	14	18.92	19	25.68			3	4.05	19	25.68	6	8.11	13	17.57
MS	33	3	9.09	4	12.12	5	15.15			3	9.09	1	3.03	17	51.52
NC	66	5	7.58	18	27.27	19	28.79	3	4.55			16	24.24	5	7.58
SC	45	3	6.67	6	13.33	13	28.89	1	2.22	17	37.78			5	11.11
TN	37	7	18.92	7	18.92	11	29.73	7	18.92	3	8.11	2	5.41		
SUM	430	49	11.40	61	14.19	120	27.91	29	6.74	73	16.98	38	8.84	60	13.95

Tables 35 to 40 : Descriptive information for people originally moved from one southeast state to another southeast state in 1995-2000, with father age<45 and child(ren) age<18

Table 35: People originally moved from one southeast state to another southeast state in 1995-2000

Orig. State	Num. of households	Moved to Southeast		Father Age<45		With Children < 18	
		Num.	%	Num.	%	Num.	%
Alabama	32,173	2,945	9.15	2,030	68.93	943	46.45
Florida	126,079	7,477	5.93	4,511	60.33	2,292	50.81
Georgia	61,368	5,357	8.73	3,423	63.90	1,654	48.32
Mississippi	18,791	1,467	7.81	1,075	73.28	487	45.30
North Carolina	58,617	3,986	6.80	2,619	65.70	1,237	47.23
South Carolina	27,325	3,047	11.15	2,080	68.26	940	45.19
Tennessee	43,306	3,079	7.11	1,976	64.18	946	47.87

Table 36 Migration of families with father age<45 and at least one child younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	943			216	22.91	329	34.89	111	11.77	75	7.95	39	4.14	173	18.35
FL	2,292	279	12.17			891	38.87	86	3.75	541	23.6	204	8.9	291	12.7
GA	1,654	270	16.32	543	32.83			59	3.57	289	17.47	239	14.45	254	15.36
MS	487	106	21.77	94	19.3	72	14.78			32	6.57	21	4.31	162	33.26
NC	1,237	71	5.74	330	26.68	295	23.85	30	2.43			369	29.83	142	11.48
SC	940	39	4.15	192	20.43	265	28.19	14	1.49	345	36.7			85	9.04
TN	946	128	13.53	172	18.18	274	28.96	167	17.65	145	15.33	60	6.34		
Sum	8,499	893	10.51	1,547	18.20	2,126	25.01	467	5.49	1,427	16.79	932	10.97	1,107	13.03

Table 37 Migration of families with father age<45 and ONE child younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	416			92	22.12	141	33.89	43	10.34	41	9.86	21	5.05	78	18.75
FL	940	119	12.66			365	38.83	29	3.09	225	23.94	93	9.89	109	11.6
GA	690	115	16.67	233	33.77			25	3.62	107	15.51	109	15.8	101	14.64
MS	218	44	20.18	44	20.18	33	15.14			14	6.42	9	4.13	74	33.94
NC	544	31	5.7	147	27.02	114	20.96	8	1.47			171	31.43	73	13.42
SC	403	18	4.47	74	18.36	118	29.28	6	1.49	157	38.96			30	7.44
TN	381	41	10.76	59	15.49	118	30.97	70	18.37	67	17.59	26	6.82		
Sum	3,592	368	10.24	649	18.07	889	24.75	181	5.04	611	17.01	429	11.94	465	12.95

Table 38 Migration of families with father age<45 and TWO children younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	353			78	22.1	127	35.98	43	12.18	25	7.08	12	3.4	68	19.26
FL	895	107	11.96			347	38.77	38	4.25	204	22.79	71	7.93	128	14.3
GA	637	97	15.23	212	33.28			22	3.45	114	17.9	86	13.5	106	16.64
MS	170	45	26.47	31	18.24	21	12.35			10	5.88	8	4.71	55	32.35
NC	472	29	6.14	115	24.36	121	25.64	15	3.18			140	29.66	52	11.02
SC	377	11	2.92	91	24.14	105	27.85	5	1.33	131	34.75			34	9.02
TN	408	62	15.2	80	19.61	112	27.45	74	18.14	55	13.48	25	6.13		
Sum	3,312	351	10.60	607	18.33	833	25.15	197	5.95	539	16.27	342	10.33	443	13.38

Table 39 Migration of families with father age<45 and THREE children younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	139			39	28.06	48	34.53	17	12.23	7	5.04	4	2.88	24	17.27
FL	330	37	11.21			124	37.58	14	4.24	85	25.76	30	9.09	40	12.12
GA	255	44	17.25	80	31.37			9	3.53	50	19.61	38	14.9	34	13.33
MS	67	14	20.9	15	22.39	14	20.9			5	7.46	3	4.48	16	23.88
NC	162	6	3.7	51	31.48	44	27.16	5	3.09			43	26.54	13	8.02
SC	118	7	5.93	22	18.64	30	25.42	2	1.69	41	34.75			16	13.56
TN	122	18	14.75	28	22.95	33	27.05	16	13.11	20	16.39	7	5.74		
Sum	1,193	126	10.56	235	19.70	293	24.56	63	5.28	208	17.44	125	10.48	143	11.99

Table 40 Migration of families with father age<45 and MORE THAN THREE children younger than 18

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	35			7	20	13	37.14	8	22.86	2	5.71	2	5.71	3	8.57
FL	127	16	12.6			55	43.31	5	3.94	27	21.26	10	7.87	14	11.02
GA	72	14	19.44	18	25			3	4.17	18	25	6	8.33	13	18.06
MS	32	3	9.38	4	12.5	4	12.5			3	9.38	1	3.13	17	53.13
NC	59	5	8.47	17	28.81	16	27.12	2	3.39			15	25.42	4	6.78
SC	42	3	7.14	5	11.9	12	28.57	1	2.38	16	38.1			5	11.9
TN	35	7	20	5	14.29	11	31.43	7	20	3	8.57	2	5.71		
SUM	402	48	11.94	56	13.93	111	27.61	26	6.47	69	17.16	36	8.96	56	13.93

Tables 41 to 46 : Descriptive information for people originally moved from one southeast state to another southeast state in 1995-2000, with father age<45 and child(ren) age<22

Table 41: People originally moved from one southeast state to another southeast state in 1995-2000

Orig. State	Num. of households	Moved to Southeast		Father Age<45		With Children < 22	
		Num.	%	Num.	%	Num.	%
Alabama	32,173	2,945	9.15	2,030	68.93	959	47.24
Florida	126,079	7,477	5.93	4,511	60.33	2,332	51.70
Georgia	61,368	5,357	8.73	3,423	63.90	1,686	49.26
Mississippi	18,791	1,467	7.81	1,075	73.28	495	46.05
North Carolina	58,617	3,986	6.80	2,619	65.70	1,261	48.15
South Carolina	27,325	3,047	11.15	2,080	68.26	956	45.96
Tennessee	43,306	3,079	7.11	1,976	64.18	965	48.84

Table 42 Migration of families with father age<45 and at least one child younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	959			221	23.04	336	35.04	113	11.78	75	7.82	40	4.17	174	18.14
FL	2,332	285	12.22			901	38.64	86	3.69	554	23.76	207	8.88	299	12.82
GA	1,686	277	16.43	556	32.98			59	3.5	292	17.32	241	14.29	261	15.48
MS	495	109	22.02	96	19.39	72	14.55			33	6.67	21	4.24	164	33.13
NC	1,261	74	5.87	334	26.49	299	23.71	30	2.38			380	30.13	144	11.42
SC	956	40	4.18	192	20.08	270	28.24	14	1.46	354	37.03			86	9
TN	965	129	13.37	179	18.55	281	29.12	170	17.62	145	15.03	61	6.32		
Sum	8,654	914	10.56	1,578	18.23	2,159	24.95	472	5.45	1,453	16.79	950	10.98	1,128	13.03

Table 43 Migration of families with father age<45 and ONE child younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	418			95	22.73	145	34.69	44	10.53	40	9.57	19	4.55	75	17.94
FL	930	118	12.69			355	38.17	29	3.12	223	23.98	92	9.89	113	12.15
GA	691	117	16.93	228	33			25	3.62	106	15.34	109	15.77	106	15.34
MS	217	45	20.74	43	19.82	32	14.75			15	6.91	9	4.15	73	33.64
NC	546	31	5.68	146	26.74	113	20.7	8	1.47			175	32.05	73	13.37
SC	406	17	4.19	72	17.73	119	29.31	6	1.48	161	39.66			31	7.64
TN	383	40	10.44	63	16.45	118	30.81	71	18.54	64	16.71	27	7.05		
Sum	3,591	368	10.25	647	18.02	882	24.56	183	5.10	609	16.96	431	12.00	471	13.12

Table 44 Migration of families with father age<45 and TWO children younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	361			80	22.16	128	35.46	44	12.19	25	6.93	15	4.16	69	19.11
FL	912	112	12.28			350	38.38	36	3.95	215	23.57	72	7.89	127	13.93
GA	644	101	15.68	219	34.01			21	3.26	112	17.39	86	13.35	105	16.3
MS	173	45	26.01	32	18.5	22	12.72			9	5.2	8	4.62	57	32.95
NC	482	31	6.43	117	24.27	123	25.52	15	3.11			142	29.46	54	11.2
SC	382	13	3.4	90	23.56	105	27.49	5	1.31	135	35.34			34	8.9
TN	411	63	15.33	82	19.95	114	27.74	71	17.27	57	13.87	24	5.84		
Sum	3,365	365	10.85	620	18.42	842	25.02	192	5.71	553	16.43	347	10.31	446	13.25

Table 45 Migration of families with father age<45 and THREE children younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	142			39	27.46	48	33.8	17	11.97	8	5.63	4	2.82	26	18.31
FL	350	38	10.86			136	38.86	16	4.57	87	24.86	30	8.57	43	12.29
GA	277	45	16.25	91	32.85			10	3.61	56	20.22	38	13.72	37	13.36
MS	70	15	21.43	17	24.29	14	20			5	7.14	3	4.29	16	22.86
NC	170	7	4.12	52	30.59	46	27.06	5	2.94			47	27.65	13	7.65
SC	124	7	5.65	25	20.16	33	26.61	2	1.61	41	33.06			16	12.9
TN	133	19	14.29	29	21.8	36	27.07	21	15.79	20	15.04	8	6.02		
Sum	1,266	131	10.35	253	19.98	313	24.72	71	5.61	217	17.14	130	10.27	151	11.93

Table 46 Migration of families with father age<45 and MORE THAN THREE children younger than 22

Orig. State	Num.	Moved to Alabama		Moved to Florida		Moved to Georgia		Moved to Mississippi		Moved to North Carolina		Moved to South Carolina		Moved to Tennessee	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
AL	38			7	18.42	15	39.47	8	21.05	2	5.26	2	5.26	4	10.53
FL	140	17	12.14			60	42.86	5	3.57	29	20.71	13	9.29	16	11.43
GA	74	14	18.92	18	24.32			3	4.05	18	24.32	8	10.81	13	17.57
MS	35	4	11.43	4	11.43	4	11.43			4	11.43	1	2.86	18	51.43
NC	63	5	7.94	19	30.16	17	26.98	2	3.17			16	25.4	4	6.35
SC	44	3	6.82	5	11.36	13	29.55	1	2.27	17	38.64			5	11.36
TN	38	7	18.42	5	13.16	13	34.21	7	18.42	4	10.53	2	5.26		
SUM	432	50	11.57	58	13.43	122	28.24	26	6.02	74	17.13	42	9.72	60	13.89

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Dissertation

"**The Effect of the HOPE Scholarship Program on Interstate Migration**"
(**Two Chapters**)

Dissertation Committee: Jan Ondrich (Chair, an applied econometrician), John Yinger, Donald Dutkowsky from Economics Department; Ross Rubenstein, Robert Bifulco from Public Administration Department

Abstract: In this research, I analyze whether and how the HOPE scholarship program (the first large scale and merit-based higher educational scholarship program created by Georgia State) affects interstate educational migration. I use border analysis and difference-in-differences estimates and apply conditional multinomial logistic model and nest model in the study. I find supportive evidence that Georgia State attracts migration of families with high school seniors from its border states through the HOPE scholarship.

Selected Publications

Selected Books

- *Effective Decision Making* (A 10th Five-Year Plan Project on Social Science of Beijing), with Hongchun Wang, Enterprises Management Publishing Inc., Beijing, China, 2006

- *Extreme Financial Management*, Enterprises Management Publishing Inc., Beijing, China, 2002

Translation Publication

- *21 Golden Rules for Successful Manager*, with Linna Shi, CITIC Publishing House, Beijing, China, 2003

Selected Journal Articles

- Forecast and Advisory Policies for Beijing's Economic Development of 2003, with Ye Huang, *The Annual Forecast Report of Beijing's Economic Development*, 2003, pp. 25-43
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- A Comparative Research on the Hi-Tech Industrial Parks in Beijing and Shenzhen, *Research on Social and Economic Affairs*, vol.224, 2002, pp. 18-31.

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