Climbing the Educational Ladder: The Relative Performance of Rural and Urban Students in Brazilian Universities

Gustavo Ramos Sampaio
Department of Economics
Universidade Federal de Pernambuco
gustavorsampaio@gmail.com

Mary Arends-Kuenning
Department of Agricultural and Consumer Economics
University of Illinois at Urbana-Champaign
marends@illinois.edu

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Gustavo Ramos Sampaio[1], Mary Arends-Kuenning[2]

[1]Department of Economics, Universidade Federal de Pernambuco, [2]Department of Ag. Economics, University of Illinois at Urbana-Champaign

Objective

The main objective is to discuss differences of rural and urban students in Brazilian universities and analyze their performance while in college in order to determine better ways for increasing rural schooling and to decrease income inequalities in the country.

Introduction

In recent years, there has been increasing concern as to how higher education could reach rural students. The federal government recently has launched a program whose main purpose was to build several university campuses in rural areas. This would allow more students to enter higher education and benefit from its high returns (see Psacharopoulos (1994) and Fernandes and Menezes Filho (2000)), especially those students that otherwise would not have the opportunity to study. Despite the effort to increase the number of higher educational institutions, rural students usually face disadvantages when trying to obtain a college degree (see Sampaio (2011)). A natural question is how could acceptance rates for rural students be increased, for example through affirmative action, and what are the consequences of doing so.

Theoretical Framework

The model presents a simple two-period economy consisting of a continuum of students, a college and a household, represented by the parents, which make educational investment decisions for their children. In the first period, the parents decide how much to invest in their childrens education. In the second period, students take a college entrance exam that determine who gets accepted to enter the public higher educational system.

Implications

1. Students coming from rural areas are likely to have lower performance in the university entrance exam compared to those coming from urban areas.

2. Once at the university, students coming from rural areas are likely to outperform their urban classmates.

3. The high pre-college ability urban students and part of the high pre-college ability rural students will enter the highest competitive majors at UFPE.

4. The remaining high pre-college ability rural students and the urban students with low pre-college ability will enter the lowest competitive majors.

Data

The dataset used in this paper comes from students' who enter the Universidade Federal de Pernambuco (UFPE), which is a major university that is located in the Northeast of Brazil. UFPE is a public university, which charges no tuition fees. The main requirement for entering the universities' undergraduate programs is an entrance exam that must be taken by all candidates.

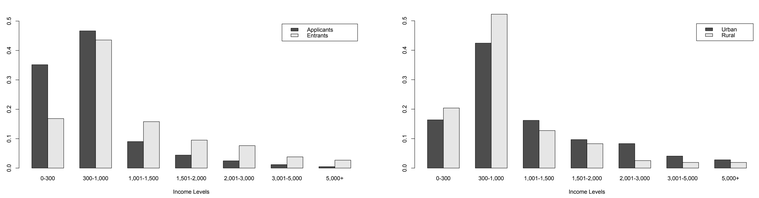

Figure 1: Income Distribution of Applicants and Entrants / Urban and Rural Entrants

Methods

Our empirical specification captures the GPA difference between urban and rural students while controlling for family and individual characteristics.

$$GPA_{ij} = \psi_0 + \psi_1 urban_{ij} + \psi_2 scores_i + \psi_3' X_{ij1} + \psi_4' X_{ij2} + major_j + \varepsilon_i \quad (1)$$

Our primary focus is to identify the source of such GPA differences among urban and rural entrant students and to make sure that these differences do not arise because of different family background or some individual characteristics.

Results

Table 1 presents estimates of the GPA difference between urban and rural university students.

Table 1: Determinants of GPA Differences

	Part I							Part II	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Urban	-0.195^{**}	-0.178^{**}	-0.173^{**}	-0.174^{*}	-0.174^{*}	-0.182^{**}	-0.193^{**}	-0.338^{**}	-0.341^{***}
	(0.079)	(0.084)	(0.085)	(0.088)	(0.090)	(0.091)	(0.086)	(0.154)	(0.124)
Number of Entrance Tests						-0.118^{***}	-0.121^{***}	–	–
						(0.026)	(0.026)	–	–
Private Tutoring Classes						-0.038	-0.053	0.019	-0.033
						(0.055)	(0.056)	(0.114)	(0.103)
University Entrance Scores							0.175^{***}		0.399^{***}
							(0.042)		(0.073)
Individual Characteristics	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parents Education	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parents Income	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
School Characteristics	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Major Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.001	0.029	0.038	0.043	0.049	0.056	0.070	0.060	0.113
N. of observ.	1,335	1,276	1,172	1,172	1,148	1,146	1,146	264	264

Quantile Regression provides a more complete statistical analysis on how the variable of interest varies among the different quantiles. Here we provide quantile estimates for the variable of interest, i.e., the indicator variable *urban*. We estimate the quantile regression using the full set of controls reported in column (7) of Table 1

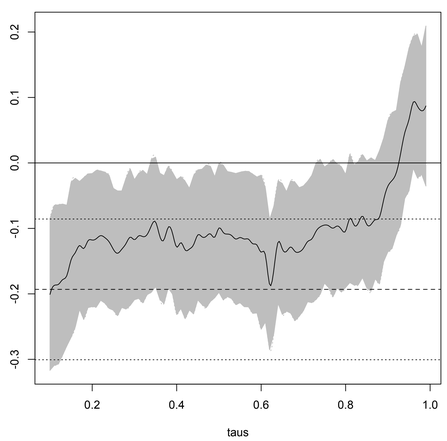

Figure 2: Quantile regression estimates for the indicator variable urban. Dependent variable: first year GPA. The solid line corresponds to the quantile estimate and the shaded area the 90% confidence interval. The dashed line represents the OLS estimate and dotted lines its 90% confidence interval.

Results - Cont.

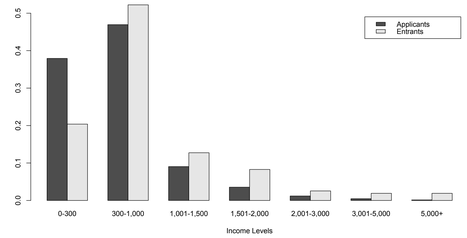

Figure 3: Income Distribution of Rural Applicants and Entrants

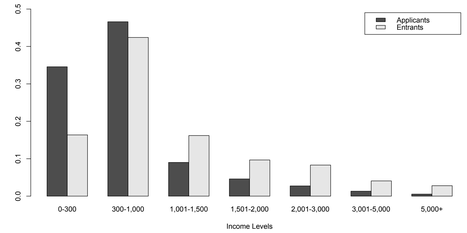

Figure 4: Income Distribution of Urban Applicants and Entrants

Figure 3 and 4 show that students from both regions that enter the university come from wealthier families. But comparing the income levels of the entrant students depicted in Figure 1 we can observe that students coming from urban areas have higher income levels. Therefore, affirmative action for rural areas would not only decrease regional education inequalities, but also help fight the high income disparities observed in the Brazilian society.

Conclusions

In this paper we look at differences in GPA performance between students coming from rural and urban areas in Brazil who ware granted access to the higher educational system. Understanding how these students perform once they are granted access to the university is important to help design better and more efficient ways of selecting students to enter the university system and construction public policies to decrease regional educational inequalities and overall income inequality in Brazil. The findings of the paper suggest that affirmative actions that benefit rural students to enter the university (specially for the highest competitive majors) are among the most effective by increasing efficiency at the universities and helping fight educational inequalities among regions and decreasing income inequalities in Brazil.

References

Fernandes, R., and N.A. Menezes Filho. 2000. "A Evolução da Desigualdade no Brasil Metropolitano entre 1983 e 1997." *Estudos Econômicos* 30:549 – 569.

Koenker, R., and J. Bassett, Gilbert. 1978. "Regression Quantiles." *Econometrica* 46:33–50.

Psacharopoulos, G. 1994. "Returns to investment in education: A global update." *World Development* 22:1325–1343.

Sampaio, G.R. 2011. "Rural and urban schools performance in Brazil and its impact on access to higher education." *Working Paper* Available at: http://www.gustavorsampaio.com.