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

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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 Pacharopoulos (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 children’s 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.

Results
The model captures the GPA difference between urban and rural students while controlling for family and individual characteristics.

\[ GPAD_j = \theta_0 + \theta_1urban_{ij} + \theta_2score_{ij} + \theta_3X_{ij1} + \theta_4X_{ij2} + \mu_j + \epsilon_j \]  

(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.

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (SE)</th>
<th>Coefficient (SE)</th>
<th>Coefficient (SE)</th>
<th>Coefficient (SE)</th>
<th>Coefficient (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>0.1215 (0.001)</td>
<td>0.1215 (0.001)</td>
<td>0.1215 (0.001)</td>
<td>0.1215 (0.001)</td>
<td>0.1215 (0.001)</td>
</tr>
<tr>
<td>Number of Entrance Tests</td>
<td>0.012**</td>
<td>0.012**</td>
<td>0.012**</td>
<td>0.012**</td>
<td>0.012**</td>
</tr>
<tr>
<td>Private Tution Classes</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
</tr>
<tr>
<td>University Entrance Score</td>
<td>0.012**</td>
<td>0.012**</td>
<td>0.012**</td>
<td>0.012**</td>
<td>0.012**</td>
</tr>
<tr>
<td>Individual Characteristics</td>
<td>No Yes No Yes Yes Yes Yes Yes Yes</td>
<td>No Yes No Yes Yes Yes Yes Yes Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Education</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
</tr>
<tr>
<td>Parent Income</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
</tr>
<tr>
<td>School Characteristics</td>
<td>No No No No No Yes Yes Yes Yes Yes</td>
<td>No No No No No Yes Yes Yes Yes Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Field</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.061</td>
<td>0.061</td>
<td>0.061</td>
<td>0.061</td>
<td>0.061</td>
</tr>
</tbody>
</table>

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.

Conclusions
In this paper we look at differences in GPA performance between students coming from rural and urban areas in Brazil who were 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 construct 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 (especially for the highest competitive majors) are among the most effective by increasing efficiency of the universities and helping fight educational inequalities among regions and decreasing income inequalities in Brazil.

References

