How educational groups affect choice in higher education?

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Abstract

Private higher educations are increasing in number and size around the world. The widespread of educational groups and mass brands in Brazil, stimulated by the strong growing demand from the last decade, raises the question on how important educational groups are to potential students’ choice and what are the factors that drive the success of these groups. This paper takes advantage of an unique environment of ownership changes between higher education institutions and of an unique dataset to answer these questions. Results show that being part of an educational group may be very important to students’ choice, especially if the institution is tied up to an international group. The model estimates that potential students are willing to pay up to 30% more to study in an institution from an international educational group. Ownership changes from an independent institution to an multinational educational group may cause an upward shift in the demand curve as high as eight times the demand of the acquired institution in the pre-acquisition period. This result is not related to the institution brand name, as international educational groups operate various brands. Not all single brand educational groups benefit from a brand premium, and this result seems to be related to the ability of educational groups on passing consistent information to students through its brand name. Other factors determine the choice for an educational group. Their ability to charge lower prices due to economies of scale and scope, their expertise to provide funding options to potential students, and some higher quality indexes when compared to independent institutions are elements that give them advantage in recruiting and retaining students. Estimates also show that the willingness to pay for higher quality programs is low, which may explain why most of the institutions keep their quality measures at the minimum acceptable by the Ministry of Education.

Keywords: higher education, educational groups, demand estimation, students’ choice.

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1 Introduction

More students than ever are attending higher education, an achievement strongly driven by the growth of private institutions. As governments struggle to accommodate the increasing attendance rates, private institutions are increasing in number and size around the world, achieving 30% of global enrollments in 2014 (McCowan, 2007; UNESCO, 2016). The growth of the private sector led to the emergence of large educational groups controlling several institutions within countries and, in some cases, worldwide. In Brazil, the expansion of the access to higher education through the private sector and educational groups is flagrant. The private sector more than tripled its size between 2000 and 2015, achieving more than 6 million students and 75% of total enrollments in 2015. More than 30% of private enrollments are in institutions owned by educational groups.

Educational groups have different characteristics when compared to independent institutions that may facilitate the recruitment of potential students. Some of these characteristics may be common to all educational groups, such as higher quality programs and better infrastructure at a lower cost due to economies of scale and scope, and a greater availability of scholarships and student funding. Other characteristics are specific to the group business strategy, such as student exchange opportunities and international network benefits for students enrolled in multinational educational groups, and the reputation of the brand for single brand educational groups, which may facilitate the placement in the labor market, a feature that can be ascertained only upon consumption\(^1\). Educational groups may have different management and academic strategies but share one common feature: the success in recruiting potential students.

This paper aims to evaluate how important educational groups are to students’ choice and what are their relevant characteristics that attract students. How valuable educational groups’ brands are to students? Are single brand groups more effective in recruiting students than multi-brand groups? Are the international benefits of multinational groups relevant to choice? And ultimately, what explains educational groups success? Besides assessing the role of educational groups, this investigation is relevant to generally understand what are the factors that determine students’ choice and how policymakers may act both to increase access to higher education and to promote better quality education, the main challenges on the current higher education policy agenda.

Several reasons make the higher education in Brazil a particularly appealing case to investigate the role of educational groups on students’ choice. First, the expansion of educational groups and mass brands through acquisitions of existing institutions provides the variation needed to evaluate how educational groups and brand names affect students’ choice. Second,

\(^{1}\)Several papers document branding strategies in higher education to built an unique identity to achieve a competitive advantage in recruiting and retaining students and raise funds. See for example Waeraas and Solbak (2009), Curtis, Abratt, and Minor (2009), Vrontis, Thrassou, and Melanthiou (2007), Khanna, Jacob, and Yadav (2014) and Chauhan and Pillai (2013).
the availability of a very rich dataset public provided by the Ministry of Education containing
detailed information on HEIs and program characteristics, including quality measures. Third,
I have a unique dataset on tuition fees for a large part of the programs offered in Brazil from
2007 to 2014\(^2\).

To address these questions, I estimate an aggregated nested logit model for the demand
of higher education at the program level. Parameters estimates show that being part of an
educational group may be a very important factor for student choice. Ownership changes from
an independent institution to an multinational educational group may cause an upward shift
in the demand curve as high as eight times the demand of the acquired institution in the pre-
acquisition period. Students would be willing to pay up to 30\% more to study in an institution
from an international educational group. This result is not related to the institution brand
name, as international educational groups keep the brand names of their acquired institutions
and, consequently, operate various brands. Interestingly, not all single brand educational groups
benefit from a brand premium, and this result seems to be related to the ability of educational
groups on passing consistent information to students through its brand name.

Educational groups success to recruit freshmen students are also rooted in their expertise
to provide funding options to potential students in an environment of low-income and credit
constraint, in their ability to charge lower prices due to the economies of scale and scope, and
in some higher quality indicators that are easier to achieve in the presence of economies of scale
and scope, such as the proportion of Ph.D. professors. More important, each educational group
combines these elements differently.

The estimates also bring other interesting results. The availability of funding programs
greatly reduce the price sensitivity of potential students apart from the program field they
are applying for, a result also found by Duarte and Mello (2015). Finally, the willingness to
pay for better quality indicators is low, which may explain the fact that most of the HEIs keep
their quality indexes at the minimum acceptable by the Ministry of Education.

This paper contributes to the literature that estimates how institutional characteristics,
such as cost, distance, size, quality and availability of financial aid influence higher education
choice (Manski and Wise, 1983; Long, 2004; Hoxby and Avery, 2004). Papers usually rely on
the random utility framework to understand institutions preferences. The complexity of higher
education choice due to the high number of alternatives has been discussed in many papers
and different approaches have been specified. Long (2004) and Niu, Tienda, and Cortes (2006),
for example, presume that students consider every possible institution in their choice set, while
Hoxby and Avery (2004) define subsets of institutions that granted respondents admission. A
common feature of these papers is that the choice is estimated at the level of the institution,
disregarding the study program.

Some of the previous empirical research estimate the effects of tuition fees on participation

\(^2\)Tuition fees vary at the program level in private institutions Brazil. Public institutions are free.
decision in the U.S., where fees usually vary at the state level (Kane, 1995; Dynarski, 2003; Cameron and Heckman, 2001). Regarding studies using more disaggregated data, Long (2004) has looked at the effects of tuition fees at the level of institution and Kelchtermans and Verboven (2010) at the program field level\(^3\). They also estimate the effects of travel costs on choice. Both studies find that tuition fees and travel costs have a higher impact on what and where to study than on participation decision. This is the first study to estimate the demand in higher education at the level of the program.

The remainder of this paper is structured as follows. The next section brings some background information on the higher education system in Brazil. Section 3 presents the empirical model of higher education program choice. Section 4 brings the results and section 5 concludes.

2 Higher Education in Brazil

This section begins with a description of the Brazilian higher education system, focusing on the relevant aspects for the potential students’ choice. The second part of the section gives some details about the educational groups and the third presents some descriptive statistics of the sector.

2.1 Industry background

In Brazil, higher education public institutions are free, while private institutions are tuition-funded. As they are free, public institutions select students through very competitive admittance exams and, as a rule, have a higher quality than the private ones, except for a few high-quality non-profit organizations. As the supply of new places in the public system is scarce, the private sector plays a key role in the system. In 2016, 75% of the enrolled students were in private institutions\(^4\). Nevertheless, the sector is heavily regulated by the Ministry of Education.

The Ministry of Education classifies higher education institutions in three different types. *Universities* are multidisciplinary institutions with requirements in terms of research, community engagement and autonomy to offer new places and programs. Public universities are created by the government, while private institutions are converted into universities after fulfilling the necessary requirements to do so. New private institutions are created as *Colleges (Faculdades)* and must ask authorization to the Ministry of Education to increase the number of places and open new programs. Intermediary institutions in terms of autonomy are

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\(^3\)As the tuition fees are uniform in the region (Flanders, Belgium) studied by Kelchtermans and Verboven (2010), they assume that pupils respond in the same way to tuition fees as to travel costs.

\(^4\)Specifically for distance learning programs, this number reached 92% in the same year.
called University Centers (Centros Universitários). Colleges accounted for 88% of the private institutions in 2016.

Undergraduate programs are classified in bachelor degrees (e.g. Economics, Engineering, History, Medical Sciences, Nursing), technological training programs (e.g. Hospitality and Catering, Information and Communications Technology), and teaching oriented programs (typically programs oriented to training teachers to high school classes, such as Mathematics, History, Literature). Programs may also be classified as in-class programs and distance learning programs. In-class programs may substitute up to 25% of the classes by online content. Students must choose a specific program (e.g. in-class Economics) at the admission stage. Admission exams are HEI-program specific.

Programs can also be classified into three fields: Social Sciences, Exact Sciences and Biosciences. The majority of students choose Social Sciences programs. In 2015, 55% of the students from private in-class programs were enrolled in Social Sciences programs. Some reasons may explain this pattern. From the demand perspective, these programs are usually less expensive when compared to Exact Sciences and Biosciences programs, which facilitates the access to low-income pupils. From the supply side, Social Sciences programs usually do not require engagement in research and development activities and investment in expensive laboratories.

Graduating students are evaluated by the Ministry of Education in a national exam (Enade), which consists of a general knowledge test common to all programs and a subject test for each program. The exam is held every year for different groups of degree programs and each program is evaluated every three years. For example, programs evaluated in 2007 were evaluated again in 2010, 2013 and 2016. In addition to students’ performance, the Ministry of Education uses other quality indicators, such as the percentage of professors with a Ph.D. degree, the percentage of full-time professors, infrastructure of the buildings and libraries. Each HEI is assigned a standardized quality index composed by the mentioned variables in a 1 to 5 scale, where an index of 3 is the minimum acceptable. As there is no minimum requirement for the individual measures of quality, institutions can compensate a low performance of students in the national exam by increasing, for example, the percentage of professors with a Ph.D. degree with a few contracted hours. The student-faculty ratio is not included as a quality measure.

Regulatory requirements are the most relevant barriers to entry and expansion in the industry. The entry must be authorized in each municipality, the lowest level of the Brazilian administrative division. Brazil has over 5,500 municipalities. The expansion requires the fulfillment of a set of time-consuming regulatory obligations that include accreditation of the

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5 The General Index of Courses (IGC, in the portuguese acronym).

6 The advent of a mandatory national exam dates back to 1996, when the National Exam of Courses was created. Rezende (2010) provides an overview of the quality evaluation procedure and estimates that the creation of the accountability system had a positive impact on faculty characteristics and that the higher the achieved grade by colleges the higher the enrollment growth.
HEI and authorization for offer of each program and the respective number of vacancies. Every new HEI must be accredited and request authorization for each new program. Universities have autonomy to open new degree programs in their current location, but an authorization is still needed to open a branch in a new municipality. The legal deadline for accreditation of HEI and program permit is 15 months. The same deadline is applied in the case of program authorization process requiring on-site evaluation, even if the HEI is already accredited. If the program does not require the on-site evaluation, the deadline is 8 months\(^7\). The transfer of degree programs between HEIs is not allowed.

Nevertheless, the system had an impressive growth in the last two decades. From 2000 to 2016 the number of enrolled students in higher education increased from 2.7 million to 8 million, while the number of HEIs has doubled from 1,180 to 2,407. Despite that growth, Brazil still has a very low gross enrollment ratio. According to the World Bank, the ratio achieved 49%, 83%, and 87% in Brazil, Argentina, and Chile, respectively, in 2014\(^8\). Even though, less than half of the new places in private institutions were filled in 2016 whereas 90% of the available places in public institutions were filled.

A combination of low-income and credit constraints keep most of the young population away from tertiary education. To facilitate the access in private institutions, the Federal Government developed two large incentive programs. Prouni (University for All Program), created in 2004, provides free places in private higher education institutions in return of tax exemptions. Fies (Student Financing Fund), created in 1999 and largely expanded since 2010, is a program established by the Ministry of Education that provides student loans with attractive payment terms for undergraduate students enrolled in private institutions. According to the Federal Government, Prouni granted 2.1 million scholarships since 2004, of which 70% were full scholarships, while Fies has benefited 3 million students since 1999. Part of the performance of the private sector in terms of enrollment is due to these programs, including the stagnation in recent years following the economic crises and the budget adjustments for them.

### 2.2 Educational groups

Excited by the potential growth of the sector, in the middle of the 2000’s international investors landed in Brazil whilst existing national educational groups joined the stock market to raise funds to expand. The strong demand growth and the regulatory barriers to entry resulted in the wave of acquisitions of HEIs by national and international educational groups to reach new geographic markets\(^9\). Brazil has continental dimensions and the massification of higher

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\(^7\)The on-site evaluation in the program application may be excused if the HEI has a quality index of at least 3 (three) on a 0-5 scale, among other requirements.

\(^8\)The gross enrollment ratio in higher education is defined as the ratio between the total number of enrollment and the population aged between 18 to 24 years.

\(^9\)Even though, not all educational groups grow through mergers and acquisitions. Unip (Universidade Paulista) and PUC (Pontificia Universidade Católica), for example, opted to grow organically.
education requires that institutions reach local markets. Adtalem, Anhanguera, Estácio, Kroton and Laureate groups made most of these transactions, acquiring around 130 HEIs between 2007 and 2014\textsuperscript{10}. The following paragraphs present the main educational groups that staged this consolidation process.

**Adtalem Global Education** (previously Devry Education Group) is an international group operating in more than 50 countries worldwide. It entered in Brazil in 2009 by acquiring Fanor, at the time owner of three institutions in two states in the Northeast region of the country. The group expanded geographically mainly by means of acquisitions of institutions with a good local reputation and focused its operation on the North and Northeast region of the country until very recently, when it acquired the reputed group of institutions Ibmec. Currently the group has 18 institutions and various brands. Adtalem institutions also encourage student exchange in undergraduate and postgraduate programs through ”international benefits”, as stated in its website.

**Laureate International Universities** is one of the largest higher education companies in the world, with institutions in more than 20 countries in the Americas, Europe, Africa, Asia and the Middle East. Laureate entered in the Brazilian market in 2005 by acquiring Universidade Anhembi Morumbi, and since then it grew both organically and by means of acquisitions, reaching all regions of the country. Laureate promotes itself as a high quality educational group whose mission is to make high quality higher education accessible and affordable. Every institution in the group operates its own unique brand, both in and out of the country. In Brazil, Laureate operates 12 brands offering undergraduate and postgraduate programs both in-class and online. The group offers study programs in all program fields, but greatly foments health programs. It also promotes student exchange among the institutions of the group worldwide.

**Kroton Educacional** is a Brazilian group that started its activities in primary education in 1996 originally under the brand Pitágoras. The group joined the stock market in 2007 and since them greatly expanded its activities in in-class and distance learning higher education by means of mergers and acquisitions\textsuperscript{11}. Kroton operates 9 different brands in 16 Brazilian states, and the distance learning plays an important role in its activity. The branding strategy of the group varies when acquiring a HEI, as in some cases the acquired unit had its name changed for one of the pre-existing brands of Kroton, probably when the acquired unit did not have a good local reputation. The group targets mainly potential students coming from public secondary education and is well known by its ability to provide funding opportunities\textsuperscript{12}.

**Anhanguera Educacional** is a Brazilian company created in 1994\textsuperscript{13}. Until 2003, Anhanguera

\textsuperscript{10}Ser Educacional and Anima Educação joined the stock market later in 2012 and also acquired a few institutions when compared to the other educational groups in the same period.

\textsuperscript{11}Currently the group offers in-class and distance-learning higher education, post-graduate courses, primary and secondary education, preparatory courses for specific exams and is also involved with distribution, import and export of textbooks, technologies and other publications.

\textsuperscript{12}Kroton is very successful in getting public funding Fies for its students, as will be clear in the next subsection. After the government budget adjustments for the program, Kroton created its own funding program.

\textsuperscript{13}Anhanguera offers in-class and distance learning higher education programs, post-graduate programs, voca-
had 4 institutions located in 6 municipalities in the state of São Paulo. The company joined the stock market in 2007 and in a short period acquired around 40 institutions and achieved near 200 thousand students in higher education in 2011. The company operates its single national brand Anhanguera and, consequently, changes the brand of all its acquired institutions. The company focus on the low-income working class aiming a higher education degree and has the distance learning as an important share of its higher education operation. According to the Millward Brown ranking, Anhanguera has been the most valuable educational brand in Brazil. As of May 2014, Anhanguera was acquired by Kroton giving rise to the world’s biggest educational group in number of students and market value.

Estácio Participações was born in 1970 in Rio de Janeiro and kept its activities in the state until 1998, when it expanded to the Northeast region. The company joined the stock market in 2007, as did Kroton and Anhanguera, and grew both organically and through acquisitions, although its growth by acquisitions has been much less intense than its competitors. The group operates a single national brand Estácio and offers higher education and post-graduate programs. It targets middle and low-income students and is known by its aggressive pricing strategy. More recently, after the Brazilian competition authority blocked its acquisition by Kroton in June 2017, the group has been restructuring its activities by increasing efficiency, raising prices and expanding the distance learning offer all over the country to make the company more sustainable. Estácio is the less profitable educational company in the Brazilian stock market. Following Kroton, Estácio just launched its own funding program.

Educational groups have different strategies in terms of branding. Adtalem, Laureate and Kroton operate local brands and, in addition to acquiring the license to offer the courses, they acquire an intangible asset, the reputation of the local brand. Anhanguera and Estácio acquire institutions in the geographic market of interest and replace the local brand with its national brand. In this case, it is clearer that the purpose of the acquisition is to get the license to operate in the market. Using local brands may help organizations to dissociate the profit driven corporation from the educational institution. However, if students are satisfied with their institution and the brand has a good reputation, operating national brands may reduce the advertising costs when entering in a new local market and facilitate pupils recruiting.

Another feature that differentiates educational groups is whether its corporate administration is under national or foreign control, which has consequences to the academic and pedagogical organization within each institution, according to Tasquetto (2014). The author has done an extensive research on the sector describing the management strategy of educational groups by interviewing various actors from the sector, including professors, coordinators, managers, consultants, a director, and a vice-chancellor from these groups.

On the one hand, according to the interviewees, institutions controlled by international

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14In interview with a former higher executive of one of these groups, he said that the reason to operate local brands is to dissociate the image of the profit driven corporation from the educational institution.
educational groups have their organizational culture ‘respected’ after the acquisition, for example by having autonomy in deciding programs syllabus and courseware. The rule is that as long as the recruitment targets are delivered, the financial managers are not involved in the academic management. This way, each institution remains different each other, and the adaptation to the new corporate administration would happen in the form of a best practices guideline.

On the other hand, institutions from Brazilian born educational groups should follow a common curriculum centrally defined and use the same books and materials provided to all institutions of the group. The faculty profile must also be in accordance to the group pattern, which may lead to dismissals after the acquisition and changes in the contracted working hours. In this case, the centralization of the academic and financial management leads to the standardization of the institution to the educational group pattern, apart from the brand strategy.

The degree of standardization would help to determine the type of institution to be acquired (Tasquetto, 2014). Foreign groups would seek for good quality institutions with research activities that would be just below renowned private institutions in terms of quality, such as the Pontifícia Universidade Católica (PUC), present in many states. This strategy would be necessary to enable students to benefit from the international network of the group through exchange programs, for example. Within the national groups, interviewees show different perceptions. One point of view is that Anhanguera, Estácio and Kroton acquire institutions with a quality index around 3, which is the minimum requirement by the Ministry of Education, and many times the standardization provided by the acquisition improves the quality of the institution. Another point of view is that Estácio would acquire some better institutions when compared to Anhanguera and Kroton.  

2.3 Summary statistics

This study collects information on various sources to construct a unique dataset. The data sources and their main variables are presented below, followed by some summary statistics of the data.

Higher Education Census. The first source of information is the Brazilian Higher Education Census, conducted by the National Institute of Studies and Educational Research Anísio Teixeira (Inep, in the Portuguese acronym), an independent agency linked to the Ministry of Education. The census provides information on number candidates, vacancies, freshmen,
enrolled students, scholarships and student loans at the study program-HEI level by municipality where the program is offered (in case the HEI offers the program in more than one municipality).

**System for Evaluation of Higher Education.** The second source of information comes from the National System for Evaluation of Higher Education (Sinaes, in the Portuguese acronym), also conducted by the Inep. The system evaluates (i) the performance of graduating students by means of the national exam Enade, (ii) the study programs by collecting information on faculty profile for example, and (iii) the HEI in general, by evaluating libraries and infrastructure of the buildings. The relevant information for this study is the proportion of professors with a Ph.D. degree, the proportion of full-time professors, and the performance of graduating students in the national exam.

**The Annual Relation of Social Information.** The Annual Relation of Social Information is an administrative dataset compiled by the Ministry of Labor that collects information on all formally registered companies and its respective employees in the country. I use this dataset to collect the average of the professors’ wages by municipality.

Besides these structured datasets, I also collect information from two other sources. To identify mergers and ownership changes between HEIs, I collect information from the Brazilian Administrative Tribunal for Economic Defense (CADE, in the Portuguese acronym). For those mergers not analyzed by the competition authority, I gather information from HEIs and investors’ websites.16 The dataset also contain the tuition fee (sticker prices) for about two thirds of all private in-class programs offered in the country in the 2007-2014 period. This data was confidentially provided by the Student Guide (Guia do Estudante), an annual publication from Abril publishing company.

Table 1 presents the total number of enrolled students in in-class programs by educational group and the total for all other existing HEIs in the country. As the table shows, the sector has been expanding overall, and the educational groups represent a growing fraction of the enrollment in in-class programs through the years. Independent institutions (“Other HEIs”) lost share in terms of total enrollment in the 2007-2015 period, whilst some groups such as Anhanguera, Kroton and Laureate had an impressive growth. Kroton, for example, was from 12 thousand students in in-class programs in 2007 to more than 200 thousand in 2015.

The government funding program played an important role in the expansion of the sector, as can be seen in Table 2. Despite of losing share in terms of enrollment, independent institutions have a higher and growing share of students with the student loan in the period when compared to the whole set of educational groups. On the other hand, some educational groups capture a high share of the available loans. More than half of the students from Kroton

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16Anhanguera, Laureate and Kroton started to notify their operations to the Brazilian competition authority only in 2008, 2009 and 2010, respectively. As reported in the records of more recent cases that were notified, prior to this period the companies did not reach R$400 million in revenues, the criterion that requires companies to notify the operation.
Table 1: Enrolled students in in-class programs by educational group, 2007-2015 period

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<tbody>
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<td>Anhanguera</td>
<td>53</td>
<td>99</td>
<td>99</td>
<td>112</td>
<td>197</td>
<td>177</td>
<td>178</td>
<td>223</td>
<td>237</td>
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<tr>
<td>Kroton</td>
<td>12</td>
<td>26</td>
<td>29</td>
<td>72</td>
<td>90</td>
<td>136</td>
<td>157</td>
<td>191</td>
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<tr>
<td>Estácio</td>
<td>145</td>
<td>164</td>
<td>150</td>
<td>161</td>
<td>174</td>
<td>182</td>
<td>198</td>
<td>241</td>
<td>270</td>
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<tr>
<td>Laureate</td>
<td>35</td>
<td>55</td>
<td>64</td>
<td>86</td>
<td>97</td>
<td>113</td>
<td>169</td>
<td>190</td>
<td>201</td>
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<td>Adtalem</td>
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<td>0</td>
<td>8</td>
<td>11</td>
<td>12</td>
<td>22</td>
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<td>Ser Educacional</td>
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<td>17</td>
<td>22</td>
<td>25</td>
<td>31</td>
<td>41</td>
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<td>171</td>
<td>164</td>
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<tr>
<td>Other HEIs</td>
<td>2,913</td>
<td>2,817</td>
<td>2,500</td>
<td>2,590</td>
<td>2,575</td>
<td>2,600</td>
<td>2,662</td>
<td>2,725</td>
<td>2,769</td>
</tr>
<tr>
<td>Total</td>
<td>3,448</td>
<td>3,474</td>
<td>3,196</td>
<td>3,377</td>
<td>3,508</td>
<td>3,611</td>
<td>3,806</td>
<td>4,086</td>
<td>4,229</td>
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Table 2: Enrolled students in in-class programs benefited by the funding program Fies by educational group, 2007-2015 period

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<td>1.7</td>
<td>1.3</td>
<td>1.8</td>
<td>2.4</td>
<td>2.3</td>
<td>3.6</td>
<td>24.4</td>
<td>60.4</td>
<td>74.7</td>
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<td>Kroton</td>
<td>1.4</td>
<td>1.3</td>
<td>1.4</td>
<td>2.6</td>
<td>8.0</td>
<td>29.0</td>
<td>58.1</td>
<td>97.8</td>
<td>83.3</td>
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<td>Estácio</td>
<td>4.3</td>
<td>4.6</td>
<td>3.1</td>
<td>4.9</td>
<td>8.9</td>
<td>16.8</td>
<td>22.4</td>
<td>57.5</td>
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<td>Laureate</td>
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<td>3.2</td>
<td>3.5</td>
<td>3.8</td>
<td>5.0</td>
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<td>0.0</td>
<td>0.5</td>
<td>0.7</td>
<td>1.4</td>
<td>5.0</td>
<td>7.0</td>
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<td>13.2</td>
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<td>Ser Educacional</td>
<td>1.2</td>
<td>1.3</td>
<td>0.8</td>
<td>0.7</td>
<td>1.9</td>
<td>9.3</td>
<td>5.1</td>
<td>22.7</td>
<td>19.6</td>
</tr>
<tr>
<td>Anima</td>
<td>0.7</td>
<td>1.0</td>
<td>1.3</td>
<td>0.7</td>
<td>2.8</td>
<td>5.9</td>
<td>7.9</td>
<td>13.2</td>
<td>10.7</td>
</tr>
<tr>
<td>Unip</td>
<td>0.9</td>
<td>0.5</td>
<td>0.7</td>
<td>1.0</td>
<td>2.1</td>
<td>9.1</td>
<td>14.4</td>
<td>32.3</td>
<td>27.9</td>
</tr>
<tr>
<td>PUC</td>
<td>7.4</td>
<td>7.2</td>
<td>6.0</td>
<td>7.7</td>
<td>7.7</td>
<td>11.4</td>
<td>13.4</td>
<td>18.0</td>
<td>14.3</td>
</tr>
<tr>
<td>Other HEIs</td>
<td>131.6</td>
<td>112.8</td>
<td>63.3</td>
<td>69.2</td>
<td>104.0</td>
<td>199.6</td>
<td>327.8</td>
<td>499.7</td>
<td>474.3</td>
</tr>
<tr>
<td>Total</td>
<td>151.2</td>
<td>133.2</td>
<td>82.4</td>
<td>93.7</td>
<td>144.1</td>
<td>297.3</td>
<td>497.0</td>
<td>837.2</td>
<td>797.7</td>
</tr>
</tbody>
</table>

Figure 1: Enrollment in in-class programs by program field, 2007-2015 period

Source: Higher Education Census. Excludes technological training programs.

had the government funding in 2014, for example\textsuperscript{17}. Anhanguera and Estácio had about 25% of their students benefited by the program in the same year.

Figure 1 shows that the majority of the students enroll in Social Sciences programs. In 2015, 55% of the students were enrolled in programs from this field. In relative terms, however, enrollment in Social Sciences had the smallest growth in the period. Biosciences programs rose by 35% from 2007 to 2015, whilst Exact programs more than doubled the number of students in the same period.

Figure 2 presents the distribution of the tuition fees for in-class programs (excluding technological training programs) at the program level in 2007 and 2014, in 2015 values, in Brazilian Reais. The panel (a) includes all study programs, panel (b) includes only Biosciences programs, panel (c) includes Exact Sciences programs and panel (d) Social Sciences programs. Tuition fees rose for all program fields in the period, especially for Exact Sciences and Social Sciences programs. For Exact Sciences programs, the average tuition was from R$7,190 in 2007 to R$12,280 in 2014, an increase of 70%. For Social Sciences programs, it was from R$5,796 in 2007 to R$9,323 in 2014, an increase of 60%.

Comparison between the averages of tuition fees charged by educational groups and independent HEIs shows that educational groups have different pricing strategies. Table 3 shows the average annual tuition fee by educational group and program field in 2014. Most of the educational groups charged prices higher than the average for the independent HEIs, such as Anhanguera, Kroton, Laureate, Adtalem, Anima and PUC. Estácio, Ser Educational and Unip

\textsuperscript{17}Following the economic crisis and the consequent adjustments in the budget for the program, Kroton launched its own funding program (Private Student Installment, PEP in the Portuguese acronym) in 2014, which may explain the reduction in the total number of benefited students by the Fies in 2015. According to public statements, the company’s goal for 2018 is to have only 3% of freshmen in in-class programs benefited by the government program Fies.
Figure 2: Tuition fees for in-class programs, years 2007 and 2014

(a) All Programs
(b) Biosciences Programs
(c) Exact Sciences Programs
(d) Social Sciences Programs

Source: Student Guide. Annual tuition fees at the program level in thousands of Reais, 2015 values. Excludes technological training programs.

Charged prices that are, on average, lower than the prices of independent institutions.

Regarding the quality measures, Figure 3 presents the densities for the proportion of professors with a Ph.D. degree (left) and for the proportion of full-time professors (right) at the study program level for the years 2007 and 2014. Graphs show that institutions have improved the faculty profile in the period. Between 2007 and 2014, the distribution for the proportion of professors with a Ph.D. have changed for a less right-skewed distribution, so the average proportion of professors with a Ph.D. degree across programs have increased. Institutions also hired a higher proportion of full-time professors in 2014 when compared to 2007, although the distribution is more uniform when compared to the Ph.D. professors’ distribution. As the students’ score on the national exam is a standardized score, there is no change in the distribution of the scores through years, so it will not be presented.

Table 3 shows the averages of the proportion of Ph.D. professors, the proportion of full-time professors and the performance of students on the national exam Enade by educational

\footnote{Many programs are missing these information on the faculty profile in 2007, probably because the evaluation system started in 2007 for a sample of programs.}
Table 3: Average tuition fees for in-class programs by educational group and program field in 2014

<table>
<thead>
<tr>
<th></th>
<th>Biosciences</th>
<th>Exact</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anhanguera</td>
<td>15.4</td>
<td>14.8</td>
<td>11.1</td>
</tr>
<tr>
<td>Kroton</td>
<td>15.0</td>
<td>12.4</td>
<td>10.4</td>
</tr>
<tr>
<td>Estácio</td>
<td>8.7</td>
<td>10.7</td>
<td>7.6</td>
</tr>
<tr>
<td>Laureate</td>
<td>13.9</td>
<td>12.4</td>
<td>9.7</td>
</tr>
<tr>
<td>Adtalem</td>
<td>16.2</td>
<td>11.8</td>
<td>10.7</td>
</tr>
<tr>
<td>Ser</td>
<td>8.7</td>
<td>9.0</td>
<td>6.9</td>
</tr>
<tr>
<td>Anima</td>
<td>16.8</td>
<td>12.3</td>
<td>10.3</td>
</tr>
<tr>
<td>Unip</td>
<td>9.1</td>
<td>9.4</td>
<td>7.8</td>
</tr>
<tr>
<td>Puc</td>
<td>24.0</td>
<td>19.0</td>
<td>15.4</td>
</tr>
<tr>
<td>Other HEIs</td>
<td>14.1</td>
<td>11.7</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>Total average</strong></td>
<td><strong>14.0</strong></td>
<td><strong>12.3</strong></td>
<td><strong>9.3</strong></td>
</tr>
</tbody>
</table>


Figure 3: Proportion of Professors with a Ph.D. and Proportion of Full-Time Professors, years 2007 and 2014

Source: Sinaes, Ministry of Education. Excludes technological training programs.

group and program field in 2014. These quality indicators are provided at the study program level and averaged by group/program field. The statistics indicates that most of the educational groups have a lower proportion of professors with a Ph.D. degree when compared to independent institutions, apart from the program field. Exceptions are Unip and Adtalem for some program fields. Regarding the proportion of full-time professors, there is no pattern that fits all educational groups, as conclusions vary by educational group and program field when comparing their proportions with those of the independent institutions. For the students’ score on the national exam, only PUC has a higher score in Biosciences and Social Sciences when compared to the other HEIs.
Table 4: Proportion of Ph.D. professors, proportion of full-time professors and students’ score at Enade by educational group and program field, 2014

<table>
<thead>
<tr>
<th></th>
<th>Ph.D. Prof.</th>
<th>Full-Time Prof.</th>
<th>Enade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bio Exact Social</td>
<td>Bio Exact Social</td>
<td>Bio Exact Social</td>
</tr>
<tr>
<td>Anhanguera</td>
<td>0.31 0.21 0.27 0.67 0.39 0.61</td>
<td>1.73 1.23 2.06</td>
<td></td>
</tr>
<tr>
<td>Kroton</td>
<td>0.22 0.27 0.60 0.39 0.70 1.09</td>
<td>0.92 1.79</td>
<td></td>
</tr>
<tr>
<td>Estácio</td>
<td>0.26 0.38 0.67 0.36 0.67 1.56</td>
<td>0.87 2.09</td>
<td></td>
</tr>
<tr>
<td>Laureate</td>
<td>0.48 0.20 0.47 0.60 0.24 0.68</td>
<td>1.56 0.60 2.18</td>
<td></td>
</tr>
<tr>
<td>Adtalem</td>
<td>0.34 0.25 0.25 0.86 0.60 0.51</td>
<td>1.80 0.92 1.79</td>
<td></td>
</tr>
<tr>
<td>Ser</td>
<td>0.23 0.26 0.52 0.37 0.48 1.67</td>
<td>1.07 1.94</td>
<td></td>
</tr>
<tr>
<td>PUC</td>
<td>0.48 0.52 0.53 0.52 0.71 2.41</td>
<td>1.54 2.26</td>
<td></td>
</tr>
<tr>
<td>Unip</td>
<td>0.37 0.28 0.94 0.60 0.76 3.04</td>
<td>1.64 2.78</td>
<td></td>
</tr>
<tr>
<td>Other HEIs</td>
<td>0.46 0.50 0.61 0.50 0.65 2.48</td>
<td>2.13 2.69</td>
<td></td>
</tr>
<tr>
<td>Total average</td>
<td>0.33 0.24 0.29 0.68 0.43 0.63</td>
<td>1.82 1.21 2.09</td>
<td></td>
</tr>
</tbody>
</table>

Source: Sinaes, Ministry of Education. Averages at the program level. Excludes technological training programs.

3 Empirical Framework

This section specifies the model of students’ program choice and the estimation details. The decision on which program to choose is modeled in a discrete choice framework in which each student choose the alternative that maximizes the random utility among the set of available alternatives. The chosen model is a nested logit, that can incorporate consumer heterogeneity along discrete dimensions, in this case, the program field (Biosciences, Exact Sciences and Social Sciences). As presented in the last section, segmentation according to the program field seems to be particularly relevant. More flexible models that allow for heterogeneity in the valuation of continuous characteristics and provide more realistic substitution patterns across programs, such as the aggregated random coefficients logit model (Berry, 1994; Berry, Levinsohn, and Pakes, 1995), are considerably more complicated. Since the main objective of this study is not to provide accurate cross-price elasticities, the nested logit model is well suited to evaluate in which extent brand names influence choice in higher education.

3.1 The Choice Model

There are $T$ markets, $t = 1, \ldots, T$. In each market $t$, there are $K^t$ institutions. Each institution in market $t$, $k^t = 1, \ldots, K^t$, offers $J^t_k$ study programs, $j^t_k = 1, \ldots, J^t_k$. The total number of alternatives in each market is $J^t = \sum_{k=1}^{K^t} J^t_k + 1$, including an outside option. Then, the study alternatives are defined by the institution and the program within each market.

An individual’s utility for program option $j$ in institution $k$ and market $t$ is the sum of a deterministic component $\delta_{ijkt}$ and a random component $\varepsilon_{ijkt}$, i.e. $U_{ijkt} = \delta_{ijkt} + \varepsilon_{ijkt}$. 

15
Individual’s utility for the no-study option is \( U_{i0} = \delta_{i0} + \varepsilon_{i0} \). Conditional on having decided to study, consumer \( i \)’s indirect utility for product \( j_k^t \) is:

\[
U_{ijkt} = x_{jkt}\beta + \alpha p_{jkt}(1 - f_i1\{F = 1\}) + \gamma w_{ijkt} + \eta B_k + \xi_{jk} + \varepsilon_{ijkt}
\]  

where \( x_{jkt} \) is a \( 1 \times W \) vector of observed characteristics for study program \( j \) at institution \( k \) in market \( t \), \( p_{jkt} \) is the tuition fee, \( f_i \) is the percentage of the tuition fee financed by the Government funding program for student \( i \), \( 1\{F = 1\} \) is an indicator variable for whether the student is benefited by the funding program, \( w_{ijkt} \) is the expected wage that student \( i \) has by graduating from program \( j \) at institution \( k \), \( B_k \) is a categorical variable indicating the educational group, \( \xi_{jk} \) refers to unobservable (to the econometrician) study program characteristics, and finally \( \varepsilon_{ijkt} \) is a remaining individual-specific valuation for program \( j \) at institution \( k \). The expected wage is defined as:

\[
w_{ijkt} = \bar{w}_{jt} + \sigma_i
\]

and is an additively separable function depending on the mean wage of graduates from program \( j \) in market \( t \), \( \bar{w}_{jt} \), and an individual-specific shock on wage, \( \sigma_i \).

Let \( p^F \) be the probability that the student is benefited by the Government funding program, then the expected utility is

\[
E[U_{ijkt}] = E[U_{ijkt}|F = 1]p^F + E[U_{ijkt}|F = 0](1 - p^F)
\]

which we can rewrite as

\[
E[U_{ijkt}] = x_{jkt}\beta + \alpha_i p_{jkt} - \alpha_i p_{jkt} f_i p^F + \gamma w_{ijkt} + \eta B_k + \xi_{jk} + \varepsilon_{ijkt}
\]

The individual valuations for the program \( j \) at institution \( k \), \( \varepsilon_{ijkt} \), follow the distributional assumptions of the nested logit model, which allows valuations to be correlated across study programs in the same group. More specifically, suppose each program \( j \) of institution \( k \) can be assigned to one of \( G \) collectively exhaustive and mutually exclusive groups, \( g = 0, \ldots, G \), where group 0 is reserved for the outside good 0. Then

\[
\varepsilon_{ijkt} = \zeta_{igt} + (1 - \rho)\varepsilon_{ijkt}
\]

where \( \varepsilon_{ijkt} \) is iid extreme value and \( \zeta_{igt} \) has the unique distribution such that \( \varepsilon_{ijkt} \) is extreme value (Cardell, 1997). The \( \zeta_{igt} \) can be interpreted as a random coefficients on group-specific dummies. The nesting parameter \( \rho, 0 \leq \rho \leq 1 \), measures the preference correlation across
products of the same group. When $\rho$ goes to 1, consumer preferences are strongly correlated across products of the same group, and consumers perceive products of the same group as perfect substitutes. If $\rho = 0$, consumer preferences do not show correlation across products from the same groups, so the model reduces to the simple logit.

Each consumer $i$ chooses the product $j^t_k$ that maximizes her random utility, conditional on product characteristics. Define the set of $\varepsilon_{ijkt}$ that result in the choice of program $j^t_k$:

$$A(\delta_{ijkt}) = \{\varepsilon_{jkt} | \delta_{ijkt} + \varepsilon_{ijkt} > \delta_{imnt} + \varepsilon_{imnt}, \forall jk \neq mn\}$$

The market share of program $j^t_k$ is the probability that $\varepsilon_{ijkt}$ falls into region $A$, which is also the conditional probability that consumer $i$ chooses product $j^t_k$:

$$s_{jkt}(\delta, \theta) = \frac{\int_A f(\varepsilon_{ijkt})d\varepsilon_{jkt}}{P_{ijkt}} = \frac{\exp((\delta_{jkt})/(1 - \rho)) \exp(I_{ig})}{\exp((I_{ig})/(1 - \rho)) \exp(I_{i})}$$

Where $\theta$ are the parameters to be estimated and $I_{ig}$ and $I_i$ are ”inclusive values” (McFadden, 1977) defined by

$$I_{ig} = (1 - \rho) \ln \sum_{t=1}^{J_t} \exp(\delta_{lt}/(1 - \rho))$$

$$I_{i} = \ln \left(1 + \sum_{g=1}^{G} \exp I_{ig}\right)$$

and $J_G$ is the number of products in segment $g$ (such that $\sum_{g=1}^{G} J^t_g = J^t$). Note that the separable terms $\sigma_i$ cancel out from the choice probabilities.

The probability that $i$ chooses the no-study option is:

$$s_{0t} = P_{i0t} = \frac{\exp(\delta_{0t})}{\left(\sum_{j=1}^{J_t} \exp(\delta_{jt}/(1 - \rho))\right)^{(1-\rho)} + \exp(\delta_{0t})}$$

With the mean utility of the outside good normalized to zero, Berry (1994) shows that

$$\ln(s_{jkt}) - \ln(s_{0t}) = \delta_{ijkt} + \rho \ln(s_{jkt}|g)$$

where $s_{jkt}|g$ is the share of the program $j^t_k$ within its group $g$. The price and the log of within group share are endogenous. So that estimates of $\theta$ can be obtained from a linear instrumental
regression of differences in market shares on product characteristics and the log of within group share.

3.2 Specification and estimation

This subsection presents the details on the specification and estimation.

As for the delimitation of the relevant market in the product dimension, I consider public and private HEIs and online and in-class programs as different relevant markets. The model estimates the choice for in-class programs from private institutions, excluding technological training programs. Considering the Brazilian higher education system as explained in the second section, it is a reasonable definition. The geographic dimension of the relevant market will be the municipality. As shown in Garcia and Azevedo (2019), a few pupils move to study and the majority of students live and study in the same municipality. As this conclusion is weaker for bigger municipalities, I exclude São Paulo and Rio de Janeiro from the estimation, the biggest cities in the country.

For the potential demand, I assume that the municipality population from 20-49 years old is the total number of potential students facing the choice decision. Sensitivity analysis related to the potential market size provide comparable results. A bit more challenging is to define the actual demand for higher education. The enrollment in higher education in Brazil is conditional on passing on admittance exams specific for each institution/program. However, most study programs present more available places than freshmen students yearly. As discussed in section 2, less than half of the new places in private institutions were filled in 2016. A few high quality private institutions have a permanent excess demand, specially in big cities such as São Paulo and Rio de Janeiro, excluded from the analysis. Even though, to avoid the potential issue that some students apply for a specific program but are not admitted, I consider that all candidates that applied for the admittance exam represent the demand for the program. It should be noted, however, that it still is an imperfect measure that may overestimate the demand for the program, as candidates may apply for more than one program/institution in the same year and choose only one if they pass in all of them.

For the program characteristics, \( x_{jkt} \), the variables used are the percentage of professors with a Ph.D. degree, the percentage of full-time professors, the average score of the graduating students from the program in the national exam (Enade), and the age of the program. The annual tuition fee is at 2015 values in the Brazilian Real. For the probability of getting the public student loan (Fies), I assume that it is equal to the percentage of enrolled students

Using the population between 20 and 24 years old and between 20 and 29 years old as the potential market produce very similar results. Age groups including the 18-19 years old population at the municipality level are not available after 2012. Estimation using the proportion of the population between 18-29 years old in 2012 at the municipality level to predict these age groups in the later years also produce similar results.

The demand excess strategy to select better students for some institutions in São Paulo was studied by Moita, Silva, and Andrade (2015).
that are benefited by the government funding in the program. All these are program-specific variables. I add a full set of program intercepts (i.e., intercepts for Economics, Engineering, Nursing, etc.) to capture preferences related to the program, including future benefits from increased salaries. HEIs intercepts account for preferences related to the institution that cannot be captured by program characteristics and program dummies, such as the reputation and the location of the institution. To identify the brand effect (single brand groups) or the educational group effect (multi-brand groups), I add dummies for the acquired institutions. These dummies are equal to one only in the post acquisition periods.

The groups for which programs can present correlation are defined as program fields: Social Sciences, Exact Sciences and Biosciences. This nesting structure implies that students substitute more strongly to other programs within a program field. I also tested a number of alternative nesting structures, such as HEIs and more disaggregated program areas as groups for the one level nested logit specification, as well as combinations of these nesting groups in two level nested logit specifications. Results indicate that students do not substitute programs within institutions, as the nesting parameter was not consistent with random utility maximization, and more disaggregated program areas showed weaker correlation than the program fields.

The price variable and the group share variable are endogenous since they may be correlated with the error term. As instrument for the tuition fee, I use the average wage of the professors in the municipality/year. This variable is a cost shifter correlated with prices and probably uncorrelated with unobserved characteristics that may impact the demand, such as the distance between the student’s home/work and the institution. Other instruments are possible, such as the average tuition fee for similar programs and for programs within the same program field in other municipalities, and produce similar conclusions. For the log of the program share within the program field, I use the number of programs in the field in the municipality and the number of similar programs in the municipality, as suggested by Verboven (1996) and extensively used in the literature.

The quality measures of the program are also endogenous, as they are simultaneously determined in equilibrium: programs with higher quality indexes have higher prices. Special concern come from the variables related to the faculty profile, that are more easily adjusted and may vary more frequently than the performance of the graduating students on the national exam. As instruments for these program characteristics, I use the sums of these same

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21 The government scholarship program Prouni was not included in the model. Whilst students usually enroll in the program before having the result of the Fies, Prouni beneficiaries receive the result before enrolling in the program. If the student was accepted as a Prouni beneficiary in a particular program, I suppose that other alternatives are automatically excluded from the student’s choice set. Then the model estimated here would not describe the choice mechanism in this case, specially because HEIs usually have a quota of Prouni beneficiaries.

22 There is no available data on wages by study program.

23 Garcia and Azevedo (2019) for example estimates that educational groups adjust the faculty profile of acquired institutions to their business model right after the acquisition of new HEIs.
characteristics for the other programs of the institution in the municipality, as the quality indicators of programs offered by the same institution must be correlated each other. This type of instrument has been discussed by Berry, Levinsohn, and Pakes (1995).

Besides the Nested Logit model, I present a Conditional Logit Model as an alternative specification. The next section presents the results.

4 Results

Table 5 presents the estimated parameters. To highlight the effects of the instrumental variables, I present the parameter estimates for the Conditional Logit and the Nested Logit (NL) ignoring the endogeneity issues in columns 1 and 4, respectively. Columns 2 and 5 present the coefficients for instrumental variables regressions of the Logit and the Nested Logit models, respectively, ignoring endogeneity issues on quality indicators (i.e., only tuition fees and the log of the shares within nests are considered endogenous). Estimates with the whole set of instruments for the Conditional Logit and the Nested Logit are presented respectively in columns 3 and 6. As the main interest does not fall on the determinants of the choice related to specific study programs, I omit from the table the coefficients of the program dummies.

In all specifications, most of the parameters for the program characteristics have the expected sign and are estimated significantly different from zero. Ignoring endogeneity in quality indicators produce positive coefficients for tuition fees in the Nested Logit model (columns 4 and 5). As a general rule, IV estimates have much higher coefficients than their comparable models that ignore endogeneity. When comparing the IV Logit (3) and the IV Nested Logit (6), the later usually presents much lower coefficients. The group nesting parameter satisfy the requirement for the Nested Logit model to be consistent with random utility theory, $0 \leq \rho \leq 1$, and is statistically significant, which means that consumers perceive programs from the same program field as closest substitutes.

The tuition coefficient is negative and significant in both IV Logit (3) and IV Nested Logit (6) specifications, and a higher probability of getting funding lowers the consumers’ response on price. The implied own-price elasticity is -8.27 for the IV Logit model and -3.72 for the IV Nested Logit model. This difference highlights the role of more flexible substitution patterns in the Nested Logit model. Considering the probability that the student get a public funding that covers 100% of the tuition fees, these elasticities increase for -6.43 and -2.53, respectively. It means that the availability of the government funding program makes students less price sensitive and, as a result, the average relative markup changes from 27% to 39%, an increase of 47%. These numbers refer to the average and are calculated for 2014, the last year in the dataset.

The coefficients on the proportion of professors with a Ph.D. degree and the proportion
of full-time professors are positive and significant in the IV Nested Logit model (6). Also, the better the performance of the graduating students on the national exam (Enade), the higher the demand. The performance of the graduating students may signals both the quality of the student body and the quality of the program, then potential students may see this variable as a measure of the success of graduates from the program. The age of the program was not significant to the choice both on the IV Logit and IV Nested Logit models.

To give an idea of the importance of the parameters estimates on quality measures, I compute the additional willingness to pay using the estimates from the IV Nested Logit model. Potential students would pay R$335 more for an increase of 10 percentage points in the percentage of professors with a Ph.D., which means an increase of 3% in the average annual tuition for 2014. Similarly, potential students would pay R$308 more for an increase of 10 p.p. in the percentage of full-time professors, an increase of 2.7% in the average annual tuition for 2014. For the performance of students in the national exam, potential students would pay R$1,092 more for an increase of 1 point (the maximum score is 5), which means an increase of 9.8% in the average annual tuition for 2014.

The low willingness to pay for higher quality programs explain why the majority of the institutions present their quality measures at the minimum acceptable by the Ministry of Education. In 2014, Ph.D. professors earned 40% more than professors with a higher education degree and represented 28% of total professors at the program level, on average. Increasing this share to 38% would increase in 3.6% the average wage paid by institutions. Students’ average willingness to pay for better quality programs is lower than the average cost to provide it, at least in the case of Ph.D. professors. A sustainable way to increase the proportion of Ph.D. professors is to raise the student-faculty ratio. As shown by Garcia and Azevedo (2019) and Garcia (2018), institutions acquired by educational groups increase the proportion of Ph.D. professors, the student-faculty ratio and the average wage of professors, which is consistent with the results presented here. The low willingness to pay for quality also helps to explain the existence of a few high-quality institutions serving niche markets.

The coefficients for the group effect are positive and significant for Adtalem, Anhanguera and Laureate in the IV Nested Logit model, which translates into an upward shift in the demand curve when an institution is acquired by these educational groups. By computing the marginal effects, acquired institutions by Adtalem and Anhanguera would almost double their market shares, whilst acquired by Laureate would increase their market shares in 8 times. In terms of willingness to pay, potential students would be willing to pay 10%, 11% and 30% more to study in an institution from Adtalem, Anhanguera and Laureate, respectively, in comparison to the average tuition in 2014.

As results show, operating a single brand does not guarantee a brand premium, as Anhanguera and Estácio operate national single brands and only Anhanguera’s brand is perceived

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24 Dividing a quality measure coefficient by the tuition fee coefficient will give the willingness to pay in thousands of Reais for one unit increase in the quality measure.
as valuable by potential students. To be effective, the brand name should carry consistent information to potential students. As described in the second section, even professionals from the sector have diverse perceptions regarding the business strategy of Estácio. This uncertainty may also be shared with potential students, which may explain the absence of a brand premium. According to the interviews of Tasquetto (2014), Estácio’s bad reputation in São Paulo, for example, is due to the acquisition of a low-quality institution previously named Universidade Radial, despite its improve in quality after the acquisition. According to the interviewee, the bad reputation was not forgotten by potential students. If Estácio’s brand is valuable to students in some regions it was not captured by the average estimation.

Less controversial are the results for institutions acquired by international educational groups. Being part of an international group is a valuable characteristic for potential students, as institutions acquired both by Adtalem and Laureate enjoy an ‘educational group premium’ after the acquisition. This average effect is not related to the institution brand name, as these groups operate multi-brand institutions and do not change brand names after the acquisition. Potential students may perceive international groups as providing higher quality education and see an increased likelihood of student exchange opportunities. Being part of an international network seems to be a prestigious characteristic.

Kroton brings together both characteristics from the international educational groups, by operating various brands, and from the single brand groups, by being a national group. However, Kroton has neither the advantages of being international nor the benefits of having a single brand, which may explain the absence of an ‘educational group effect’. Curiously, despite operating various brands Kroton manages a business model that standardizes its programs across all its units. Operating a single national brand could probably lead to a brand premium, as well as Anhanguera is able to capture it.
Table 5: Demand estimation for program choice - Comparison between alternative models

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<td>% Faculty with a PhD</td>
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<td>0.031</td>
<td>1.670***</td>
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<td>(0.023)</td>
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N. of obs 56,152 54,401 54,401 56,152 54,401 54,401
N. of HEIs 1,741 1,704 1,704 1,741 1,704 1,704

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

5 Conclusion

The access to higher education has been expanding worldwide, together with educational groups. This paper estimates how important being an institution from an educational group is to potential students choice and if single brands are more successful in recruiting potential
students. To address this question, this paper use an unique dataset in an unique environment in Brazil that provides a number of ownership changes to evaluate the role of educational groups.

Model estimates show that being part of an international educational group greatly influence students’ choice. Ownership changes from an independent institution to an international educational group may cause an upward shift in the demand curve as high as eight times the demand of the acquired institution in the pre-acquisition period. Students would be willing to pay up to 30% more to study in an institution from an international educational group. This result is not related to the institution brand name, as international educational groups keep the brand names of their acquired institutions and, consequently, operate various brands. Being part of an international network is perceived as valuable for students. This may explain why institutions from Kroton, a national multi-brand group, do not benefit from an ‘educational group premium’. Not all single brand educational groups benefit from a brand premium. Whilst potential students are willing to pay 11% more to study in an institution from Anhanguera, Estácio’s institutions does not face a brand premium. Estácio seems to be failing to pass an homogeneous information through its brand name, as even professionals from the sector have diverse views on its business strategy.

There are factors other than the brand name and the international network that influence the choice for an institution from an educational group. One important element is the ability that some educational groups have to capture students potentially eligible to student loans and successfully convert them into beneficiaries of the program (students usually enroll in the program before applying to the government funding program). The relevance of funding availability to enrollment conversion was clear when the government reduced the number of loans and Kroton created its own funding program in partnership with a private bank. More recently Estácio adopted the same path. Another factor may be the price, as the educational groups benefit from economies of scale and scope and may pass on these efficiencies on the form of lower prices to students. Garcia and Azevedo (2019) found evidence that acquired institutions from Estácio reduce prices when compared to non-acquired institutions. Last, may be the case that educational groups attract more students by having better quality indicators such as a higher percentage of professors with a Ph.D. degree, a result also found in Garcia and Azevedo’s study. Each of these elements may be differently combined by each of the educational groups.

These results give some guidance to policymakers. First, the individual quality measures, especially the performance of the graduating students from the program on the national exam, should be more easily accessed and widely disseminated by the regulator. Although brand names and educational groups may carry some quality information, disclosing quality information may avoid a herd behavior (Banerjee, 1992) - when a decision maker looks at the decisions made by previous decision makers to take her own decision. With more disclosed information on quality measures, the choice could be based on objective measures that reflect the quality
of the program that students are paying for. Second, the access to higher education is clearly constrained by the availability of public funding options to potential students, but this availability must be tied to minimum quality requirements, a step given by regulators in Brazil after budget adjustments for the program.

References


