# Private Tutoring: a necessary supplement to admission in Higher Education?*

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The aim of this paper is to shed light on the Economics of Private Tutoring as the most visible and extended manifestation in Argentina of the existence of a *shadow education market* affecting the admission chances of candidates at Universities. The conceptual tenets of shadow education emerged in the literature in relation to secondary education (Bray, 1999, 2013, Bray & Lykins, 2012; Choi, Calero & Escardíbul, 2011). In this presentation the idea is extended to the realm of higher education. This issue received little attention in the literature and is examined in Argentina for the first time in this paper. Information collected, during 2013, through a survey of 360 admitted candidates at four schools at National University of Cordoba was used in this study. Schools were selected to account for students that present the highest and lowest probabilities to attend to entrance supplementary private tutoring (ESPT). About 17%, 31%, 39% and 92% of admitted candidates in Law, Dentistry, Economic and Health Sciences declared to have attended SPT. Preliminary results show student population is heterogeneous across schools (by place of residence or gender). Large variations in chances of attending SPT, once socio-economic factors were controlled, were found. In all four schools, migrant students are more willing to buy SPT. No correlation was found, however, between the ratio of the accepted to pre-registered students and the proportion of admitted students who assisted to SPT by school. Nevertheless, we conclude, ESPT in Higher Education is in Argentina a growing, highly concentrated industry. Activities related only to the four examined schools revealed near 7,000 candidates attended SPT (1/3 of total candidates). This small slice of the market might have contributed to a total estimated income to private tutoring companies of about US$ 4.6 million a year, in 2012.

Keywords: Private tutoring, Higher Education, Shadow Education, National University of Cordoba.

JEL Classification: I23, I21

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## INTRODUCTION

Private tutoring is the most visible manifestation of the existence of a *shadow education market.* It refers to private educational activities that take place outside the formal education system of each country in order to address weaknesses displayed by the students in relation to the skills required for their advancement in formal education. The conceptual tenets of shadow education emerged in the literature in the 1990`s (Bray, 1999) but it was not until the beginning of the XXI century that caught the attention of researchers and policy makers. It has been found that it could contribute to the improvement of student performance yet it also could maintain and amplify social inequalities. Other potential consequences of private tutoring would be the deviation of resources from other uses and the contribution to the inefficiency of the formal education system (Bray, 1999).

The demand for Private Supplementary Tutoring (PST) has become an important part of the renewed debate on admissions to higher education ignited after the publication of The Schwartz Report (2004) and the Code of Practice for the Assurance of Academic Quality and Standards in Higher Education (2006) in England. As a consequence of this increasing use of private tutoring in higher education, a relevant question that has recently emerged in many countries is whether the use of private tutoring could help to rise the likelihood of been admitted to a university career. It has been calculated that in the United States each year over one-third of entering freshmen demand some sort of remedial courses, of which the private supplementary tutoring is the most visible one (Bettinger, Boatman, & Terry Long, 2013). References to other countries include such disparate cases like China (Zhang, 2013), Turkey (Tansel & Bircan, 2005) or South Korea (Kim & Park, 2010). Entrance Private Supplementary Tutoring (EPST) is an extended practice in Latin America; however the study of the phenomenon has received little attention by part of researchers in the field. Similarly, in other parts of the world, most of the research done on private supplementary tutoring has concentrated mostly on lower levels of education (Bray, 1999, 2013; Bray, Mazawi, & Sultana, 2013; Bray & Lykins, 2012; Bray, 2011 Choi, Calero & Escardíbul, 2011; Kim & Park, 2010).

The importance of private tutoring to enhance chances of admissions cannot be underestimated. In some countries private tutoring of this type operates at the end of the secondary school because students have to pass a comprehensive final exam as a pre-condition to opt for further studies while in others, like it is the case of Argentina, private tutoring operates more in tune with specific requirements for admissions at each career. The market for entrance private supplementary tutoring is therefore country specific.

Universities in Argentina are both public and private institutions. Public universities are fully funded by government budget, with no or little cost for students (books, educational materials, transport). Public universities also support the cost of training courses as part of the admission processes which is totally free for the students. Why students in public universities are willing to pay for private supplementary tutoring?

Public universities concentrate 80% of total university enrolment in 47 institutions, including the National University of Cordoba which is the second largest with about a 100,000 students.

Although public universities are free for the students, not all the applicants gain access, there is selectivity. In 2013, the National University of Cordoba received approximately 30,000 applications of which 21,000 were admitted. Consequently, about 30% of applicants indeed have not passed the entrance exams. This suggests that selectivity could be considered an important determinant of the willingness to use private supplementary tutoring as part of the admission process. Additionally, selectivity varies by school. Health Sciences, for example, has a set quota of about 600 freshmen while pre-inscription of applicants is about 2,500 students a year. It means that only 22.6% of applicants get a place to study this career. At the other end, the school of Economic Sciences has not set quota for freshmen and offers also softer conditions to attract students. With lower selectivity, over 70% of freshman applicants gain access to this school (see Table A.1 and A.2).

Therefore, the aim of this paper is to shed light over the current developments of Private Supplementary Tutoring and Higher Education in Argentina through a case-study. Specifically, the paper explores the use of entrance private supplementary tutoring by freshman applicants at the National University of Córdoba (UNC). Information collected, during 2013, through a survey of 360 admitted candidates at four schools was used in this study. We attempt to answer the following questions: What is the scope of the phenomenon of private tutoring in higher education in Argentina? Why families of freshman applicants are willing to pay twice for similar services? Is there a difference among freshman students who have attended to EPST or not? (Personal and family characteristics, performance in high school and so on)

The paper is organized as follows: Section 2 presents the conceptual framework of *shadow education* used in this research followed by a description about the data used in this study and the main descriptive statistics of the extent of shadow education at the UNC (Section 3). Section 4 presents the empirical approach used to analyze the factors affecting the decision to attend private tutoring of entering freshmen in Argentina and Section 5 highlights the main results. Finally, some conclusion follows.

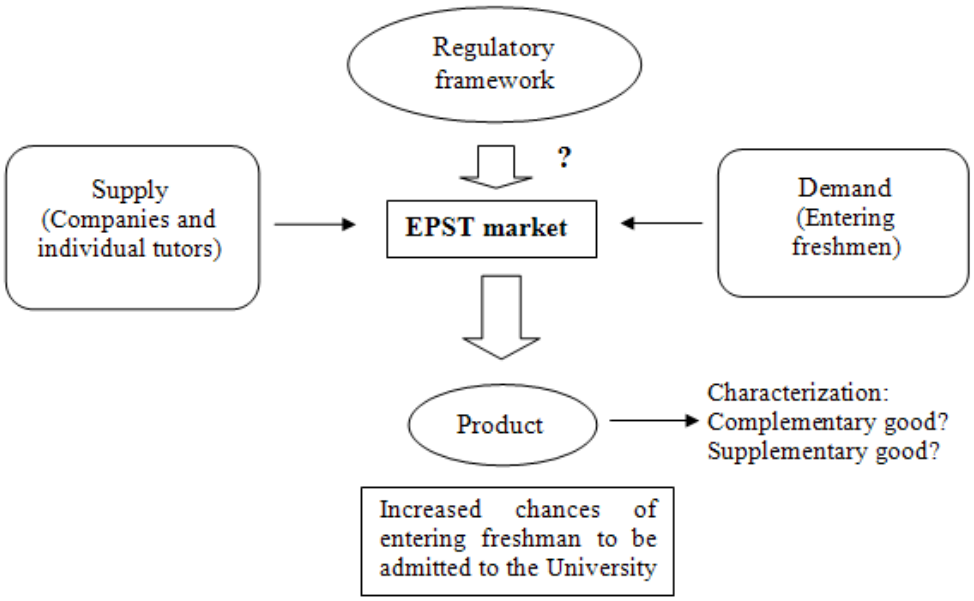
## CONCEPTUAL FRAMEWORK

To organize the discussion about the scope and relevance of the EPST in Argentina it is convenient to introduce a model of the relationship between agents involved in this trade. This is done in Figure 1. This figure starts with the regulatory framework of the EPST market. Argentina lacks a specific regulatory framework for this type of educational services whose activity is only subjected to the general commercial legislation. It is therefore an economic activity guided by a profit maximizing goal.

Market demand for EPST is formed by entering freshmen willing to buy increased chances to be admitted to a university career. Demand, in the right hand side of Figure 1, can be discriminated by gender, birthplace and affinity between high school specialization and career selected. Suppliers, in the left hand side of Figure 1, are made of education companies and individual tutors. Education companies are gaining momentum in this market according to the most recent literature. Individual tutors are commonly seen in lower levels of educations. The good which is traded in this industry, bottom part of Figure 1, may be considered a substitute for

courses offered for the same purpose by the public university at no cost for the student, because both compete for students´ time. However, casual observation has shown that in a number of cases it might be expected that students attend both courses. Thus, it is important to investigate whether courses are perceived as being complementary or substitutes.

**Figure 1. EPST relations**




## DATA AND DESCRIPTIVE STATISTICS

### Data

Data for the empirical analysis were collected by the authors through a survey of freshmen which belong to the National University of Córdoba. The sample survey was specifically designed for the purpose of this research (EPST Survey 2013). The National University of Cordoba is the second largest with a total of 100,000 regular students of which 21,000 are freshmen, distributed in 13 schools (*facultades*).

For the purpose of this study, four schools and one orientation in each were selected: i) Law, ii) Economic Sciences, iii) Dentistry and iv) Health Sciences. The criteria for selecting these schools and orientations was guided as to capture those orientations where students presented the highest and the lowest probabilities to demand entrance private supplementary tutoring. The total number of freshmen in the selected schools and orientations represent a quarter of the total freshmen enrollment at UNC in 2012. The smallest quantity of freshmen correspond to Health Sciences (569), followed by Dentistry (616), Law (1,855) and Economic Sciences (2,214) (National University of Cordoba, 2013).

A stratified sample design with proportional allocation by school was adopted for this study. The resulting sample size is 360 freshmen and its distribution is presented in Table A.3 in the

Annex. The field work was done during the months of October and November 2013. The survey questionnaire was administered through personal interviews with the students, with duration of approximately 15/20 minutes each.

Students were asked about the following: i) personal identification, ii) information about socioeconomic characteristics of the student and their family, iii) previous educational experience, iv) their experience when entering freshman (time devoted to study, study strategies and so on), v) their experience when freshman and vi) specific section about the use of private tutoring[1].

The information provided by the field work was complemented with secondary sources, such as the UNC Statistical Yearbook 2012 and websites of the schools to gather additional information concerned with the type of entrance examination courses and the degree of selectivity in each school.

## Descriptive statistics

Table 1 summarizes the economic importance acquired by EPST in Argentina in recent years through a number of indicators. According to the EPST Survey 2013, 36.4% of freshman students surveyed attended to an EPST provider. There are, however, enormous differences across schools: while only 17.5% of the students of Law attended to EPST, in Health Sciences 92.3% of students bought services of EPST. Intermediate situations are those of students of Economic Sciences (39.2%) and Dentistry students (31%).

**Table 1. EPST in numbers**

| School | EPST assistance (%) | Mean Cost ($) | Mean duration (months) | Monthly expenditure ($) |
|---|---|---|---|---|
| Law | 17.5 | 2,370 | 3.4 | 697 |
| Dentistry | 30.9 | 3,127 | 5.2 | 601 |
| Economic Sciences | 39.2 | 1,834 | 2.8 | 655 |
| Health Sciences | 92.3 | 5,610 | 6.9 | 813 |
| Total | 36.4 | 3,046 | 4.5 | 677 |

Source: EPST Survey 2013.

The cost of attending private supplementary tutoring is shown in column 2. Attending a provider in Health Sciences would cost on average about three times the cost of attending a provider in Economic Sciences. Relative to the country´s minimum salary at that time ($3,600 monthly) a student buying EPST courses for Health Sciences would have to spend as much as one and a half minimum salary to be trained. Column 3 expresses in month the average duration in the formal EPST courses bought by students from companies and individual providers. Students assisting courses in Health Sciences and Dentistry spend as much as 6.9 and 5.2 months respectively. Courses in Law and Economic Sciences have a shorter duration. By using

[1] The complete questionnaire is not included for reasons of space and can be requested from the authors.

column 2 and 3, the average monthly cost of attending EPST has been estimated and is shown in column 4.

Estimates of the proportion of freshmen who attended EPST courses presented in column 1 were used to obtain a preliminary estimation of the economic value of this industry. In 2012 a total of 21,000 candidates were admitted at the National University of Cordoba as freshmen. Applying our estimate of the proportion of freshmen who attended to EPST courses (36.4%) to the total produces a rough estimate of total demand for EPST courses that would amount to 7,644 individuals in Metropolitan Cordoba, clearly an area that represent only a small slice of the national market. The total estimated income accruing to private tutoring companies in Metropolitan Cordoba in 2012 was about US$ 4.6 million a year. To sum up, there is a growing evidence of the presence of an important shadow education market to train students for entrance examination tests. There are several strategies to meet the demand for this type of pedagogical support. One strategy consists on demanding EPST courses from private providers. There are two main classes of private providers: individuals and companies. A completely different set of strategies includes self-support or working with peers. The first strategy is to go the market way which is highlighted in Figure 1 and is the focus of this research.

Table 2 shows the distribution of freshmen by main source of pedagogical support and is presented by school. The last column on the right hand side of Table 2 indicates for the aggregate that the main type of pedagogical support is the own capacity of students (61% of answers). Market support has been indicated as being the main source of pedagogical support in 32.1% of the cases. Of this total, about 80% corresponds to the market share of private companies. The market solution has been chosen in Health Sciences much more frequently than in the other three schools included in the study. The pedagogical strategy of market providers includes theoretical/practical classes (79.1% of the cases) and key information about the entrance examination tests (23.9%). The service often includes the provision of written study materials (85.8%). ICT as a teaching device was introduced only by the biggest companies. Individual classes are not common, 59% of the interviewed students who assisted EPST courses were trained through group-tutoring techniques.

**Table 2. Distribution of freshmen by school and main source of pedagogical support (in %)**

| Source of pedagogical support | Law | Dentistry | Economic Sciences | Health Sciences | Total |
|---|---|---|---|---|---|
| *Market support* | | | | | |
| Individual tutoring services | 1.6 | 7.1 | 9.2 | 10.3 | 6.3 |
| Private companies | 12.7 | 21.4 | 26.1 | 82.1 | 25.8 |
| *Non-market support* | | | | | |
| Peers | 4.8 | 2.4 | 7.8 | 2.6 | 6.3 |
| Self-support | 79.4 | 69.1 | 57.0 | 5.1 | 61.0 |
| Other | 1.6 | - | - | - | 0.6 |
| Total freshmen in sample | 126 | 42 | 153 | 39 | 360 |

Source: EPST Survey 2013.

Freshmen differ in many aspects: gender, place of provenance, type of secondary school and specialization in high school. Table 3 shows the frequency of major characteristics of freshmen who attended EPST courses by school. The 36.4% of freshmen in the sample bought services of private supplementary tutoring as part of their strategy to gain access to the university. Female students represent 64.0% of total enrollment in EPST, broken by schools Dentistry shows the highest female participation rate (84.2%). Students from Metropolitan Cordoba represent 35.2% of the total sample. They are underrepresented in EPST courses for Dentistry (15.5%) and Health Sciences (27.7%). Most of the students came from a privately run secondary school (72.5%). The degree of affinity between academic specialization in high school and career of choice does not make a difference in demanding EPST courses, except in Dentistry.

**Table 3. Distribution of freshmen who attended EPST courses by school and characteristics**

| | Law | Dentistry | Economic Sciences | Health Sciences | Total |
|---|---|---|---|---|---|
| ***% Freshmen with EPST***[1] | **17.5** | **30.9** | **39.2** | **92.3** | **36.4** |
| Female[2] | 63.4 | 84.2 | 56.6 | 69.4 | 64.0 |
| From Metropolitan Cordoba[2] | 22.9 | 15.5 | 48.5 | 27.7 | 35.2 |
| Private secondary school[2] | 77.1 | 84.8 | 71.7 | 66.6 | 72.5 |
| Matching specialization[2] | 40.6 | 23.0 | 55.1 | 50.1 | 48.1 |
| **N** | **126** | **42** | **153** | **39** | **131** |

Note: [1)] Percentage with respect to N in each column. [2)] Percentage with respect to row 1.
Source: EPST Survey 2013.

Is there a difference between freshman students who have or have not attended to EPST? Table 4 illustrates that the participation ratios of admitted students and those of EPST students presented differences when assessed for several characteristics. The female/male participation ratios in the two populations (EPST participants and total freshmen as indicated in the last column) suggest that females are overrepresented in EPST when compared against the female freshmen. After examining the school columns, it was found that overrepresentation is higher in Dentistry (5.5 to 3.2).

**Table 4. Participation ratios of admitted students and EPST students by school and characteristics**

| | Law | Dentistry | Economic Sciences | Health Sciences | Total |
|---|---|---|---|---|---|
| Female /male participation ratio | | | | | |
| EPST | 1.8 | 5.5 | 1.3 | 2.3 | 1.8 |
| Total freshmen | 1.4 | 3.2 | 1.2 | 1.8 | 1.5 |
| Non-native/native participation ratio | | | | | |
| EPST | 3.4 | 5.5 | 1.1 | 2.6 | 1.8 |
| Total freshmen | 1.0 | 2.5 | 0.9 | 2.9 | 1.2 |
| ***Type of secondary school*** | | | | | |
| Private/ public participation ratio | | | | | |
| EPST | 3.4 | 5.5 | 2.5 | 2.0 | 2.6 |
| Total freshmen | 2.2 | 2.0 | 2.5 | 2.0 | 2.2 |
| Non-matching/matching specialization ratio | | | | | |
| EPST | 1.4 | 3.3 | 0.8 | 1.0 | 1.1 |
| Total freshmen | 1.1 | 2.8 | 0.5 | 1.1 | 0.9 |

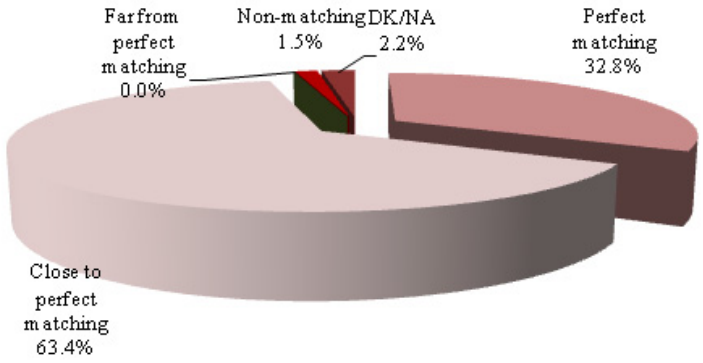
Source: EPST Survey 2013.

The non-native/native participation ratios in the two populations (where native means "Metropolitan Cordoba") show that non-natives are overrepresented in EPST relative to the total freshmen population. Again, the difference in the value of the ratio for the two populations is more visible in the corresponding column of Dentistry (5.5 to 2.5), followed by Law (3.4 to 1.0). The private/public school ratio has also been examined. Students that attended private high schools are overrepresented in EPST courses relative to total freshmen. The highest difference between the values of the ratios is in Dentistry (5.5 to 2.0). The last characteristic being examined is the degree of affinity between studies in high school and university. Students whose specialization shares a strong affinity with career are underrepresented in EPST courses relative to the total freshmen population although the difference is quite small in all schools except for Dentistry.

Conceivably, private tutoring produce a kind of good which is demanded in order to enhance the chances to gain access to a public University. Yet, public universities provide their own supply of preparatory courses guided by similar goals. To what extent both courses collide or are complementary in its nature? Figures 2 and 3 summarize information that was collected on two important aspects related to this question: whether they are substitutes or complementary goods in production of knowledge to pass the entrance examination tests.

Figure 2 summarizes results concerned with the degree of affinity between EPST courses contents and knowledge being evaluated in entrance examination tests in order to discuss complementarities issues. Matching was classified as: i) perfect, ii) close to perfect, iii) far from perfect, and iv) non-matching. A 32.8% of students who attended EPST courses declared "perfect matching" between private tutoring and tests content, and another 63.4% suggested that matching was "close to perfect". This suggests that EPST providers each year have access to important and updated information concerned with the structure and contents of entrance examination tests.

**Figure 2. Relationship between EPST contents and evaluated contents in entrance examination Percentage of freshmen who attended to EPST**

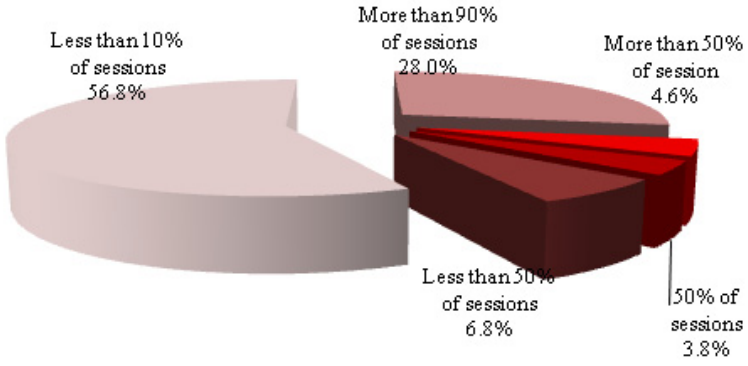



Source: EPST Survey 2013.

Figure 3, in turn, has been included to anticipate a preliminary answer to the question of how students allocate their time between two competing ends: i) attending free university preparatory courses, ii) attending EPST courses. With this purpose in mind, students were asked "How

many classes of the preparatory course offered by the university (at no charge) stopped attending by going to EPST courses?" The most important finding about the possibility of substitution effects is that a 56.8% of students have indicated that they assisted to both courses (on average they lose less than 10% of sessions of the official course). For this group, private tutoring is taken as a worthy complementary good to be purchased to supplement the content given in the official course. Yet, for another 28.0% of students private tutoring were taken as a substitute for official courses. The existence of substitution effects was also suggested in a recent study on absenteeism carried on with information from Complutense University of Madrid (Gracia Expósito & Villasol, 2007). According to this study, absenteeism is higher among students who attend private tutoring. Notwithstanding, at the National University of Cordoba (Argentina) complementarities emerged as the most important characteristic linking private tutoring and university free preparatory courses.

Figure 3. Proportion of absentees to university admission courses due to EPST, % of freshmen who attended to EPST by category of answer




Source: EPST Survey 2013.

## FACTORS AFFECTING THE DECISION TO ATTEND PRIVATE TUTORING OF ENTERING FRESHMEN

The factors affecting the decision to attend private tutoring of entering freshmen are explored in this section by applying a discrete choice model. The suggested model specifies the probability of attending private tutoring after controlling for the main characteristics of entering freshmen, their families and secondary school of provenance.

Entering freshman characteristics examined in this study are gender, age, place of previous residence and years elapsed between high school completion and university matriculation. Highest educational level of parents is included to capture family characteristics of entering freshman population. The contribution of the secondary school of provenance is highlighted by several attributes: management (private/public), discipline level, student perception of high school strictness, affinity of specialization field with career and the hours spent studying out of school while in high school. Control variables were also included to capture the difference in estimated chances of attending private tutoring among schools. A more detailed description of the variables is included in the Table A.4 of the Annex.

## The model

To be admitted to the National University of Cordoba, entering freshmen have to pass entrance examination tests. The university offers training courses to coach candidates willing to pass these tests. Coaching activities are free of charge for the students. It is common, however, to found that a considerable number of student choose to attend private supplementary tutoring courses which are paid courses, as it was shown in the previous section. Why a proportion of entering freshmen choose to attend paid courses? A simple discrete choice model (Train, 2003) allows studying the factors affecting the decision to demand EPST. Introducing a *logit* model of the type:

$$p(y_i = 1) = \frac{e^{x'\beta}}{1 + e^{x'\beta}} \quad (1)$$

Where, $p(y_i = 1)$ is the probability of attending private tutoring, *X* is a vector of independent variables representing the characteristics of entering freshmen, their families and secondary school of provenance and *β* summarize the respective effects of the independent variables on the probability (Cameron & Trivedi, 2005). A log linearization of function (1) produces estimates for the *β´*s which allows the calculation of the marginal effect attributed to each of the independent variables included in the model (*odds ratio*).

The model and the odds ratio were estimated for the sample of freshmen described in Section 3 and are presented in Section 5 bellow.

## RESULTS

Table 5 summarizes the results of the *logit* estimation of the model. Column (1) indicates the coefficients and column (2) transforms this information in terms of odds ratio ($p/(1-p) = e^{x'\beta}$). The coefficients help to understand the direction and significance of the effect attributed to each variable, while the odds ratios facilitate the interpretation of the coefficient in term of the marginal effect, measured at the mean of the co-variables[2]. It has also been evaluated the goodness-of-fit of the estimated model and the goodness-of-fit based on classification using standard methodologies.

Examining the variable "gender", it was found that male students have a lower probability to attend private tutoring relative to female students, with a resulting odds ratio of 7 to 10. However, the effect estimated is not statistically significant. Previous studies exploring gender effects on private tutoring have found that parents are more willing to invest in supplementary education of the boys at the high school level on the grounds that boys are more likely to seek paid employment that will require educational qualifications (Bray, 1999, 2012). It should be remarked that even at the highest level of education Argentina, contrary to what has been observed in many countries, offers no gender discrimination in schools enrolment and that might explain the different sign of the gender coefficient reported in Table 5. Students whose school of provenance was located in Metropolitan Cordoba showed

[2] It should be remained that the marginal effect, in the case of dummy variables, expresses the differential effect between the two categories being compared.

a lower inclination for buying private tutoring relative to the remaining of the students in the sample and the result was statistically significant. The corresponding odds ratio is 0.56. Although, previous studies have confirmed that most private tutoring take place in urban areas, the place of provenance of clientele has not been discussed in those studies (Bray, 1999). An important question is whether obsolescence of knowledge stimulates the demand for private tutoring. In the paper, it was introduced a variable to measure "obsolescence of knowledge" in terms of years elapsed between graduation in high school and the decision to enrol at the university. The coefficient associated with this variable in the model shows a negative and significant effect meaning that the younger students demand private tutoring more than the older ones. This is a rather unexpected result. One possible explanation can be linked to the fact that the older students have a previous experience at the university that makes them more mature then less demanding of private tutoring. Another possible explanation is associated with the possibility that they are not within the target population of academies (advertisement concentrates most at the school doors). Finally, the possibility of having less time available and higher opportunity costs because of their age and labour status may partially explain that more mature students demand less private tutoring. In sum, students who are not from Metropolitan Cordoba and are younger were found to be the best candidates to attend private supplementary tutoring while the study did not found any significant difference between male and female students as target population of the private supplementary tutoring providers.

Family´s characteristics have been captured through a variable indicating the highest educational level of parents. The coefficient for this variable was small and non significant. This is not a surprising result because, as expected, most of freshmen´s families share a medium to high socio-economic status with little variability across students[3]. Moreover, in the educational system of Argentina selectivity took place before, at the secondary school level (UNESCO, 2009; Millán Smitmans, 2012; Steinberg, 2013). When populations are more heterogeneous and selectivity in education is higher, as it is the case of Turkey and South Korea, it was confirmed the importance of educational level of parents to pay for entrance private supplementary tutoring (Aysıt Tansel, 2006; Kim & Park, 2010). This is an important departure from the result found in this research which should be explored more deply in future work.

[3] This result is not shown in the paper but can be requested from the authors.

**Table 5. Estimation of the *logit* model**

| Variable | Coefficient (1) | | Odds ratio (2) |
|---|---|---|---|
| *Student´s characteristics* | | | |
| Male | -0.38 | | 0.69 |
| Cordoba | -0.57 | ** | 0.56 |
| Years elapsed | -0.27 | ** | 0.77 |
| *Family´s characteristics* | | | |
| HELOP | -0.06 | | 0.94 |
| *School of provenance´s characteristics* | | | |
| Private | 0.66 | ** | 1.92 |
| Discipline in HS | 0.01 | ** | 1.01 |
| HS strictness | -0.01 | | 0.99 |
| Matching exists | -0.54 | ** | 0.58 |
| *Control variables* | | | |
| Economic Sciences | 1.28 | *** | 3.55 |
| Dentistry | 0.57 | | 1.78 |
| Health Sciences | 4.00 | *** | 54.67 |
| *Constant* | -0.22 | | 0.81 |
| | | | N = 360 |
| | | | Prob>chi2 = 0.00 |

Source: EPST Survey 2013.

There is an abundant literature signalling at the positive correlation between school of provenance and success in advancing along the educational ladder (Gertel, Giuliodori, Casini, & González, 2009; Ferreyra, 2007). This paper found that the type of management of the school of provenance is the first school characteristic to be analyzed as a determinant of the willingness to attend private supplementary tutoring. More specifically, having attended a private school duplicates the chances to buy private tutoring. Private schools in Argentina are closely correlated with social class, so this result may be interpreted as indicating that those more affluent families are the ones that buy more private tutoring services. This might be attributed to either of these factors: they send their children to private schools with lower quality or they share a perception of private tutoring as a conspicuous consumption. In South Korea, instead, having attended to a private high school reduces the probability to attend PST and the expenditure on PST (Kim & Park, 2010). The second school characteristic to be analyzes is school climate. School climate does not affect the decision to buy private tutoring[4]. The affinity between high school specialization and career of choice is the last school characteristic to be analyzed. High school in Argentina offers several alternatives for specialization, all conducing to a high school degree (administration, technical education, social studies, sciences, humanities and arts, among the leading tracks). Whatever their specialization, the student is able to choose any career at the university without any further condition other than having their high

[4] A variable that measures the hours spent studying out of high school by the student was also considered but it was eliminated because of the high correlation with high school strictness perception.

school diploma. This research found that lack of affinity between high school track and career raises the chances of students to buy private tutoring services, with an odds ratio of 1.72 (equal 1/0.58 from Table 5). This is an important result suggesting the positive contribution of private tutoring as remedial education.

The model also includes the schools (Law, Dentistry, Economic Sciences and Health Sciences) as control variables where Law is taken as base category. Once a control for the school of preference is introduced, an unequal distribution of the chances to attend private tutoring emerged. Lower chances to buy private tutoring have been found for Law entering freshmen (base category in Table 5). Results for Dentistry are no significantly different from those of Law entering freshmen. Chances for attending private tutoring of the entering freshmen in Economic Sciences are over three times higher relative to Law students while, as expected, almost all candidates to Health Sciences are willing to buy private tutoring services to assure their chances to be admitted to this school.

The strength of the model was tested through the Hosmer-Lemeshow test and the null hypothesis of poor model specification was rejected (Table A.6). It has also been evaluated the goodness-of-fit of the estimated model based on statistic classification[5]. After evaluating the percentage of observations correctly classified, a 75.2% of observations were correctly classified. Results for the specificity rate indicates that 82.97% observation with *y=0* were correctly specified and the sensitivity rate indicates that 61.83% of observation with *y=1* were correctly specified (Table A.7).

## CONCLUSION

Private supplementary tutoring is today an increasingly popular and widely adopted tool for improving progression of studies within the formal system of education in many countries. Its expansion at the lower levels of education has been extensively documented by many authors in recent years. It is not seen, however, a parallel effort to develop research of equal quality about using private supplementary tutoring in Higher Education. Demand for private tutoring by students in Higher education is perceived in many regions of the world, having laid the groundwork of a new industry whose scope is still little known.

This research is an attempt to contribute to the scarce literature on the use of private tutoring in Higher Education. The study focused on the demand and supply of private tutoring at one particular stage, that marking the transition from High School to the University. The institutional organization of the Higher Education System of Argentina provided a particularly interesting environment to this type of study. In this country, every high school graduate, having their diploma, may apply to any of the competing careers being offered at the University, with no other restriction. Additionally, in most universities, particularly the public universities, free training courses which are career specific are supplied to help passing the entrance examination tests. In this context of assurance of equality of opportunities: what causes private supplementary tutoring to flourish?

[5] The test is based on post-estimation data provided by the statistical program Stata (*estat classification*).

Our findings are presented within a provisional conceptual that was developed along the lines of traditional institutional analysis. Structural differences are highlighted between schools. Companies and individual providers have the ability to charge more for courses in the Health Sciences than in any of the other three schools being studied (Dentistry, Economic Sciences and Law). Courses also differ in the time-duration and intensity of its curricular design; Health Sciences and Dentistry are the more demanding ones. Thousands of students in Argentina enrol in Public Universities. Even if only one third of the freshmen opt to attend to a private tutoring provider, which is not far from reality, business incentives in this market should have to be taken seriously by the regulatory authority. It has been detected a prevalence of companies among providers, marking the existence of a high degree of concentration in the market. The larger companies have been adopting ICT gadgets to improve their market image, and perhaps its productivity, while small providers are more attached to traditional teaching methods. The size of the market seems to have added to the concentration phenomena. Companies are more visible in Health Sciences and Economic Sciences, and less important in Dentistry and Law.

The paper found that participation ratios classified by the characteristics of admitted students and EPST students differ. Female participation ratio was higher in EPST courses relative to freshmen, in all the schools. There was greater involvement of non-natives students of Metropolitan Cordoba in EPST courses. Students from private high schools were overrepresented in EPST courses relative to freshmen. Finally, chances to attend EPST courses were higher among students who have attended high schools with weak vocational affinity.

To sum up, among the incentives to buy private tutoring, students valued the high degree of affinity found between courses´ content and the questions asked in the examination tests. However, it seems that most students attending private tutoring decided to divide risk, by attending both, private and university courses at the same time. Only 28% of students who attended private tutoring used this tool as a substitute of the university course. The study has shown that among the salient characteristics of the clientele of private tutoring, special attention should be paid to the fact that migrant students have the highest probability to attend private tutoring, and that the younger the student is the higher is the probability to demand private tutoring. While parents' education does not make any difference, the type of management of the school of provenance signals important differences in the chances to attend private tutoring: private management has a positive effect. The existence of strong affinity between high school specialization and career of choice reduces the chances to attend private tutoring. Finally, fix effects have been modelled to evaluate the existence of differences in the behaviour of students by school. Chances to attend private tutoring are extremely high in Health Sciences, moderate to high in Economic Sciences and slightly high in Dentistry, relative to Law school.

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## ANNEX

**Table A.1. Student population at National University of Cordoba**

| | Law | Economic Sciences | Dentistry | Health Sciences | UNC total |
|---|---|---|---|---|---|
| Regular students | 13,331 | 17,292 | 3,628 | 5,165 | 107,542 |
| Freshman applicants | 3,716 | 3,114 | 1,100* | 2,514 | 30,000* |
| Freshman students | 1,855 | 2,214 | 616 | 569 | 21,066 |
| Selectivity of schools** | 49.9% | 71.1% | 56.0% | 22.6% | 70.2% |

Note: *Estimation based on key information; ** Applicants/freshman students
Source: 2012 UNC Statistics yearbook and websites of the schools.

**Table A.2. Entrance examination courses information**

| | Law | Economic Sciences | Dentistry | Health Sciences |
|---|---|---|---|---|
| Assistance required | Yes | No | Yes | No |
| Period | January-February | January-February | February-June | [1)]September-March<br>[2)]January-March |
| Weekly hours | 8 | 12 | 18 | [1)]Saturdays 2 hours<br>[2)]6 hours |
| Quota | No | No | No | Yes |
| Cost recovering | University budget | University budget | University budget | University budget |

Source: 2012 UNC Statistics yearbook and websites of the schools.

**Table A.3. Sample composition, % of freshman students surveyed by school**

| School | Frequency | % |
|---|---|---|
| Law | 126 | 35.0 |
| Economic Sciences | 153 | 42.5 |
| Dentistry | 42 | 11.7 |
| Health Sciences | 39 | 10.8 |
| Total | 360 | 100.0 |

Source: EPST Survey 2013.

**Table A.4. Variables definition**

| Etiquette | Description | Hypothesis |
|---|---|---|
| EPST | Dummy variable (1=Assisted) | |
| Male | Dummy variable (1=Male) | ? |
| Cordoba | Dummy variable (1=HS in Cordoba City) | - |
| HELOP | Highest educational level of parents. Proxy of socioeconomic level | + |
| Private | Dummy variable (1=Private HS) | + |
| Discipline in HS | Index of discipline in high school (Higher index, lower discipline) | + |
| HS strictness | Student´s perception of high school strictness | - |
| Matching exists | Dummy variable (1=Yes, major in high school akin to selected career) | - |
| Length of time spent studying in HS | Ordinal categorical variable (in hours by week, six categories) | - |
| Years elapsed | Years elapsed between finishing high school and entrance examination | ? |
| Economic Sciences | Control. Dummy variable (1=Economic Sciences student) | + |
| Dentistry | Control. Dummy variable (1=Dentistry student) | + |
| Health Sciences | Control. Dummy variable (1=Health Sciences student) | + |
| Law | Base. Dummy variable (1=Law student) | |

**Table A.5. Descriptive means**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Tutoring | 360 | 0.36 | 0.48 | 0 | 1 |
| Male | 360 | 0.41 | 0.49 | 0 | 1 |
| Cordoba | 360 | 0.46 | 0.50 | 0 | 1 |
| HELOP | 360 | 6.59 | 2.14 | 1 | 10 |
| Private | 360 | 0.69 | 0.46 | 0 | 1 |
| Discipline in HS | 360 | 22.78 | 21.21 | 0 | 100 |
| Exigency level of HS institution | 360 | 65.56 | 22.57 | 0 | 100 |
| Matching exists | 360 | 0.53 | 0.50 | 0 | 1 |
| Years elapsed | 360 | 1.69 | 2.22 | 0 | 32 |
| Law | 360 | 0.35 | 0.48 | 0 | 1 |
| Economic Sciences | 360 | 0.43 | 0.50 | 0 | 1 |
| Dentistry | 360 | 0.12 | 0.32 | 0 | 1 |
| Health Sciences | 360 | 0.11 | 0.31 | 0 | 1 |

Source: EPST Survey 2013.

**Table A.6. Goodness-of-fit test, Hosmer-Lemeshow**

| | |
|---|---|
| N | 359 |
| Number of groups | 10 |
| Hosmer-Lemeshow *chi2(8)* | 5.24 |
| *p*>chi2 | 0.732 |

Source: EPST Survey 2013.

**Table A.7. Goodness-of-fit test by statistical classification**

| | | |
|---|---|---|
| Sensitivity | Pr( +\| D) | 61.83% |
| Specificity | Pr( -\|~D) | 82.97% |
| Positive predictive value | Pr( D\| +) | 67.50% |
| Negative predictive value | Pr(~D\| -) | 79.17% |
| Correctly classified | | 75.28% |
| Classified + if predicted Pr(D) >= .4 | | |
| True D defined as Tutoring != 0 | | |

Source: EPST Survey 2013.