Private and Group Tutoring in Egypt: Where is the Gender Inequality?

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Abstract

Private tutoring is being practiced at a large scale in Egypt and in many other developing countries. Nonetheless, the literature on tutoring is still small. The purpose of this paper is to gain an understanding of the nature and determinants of tutoring in Egypt, using micro-level data, in order to investigate whether gender bias exists in tutoring decisions. It is expected that since labor market outcomes are more favorable to boys, parents would be less willing to spend on tutoring for girls. It is also expected that since gender disparities are present in educational investments in general, they would be more pronounced in optional educational investments like that of receiving tutoring. Surprisingly, however, no gender bias against girls was detected with respect to tutoring. The absence of bias is in itself a significant and puzzling finding. We conclude that the education premium in the marriage market may be the answer to the puzzle.

1. INTRODUCTION

Private tutoring[1] is an activity where a tutor provides instruction for students in return for a fee. The term tutoring is used to denote help with academic subjects and excludes extra-curricular classes such as music. In this paper, we focus on pre-university tutoring that provides help with school syllabuses[2]. Over the last few decades, tutoring has become a significant and growing industry across much of the developing world. Despite some efforts to document the phenomenon, it remains significantly under-researched. Particularly, more rigorous quantitative research on the determinants and implications of tutoring needs to be undertaken.

Tutoring can be effective if it is remedial in the sense that it provides weaker students with access to teaching tailored to their level (de Silva 1994). It can also be a necessary learning supplement to low-quality schooling. However, in developing countries, tutoring has been predominantly an exam-preparation activity. Hence, while it can improve scores, it may not necessarily improve learning especially if it becomes a substitute to formal schooling.

Tutoring may have important equity implications as it can exacerbate education and income gaps because children from well-off families are more likely to afford tutoring. They are, therefore, more likely to obtain higher scores leading to better career and higher future income (Bray 2005)[3][4]. Even when the poor are as likely to get tutored, they may only afford lower-quality tutoring (e.g., larger-group tutoring) and/or tutoring for shorter periods of time (e.g., before-exam tutoring as opposed to tutoring throughout the year), de Silva (1994). Moreover, if tutoring becomes an essential education cost, it can affect enrollment and dropout decisions especially of liquidity-constrained households. "Seeing that schooling has major costs which escalate at each step, families

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[1] There are two forms of tutoring used in this paper: private and group tutoring. Group tutoring (in Egypt) is a form of tutoring provided by public schools as an inexpensive alternative to private tutoring (more details are provided in section 3.3).

[2] In some settings, tutoring is customized to institution-specific admission exams (e.g., university admission exams that vary from one university to another) and therefore needs not follow school syllabuses.

[3] Bray also points out that tutoring can augment urban/rural stratification since it is more prevalent in urban areas.

[4] Kim and Lee (2004) add that, in addition to being inequitable, such a scenario is inefficient.

may decide simply to abandon schooling because they perceive that their children will never get far enough in the system for the investment to yield returns" (Bray 2005).

In addition to income inequality effects, tutoring can augment gender inequality in education. Gender gaps in tutoring can even be more pronounced than gaps in education aspects such as enrollment and dropout rates given its optional nature. Resource-constrained families can be more likely to invest in tutoring for their sons. Similarly, it is expected that tutoring effects on school entry and dropout decisions would be more profound on girls. In the case of Kenya, Buchmann (2002) notes that "lingering gender stereotypes regarding job prospects and gender biases in children's expected contributions to housework may mean that parents are less willing to provide *additional* educational resources to their daughters, especially in cases where family resources are severely limited (i.e. in poor families or those with many children)".

In Egypt, education gender differentials exist. Furthermore, reliance on tutoring is a central feature of the education system in Egypt. Based on the Egypt Labor Market Survey of 1998 (ELMS 98), 45% of pre-university students receive private tutoring. Among pre-university students, secondary level students are most likely to take tutoring (62%). Private tutoring is widespread geographically, across different income groups, and school types (see Tables 1-4). In addition to prevalence, tutoring absorbs substantial amounts of resources making it of considerable importance to study[5]. According to World Bank (2002 p. 26), aggregate household spending on tutoring at the pre-university level is estimated to represent 1.6 percent of GDP. It also represents the largest household education expense (even compared to spending on private school tuition and fees). Private lessons also constitute a significant part of total household spending and are known to be financially burdensome. According to the Economist Intelligence Unit (1996), it is not uncommon for households with children in the secondary education level to spend up to 25% of annual income on tutoring.

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[5] Additionally, studying tutoring in Egypt adds to the tutoring literature in the Middle-East and North Africa (MENA) region which is small relative to the scale of tutoring in these countries and relative to the literature on Asian countries.

The purpose of this paper is to gain an understanding of the nature and determinants of both private and group tutoring in Egypt in order to investigate whether gender bias exists in tutoring. Tutoring decisions examined are (1) the decision to receive tutoring and (2) the amounts to spend on it. We expected that since gender disparities are present in educational investments in general, they would be more prominent with respect to tutoring. However, we did not find any sign of gender disparities in the likelihood of taking private or group tutoring or in the level of spending on them.

The remainder of this paper is organized as follows. In the second section, the literature on tutoring is reviewed. In the third section, we describe the education system and discuss gender differences with respect to education in Egypt. We also provide a description of tutoring in Egypt. The data sources and methodology are discussed in the fourth section. We present the empirical results and conclusions in the last section.

2. LITERATURE REVIEW

Tutoring was initially under-researched due to data shortage given that tutoring is not as observable as is mainstream schooling. For instance, it is hard to monitor its volume as tutors in many cases are not ready to declare the scale of their activity for tax reasons and sometimes because tutoring is not welcomed by authorities. A large body of the literature remains descriptive. Nonetheless, some attempts have been made to examine the determinants of receiving or spending on tutoring using multivariate statistical techniques. Bray (1999a, 1999b, 2005) provides an extensive cross-national documentation and compilation of work done on tutoring patterns[6]. Aspects he covered include the scale of tutoring, its forms and its causes.

A set of factors was believed to cause the spread of tutoring in the literature. First, tutoring, being a "shadow" or "parallel" form of education as many authors describe it, is linked to the nature of the mainstream education system. It tends to be more evident in education settings where the score acquired in a standardized exam is the criteria by which a student is promoted into a higher level of education and subsequently on which

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[6] Summary tables can be found in Bray 1999a (Table 1 p. 24-25) and Bray 2005 (Table 1 p. 3).

his career path and future income depends[7]. Competition to secure a place into a higher education level (especially university) and into a prestigious stream/field has induced students to demand and invest in tutoring to facilitate obtaining higher marks. The above is consistent with tutoring being more prevalent in end-of-cycle years which represent transition points to higher education levels. The connection between tutoring and exams being the education and career gateway has been noted by several researchers with reference to many countries, e.g., in Japan by Stevenson and Baker (1992), in Sri Lanka by de Silva (1994), in Mauritius by Foondun (2002) and in Turkey by Tansel and Bircan (2005).

Second, tutoring may be supply-related. In developing countries where school teachers earn low salaries, tutoring can be the result of teachers' direct or indirect attempts to secure additional income (Bray 1999b, Gunawardena 1994, Montgomery et al. 2000 and Foondun 2002). For instance, teachers can pressure students to hire them as tutors or they can simply shirk thereby creating a need for their tutoring services. Similarly, Biswal (1999) maintains that teacher shirking together with lack of monitoring is the theoretical explanation of why tutoring exists.

Third, inadequacy of school quality is another supply factor that has led to the rise of tutoring (Foondun 2002, Montgomery et al. 2000). Foondun (2002) gives examples of countries where a perception that teaching at school is insufficient creates a need for tutoring. Foondun also points out that large classes and a lack of individual attention contribute to the need for tutoring. Another factor he adds is peer pressure. Kim (2004) finds, using multivariate analysis, that it is school quality that induces tutoring.

Finally, Montgomery et al. (2000) indicate, with reference to tutoring in South Ghana, that as parents' level of education rose compared to earlier generations, they are more concerned over the quality of education their children receive and are hence willing to invest in tutoring.

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[7] Moreover, the examination arrangement affects tutoring details. For example, when university admission depends on the score acquired on high school exams, tutors would tend to be teachers. However, if every university sets its own admission test, tutors may be university students.

As already seen, private tutoring has been documented across regions of the developing world. Most of the tutoring studies focused on a single-country[8] and usually did so from a demand-side perspective. Attention has given given to countries in East and South Asia[9]. Tutoring patterns have also been examined in some African countries[10] and are documented in East and in South Europe. Despite primarily being a developing country phenomenon, tutoring is emerging in Western Europe and North America as well. Davies (2004) examines tutoring in Canada[11]. Glasman (2004) examines tutoring in France. Ireson and Rushforth (2005) look at the nature and extent of private tutoring in England. However, it is less prominent one reason being that the education system in these countries is less examination-oriented (Kwok 2001).

In the MENA region, Hussein (1987) provides a discussion of tutoring reasons and impacts in Kuwait[12]. Tansel and Bircan (2005) quantitatively examined the determinants of spending on tutoring in Turkey using the 1994 Household Expenditures Survey. They found household total expenditure (a proxy of income) and parents' education to be among the main determinants of spending on tutoring. It is worth noting that the data they used showed total tutoring expenditure per household and hence did not allow for examination of differences in tutoring spending by child characteristics such as gender and education level.

In addition to Tansel and Bircan (2005)'s paper, there are a few papers that used multivariate quantitative methods to investigate tutoring determinants as mentioned above. Stevenson and Baker (1992) use a logistic regression in the case of Japan[13]. Montgomery et al. (2000) use a probit model to examine the determinants of tutoring in 4

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[8] One exception is Paviot et al. (2005) where cross-national data is used to analyze tutoring in 6 Eastern and Southern African countries.

[9] Examples of Asian countries studied include: Sri Lanka (de Silva 1994), Cambodia (Bray 1999c), Japan (Stevenson and Baker 1992), Korea (Kim 2004, Kim and Lee 2004), Hong Kong (Bray and Kwok 2003) and, Malaysia (Marimuthu et al. 1991).

[10] Examples include: Mauritius (Foondun 1992), Ghana (Montgomery et al. 2000) and Kenya (Buchmann 02).

[11] Davies (2004) uses logistic regressions to examine tutoring demand in Canada. He focuses on the characteristics of parents whose children participate in tutoring.

[12] His discussion is based on a survey he conducted of 934 students who too tutoring in at least one subject and who were mostly boys.

[13] They also run regressions to check the effects of tutoring on joining university.

communities in South Ghana. Kim (2004) and Kim and Lee (2004)[14] looked at determinants of tutoring in South Korea. A common finding was that socioeconomic status (represented by variables like parents' education and income) is a significant explanatory variable with which tutoring is positively related.

We are aware of no study whose motivation was the examination of tutoring gender gaps. Nevertheless, gender was sometimes included among the variables used to examine tutoring determinants. Bray (1999a, 2005) refers to several cases where authors make observations about gender differences: (negative) gender bias is observed in Kenya (Buchmann 2002) and in Bangladesh (Ahmad and Nath 2005). On the other hand, gender parity is found in Sri Lanka (de Silva 1994), Malaysia (Marimuthu et al. 1991), Malta (Falzon 1988) and Taiwan (Tseng, 1998).

The findings about gender gaps with respect to tutoring are mixed not only across countries but also within countries. For instance, Stevenson and Baker (1992) found significant gender differences in most of the tutoring types they examined. However, the sign of the difference is not constant across tutoring types. Furthermore, in the case of Korea, in the regressions Kim (2004) uses to model the number of hours spent daily on private tutoring, the "girl" dummy coefficient is negative and is significant[15]: the expected gender effect[16]. On the other hand, Kim and Lee (2004) found that Korean girls enjoy larger spending on tutoring compared to boys. They suggest that this finding may be due to girls being more likely to receive tutoring in music and arts, which tends to be more expensive. This is not however the only case where a *positive* gender bias was discovered. Montgomery et al. (2000), who explicitly included gender as a child characteristic that affects the demand for tutoring, were surprised to find that girls are more likely to participate in shadow education in Ghana. As the results concerning gender gaps in tutoring are inconclusive, there is a need to further study the issue.

3. EDUCATION IN THE EGYPTIAN CONTEXT

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[14] Kim and Lee focused on demonstrating that school quality is a main determinant of tutoring.

[15] This dummy remains negative but becomes less significant in the specification where potentially endogenous variables are removed (Table 4).

[16] While Kim (2004) includes gender as a variable in the regression, he does not discuss the interpretation of the gender variable sign and significance in his results.

3.1 Overview of the Education System[17]

Pre-university education in Egypt consists of three education levels: a five-year primary level[18], a three-year preparatory level, and a three-year secondary level[19]. Primary and preparatory stages (called basic education) are compulsory. There is a standardized examination in the final year of each level[20] that is required for access to higher education levels[21]. Education is mainly publicly-provided and publicly-controlled as school curricula are set by the Ministry of Education (MOE)[22]. School choice is somewhat limited as students have to enroll in a public school located in the corresponding catchment's area and frequently there is only one school especially in rural areas.[23]

Basic education contains only one stream. Beyond the basic phase, education becomes stratified into ranked tracks. The secondary stage branches off to general and technical streams. Admission into streams depends on the score obtained in the final year of the preparatory cycle. Admission into the general secondary stream requires a higher score in the preparatory diploma since it is regarded as the "prestigious" stream and is required for joining university.

The general secondary diploma "*thanaweyya aama*" is more of a bottleneck as students compete to secure seats in prestigious fields in prestigious universities. Admission into universities solely depends on the diploma score. "Egypt's education system is dominated by the secondary leaving certificate" (Hargreaves 1997). Each year, the coordination office determines cutoff scores for admission to each faculty in each

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[17] An analysis of education trends and differentials by urban/rural residence and by gender is provided in the appendix.

[18] Starting in the school-year 2004/2005, a sixth-year was re-added to the primary level. However, the data we use (ELMS 98) applies to an earlier period where the primary level consisted of only five grades.

[19] Primary-level schools tend to be co-ed while post-primary schools tend to be segregated by gender.

[20] The final two years of the secondary level are diploma years.

[21] Primary, preparatory and secondary exams are standardized at the education directorate, governorate and nation levels respectively.

[22] Private schools constitute only 4% of the total number of schools (based on the dataset we employ). Private schools teach public curricula. But private schools can have additional subjects/ subject content (e.g., languages).

[23] Only students whose score in the standardized exam exceeds 85% can choose which public school to join regardless of where they live.

university. With population growth pressure and a preference for university education[24], Egypt has been witnessing inflation in university admission scores[25].

3.2 Gender Bias in Education

Some aspects of gender bias with respect to educational investments are present in Egypt. Theoretically, a gender differential in educational investments can arise due to two reasons[26]. First, girls can face discrimination because of different weights parents place on the education of their sons and daughters. Parents may invest more in their sons' education because they value their human capital more than that of their daughters'--a pure preference bias. Dominant social norms about gender roles and parents' perceptions about the importance of women education can cause this bias. For example, parents may believe that girls should marry and take care of their families rather than work and, therefore, do not need as much education as boys. In addition, parents may value benefits associated with their daughters' education less because of their primarily non-pecuniary nature. Examples of such benefits include more efficiency in home production and childcare.

Second, girls can receive differential treatment based on pure efficiency grounds. Parents -- even if inequality averse-- can rationally invest more in boys' schooling if they expect higher returns on education in the case of boys (Rosenzweig and Schultz 1982). Differing returns to boys and girls can result from gender-related differentials in either the benefits or costs of education. Even if the benefits and costs of education are identical for boys and girls, parents can invest more in boys' education if they expect boys to transfer back a relatively larger part of their future income. However, it is likely that both the benefits and costs streams of education would vary by gender in developing countries. In addition, resource constraints along with imperfect credit markets would reinforce the investment bias against girls.

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[24] Preference for university is partly fuelled by an earlier government guarantee to hire university graduates in the public sector. At the same time, vocational jobs have been looked down upon. Furthermore, parents' aspirations regarding the education of their children rose because parents are more educated than earlier making university education a common aspiration.
[25] For example, in recent years, medical school requires a score above 95%.
[26] The discussion that follows assumes that girls and boys have the same cognitive abilities.

On the education benefits side, labor market outcomes tend to be more favorable to boys. It is not unusual for women in developing countries to have limited access to paid labor market jobs or to get a lower wage rate. In MENA countries, women face barriers to entry in the private sector (Moghadam 2002). In Egypt, female labor force participation is low and there are considerable wage differentials favoring males in the private sector even after accounting for education and experience (Assaad and Arntz 2002).

Costs can also vary by gender. Costs associated with traveling to school are particularly important. These can be gender specific due to school availability and accessibility constraints. For example, if no school is available in a village, parents can be more reluctant to send a daughter as opposed to a son to a school in another village[27]. The opportunity cost of children's time (an indirect cost) is a major cost of education that parents bear. Boys can help in farm work while girls typically help in house chores and in taking care of younger siblings. If parents value girls' time more than boys', they would be more reluctant to send girls to school.

In the case of Egypt, girls are disadvantaged in terms of school entry (Elbadawy and Assaad 2008) but are not disadvantaged in terms of school progress (Elbadawy and Assaad 2008, Lloyd et al. 2003). In other words while girls are more likely not to join school, they are not more likely to drop out of school than boys conditional on school entry. Table 5 shows the percentage of girls and boys who have ever been to school by background characteristic. Overall, the percentage of girls who at some point were in school is 86.3% while the percentage of boys is 95.1%. The disparity is especially evident in rural areas, in Upper Egypt, and for children whose household lies in the lowest wealth quintile.

3.3 Tutoring in Egypt

Private tutoring (d*oroos khososeyya*) has long existed in Egypt. However, it has become widespread over the last few decades. Tutoring is largely a by-product of an exam-driven

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[27] Alderman et al. (1996), King and Lillard (1987), and Newman and Gertler (1994) find that distance has a stronger negative effect on girls enrollment in Pakistan, Malaysia, Philippines, and Peru.

system whose goal is to provide students with credentials and as such tutoring is used to acquire exam-taking skills. Tutoring started as being mainly associated with the general secondary diploma. Since the score on the standardized national-level exam is critical in determining a student's career path and future earnings, families are prepared to invest in tutoring. Even families of lower income are willing to invest in tutoring as an avenue for upward social mobility. Through time, tutoring became a score maximization strategy with respect to primary and preparatory diploma years as well. The relative importance of different diploma years in different education stages is reflected in the percentage of those taking private tutoring. The percentage of tutees is 45%, 60%, 62% for the primary, preparatory and secondary stages, respectively (Table 1) [28].

Tutors are essentially school teachers. [29] [30] One reason for preferring teachers is that they are perceived to be more experienced with the curriculum on which exams are entirely based. At the same time, teachers' salaries are low creating an incentive for teachers to engage in tutoring to earn additional income[31]. As with other countries where school teachers provide tutoring for their students, there is a potential for teachers abusing their position to blackmail their students. For example, they may deliberately not cover the syllabus fully so that students need extra help. They can also mistreat students to pressure them to hire them as tutors.

In addition to the education system being exam-oriented and the low salary of teachers, schooling quality is another important factor that created a need for supplementary tutoring. Factors adversely affecting the quality of education at school include the high class density. The growth in school-age population in Egypt has intensified the need for tutoring through different channels. On the one hand it has

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[28] It is worth noting that ELMS 98 does not allow for the identification of students in general versus technical secondary stage. Technical secondary students are not expected to need tutoring as much as general secondary students because their degree tends to be terminal. Therefore, we expect that the percentage of students receiving tutoring in the general secondary stream is significantly larger than 62%.
[29]Teachers can tutor their own students or students in other grades/schools.
[30] In some countries, tutors are full-time professionals working in tutoring centers.
[31] Usually, a teacher keeps his low-paid job as public school teacher while working as a tutor. A school teacher can better market his tutoring services. In addition, despite the low salary, public school teachers enjoy job stability and social security benefits.

affected the class density and classroom teaching quality. On the other, it has intensified competition for seats in the general secondary stream and in universities.[32]

Private tutoring takes place as an underground activity because private tutoring was banned in 1998 by the MOE. But even before the ban, private tutoring was practiced with some level of secrecy to avoid the punitive measures that the MOE imposed on public school teachers who were participating in private tutoring. Tax evasion was another important factor contributing to the secrecy of private tutoring. Like in other countries where a ban was imposed on tutoring, enforcement of the ban is difficult and tutoring usually remains widespread.

In an effort to offer an alternative to private tutoring, MOE has been providing group tutoring (*magmoo'at taqweya*). Group tutoring is offered in schools, on the premises by school teachers (usually at the end of the school day). Generally speaking, the number of tutees is larger and the fees are much lower than in private tutoring. Therefore, it is viewed as the less expensive substitute to private tutoring. However, group tutoring is not as popular as private tutoring. The percentage of students taking private tutoring is 44% while the percentage of students taking group tutoring is only 19% (Table 1 and Table 2)[33].

Table 1 (2) provides details on the percentage of students taking private (group) tutoring in 1998 by gender and by background characteristic. Table 3 (4) lists the average yearly spending on private (group) tutoring per child (for children who take tutoring) by gender and by background characteristic. The figures in Tables 1-4 are survey-weight adjusted and are restricted to pre-university students who are 6-18 years of age. From Table 1, it is clear that private tutoring is common among children with different characteristics.

While private tutoring is observed in both rural and urban areas, it is more of an urban activity (Table 1). Group tutoring, on the other hand, is equally taken in rural and

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[32] Public schools are expected to be of lower quality compared to private schools because public schools tend to have over-crowded classrooms Nonetheless, pupils in private schools are more likely than those in public schools to take tutoring because of an income effect (see Table 1). Therefore, it is not entirely to compensate for lower school quality that pupils take tutoring.
[33] 3% of students take both private and group tutoring.

urban areas (Table 2). Observing an urban/rural gap in the likelihood of receiving private tutoring may be a result of an income effect: rural households tend to be poorer and therefore may not be able to afford the relatively expensive private tutoring as much as urban households. Households in urban areas spend considerably more per child for both types of tutoring (see Table 3 and Table 4). The urban/rural difference in the spending level may arise because of the general differences in prices (tutoring fees tend to be lower in rural areas) and because of an income effect.

Private tutoring is widespread across regions of Egypt. The region with the largest percentage of private tutoring is Lower Egypt (56.3%). Urban governorates come second with Alexandria and Canal governorates having 49.1 percent and Greater Cairo having 47.5 percent of students being tutored. The region with the lowest but still sizeable percentage of tutoring receivers is Upper Egypt (27.3%). This is possibly because of an income effect since this is the poorest area of Egypt. It can also be the result of a supply effect: tutors are not as available as in other regions. Upper Egypt exhibits a larger urban/ rural gap[34]. A contrasting picture is seen with respect to group tutoring: in regions where private tutoring is least prevalent, group tutoring is most common (e.g., in Upper Egypt).[35] In addition, group tutoring is found more in rural areas of Lower and Upper Egypt.

Comparing tutoring across educational levels shows that reliance on private (group) tutoring increases (decreases) as a student progresses through the system. Similarly, more students depend on private tutoring in diploma years while reliance on group tutoring does not increase in those years. In addition, as higher education levels and diploma years are more critical, tutoring spending is larger in higher levels and in diploma years whether students choose to receive private or group tutoring.

The likelihood of receiving private (group) tutoring is slightly higher (lower) in private schools. The spending on private tutoring for a child attending a private school is

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[34] Students in urban areas of Lower Egypt are 1.25 times as likely to get tutored, while students in urban areas of Upper Egypt are more than twice as likely to get tutored.

[35] The by-region yearly spending in descending order is: Greater Cairo, Alexandria and Canal, Lower Egypt then Upper Egypt. This ranking holds for both private and group tutoring (Table 3 and Table 4) and can reflect an income effect as well as differences in tutoring fees.

notably larger relative to a child attending a public school (Table 3) despite the general perception that private schools are of higher quality. The higher spending for private schools is expected to result from an income effect.

To capture differences across different income groups, we compared the percentage of students receiving tutoring in the lowest and highest urban wealth quintiles as well as the lowest and highest rural wealth quintiles[36]. As expected, students coming from households in the highest quintile are more likely than those in the lowest quintile to receive private tutoring because of the inherent income effect (Table 1). The average per-child tutoring expenditure by households falling in the highest urban (rural) quintile is five (three) times greater than by those in the lowest urban (rural) quintile (Table 3).[37]

Based on the above, children in urban areas and children who come from richer households tend to participate and spend more on private tutoring. This illustrates the potential equity implications of private tutoring. Parents whose children are in higher education levels and whose children are in diploma years are more willing to invest in private tutoring. The opposing patterns of private and group tutoring reflect their substitutability and that group tutoring is perceived as the inexpensive and lower-quality alternative that is used in less critical years.

Given the differences in the likelihood of receiving tutoring and the level of spending on it, we expected to find different patterns of tutoring by gender. We particularly expected that girls in rural areas, in Upper Egypt and girls belonging to households falling in the lowest wealth quintile are more susceptible to gender bias. However, to our surprise and by examining Table 1 through Table 4, we found no real gender disparities with respect to tutoring across the various characteristics. Moreover, the level of spending on private tutoring was rather in favor of those girls. We use

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[36] The index is based on asset ownership. Since, asset composition differs across rural and urban areas, we constructed a separate wealth index for rural and urban areas. See Filmer and Pritchett (2001) for the factor analysis methodology used to construct the wealth score.

[37] In contrast to private tutoring, the likelihood of taking group tutoring does not really vary by wealth quintiles (Table 2). As for group tutoring spending, urban households in the highest urban quintile spend more than twice than those in the lowest urban quintile. However, spending is almost equal in rural areas.

regression models in the next section to see if the pattern of no gender bias persists when controlling for other variables.

4. DATA AND METHODOLOGY

This paper primarily utilizes data from the Egyptian Labor Market Survey (ELMS 98), a nationally representative survey that includes 4,816 households and 23,997 individuals of all ages[38]. We restrict our sample to individuals that are currently in school and are 6 to 18 years of age (6,114 of the 23,997 individuals). We supplement ELMS 98 by locality-level data drawn from the 1996 Egyptian Population Census as well as governorate-level[39] education data from MOE.

In ELMS 98, four questions cover tutoring for each child currently in school. The first two questions are related to private tutoring. The answers to these indicate whether a student received private tutoring in the last school year or not, and how much was spent during the last year on private tutoring. The two questions are repeated for group tutoring[40]. These variables will be used as dependent variables.

Variables representing individual, household, as well as community characteristics serve as explanatory variables. Individual-level variables are gender, age-group dummies (corresponding to different education levels)[41], a dummy for being the eldest child and a dummy for being the son/daughter of the household's head (as opposed to being a step child, grandchild, or other). We also employ variables showing whether the child attended a multiple-shift school at the primary level[42], whether he/she is in a

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[38] For more information on the data, please refer to the thesis appendix.

[39] There are 27 governorates in Egypt. ELMS 98 has observations on 22 governorates as it excludes the sparsely populated and mainly nomadic frontier governorates.

[40] The four questions are only concerned with tutoring dealing with school subjects and exclude extra-curricular courses.

[41] While we have data on which education level a student is attending, progress to a given education level can be endogenous given that it can be affected by investment in tutoring.

[42] Due to school supply constraints, some schools operate in two or three shifts to accommodate larger numbers of students. Each student attends school in one of these shifts e.g., in the morning or the afternoon shift. School quality may be adversely affected in these schools because the school day is shorter.

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diploma year, and if he/she is a delayed pupil (i.e., had experienced delayed school entry or repetition) [43].

Household-level variables are parents' years of schooling, whether parents are present or absent (e.g., because of labor migration), and urban and rural wealth quintiles[44]. Dummies showing which region of Egypt the student resides in, and whether it is an urban or rural area, are included to reflect community factors. In addition, a variable indicating the percentage of the local-level working age population employed in the education sector was constructed, using census data, as a proxy for the supply of tutors. Furthermore, in an attempt to capture the effect of schooling quality, the governorate-level teacher-pupil ratio for the different education levels is included.

We use several models: single probit, bivariate probit, govenorate-fixed effects and governorate-random effects. The same set of explanatory variables is used across the different models. The (single) probit model assumes that the private and group tutoring decisions are made separately. The (single) probit model follows the standard form:

$$\Pr (T = 1|X) = \Pr (\varepsilon > - X\beta),$$

where T denotes the tutoring status (1= receiving tutoring), and the error term ε is assumed to follow a normal distribution. X represents the vector of regressors: individual, household and community characteristics, as well as other supply side variables (as discussed above).

Since it is possible that the errors of these two equations are not independent, we also use a bivariate probit model where the two equations for private and group tutoring are estimated jointly. With respect to spending on tutoring, we employ two (single) tobit

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[43] We did not include a dummy for private school attendance because of its endogeneity. School type (private versus public) and tutoring are related education decisions. Parents can choose to enroll their children in free public schools without supplementing with group or private tutoring at one end of the continuum of education investment choices while they can choose to enroll their children in private schools and to supplement with tutoring at the other end of the continuum. In between, parents can choose free public schools and compensate with tutoring spending.
[44] A wealth score is constructed using factor analysis based on household asset ownership and house characteristics information. A separate score is created for urban and rural areas, as what a wealthy person owns and his/her house characteristics vary across urban and rural areas. Households are then divided into quintiles according to the wealth score. See Filmer and Pritchett (2001) for the factor analysis methodology used to construct the wealth score.

equations -where the dependent variables are spending on private tutoring and spending on group tutoring, respectively (Table 11).

To control for within-province variation, we also include in our analysis of private tutoring and group tutoring two additional models: governorate fixed effects and governorate random effects. To account for possible differences in tutoring decisions across different education levels (primary, preparatory and secondary), we estimate separate (single) probits for each level of education (Table 13, 14).

In each model, a female dummy variable is included to test for whether there are differences in the likelihood of receiving tutoring based on gender, controlling for other explanatory variables. Additionally, we employed specifications where each regressor is interacted with the female dummy to further test for gender-related differences (detailed results for these specifications are not shown).

5. RESULTS

5.1 Lack of Gender Differences in Tutoring

The data did not show any sign of gender differences either in the likelihood of taking tutoring (group or private) or in the level of spending on tutoring. The female dummy generally turned out to be insignificant. The female dummy and the interaction terms with "female" were jointly insignificant (P-values for the joint significance test are listed at the bottom of Tables 8, 9, 11).

For private tutoring, the female dummy was insignificant across the four models (Table 8). For group tutoring, the female dummy was significant (at the 10% level) in the governorate fixed effects and random effects specifications. However, the dummy coefficient was positive, indicating favorable treatment for girls (Table 9). No bias against girls was detected with respect to tutoring expenditure. The female dummy was insignificant for spending on private tutoring. The female dummy was significant (at the 10% level) and positive for spending on group tutoring (Table 11).

Based on the female-interacted specifications (results not shown), the similarity of tutoring patterns by gender holds across household and community characteristics apart

from some exceptions. For example, in private tutoring models, the dummy for household being in the third urban wealth quintile, and the dummy for living in Lower Egypt were both significant (at the 10% level) when interacted with the female dummy. However, the coefficients were positive indicating more private tutoring for girls. For the group tutoring specifications (with interactions), significant interactions included the dummy for age 15 to 19, the dummy for being a son/daughter of the head, the dummy for the temporary absence of father, and the proxy for educators at the local level. All except the age 15 to 19 dummy had a negative effect.

As for regressions performed separately for private, preparatory, and secondary levels, the female dummy was significant and positive in sign for the secondary level in both private and group tutoring (at 5% and 1% level of significance, respectively). However, it was significant (at the 10% level) and negative in sign for the primary level regression in the case of private tutoring. This was the only case in which the gender variable had the expected effect.

The absence of gender bias with respect to an optional human capital investment such as tutoring is surprising. We thought that our finding may be a product of selection bias. Tutoring is conditional on child enrollment in school. It is possible that girls that enter and remain in school belong to the households that do not engage in differential treatment based on gender or that at least have different characteristics. If this is the case then the selection bias would be consistent with finding no gender differences. We ran a maximum-likelihood probit model with sample selection (results not shown) where the variable that identifies the school attendance equation is the local-level percentage of population engaging in manual work. While the female dummy was negative and significant in the schooling equation, the female dummy remained insignificant in the private tutoring equation suggesting our result was not driven by the use of a selective sample.

5.2 Tutoring Determinants

While child sex was not found to affect tutoring decisions, this does not apply to other child, family, and community characteristics. Variables significance is generally

consistent across the different estimators we used. With respect to private tutoring (Table 8), being 12-14 and 15-19 years of age (compared to being 6-11), and being in a diploma year have a highly significant and positive effect on the likelihood of taking private tutoring. This is expected given that the 12-14 and 15-19 age-groups correspond to the preparatory and secondary education levels that are more critical relative to the primary level. Similarly, tutoring is expected to be more prevalent among children in diploma grades to help them get a better score on standardized exams. Being the eldest child was also positive and significant indicating that parents tend to invest more in eldest children.

Socioeconomic status variables are also among the main determinants of private tutoring. Both father and mother years of schooling are important and display an inverted-U pattern that indicates that, at very low and at very high parental education levels, children are less likely to take tutoring. This may result from less educated parents being less willing to invest in tutoring because they may value education less. Highly-educated parents, on the other hand, may tutor their children themselves. Additionally, household wealth variables are positive and significant especially in urban areas. Children whose father is temporarily absent are more likely to get tutored. Temporary absence is likely to mean that the father is a labor migrant which possibly results in a positive income effect. One unintuitive result is that children whose father is permanently absent are also more likely to participate in private tutoring.

Some community and schooling-related variables play an important role. The variable representing the percentage of the working-age population that is working in the education sector, which we used to proxy the supply of tutors, is positive and significant. The governorate-level teacher-pupil ratio at the secondary level, which we use to proxy for school quality, affects the likelihood of taking tutoring negatively. Another unintuitive result we find is that the teacher-pupil ratio at the primary level, in contrast, has a positive effect. As in bivariate descriptive statistics, children in urban areas are more likely to resort to private tutoring. The region variables were insignificant except for the Lower Egypt dummy which means that private tutoring is more prevalent among children residing there compared to those residing in Greater Cairo.

The regression on private tutoring spending generated similar results (Table 11). However, mother's years of schooling and the permanent absence of the father are not among the significant variables. Also, unlike in the regression of the likelihood to take private tutoring, being a delayed student is a significant regressor and it affects the level of spending on private tutoring negatively.

The results in the group tutoring regressions (Table 9) were different from those in the private tutoring regressions reflecting that group tutoring is the lower-quality substitute to private tutoring. For example, the coefficient of the 15-19 age-group dummy is negative while that on the diploma year dummy is insignificant. This reflects that group tutoring is not as popular as private tutoring when children are attending more critical grades / education levels. Moreover, father education and household wealth variables are not important determinants as in the case for private tutoring. However, similar to private tutoring, the mother years of schooling and the father temporary absence and being the eldest child are associated with more group tutoring.

While the proxy for the supply of tutors is statistically significant like in the private tutoring results, it is negatively associated with the likelihood of taking group tutoring. The regional dummies are also significant but are all negative consistent with anecdotal evidence that the provision of group tutoring is more regular in Cairo schools. Students that are delayed are more likely to invest in group tutoring. This may reflect that late entry students tend to come from poorer households and are more likely to choose the more affordable group tutoring (if household poverty is not entirely captured by the wealth index). This can also explain why being delayed affects the level of spending on private tutoring negatively[45]. The tobit model for group tutoring spending produces comparable findings (Table 11). The only exception is that diploma year students spend significantly more on group tutoring. Therefore, conditional on deciding to take group tutoring, diploma students spend more than other students.

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[45] One issue we note with respect to this variable is that it may be endogenous to tutoring decisions. Being delayed may result from late school entry or from grade repetition. While it is not a strong possibility that parents decide to send their children to school at an age above the official age and later compensate with supplementary tutoring, it is possible that children taking tutoring are less likely to repeat grades because tutoring helps them to get scores that qualify them for passing.

6. CONCLUDING REMARKS

The persistence of no gender differentials is puzzling given that boys are expected to have better prospects in the labor market. However, an education premium in the labor market may not be the only motive for educating children. An education premium in the marriage market may be the answer to the puzzle. Mensch et al. (2000) argue that the main reason behind parents' willingness to invest in their daughter's education is the expected return in the marriage market. Lloyd et al. (2001, p. 13) make a similar point. Accordingly, parents may be investing in tutoring to ensure that their daughter successfully progresses through the education system so that she finds a richer and/or more educated husband. It can be the case that in addition to upward social mobility, better marriage prospects can result in a smaller contribution by parents towards a daughter's marriage.

A preliminary inspection of the data shows that the higher a girl's education is, the higher the probability that she gets an educated husband. For instance, the probability of having a husband with a university or higher degree goes from 13% for a girl with secondary education to 33% for a girl with an above-intermediate degree to 74% for a girl with a university degree (Table 7). A woman tends to match with a man who is at least as educated as she is.

REFERENCES

Ahmed, Manzoor & Nath, Samir R. (2005): *Quality with Equity: The Primary Education Agenda*. Dhaka: Campaign for Popular Education (CAMPE), Bangladesh.

Alderman, H., Behrman, J., Ross, D., Sabot, R. (1996). "Decomposing the gender gap in cognitive skills in a poor rural economy," *Journal of Human Resources*, Vol. 2, No. 1, pp. 229–254.

Assaad, R., and M. Arntz (2002). "Constrained Geographical Mobility and Gendered Labor Market Outcomes under Structural Adjustment: Evidence from Egypt." Humphrey Institute of Public Affairs Paper. Unpublished.

Biswal, Bagala. (1999) "Private Tutoring and Public Corruption: a Cost-effective Education System for Developing Countries," *The Developing Economies,* Vol. 37, No.2, pp. 222-240.

Bray, Mark (1999a): *The Shadow Education System: Private Tutoring and its Implications for Planners*. Fundamentals of Educational Planning No.61, Paris: UNESCO International Institute for Educational Planning (IIEP).

Bray, Mark (1999b): *Adverse Effects of Private Supplementary Tutoring: Dimensions, Implications, and Government Responses*. Series: Ethics and Corruption in Education. Paris: UNESCO International Institute for Educational Planning (IIEP).

Bray, Mark (1999c): *The Private Costs of Public Schooling: Household and Community Financing of Primary Education in Cambodia.* Series: Mechanism and Strategies of Educational Finance. Paris: UNESCO International Institute for Educational Planning (IIEP) in Collaboration with UNICEF.

Bray, Mark (2005): Private Supplementary Tutoring: Comparative Perspectives on Patterns and Implications. Paper prepared for the Oxford International Conference on Education and Development 'Learning and Livelihood' September 2005.

Bray, Mark & Kwok, Percy (2003): 'Demand for Private Supplementary Tutoring: Conceptual Considerations, and Socio-Economic Patterns in Hong Kong'. *Economics of Education Review*, Vol.22, No.6, pp.611-620.

Buchmann, Claudia (2002): 'Getting Ahead in Kenya: Social Capital, Shadow Education, and Achievement', in Fuller, Bruce & Hannum, Emily (eds.), *Schooling and Social Capital in Diverse Cultures*. Amsterdam: JAI Press, pp.133-159.

Davies, Scott (2004): 'School Choice by Default? Understanding the Demand for Private Tutoring in Canada'. *American Journal of Education*, Vol.110, No.3, pp.233-255.

de Silva, W. A. (1994): 'The Present Status of Private Tutoring in Sri Lanka'. *Economics Review (The People's Bank, Colombo)*, Vol. 20, Nos. 2 and 3, pp. 4-7, 20-24.

Economic Intelligence Unit (1996): "Egypt: Country Profile 1996-1997," London.

Elbadawy, Asmaa and Ragui Assaad (2008). Analysis of Educational Gender Inequalities in Egypt. Unpublished manuscript.

Falzon, P.A., Bussutil, J. (1988) Private Tuition in Malta: a Hidden Educational Phenomenon Revealed" BEd (Hons) Dissertation, University of Malta.

Filmer, D. and L. Pritchett. 2001. "Estimating Wealth Effects without Income or Expenditure Data – or Tears: Education Enrollment in India." Demography 38: 115-132.

Foondun, A. Raffick (1992): *Private Tuition in Mauritius: The Mad Race for a Place in a 'Five-Star' Secondary School*. Paris: UNESCO International Institute for Educational Planning (IIEP).

Foondun, A. Raffick (2002): 'The Issue of Private Tuition: An Analysis of the Practice in Mauritius and Selected South-East Asian Countries'. *International Review of Education*, Vol.48, No.6, pp.485-515.

Glasman, Dominique (2004): *Le Travail des Élèves pour l'École en Dehors de l'École* [*The School Work of Pupils Outside School*]. Savoie, France: Université de Savoie, Faculté de Lettres, Langues et Sciences Humaines.

Gunawardena, C. (1994): 'The Emergence of Private Tuition in Sri Lanka'. *Economics Review (The People's Bank, Colombo)*, Vol. 20, Nos. 2 and 3, pp. 8-10.

Hargreaves, E. (1997): "The Diploma Disease in Egypt: Learning, Teaching and the Monster of the Secondary Leaving Certificate". *Assessment in Education: Principles, Policy and Practice*, Vol. 4, No. 1, pp. 161-176.

Hussein, M. G. A. (1987): 'Private Tutoring: A Hidden Educational Problem'. *Educational Studies in Mathematics*, Vol. 18, No. 1, pp. 91-96.

Ireson, Judith & Rushforth, Katie (2005): 'Mapping and Evaluating Shadow Education'. ESRC Research Project RES-000-23-0117. London: Institute of Education, University of London.

Kim, Taejong (2004): 'Shadow Education: School Quality and Demand for Private Tutoring in Korea'. KDI School of Public Policy & Management Working Paper Series.

Kim, Sunwoong & Lee, Ju-Ho (2004): 'Private Tutoring and Demand for Education in South Korea' . KDI School of Public Policy & Management.

King, E. M., and L. Lillard (1987). "Education Policy and Schooling Attainment in Malaysia and the Phillipines." Economics of Education Review, Vol. 6, No. 2, pp. 167-81.

Kwok, Percy (2001): Local Knowledge and Value Transformation in East Asian Mass Tutorial Schools. *International Education Journal*, Vol. 5, No.1, pp.86-97.

Lloyd, Cynthia, Sahar E. Tawila, Wesley Clark, and Barbara Mensch. (2001). Determinants of Educational Attainment Among Adolescents in Egypt: Does School Quality Make a Difference?" Presented at the annual meetings of the Population Association of America. Washington. D.C.

Lloyd, C., S. El Tawlia, W. Clark, and B. Mensch (2003), "The Impact of Educational Quality on School Exit in Egypt," Comparative Education Review 47: 444-467.

Marimuthu, T., Singh, J. S., Ahmad, K., Lim, H. K., Mukherjee, H, Oman S., Chelliah, T., Sharma, J. R., Salleh, N. M., Yong, L. Leong L. T., Sukarman, S. Thong, L. K., Jamaluddin, W. (1991): *Extra-School Instruction, Social Equity and Educational Quality.* Report prepared for the International Development Research Centre, Singapore.

Mensch, Barbara S., Barbara L. Ibrahim, Susan M. Lee, and Omaima El-Gibaly. 2000."Socialization to gender roles and marriage among Egyptian adolescents," Policy. Research Division Working Paper no. 140. New York: Population Council.

Moghadam, V. (2002) "Enhancing Women's Economic Participation in the MENA Region." In H. Handoussa and Z. Tzannatos, eds. *Employment Creation and Social Protection in the Middle East and North Africa.* Cairo: The American University in Cairo Press.

Montgomery, Mark R., Agyeman, Dominic K., Aglobitse, Peter B. & Heiland, Frank (2000): 'New Elements of the Cost of Children: Supplementary Schooling in Ghana'. New York: The Population Council.

Newman, J.L., Gertler, P.J. (1994). "Family productivity, labor supply, and welfare in a low-income country," Journal of Human Resources, Vol. 29, No. 4, pp.: 989–1026.

Rosenzweig, M. and T. Paul Schultz. (1982): "Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Child Survival in Rural India," *American Economic Review*, Vol. 72, No. 4, pp. 803–15.

Stevenson, David Lee & Baker, David P. (1992): 'Shadow Education and Allocation in Formal Schooling: Transition to University in Japan'. *American Journal of Sociology*, Vol.97, No.6, pp.1639-1657.

Tansel, Aysit & Bircan, Fatma (2005): 'Demand for Education in Turkey: A Tobit Analysis of Private Tutoring Expenditures'. *Economics of Education Review*, Vol.24, No.6 (in press).

Tseng, J. (1998): "Private Supplementary Tutoring at the Senior Secondary Level in Taiwan and Hong Kong". M.Ed. Dissertation, the University of Hong Kong.

World Bank (2002): *Arab Republic of Egypt: Education Sector Review- Progress and Priorities in the Future.* Washington D. C.

Table 1: Percentage of Students Receiving Private Tutoring by Gender and Background Characteristic

Background Characteristic	Boys	Girls	Total
Age group			
6-11	32.7	31.3	32.0
12-14	52.3	50.9	51.6
15-18	56.2	63.7	59.6
Urban / Rural			
Urban	53.0	40.6	52.0
Rural	38.9	50.9	39.6
Regions			
Greater Cairo	52.0	43.1	47.5
Alex & Canal	49.9	48.4	49.1
Lower Egypt	55.4	57.4	56.3
Urban	62.9	69.4	66.2
Rural	53.3	53.5	53.4
Upper Egypt	26.9	27.9	27.3
Urban	46.1	45.9	46.0
Rural	21.4	21.8	21.6
Education Level			
Primary	34.3	32.9	33.7
Preparatory	53.8	52.8	53.3
Secondary	58.1	66.4	62.0
Diploma Year			
Primary	45.2	45.4	45.3
Preparatory	60.0	59.7	59.9
Secondary	61.3	69.6	65.2
Total	55.4	58.2	56.7
School Type			
Public	43.8	44.6	44.2
Private	48.5	48.0	48.0
Wealth			
Lowest Urban Quintile	41.1	38.7	39.9
Highest Urban Quintile	60.7	50.8	56.1
Lowest Rural Quintile	25.1	27.8	26.0
Highest Rural Quintile	53.5	54.1	53.8
Total ELMS 98	44.4	45.2	44.7

Source: ELMS 98

Note: Pre-university students, 6-18 years of age.

Table 2: Percentage of Students Receiving Group Tutoring by Gender and Background Characteristic

Background Characteristic	Boys	Girls	Total
Age group			
6-11	21.5	21.9	21.7
12-14	22.5	21.0	21.8
15-18	10.9	14.8	12.7
Urban / Rural			
Urban	17.1	21.1	19.1
Rural	20.1	18.9	19.6
Regions			
Greater Cairo	26.4	34.9	30.7
Alex & Canal	15.7	19.3	17.5
Lower Egypt	15.8	15.2	15.5
Urban	8.1	8.9	8.5
Rural	18.0	17.2	17.6
Upper Egypt	20.3	18.2	19.4
Urban	11.7	8.7	10.3
Rural	22.7	21.4	22.2
Education Level			
Primary	21.6	21.7	21.6
Preparatory	20.8	20.8	20.8
Secondary	8.5	13.3	10.7
Diploma Year			
Primary	24.6	20.7	22.7
Preparatory	15.1	19.6	17.2
Secondary	10.1	10.0	10.0
Total	16.6	16.5	16.6
School Type			
Public	18.0	16.0	18.0
Private	7.0	13.0	10.0
Wealth			
Lowest Urban Quintile	18.1	20.4	19.2
Highest Urban Quintile	17.8	22.5	20.0
Lowest Rural Quintile	19.8	13.8	17.8
Highest Rural Quintile	16.4	23.1	19.6
Total ELMS 98	18.9	19.9	19.4

Source: ELMS 98

Note: Pre-university students, 6-18 years of age.

Table 3: Average Yearly Spending per Child on Private Tutoring by Gender and Background Characteristic

Background Characteristic	Boys	Girls	Total
Age group			
6-11	168.1	157.6	163.3
12-14	256.2	316.6	285.0
15-18	521.6	564.2	542.1
Urban / Rural			
Urban	482.2	501.3	491.5
Rural	172.3	208.9	188.9
Regions			
Greater Cairo	731.1	746.8	738.3
Alex & Canal	459.2	473.8	466.4
Lower Egypt	223.4	257.7	239.9
Urban	330.2	359.8	345.7
Rural	188.6	215.4	201.0
Upper Egypt	162.7	236.5	194.9
Urban	227.0	307.9	264.1
Rural	123.4	186.1	149.9
Education Level			
Primary	167.5	165.2	166.5
Preparatory	271.6	336.1	301.9
Secondary	634.3	634.2	634.3
Diploma Year			
Primary	202.9	216.3	209.2
Preparatory	294.6	423.1	353.4
Secondary	740.0	740.7	740.3
Total	316.4	354.4	471.8
School Type			
Public	254.8	292.4	272.5
Private	761.8	1031.0	904.6
Wealth			
Lowest Urban Quintile	190.5	221.4	204.6
Highest Urban Quintile	922.0	1106.7	1000.6
Lowest Rural Quintile	72.2	122.3	90.5
Highest Rural Quintile	270.3	313.2	290.9
Total ELMS 98	316.4	354.4	334.2

Source: ELMS 98

Notes: Pre-university students, 6-18 years of age.

Average is in Egyptian pounds and is based on those receiving private tutoring.

Table 4: Average Yearly Spending per Child on Group Tutoring by Gender and Background Characteristic

Background Characteristic	Boys	Girls	Total
Age group			
6-11	80.7	86.2	83.3
12-14	106.5	118.9	112.3
15-18	163.3	174.4	169.2
Urban / Rural			
Urban	137.5	152.5	145.7
Rural	82.6	77.9	80.6
Regions			
Greater Cairo	160.4	168.3	165.0
Alex & Canal	112.0	150.3	133.3
Lower Egypt	89.7	76.8	83.8
Urban	123.7	97.8	110.2
Rural	85.5	73.3	80.0
Upper Egypt	80.2	84.2	81.8
Urban	83.8	91.0	86.6
Rural	79.7	83.2	81.1
Education Level			
Primary	86.8	88.5	87.6
Preparatory	111.6	115.6	113.5
Secondary	173.3	215.0	197.6
Diploma Year			
Primary	118.4	93.7	107.8
Preparatory	139.7	121.8	130.3
Secondary	142.7	270.1	201.8
Total	101.9	112.9	135.0
School Type			
Public	98.8	105.4	101.9
Private	145.1	140.9	143.0
Wealth			
Lowest Urban Quintile	105.4	98.1	101.7
Highest Urban Quintile	189.3	247.9	220.3
Lowest Rural Quintile	81.6	51.5	73.6
Highest Rural Quintile	56.6	90.0	75.4
Total ELMS 98	101.9	112.9	107.1

Source: ELMS 98

Note: Pre-university students, 6-18 years of age.

Average is in Egyptian pounds and is based on those receiving group tutoring.

Table 5: Percentage of Children Who Have Ever Been to School by Gender and Background Characteristic

Background Characteristic	Boys	Girls	Total	Number of Boys	Number of Girls	Sample Size
Age group						
6-11	95.3	88.6	92.1	1,408	1,339	2,747
12-14	94.3	87.0	90.6	926	931	1,857
15-18	95.3	83.1	89.4	1,171	1,103	2,274
Urban / Rural						
Urban	98.0	95.5	96.7	2,065	2,036	4,101
Rural	93.4	80.4	87.1	1,440	1,337	2,777
Regions						
Greater Cairo	98.6	97.4	98.0	510	552	1,062
Alex & Canal	99.1	97.7	98.4	379	405	784
Lower Egypt	96.2	89.0	92.7	1,287	1,212	2,499
Urban	98.2	94.3	96.3	513	504	1,017
Rural	95.7	87.4	91.7	774	708	1,482
Upper Egypt	91.68	75.8	84.1	1,329	1,204	2,533
Urban	95.8	90.6	93.4	663	575	1,238
Rural	90.6	72.1	81.7	666	629	1,295
Wealth						
Lowest Urban Quintile	93.9	86.0	90.1	584	534	1,118
Highest Urban Quintile	100.0	98.2	99.2	333	300	633
Lowest Rural Quintile	84.2	56.9	71.7	255	226	481
Highest Rural Quintile	99.5	97.2	98.4	307	292	599
Total ELMS 98	95.1	86.3	90.8	3,505	3,373	6,878

Source: ELMS 98

Table 6: Percentage of Children Attending School by Gender and Background Characteristic

Background Characteristic	Boys	Girls	Total	Number of Boys	Number of Girls	Sample Size
Age group						
6-11	93.9	87.5	90.8	1408.0	1339.0	2747.0
12-14	87.7	80.8	84.2	926.0	931.0	1857.0
15-18	65.0	55.7	60.4	1171.0	1103.0	2274.0
Urban / Rural						
Urban	87.5	85.2	86.3	2065.0	2036.0	4101.0
Rural	79.6	68.4	74.2	1440.0	1337.0	2777.0
Regions						
Greater Cairo	91.0	87.8	89.3	510.0	552.0	1062.0
Alex & Canal	88.0	84.2	86.0	379.0	405.0	784.0
Lower Egypt	81.2	76.5	78.9	1287.0	1212.0	2499.0
Urban	83.2	83.9	83.6	513.0	504.0	1017.0
Rural	80.6	74.3	77.6	774.0	708.0	1482.0
Upper Egypt	80.0	65.5	73.1	1329.0	1204.0	2,533 |
Urban	86.0	82.4	84.3	663.0	575.0	1238.0
Rural	78.5	61.3	70.2	666.0	629.0	1295.0
Wealth						
Lowest Urban Quintile	74.3	68.6	71.5	584.0	534.0	1118.0
Highest Urban Quintile	98.0	97.1	97.6	333.0	300.0	633.0
Lowest Rural Quintile	71.2	44.1	58.8	255.0	226.0	481.0
Highest Rural Quintile	91.7	91.6	91.7	307.0	292.0	599.0
Total ELMS 98	82.5	74.9	78.8	3505.0	3373.0	6878.0

Source: ELMS 98

Table 7: Wife and Husband Educational Attainment

Woman's Educational Attainment	Husband's Educational Attainment							
	No Education	Reads & Writes	Less than Secondary	Secondary	Above Secondary	University & Higher	Total	Number of Men
No Education	41.24	15.9	23.38	18.6	0.65	0.23	100	323
Reads & Writes	29.94	27.19	27.53	8.93	2.83	3.57	100	51
Less than Secondary	17.08	11.25	36.11	28.49	2.56	4.51	100	209
Secondary	2.84	3.88	10.99	55.51	13.36	13.43	100	416
Above Secondary	0	2.22	3.97	31.19	29.22	33.4	100	97
University & Higher	0	0	0.98	15.86	8.68	74.47	100	150
Total	18.14	9.55	18.53	31.46	7.77	14.55	100	
Number of Women	194	112	227	388	106	219		1,246

Source: ELMS 98

Notes:

1. Based on marriages in the last 10 years (i.e., from 1988 to 1998).

2. Each cell represents the probability of a certain level of husband educational attainment given the educational attainment of the wife.

Table 8: Private Tutoring Probits

	Probit (1)	Bivariate Probit (2)	Governorate Fixed Effects (3)	Governorate Random Effects (4)
Individual characteristics				
Female	-0.03	-0.03	-0.028	-0.028
	-0.88	-0.87	-0.8	-0.82
Age group 12-14^	0.616	0.614	0.632	0.628
	(14.50)***	(14.43)***	(14.72)***	(14.65)***
Age group 15-19	0.561	0.558	0.574	0.569
	(11.75)***	(11.70)***	(11.93)***	(11.80)***
Eldest child	0.093	0.097	0.083	0.085
	(2.25)**	(2.33)**	(1.99)**	(2.03)**
Son/daughter of head	0.088	0.085	0.113	0.108
	-1.32	-1.27	(1.66)*	-1.6
Late	-0.059	-0.06	-0.074	-0.073
	-1.01	-1.03	-1.26	-1.25
School operates in shifts	-0.004	-0.005	0.016	0.016
	(-0.1)	(-0.12(	(-0.43)	(-0.44)
Diploma year	0.28	0.279	0.292	0.289
	(6.83)***	(6.81)***	(7.06)***	(6.99)***
Household characteristics				
Father's years of schooling	0.046	0.046	0.043	0.041
	(4.03)***	(4.03)***	(3.78)***	(3.60)***
Square of father's years of schooling	-0.003	-0.003	-0.003	-0.003
	(4.11)***	(4.10)***	(4.05)***	(3.90)***
Mother's years of schooling	0.029	0.028	0.036	0.035
	(2.48)**	(2.43)**	(3.05)***	(2.98)***
Square of mother's years of schooling	-0.003	-0.002	-0.003	-0.003
	(3.14)***	(3.09)***	(3.32)***	(3.33)***
Father absent temporarily	0.18	0.171	0.194	0.186
	(2.15)**	(2.03)**	(2.28)**	(2.19)**
Father absent permanently	0.168	0.165	0.165	0.155
	(2.36)**	(2.32)**	(2.30)**	(2.17)**
Mother absent	0.074	0.071	0.09	0.08
	-0.67	-0.64	-0.79	-0.71
HH in 2nd lowest urban quintile^	0.263	0.26	0.24	0.226
	(3.90)***	(3.87)***	(3.53)***	(3.36)***
HH in third urban quintile	0.325	0.324	0.293	0.269
	(4.49)***	(4.48)***	(4.01)***	(3.75)***
HH in fourth urban quintile	0.43	0.429	0.381	0.35
	(5.64)***	(5.64)***	(4.94)***	(4.67)***
HH in fifth urban quintile	0.486	0.484	0.444	0.401
	(5.53)***	(5.50)***	(5.05)***	(4.80)***
HH in 2nd lowest rural quintile^	0.235	0.227	0.201	0.206
	(2.20)**	(2.14)**	(1.84)*	(1.88)*
HH in third rural quintile	0.004	-0.002	0.112	0.114
	-0.04	-0.01	-1.01	-1.05
HH in fourth rural quintile	0.293	0.286	0.372	0.369

	Probit (1)	Bivariate Probit (2)	Governorate Fixed Effects (3)	Governorate Random Effects (4)
	(2.80)***	(2.74)***	(3.42)***	(3.50)***
HH in fifth rural quintile	0.583	0.572	0.719	0.717
	(5.49)***	(5.40)***	(6.46)***	(6.73)***
Community characteristics				
Percentage working in educ. sector at the local level	0.029	0.028	0.029	0.042
	(2.88)***	(2.82)***	(2.75)***	(5.05)***
Alexandria & Canal cities^	-0.017	-0.019		
	-0.21	-0.23		
Upper Egypt	-0.064	-0.06		
	-0.87	-0.81		
Lower Egypt	0.495	0.495		
	(6.23)***	(6.21)***		
Urban	0.366	0.358	0.423	0.381
	(3.69)***	(3.63)***	(4.18)***	(3.88)***
Teacher pupil ratio in general secondary level	-0.06	-0.061		
	(2.42)**	(2.45)**		
Teacher pupil ratio in preparatory level	0.004	0.003		
	-0.38	-0.36		
Teacher pupil ratio in primary level	0.02	0.021		
	(2.83)***	(2.88)***		
Constant	-1.331	-1.303	-1.642	-1.383
	(6.51)***	(6.39)***	(12.90)***	(11.94)***
Observations	6114	6114	6114	6114
- Log likelihood	3965	6022	3627	3665
Test for joint significance of interactions with gender (P-value)	0.26	0.23	0.19	0.18

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.

^ **Omitted Categories:**
Age group 6-11
HH in lowest urban quintile
HH in lowest rural quintile
Greater Cairo

Table 9: Group Tutoring Probits

	Probit (1)	Bivariate Probit (2)	Governorate Fixed Effects (3)	Governorate Random Effects (4)
Individual characteristics				
Female	0.059	0.059	0.07	0.073
	-1.44	-1.43	(1.66)*	(1.75)*
Age group 12-14^	0.046	0.036	0.051	0.049
	-0.92	-0.72	-1	-0.96
Agegroup15-19	-0.392	-0.383	-0.388	-0.389
	(6.34)***	(6.23)***	(6.17)***	(6.20)***
Eldest child	0.157	0.161	0.161	0.163
	(3.13)***	(3.23)***	(3.17)***	(3.22)***
Son/daughter of head	-0.007	-0.023	-0.049	-0.053
	-0.09	-0.3	-0.62	-0.68
Late	0.188	0.185	0.188	0.188
	(2.70)***	(2.67)***	(2.65)***	(2.67)***
Shifts	0.076	0.075	0.095	0.09
	(1.74)*	(1.72)*	(2.07)**	(2.00)**
Diploma year	0.074	0.064	0.09	0.094
	-1.46	-1.26	(1.75)*	(1.84)*
Household characteristics				
Father's years of schooling	-0.008	-0.007	-0.012	-0.012
	-0.57	-0.53	-0.88	-0.87
Square of father's years of schooling	0	0	0.001	0.001
	-0.57	-0.5	-0.82	-0.86
Mother's years of schooling	0.052	0.051	0.051	0.05
	(3.69)***	(3.65)***	(3.58)***	(3.53)***
Square of mother's years of schooling	-0.005	-0.005	-0.005	-0.005
	(4.95)***	(4.93)***	(4.88)***	(4.94)***
Father absent temporarily	0.194	0.186	0.178	0.189
	(2.06)**	(1.97)**	(1.86)*	(1.97)**
Father absent permanently	-0.071	-0.072	-0.112	-0.099
	-0.82	-0.83	-1.27	-1.13
Mother absent	0.012	0.008	-0.06	-0.047
	-0.09	-0.06	-0.44	-0.35
HH in 2nd lowest urban quintile^	-0.107	-0.108	-0.098	-0.068
	-1.3	-1.31	-1.18	-0.83
HH in third urban wealth quintile	-0.049	-0.045	-0.024	0.01
	-0.56	-0.52	-0.27	-0.11
HH in fourth urban wealth quintile	-0.258	-0.245	-0.212	-0.152
	(2.64)***	(2.52)**	(2.16)**	-1.6
HH in fifth urban wealth quintile	-0.052	-0.042	0.037	0.129
	-0.48	-0.39	-0.34	-1.24
HH in 2nd lowest rural quintile^	0.137	0.128	0.064	0.058
	-1.19	-1.11	-0.54	-0.49
HH in third rural quintile	0.173	0.175	0.163	0.152
	-1.49	-1.52	-1.35	-1.28
HH in fourth rural quintile	0.201	0.181	0.003	-0.001

	Probit (1)	Bivariate Probit (2)	Governorate Fixed Effects (3)	Governorate Random Effects (4)
	(1.73)*	-1.57	-0.03	-0.01
HH in fifth rural quintile	0.144	0.138	0.032	0.021
	-1.19	-1.15	-0.25	-0.17
Community characteristics				
Percentage working in educ. sector at the local level	-0.077	-0.078	-0.089	-0.097
	(5.88)***	(6.02)***	(6.30)***	(7.73)***
Alexandria & Canal cities^	-0.575	-0.564		
	(5.92)***	(5.81)***		
Upper Egypt	-0.722	-0.702		
	(8.41)***	(8.18)***		
Lower Egypt	-0.773	-0.754		
	(8.09)***	(7.89)***		
Urban	-0.024	-0.026	-0.043	-0.017
	-0.22	-0.23	-0.38	-0.15
Teacher pupil ratio in general secondary level	-0.042	-0.041		
	-1.42	-1.38		
Teacher pupil ratio in preparatory level	-0.009	-0.01		
	-0.81	-0.87		
Teacher pupil in primary level	0.065	0.064		
	(6.81)***	(6.77)***		
Constant	-1.015	-0.979	-0.186	-0.527
	(4.37)***	(4.25)***	-1.3	(4.11)***
Observations	6114	6114	6114	6114
-Log likelihood	2379	6022	2311	2354
Test for joint significance of interactions with gender (P-value)	0.54	0.55	0.4	0.37

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.

^**Omitted Categories:**
Age group 6-11
HH in lowest urban quintile
HH in lowest rural quintile
Greater Cairo

Table 10: Marginal Effects for Probit Models

	Marginal Effects	
	Private Tutoring Probit	**Group Tutoring Probit**
Individual characteristics		
Female	-0.005	0.021
Age group 12-14	0.149	0.016
Agegroup15-19	0.132	-0.120
Eldest child	0.017	0.056
Son/daughter of head	0.016	-0.002
Late	-0.010	0.068
Shifts	-0.001	0.027
Diploma year	0.056	0.026
Household characteristics		
Father's years of schooling	0.008	-0.003
Square of father's years of schooling	0.000	0.000
Mother's years of schooling	0.005	0.018
Square of mother's years of schooling	0.000	-0.002
Father absent temporarily	0.034	0.070
Father absent permanently	0.032	-0.024
Mother absent	0.013	0.004
HH in 2nd lowest urban quintile	0.052	-0.036
HH in third urban wealth quintile	0.067	-0.017
HH in fourth urban wealth quintile	0.094	-0.083
HH in fifth urban wealth quintile	0.110	-0.018
HH in 2nd lowest rural quintile	0.046	0.049
HH in third rural quintile	0.001	0.063
HH in fourth rural quintile	0.059	0.073
HH in fifth rural quintile	0.138	0.052
Community characteristics		
Percentage working in educ. sector at the local level	0.005	-0.027
Alexandria & Canal cities	-0.003	-0.164
Upper Egypt	-0.010	-0.193
Lower Egypt	0.112	-0.202
Urban	0.078	-0.008
Teacher pupil ratio in general secondary level	-0.010	-0.015
Teacher pupil ratio in preparatory level	0.001	-0.003
Teacher pupil in primary level	0.003	0.022

Table 11: Spending (Tobit) Models

	(1) Private Tutoring Spending	(2) Group Tutoring Spending
Individual characteristics		
Female	-7.410	14.123
	(0.39)	(1.79)*
Age group 12-14^	338.651	15.764
	(14.11)***	(1.66)*
Agegroup15-19	489.251	-53.804
	(18.34)***	(4.58)***
Eldest child	37.650	30.032
	(1.65)*	(3.16)***
Son/daughter of head	14.405	4.922
	(0.37)	(0.33)
Late	-78.407	29.774
	(2.41)**	(2.25)**
Shifts	-24.657	13.541
	(1.19)	(1.62)
Diploma year	180.955	18.447
	(8.11)***	(1.92)*
Household characteristics		
Father's years of schooling	15.152	-3.373
	(2.36)**	(1.31)
Square of father's years of schooling	-0.686	0.173
	(1.71)*	(1.04)
Mother's years of schooling	9.045	9.973
	(1.39)	(3.74)***
Square of mother's years of schooling	-0.402	-0.906
	(0.91)	(4.81)***
Father absent temporarily	127.040	40.139
	(2.80)***	(2.25)**
Father absent permanently	31.962	-20.086
	(0.82)	(1.20)
Mother absent	7.279	-1.854
	(0.12)	(0.07)
HH in 2nd lowest urban quintile^	108.719	-17.068
	(2.83)***	(1.08)
HH in third urban wealth quintile	116.284	-9.658
	(2.84)***	(0.58)
HH in fourth urban wealth quintile	198.344	-39.094
	(4.66)***	(2.11)**
HH in fifth urban wealth quintile	398.487	13.318
	(8.22)***	(0.65)
HH in 2nd lowest rural quintile^	97.905	18.402
	(1.51)	(0.82)
HH in third rural quintile	9.063	31.223
	(0.14)	(1.38)
HH in fourth rural quintile	125.492	50.934
	(1.98)**	(2.28)**
HH in fifth rural quintile	258.613	31.745
	(4.09)***	(1.36)

	(1) Private Tutoring Spending	(2) Group Tutoring Spending
Community characteristics		
Percentage working in educ. sector at the local level	21.734 (3.90)***	-13.167 (5.25)***
Alexandria & Canal cities^	-114.717 (2.57)**	-107.481 (5.84)***
Upper Egypt	-253.674 (6.14)***	-156.982 (9.56)***
Lower Egypt	8.105 (0.18)	-159.520 (8.73)***
Urban	156.315 (2.60)***	-1.795 (0.08)
Teacher pupil ratio in general secondary level	-23.278 (1.65)*	-6.004 (1.06)
Teacher pupil ratio in preparatory level	-3.351 (0.64)	-1.383 (0.66)
Teacher pupil in primary level	9.943 (2.44)**	12.353 (6.66)***
Constant	-678.718 (5.66)***	-248.886 (5.58)***
Observations	6114	6114
-Log likelihood	23122	7751
Test for joint significance of interactions with gender (P-value)	0.32	0.39

Absolute value of z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%.

^ **Omitted Categories:**
Age group 6-11
HH in lowest urban quintile
HH in lowest rural quintile
Greater Cairo

Table 12: Marginal Effects for Spending Models

	Marginal Effects	
	Private Tutoring Spending	Group Tutoring Spending
Individual characteristics		
Female	-7.410	14.123
Age group 12-14	338.651	15.764
Agegroup15-19	489.251	-53.804
Eldest child	37.650	30.032
Son/daughter of head	14.405	4.922
Late	-78.407	29.774
Shifts	-24.657	13.541
Diploma year	180.955	18.447
Household characteristics		
Father's years of schooling	15.152	-3.373
Square of father's years of schooling	-0.686	0.173
Mother's years of schooling	9.045	9.973
Square of mother's years of schooling	-0.402	-0.906
Father absent temporarily	127.040	40.139
Father absent permanently	31.962	-20.086
Mother absent	7.279	-1.854
HH in 2nd lowest urban quintile	108.719	-17.068
HH in third urban wealth quintile	116.284	-9.658
HH in fourth urban wealth quintile	198.344	-39.094
HH in fifth urban wealth quintile	398.487	13.318
HH in 2nd lowest rural quintile	97.905	18.402
HH in third rural quintile	9.063	31.223
HH in fourth rural quintile	125.492	50.934
HH in fifth rural quintile	258.613	31.745
Community characteristics		
Percentage working in educ. sector at the local level	21.734	-13.167
Alexandria & Canal cities	-114.717	-107.481
Upper Egypt	-253.674	-156.982
Lower Egypt	8.105	-159.520
Urban	156.315	-1.795
Teacher pupil ratio in general secondary level	-23.278	-6.004
Teacher pupil ratio in preparatory level	-3.351	-1.383
Teacher pupil in primary level	9.943	12.353

Table 13: Private Tutoring, by Education Level

	Primary Level	Preparatory Level	Secondary Level
Individual characteristics			
Female	-0.092	-0.071	0.170
	(1.82)*	(1.09)	(2.02)**
Eldest child	0.124	0.058	0.227
	(1.96)*	(0.71)	(2.36)**
Son/daughter of head	0.163	0.001	0.176
	(1.72)*	(0.01)	(0.97)
Late	-0.011	-0.036	-0.047
	(0.11)	(0.42)	(0.38)
School operates in shifts	-0.006	-0.079	0.224
	(0.11)	(1.14)	(2.48)**
Diploma year	0.394	0.136	0.108
	(6.38)***	(1.90)*	(1.28)
Household characteristics			
Father's years of schooling	0.054	0.082	0.013
	(3.23)***	(3.95)***	(0.47)
Square of father's years of schooling	-0.004	-0.005	-0.000
	(4.02)***	(3.72)***	(0.10)
Mother's years of schooling	0.042	0.004	0.090
	(2.43)**	(0.20)	(3.23)***
Square of mother's years of schooling	-0.004	-0.000	-0.005
	(3.04)***	(0.28)	(2.38)**
Father absent temporarily	0.033	0.397	0.415
	(0.29)	(2.23)**	(1.71)*
Father absent permanently	-0.011	0.357	0.382
	(0.09)	(2.74)***	(2.53)**
Mother absent	0.063	-0.030	0.159
	(0.36)	(0.15)	(0.64)
HH in 2nd lowest urban quintile^	0.376	0.364	-0.256
	(3.87)***	(2.88)***	(1.48)
HH in third urban quintile	0.394	0.466	-0.107
	(3.70)***	(3.51)***	(0.58)
HH in fourth urban quintile	0.548	0.548	-0.008
	(4.83)***	(3.76)***	(0.04)
HH in fifth urban quintile	0.551	0.657	0.059
	(4.10)***	(3.94)***	(0.28)
HH in 2nd lowest rural quintile^	0.158	0.196	0.326
	(1.05)	(1.02)	(1.16)
HH in third rural quintile	0.075	-0.005	-0.225
	(0.49)	(0.03)	(0.82)
HH in fourth rural quintile	0.237	0.303	0.504
	(1.60)	(1.57)	(1.88)*
HH in fifth rural quintile	0.672	0.522	0.522
	(4.45)***	(2.72)***	(1.95)*

	Primary Level	Preparatory Level	Secondary Level
Community characteristics			
Percentage working in educ. sector at the local level	0.010 (0.70)	0.067 (3.42)***	0.057 (2.28)**
Alexandria & Canal cities^	0.182 (1.83)*	0.285 (2.35)**	-0.329 (2.01)**
Upper Egypt	0.185 (1.93)*	-0.001 (0.01)	-0.517 (3.37)***
Lower Egypt	0.833 (8.38)***	0.609 (4.51)***	-0.138 (0.87)
Urban	0.388 (2.77)***	0.262 (1.46)	0.518 (2.00)**
Teacher pupil ratio in general secondary level			-0.066 (2.21)**
Teacher pupil ratio in preparatory level		-0.000 (0.01)	
Teacher pupil ratio in primary level	-0.001 (0.10)		
Constant	-1.561 (6.36)***	-1.041 (3.40)***	-0.045 (0.09)
Observations	2848	1665	1069
- Log likelihood	1706	1023	616
Test for joint significance of interactions with gender (P-value)	0.017	0.12	0.09

Absolute value of z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%.

^ **Omitted Categories:**
HH in lowest urban quintile
HH in lowest rural quintile
Greater Cairo

Table 14: Group Tutoring, by Education Level

	Primary Level	Preparatory Level	Secondary Level
Individual characteristics			
Female	0.005	0.044	0.333
	(0.08)	(0.56)	(2.97)***
Eldest child	0.164	0.215	0.204
	(2.23)**	(2.29)**	(1.69)*
Son/daughter of head	-0.010	-0.118	-0.050
	(0.09)	(0.79)	(0.20)
Late	0.039	-0.048	0.026
	(0.35)	(0.48)	(0.15)
School operates in shifts	0.048	0.206	0.100
	(0.79)	(2.48)**	(0.83)
Diploma year	0.046	-0.060	-0.143
	(0.64)	(0.70)	(1.28)
Household characteristics			
Father's years of schooling	0.006	-0.019	0.005
	(0.29)	(0.78)	(0.13)
Square of father's years of schooling	-0.001	0.002	0.001
	(0.66)	(0.99)	(0.24)
Mother's years of schooling	0.045	0.106	0.005
	(2.27)**	(3.95)***	(0.15)
Square of mother's years of schooling	-0.005	-0.008	-0.001
	(3.48)***	(3.97)***	(0.30)
Father absent temporarily	0.241	0.242	0.022
	(1.95)*	(1.29)	(0.08)
Father absent permanently	-0.063	-0.060	-0.163
	(0.47)	(0.39)	(0.80)
Mother absent	-0.143	0.235	-0.019
	(0.72)	(1.00)	(0.06)
HH in 2nd lowest urban quintile^	-0.048	-0.261	-0.181
	(0.42)	(1.63)	(0.81)
HH in third urban quintile	0.046	-0.256	-0.199
	(0.38)	(1.57)	(0.81)
HH in fourth urban quintile	-0.237	-0.261	-0.399
	(1.68)*	(1.44)	(1.56)
HH in fifth urban quintile	0.160	-0.321	-0.147
	(1.02)	(1.56)	(0.54)
HH in 2nd lowest rural quintile^	0.183	-0.194	0.222
	(1.16)	(0.94)	(0.59)
HH in third rural quintile	0.280	-0.009	-0.130
	(1.73)*	(0.05)	(0.33)
HH in fourth rural quintile	0.382	-0.143	-0.456
	(2.42)**	(0.70)	(1.09)
HH in fifth rural quintile	0.294	-0.372	0.026
	(1.77)*	(1.74)*	(0.07)

	Primary Level	Preparatory Level	Secondary Level
Community characteristics			
Percentage working in educ. sector at the local level	-0.072 (4.00)***	-0.077 (3.12)***	-0.080 (2.30)**
Alexandria & Canal cities^	-0.472 (4.44)***	-0.635 (4.57)***	0.012 (0.06)
Upper Egypt	-0.917 (8.51)***	-0.742 (4.76)***	-0.230 (1.17)
Lower Egypt	-0.813 (7.22)***	-1.149 (7.03)***	-0.149 (0.74)
Urban	0.048 (0.31)	-0.518 (2.61)***	0.329 (0.93)
Teacher pupil ratio in general secondary level			0.111 (2.96)***
Teacher pupil ratio in preparatory level		0.020 (1.68)*	
Teacher pupil ratio in primary level	0.046 (5.33)***		
Constant	-1.183 (4.20)***	-0.007 (0.02)	-2.530 (3.92)***
Observations	2848	1665	1069
- Log likelihood	1237	688	324
Test for joint significance of interactions with gender (P-value)	0.89	0.9	0.000

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.

^ **Omitted Categories:**
HH in lowest urban quintile
HH in lowest rural quintile
Greater Cairo