

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

Ragui Assaad

Humphrey Institute of Public Affairs
University of Minnesota, USA
rassaad@hhh.umn.edu

Asmaa Elbadawy*

McMaster University, Canada
elbadaa@mcmaster.ca

&

University of Minnesota, USA
aelbadawy@hhh.umn.edu

* Corresponding author. Department of Economics, Kenneth Taylor Hall, Rm 426, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada, L8S4M4. Phone: 1-905-522-4449; Fax: 1-905-521-8232.

1. Introduction

Although technically illegal, private tutoring has become increasingly widespread in Egypt. For example, it is no longer limited to diploma years or to students attending public schools. Despite recognition of how widespread tutoring has become, the phenomenon has not yet been formally studied. There is anecdotal evidence that private lessons currently constitute a considerable part of households' expenditure. This implies that the estimation of the rates of return on education should be revised to incorporate expenditures on private lessons. In addition, tutoring potentially exacerbates educational (and thereby income) gaps across different income groups and by gender. Accordingly, examining tutoring determinants has important policy implications

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 decisions, in particular with respect to whether or not to take private lessons and how much to spend on it. Tutoring gender gaps can possibly reflect general gender gaps in education. It is expected that if disparities are present in educational investments in general, it would even be more pronounced in more optional educational investments like that of receiving tutoring.

Women's education is crucial to the development of the MENA (Middle East and North Africa) region. Over and above its intrinsic value, girls' schooling has significant benefits to society. Mothers' education has positive effects on child survival and child health. In addition, the link of women's education to lower fertility and better maternal health is well established. Educated mothers also tend to emphasize the education of their children, especially their daughters'. Equally important, by increasing women's labor force participation and their earning capacity, education enhances women's ability to influence decision-making at the household level. It also contributes significantly to their ability to exercise their political rights.

Despite these benefits, gender disparities in education¹ have strongly persisted in MENA countries and in developing countries in general.² According to the World Development Report (1996), the MENA region exhibits the highest gender gap in education, after South Asia. A considerable body of research has explored schooling gender bias in South Asian countries, but there has been a shortage in empirical research on women's education in the case of MENA countries. This is not surprising given the scarcity and inaccessibility of micro-level data in these countries. Existing literature usually just documents gender bias by looking at aggregate level measures of education. For example, studies tend to compare literacy rates, enrollment rates and mean years of schooling by

¹ Gender bias in other forms of human capital investments (for example, bias in mortality rates, in health investment, and in nutrition) is also well documented in developing countries. For instance, Sen (1990) shows that females face a considerably higher mortality rate compared to males in Asia and North Africa. Behrman (1988), on the other hand, found that there is a pro-male allocation of nutrients in rural India.

² In developing countries, gender disparities in education are present in literacy rates, enrolment rates and attainment levels. For instance, in developing countries--excluding India and China--the percentage of boys enrolled was higher than that of girls by 22 and 43 percentage points for primary and secondary school age kids, respectively (World Bank 1996).

gender (for example, Nagat El-Sanabary, 1993). Aggregate level data, however, does not help explain how individual, family, and community factors affect the extent of the bias and, hence, is not sufficient to the formulation of effective education policies.

In the case of Egypt, female literacy and enrollment rates still lag behind that of males. For instance, based on Egypt Labor Market Survey of 1998 (ELMS 98), girls are 2.3 times more likely not to have ever been to school. However, once girls are sent to school, there is no significant gender disparity observed in dropout rates.

The remaining of this paper is organized as follows. The second section provides theoretical explanations and evidence on gender bias. The third section reviews literature on tutoring. The fourth section discusses the empirical model followed. Section five presents the empirical results and preliminary findings.

2. Gender Bias: Theoretical Explanations and Evidence

Theoretically, a gender differential in educational investments can arise due to two reasons.³ First, girls can face discrimination because of different weights parents place on the education of their sons and daughters. For instance, 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 add to the bias. Parents may not emphasize their daughters' education as much as that of their sons because they believe that girls should marry and take care of their families rather than work. 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). In the context of developing countries, resource constraints along with imperfect credit markets would reinforce investment bias against girls. Realizing different returns from boys', as opposed to girls', education can result from gender-related differentials in either benefits or costs of education.

Even if 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 benefits and costs streams of education would vary by gender in developing countries. Labor market outcomes tend to be more favorable to boys. It is not unusual for women in developing countries to have limited access to the paid labor market or to get a lower wage rate. In MENA countries, women face barriers to entry in the private sector (Moghadam 2002). In addition, there are considerable wage differentials in the private sector even after accounting for education and experience (Assaad and Arntz 2002).

³ The discussion that follows assumes that girls and boys have the same cognitive abilities.

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 may be reluctant to send their daughter to a school in another village in fear of exposing her to danger.⁴ Single-sex schools (if restricted to boys), especially in remote villages, may be a major obstacle to girls' enrollments.

The opportunity cost of children's time (an indirect cost) is the major cost of education that parents bear. Boys can help in farm work while girls typically help in house chores. If parents value girls' time more than boys', they would be more reluctant to send girls to school.

3. Evidence on Tutoring

3.1. Tutoring in Egypt

Private tutoring in Egypt has become prevalent in recent years. Tutoring is generally done by teachers for a fee. It normally occurs as a shadow-phenomenon because it is technically not approved of by the ministry of education. In addition, teachers usually evade taxes on their earnings from tutoring.

It is very common for school pupils, particularly those in diploma years, to take tutoring. This is the case across different regions and income levels. In addition, pupils in private schools are as likely to take tutoring as much as those in public schools. Therefore, it is not only to compensate for relatively lower school quality that pupils take tutoring.⁵ Fees for private tutoring are relatively high and represent a significant portion of parents' spending on their children's education. Pupils in the final year of the preparatory level normally take tutoring to be do well enough in the governorate-level exams to go on to the "prestigious" general secondary level which the pathway to university requires. Those in the secondary level commonly receive tutoring so that they secure seats in the "prestigious" fields in one of the major universities.⁶

Group tutoring, on the other hand, has not witnessed such a big rise as in private tutoring. Group tutoring is usually offered in schools, on the premises by the teachers of the schools. It is not illegal. Its fees are much lower than that of private tutoring. It is considered the less expensive substitute to private tutoring.

3.2. Literature on tutoring

No studies have looked at gender differences in the context of tutoring. In fact, very few papers analyze tutoring in general. Biswal (1999), in his theoretical paper, tries to explain why tutoring takes place in developing countries. He views tutoring as a form of

⁴ Alderman et al. (1996), King and Lillard (1987), and Newman and Gertler (1994) find that distance has a more negative effect on enrollments of girls as opposed to boys in Pakistan, Malaysia, Philippines, and Peru.

⁵ One reason public schools are expected to be of lower quality compared to private schools is overcrowded classrooms.

⁶ It is a norm in Egypt that engineering and medicine are "top" fields. These faculties require very high scores in the Egyptian general secondary certificate.

corruption where teachers in public schools shirk - assuming they have monopoly power- to create demand for private tutoring in order to supplement their low incomes. This is also coupled with imperfect monitoring mechanisms in schools. Biswal follows a game theoretic framework where tutoring is represented as a club good. In the first stage of the game, the government sets the teacher's wage level. The teacher chooses his level of effort accordingly. In the second stage, teachers offer a tutoring package: the club fee and the number of students per group. In the last stage, the student accepts or rejects the offer. Under this framework, governments use tutoring as a mechanism of providing education at a lower cost. Biswal ignores important demand side determinants of tutoring. In addition, the paper leaves tutoring taken by students in private schools unexplained and, therefore, does not fully portray the tutoring process in Egypt.

Bray & Kwok (2003), on the other hand, tried to examine the issue, for the case of Hong Kong, from a quantitative perspective focusing only on demand side factors. They collected data on pupils in six secondary schools. In Hong Kong, teachers are prohibited from providing tutoring to their own pupils, thereby ruling out monopoly power of teachers. In addition, unlike Egypt, tutoring is usually not illegal phenomenon. The authors provided descriptive statistics on the proportion of pupils receiving tutoring, reasons reported by students as to why they resorted to tutoring, and the ratio of tutoring fees to monthly household incomes. Our paper, however, will go beyond providing summary statistics (as described in the next section) and will consider supply-side factors.

In addition, we employ a richer and nationally representative dataset.

4. Data Sources and Methodology

The education system in Egypt currently consists of three stages: a six-year primary stage⁷, a three-year preparatory stage, and a three-year secondary stage. Both primary and preparatory stages are compulsory. The secondary stage encompasses general and vocational streams. The general stream is regarded as the "prestigious" stream and is a required pathway for joining university. Our analysis will be restricted to pre-university education levels.

The paper utilizes data from the Egyptian Labor Market Survey (ELMS 98), supplemented by district level data drawn from the 1996 Egyptian Population Census and governorate level data from the Egyptian ministry of education. We restrict our sample to individuals currently in school and are 6 to 18 years old (6,114 observations out of an overall sample of 23,997 observations).

In ELMS 98, four questions cover tutoring (the dependent variable). The first two questions are related to private tutoring. The answers to these indicate whether a student received private tutoring or not, and how much was spent per year on tutoring. The same two questions are posed again in the context of group tutoring.⁸ A set of variables representing individual, household, as well as community characteristics serves as

⁷ Our analysis, however, applies to an earlier period where the primary level consisted of only five grades.

⁸ Group tutoring is usually offered in public schools, on the premises. It is not illegal. Its fees are much lower than that of private tutoring.

explanatory variables. Individual level variables include gender, age group dummies (corresponding to different education levels), and the child's relationship to the head of the household (for example, if he/she is the eldest child). We would also employ variables showing whether the child is in a diploma year, whether he/she attends a multi-shift school and if he/she is a delayed pupil (i.e., has experienced delayed school entry or repetition).

Household level variables comprise variables on parents' years of schooling, parental absence, and wealth (proxied by an asset score). Dummies showing which region of Egypt the student resides in, and whether it is an urban or rural area, will be included to reflect community factors. In addition, a variable indicating the proportion of the working age population employed in the education industry was constructed, using census data, to reflect the supply of tutors. Furthermore, in an attempt to capture the quality of education, governorate-level⁹ variables such as teacher-pupil ratios (for different education levels) will be used.

We will utilize a combination of single and bivariate probit models. The single probit model follows the standard form:

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

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). Two probits are estimated separately for private and group tutoring. In each equation, a female dummy variable is included to test for whether there are differences in the likelihood of receiving tutoring among girls and boys, controlling for other explanatory variables. Another specification (of single probits) adds a female dummy interaction with all regressors, to further test gender related biases.

Mindful of the potentially high covariance between disturbance terms of the two equations, we also follow a bivariate probit approach, where the two equations are estimated jointly. In the same fashion, two single tobit equations -where the dependent variables are spending on private tutoring and spending on group tutoring respectively- are estimated using the same set of regressors.

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

5. Preliminary Results and Conclusions

Initial inspection of the data reveals that private tutoring is undertaken at a large scale in Egypt. On average, 40% of students receive private tutoring; this percentage goes up to

⁹ There are 27 governorates in Egypt. ELMS 98 has observations on 22 governorates.

60% for students at the secondary stage. The average for group tutoring is around 15%. Private tutoring is more of an urban phenomenon: 44% of students in urban areas take private tutoring as opposed to 35 % in rural areas. In addition, private tutoring seems to be more practiced in Lower Egypt (53%) compared to other regions. Group tutoring, surprisingly, is more often observed in Greater Cairo (23%) compared to other regions.

The data did not show signs of gender differences either in the likelihood of taking tutoring (group or private) or in the average expenditure on tutoring. To check whether the absence of a gender disparity persists when controlling for other variables, we estimated single and bivariate probits and tobits (as explained in the previous section). The female dummy generally turned out to be insignificant. The female dummy remained insignificant after adding a series of interaction terms of gender with all regressors. The female dummy and the interaction terms with “female” were also jointly insignificant (see P-value for joint test at the end of Tables 1, 2, 4).

For private tutoring, the female dummy was insignificant across the four models (Table 1). 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 to girls (Table 2).

Based on the female interacted specifications (models 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 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 favorable outcomes for girls.

For the group tutoring specifications (with interactions), significant interactions included the dummy for age 15 to19, 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 district level. All except the age 15 to 19 dummy had a negative effect.

No bias against girls was detected in spending on tutoring. 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 4).

When regressions were 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 has the expected effect.

The absence of gender bias is a significant finding. This may result from parents --in an effort to get the most out their daughter’s education-- ensuring that she does not drop out and that she performs well. What is puzzling, however, is what sort of benefits parents are trying to maximize. If an education premium in the labor market is the main motive for educating

children, we would expect parents to invest more in boys' education since they have better prospects in the labor market. An education premium in the marriage market, due to the bride-price system may be the answer to the puzzle. Parents may want their daughter to complete her education so that she finds a richer and/or more educated husband and, hence, can achieve a higher social status through marriage (Lloyd et al. 2001).

REFERENCES

- 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*. 32 (1): 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.
- Behrman, Jere. (1988) "Intra-household Allocation of Nutrients in Rural India: Are Boys Favored? Do Parents Exhibit Inequality Aversion?," *Oxford Economic Papers*, 40 (1): 32-54.
- Biswal, Bagala. (1999) "Private Tutoring and Public Corruption: a Cost-effective Education System for Developing Countries," *The Developing Economies* 37 (2): 222-240.
- Bray, Mark and Percy Kwok (2003). "Demand for Private Supplementary Tutoring: Conceptual Considerations, and Socio-economic Patterns in Hong Kong," *Economics of Education Review* 22 (6): 611–620.
- El-Sanabary, Nagat (1993) "Middle East and North Africa" in King, Elizabeth M. and M. Anne Hill (eds.) (1993) *Women's Education in Developing Countries: Barriers, Benefits and Policies*, World Bank, Baltimore: The Johns Hopkins University Press: 136-174.
- Goujon, Anne and Annababette Wils. (1998) "Diffusion of Education in Six World Regions, 1960-90," *Population and Development Review* 24 (2): 357-368.
- Knight, J., and Song, L. (2000). *Differences in educational access in rural China. Mimeo*. UK: Department of Economics, University of Oxford.
- 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.
- 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.
- Newman, J.L., Gertler, P.J.(1994). "Family productivity, labor supply, and welfare in a low-income country," *Journal of Human Resources* 29 (4): 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* 72 (4): 803–15.
- Sen, Amartya. (1990) "More Than 100 Million Women Missing," *New York Review of Books* 37: 61-66.
- World Bank (1996), *World Development Report*, Washington, D.C.: World Bank.

Appendix

Table 1: Private Tutoring

	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

	Probit	Bivariate Probit	Governorate Fixed Effects	Governorate Random Effects
	(1)	(2)	(3)	(4)
HH in fourth rural quintile	-0.04 0.293 (2.80)***	-0.01 0.286 (2.74)***	-1.01 0.372 (3.42)***	-1.05 0.369 (3.50)***
HH in fifth rural quintile	0.583 (5.49)***	0.572 (5.40)***	0.719 (6.46)***	0.717 (6.73)***
Community characteristics				
Proportion of those working in education industry / working age population	0.029 (2.88)***	0.028 (2.82)***	0.029 (2.75)***	0.042 (5.05)***
Alexandria & Canal cities	-0.017 -0.21	-0.019 -0.23		
Upper Egypt	-0.064 -0.87	-0.06 -0.81		
Lower Egypt	0.495 (6.23)***	0.495 (6.21)***		
Urban	0.366 (3.69)***	0.358 (3.63)***	0.423 (4.18)***	0.381 (3.88)***
Teacher pupil ratio in general secondary level	-0.06 (2.42)**	-0.061 (2.45)**		
Teacher pupil ratio in preparatory level	0.004 -0.38	0.003 -0.36		
Teacher pupil ratio in primary level	0.02 (2.83)***	0.021 (2.88)***		
Constant	-1.331 (6.51)***	-1.303 (6.39)***	-1.642 (12.90)***	-1.383 (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%.

Table 2: Group Tutoring

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

	Probit	Bivariate Probit	Governorate Fixed Effects	Governorate Random Effects
	(1)	(2)	(3)	(4)
HH in fifth rural quintile	(1.73)* 0.144 -1.19	-1.57 0.138 -1.15	-0.03 0.032 -0.25	-0.01 0.021 -0.17
Community characteristics				
Proportion of those working in education Industry / working age population	-0.077 (5.88)***	-0.078 (6.02)***	-0.089 (6.30)***	-0.097 (7.73)***
Alexandria & Canal cities	-0.575 (5.92)***	-0.564 (5.81)***		
Upper Egypt	-0.722 (8.41)***	-0.702 (8.18)***		
Lower Egypt	-0.773 (8.09)***	-0.754 (7.89)***		
Urban	-0.024 -0.22	-0.026 -0.23	-0.043 -0.38	-0.017 -0.15
Teacher pupil ratio in general secondary level	-0.042 -1.42	-0.041 -1.38		
Teacher pupil ratio in preparatory level	-0.009 -0.81	-0.01 -0.87		
Teacher pupil in primary level	0.065 (6.81)***	0.064 (6.77)***		
Constant	-1.015 (4.37)***	-0.979 (4.25)***	-0.186 -1.3	-0.527 (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%.

Table 3: 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		
Proportion of those working in education		
Industry / working age pop	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 4: Spending (Tobit) Models

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

	(1)	(2)
	Private Tutoring Spending	Group Tutoring Spending
Community characteristics		
Proportion of those working in education. Industry / working age pop	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%.

Table 5: 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		
Proportion of those working in education Industry / working age pop	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 6: Private Tutoring, by Education Level

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

	Primary Level	Preparatory Level	Secondary Level
Community characteristics			
Proportion of those working in education industry / working age population	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%.

Table 7: Group Tutoring, by Education Level

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

	Primary Level	Preparatory Level	Secondary Level
<i>Community characteristics</i>			
Proportion of those working in education industry / working age population	-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%.

