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Working Papers

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ECON2004-2

Discipline of Economics

Faculty of Economics and Business

ISBN 1 86487 634 4 **ISSN 1446-3806**
May 2004

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ABSTRACT

This paper examines the role of gender and rural-urban residence, and the interaction between them in influencing schooling outcomes, using household level cross-section data from Egypt. Our empirical analysis finds strong evidence for the hypothesis that being male and living in urban areas significantly improves schooling outcomes. We show that relative to a female child who is 'never enrolled' in school, a male child is nearly twice as likely to be currently attending school, and over two and a half times more likely to have some schooling. Interestingly, the adverse effect of gender is greater in rural areas, with urban location increasing the odds of female children being currently enrolled. Finally, we find that female headship reduces the likelihood of a favorable schooling outcome for females and children living in rural areas.

Keywords: Egypt, schooling, gender, rural-urban differences
JEL codes: J22, J23, O15, I21

We would like to express our gratitude to IFPRI for giving us access to the data set, Egyptian Integrated Household Survey and to Yisehac Yohannes for kindly supplying the expenditure data calculated by IFPRI. We would also like to thank participants at the Agricultural Economics Conference, London, April 2004 for valuable comments

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1. Introduction

Human capital investment through schooling is widely recognised as an important component of economic growth. (See Lucas, 1988, Mankiw *et al*, 1992 and Barro and Sala-i-Martin, 1995.) Despite this, the level of schooling attainment continues to be low in many developing countries, where as many as 30% of the children enrolled in primary schools do not complete it, with the figure rising to 60% in some countries (UNICEF, 1997). Furthermore, schooling levels tend to be low in regions with a high proportion of working children. For example, an International Labor Office (ILO) study finds that up to 33 % of boys and about 42 % of girls in the school-going age also work on a part-time basis (ILO 1996). Low schooling levels for females relative to males is also widely observed across countries, a trend that is more readily observed in the world's poorest countries (United Nations Development Program, 2002).

Since schooling investments are typically made at the household level, factors such as household resource constraints, parental education, child's gender and place of residence (rural/urban), are all likely to play an influential role in schooling decisions. Furthermore, studies by Becker (1991) have shown that parents invest in the schooling of their children to the point where the marginal benefits from the investment exceed the cost of the investment. The main source of child benefits in traditional societies is from children's labour contributions and their role as informal sources of old-age security. Hence, it is likely that parents will invest more in the education of those children from whom they derive marginally greater benefits. There is wide acknowledgement in the development economics literature that there is gender segmentation with regard to schooling attainment. There are numerous explanations in the literature for the differential schooling investments in male and female children. Studies by Gertler and Alderman (1989), Zhang and Davies (1995), Garg and Morduch (1996), and Kingdon (1998), attribute differential educational investments to greater labour market returns to males relative to females. The possibility of receiving greater direct benefits from sons in the form of transfers is also cited as a possible explanation for lower investment in female education by Anderson *et al*

(1996). Differential education costs are discussed by Alderman *et al.* (1996) and King and Lillard (1987). See Alderman and King, 1998 for a review of this literature.

In order to analyse the gender differentials in schooling, it is important to take into account the context in which these decisions are being made. The informal nature of the rural production process for example, often makes it possible to combine schooling with household chores, making child labour more common in rural areas of developing countries. World Bank estimates show that a majority of working children are involved in the agricultural and domestic services sectors (World Bank, 1999). This raises the question of the extent to which the persistence of low schooling levels, particularly for women, can be attributed to the rural nature of the production process, traditional attitudes towards educating female children or a combination of the two. However, schooling investments are segmented not just along gender lines, but also by rural-urban differences. Despite this, few studies have explored the manner in which rural residence may exacerbate gender differences in schooling attainment.

In this paper, we examine whether gender and rural-urban residence affect schooling outcomes, using household level cross-section data from Egypt. For at least three reasons, Egypt presents an interesting context in which to study these issues.

First, public investment in schooling in Egypt has been high relative to other countries in the region (see Tansel and Gungor, 1999). Moreover, in 1923, the Egyptian Constitution sought to make schooling compulsory for all children between 6 and15 years of age inclusive. Despite this, Egyptian adult literacy rates (for ages 15 and above) are low, approximately 56.1 % in 2001, an increase of 9% since 1990. Moreover, there is a substantial gender gap in educational attainment. For instance, in 2001, female adult literacy rates were 44% relative to 67.2% for males. Further, approximately 12% of girls in the primary school going age-group are currently not attending school, with the figure rising to 32% in the secondary school going age-group. In contrast, the non-attendance rate in primary school for boys is 0%, rising to 21% in the secondary school age-group (Population Research Bureau, 2003).

Second, Egypt has a large rural sector and in 2000, 57% of the population was living in rural areas (World Bank 2001). Furthermore, between 1975- 2001, the share of the urban population as a proportion of the total, remained more or less the same, declining by only around 1% (World Bank, 2003).

Finally, previous studies have found strong evidence of son preference among Egyptian households (Arnold, 1992). This may indicate either that there are greater economic benefits from educating sons or that the social and cultural norms work against females. Interestingly, our data shows that in Egypt, the rural-urban divide in schooling among children of school-going age is substantially greater than the gender gap (almost double). This presents a strong case for a systematic study of both gender and rural-urban differences in schooling.

However, despite the low school attendance rates in Egypt, particularly among female children, few studies have systematically studied this issue using household level data.[1] In fact, there is no analysis of why so many Egyptian children do not attend school. In this paper our main focus is examining the determination of schooling, particularly focusing on the role of gender and rural-urban residence. Specifically, we test several key hypotheses on the link between schooling enrolment, gender and rural/urban location. First, we examine whether there are significant gender differences in schooling outcomes. Second, whether place of residence and the interaction between gender and place of residence affects schooling outcomes. Third, we analyse the influence of individual and household factors (such as age, household size and composition, household income and education) on schooling outcomes.

In our empirical analysis, we simultaneously examine three different schooling outcomes: 'never enrolled', 'dropped out' and currently enrolled' in school. This distinction helps us analyse conditions under which a child is likely to have had some schooling rather than none. This factor is important

[1] We are aware of just one other recent study on schooling in Egypt using cross-section data (Wahba, 2000). Wahba's study examines the effect of market wages on child labour and schooling outcomes and the intergenerational transmission of child labour (using a different data set to ours).

because a recent study by Psacharopoulos and Patrinos (2002) has shown that the marginal return to primary school education is far greater than marginal returns to secondary schooling. For example, the private returns to investment in primary education are approximately 27%, falling to 17% in the case of secondary school investment. Therefore, by using only 'currently enrolled' as our dependent variable, we are likely to lose valuable information on those children who may have dropped out of school after gaining basic literacy and numeracy skills. Furthermore, in our analysis, we also include children who have had no schooling.

Using 'never enrolled in school' as our base, we employ a multinomial logit model to jointly estimate the probability of 'dropping-out of school' and being 'currently enrolled'. We first examine the determinants of schooling for the entire sample, and then estimate separate models for male-female, rural-urban and also on the interaction between rural-urban and male-female.

The rest of the paper is organised as follows: In the next Section we introduce the data and summary statistics on the variables used in our analysis. This is followed by Section 3 where we present our estimation strategy. The empirical results are presented in Section 4 and our main conclusions follow in Section 5.

2. Data and Summary Statistics

The setting for our analysis is Egypt, which is a middle-income country with a large rural sector, with substantial gender differences in educational attainment. With a population of approximately 67 million in 2002, Egypt is the 17th most populated country in the world (World Bank, 2003). Although the trends in the Human Development Index have shown a continual improvement in Egypt since 1975, the Human Development Index ranked Egypt 120 out of 175 countries, with an index of 0.64 in 2001 (United Nations Development Program, 2003).

The data for this study comes from the 1997 Egypt Integrated Household Survey (EIHS). The EIHS is a multi-topic, nationally representative household survey carried out by the International Food Policy Research Institute (IFPRI) in conjunction with the Ministry of Agriculture and Land Reclamation (MALR) and the Ministry of Trade and Supply of the Government of Egypt. The sample is nationally representative and consists of 2,500 households and 14,231 individuals from 20 governorates (provinces). The dataset is unique, in that it contains detailed unit record data on various demographic, social, economic, health and labour market characteristics for every household member.

Descriptions and definitions of the variables used in the modelling process are presented in Table 1. Tables 2 – 4 give the descriptive statistics for the entire sample, by different schooling outcomes and by male/female and rural/urban respectively. Our analysis is based on data for 3070 children in the 6-15 age group for whom complete information is available on schooling and household characteristics. Thus, we exclude those households with no child in the school-going age, or where data are missing. A little over half of the children in the sample are boys, and 64 % of all children live in rural areas. Approximately 50 % of the children in our sample have siblings below the ages of 6.

Table 4 describes the characteristics of school attendance disaggregated by gender and rural-urban residence. Note that the non-attendance rate (as measured by 'never enrolled' in school) is roughly similar between females (20%) and rural children (21%). However, the gender-gap in schooling is 8%, with 20% females and 12% males in the school-going age who have never attended school. It is interesting to note however, that the rural-urban gap of schooling non-attendance is significantly higher at 15%, and approximately double the gender-gap in schooling non-attendance. Further, among urban children, 89% are currently attending school, 5% have had some schooling, and 6% have no schooling. This contrasts with schooling attendance by rural children, where only 73% of rural children are currently in school, with 6% having dropped out, and 21% with no schooling.

Interestingly, the disparities in rural-urban schooling levels cannot be attributed to differences in access to schools. While previous studies (such as Ilahi, 2001) have included access and average distance to school as important determinants of schooling costs, our data show that, in both rural and urban areas, over 98% of the households are within walking distance of primary

and intermediate schools. Moreover, the average walking time to school is only around 12 minutes for the entire sample. Hence, we do not include schooling cost among our explanatory variables.

We control for household characteristics by including variables relating to household income, the presence of pre-school age siblings, the level of education of the household head and their spouse and the household head's age (Tables 2 and 3). We use the level of education of the household head and their spouse as a proxy for parental education levels.

There appears to be an intergenerational transmission of schooling levels, with a positive correlation between children's schooling outcomes and parental levels of education. For example, children that are currently enrolled in school typically belong to households where the household head's education level is relatively high (5.9 years). Moreover, the head's education level in these households is more than double that of households where the children have either dropped out (2.3 years), or have never attended school (2.9 years).

We observe similar trends for the effect of spouse's education on children's schooling outcomes, where we note that currently enrolled children belong to households where the head's spouse has the highest level of education (3.7 years). This contrasts with households where the children have either dropped out of school (1.2 year) or have never attended school (1.6 years) (Table 3). Further, our data show that, in Egyptian households where the head and spouse have less than 5 years education, the proportion of children reporting non-attendance or have dropped out of school are 21% and 18% respectively. In contrast, only 9% of children were 'never enrolled' in households where the household and spouse had over 11 years schooling.

Interestingly, children that are currently enrolled also belong to smaller households relative to children that 'drop out' of school or who have 'never attended' school. This together with the fact that the lowest proportion of children that report 'never enrolled in school' belong to households with no pre-school age children, suggests a 'quantity-quality trade-off' in schooling investment (Becker and Lewis, 1973).

Finally, we also observe that the household income (as proxied by per capita household expenditure) was highest in those households where children were attending school.

3. Econometric Approach

For our econometric analysis we focus on three variables relating to schooling outcomes: never attended school, currently in school and dropped out of school. Our dependent variable is the discrete variable, CHSCHOOL, which is based on self-reported answers to a question on whether or not the child is enrolled in school. The variable, CHSCHOOL, equals 0 if the child has never attended school, 1 if the child has dropped out of school and 2 if the child is currently enrolled in school.

We use multivariate logistic regression techniques for our empirical estimation and model the entire sample as well as separate sets of male-female, rural-urban and interactive regressions of rural-male, rural-female, urban-male and urban-female regressions to examine possible effects of gender and rural-urban segmentation in the determinants of schooling.

Assuming each child has an unobserved utility associated with each of the discrete outcomes, the utility index is assumed to depend on personal and family characteristics. Individual children (or, more likely, their families) then choose the alternative with the highest utility. With a linear random utility model, we have: $U_{ij} = \beta_j' x_i + \varepsilon_{ij}$. . Under the assumption that $(\varepsilon_{i0} - \varepsilon_{ij})$ follows a logistic distribution, this random utility framework motivates the use of the multinomial logit model. Under this model specification, the probability that the i^{th} child falls into the j^{th} category is given by:

$$P_{ij} = \frac{\exp(\beta_j' x_i)}{\sum_{k=1}^{m} \exp(\beta_k' x_i)}, \quad i = 1, \cdots, n, \quad j = 1, \cdots, m. \qquad (1)$$

If the m^{th} category is taken to be the base category, then β_m is normalized to zero. The logistic coefficients are transformed by exponentiating them, so that the coefficients shown in the tables are the multiplicative effects on the odds of being currently in school or having dropped out.

The interpretation of the coefficients is facilitated by considering the log odds ratio defined by:

$$\log\left(\frac{P_{ij}}{P_{ik}}\right) = (\beta_j - \beta_k)' x_i. \qquad (2)$$

Thus if $\beta_{jr} > \beta_{kr}$, then an increase in the level of characteristic r increases the log odds of the child being in category j rather than k.

The econometric model is derived from the theory of household demand for schooling. We assume that parents will invest in the schooling of their children to the extent that the marginal benefits of schooling exceed the costs of the schooling investment. The outcome of this decision is determined by a set of individual and household characteristics. Thus:

$$S_i = f(I_i, H_i, C)$$

where S is the decision variable- never attended, dropped out of school or currently in school. I is a vector of individual characteristics (such as age, age-squared, gender, grade for age); H is a vector of household and parental characteristics (such as the number of siblings below 6 years, household head's age and years of schooling, years of schooling for the household head's spouse, a dummy variable for whether it is a female headed household and per capita household income). The term C refers to the geographical location, i.e. whether the household resides in a rural or urban area.

It is assumed that there exist three distinct groups of children - never been to school, dropped out of school and currently attending school. Are there significant differences between the group of children who have never been to school and the group who have dropped out of school, justifying the current treatment of them as separate groups? The Cramer and Ridder (1991) test was used to test the null hypothesis that the two groups could be pooled into one homogeneous group. The test statistic is asymptotically distributed as a chi-square with degrees of freedom equal to the number of restrictions imposed. For each of the different models (entire sample, rural, urban, male and female), the calculated chi-square statistic is always greater than 100 (p-value = 0.000) giving very strong evidence that these two groups (never been to school and dropped out of school) are not a homogeneous group, and thus cannot be pooled. It could also be argued that the group of children who are currently in school may have similar characteristics to the group who have dropped out of school. The Cramer and Ridder test was again used here to test whether pooling can be considered. Again the chi-square statistic was always greater than 100 (p-value = 0.000) indicating very strongly that the two groups, dropped out of school and currently enrolled in school, cannot be pooled. Thus the multinomial logit model is used rather than a binary logit model.

The explanatory variables used in our regression analysis are discussed below.

Child characteristics

The child characteristics considered here are the child's gender, age and age squared. The child's gender is a dichotomous variable that takes on a value of 1 for males and 0 for females. This variable is included because it is well known that girls on average receive lower schooling than boys do (United Nations Development Programme, 2002). There is also empirical evidence that older children are more likely to be working. To capture this effect we include both the child's age and age-squared to take into account possible non-linearities.

Household characteristics

Since we are interested in empirically testing for the influence of gender on schooling attainment, in addition to the child's gender, we also consider other household specific gender variables such as female headship, and the level of schooling of the household head's spouse measured in years.

Female-headed households are more likely to be poor. There is also empirical evidence that mother's education levels impact favourably on education, particularly for females. There is therefore some empirical

ambiguity over the effect of female headship variable on schooling. While Patrinos & Psacharopoulos (1997) show that being a member of a female-headed household increases the likelihood of a child working in Peru, others such as Lloyd and Gage-Brandon (1994) and Canagarajah and Coulombe (1998) find that, in sub-Saharan Africa and Ghana, female-headship improves the chances of being able to go to school. Hence, we introduce a dummy variable that takes on the value of 1 for female-headed households and 0 otherwise.

Further, according to Psacharopoulos & Arriagada (1989), Grootaert (1998), Dreze and Kingdon (2001), parental schooling affects the probability of whether or not the child will go to school. However, Handa (1996), Rosenzweig and Wolpin (1994), Lillard and Willis (1994), and Unni (1998) show that parental schooling affects girls and boys differently. While father's schooling is more likely to influence the schooling of boys, mother's schooling has a favorable affect on the education of female children. Hence, we include the level of education for the household head's spouse, measured in years, to take into account the influence of mother's education.

Previous research has identified the presence of younger siblings in the household as reducing the likelihood of school attendance (see Patrinos and Psacharopoulos, 1997; Lloyd and Gage-Brandon, 1994). The effect of this variable is however unclear and may be different for male and female children. For example, according to Morduch (2000), in resource constrained Ghanaian households, the presence of an older sister increases the probability of a younger sibling going to school. However, Lloyd and Gage-Brandon (1994) find that schooling outcomes in sub-Saharan Africa, particularly for girls, are more likely to be adversely affected by the presence of younger siblings. Therefore, we include the number of siblings under the age of 6 years as an explanatory variable.

In addition to gender-related variables, economic factors such as household income, and household characteristics such as parental schooling and age, and presence of pre-school age siblings are also important determinants of child schooling. To incorporate these household-level influences we include the following variables: per capita household expenditure as a proxy for household income, household head's age and level of education and the level of education of the household head's spouse. Since a large proportion of the households in our sample do not report household head's schooling (38%) and spouse (8%), we include two dummies to take into account these variables.

While low incomes impose resource constraints thus increasing direct schooling costs, they also make the monetary benefits from child labour more attractive. Hence, in areas where there are possibilities for child labour, the opportunity cost of schooling increases for poor households. Hence, per capita household expenditure is used as a proxy for household income.

Further, because the informal methods of rural production make it possible to combine work with schooling, we are more likely to see rural children with lower levels of schooling. A dummy variable is used to incorporate the influence of rural residence, which takes on the value of 1 if the child lives in an urban area.

4. Results

The empirical results are summarized in Tables 5-13. Table 5 presents the results for the entire sample, and Tables 6 and 7 report the results for the male and female sample respectively. The estimation results for rural and urban areas are reported separately in Tables 8 and 9. Tables 10-13 display the results of the interaction effects. We report the coefficients, the odds-ratios and the P-values. Our estimation results support the hypothesis that the child's gender and residence (rural/ urban) are important determinants of schooling. It is immediately obvious that being female and living in rural areas, significantly increases schooling disadvantage.

Gender

As discussed above, we used three variables to measure the influence of gender: the child's gender, female headship, and schooling of the household head's spouse. Our results show that being female has a significantly negative influence on schooling outcomes. At the national level, relative to a female child who is 'never enrolled' in school, a male child is nearly twice as likely to be currently attending school, and over two and a

half times more likely to have some schooling (see Table 5). We find similar effects in both rural (Table 8) and urban areas (Table 9), where being male is both statistically and economically significant in increasing the probability of being enrolled in school and having some schooling, rather than never being enrolled.

Our empirical results also point to female headship as having an adverse impact on schooling outcomes, particularly in rural areas and among female children, both rural and urban. For example, relative to children who have never been to school, rural children living in female-headed households are over two and a half times less likely to have had any schooling (Table 8). However, this variable has an even greater effect on rural and urban females. A rural or urban female child living under female headship is nearly seven times more likely to have never attended school rather than have some schooling (see Tables 12 & 13). These results contrast with the findings of Lloyd and Blanc (1996), who find that girls fare better under female headship in sub-Saharan Africa.

The education level of the household head's spouse is our measure of the extent to which mother's education affects schooling outcomes. Surprisingly, we find that this variable has no effect in any of our models. There are two possible explanations for this result. Since a majority of the households in our sample have male heads, this may indicate that females do not have much of a say in decisions regarding their children's school. Note also, that the level of spouse's education is generally low in our sample, across each of the three schooling outcomes.

The influence of rural-urban residence

Urban residence emerges as a strong factor in improving schooling outcomes. Our estimation results show that, relative to the base of 'never enrolled' in school, living in urban areas is statistically and economically significant at the1% level, in increasing the odds of both being currently enrolled and having some schooling, for the entire sample, for males and females (Tables 5, 6 & 7). For example, according to the odds-ratio in columns 3 and 6 of Table 5, using 'never enrolled' as the base, the odds of having some schooling or being currently enrolled increases for an urban child by at least three times and two and half times respectively. Similar sized effects are observed in the male and female samples (Tables 6 & 7).

As discussed above, the child's gender affects schooling outcomes in both rural and urban areas. However, a comparison of schooling outcomes between rural and urban areas (Tables 8 and 9) shows that the effect of gender is marginally greater in rural areas. For example, relative to rural females, rural males are nearly three times more likely to have had some schooling and approximately twice as likely to be currently enrolled. We find similar effects in urban areas.

Living in female-headed households has a statistically significant negative impact on schooling attendance, for rural and urban females as discussed previously. This effect is very important in reducing the odds of having some schooling, with a rural or urban female child living under female headship over six times more likely to have never been enrolled rather than having some schooling. This is contrary to the findings of Ilahi (2001), who shows that in rural areas of Peru, female headship leads to lower child labour among males but has no impact on females.

With regard to household specific variables, household income (as proxied by per capita income) is statistically (but not economically) significant at increasing the odds of being currently enrolled relative to never enrolled for all the models with the exceptions of the urban sample and urban males.

The influence of other household characteristics

When there is no education reported for the household head, the estimated coefficient is statistically significant in reducing the odds of dropping out of school for all models, with the exception of urban males and the urban sample. For currently enrolled children, the estimated coefficients are significant for all the models. The estimated coefficient for head's age is only significant for currently being in school versus never been at school for rural and rural male models. However, for children that have dropped out of school relative to never been in school, the estimated coefficients are significant for all the models with the exceptions of urban and urban male samples.

The estimated coefficients for the head of household's schooling for children who are currently enrolled in school are never significant. However, with the exception of rural males, in all the models, for the group of children who have dropped out of school, the estimated coefficients for head's schooling are significant and negative. This result is unexpected but there are a few possible explanations. A large proportion (59%) of the household heads in the sample has a low level of education (less than 6 years). Moreover, as a large part of the households in the sample live in the rural sector, this lack of education may mean that the quality of schools is considered to be poor or that households do not value education as much as is desirable. As a result, children may be working or households may be unable to afford schooling.

The estimated coefficients of age (always positive) and age-squared (always negative) are also usually very significant. The exceptions to this are age-squared for rural and urban males who have dropped out of school. These results indicate that, as age increases, the odds of dropping out of school or being currently in school compared with never been in school increase significantly. Further, the quadratic relationship between age and the variable, chschool, indicates that the odds of dropping out of school and currently being in school increase but at a decreasing rate.

As there were a number of households where the head of the household did not have a spouse, it was important to include this variable as this may have an effect on the level of schooling. The estimated coefficients are only ever significant for the children who have dropped out of school. These coefficients are positive and weakly significant for the entire sample, the rural sample and for rural and urban females. The odds ratios indicate that children are approximately three to four times more likely to have some schooling than no schooling.

Although percapita expenditure is sometimes significant, it is never economically significant. The estimated coefficients are very small and the odds ratios are essentially equal to 1 implying that there is no differential effect for percapita expenditure between never enrolled in school and either currently enrolled or dropping out of school.

5. Conclusions

In this paper we examine the determinants of schooling in Egypt using a nationally representative dataset, to determine if there were systematic gender and rural-urban differences in schooling. Our finding that gender has a significant effect on the probability of being currently enrolled and having some schooling, is consistent with the findings of previous studies. However, unlike previous research, we also examine the extent to which rural-urban residence can interact with gender and influence schooling investment. Not surprisingly, we find that being male and living in urban areas significantly improved schooling outcomes. Male children are not only more likely to be currently enrolled, but relative to females, they are also more likely to have some schooling rather than none at all. Our empirical results also point to female headship as having an adverse impact on schooling outcomes, particularly in rural areas and among female children, both rural and urban. However, this variable has an even greater effect on females, with a female child, rural or urban female living under female headship nearly seven times more likely to have never attended school rather than have some schooling. Our finding that mother's education has no effect on children's schooling is somewhat surprising and is contrary to previous findings.

The incorporation of rural-urban residence and a study of its interaction with gender specific variables also point to some interesting results. We find that the urban effect is particularly strong for females, with urban location increasing the odds of female children being currently enrolled by at least two and half times and having had some schooling by three and a half times. The finding that rural residence has an adverse impact on schooling attendance is especially interesting, given that our data indicates that access to schools is not an issue in rural areas. This suggests the possibility that the opportunity or necessity for rural children to combine schooling with work, may be leading to unfavourable schooling outcomes, particularly for females.

From a policy perspective, our study provides a clear indication of gender bias in schooling investments in Egypt. Our analysis shows that Egypt has

improved schooling opportunities in urban areas. However, more needs to be done in order to improve schooling opportunities, particularly for rural and female children.

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APPENDIX

Table 1: Definition of variables

Dependent variable	
CHSCHOOL	= 1 if never attended school, 2 dropped out of school and 3 if currently enrolled
Child characteristics	
CHAGE	Child's age (in years)
AGE SQUARED	Square of age
CHMALE	= 1 if child is male
Household characteristics	
SIBS	Number of siblings aged 0 to 6 years
HEADAGE	Head of household's age (in years)
DFHEAD	= 1 if female headed household
HSCHOOL	Head of household's schooling (in years)
DHSCH	= 1 if household head's schooling not reported
SPAGE	Head of household's spouse's age (in years)
DNOSP	= 1 if no spouse reported
SPSCHOOL	Head of household's spouse's age (in years)
PERCAP	Per capita expenditure= total household expenditure divided by household size
Regional characteristics	
URBAN	= 1 if child lives in urban areas

Table 2: Descriptive statistics for the whole sample

	Mean	Standard Deviation	Minimum	Maximum
Child characteristics				
Child's age	10.56	2.83	6	15
Dummy for male child	0.52	0.50	0	1
Household characteristics				
Number of siblings below 6 years	0.78	1.00	0	6
Head's age	44.89	9.00	21	85
Dummy for female headship	0.10	0.30	0	1
Head's education level	5.21	5.53	0	20
Dummy if head's education is not reported	0.38	0.49	0	1
Household head's spouse's age (n=2819)	37.65	7.48	16	70
Dummy for no spouse reported	0.08	0.27	0	1
Household head's spouse's education (n=2819)	3.22	4.84	0	20
Household size	7.32	2.77	2	34
Per capita expenditure	150.12	132.16	0	2696.33
Regional characteristics				
Dummy for urban residence	0.36	0.48	0	1

Table 3: Descriptive statistics for the different types of schooling outcomes

	Never attended	Dropped out of school	Currently in school
Child characteristics			
Child's age	9.51 (3.25)	13.29 (1.89)	10.59 (2.66)
Dummy for male child	0.40 (0.49)	0.61 (0.49)	0.54 (0.50)
Household characteristics			
Number of siblings below 6 years	1.04 (1.15)	0.67 (0.89)	0.74 (0.97)
Head's age	45.04 (10.48)	45.16 (8.44)	44.84 (8.71)
Dummy for female headship	0.09 (0.29)	0.15 (0.35)	0.10 (0.30)
Head's education level	2.82 (4.77)	2.27 (3.39)	5.89 (5.59)
Dummy if head's education is not reported	0.64 (0.48)	0.56 (0.50)	0.32 (0.46)
Household head's spouse's age	37.18 (8.45) (n=446)	38.46 (6.89) (n=137)	37.69 (7.30) (n=2236)
Dummy for no spouse reported	0.08 (0.27)	0.17 (0.38)	0.08 (0.27)
Household head's spouse's education	1.59 (3.74) (n=446)	1.23 (2.37) (n=137)	3.67 (5.05) (n=2236)
Household size	8.11 (3.05)	7.51 (2.32)	7.15 (2.71)
Per capita expenditure	109.79 (92.87)	109.30 (61.54)	160.97 (140.05)
Regional characteristics			
Dummy for urban residence	0.14 (0.35)	0.32 (0.47)	0.40 (0.49)

Note: Standard deviations are in parentheses.

Table 4: Comparison of different schooling outcomes by male-female and urban-rural residence

	Never Attended	Dropped out	Currently in School	Total
Female/male comparison				
Female	292 (20%)	65 (4%)	1120 (76%)	1477
Male	192 (12%)	100 (6%)	1301 (82%)	1593
Ratio (female/male)	1.67	0.67	0.93	
Rural/urban comparison				
Rural	414 (21%)	112 (6%)	1454 (73%)	1980
Urban	70 (6%)	53 (5%)	967 (89%)	1090
Ratio (rural/urban)	3.5	1.2	0.82	

Note: The first term in each entry is the absolute number, figures in parentheses are % of the row and the ratios are expressed as a ratio of the %.

Table 5: Regression results: Determinants of schooling for the entire sample

	Dropped out of School			Currently in School		
	Coefficient	**Odds-ratio**	**P-value**	**Coefficient**	**Odds-ratio**	**P-value**
CONSTANT	-11.77		0.00***	-7.79		0.00***
URBAN	1.10	3.01	0.00***	0.84	2.32	0.00***
SIBS	-0.18	0.83	0.09*	-0.09	0.92	0.11
CHAGE	1.96	1.21	0.00***	1.83	0.95	0.00***
AGE-SQUARED	-0.07		0.00***	-0.08		0.00***
CHMALE	0.97	2.63	0.00***	0.67	1.96	0.00***
HEADAGE	-0.04	0.96	0.00***	-0.01	0.99	0.16
HSCHOOL	-0.18	0.83	0.00***	0.00	1.00	0.95
DHSCH	-1.44	0.24	0.00***	-1.14	0.32	0.00***
DFHEAD	-0.75	0.47	0.13	0.40	1.49	0.17
DNOSP	0.82	2.26	0.09*	-0.21	0.81	0.51
SPSCHOOL	-0.04	0.96	0.34	0.01	1.01	0.61
PERCAP	0.00	1.00	0.57	0.00	1.00	0.00***

Table 6: Determinants of schooling: Males

	Dropped out of school			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
CONSTANT	-11.50		0.01***	-5.83		0.00***
URBAN	1.24	3.45	0.00***	0.91	2.48	0.00***
SIBS	-0.18	0.83	0.27	-0.15	0.86	0.03**
CHAGE	1.71	1.32	0.03**	1.55	0.91	0.00***
AGE-SQUARED	-0.05		0.09*	-0.07		0.00***
HEADAGE	-0.03	0.97	0.07*	-0.01	0.99	0.17
HSCHOOL	-0.14	0.87	0.06*	0.02	1.02	0.52
DHSCH	-1.44	0.24	0.00***	-1.24	0.29	0.00***
DFHEAD	-0.19	0.83	0.79	0.41	1.51	0.30
DNOSP	0.55	1.73	0.44	-0.26	0.77	0.54
SPSCHOOL	-0.07	0.93	0.29	0.00	1.00	0.99
PERCAP	0.00	1.00	0.92	0.00	1.00	0.04**

Note: In all our tables, *** indicates significant at 1% level, ** indicates significant at 5% level and * indicates significant at 10% level. The odds ratio for age is calculated at the mean of 13 for dropping out of school and at the mean of 11 for currently enrolled.

Table 7: Determinants of schooling: Females

	Dropped out of School			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
CONSTANT	-12.18		0.00***	-9.36		0.00***
URBAN	1.01	2.74	0.00***	0.78	2.18	0.00***
SIBS	-0.16	0.85	0.27	-0.03	0.97	0.75
CHAGE	2.32	1.15	0.00***	2.13	0.99	0.00***
AGE-SQUARED	-0.08		0.00***	-0.09		0.00***
HEADAGE	-0.05	0.95	0.00***	-0.01	0.99	0.54
HSCHOOL	-0.22	0.80	0.00***	-0.02	0.98	0.52
DHSCH	-1.33	0.27	0.01***	-0.98	0.37	0.00***
DFHEAD	-1.15	0.32	0.10	0.40	1.49	0.35
DNOSP	0.86	2.37	0.21	-0.37	0.69	0.44
SPSCHOOL	-0.01	0.99	0.82	0.02	1.02	0.49
PERCAP	0.00	1.00	0.92	0.01	1.01	0.00***

Table 8: Determinants of schooling: Rural

	Dropped out of school			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
CONSTANT	-8.80		0.00***	-6.45		0.00***
SIBS	-0.16	0.85	0.16	-0.05	0.95	0.39
CHAGE	1.47	1.32	0.00***	1.55	0.93	0.00***
AGE-SQUARED	-0.04		0.04**	-0.07		0.00***
CHMALE	1.05	2.86	0.00***	0.68	1.97	0.00***
HEADAGE	-0.05	0.95	0.00***	-0.01	0.99	0.03**
HSCHOOL	-0.22	0.80	0.00***	0.01	1.01	0.60
DHSCH	-1.87	0.15	0.00***	-1.00	0.37	0.00***
DFHEAD	-0.98	0.37	0.09*	0.43	1.54	0.16
DNOSP	1.03	2.81	0.06*	-0.04	0.96	0.89
SPSCHOOL	-0.06	0.94	0.35	0.03	1.03	0.30
PERCAP	0.00	1.00	0.99	0.01	1.01	0.00***

Note: In all our tables, *** indicates significant at 1% level, ** indicates significant at 5% level and * indicates significant at 10% level. The odds ratio for age is calculated at the mean of 13 for dropping out of school and at the mean of 11 for currently enrolled.

Table 9: Determinants of schooling: Urban

	Dropped out of School			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
CONSTANT	-22.33		0.00***	-14.46		0.00***
SIBS	-0.27	0.76	0.36	-0.24	0.79	0.21
CHAGE	3.88	0.93	0.00***	3.17	1.01	0.00***
AGE-SQUARED	-0.15		0.00***	-0.14		0.00***
CHMALE	0.78	2.17	0.06*	0.64	1.90	0.03**
HEADAGE	-0.01	0.99	0.63	0.02	1.02	0.25
HSCHOOL	-0.14	0.87	0.09*	-0.04	0.96	0.35
DHSCH	-0.55	0.58	0.45	-1.51	0.22	0.00***
DFHEAD	-0.79	0.45	0.53	-0.16	0.85	0.86
DNOSP	0.30	1.36	0.81	-0.65	0.52	0.50
SPSCHOOL	0.01	1.01	0.85	0.02	1.02	0.52
PERCAP	0.00	1.00	0.33	0.00	1.00	0.26

Table 10: Determinants of schooling: Rural male

	Dropped out of School			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
Constant	-11.49		0.06*	-4.03		0.00***
SIBS	-0.24	0.79	0.23	-0.11	0.90	0.15
CHAGE	1.69	1.34	0.09*	1.16	0.88	0.00***
AGE-SQUARED	-0.05		0.21	-0.06		0.00***
HEADAGE	-0.04	0.96	0.05**	-0.02	0.98	0.05**
HSCHOOL	-0.10	0.91	0.30	0.05	1.06	0.14
DHSCH	-1.52	0.22	0.01***	-0.90	0.41	0.00***
DFHEAD	0.18	1.20	0.82	0.42	1.52	0.31
DNOSP	0.45	1.57	0.56	-0.15	0.86	0.74
SPSCHOOL	-0.21	0.81	0.16	0.02	1.02	0.57
PERCAP	0.00	1.00	0.35	0.01	1.01	0.00***

Note: In all our tables, *** indicates significant at 1% level, ** indicates significant at 5% level and * indicates significant at 10% level. The odds ratio for age is calculated at the mean of 13 for dropping out of school and at the mean of 11 for currently enrolled.

Table 11: Determinants of schooling: Urban male

	Dropped out of School			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
Constant	-16.82		0.04**	-13.07		0.00***
SIBS	-0.06	0.94	0.88	-0.34	0.71	0.21
CHAGE	2.77	1.27	0.04**	2.99	1.09	0.00***
AGE-SQUARED	-0.09		0.11	-0.13		0.00***
HEADAGE	0.01	1.01	0.80	0.02	1.02	0.45
HSCHOOL	-0.26	0.77	0.06*	-0.09	0.92	0.16
DHSCH	-1.78	0.17	0.10	-2.34	0.10	0.00***
DFHEAD	-1.81	0.16	0.37	-0.09	0.92	0.95
DNOSP	0.92	2.51	0.63	-0.41	0.67	0.78
SPSCHOOL	0.06	1.06	0.55	0.03	1.03	0.58
PERCAP	0.00	1.00	0.38	0.00	1.00	0.52

Table 12: Determinants of schooling: Rural female

	Dropped out of School			Currently in School		
	Coefficient	Odds-ratio	P-value	Coefficient	Odds-ratio	P-value
Constant	-8.10		0.02**	-8.29		0.00***
SIBS	-0.14	0.87	0.37	0.00	1.00	0.97
CHAGE	1.68	1.30	0.01***	1.95	1.00	0.00***
AGE-SQUARED	-0.05		0.04**	-0.09		0.00***
HEADAGE	-0.05	0.95	0.01***	-0.01	0.99	0.23
HSCHOOL	-0.32	0.73	0.00***	-0.03	0.97	0.41
DHSCH	-2.10	0.12	0.00***	-1.05	0.35	0.00***
DFHEAD	-1.88	0.15	0.02**	0.45	1.57	0.32
DNOSP	1.34	3.81	0.09*	-0.17	0.84	0.74
SPSCHOOL	0.01	1.01	0.89	0.04	1.04	0.33
PERCAP	0.00	1.00	0.54	0.01	1.01	0.00***

Note: In all our tables, *** indicates significant at 1% level, ** indicates significant at 5% level and * indicates significant at 10% level. The odds ratio for age is calculated at the mean of 13 for dropping out of school and at the mean of 11 for currently enrolled.

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