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IS FREE BASIC EDUCATION IN EGYPT A REALITY OR A MYTH?

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1. Introduction

Free education—promised in the Egyptian constitution—is considered a fundamental right of every Egyptian. Over the past three decades, Egypt has made substantial progress in increasing access to education and raising educational attainment. Gross enrollment rates in primary education have increased from 67 percent in 1980 to 112 percent in 2010 (World Bank 2014). At the same time the average years of schooling went from 2.7 to 7.1, putting Egypt among the top 20 countries globally in terms of increases in school attainment over that period (Campante and Chor 2012). The focus in Egypt, as in many countries and in the international discourse on access to education, has essentially been on increasing enrollments and attainment, often to the neglect of other important dimensions of education. There has been, until recently, insufficient concern about the demonstrably low school quality and low levels of learning students are achieving (Assaad 2014; Salehi-Isfahani, Hassine, and Assaad 2014; World Bank 2008). There has also been limited societal debate about the substantial inefficiencies and inequities associated with public expenditure on education (El-Baradei 2013). These issues mean that while education is theoretically free, substantial additional spending is often required by families to ensure that children learn and succeed within the education system. The need for additional spending contributes to young people's unequal opportunities to attain education or achieve learning (Assaad, Salehi-Isfahani, and Hendy 2014; Assaad 2013; El-Baradei 2013; Salehi-Isfahani, Hassine, and Assaad 2014; World Bank 2012).

The problems of low quality, inefficiencies and unequal opportunities start within the basic education system. In part because public funding of basic education is inadequate (El-Baradei 2013), the quality of basic education is low. Egypt was one of the lowest ranked countries in the 2014-2015 World Competitiveness Report (141st out of 144 countries) in terms of the quality of primary education (Schwab 2014).[3] In part because the quality of education is low, investments in education may generate low returns. Annualized wage returns to basic education are estimated to be just 1 percent per year of education (Said 2015). The returns to basic education in Egypt are less than one-twenty-fifth the international average of 26.6 percent per year of primary education (Psacharopoulos and Patrinos 2004). If only returns in the private sector are taken into account, returns are even worse, less than 1 percent per year (0.1 percent per year for males and 0.4 percent per year for females). While returns to all levels of education are relatively low in Egypt compared to other countries, basic education in Egypt has lower returns than secondary or higher education (Said 2015).

When the quality of education in public schools is poor, families who can afford it must often use other means to help their children succeed in school. In Egypt, the poor quality of public basic education has generated substantial demand for educational supplements, such as private schooling, parental help, help groups, and especially private tutoring. Spending on basic education, and particularly on private tutoring is a substantial and rising share of the budgets of Egyptian households with school-age children (El-Baradei 2013). Given the low quality of free public education, this supplemental private spending may be a critical element for succeeding in school, for those who can afford it.

This paper examines whether free basic education is a reality or a myth in Egypt. The discussion begins with an examination of equity in access to, success in, and completion of basic education. The paper then investigates the costs of basic education, which is in theory free, in terms of use of, and spending on, education supplements such as private schooling and private tutoring or help groups, as well as the provision of study help by family members. Two key outcomes of basic education are also explored: the performance of students on tests during basic education, and their ability to pursue the general secondary track (higher education bound), as opposed to poorly regarded vocational track after basic education. The differences in education experiences and

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[3] Based on the World Economic Forum Executive Opinion Survey.

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outcomes by gender, socio-economic status, and place of residence are explored to illustrate how the need to supplement publicly provided basic education contributes to unequal opportunities for young Egyptians.

2. Research Questions

The overarching question that guides the paper is whether free basic education is a reality for most Egyptians or if substantial private spending on education is necessary for success. If spending is necessary, how does success in basic education vary based on children's social origins and the family resources their families are able to invest in their education? This will be investigated through two linked questions:

1) Is there equality in accessing basic education? What inequalities of opportunity in completing and succeeding in basic education occur in terms of gender, socio-economic background, and region?

2) What role do education supplements, especially private tutoring, play in basic education and inequality of opportunity? What differences in education supplements and education outcomes occur by gender, socio-economic background, and region?

3. FRAMEWORKS

In investigating whether free basic education in Egypt is a myth or a reality, we connect three interlinked issues. The first is the unequal and inefficient nature of public investments in education, making it difficult for many young Egyptians to learn and succeed in school. The second issue is the high and unequal investments in private supplements to education that many parents consider necessary for their children to succeed in the education system. Lastly, the result of the combined inadequacy of the public education system and unequal investments in private education is unequal opportunities for Egyptians to succeed in basic education and beyond. This section provides some background, both theoretical and empirical, on these issues both globally and in Egypt.

3.1 Unequal and Inefficient Public Investments in Education

There are a variety of justifications for public subsidization of education. The efficiency argument for public spending rests on substantial market failures that cause private demand for education to be lower than would be socially optimal. Substantial externalities (public benefits and spillovers) such as improvements in child health, reduced fertility, more effective political participation, or decreased crime are examples of justifications for public expenditure on education (Lindelow 2008; Schultz 2002; Temple and Reynolds 2007). That parents, deciding on education for their children, will not capture the full benefits can also lead to the under-provision of education (Edmonds 2008). Information issues, where parents or youth are unaware of the true returns to education (Jensen 2010), or credit constraints to investing in education (Schultz 1961), all might act as justifications for public investment. Public investment should particularly target the levels of education and individuals who would not otherwise receive (enough) expenditure in the private market, as it is at these points that there is a justification for public investment in education. Currently, Egypt publicly funds primary through higher education, a policy that will, at least in the abstract, overcome some of the market failures, but at the expense of substantial spending on those who would attend and can afford to spend on education even if education were not free.

Public investments should not only promote efficiency in the overall economy, but the investments themselves should be efficient. High rates of grade repetition and dropout in Egypt (Elbadawy 2015; Krafft 2012a) are symptomatic of inefficiencies within the education system. When young people repeat a grade, it doubles the amount of spending required to learn the same material and is a signal that the initial year of schooling was of insufficient quality to provide mastery of the material. Likewise, when young people drop out of school, it is often a symptom that the school system is failing to

educate them. In examining the reasons stated for dropping out of school in a recent survey, after "I did not want to finish" (40 percent) and "the cost of uniforms and school fees" (19 percent), the next most common reason for dropout stated was "not doing well in school" (15 percent) (Population Council 2011). This reason disproportionately affected children from less wealthy families and from rural areas. Research has demonstrated that children in Egypt are much more likely to drop out when experiencing a low-quality school environment (Hanushek, Lavy, and Hitomi 2008; Lloyd et al. 2003). When children cannot succeed in school, particularly when it is due to the inadequate quality of schooling, it is clear that Egyptian society is not meeting its promise of a free education for all.

In addition to issues of efficiency justifying public investment in education, issues of equity may motivate the provision or financing of education through public channels. The equity argument for public spending on education rests on equalizing access to education across people of different social circumstances. To do so, public investment needs to target disadvantaged children to compensate for otherwise poor early environments, high opportunity costs, or excessive discount rates and an absence of financing. Currently in Egypt, public education funding is essentially regressive. Per pupil public education funding increases with the level of education, so that those in higher education receive the most funding (El-Baradei 2013). These are, however, the wealthiest individuals in society, creating substantial inequality and providing the most funding to those who need the state's support the least (Assaad 2013). Thus, public funding prioritizes higher levels of education for some at the cost of universal high quality basic education for all. A policy of free public education at all levels, intended to provide opportunity for all, ends up instead in reproducing an unequal and regressive system.

3.2 High and Unequal Investments in Education Supplements

The inadequacy and inefficiency of public spending on basic education in Egypt results in the need for substantial private investments (by those who can afford it) in the form of educational supplements that reinforce quality and inequality issues. For instance, private tutoring is so widespread and extensive in Egypt that many students will skip attending school, especially in key exam years, and rely on private tutors for their instruction (Population Council 2011). While private tutoring can have positive impacts, such as improved learning, it also can misalign teachers' incentives, create distortions in the curricula, and worsen inequalities (Bray 2003). In an environment with both school day teaching and supplemental private tutoring, private tutoring creates an incentive for teachers to teach less during the school day.

In Egypt, teachers play a key role in whether basic education alone is adequate for student success. A number of forces affect teachers' efforts in school. Teacher pay has been largely stagnant in the face of rising inflation, yet teachers' employment, as civil servants, is secure and their pay is unrelated to their performance in the classroom (Ille 2014). Teachers therefore do not have strong incentives to perform well in their regular teaching. Additionally, they are motivated to generate income through other routes, such as private tutoring. This creates a serious incentive problem in the classroom; teachers will have higher income when they teach less. In order to generate demand for private tutoring, teachers may reduce the quality of schooling during regular school hours (Ille 2014; Jayachandran 2014). The lower a teacher's effort level in the classroom, the greater the incentives for students to take private tutoring with the teacher, thus increasing his or her income (Ille 2014). As a result, when teachers can offer private tutoring, it reduces student learning and achievement, particularly for poorer students who are less able to access tutoring (Ille 2014; Jayachandran 2014). Thus, while private tutoring in Egypt may be necessary for success, it also further distorts the functioning of the education system.

3.3   Unequal Opportunities to Succeed in Basic Education

On the surface, the policy of free education in Egypt should provide children with equal chances to succeed; no child should be prevented from attaining a basic education because his or her family cannot afford school fees. This ideal is conceptually aligned with the idea of equal opportunity. Due to unequal public funding and low quality public schooling, compounded by the need for large private investments in education, the reality is severe inequality in the opportunity to learn and succeed. To assess inequality of opportunity in basic education, we draw on the framework developed by the well-known economist and philosopher John Roemer (1998). Conceptually, some inequality in outcomes, such as wages in the labor market or test scores in school, is a desirable aspect of a well-performing economy. When individuals are rewarded with higher wages or better grades because of their efforts, this creates strong incentives for higher performance. However, inequality due to circumstances beyond an individual's control—what is termed inequality of opportunity—is problematic both as a matter of social justice and in disconnecting efforts from outcomes. When a girl in rural Upper Egypt is less likely to complete basic education simply because of her gender and place of birth, this is inequality of opportunity. Inequality of opportunity can be assessed empirically by looking at differences in education outcomes by socio-economic, gender, and regional characteristics.

There is a substantial body of existing evidence indicating that there is inequality of opportunity in access to basic education in Egypt. This inequality starts at school entry. Although entry into primary school for Egyptian children is becoming almost universal, a most-marginalized group, primarily girls from poor families in rural Upper Egypt, are still disadvantaged in that regard (Elbadawy 2015; Krafft 2012a). Among those who do enter the school system, poorer youth are more likely to repeat a grade and also are more likely to drop out during basic education (Elbadawy 2015; Krafft 2012a). As well as unequal attainment, students experience unequal school quality depending on their background, and achieve unequal levels of learning (Assaad, Salehi-Isfahani, and Hendy 2014; Population Council 2011; Salehi-Isfahani, Hassine, and Assaad 2014). We provide additional evidence on inequality of opportunity, linking the roles of low-quality public schools, supplemental private investments, and ultimately unequal opportunities.

4.   DATA AND METHODS

Surveys are the primary source of data used to assess the question of whether free and universal basic education is a myth or a reality for children in Egypt. We rely on the nationally-representative Egypt Labor Market Panel Survey (ELMPS) of 2012, which includes rich information on education, including private supplements to education, as well as young people's background and circumstances. The ELMPS 2012 is the third round of a longitudinal survey,[4] which allows us to look at the outcomes of students in the most recent round of the survey based on their circumstances in earlier rounds. For instance, we can look at how the wealth of a young person's household in 2006 affected their probability of completing basic education by 2012. This allows us to be sure that we are observing how family circumstances affect education—not how education affects the economic outcomes of the household.

The paper primarily relies on descriptive statistics to examine whether and how inequality in access to basic education, education supplements, and public spending occur along gender, socio-economic, and regional lines. Multivariate analyses are used to consider the net effects of different characteristics on outcomes. Although these methods are unable to identify causal relationships, they can identify important associations, and are interpreted as such.

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[4] See Assaad and Krafft (2013) for detailed information on the rounds of the ELMPS.

5. Background: The Structure of the Education System in Egypt

Although pre-primary enrollments are expanding (Krafft 2012b), most young people in Egypt enter school at the primary stage. On-time entry occurs at age six, and primary school comprises grades one through six. Upon completion of primary education, students proceed to preparatory school for grades 7-9, which correspond to ages 12-14 if a student is progressing on time. The primary and preparatory stages comprise basic, compulsory education in Egypt. If students continue beyond basic education, they are tracked into either vocational secondary, which is usually a terminal degree, or general secondary, which implicitly guarantees access to higher education if the student completes the stage. Higher education comprises post-secondary technical institutes, which are two-year institutions, higher institutes and universities, which are four-year institutions and in some cases longer. Passing from the basic to the secondary stage or from the secondary to higher education stage is contingent on high-stakes exams that not only determine whether the student is allowed to continue, but also determine the type of education they are able to pursue.

Figure 1. Structure of the Egyptian Education System

|		**Vocational secondary**	**Post-secondary institutes**
		Grades 10-12	Two-year
Basic education		Usually terminal	
Primary⇒	**Preparatory⇒**		**Higher institutes**
Grades 1-6	Grades 7-9		Four-year
	End of compulsory schooling	**General secondary⇒**	**University**
		Grades 10-12	Four-year
(Ages 6-11)	(Ages 12-14)	(Ages 15-17)	(Ages 18 and up)

Note: Ages in parentheses are ideal, assuming on-time entry and no repetition.

6. BASIC EDUCATION: ACCESS, TYPES OF SCHOOLS, AND COMPLETION

6.1 Who Accesses Education?

There has been substantial progress over time in whether children actually enter primary school in Egypt (Figure 2). For Egyptians born in the 1950s, a substantial proportion never entered school and there was also a large gender gap in access. As shown in Figure 2, fewer than 50 percent of females born in the 1950s entered school, while the rate among males born in that decade ranged from 65 to 80 percent. Among more recent birth cohorts, starting with those born around the year 2000, school entry was nearly universal. Additionally, the percentage of girls entering school has nearly caught up with that of boys for the cohorts born after the mid-1990s. Among the most recent birth cohorts who are of school entry age, individuals born from 2000 to 2002, only 1 percent of boys and less than 4 percent of girls did not yet enter school. Essentially, the primary challenge facing the Egyptian education system has shifted over time, from a historical challenge of ensuring that students entered school, to a challenge of ensuring that students complete basic education and achieve an adequate level of learning.

Figure 2. School Entry by Year of Birth and Gender, 3 Period Moving Average (Percentage)
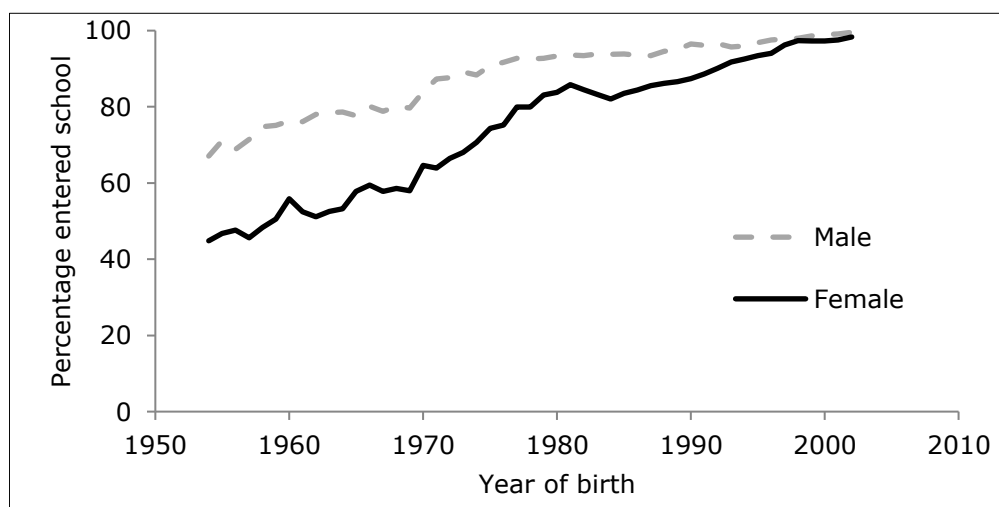
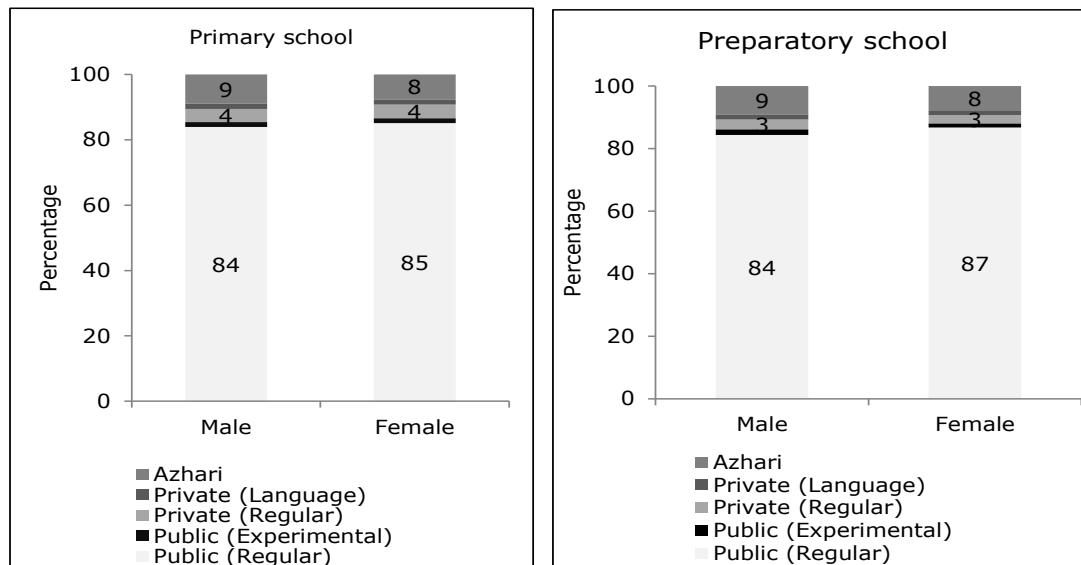*Source*: Authors' calculations based on ELMPS 2012.

6.2 What Types of Basic Education do Students Attend?

One of the methods families can use to address the inadequate quality of public basic education is to invest in education outside of the regular public system. In Egypt, alternatives to the regular public education system include public experimental schools, private regular or language schools (the latter teaching in a foreign language such as English or French), or Azhari (religious) schools. With the exception of Azhari schools, which are overseen by the Al-Azhar institution, all of these school types are overseen and regulated by the Ministry of Education and follow a standard curriculum.[5]

The majority of students attend regular public schools for the basic education stage (Figure 3). Between 84-87 percent of male and female students in primary and preparatory schools are in regular public schools. Azhari schools are the second most popular choice for primary and preparatory education, enrolling 8-9 percent of students. Boys are slightly more likely to enroll in Azhari schools than girls. Private regular schools are the next most common form of education, enrolling 2-4 percent of students. Private language schools and public experimental schools each enroll only around 1 percent of students.

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[5] In recent years, foreign schools that provide international credentials have been introduced in Egypt. These schools are still few in number and are very expensive by Egyptian standards. As a result they only serve a tiny proportion of the wealthiest families, and only a few children attending these schools appear in our surveys. We therefore include this category of schools with private language schools in our analyses. Home schooling, which is also used by only a few respondents, is included in private regular schooling.

**Figure 3. School Type by Level and Gender (Percentage)**

Primary school

Preparatory school

Note: School type is for youth ages 13-22 in 2012.

It is primarily the richest households that send their children to private schools and public experimental schools (Figure 4).[6] This is particularly true for primary schools where about 37 percent of students from the richest fifth of households attend public experimental or private schools. Azhari schools remain a common choice for students in both primary and preparatory education regardless of wealth. Rates of attendance of students in Azhari schools from across all wealth levels fall within a range of 6 percent to 11 percent.

Figure 4. School Type by Level and Parental Wealth Quintile (Percentage)
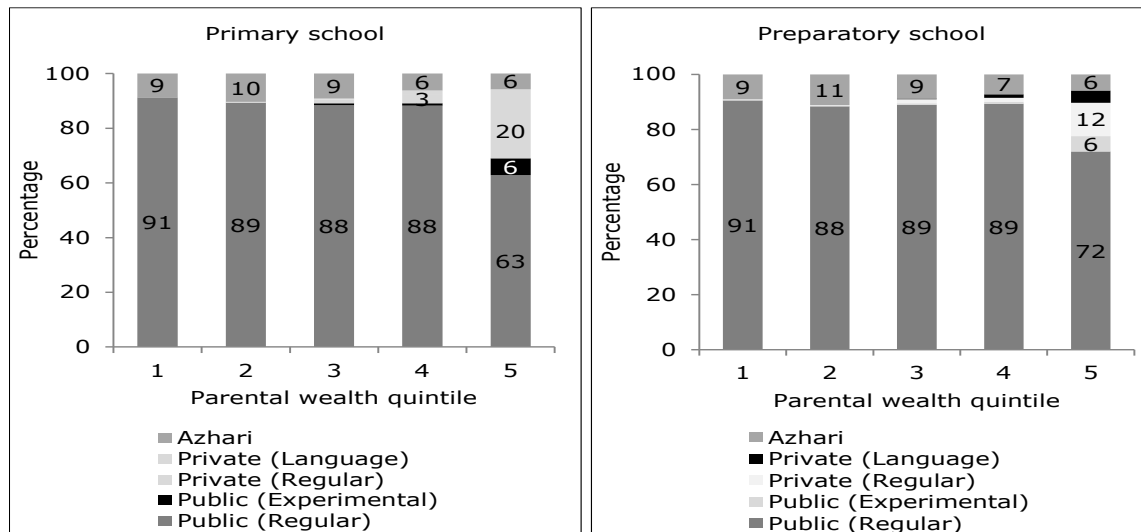
Primary school

Preparatory school

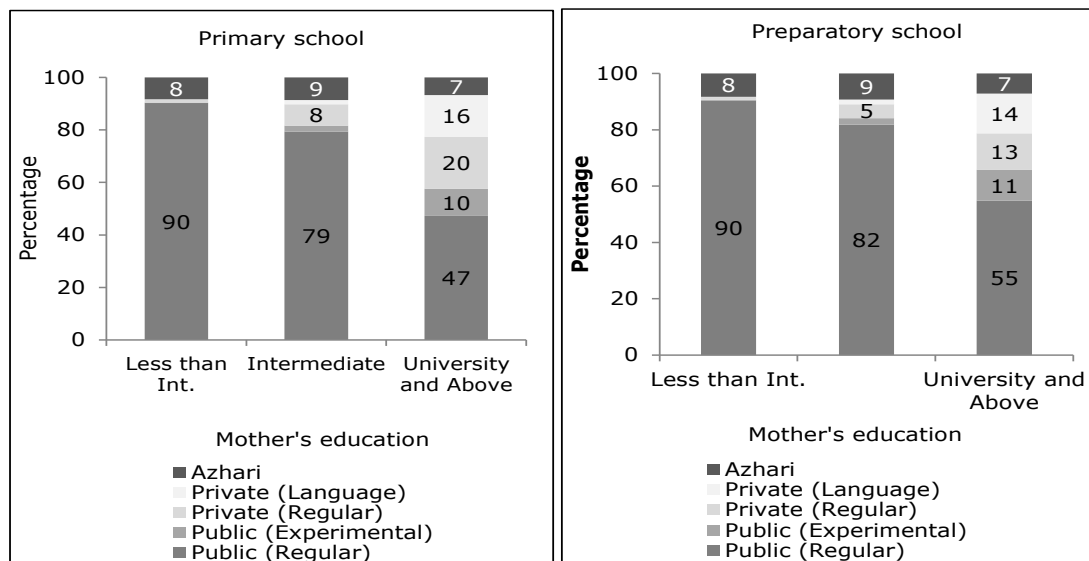*Note*: School type is for youth ages 13-22 in 2012. Parents' wealth quintile is from 2006.

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[6] When examining youth who are not all currently in school, we use the wealth quintile of the individuals' households in 2006 to make sure that the individual was still living with his/her parents and thus the variable truly captures parental wealth. Household wealth quintiles are based on a wealth index calculated using factor analysis on household ownership of a large number of durable assets and housing conditions, a common approach (Filmer and Pritchett 2001).

Given that the effects of father's and mother's education are fairly similar, we present graphs showing outcomes only by mother's education. Although fathers tend to be somewhat more educated than mothers, the education levels of the two parents are usually closely related. Almost all (96 percent) of youth with fathers with less than intermediate education also have mothers with less than intermediate education. Among young people whose fathers have a university education and above, few (16 percent) have mothers with less than intermediate education. Most have mothers with intermediate (42 percent) or university education and above (42 percent). We focus on mothers because fathers' and mothers' education follow similar patterns and other studies have shown that mothers play a more important role in determining children's educational outcomes (Schultz 2002). Fathers' education is more likely to determine household income or wealth, effects that we examine separately.

Households with highly-educated mothers were more likely to send their children to private schools (Figure 5). For primary education, students with university-educated mothers had a 35 percent chance of attending private schools. Public experimental schools also are an option for households with highly-educated mothers, as around 10 percent of children with highly educated mothers attend public experimental schools. There is some use of private schooling among those with intermediate educated mothers, but essentially none among youth with mothers with less than secondary education. Meanwhile, Azhari schools continue to be used at a constant rate (around 8 percent) regardless of mother's education.

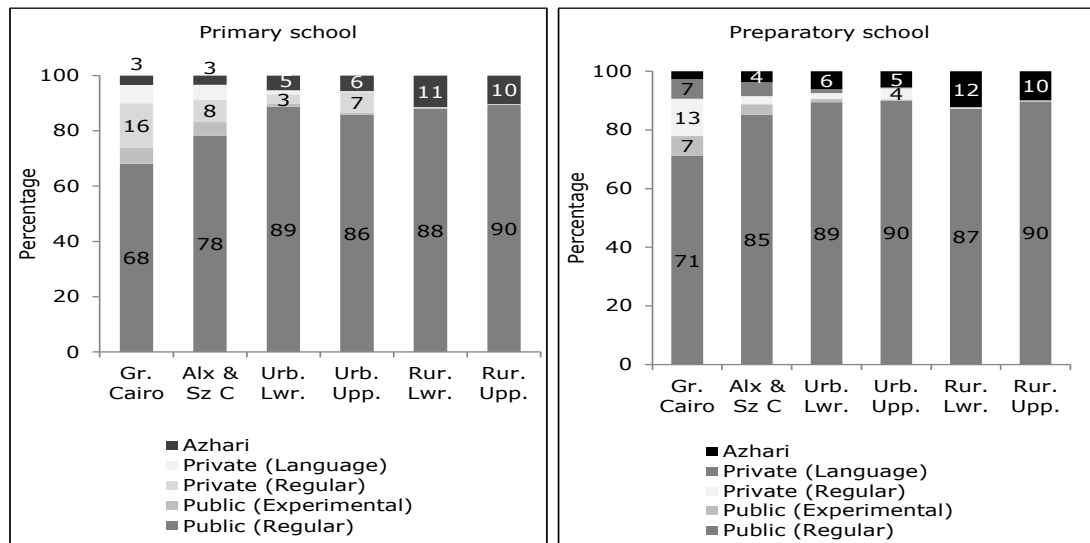**Figure 5. School Type by Level and Mother's Education (Percentage)**

Source: Authors' calculations based on ELMPS 2012.

Note: School type is for youth ages 13-22 in 2012.

Use of private schools in basic education mostly occurs in urban regions, particularly Greater Cairo (Figure 6). Twenty-two percent of students in Greater Cairo attend private primary schools, with a slightly lower percentage in the case of preparatory schools. Children in the Alexandria and Suez Canal region have the next highest use of private schools, and both regions have substantial enrollments in public experimental schools. Children in urban Lower and Upper Egypt attend some private schooling, but that rate is less than 5 percent in either of these regions. Few students attend public experimental schools in either Lower or Upper Egypt. Very few children attend private schools in rural areas. Azhari schools are more popular in rural areas, with 10-12 percent of students attending this type of school.

Figure 6. School Type by Region (Percentage)

Source: Authors' calculations based on ELMPS 2012.

Note: School type is for youth ages 13-22 in 2012. Urb=Urban, Rur= Rural, Upp = Upper, Lwr =Lower

The vast majority of students are attending regular public schools at the basic education stage in Egypt. Azhari schools are a common alternative, particularly in rural areas. In urban areas and among wealthier and more educated families, private schools are more common and may be a way to circumvent the low quality of public schools. More privileged families also are more likely to make use of the public experimental schools. It is clear that there are unequal opportunities for young people to access alternative forms of education outside the regular public education system.

6.3 Who Struggles during Basic Education?

While Egypt has made great strides in ensuring children enter school, their success in basic education is not assured. One helpful metric to assess both the quality and efficiency of the education system is whether or not students are repeating grades during school. Repeating a grade occurs when a student is unable to master the material covered in a grade during the course of the school year. High grade repetition rates are a symptom of low-quality education. Repetition also contributes to inefficiency and high costs, as it takes twice the investment for the student to master the same material. In this section, we assess the chances a student repeats a grade during basic education[7] as a symptom of students' struggles in basic education.

Grade repetition is common in Egypt, particularly during the preparatory stage (Figure 7). Around 5 percent of students repeat at least one grade in primary education, and 9 percent in preparatory education. Male students are more likely to repeat a grade than female students. While 11 percent of male students repeat in preparatory, only 6 percent of female students do so. There is a similar gap at the preparatory stage as well (7 percent male, 4 percent female repetition). Among those who enter a level of schooling, female students are less likely to struggle.

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[7] Students could repeat more than once within a level, but we do not quantify this possibility.

Figure 7. Percentage Repeating a Grade by Gender and School Level
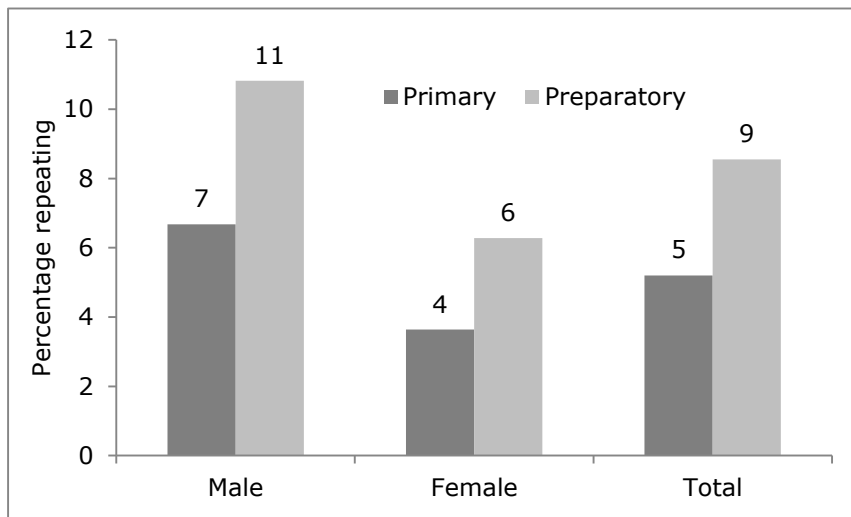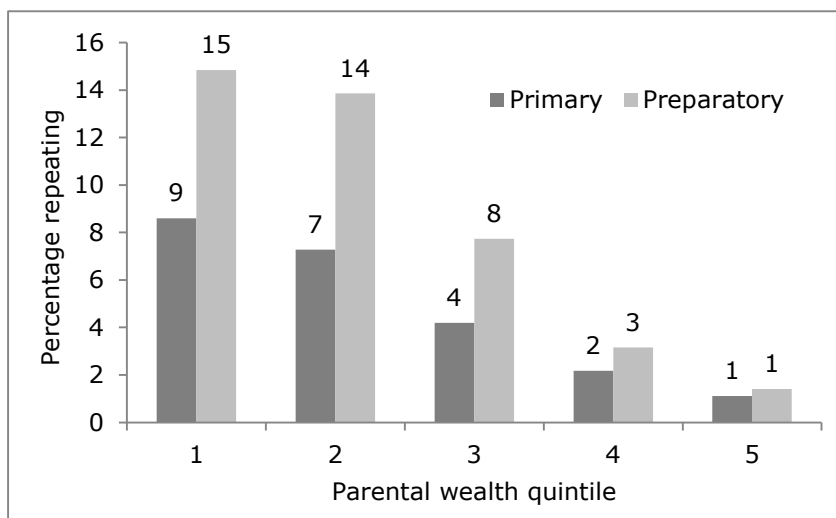

Source: Authors' calculations based on ELMPS 2012.

Note: Youth ages 16-22 in 2012 who attended these levels in the past.

The students who struggle the most to master the material of basic education are the students from the poorest wealth quintiles. Figure 8 shows the percentage of students who repeated a grade during primary or preparatory by wealth. Students in the bottom two wealth quintiles do by far the worst; 7-9 percent repeat during primary and 14-15 percent repeat in preparatory. In contrast, students from the richest wealth quintile have only a 1 percent chance of repeating in primary or preparatory. Family resources clearly intersect with the chances that children will succeed or struggle in basic education.

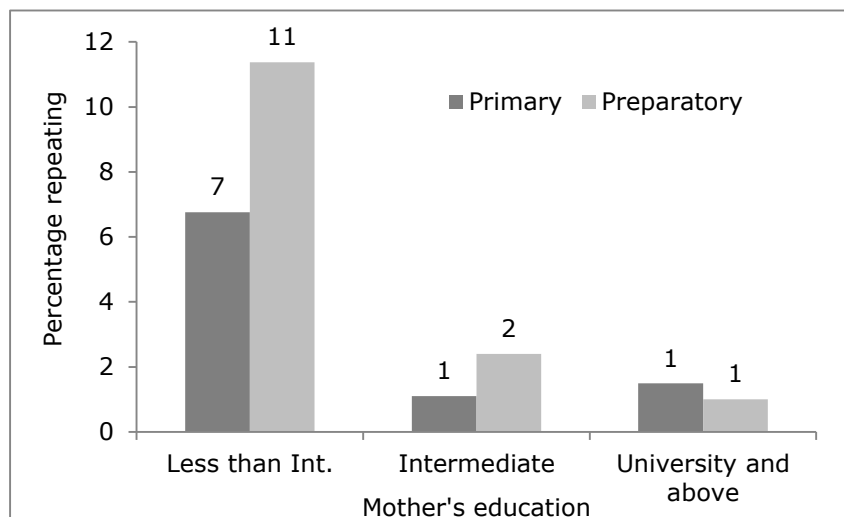**Figure 8. Percentage Repeating a Grade by Wealth Quintile and School Level**

Source: Authors' calculations based on ELMPS 2012.

Note: Youth ages 16-22 in 2012 who attended these levels in the past. Parents' wealth quintile is from 2006.

It is youth with less educated parents who struggle and repeat grades during basic education (Figure 9). While students with intermediate or university educated mothers have only a 1-2 percent chance of repeating a grade in primary or preparatory, those whose mothers have less than intermediate education have a 7 percent chance of repeating during primary and an 11 percent chance of repeating during preparatory. Whether because mother's education is linked to socio-economic status, or more educated mothers can compensate for the inadequate quality of basic education, children face unequal chances of school success depending on their parents' education.

Figure 9. Percentage Repeating a Grade by Mother's Education and School Level
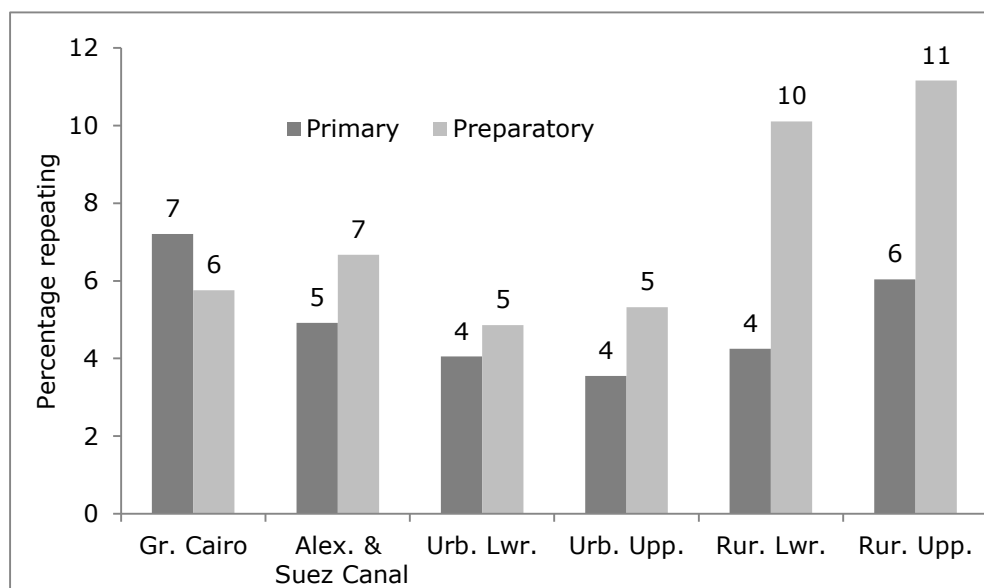
Note: Youth ages 16-22 in 2012 who attended these levels in the past.

There are substantial regional differences in grade repetition and school success, particularly at the preparatory level (Figure 10). While primary grade repetition is highest in Greater Cairo, followed by rural Upper Egypt, the rest of the regions have 4-5 percent repetition rates. In contrast, during preparatory, in urban areas 5-7 percent of students repeat, but in rural areas, 10-11 percent repeat. Preparatory, when the exams are more challenging and higher stakes, is when rural students struggle.

Figure 10. Percentage Repeating a Grade by Region and School Level

*Note*: Youth ages 16-22 in 2012 who attended these levels in the past.

Overall, there are clear differences in students' chances for school success depending on their backgrounds. Male students struggle more in school—evidenced by their higher rates of repetition—than female students. Students whose families are poor or whose parents are less educated struggle to succeed in basic education and have high repetition rates. In contrast students from wealthier families or with educated mothers have greater success and easier progress during basic education. These differential experiences of struggles or success during basic education translate into different chances of completing basic education, as the next section demonstrates.

6.4 Who Completes Basic Education?[8]

Whether or not a child completes basic education or not will depend on a number of factors. Parents (and as they become older, children) will decide whether to continue with schooling depending on whether or not the benefits or value of schooling are greater than the costs of schooling. Costs include not just the direct costs, such as fees or uniforms, but the opportunity costs of children's time. For instance, for boys, it may be possible to work at a young age, and so continuing in school imposes an opportunity cost in terms of income. For girls, there is an opportunity cost both in terms of domestic labor (chores), as well as potentially working in the market. Girls may also face a reputational cost to attending school if they have to mix with boys. Parents will weigh this multitude of costs against the benefits of schooling; particularly since the quality of schooling and the returns to basic education are low (Said 2015; Schwab 2014; World Bank 2008), as children age and costs rise, families may decide to not complete a low-value basic education.

The chances of completing a basic education (primary and preparatory schooling) have also improved over time (Figure 11). Eighty percent of the cohorts born in the 1990s were able to complete basic education while less than half of Egyptians born in the 1950s completed basic education. The gender gap in completion of basic schooling has narrowed substantially over time. While around 40 percent of males and just 20 percent of females completed a preparatory education among those born in the 1950s, the gender gap in completion has narrowed considerably for subsequent generations. Among those born in the 1990s, the gender gap had virtually disappeared.

Figure 11. Completion of Basic Education by Gender and Year of Birth, 3 Period Moving Average (Percentage)
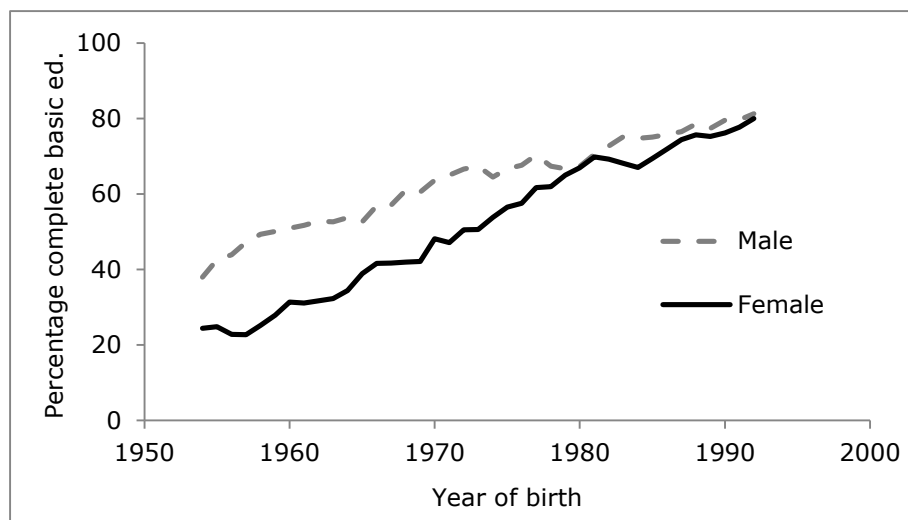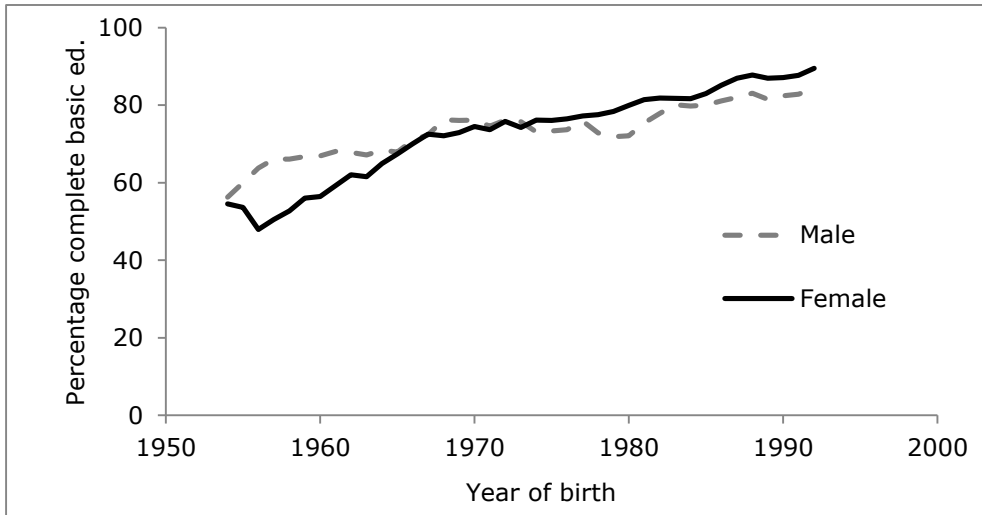

Source: Authors' calculations based on ELMPS 2012.

Among those who were privileged enough to enter school, there has been a gradual increase in completion rates over time (Figure 12). While those who did enter school had a 60 percent chance of completing education among the cohorts born in the 1950s, younger generations of Egyptians born in the 1980s and 1990s have completion rates that exceed 80 percent. Among those who entered school, the gender gap in completion rates narrowed early on, virtually disappearing by the 1970 birth cohort. This suggests that the gender gap in completing basic education for subsequent generations was entirely due to gaps in school entry. In fact, starting with cohorts born after 1980, among

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[8] In examining basic education completion rates, we focus on those born prior to 1992 to ensure that those who will complete have had the chance to do so. By the same logic and to have a sufficient sample size to work with, in examining current completion rates, we focus on youth who were 18 to 22 in 2012.

those who entered school, girls had a higher basic schooling completion rate than boys. Girls' greater success in completing school, if they enter, is likely due to their better performance, including test scores (shown below) and repetition (shown above). Girls also may face lower opportunity costs of remaining in school since they face poorer labor market prospects (Assaad and Krafft 2015).
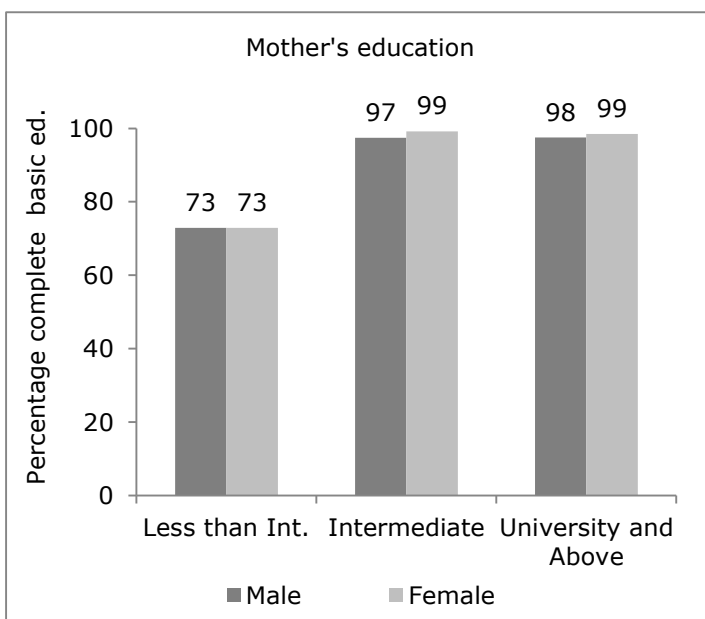
Figure 12. Completion of Basic Education by Gender and Year of Birth, among those ever Entering School, 3 Period Moving Average (Percentage)

Source: Authors' calculations based on ELMPS 2012.

Basic schooling completion rates are strongly dependent on socioeconomic background. While 79 percent of all youth who were 18-22 in 2012 had completed a basic education, Figure 13 shows that this rate varies substantially with parental education. Youth with mothers educated at the intermediate (secondary) level or university level have basic education completion rates that exceed 97 percent, as compared to rates of 73 percent for those whose mothers have less than an intermediate education. There are no appreciable gender differences in the effect of parental education on basic school completion rates.
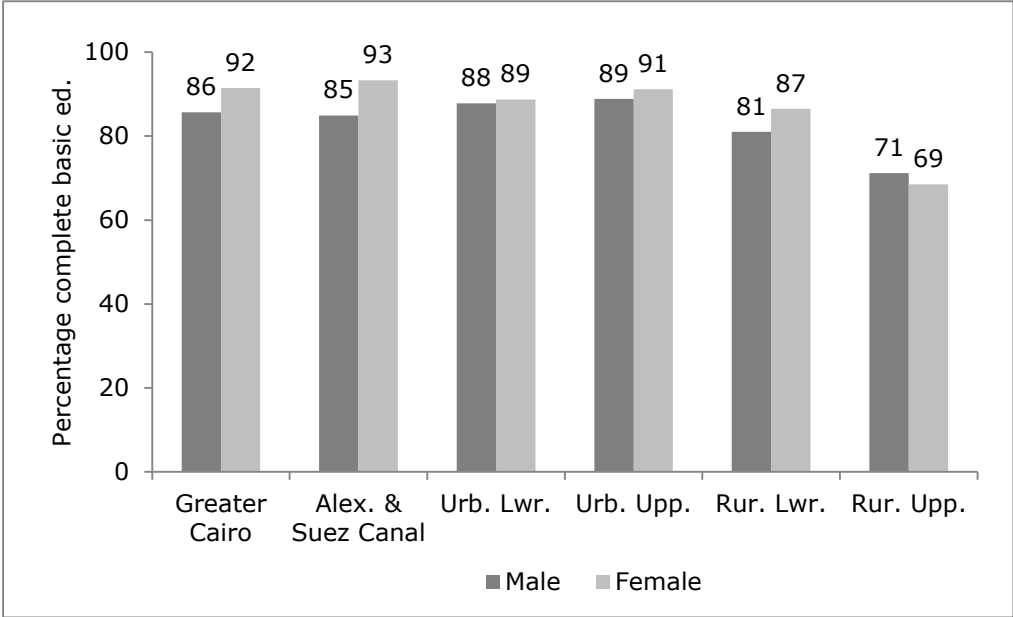
Figure 13. Completion of Basic Education by Mother's Education, 18-22 year-olds in 2012 (Percentage)

Source: Authors' calculations based on ELMPS 2012.

There are substantial regional differences in the rates of completion of basic education (Figure 14).[9] All regions in Egypt except for rural Upper Egypt have basic education completion rates above 80 percent. In urban areas, nearly 90 percent of young people complete a basic education. Rates are closer to 80 percent in rural Lower Egypt and average around 70 percent in rural Upper Egypt. Also, in every region except rural Upper Egypt, young women who were 18-22 in 2012 were more likely to complete basic education than their male counterparts. In rural Upper Egypt, there was still a gender gap in favor of males.

Figure 14. Completion of Basic Education by Region in 2006, Ages 18-22 in 2012 (Percentage)
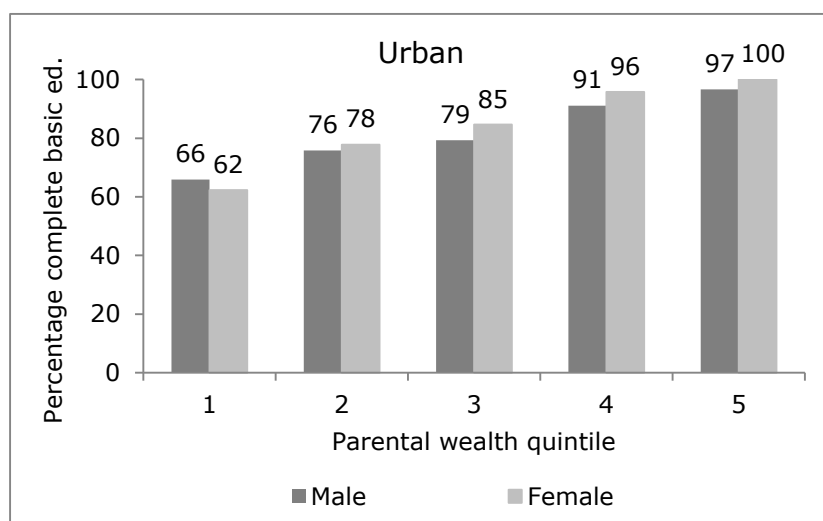

Source: Authors' calculations based on ELMPS 2012.

The chance of completing basic education varies not only with parents' education, region of residence and gender but also with parental wealth (Figure 15 and Figure 16). As expected, children from richer families are more likely to complete basic education. In urban areas, those from the poorest fifth of households have approximately a 65 percent chance of completing basic education, compared to nearly 100 percent for youth from the richest fifth of households (Figure 15). A slight gender gap exists in favor of females except among the poorest household where males are slightly more likely to complete basic education.

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[9] Region is measured in 2006, to measure the region where youth would have been of basic school age.

Figure 15. Completion of Basic Education by Parents' Wealth Quintile in 2006, Urban Residents in 2006, Ages 18-22 in 2012 (Percentage)

Source: Authors' calculations based on ELMPS 2012.

In rural areas, the same general pattern of higher basic education completion rates associated with higher wealth is observed. However, in rural Upper Egypt completion rates are lower compared with those from rural Lower Egypt, particularly at lower levels of wealth (Figure 16). Moreover, different patterns are observed by gender. Poor young females in rural Lower Egypt have higher completion rates (76 percent) than their male counterparts (59 percent). On the other hand, young males from rural Upper Egypt are more likely to complete basic education (61 percent) than females (56 percent). In contrast to rural Lower Egypt, females in rural Upper Egypt are disadvantaged relative to males in basic education completion rates, except at the highest wealth level.

Figure 16. Completion of Basic Education by Parental Wealth Quintile in 2006 and Region in 2006, Rural in 2006, Ages 18-22 in 2012
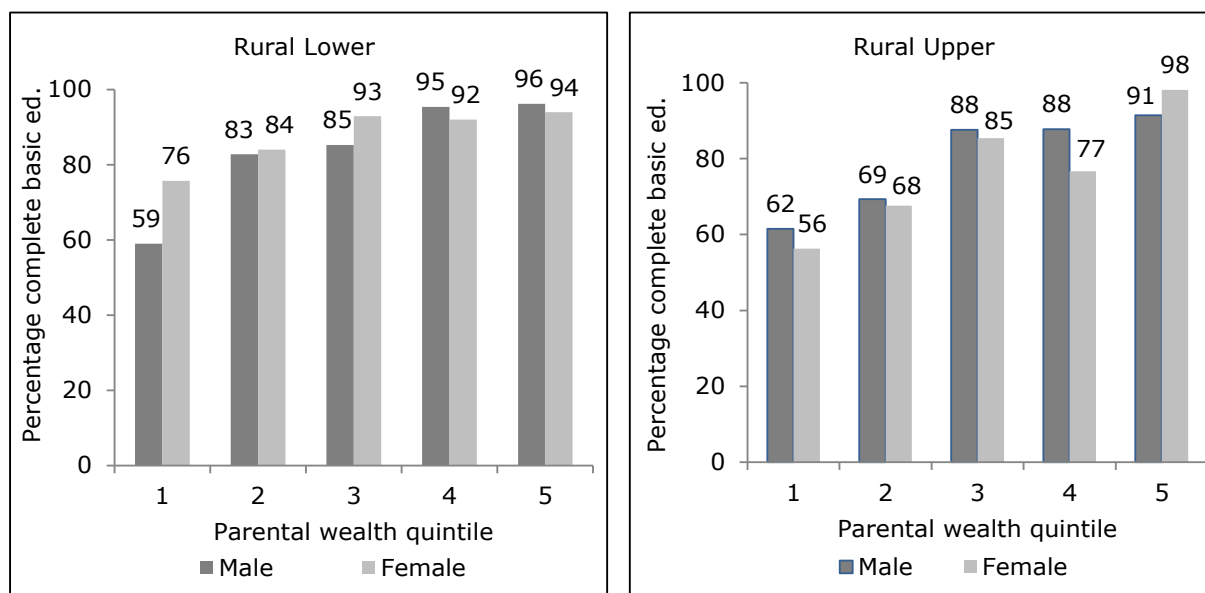
Source: Authors' calculations based on ELMPS 2012.

The different rates of completion by wealth lead to very different numbers of young people without a basic education. For instance, among the approximately 1,469,000 18-22 year-olds without a basic education, almost half (691,000) are from the poorest fifth of households and more than a quarter (406,000) are from the second poorest fifth of households.

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The combination of just a few different circumstances can lead to dramatically different chances of completing basic education. We compare a "least advantaged" child, who is from the poorest quintile, lives in rural Upper Egypt, and has a mother with less than an intermediate education, to a "most advantaged child," who is from the richest quintile, lives in either Cairo or Alexandria and Suez Canal, and has a mother with higher education. A least advantaged male has a 61 percent chance of completing basic education, compared to a 94 percent chance for a most advantaged male. A least advantaged female has a 57 percent chance of completing basic education, compared to a 100 percent chance for a most advantaged female. These differential chances also translate into very different public investments, for students attending public schools. For fiscal year 2012/2013, the annual cost of a year of primary school was 2,454 and the annual cost of a year of preparatory school was 3,634.[10] As students differentially attend and complete basic education, they receive differential public investments.

In sum, we see young people have substantially different chances of completing basic education depending on parents' education, place of residence, and parental wealth. It is clear that, despite a policy of free education for all, young Egyptians face unequal chances of completing a basic, compulsory education depending on their circumstances. The current system is inadequate for providing a basic education for all, with the poor, those from less educated families, and those in rural Upper Egypt facing particular disadvantage. In failing to complete a basic education, these youth will also receive less investment in their educations than those from wealthier, more educated families, or living in urban areas. In the next sections, we explore the role of private investments and how it may contribute to the inability of disadvantaged groups to succeed in the face of low-quality public education.

7. USE OF EDUCATION SUPPLEMENTS

In this section, we explore a variety of strategies parents can use to supplement public education in Egypt. Parents can assist their children with schoolwork, invest in more costly forms of schooling through the payment of tuition and fees, or invest in help groups or private tutoring for their children. If public education alone were sufficient to ensure school success, parents would not need to invest substantially in these supplementary strategies. Besides presenting descriptive statistics about the use of these alternative strategies, we discuss in this section the net effects of various circumstances on the use, and subsequently the cost of education supplements based on the multivariate regressions presented in Table 2.

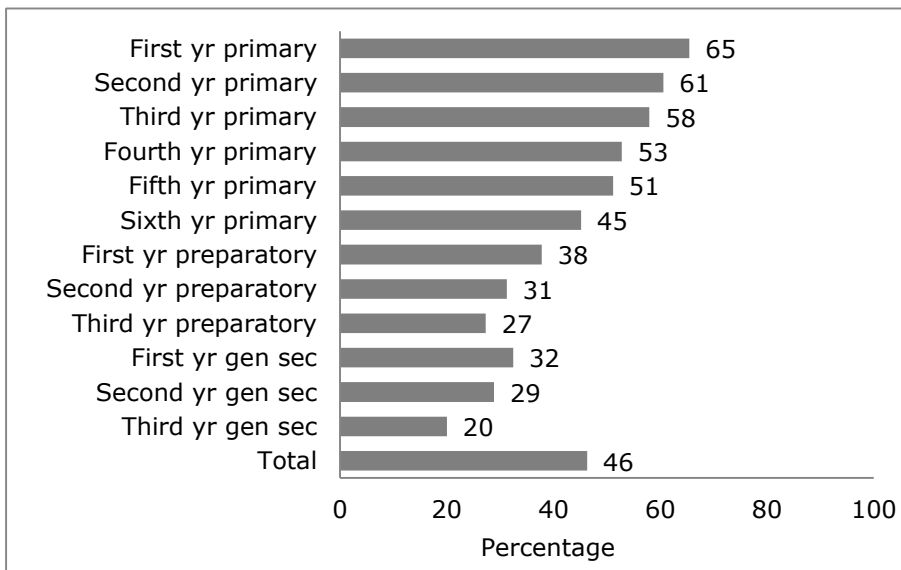### 7.1   When Do Students Receive Family Help with Schoolwork?

Parents are likely to help their children with school work during the first few years of primary school. However, students receive less parental help[11] as they advance through the education system. This may be due to the inability of less educated parents to help with advanced material. In the first year of primary school 65 percent of students received parental help, but only 20 percent did so by the time they reached the third year of general secondary (Figure 17).

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[10] Data provided in correspondence with the Central Agency for Public Mobilization and Statistics.

[11] What we refer to as parental help could also include help from other household members but, as we show below, it is primarily parents.

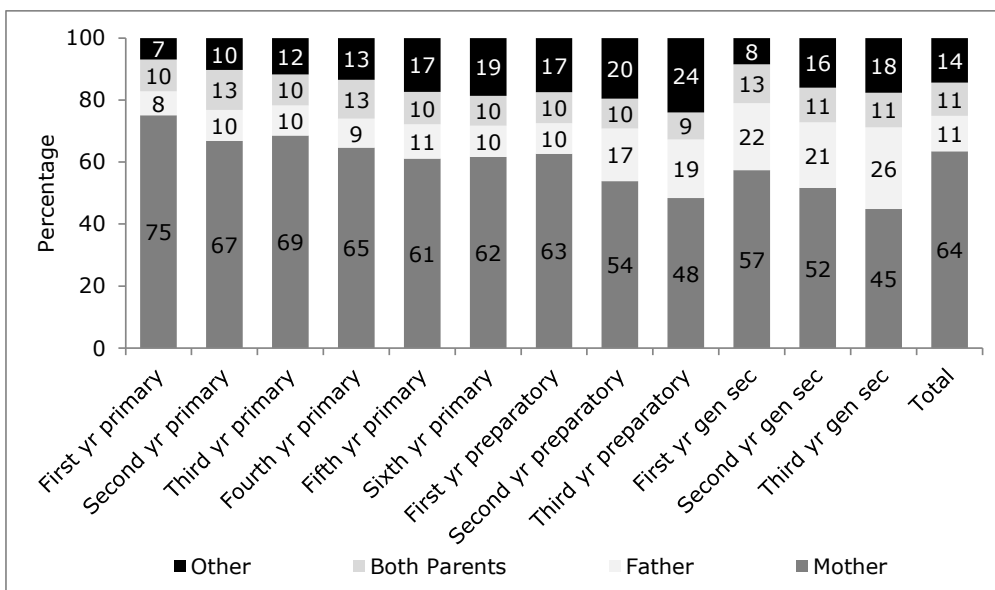**Figure 17. Percentage Receiving Help from a Parent by Level and Year**

Level and Year	Percentage
First yr primary	65
Second yr primary	61
Third yr primary	58
Fourth yr primary	53
Fifth yr primary	51
Sixth yr primary	45
First yr preparatory	38
Second yr preparatory	31
Third yr preparatory	27
First yr gen sec	32
Second yr gen sec	29
Third yr gen sec	20
Total	46

Source: Authors' calculations based on ELMPS 2012.

Note: School years are the years attended in the current academic year for current students.

Students mostly receive help from their mothers. On average mothers provide 64 percent of the help on their own and an additional 11 percent jointly with the father (Figure 18). Fathers become increasingly involved as students advance to higher grades. Among those receiving family help, help exclusively from fathers rises steadily from 7 percent in the first year of primary to 26 percent for the third year of general secondary. Other members of the household also chipped in to help, particularly during the last years of the basic and general secondary levels. These are the years with high stakes exams, and may be when older siblings are asked to provide study help for exams. Help from other household members rose from only 7 percent during the first year of primary to 24 percent during the third year of preparatory. Likewise, it again increased to 17 percent by the third year of general secondary from only 8 percent in the first year of general secondary.

**Figure 18. Help Source by Year and Level (Percentage)**

Year and Level	Mother	Father	Both Parents	Other
First yr primary	75	10	8	7
Second yr primary	67	10	13	10
Third yr primary	69	10	10	12
Fourth yr primary	65	9	13	13
Fifth yr primary	61	11	10	17
Sixth yr primary	62	10	10	19
First yr preparatory	63	10	10	17
Second yr preparatory	54	17	10	20
Third yr preparatory	48	19	9	24
First yr gen sec	57	22	13	8
Second yr gen sec	52	21	11	16
Third yr gen sec	45	26	11	18
Total	64	11	11	14

Source: Authors' calculations based on ELMPS 2012.

Note: School years are the years attended in the current academic year for current students.

7.2 When and Why Do Students Receive Private Lessons and Help Groups?

Private lessons become increasingly common as students advance in school. Overall, 53 percent of current students in primary, preparatory, or general secondary take private lessons, 10 percent take help groups, and 24 percent receive no help (including no parental help).[12] On average, the number of subjects taken in help groups and private lessons is around three subjects. Use of private lessons ranges from around 30 percent during the first year of primary to 75 percent during the second year of general secondary (Figure 19). Private lessons are common in every school year, but particularly in years with government exams, such as the sixth year of primary, the third year of preparatory and the second year of general secondary. The prevalence of private tutoring, particularly around high stakes exams, indicates the inadequacy of school alone as a mechanism for success in these exams. It also suggests a key pathway for inequality of opportunity, in that the need for tutoring around high stakes exams will exclude poorer families from succeeding and progressing.

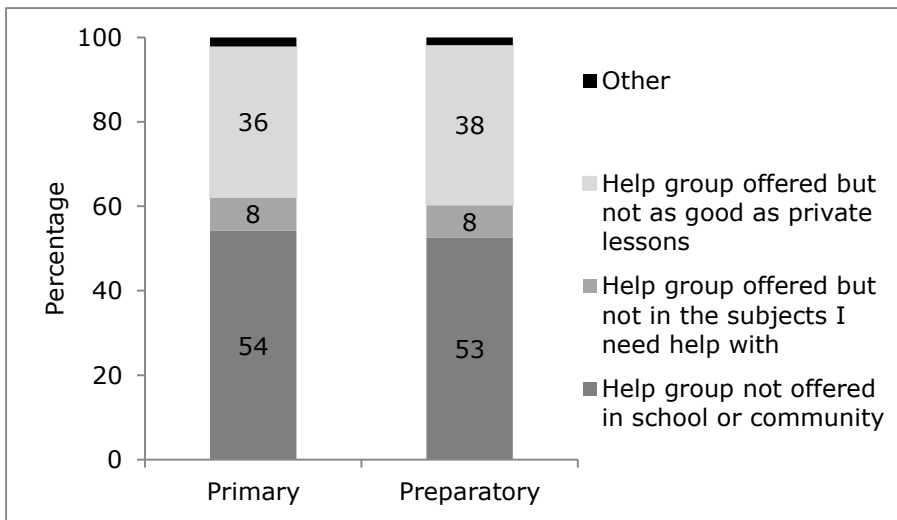**Figure 19. Percentage Taking Private Lessons, Help Groups, no Help by Grade and Level**
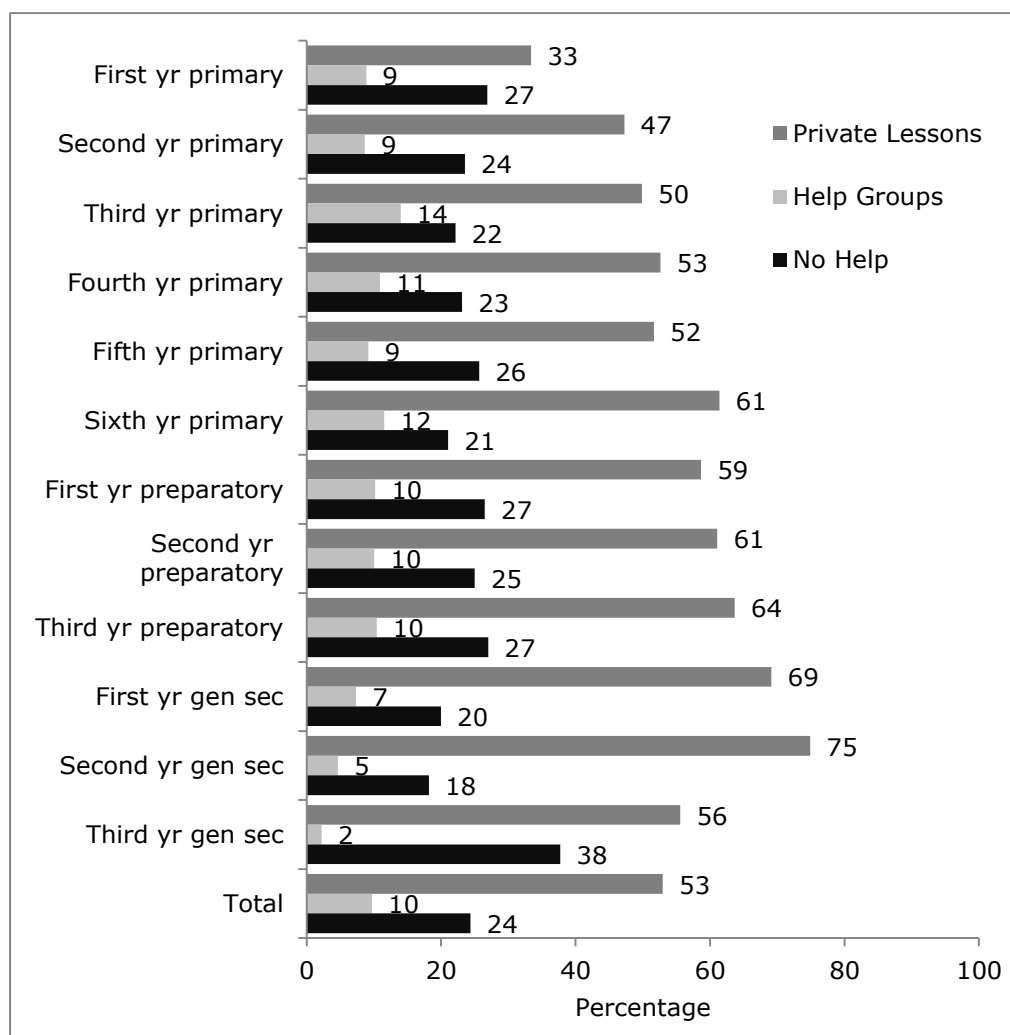
Source: Authors' calculations based on ELMPS 2012.

Note: School years reported are the years attended in the previous academic year for current students, which is the year for which they report the receipt of private lessons and help groups.

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[12] The questions about help groups and private lessons refer to the last academic year and the questions about parental help refer to the current year. In order to calculate the percentage of children receiving no help, parental help in the previous year is assumed to be the same as the current year.

Help groups are not as common as private lessons mainly because they are either not offered and oftentimes, those offered are not as good as private lessons. Students who took private lessons were asked why they took private lessons and not just used the cheaper help groups. Figure 20 shows that half of the students who took private lessons in both the primary and preparatory levels do not have access to a help group in their school or community. That help groups were offered but were not as good as private lessons was also a common issue (36-38 percent) followed by help groups not being offered in the subjects needed (8 percent). Help groups are a lower cost alternative to private lessons, but clearly an alternative that is not as readily available, or as helpful when it is available.

Figure 20. Reasons for Private Lessons rather than Help Group by Level for those not Using Help Groups

Source: Authors' calculations based on ELMPS 2012.

Note: School years reported are the years attended in the previous academic year for current students, which is the year they report the receipt of private lessons and help group for.

The use of private lessons is common across all school types.

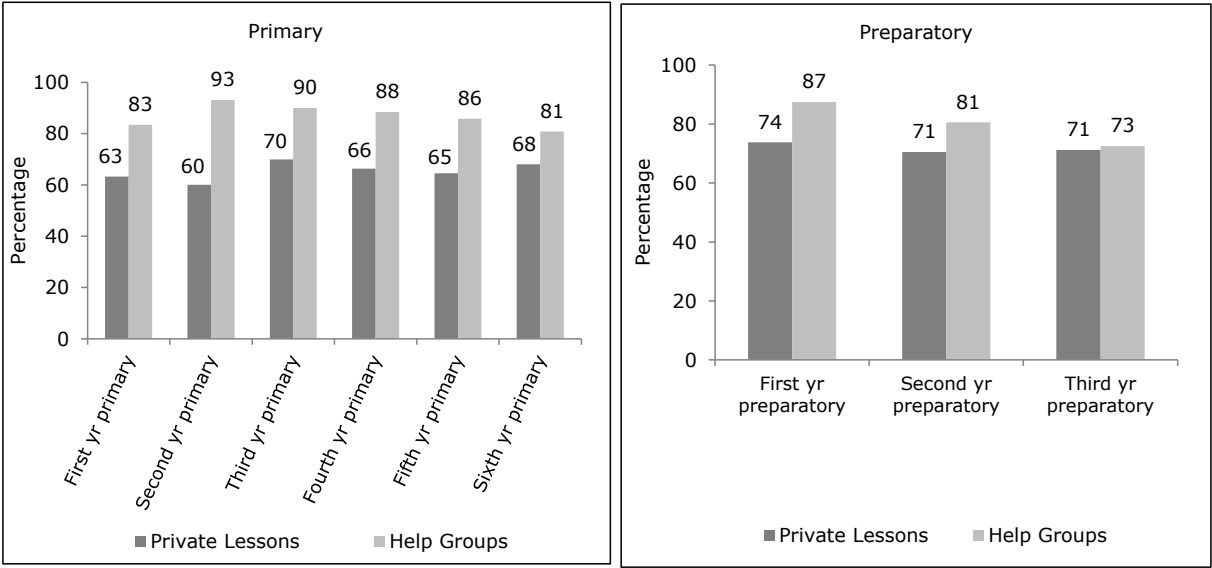**Figure 21. Percentage Taking Private Lessons, Help Groups, no Help by Type of School**
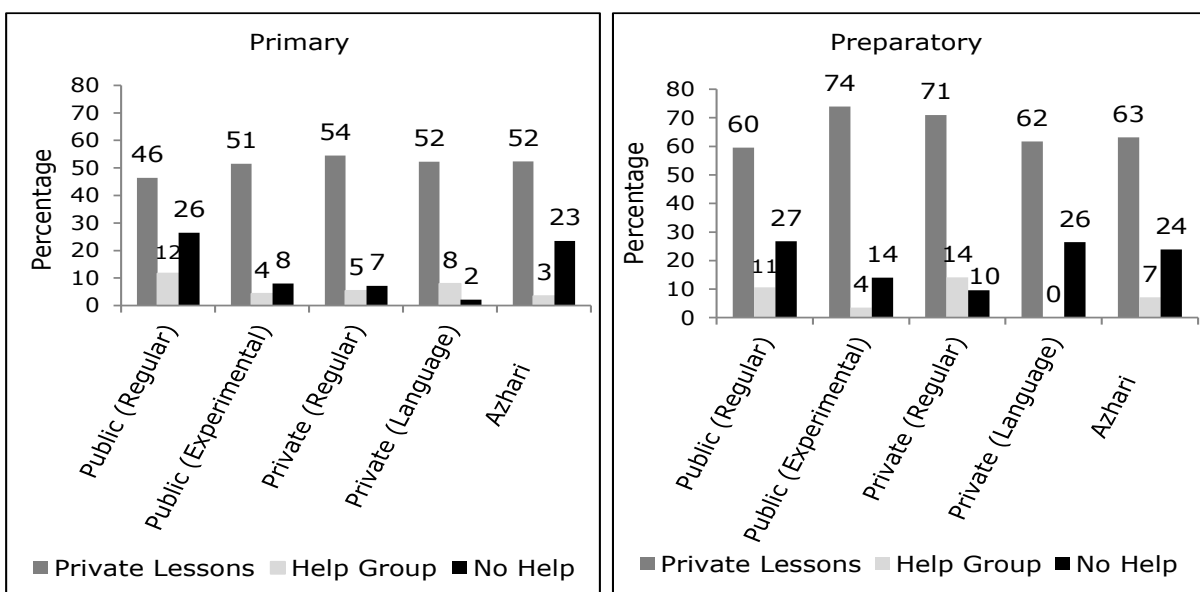
Source: Authors' calculations based on ELMPS 2012.

Note: School levels are the previous levels of current students.

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Classroom teachers are also often the tutors in private lessons and help groups. This is likely to create incentives for teachers not to fully cover the necessary material in class, in order to receive fees for the assistance provided outside of class. This incentive problem has been shown in other countries to decrease learning in school and particularly harm poorer students (Jayachandran 2014). Both private lessons and help groups are primarily taught by classroom teachers, but help groups are slightly more likely to be taught by classroom teachers than private lessons. Figure 22 shows classroom teachers handle 80 percent or more of help groups in all basic education years except during the last year of preparatory school. Increasing from 60 percent in the early years of primary school, classroom teachers provide 71 percent to 74 percent of private lessons for students in the final years of basic education.

Figure 22. Percentage Taught by Classroom Teacher in Private Lessons or Help Group, by Level and Year
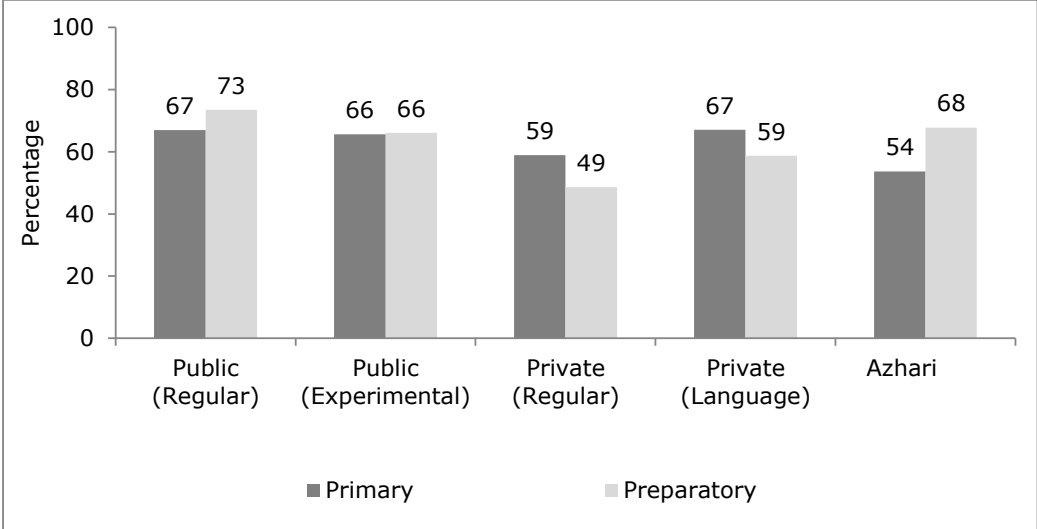

Source: Authors' calculations based on ELMPS 2012.

Note: School levels are the previous levels of current students.

Private lessons are commonly taught by classroom teachers, regardless of the school type in which the student is enrolled (Figure 23). Private lessons taught by classroom teachers are slightly more common in public and Azhari schools than they are in private schools. Classroom teachers provide 66 percent to 73 percent of private lessons for public school students in both the primary and preparatory levels. With the exception of the primary level in private language schools, teacher-taught private lessons make up less than 60 percent of lessons in private schools. Students attending public and Azhari preparatory schools are more likely to have private lessons with their classroom teachers if taking lessons than students in public and Azhari primary schools. This is in contrast to students attending private schools where private lessons are taught by classroom teachers more during the primary than the preparatory level.

Figure 23. Percentage of students taking private lessons whose lessons are taught by their classroom teacher by type of school and level
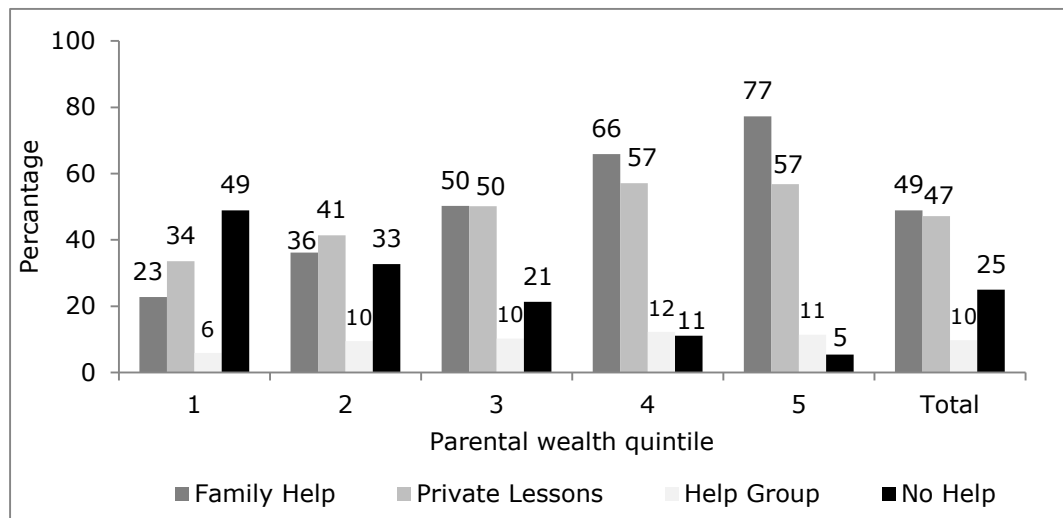

Source: Authors' calculations based on ELMPS 2012.

Note: School levels are the previous levels of current students.

7.3 Who Receives Education Supplements?

Private lessons and help groups are a source of help for both poor and wealthy students, but there are substantial differences in the chances of using these supplements by wealth. Wealthier students are able to receive more family help in their studies than poorer students. Students from the poorest quintile of households have only a 23 percent chance of parental help compared with 77 percent for students belonging to the richest quintile of households (Figure 24). Moreover, around a third of students from the poorest quintile take private lessons, but almost half of them end up without any source of supplementary help. The share of students not receiving help drops sharply as wealth increases, to just 5 percent among those in the wealthiest quintile. Beyond the poorest quintile, around half of students receive private lessons. Help groups are a source of help for about 9 percent of students, a rate which did not vary appreciably across wealth quintiles. In the multivariate models (Table 2), there were statistically significant impacts for all wealth quintiles as compared to the poorest for parental help, private lessons, help groups, and receiving no help. The probability of no help dropped with increasing wealth, while the probability of private lessons, help groups, and parental help increased at higher wealth levels.

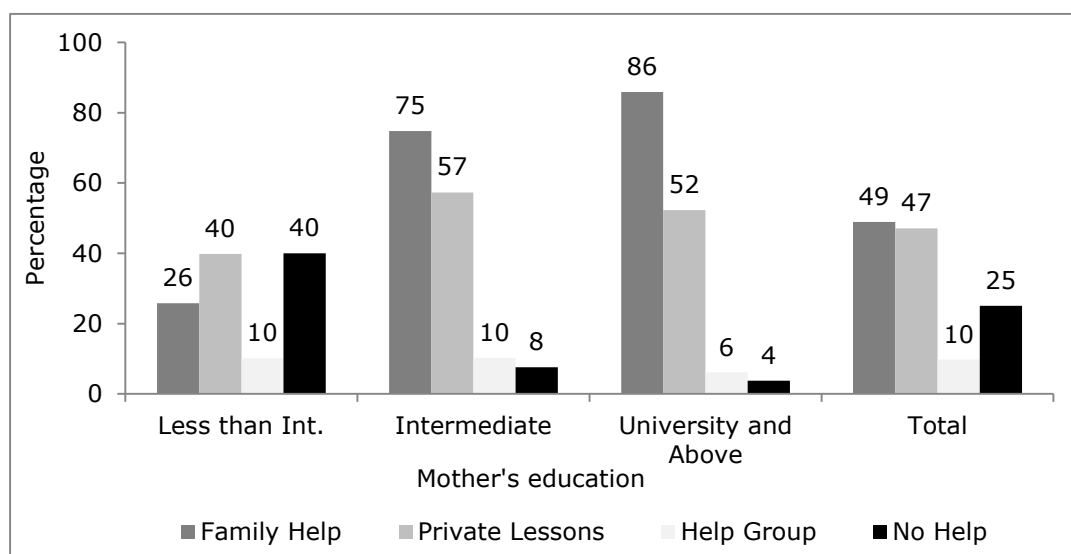**Figure 24. Percentage with Parental help, Private Lessons, Help Groups by Parent's Wealth Quintile**

Source: Authors' calculations based on ELMPS 2012.

Note: Current students attending preparatory or primary schools. Parental wealth quintile is wealth quintile of current students in 2012.

Students with less educated parents are by far the most disadvantaged in terms of education supplements (Figure 25). Among students with less than intermediate educated mothers, 40 percent receive no help, just 25 percent receive family help, 40 percent receive private lessons and 10 percent attend help groups. More than half of students with mothers with intermediate or higher education receive private lessons and at least three quarters receive family help. Notably, for students with intermediate or higher educated parents, multiple forms of help are clearly common, including combinations of family help, help groups, and private lessons. Students with highly-educated mothers are more likely to receive family help and slightly less likely to receive private lessons compared to those with intermediate educated mothers, suggesting there may be substitution of family help for private lessons among the more educated mothers.

In the multivariate regressions (Table 2), having a secondary or university educated father significantly decreased the probability of no help and increased the probability of parental help, compared to a youth with a less than intermediate educated father. While an intermediate educated father significantly increased the probability of private lessons, the effect for a university-educated father was not significant, and father's education had no effect on help groups. Having a mother with intermediate or university education as compared to no education significantly decreased the probability of no help and increased the probability of parental help, but had no effect on private lessons. Having a university-educated mother slightly decreased the probability of help groups, suggesting some substitution of family help for help groups for children of mothers more able to provide such help. Notably, different dimensions of socio-economic status have different effects on the types of education supplements used, taking into account multiple characteristics. While wealth increases the use of all supplements, parental education affects primarily parental help and does not have large additional effects on other forms of assistance, after accounting for other characteristics.

Figure 25. Percentage with Parental Help, Private Lessons, Help Groups, by Mother's Education

Source: Authors' calculations based on ELMPS 2012.

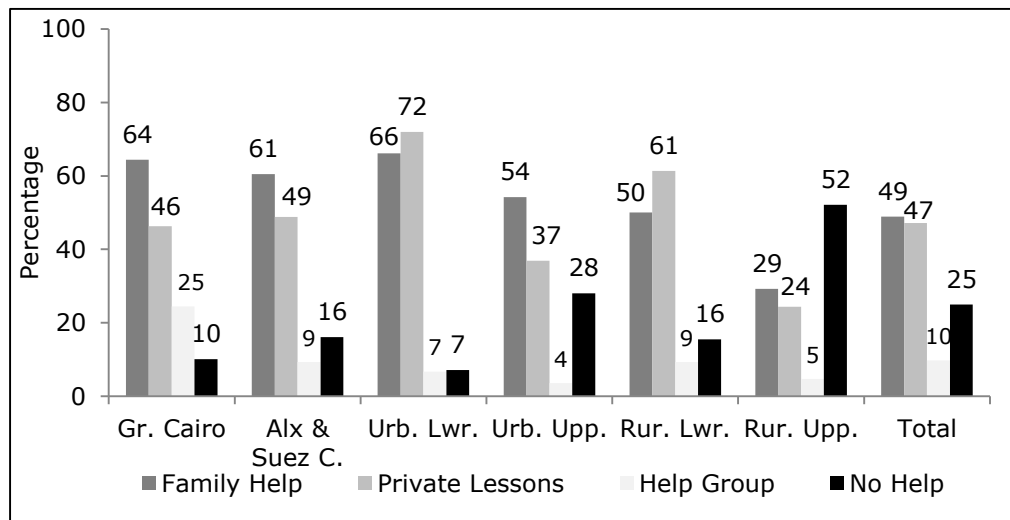*Note*: Current students attending preparatory or primary schools.

There are notable differences in access to education supplements by region (Figure 26). In rural Upper Egypt, where only a minority of students receives family help or private lessons, more than half of students do not receive any help at all. In urban Upper Egypt, 28 percent of students receive no help. All other regions have rates below 20 percent for receiving no assistance. Family help and private lessons are the main source of help in all regions. Private lessons are particularly common in both urban and rural Lower Egypt. Sixty to 70 percent of students take private lessons in these regions surpassing the share of students receiving help from their families. Overall, family help is a major source of assistance for students, as rates are no less than 50 percent in all regions except rural Upper Egypt where they are less than 30 percent. Help groups were also a varying source of help by region, used by just 4 percent of students in urban Upper Egypt compared to up to 25 percent of students in Greater Cairo. Since availability is a large constraint on the use of help groups, this suggests that students in Greater Cairo have much better access to this low-cost alternative to private lessons.

Even after controlling for other characteristics such as parental wealth and education, regional differences in education supplements continue to be important (Table 2). Compared to Greater Cairo, the probability of no help was slightly higher in the Alexandria and Suez Canal region, and much higher in both urban and rural Upper Egypt. The probability of parental help was significantly lower throughout Upper Egypt, as was the probability of private lessons. Throughout Lower Egypt, there was a significantly higher probability of private lessons compared to Greater Cairo. Every other region had a significantly lower probability of help groups as compared to Greater Cairo.

Although there are large differences in the use of education supplements by wealth, parent's education, and region, there are essentially no differences by gender, nor are there statistically significant differences in the multivariate regression models (Table 2). There are also few differences by type of school. Those in public experimental schools are slightly more likely to receive no help than those in public regular schools, but no other school type is significantly different from regular public schools. Those in private regular schools are slightly more likely to receive parental help than those in public schools, but again no other school type is different. There are no significant differences in the probability of private lessons by school type, after accounting for other characteristics, but compared to public regular schools, every other type of school is related to a significantly lower probability of help groups.

Figure 26. Percentage with Family Help, Private Lessons, Help Groups, by Region

Source: Authors' calculations based on ELMPS 2012.

Note: Current students attending preparatory or primary schools.

The use of costly education supplements, particularly the use of private tutoring, is pervasive in Egypt. The common practice of teachers providing education supplements is likely to create perverse incentives, and reinforce the low quality of education in schools, requiring families to provide additional help. Families also play a key role in assisting their children with school work, providing unequal assistance to children depending on their family background. There are large disparities in the assistance children receive depending on their background, but even the poorest families invest in education supplements, a clear sign that supplements are often required for school success. The necessity of providing supplements indicates that young people cannot succeed in basic education simply by attending free public schools. The inadequacy of the public education system requires supplements that are particularly likely to limit opportunities for students from less privileged backgrounds.

How many students are without education supplements? Table 1 describes the number of students with no help (in thousands) in each region, by mother's education, by wealth, and by gender. The vast majority of students going without assistance (2.0 million of the 3.5 million) are in rural Upper Egypt. Almost all (3.1 million) have mothers with less than an intermediate education. Most are poor (1.5 million are from the poorest wealth quintile and 1.0 million from the second poorest). These patterns suggest that it would be relatively easy to target students in need of additional support, who would struggle to succeed in school without assistance, along geographic, parental education, or wealth dimensions.

Table 1. Number of Current Students in Basic Education with no Help, by Background

|	Number with no help, in thousands
Region	
Greater Cairo	222
Alexandria & Suez Canal Cities	151
Urban Lower Egypt	92
Urban Upper Egypt	286
Rural Lower Egypt	771
Rural Upper Egypt	2,043
Mother's Education	
Less than Intermediate	3,145
Intermediate	366
University and Above	54
Wealth Quintile	
Lowest	1,484
Second	1,009
Third	635
Fourth	307
Highest	129
Gender	
Male	1,888
Female	1,676
Total	3,564

Source: Authors' calculations based on ELMPS 2012.

Note: Current students attending preparatory or primary schools. Based on FY 2012/13 numbers of 8,959,343 primary school students and 4,003,136 preparatory students.

7.4 Cost of Education Supplements

School fees and tuition costs generally increase with education level. In the first year of basic education the average fees are £E220 per student. School fees reach £E525 during the last year of general secondary (Figure 27). The increase in fees is particularly steep during the final years of each level when high stakes exams are given. This suggests that families may be charged more for the final year of a level, or that families may report some of their additional costs in preparation for high-stakes exams as fees and tuition. Families spend £E293 per student during the sixth year of primary, a 90 percent increase from what they pay during the fifth year of primary. Third year preparatory costs 38 percent more than the average cost of £E157 for the first and second year of preparatory. And while general secondary tuition fees are usually higher than the average cost of basic education, families spend 57 percent more during the final year compared with the average cost of £E334 during the first and second years of general secondary.

Figure 27. School Fees and Tuition Cost per Year and Level (in 2012 £E)
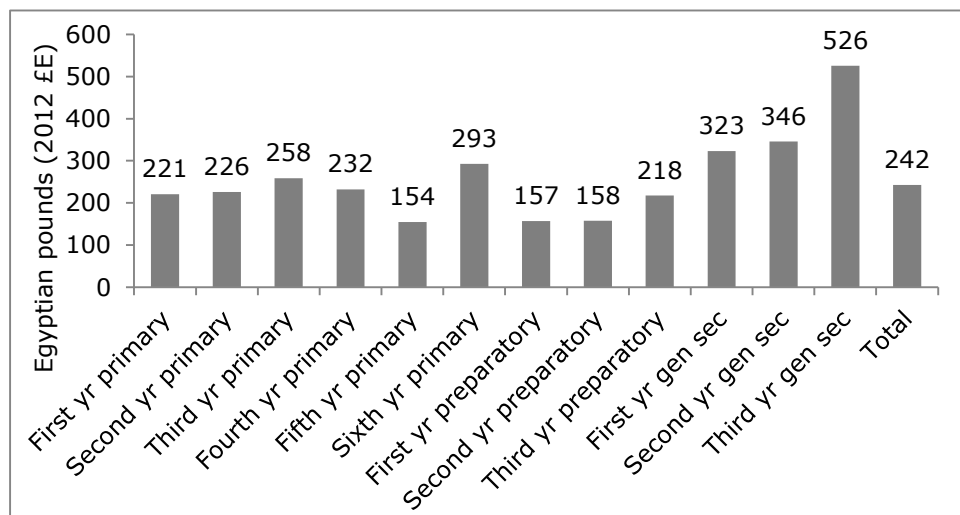
Source: Authors' calculations based on ELMPS 2012.

Note: School levels are current levels of current students.

In addition to school fees, families spend a great deal of money on private lessons. The "conditional" panel of Figure 28 demonstrates the per student spending on private lessons and help groups by level among those who use these forms of assistance, while the "unconditional" panel of Figure 28 presents per student average spending, treating those who do not use assistance as spending zero. Private tutoring costs are not only higher than school fees, they also show a steeper increase as a student advances in school. Except for a slight dip in private lesson costs during the sixth year of primary, private lesson costs have a clear increasing trend throughout the basic and general secondary education levels. By the end of the primary stage, costs average around £E350 per year (unconditionally, i.e., among all students) and £E600 per year among those using private tutoring. The third year of preparatory includes an average of around £E1,000 per year in tutoring costs (more than £E1,500 per year among those using private tutoring). The rising cost in private lessons as students advance in school reflects not just the increasing use of private tutoring as students' progress in the education system (Figure 19), but also more intensive and expensive use.

These private costs to families are substantial even in comparison to public expenditure. Recall that for fiscal year 2012/2013, the annual cost of a year of primary school was £E 2,454 and the annual cost of a year of preparatory school was £E 3,634.[13] Thus during primary, families spend an average of an additional 14 percent above and beyond public expenditure on private lessons alone (24 percent for those using private lessons). By the end of preparatory this rises to an additional 28 percent of public expenditure spent on private lessons (43 percent among those using private lessons).

Spending on tutoring is particularly high in general secondary education. Spending for private lessons in the third year of the general secondary stage reached £E2,400 per year for students using tutoring and £E1,300 per year across all students. These figures are almost six times (for students who use tutoring) to nine times more (for all students) than amounts paid for private tutoring during the first year of basic education.

Similar to private tutoring costs, group lesson costs are also a substantial expense for students who participate in help groups. Students participating in help groups in basic education pay close to £E400 per year on average for help groups, while the cost is only about £E40 per year for all students, as only a small share of students use help groups. These average help group costs are maintained during the primary and preparatory levels but rise for students during their general secondary years. The spending increase

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[13] Data provided in correspondence with the Central Agency for Public Mobilization and Statistics.

for help groups among those using them rises to £E 1,500 per year in the third year of general secondary from only £E600 per year in the third year of preparatory. Students spend more as they prepare to take qualifying exams for higher education.

Figure 28. Private and Group Lessons Cost per Level and Year (in 2012 £E)
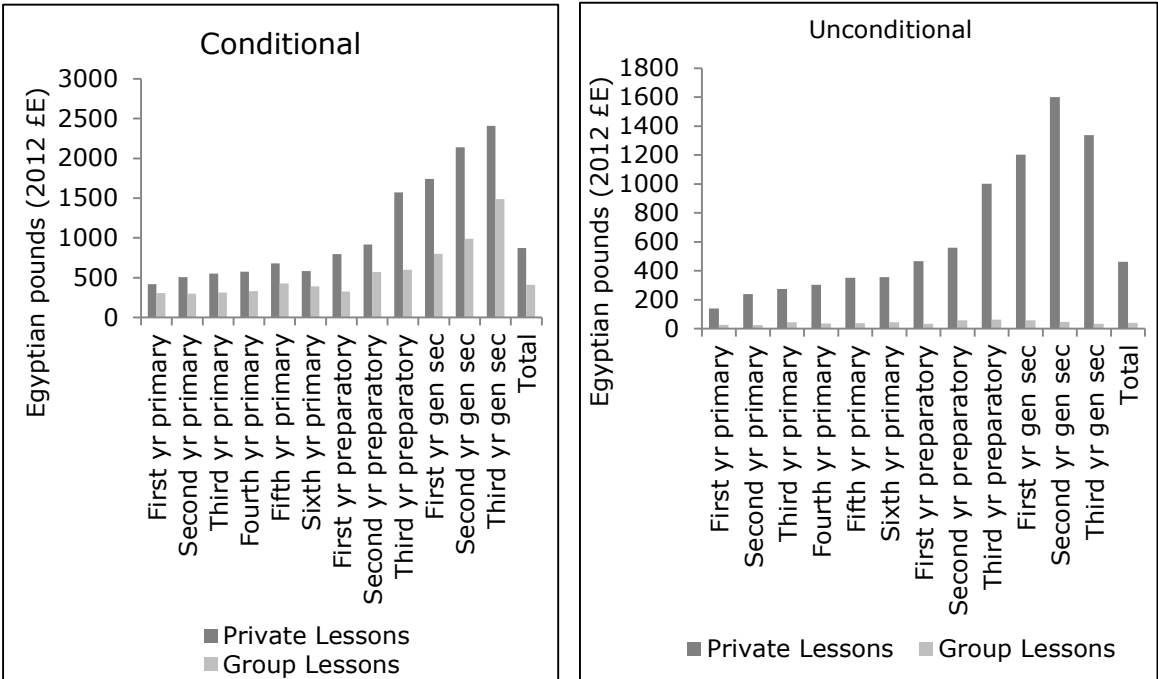
Source: Authors' calculations based on ELMPS 2012.

*Note*: School levels are the previous levels of current students.

Comparing spending for school fees and education supplements across types of primary and preparatory schools, we observe that families that send their children to public schools spend more for children's private lessons than for school fees. However, families that send children to private schools spend relatively more on school fees than private lessons, but are spending far more on both types of education supplement, because they are generally wealthier on average. Private lesson spending is highest for those attending public experimental schools, while private language schools have the highest tuition and fees. Recall that for fiscal year 2012/2013, the annual cost of a year of primary school was £E 2,454 and the annual cost of a year of preparatory school was £E 3,634.[14] For those attending private preparatory schools, the cost of school fees averages £E2,000 per year for regular private schools and £E3,900 for private language schools, similar to the costs in terms of public expenditure. Spending for private lessons is highest for preparatory students currently attending public experimental schools at £E3,300 per year, almost the same as public expenditure per student on this level. Those attending regular public and Azhari schools spend only £E700 per year on average (Figure 29). This cost pattern looks similar for primary school students, except that the spending for private lessons for those attending public experimental schools is relatively lower.

In the multivariate regression models (Table 2), school fees were significantly higher for every other type of school compared to regular public schools, but differences ranged from 12 percent higher for Azhari schools to 357 percent higher for private language schools. Among those taking private lessons, spending on private lessons was significantly higher by 35 percent-50 percent for every school type except for Azhari schools compared to regular public schools, but only in private language schools was spending on help groups higher (66 percent). Total costs were significantly higher for every type of school except Azhari when compared to regular public schools, with

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[14] Data provided in correspondence with the Central Agency for Public Mobilization and Statistics.

increases from 105 percent (public experimental) to 212 percent (private language). There are no gender differences in spending with families spending the same amount for fees, tutoring, and group lessons for both male and female students, even after accounting for multiple characteristics.

Figure 29. Cost of School Fees, Private and Group Lessons, by Type of Preparatory School (in 2012 £E)
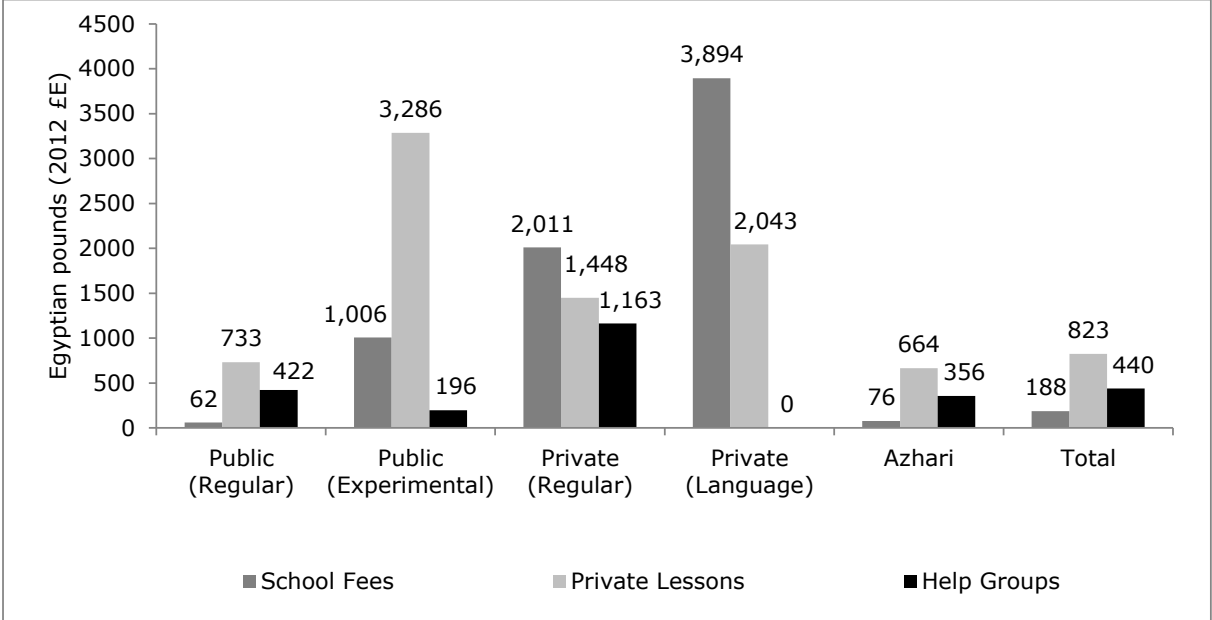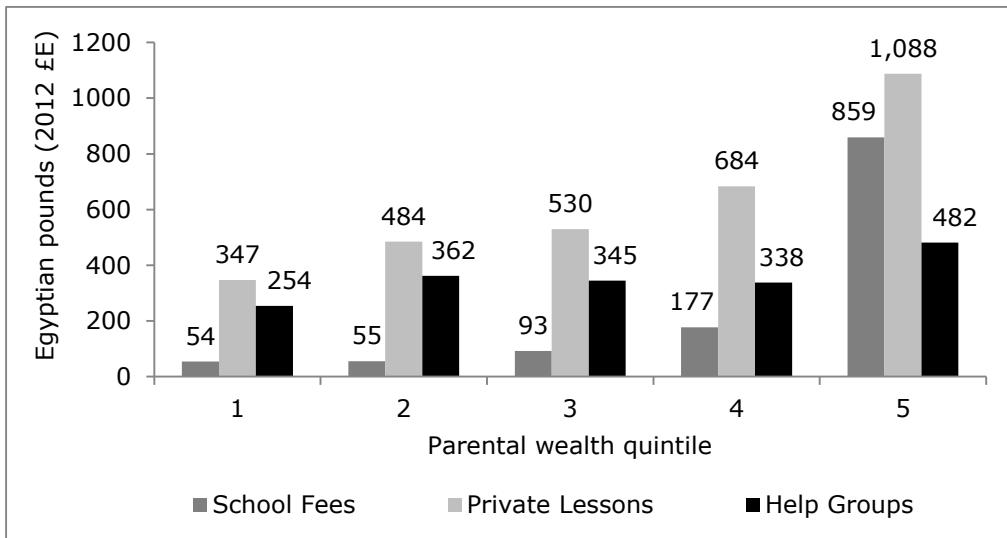

Source: Authors' calculations based on ELMPS 2012.

Note: Current students of preparatory schools. Costs for private lessons for those who used private lessons. Costs for help groups for those who used help groups.

As expected, families pay more for private lessons the wealthier they are. Figure 30 shows the wealthiest households who use tutoring spending over £E1,000 per year for a student's private lessons in basic education, in contrast to £E350 per year paid by the poorest quintile of households for a student's private lessons, when they use tutoring at all. Moreover, only the wealthiest pay large school fees as more of them send their children to expensive private schools. The richest fifth of families average £E860 per year in school fees per child while other levels of wealth average less than £E200 per year. Spending for help groups among those who use them is more or less stable across wealth levels albeit with slightly higher amounts paid by those from the wealthiest quintile of households. After accounting for other characteristics (Table 2), compared to the poorest quintile, spending on fees was only significantly higher for the richest fifth of households. However, spending on private lessons was significantly higher and increased with every wealth level. Spending on help groups was significantly higher in the second and fifth quintiles compared to the poorest. Taken together, total costs increased with wealth, by up to 68 percent for the richest fifth of households.

Figure 30. Cost of School Fees, Private and Group Lessons, by Parent's Wealth Quintile (in 2012 £E)

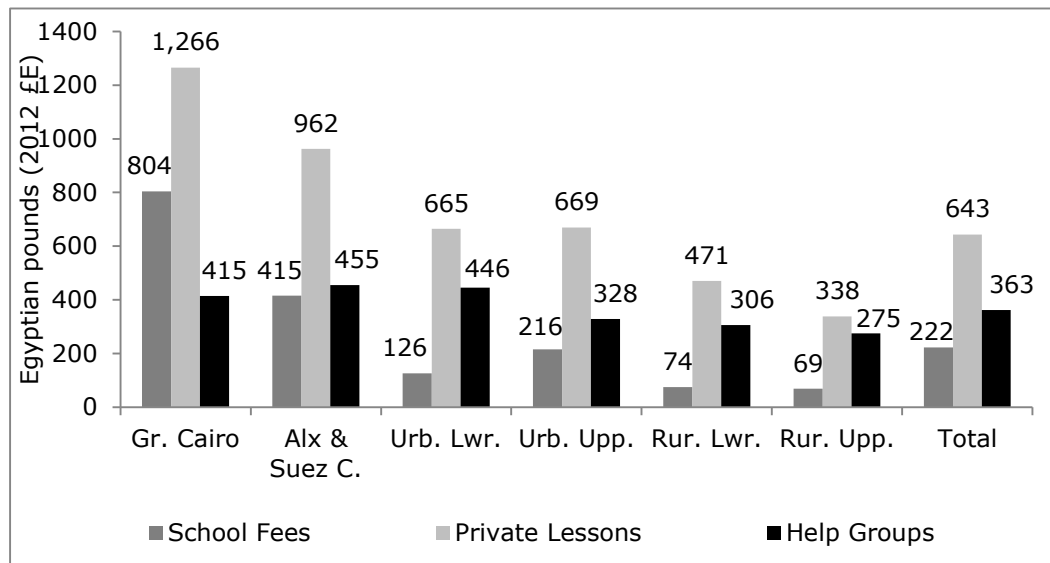*Source*: Authors' calculations based on ELMPS 2012.

Note: Current students of primary and preparatory schools. Costs for private lessons for those who used private lessons. Costs for help groups for those who used help groups.

Looking at parent's education in the multivariate models (Table 2), having an intermediate as compared to less than intermediate educated father significantly increased total costs but not the separate categories of cost. Having a university-educated father significantly increases total costs, fees, and private lessons by 14 percent-20 percent. However, there were no statistically significant differences on the amount spent on supplements (among those using them), by mother's education after controlling for father's education and other household characteristics. The impact for father's education but not mother's on spending may reflect the impact of father's earning potential, whereas mothers are much less likely to work.

The amount of money spent on education supplements varies substantially across regions. The spending on private lessons (for those using them) is especially high in the Greater Cairo region (£E1,300 per year) and the Alexandria and Suez Canal region (£E1,000), in contrast to around £E300 paid in rural Upper Egypt (Figure 31). The same regional pattern is observed for school fees, with fees averaging £E800 per year in Greater Cairo, more than ten times what is spent in rural Upper Egypt. The regional pattern for help group spending, among those using help groups, is similar but the differences in levels between regions are not as large.

After controlling for other characteristics (Table 2), spending on school fees was significantly lower in urban Lower Egypt, rural Lower Egypt, and rural Upper Egypt as compared to Greater Cairo. Spending on private tutoring was significantly lower in every other region compared to Greater Cairo, but differences ranged from 14 percent lower (Alexandria and Suez Canal) to 97 percent lower (rural Upper Egypt). Spending on help groups was also significantly lower in Upper Egypt and rural Lower Egypt. Overall, total costs were significantly lower in Upper Egypt.

Figure 31. Cost of School Fees, Private and Group Lessons, by Region (in 2012 £E)

Source: Authors' calculations based on ELMPS 2012.

Note: Current students of primary and preparatory schools. Costs for private lessons for those who used private lessons. Costs for help groups for those who used help groups.

The high spending for private tutoring reflects families' heavy reliance on its use to supplement school education for their children. Wealthier families and those with more educated parents and living in urban areas spend more for private lessons, particularly during the final years of each education level when students take qualifying exams. Families also pay higher tuition fees during these years. On the other hand, help group spending among those using help groups is relatively constant regardless of education level, wealth, parent's education, or geographical location.

Table 2. Regressions for Probability and Cost (Conditional on Use) of Education Supplements, Current Primary or Preparatory Students

	Probability of no help	Probability of parent help	Probability of private lessons	Probability of group help	Log total costs	Log fees	Log private lesson costs	Log help group costs
Female	-0.007	-0.008	0.017	-0.003	0.043	0.033	-0.017	-0.074
	(0.010)	(0.011)	(0.013)	(0.008)	(0.035)	(0.018)	(0.029)	(0.073)
Type of school (public regular omit.)								
Public experimental	0.106*	0.001	-0.056	-0.089***	1.045***	2.116***	0.407***	0.205
	(0.050)	(0.043)	(0.042)	(0.012)	(0.105)	(0.096)	(0.104)	(0.227)
Private regular	0.023	0.134***	-0.008	-0.085***	1.740***	3.088***	0.345***	0.188
	(0.042)	(0.040)	(0.035)	(0.011)	(0.088)	(0.077)	(0.076)	(0.376)
Private language	0.074	-0.048	-0.042	-0.083***	2.124***	3.565***	0.498***	0.655*
	(0.084)	(0.056)	(0.054)	(0.018)	(0.130)	(0.128)	(0.098)	(0.260)
Azhari	0.002	0.026	0.023	-0.053***	0.069	0.115***	0.026	0.128
	(0.015)	(0.017)	(0.020)	(0.013)	(0.051)	(0.031)	(0.044)	(0.193)
Wealth quintile (poorest omit.)								
Second	-0.079***	0.070***	0.053**	0.028*	0.170***	-0.020	0.188***	0.306**
	(0.015)	(0.018)	(0.020)	(0.012)	(0.044)	(0.015)	(0.047)	(0.109)
Third	-0.092***	0.079***	0.086***	0.036**	0.269***	-0.004	0.208***	0.182
	(0.016)	(0.018)	(0.020)	(0.013)	(0.049)	(0.018)	(0.051)	(0.125)
Fourth	-0.137***	0.136***	0.139***	0.032*	0.444***	-0.016	0.314***	0.180
	(0.019)	(0.021)	(0.023)	(0.014)	(0.062)	(0.030)	(0.051)	(0.106)
Fifth	-0.159***	0.107***	0.180***	0.062***	0.682***	0.105**	0.386***	0.366**
	(0.022)	(0.025)	(0.026)	(0.018)	(0.065)	(0.033)	(0.060)	(0.138)
Father's education (less than int. omit.)								
Intermediate	-0.105***	0.164***	0.042*	-0.002	0.136*	0.052	0.040	-0.061
	(0.014)	(0.017)	(0.017)	(0.011)	(0.054)	(0.030)	(0.036)	(0.085)
University	-0.139***	0.201***	0.016	-0.023	0.202**	0.142***	0.210***	0.148
	(0.020)	(0.026)	(0.024)	(0.014)	(0.074)	(0.040)	(0.052)	(0.131)
Mother's education (less than int. omit.)								
Intermediate	-0.155***	0.313***	0.029	-0.015	-0.019	-0.025	-0.055	0.091
	(0.016)	(0.019)	(0.018)	(0.012)	(0.060)	(0.033)	(0.036)	(0.088)
University	-0.163***	0.371***	-0.035	-0.047**	-0.093	0.032	0.020	-0.283
	(0.023)	(0.031)	(0.029)	(0.016)	(0.083)	(0.046)	(0.067)	(0.242)
Region (Greater Cairo omit.)								

	Probability of no help	Probability of parent help	Probability of private lessons	Probability of group help	Log total costs	Log fees	Log private lesson costs	Log help group costs
Alex. and Suez Canal	0.066*	-0.034	0.041	-0.167***	-0.196	-0.121	-0.142*	0.144
	(0.031)	(0.030)	(0.033)	(0.026)	(0.106)	(0.062)	(0.070)	(0.122)
Urban Lower Egypt	-0.033	0.000	0.272***	-0.201***	0.043	-0.116*	-0.487***	0.048
	(0.025)	(0.028)	(0.029)	(0.024)	(0.098)	(0.056)	(0.067)	(0.138)
Urban Upper Egypt	0.173***	-0.067*	-0.061*	-0.229***	-0.724***	-0.067	-0.559***	-0.421*
	(0.024)	(0.026)	(0.028)	(0.024)	(0.089)	(0.053)	(0.069)	(0.213)
Rural Lower Egypt	-0.004	-0.041	0.198***	-0.174***	-0.202*	-0.121*	-0.686***	-0.301**
	(0.022)	(0.025)	(0.027)	(0.024)	(0.092)	(0.053)	(0.063)	(0.100)
Rural Upper Egypt	0.246***	-0.111***	-0.139***	-0.221***	-1.041***	-0.102*	-0.965***	-0.319**
	(0.023)	(0.026)	(0.028)	(0.024)	(0.088)	(0.048)	(0.071)	(0.117)
Constant					5.191***	3.918***	6.336***	5.517***
					(0.099)	(0.055)	(0.073)	(0.109)
N (Observations)	7972	7972	7972	7972	7884	7776	3604	596

Source: Authors' calculations based on ELMPS 2012.

*p<0.05, **p<0.01, ***p<0.001

Notes: Regressions for probability are based on probit models. Marginal effects are presented here. Regressions for costs are in the form of log costs, and coefficients can be interpreted in terms of percentage changes.

In order to explicitly test the potential tradeoffs between different types of education supplements, we estimated bivariate probit models. These models allow for tests of the relationship (correlation (rho)) between different help strategies. The results are presented in Table 3. Although there is not a statistically significant relationship between parent help and help groups, there are significant tradeoffs (negative correlations) between parent help and private lessons, and particularly private lessons and help groups. These negative correlations indicate that parents see these strategies as substitutes for each other controlling for ability to pay and other characteristics. In summary, after accounting for other factors, there is no apparent tradeoff between parental help and help groups. Parental help and private lessons are clear substitutes, as are private lessons and help groups. This implies that providing additional help groups might potentially reduce the reliance on private lessons.

Table 3. Correlation (Rho) Between Different Help Strategies (Based on Bivariate Probits)

Relationship	Correlation (Rho)	Significance
Parent Help & Private Lessons	-0.167	***
Parent Help & Help Groups	0.040	
Private Lessons & Help Groups	-0.291	***

Source: Authors' calculations based on ELMPS 2012. *p<0.05, **p<0.01, ***p<0.001.

8. EDUCATION OUTCOMES

In this section, we examine two important education outcomes in Egypt: test scores and tracking into general secondary versus vocational secondary at the end of the basic education stage. Test scores demonstrate whether students have mastered the material required to pass a level. We examine students' performance on the exams taken during their sixth year of primary and third year of preparatory in Egypt. The preparatory exam

is particularly high-stakes, as it determines whether students can access general secondary (university-track) or vocational secondary (which is almost always a terminal degree). Additionally, we present in Table 4 multivariate regression models for preparatory test scores, the probability of entering the general secondary track, and the probability of entering the general secondary track after accounting for test scores. Theoretically, only test scores should determine tracking into general or vocational secondary, although test scores might be affected by students' background.

8.1 Test Scores in Egypt

Primary students have slightly higher averages on their exams compared with preparatory students. Primary test scores averaged 80 on a scale of 100, compared with the mean of 76 achieved by preparatory students. Only a few students, about 4-5 percent, did not sit or failed in the exam. However, around half of students reported that they do not know their exam scores for both the primary (54 percent) and preparatory (43 percent) stages. For the remainder of the section, we report results based on only those who report a numerical score.

Girls performed slightly better than boys in both levels. Scores of female students averaged 81 and 77 in their final primary and preparatory years, respectively, a 2-point advantage over the mean score of male students in the same years. In the multivariate models, although females averaged 1.5 points higher scores, the differences were not statistically significant (Table 4).

There is a strong relationship between test scores and household wealth, a reflection of the greater resources wealthier families can draw upon to assist their children to succeed in school. Figure 32 shows a clear pattern of higher scores for students from wealthier households. Mean scores for primary students belonging to the wealthiest quintile of households reached 88, a 15-point advantage over the mean score of students from the poorest quintile of households. Preparatory students from the wealthiest quintile of households, who scored an average of 84, had the same 15-point advantage over preparatory students from the poorest quintile of households. After accounting for other characteristics (Table 4) test scores were higher for every other wealth level compared to the poorest, but differences were significant only for the fourth (4.7 points higher) and fifth (8.2 points higher) wealth quintiles.

Figure 32. Test Scores by Parental Wealth
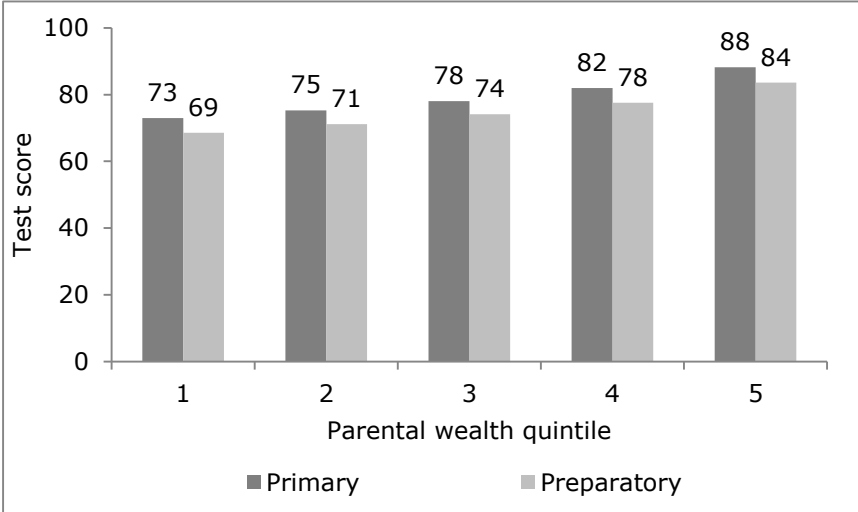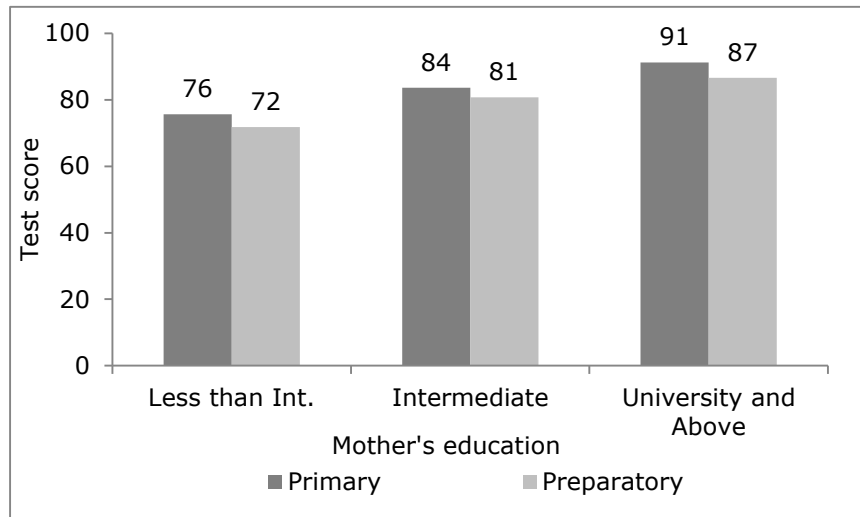

Source: Authors' calculations based on ELMPS 2012.

Note: Ages 13-17 for primary level and ages 16-19 for preparatory level.

Mother's education is also positively related to student performance. Figure 33 shows that students with university-educated mothers reached mean scores of 91 and 87 in the primary and preparatory exams, respectively. However, students with less than

intermediate-educated mothers scored 15 points less, on average, in both exams. Having more educated parents is significantly related to test scores even after accounting for other characteristics (Table 4). Compared to those with fathers with less than intermediate education, those with intermediate educated fathers had test scores that were higher by 5 points and those with university-educated fathers had test scores higher by 9 points. There were not significant differences comparing intermediate educated mothers to mothers with a less than intermediate education, but mothers with a university education were associated with a 4-point increase in test scores.

Figure 33. Test Scores by Mother's Education

Source: Authors' calculations based on ELMPS 2012.

Note: Ages 13-17 for primary level and ages 16-19 for preparatory level.

Students from urban areas generally performed better than those from rural areas. Primary students in Greater Cairo achieved a mean score of 84 compared with the 74 average score of students in rural Upper Egypt (Figure 34). Likewise, preparatory students scored highest in Greater Cairo with an average of 79 compared with the mean score of 70 achieved by students from rural Upper Egypt. This almost 10-point difference is a meaningful gap particularly when seeking to qualify for the general versus the vocational track at the secondary stage, which generally determines access to higher education. After accounting for multiple characteristics (Table 4), there are only significant differences in scores in rural Upper Egypt (as compared to Greater Cairo).

Figure 34. Test Scores by Region

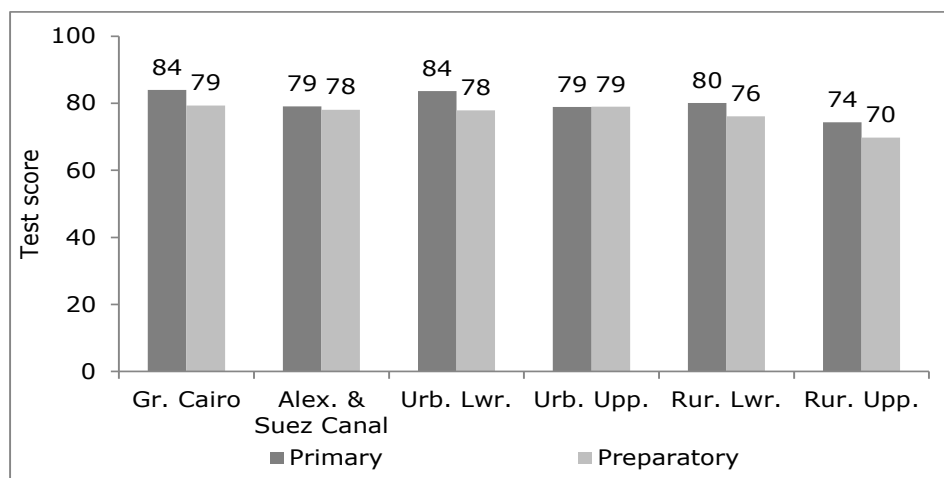*Source*: Authors' calculations based on ELMPS 2012.

Note: Ages 13-17 for primary level and ages 16-19 for preparatory level.

Students going to the more common regular public and Azhari schools also have the weakest performance in exams with mean scores at or below 80, compared with those attending public experimental, and private schools whose mean scores average at least 87; however this difference is likely due to only the most educated and wealthy families, who are high-scoring anyway, sending their children to these schools.

## 8.2   Tracking into General Secondary versus Vocational Secondary

One of the most important measures of success in the basic education stage is whether or not a child is then able to track into general secondary education or relegated to the inferior vocational secondary track.[15] This section investigates the chances of attending general secondary as an outcome of the basic education stage. The average chance of attending general secondary (among those attending secondary) is 44 percent. The probability of tracking into general secondary is significantly higher for females than males by 8.5 percentage points, but this difference disappears once test scores have been accounted for (Table 4).

There are significant differences in the probability of entering the general secondary track by wealth (significant for third through fifth wealth levels as compared to the poorest), a difference as high as 27.1 percentage points for the richest fifth of households compared to the poorest fifth. Even at the same test scores, wealthier students have higher chances of general secondary. Figure 35 shows the observed probabilities of attending general secondary by scores in the preparatory exam for students from different wealth levels. Children from the richest quintile of households clearly have an advantage in accessing general secondary education over other students. For the wealthiest quintile of students, the probability of attending general secondary school is substantially higher than the rest even when they achieve the same test scores. The gap is particularly striking among students with low scores. At scores of 60 a student from the wealthiest quintile of households still has a 30 percent probability of attending general secondary school. In contrast, students belonging to the first to the fourth quintile with scores around 60 have little chance of making it to general secondary. For all but the wealthiest students with scores below 65, there are no notable differences in the probabilities of attending general secondary school. However, for those who reach the cut-off score of 70, the chances of getting into general secondary vary, with those from the third and fourth quintiles gaining higher chances of attending general secondary schools than those from the bottom two quintiles. In the case of the least wealthy students, the probability of accessing general secondary level only increases substantially when they reach scores above 80. After accounting for test scores (Table 4), the fourth and fifth wealth levels have significantly higher chances of general secondary, as high as a 25.1 percentage point increase for the richest fifth of households as compared to the poorest fifth. Because a one point higher preparatory score increases the probability of general secondary by 1.3 percentage points, a student from the poorest fifth of households would have to get a twenty point higher test score to have the same probability of general secondary as a student from the richest fifth of households.

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[15] The vocational secondary track can be characterized as inferior on a number of grounds. Vocational secondary is attended by students with lower test scores in preparatory; only those who have high test scores can attend general secondary and subsequently higher education. Vocational secondary is poorly regarded by society and employers (OECD/The World Bank 2010; World Bank 2013). In part the poor regard for vocational secondary is because the skills and equipment used tend to be outdated, instructors are poorly trained, and connections to the private sector are weak (OECD/The World Bank 2010; UNDP & Institute of National Planning 2010). As a result, only a minority of attendees report receiving hands-on training that was useful in the labor market (Krafft 2012a). Because of the poor quality of their education, recent vocational secondary graduates earn no higher wages than those with lower levels of schooling (El-Araby 2013; Krafft 2013).

Figure 35. Wealth, Test Scores, and Probability of Entering the General Secondary Track, Ages 16-19 in 2012
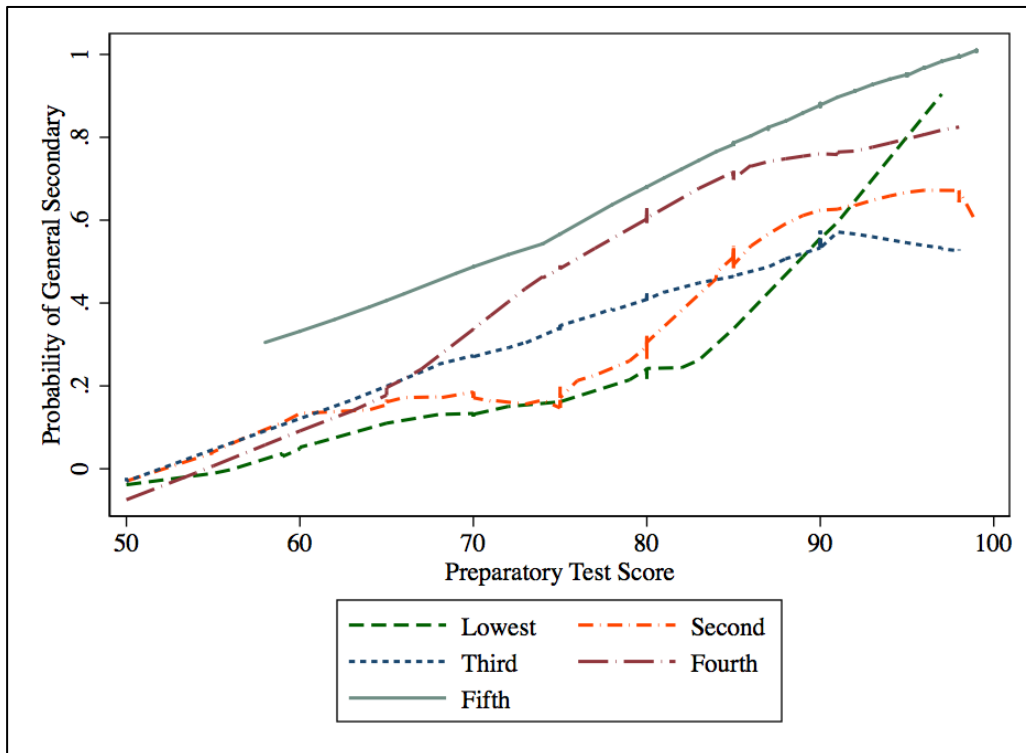
Source: Authors' calculations based on ELMPS 2012.

There are also significant differences by parents' education, comparing both intermediate and university educated mothers and fathers to less than intermediate educated parents before accounting for test scores. After accounting for test scores, there are not significant differences for intermediate educated mothers or fathers, but the probability of general secondary is significantly higher with a university educated father (14.2 percentage points) or university educated mother (21.4 percentage points). There are not significant differences by region in the probability of general secondary either before or after accounting for test scores. Overall, family background impacts not just school performance, but secondary tracking even after accounting for performance.

Table 4. Regression models for test scores and type of secondary, Ages 16-19 in 2012

	Preparatory score	Probability of general secondary	Probability of general secondary (with test scores)
Female	1.483	0.085***	0.062
	(0.800)	(0.022)	(0.032)
Wealth quintile (poorest omit.)			
Second	1.943	0.040	0.091
	(1.651)	(0.036)	(0.067)
Third	2.900	0.093*	0.125
	(1.635)	(0.038)	(0.072)
Fourth	4.656**	0.138***	0.187**
	(1.718)	(0.038)	(0.067)
Fifth	8.230***	0.271***	0.251***
	(1.927)	(0.048)	(0.076)
Father's education (less than int. omit.)			
Intermediate	4.608***	0.159***	0.068
	(1.192)	(0.032)	(0.044)
University	8.721***	0.347***	0.142*
	(1.517)	(0.055)	(0.066)
Mother's education (less than int. omit.)			
Intermediate	2.182	0.119***	0.030
	(1.302)	(0.034)	(0.043)
University	3.562*	0.330***	0.214*
	(1.701)	(0.080)	(0.085)
Region (Greater Cairo omit.)			
Alex. and Suez Canal	-1.698	-0.077	-0.092
	(1.651)	(0.051)	(0.060)
Urban Lower Egypt	0.690	-0.037	-0.022
	(1.332)	(0.046)	(0.054)
Urban Upper Egypt	0.099	0.010	0.071
	(1.150)	(0.046)	(0.054)
Rural Lower Egypt	2.017	-0.072	-0.026
	(1.228)	(0.043)	(0.048)
Rural Upper Egypt	-4.033**	-0.088	-0.011
	(1.375)	(0.047)	(0.064)
Preparatory Score			0.013***

	(0.001)		
Constant	71.199***		
	(1.700)		
N (Observations)	994	2114	785

Source: Authors' calculations based on ELMPS 2012.

*p<0.05, **p<0.01, ***p<0.001

Notes: Regressions for probability are based on probit models. Marginal effects are presented here.

9. CONCLUSIONS AND POLICY RECOMMENDATIONS

Free basic education in Egypt is failing Egyptian children. A policy of free education, designed to promote opportunities for children, has led to a distorted system where there is substantial inequality in succeeding in basic education depending on a child's family circumstances. With an under-funded basic education system, children are not guaranteed success through school alone. Substantial expenditures on basic education supplements, particularly private tutoring, are often necessary to succeed. These expenditures further exacerbate the unequal chances students of different backgrounds are facing for school success. Children from wealthier and more educated families have much higher chances of attending private schools and receiving education supplements such as tutoring. This contributes to further inequality in not just completion of basic education, but unequal performance on tests and unequal access to general secondary and thus higher education.

The current system is clearly not meeting its goals of providing equitable and adequate education for Egyptian children. The problems within the education system are complex, and no single policy can address them all. However, a series of reforms targeting school financing, altering the incentives schools and educators face, and providing support to students in need can make a substantial difference in both education quality and equality within the education system.

How education is funded in Egypt needs to undergo substantial changes. Currently, spending increases with the level of education, and access decreases at higher levels, making education spending, particularly public spending on higher education, regressive (Assaad 2013; El-Baradei 2013). Despite substantial public spending, all levels of education are underfunded. The cost structure must change. Higher education should no longer be free of charge; students and families should contribute a large share of the costs of higher education, with scholarships for those who can demonstrate financial need and merit. Savings from the higher education budget should be directed towards basic education, including also pre-primary education, which is *not* free of charge (UNESCO International Bureau of Education 2006), unlike every other level of schooling, and where there is substantial inequality of opportunity (Krafft and El-Kogali 2014).

Easing regulations on private schools and encouraging growth and competition among private schools—which wealthy families are more likely to use—could also allow the rich to opt out of the public school system and free up public resources to improve basic education for less wealthy students. For every million primary students that shifted from public to private schools, the government would save £E 2.5 billion per year and for every million preparatory students that shifted from public to private schools, the government would save £E 3.6 billion per year. [16] Such savings could enable the government to increase investments in basic education quality.

Raising teachers' salaries within schools may help to address the strong incentives to provide private tutoring, and its damaging effect on opportunities and learning. Simply prohibiting teachers from tutoring their students is unlikely to be enforceable or effective.

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[16] Based on fiscal year 2012/2013 annual costs of a year of primary school (£E 2,454) and annual costs of a year of preparatory school (£E 3,634).

Teachers' and school's incentives need to be addressed more directly. Teachers and schools must be held responsible for how much they teach children, with performance pay and incentives based on what students learn during the year. Stronger incentives may be more effective than additional resources; an experiment in Kenya found that approximately halving the pupil-teacher ratio had little impact on test scores, but using local teachers on short contracts and training school committees led to significant improvements in test scores (Duflo, Dupas, and Kremer 2009).

Incentives targeting teachers have shown mixed impacts globally, with impacts on student outcomes that range from small to impressive (Glewwe, Ilias, and Kremer 2010; Lavy 2009; Sojourner, Mykerezi, and West 2014; Springer et al. 2010; Sundararaman 2011). Rewards and incentives need to be structured very carefully so the policy does not result in perverse effects, such as teaching to only the best students, or teachers being unwilling to work in poorer areas because, in the absence of educated parents at home, students may improve less. Having meaningful measures of student success is also very important. A randomized study of the effectiveness of teacher incentives in Kenya found that, while incentives caused increases in the tests for which teachers were rewarded, this was primarily driven by increases in multiple-choice-question scores, and did not correspond to improvements on other exams (Glewwe, Ilias, and Kremer 2010). Thus the design of incentives and how learning and gains are measured are both extremely important to whether incentives will substantially improve learning.

In addition to creating direct incentives for teachers through performance pay, teachers' incentives may also be affected by the nature of their contracts and oversight. A study in Kenya demonstrated that using local contract teachers improved test scores (Duflo, Dupas, and Kremer 2009). In India, however, contract teachers were merely equally effective—although they were less educated and less trained, as well as lower paid (Muralidharan and Sundararaman 2013).

Rewarding teachers for their performance creates both better incentives and accountability, but additional accountability can be achieved by making both schools and teachers more accountable to parents and local communities for their performance. Egypt's education system is highly centralized. Decentralizing the authority to hire, fire, or reward teachers to local school districts or school boards may increase accountability (World Bank 2008). Design of accountability measures is also important. A randomized evaluation of four different interventions to strengthen school committees in Indonesia found that grants and training had little effect, but that linking the school committee to the village council and democratic elections of school committee members significantly improved test scores (Pradhan et al. 2011). Involving parents in school-based management committees in rural Mexico reduced grade failure and grade repetition (Gertler, Patrinos, and Rubio-Codina 2008).

Addressing some of the quality problems in basic education, such as poor funding and teacher and school incentives, will help equalize opportunities for students to some extent. However, additional targeted policy measures need to address children's unequal opportunities directly. Education policies play an important role in educational inequality and later in labor market inequalities. One study found that the policy that can lead to the largest reduction in education inequality is public pre-primary education (Checchi and van de Werfhorst 2014). More must be done in Egypt to ensure children enter school on equal footing, and early childhood programs such as pre-primary education play a particularly important role in equalizing opportunities. For instance, an early childhood program in Indonesia reduced the achievement gap between rich and poor children when they entered school (Jung and Hasan 2014).

Besides policies that help place children on equal footing before they start basic education, policies that help struggling and disadvantaged students during the school years are important. Policies and programs must address and compensate for poor home environments and ensure that students have all the help they need to master material. Programs for students who have poor performance and who are at risk of failure or dropout can take a number of forms. Special instruction for children who are failing is

one important element of addressing inequality. Additional or special instruction can be extra time after school, extra days of school during breaks or summer, or targeted help during the school day. Targeted additional instruction helped address repetition and dropout and improved educational outcomes in Latin America (Randall and Anderson 1999). Remedial tutoring for struggling students can be extremely cost effective. A remedial tutoring program in India targeting students struggling with basic numeracy and literacy used young women from the community to deliver tutoring by taking students out of class for tutoring during the school day. The program had a large impact on learning outcomes (Banerjee et al. 2007). Particularly in the context of Egypt, where mastery of the material during the normal school day is difficult in the face of private tutoring, public or publicly funded programs that provide additional instructional time to disadvantaged or struggling students are important.

Another policy to reduce inequality in basic education is to provide cash transfers to address the incentives, constraints and challenges disadvantaged families face. Conditional cash transfer (CCT) programs can provide transfers to low-income households that are conditional on school-age children attending school. These programs incentivize parents to keep their children in school, and provide additional income to help offset the lost earning potential of children. Since the need to work is a common reason for school dropout in Egypt, particularly among poor families (Population Council 2011), this is a promising intervention. In contexts where CCTs have been carefully targeted to populations or levels of schooling with gaps in enrollment, they tend to be effective (Orazem, Glewwe, and Patrinos 2009). Simply labeling transfers as for education and connecting them to the school system has been shown to impact educational outcomes in Morocco (Benhassine et al. 2013). A study in Malawi also demonstrated that unconditional cash transfers can improve education outcomes, although to a lesser extent (less than half the effect on dropout) compared to conditional cash transfers (Baird, McIntosh, and Ozler 2011). Thus, programs that provide income to the poorest families may also help their children stay in school, but programs that are conditioned on or linked to schooling are more effective.

Moving forward, Egypt must take a number of steps in order to ensure that students have equal chances to succeed in basic education regardless of their background. Shifting funding from higher education, by imposing cost sharing at that level, could provide substantial additional resources for basic education. Additional spending on education is also planned; the constitution of January 2014 mandates that pre-university education spending be 4 percent of the gross national product (Egypt State Information Service 2014), an increase over current levels (El-Baradei 2013). The additional funds for education should be, at least in part, managed at the local school level by parent committees to strengthen incentives and accountability. We also recommend that additional spending should go towards three key interventions:

1. Egypt should provide free high-quality public pre-primary education targeted to the poor, so that students enter school on a more equal footing.

2. Free help groups should be made available to struggling and disadvantaged students; as this paper demonstrated, help groups are used across socio-economic statuses, although there are geographic differences that likely relate to availability. Providing free help groups would thus both diminish the counter-productive system of private tutoring and help equalize opportunities. The large pool of unemployed, primarily female secondary graduates throughout the country (Assaad and Krafft 2015) can provide a pool of labor for these interventions.

3. Conditional cash transfers should be targeted to the poorest 30 percent of children to encourage them to participate in preschool, remain in school, and attend free help groups.

In Table 5 we provide the estimated costs of these different recommendations. Costs are estimated per child per year (in 2014 £E), as a total cost per year (in 2014 £E),

and with the total cost as a percentage of 2013/14 GDP.[17] For providing free pre-primary education to the poorest 60 percent of children, we use the number of births in 2010, namely 2,261,000 (Central Agency for Public Mobilization and Statistics 2014), as an estimate of the number of five year olds who would be eligible for a year of pre-primary education in 2015. The cost of a year of pre-primary education per child is estimated to be £E 1,407 (World Bank 2002) including both recurrent and investment costs. The program should be financed by the central government but provided by NGOs and community development associations, overseen by community boards appointed by local authorities.

Table 5. Estimated Costs for Policy Recommendations

	Cost per child per year (2014 £E)	Number of participants per year	Total cost per year (million 2014 £E)	Cost as a percent of 2013/14 GDP
1) Free pre-primary to the poorest 60 percent	1,407	1,356,600	1,908	0.10 percent
2) Free help groups for the poorest 60 percent	216	7,777,487	1,680	0.09 percent
3) Conditional cash transfers for the poorest 30 percent	900	4,567,044	4,110	0.22 percent

For providing free help groups, we target the poorest 60 percent of students enrolled in primary and preparatory public schools.[18] We assume that a teacher's assistant earns £E 1200 per month, the minimum public sector wage, providing three hours of supplementary classes after hours on school premises. He or she can teach six days per week, and students participate in two three-hour sessions per week in classes of twenty children per instructor (a total of sixty students are served by each instructor). Assuming a 20 percent overhead rate and a nine-month position, the cost is £E 216 per child per year.

For conditional cash transfers (CCTs), the poorest 30 percent of students should be targeted and incentivized to attend pre-school and supplementary classes, as well as go to school regularly. Assuming a nine month school year, a transfer of £E 100 per month, and the full participation of the poorest 30 percent during pre-primary through preparatory,[19] the program would cost £E 900 per year per participant.

For all of these programs, there would be a number of additional costs that could result, secondarily, from the interventions. For instance, if children who receive CCTs are more likely to remain in school, there would be additional costs in terms of providing education to these children. There might also be additional savings from the interventions. For instance, free help groups might reduce grade repetition and thus increase the efficiency of education spending, potentially lowering total costs. We do not estimate these additional savings or costs here, but rather the costs of the interventions alone.

These different interventions could have large impacts with costs that may be high in absolute terms (all would total more than a billion £E in 2014 terms), but low in relative terms, compared to Egypt's GDP. Free pre-primary for the poorest 60 percent would cost 0.10 percent of GDP, one one-thousandth. Free help groups for the poorest 60 percent would likewise cost 0.09 percent of GDP. Conditional cash transfers for the poorest 30 percent are slightly more expensive, at 0.22 percent of GDP. However, in comparison to both Egypt's GDP and the constitutionally mandated minimum of 4 percent of GNP going to education, these investments are moderate and could overcome substantial problems with inequality and quality in the Egyptian education system.

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[17] The 2013/14 GDP value used is £E 1.911 trillion.

[18] Based on FY 2012/13 numbers of 8,959,343 primary school students and 4,003,136 preparatory students.

[19] Numbers of pre-primary, primary, and preparatory students are derived as described above.

Implementation of all of these programs would require identifying students from the poorest households. Geographic targeting mechanisms, such as poverty maps, already exist in Egypt; for instance, the Ministry of Social Solidarity already targets conditional cash transfers to poor households.

The quality of basic education in Egypt is very low, and this is reflected in the poor ranking of Egypt's education in comparison to other countries (Schwab 2014), as well as essentially zero returns to basic education in the labor market (Said 2015). Families often must invest in substantial additional expenditures in order to ensure their children can succeed in school; so-called "free" basic education in Egypt is a myth. Children face low and unequal changes of school success as a result of the low quality, inefficiencies, and incentive problems within the school system. Improving the quality of basic education and addressing inequality in school success will require a concerted effort on a number of fronts, but is vital to the development of Egypt and the future of Egyptian youth.

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